

Executive Agency for Health and Consumers

CONSUMER MARKET STUDY ON THE FUNCTIONING OF THE MARKET FOR VEHICLE FUELS FROM A CONSUMER PERSPECTIVE

Final Report

Part 1: Synthesis Report



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1 KEY MESSAGES

This section provides the key messages of the study on the functioning of the vehicle fuels market from the consumer perspective, which is based on research comprising of an online consumer survey (with approximately 27,000 respondents in the 29 countries covered by the study), a price collection exercise, mystery shopping exercises (an evaluation of price comparison and information websites as well as visits to petrol stations in six capital cities), interviews, literature review, and a survey of relevant stakeholders in the EU, Norway, and Iceland.

Information provision and perceptions of vehicle fuels

1. Consumer survey respondents are, in general, likely to say that they find it easy to get clear information about fuel types (67%). On the compatibility of different fuel types with their vehicle, there is a broadly even split between those who find it easy to get clear information (41%) and those who don't (49%).
2. Generally, knowledge of the market is low according to the results of the assessment question designed to measure respondents' level of knowledge on vehicle fuels. This is particularly the case for knowledge of new fuel types with biofuel content.
3. Consumer and stakeholder survey respondents reported fuel labelling at the pump to be the primary source for both general information about vehicle fuels and more specific information about fuel-vehicle compatibility. While the vast majority of stakeholders (85%) considered labelling at the pump in their country to be clear, only 38% of consumers indicated that it was easy to identify the right fuel for their vehicle.
4. The results of the assessment of fuel labelling at the pump during the station visits in six countries also make clear that labelling practices can have a major impact on the ease of identifying even regular petrol 95 and regular diesel fuel. Survey responses as well as available data on mis-fuellings obtained from stakeholder interviews strongly suggest that labelling practices at many petrol stations could be improved to the benefit of consumers.

Consumer preferences regarding fuel types

5. Results from the stakeholder survey showed that the most widely available fuel types were regular diesel and unleaded petrol with a RON of 95 followed by unleaded petrol with a RON of 98 and premium fuel types, though not to the same extent as the regular fuel types. Regarding the most common types of vehicle fuels available, consumer survey respondents indicated that they

mostly frequently bought petrol (61%), followed by diesel (36%) or other types of fuel (3%). Petrol users were most likely to use only regular petrol (76%), an identical proportion to diesel users who were most likely to only use regular diesel, as opposed to premium or other types of diesel such as biodiesel.

6. In the three countries in which E10 fuel was widely available at the time of research (Finland, France, and Germany) 22% of respondents buy it for the vehicle they most frequently drive. The proportion is higher in Finland (30%) than in France (24%) or Germany (21%). In contrast, only 1% of respondents in the EU used B7 biodiesel exclusively.
7. Regarding claimed advantages of biofuels, the main advantages perceived by consumer survey respondents are that biofuels make us less dependent on oil (50%), that they are better for the environment than fossil fuels because they produce fewer air polluting emissions (47%), and that they are renewable, whereas fossil fuels will run out (46%). On the other hand, 15% did not agree with any of the claimed advantages of biofuels.
8. In the three countries where E10 fuel is widely available, the percentage of consumer survey respondents indicating that biofuels have no advantage is, at 29%, substantially higher than the EU average. Regarding alleged disadvantages of biofuels, consumer survey respondents are most likely to agree with the claim that they are taking land away from food production (40%) and that they are too expensive (38%). Respondents who are more knowledgeable about fuels are more likely to agree with the alleged disadvantages of biofuels, for example that they are taking land away from food production.
9. As with retailer selection, consumers' selection of fuel type mainly revolves around price: 67% of survey respondents indicated price as the main reason for buying their preferred fuel type, with 27% citing their previous good experience with this fuel type. Only 6% of consumers indicated that they bought their preferred fuel type because it was good for the environment.

Price information, transparency, and competition

10. Considering the key results of the collection of petrol and diesel prices in all 29 countries covered, collected fuel prices were approximately 0.2% cheaper in rural areas than in capital cities and 1.3%-1.7% more expensive along motorways than in the capital cities. The price differentials for both petrol and diesel reveal that, on average, non-major brands and independent fuel retailers sold fuel at slightly lower prices than major brands. Specifically, the price index for non-major brands and independent retailers was 99.6,

compared to 100.2 for major brands, with 100 indicating the average price for all stations.¹

11. However, supermarket stations were by far the cheapest, according to the collected data: the price index for supermarket stations, based on countries where they could be identified, was 96.9 during the week in which the research was conducted. The retailer-type price differentials are highly similar for regular diesel fuel.
12. Turning to the average prices found at manned and unmanned stations reveals that unmanned (or 'automatic') petrol stations nearly always sold fuel at lower prices than their manned counterparts. In fact, with respect to regular petrol 95 prices, the average price at unmanned stations was lower in 13 of the 14 countries in which prices were collected from unmanned stations. Across the 13 countries, the average unmanned station's price for regular diesel fuel was 2.7% below that of the average manned station.
13. Mystery shoppers reviewed in the framework of this study a total of 60 price comparison websites for vehicle fuel across Europe. More than one third of the reviewed websites were assessed as very user-friendly (34%), and another 43% as fairly user-friendly. Mystery shoppers found the vast majority (70%) of the comparison websites helpful in terms of allowing for an informed fuel purchasing decision. The above findings show that many comparison websites were well assessed by mystery shoppers, despite the fact that several listed out of date price observations or whose functionality limited their usefulness to consumers.
14. In several countries price comparison websites have become a tool for regulators to increase price transparency. In these countries, regulatory rules have been enacted that require fuel retailers to notify their prices to a publicly administered database which in turn serves as the foundation for one or more comparison websites. The existence of such price transparency systems has been confirmed in Greece, Spain, France, Cyprus, Austria, and Portugal while Germany declared its intention to enact a similar system.
15. The results of the economic analysis of weekly petrol and diesel prices from 2005 to 2013 conducted in the framework of this study indicate that the regulatory interventions in Austria, namely the requirement that all fuel retailers notify the regulatory authority of each of their price changes combined with a regulator-operated price comparison website, and the associated law permitting only one price increase per day, are associated with lower price levels ex post. As a result, the regressions conducted for this study show a reduction by 3.0% to 3.6% with respect to petrol prices and a reduction by 1.5% to 2.5% with respect to diesel fuel prices induced by the

¹ These average figures are excluding France, which was a significant outlier due to the prices charged by several independent petrol stations located in central Paris.

2011 pricing regulation. The analysis is therefore able to provide some evidence that the Austrian pricing rule and internet platform have led to a decrease in fuel prices in this country compared to the control group of other EU countries.

Problems experienced by consumers and potentially vulnerable groups

16. According to the stakeholder organisations consulted for this study, the highest number of complaints received during the previous five years concerned fuel prices (51%), followed by fuel quality (31%) and unfair commercial practices (11%). Regarding the incidence of problems reported by consumer survey respondents, 43% say that they have experienced a problem during the previous 12 months, when filling up their vehicle either in their own country or in another EU country. Overall, 24% of respondents who provided an answer regarding the problem they had experienced stated that they had to wait in a queue to fill up the vehicle; 10% had a problem at an unmanned station and found nobody to help; 9% said that low quality fuel led to engine or vehicle performance problems; 7% received less fuel in the tank than they paid for; 6% paid higher than advertised price for fuel; 5% could not identify fuel due to unclear labelling; 5% could not buy E10 or B7 because they were uncertain of compatibility; 3% pumped petrol into a diesel vehicle or vice versa due to unclear labelling; and 3% incorrectly pumped a biofuel because of unclear labelling. The mean loss of those who reported actually incurring a financial loss was 176 Euro, with a median loss of 35 Euro.
17. Turning to potentially vulnerable consumers, evidence from several of the data collection tools employed for this study identified those with little or no disposable income, and persons with reduced mobility as being particularly at risk.

Finally, the study presents 11 recommendations based on the key conclusions of the study. These cover areas such as an EU-wide colour-coding scheme for fuel labelling at the pump so that the same distinct colours are used at petrol stations across the EU to indicate on the one hand, regular petrol (green), and on the other regular diesel fuel (black) as is already widely the case. Other recommendations concern improving the quality of information provided on comparison websites, the introduction of vehicle fuel price notification systems, the improvement of preventive and enforcement measures to address problem areas identified, as well as improvements concerning services provided to vulnerable consumers at petrol stations.

2 EXECUTIVE SUMMARY

This section provides a summary of the key findings on the study on the functioning of the vehicle fuels market from the consumer perspective, followed by recommendations based on these findings. The study was commissioned by the Executive Agency for Health and Consumers, acting on behalf of the European Commission, and led by Civic Consulting; lead Contractor of the Consumer Market Studies Consortium (CMSC). The study was implemented with the support of a subcontractor, TNS Opinion (consumer survey). In line with the Terms of Reference, the study:

1. Addresses whether consumers are able to make *informed choices*. This pertains to consumer understanding and transparency of information, including, for example, consumer understanding of information presented on labels at petrol stations, of differences between fuel types, and of the suitability of different fuel types for specific vehicle models;
2. Investigates how to *standardise and harmonise labelling-at-the-pump* practices following the introduction of new fuel types such as those with biofuel content (e.g. E10 and B7);
3. Focuses on the *sustainability of biofuels compared to fossil fuels as perceived by consumers*. Also considered is the extent to which environmental / sustainability concerns affect consumers' purchasing decisions;
4. Examines *the availability of different fuel and retailer types as well as retail prices*.

This market is analysed based on data collected in the framework of this study during the period September 2012 to April 2013, in all 27 Member States of the European Union, Iceland, and Norway.² Research comprised of an online consumer survey (with approximately 27,000 respondents), a price collection exercise, mystery shopping exercises (an evaluation of price comparison and information websites as well as visits to petrol stations in six capital cities), interviews, literature review, and survey of national regulatory authorities, industry bodies, consumer organisations, and other relevant stakeholders. The study consists of four parts: Part 1 presents the main findings of the study, whereas the other parts present detailed methodology and results of the consumer survey (Part 2), the price collection exercise (Part 3), and mystery shopping exercises (Part 4).

² Croatia was not yet a member of the EU when this study was commissioned.

Information provision and perceptions of vehicle fuels

In order to make informed purchasing decisions, consumers across the EU need clear information on key aspects of vehicle fuels. These aspects range from fuel price to compatibility of different fuel types with the vehicle or the effects of particular fuel types on the environment.

This study looks at both the main sources of information used by consumers, as well as their usefulness, i.e. the ease with which clear information can be found. Our consumer survey across 29 European countries found that when asked what their main sources of information about vehicle fuels were, consumer survey respondents indicated the following:

- ▶ Information at the pump (fuel labels or other signs) (50%);
- ▶ Family / friends / colleagues (29%);
- ▶ Information on or next to the vehicle's filling cap (22%);
- ▶ Price comparison websites for fuel (22%); and
- ▶ Staff working at the petrol station (21%).

Stakeholders generally agreed with the effectiveness of these sources, but identified traditional media (television / radio and newspapers / magazines) and fuel retailers' websites as more effective sources than family, friends, colleagues and station staff. Both the consumer survey and stakeholder survey results therefore confirm the central importance of fuel labelling at the pump as an information source.

Consumer survey respondents are, in general, likely to say that they find it easy to get clear information about fuel types (67%). On the compatibility of different fuel types with their vehicle, there is a broadly even split between those who find it easy to get clear information (41%) and those who don't (49%). On three other market aspects, only a minority finds it easy to get clear information: fuel quality (28%), the effects of particular fuel types on engine or vehicle performance (26%), and the effects of particular fuel types on the environment (25%).

- ▶ The findings of this study suggest a substantial disconnect between the ease with which stakeholders think consumers can gather clear information about key market aspects and the actual difficulty of doing this, as expressed by consumer survey respondents. The disparity is largest for information about fuel-vehicle compatibility: whereas 70% of stakeholders indicated it was easy to find clear information, only 41% of consumer survey respondents thought likewise. For fuel prices, 94% of stakeholders and 77% of consumer survey respondents reported it was easy to obtain clear price information.

- ▶ The trend also holds for information about fuel types (82% of stakeholders, compared to 67% of consumer survey respondents), fuel quality (41%, compared to 28%), and fuels' effects on vehicle performance (34%, compared to 26%). Only for fuels' effects on the environment did a similar proportion (25%) of stakeholders and consumer survey respondents indicate that obtaining clear information was easy.

Generally, knowledge of the market is low according to the results of the assessment question designed to measure respondents' level of knowledge on vehicle fuels. In the majority of cases (85%), consumer survey respondents made between two and four mistakes (out of six possible). Each of the three true statements was correctly identified only by between 25% and 30% of respondents, while each of the three false statements was wrongly indicated as correct by at least 15% of respondents. The 'trick' statement – 'None of the listed statements are correct' – was selected by 25% of respondents.

Perceptions of premium fuels and biofuels

With regard to consumer survey respondents' opinions of premium fuels and biofuels, the study found that among consumer survey respondents, perceptions toward premium fuels are mixed: whereas 24% agree with the claim that premium fuels are superior in quality to regular, 47% consider that premium fuels are too expensive and 8% agree with the statement that premium fuels offer no benefits relative to regular fuel types.

Regarding claimed advantages of biofuels, the main advantages perceived by respondents are that biofuels make us less dependent on oil (50%), that they are better for the environment than fossil fuels because they produce fewer air polluting emissions (47%), and that they are renewable, whereas fossil fuels will run out (46%). On the other hand, 15% did not agree with any of the claimed advantages of biofuels. In the three countries where E10 fuel is widely available, the percentage of consumer survey respondents indicating that biofuels have no advantage is, at 29%, substantially higher than the EU average.³

Regarding alleged disadvantages of biofuels, consumer survey respondents are most likely to agree with the claim that they are taking land away from food production (40%) and that they are too expensive (38%), while 23% agree with the claim that they lead to the destruction of the rainforests, and 22% that they worsen engine or vehicle performance.

³ However, this is due to the high percentage of respondents in Germany reporting this opinion because the percentages for Finland and France are broadly similar to the EU average.

The findings of the knowledge assessment portion of the consumer survey appear to indicate insufficient knowledge of newer fuel types with biofuel content, as four of the six statements included in the assessment were linked to fuels with biofuel content, such as E10 and B7.

However, respondents who are more knowledgeable about fuels are more likely to agree with the alleged disadvantages of biofuels, for example that they are taking land away from food production (62% of those in the 'most knowledgeable' group, compared with 44% of those in the 'more knowledgeable' group and 31% in the 'least knowledgeable' group).⁴ The relatively high proportion of respondents in Germany who reported biofuels as having no advantages (40%) is especially notable because Germany is currently one of three Member States in which E10 fuel is widely available.

Information provision at the pump

Consumer and stakeholder survey respondents reported fuel labelling at the pump to be the primary source for both general information about vehicle fuels and more specific information about fuel-vehicle compatibility.

The vast majority of stakeholders (85%) considered labelling at the pump in their country to be clear. However, consumer survey respondents provided a substantially different impression. While a majority of consumers (69%) indicated that fuel prices were clear and understandable at petrol stations, a much lower proportion (38%) reported fuel types to be clear and understandable in their country of residence. Similarly, only 38% of consumers indicated that it was easy to identify the right fuel for their vehicle. These are potentially concerning results given that providing consumers with the information needed to differentiate fuel types and arrive at reliable conclusions about fuel-vehicle compatibility is a primary task of fuel labelling at petrol stations.

Consumer survey respondents found petrol stations located outside of their country of residence more problematic to use than petrol stations in their own country. Respondents were shown a list of seven positive statements about information provision at petrol stations and asked which they agreed with. Whereas 90% of respondents agreed with at least one positive statement and 40% agreed with three or more of the statements regarding petrol stations in their country of residence, those proportions fell to 81% and 29%, respectively, for petrol stations located in other EU countries.

⁴ Generally, knowledge of the market is low according to the results of the assessment question. In the majority of cases (85%), respondents made between two and four mistakes (out of six possible).

- ▶ More specifically, 38% of consumer survey respondents agree that fuel types are clear and understandable at petrol stations in their country of residence, and the same proportion (38%) agrees that it is easy to identify the right fuel for the vehicle. However, when asked about their experiences at petrol stations abroad, 31% agree that fuel types are clear and understandable, and 26% agree that it is easy to identify the right fuel for the vehicle.

The results of the assessment of fuel labelling at the pump during the station visits that were carried out in the capital cities of six countries⁵ for this study make clear that labelling practices can have a major impact on the ease of identifying regular petrol 95 and regular diesel fuel.

- ▶ While green was the colour most commonly associated with regular petrol 95 (66% of all sampled stations that offered regular petrol 95), other colours such as yellow (15%) and blue (6%) were also used in conjunction with this fuel type.
- ▶ At least one station in each capital city of the six countries where station visits took place used a colour other than green, though the colour-coding was largely consistent in Rome (96% of sampled stations used green) and Prague (84%). However, in Paris (56%) and Bucharest (58%) less than three fifths of stations used the same colour in association with regular petrol 95; in the case of Berlin (29%), less than one third of stations used the same colour.
- ▶ Although nowadays diesel nozzles are too large for the opening on petrol vehicles, helping to prevent this type of misfuelling, one can still pump petrol into a diesel vehicle.⁶

In some cases insufficient labelling can contribute to consumer errors, as evidenced by the annual number of mis-fuellings in Germany and the United Kingdom. The ADAC automobile club in Germany reports that roadside assistance patrols were dispatched about 5,000 times in one recent year due to consumer mis-fuelling.⁷ In the UK, the Automobile Association (AA) reported that it deals

⁵ France, Finland, Germany, Italy, Romania, and the Czech Republic.

⁶ According to research by the German automobile club ADAC, in some cases it is still possible to pump diesel into petrol vehicles (listed are Chrysler 300 C, Citroen C1 und C4, Lexus IS 250 und RX 400H, Mazda 5, Mitsubishi Colt, Nissan 350 Z Roadster, Peugeot 107, Seat Toledo II, Skoda Octavia II, Smart forfour Brabus, Toyota Aygo, VW Golf V). See: <http://www.adac.de/infotestrat/tanken-kraftstoffe-und-antrieb/benzin-und-diesel/falsch-getankt/default.aspx?ComponentId=28479&SourcePageId=48532>

⁷ See: ADAC (2012), 'Wrong tank - what to do?', ADAC Website, available at: <http://www.adac.de/infotestrat/tanken-kraftstoffe-und-antrieb/benzin-und-diesel/falsch-getankt/default.aspx?ComponentId=28479&SourcePageId=48532>.

with 60,000 mis-fuellings a year.⁸ While these numbers seem to be considerable, they have to be interpreted in light of the large number of vehicles in use in these countries. Most consumers do not mis-fuel their vehicle, and incidents of mis-fuelling clearly involve an element of inattention on the side of the consumer. On the other hand, in the cases in which mis-fuelling occurs it does lead to considerable (preventable) detriment for the affected consumer.

Timing purchases and selecting a retailer

Based on their understanding of the vehicle fuels market and the information they are able to find, active consumers in this market need to regularly make decisions about which retailer to purchase fuel from.

Results of this study indicate that most consumers are *not* loyal to a particular fuel brand or individual petrol station. Only 13% and 10% of consumer survey respondents, respectively, indicated 'sells my preferred brand' and 'is at my preferred supermarket chain' as important considerations for their selection of a petrol station. This suggests that most consumers were open to purchasing fuel from various retailers.

- ▶ Instead, price is the critical factor in consumers' decision-making in terms of retailer selection: 68% of consumer survey respondents indicated 'offers the lowest price' as an important consideration in their choice of a petrol station. Aside from price, key factors in the selection of a particular petrol station include a convenient location (43%) and the offer of a loyalty card or membership scheme (22%).

In more detail, key findings on the timing of fuel purchases and retailer selection show that almost half of the consumer survey respondents say that they usually fill up their vehicle when the tank is nearly empty (46%), while 19% fill up whenever they see a good deal or see that prices have fallen; only 2% fill up on specific days of the week.

Also, the more knowledgeable respondents are about fuels the more likely they are to say they fill up when they see a good deal.⁹ Survey respondents who spend a larger share of their income on fuel are more likely to say that they fill up whenever they can afford it (13% of those who spend 21% or more of their income on fuel, falling to 3% of those who spend no more than 5% of their income on fuel).

⁸ In an interview conducted for this study, the UK Automobile Association reported that the AA deals with 60,000 mis-fuellings a year, and it estimated that across the UK this number may be as high as 150,000 mis-fuellings a year.

⁹ 26% of those in the 'most knowledgeable' group indicated they filled up when they saw a good deal, compared with 20% of those in the 'more knowledgeable' group and 16% in the 'least knowledgeable' group.

Availability of price information

The percentage of both consumer survey and stakeholder survey respondents that reported it easy to find clear information about fuel prices (77% and 94%, respectively) is higher than for any of the other market aspects researched (i.e. fuel types, fuel quality, fuel-vehicle compatibility and the effects of particular fuel types on both engine / vehicle performance and the environment). Referencing billboard displays while driving by petrol stations is the price comparison method most frequently reported by consumer survey respondents.

It is notable that the reported ease of comparing prices as evidenced in the results of the consumer survey contrasts with the fact that fuel prices were the subject of the majority of the complaints (51%) received by the stakeholder organisations during the previous five years. Complaints concerned alleged high or increased retail prices, which might indicate a lack of price transparency, and opaque or non-competitive wholesale markets.

Even if price displays are clear, price transparency may be limited in a situation where prices at fuel retailers change multiple times per day, as was reported for example from Austria. E-Control Austria, the regulatory authority, reported that petrol stations operated by the five major brands sometimes change their prices 10-15 times per day. This means that if consumers base their selection of retailer on price, the framework for their decision-making can change multiple times per day.

A possible approach to address this situation in those countries where rapid price changes can be observed is to set up price comparison websites which provide up-to-date price information online.¹⁰ In several countries they have become a tool for regulators to increase price transparency. In these countries, regulatory rules have been enacted that require fuel retailers to notify their prices to a publicly administered database which in turn serves as the foundation for one or more comparison websites. The existence of such price transparency systems has been confirmed in Greece, Spain, France, Cyprus, Austria, and Portugal while Germany declared its intention to enact a similar system.¹¹

¹⁰ The term price comparison website is here understood broadly and also includes mobile applications for smart-phones (apps) that compare prices, as well as navigation devices with relevant functionalities.

¹¹ See: http://www.bundeskartellamt.de/wDeutsch/aktuelles/presse/2012_12_04.php. It is notable that a similar approach is now suggested at EU level in the area of bank accounts. For the first time, a proposal tabled by the Commission in May 2013 would establish an obligation on Member States to ensure that consumers have access to at least one website comparing payment account fees, and to establish an accreditation scheme for private operators of such websites; See: Proposal for a Directive on the comparability of fees related to payment accounts, payment account switching and access to payment accounts with basic features, COM(2013) 266 final.

Several important conclusions regarding the availability and usefulness of comparison websites for the vehicle fuels market were produced by the mystery shopping exercise.

- ▶ During the comparison website evaluation, which was part of the mystery shopping exercise, up to three websites per country that allow for the comparison of vehicle fuel prices were evaluated. Mystery shoppers found that 27 of the 60 comparison websites (45%) provided a clear explanation of the frequency of their price updates, and the indications recorded by mystery shoppers show that the most commonly reported update frequency was once per day (18% of the websites in the full sample). This was closely followed by a frequency of more than once per day (13%).
- ▶ The most commonly reported source of price was crowd sourcing.¹² At the time of research more than half (32) of the 60 comparison websites relied on this data channel for some or all of their price data. Twenty-two of the comparison websites received some or all of their price data directly from petrol stations, while nine benefited from national regulations that require vehicle fuel retailers to notify relevant authorities of their prices.
- ▶ Findings on the prevalence of multi-lingual functionality, as well as market coverage, make it clear that most of the comparison websites in this sample were designed for one national market or a portion of that market.
- ▶ Mystery shoppers assessed more than one third of the reviewed websites as very user-friendly (34%), and another 43% as fairly user-friendly. Mystery shoppers found the vast majority (70%) of the comparison websites helpful in terms of allowing for an informed fuel purchasing decision, though they strongly agreed with this statement for only 20% of the websites.

The above findings show that many comparison websites were well assessed by mystery shoppers, despite the fact that several listed out of date price observations or whose functionality limited their usefulness to consumers. When based on up-to-date and comprehensive data, comparison websites offer the ability to comprehensively compare prices nearly instantly, and thereby offer significant advantages compared to other methods used.

¹² Crowd sourcing refers to functionality that allows users of the website to upload price data based on their observations of or visits to petrol stations. The uploading procedure may utilise SMS, a proprietary mobile phone application, or a form on the comparison website, among other potential methods.

The results of the economic analysis of weekly petrol and diesel prices from 2005 to 2013 conducted in the framework of this study also indicate that the regulatory interventions in Austria, namely the requirement that all fuel retailers notify each of their price changes, and the associated law permitting only one price increase per day, are associated with lower price levels ex post.

- ▶ The regressions conducted for this study show a reduction by 3.0% to 3.6% with respect to petrol prices and a reduction by 1.5% to 2.5% with respect to diesel fuel prices induced by the 2011 pricing regulation. The analysis is therefore able to provide some evidence that the Austrian pricing rule and internet platform have led to a decrease in fuel prices in this country compared to the control group of other EU countries. However, a full identification of specific effects is not possible given the limitations of the data.

Regulatory rules on fuel prices do exist in several other Member States, including Belgium, Luxembourg, Malta and Slovenia. These regulatory regimes generally employ price 'ceilings' or maxima to limit the prices that retailers can set.¹³

In contrast, the previously mentioned regulatory intervention in Austria does not directly concern price levels, but rather increases price transparency through a requirement to notify price changes to the relevant authority (see above) and a limitation concerning which time of the day a price increase can take place. As a consequence, consumers know precisely when retailers are permitted to increase their prices and can act accordingly.

Ensuring price transparency and competition

This section considers the study's key conclusions on vehicle fuels pricing. First, we consider the key results of the price collection exercise in which mystery shoppers collected 11,314 fuel price observations over the course of one week by calling petrol stations in all 29 countries subject to this study. Petrol stations in three distinct areas were sampled in each country, usually the capital city, a rural area, and along a motorway.

- ▶ In sum, the collected fuel prices were approximately 0.2% cheaper in rural areas than in capital cities and 1.3%-1.7% more expensive along motorways than in the capital cities.
- ▶ Only in a handful of countries did the average daily price for petrol or diesel (taking into account all stations sampled in the capital city, along motorways and in a rural area) remain constant between Monday, Wednesday and Friday; generally, the average price changed by less than

¹³ At least in Belgium and Slovenia retailers are free to price their fuels below the maxima.

1% between Monday and Friday during the week in which the research was conducted.

- ▶ The price differentials for regular petrol 95 based on data from 28 countries (excluding France, which was a significant outlier due to the prices charged by several petrol stations located in central Paris) reveal that, on average, non-major brands and independent fuel retailers sold this fuel type at lower prices than major brands.
- ▶ Specifically the price index for non-major brands and independent retailers is 99.6, compared to 100.2 for major brands, with 100 indicating the average price for all stations. However, supermarket stations were by far the cheapest, according to the collected data: the price index for supermarket stations, based on countries where they could be identified, was 96.9 during the week in which the research was conducted. The retailer-type price differentials are highly similar for regular diesel fuel.
- ▶ Turning to the average prices found at manned and unmanned stations reveals that unmanned (or 'automatic') petrol stations nearly always sold fuel at lower prices than their manned counterparts. In fact, with respect to regular petrol 95 prices, the average price at unmanned stations was lower in 13 of the 14 countries in which prices were collected from unmanned stations. This finding also holds for the average price of regular diesel fuel. Across the 13 countries, the average unmanned station's price for regular diesel fuel was 2.7% below that of the average manned station.

Presented next are the findings on average price differences between different fuel types, which are based on data collected during visits to 150 petrol stations spread across the capital cities of 6 Member States.

- ▶ As one would expect, premium petrol and premium diesel were always more expensive, where available, than regular petrol 95 and regular diesel fuel, respectively. The cost difference for premium petrol compared to petrol 95 ranged from 6.1% in Italy to 8.3% in the Czech Republic; for premium compared to regular diesel the range was from 1.8% in Finland to 9.3% in Germany.
- ▶ As might be expected, petrol 98 blends tended to be more expensive than regular petrol 95 blends, usually around 6-9% more expensive. The only exception was in Paris, where petrol 98 was both more widely available and cheaper by 1.4% compared to regular petrol 95.
- ▶ In the two countries – Germany and France – in which both regular petrol 95 and E10 fuel with a RON of 95 were available, E10 was between 2.5% (Germany) and 7.2% (France) cheaper than the blend with lower biofuel content.

Consumer preferences regarding fuel types

Next, we turn to consumer survey respondents' indications regarding the considerations underlying their fuel type preferences.

- ▶ Regarding the most common types of vehicle fuels available, consumer survey respondents indicated that they mostly frequently bought petrol (61%), followed by diesel (36%) or other types of fuel (3%). Petrol users were most likely to use only regular petrol (76%), an identical proportion to diesel users who were most likely to only use regular diesel, as opposed to premium or other types of diesel such as biodiesel. The distribution of fuel types bought by survey respondents varied considerably by country - in Greece, for example, the vast majority (93%) of consumer survey respondents bought petrol, compared to only 33% in France.
- ▶ As with retailer selection, consumers' selection of fuel type also revolves around price: 67% of survey respondents indicated price as the main reason for buying their preferred fuel type.
- ▶ Factors other than price that play a role in fuel type preferences include previous good experience with a given type of fuel (27%), its perceived benefits for engine or vehicle performance (22%) and fuel quality (18%). Only 6% of consumers indicated that they bought their preferred fuel type because it was good for the environment.
- ▶ One in ten consumer survey respondents say they don't have a choice between fuel types as there is only one type of fuel available in their area that is compatible with their vehicle. This percentage is higher for respondents living in rural areas (14%, compared with 6% in metropolitan areas).
- ▶ Only one fifth (20%) of responding EU27 stakeholders were of the opinion that it is easy for consumers in their country to compare the performance of branded fuels, generic / non-branded fuels, and fuels sold at supermarkets. Indeed, the majority of stakeholders (52%) reported that such comparison is not at all easy.

While in many markets competition can ensure that price serves as a good signal of quality, this is not necessarily the case for the vehicle fuels market. This is because in the vehicle fuels market consumers pay a significant price premium for premium fuel compared to regular fuel, while it is unclear to which extent material differences exist between the fuels sold that would lead to measurable performance differences.

Opinions on this issue are not necessarily consistent between fuel industry representatives and independent observers, and in absence of consistent and independent testing with multiple types of vehicles and under different road

conditions claims of better quality are often considered a matter of marketing and customer segmentation.

At least in recent independent tests carried out in Portugal and in previous tests by the German automobile club (ADAC), premium fuels were not found to be substantially superior in performance,¹⁴ in spite of the widespread perception in this respect, as evidenced by consumer survey results.

Incidence and types of problems

Regarding the incidence and types of problems reported by consumer survey respondents, 43% say that they have experienced a problem during the previous 12 months, when filling up their vehicle either in their own country or in another EU country. In terms of incidence of problems encountered both at home and abroad, respondents who spend a larger share of their income on fuel are more likely to experience problems (29% of those who spend no more than 5% of their income on fuel, compared to 62% of those who spend 21% or more of their income).

Overall, 24% of respondents who provided an answer regarding the problem they had experienced stated that they had to wait in a queue to fill up the vehicle; 10% had a problem at an unmanned station and found nobody to help; 9% said that low quality fuel led to engine or vehicle performance problems; 7% received less fuel in the tank than they paid for; 6% paid higher than advertised price for fuel; 5% could not identify fuel due to unclear labelling; 5% could not buy E10 or B7 because they were uncertain of compatibility; 3% pumped petrol into a diesel vehicle or vice versa due to unclear labelling; and 3% incorrectly pumped a biofuel because of unclear labelling. When considering only those problems which resulted in financial detriment, 28% of respondents claimed that they had encountered such a problem.

- ▶ One in three (32%) of those respondents who indicated a problem or problems that could have resulted in financial detriment say that they experienced no financial loss. 31% experienced a loss of less than 20 Euro, while 23% incurred a loss of between 20 and 99 Euro. Some respondents incurred larger financial losses, as one in ten (12%) of those respondents who indicated a problem or problems that could have resulted in financial detriment suffered a self-reported loss of between 100 and 999 Euro and one in fifty (2%) a loss of 1,000 Euro or more. The mean loss of those who reported actually incurring a financial loss was 176 Euro, with a median loss of 35 Euro.

¹⁴ See, for example: <http://www.adac.de/infotestrat/tanken-kraftstoffe-und-antrieb/benzin-und-diesel/premiumkraftstoffe/default.aspx?ComponentId=33085&SourcePageId=61719&tabid=tab1>).

Respondents who experienced a problem when filling up their vehicle were then asked what action they took in response. The majority of respondents (72%) say that they did not take any action, while 28% took some form of action, most commonly a complaint to the petrol station (23%). Approximately equal proportions of those respondents who took action in response to the problem(s) they experienced say they were satisfied (47%) or dissatisfied (51%) with the final result.

Another potentially concerning result is the apparent divide between the EU15 and EU12 findings.¹⁵ Not only did a larger proportion of respondents in the EU12 report experiencing a problem, but nearly double the proportion reporting a problem that could lead to financial detriment can be observed.

To gather additional information on problems in the vehicle fuels market, organisations that responded to the stakeholder survey were asked to provide both consumer complaints data (if available) and qualitative indications of consumer problems observed in their country. Several additional conclusions can be drawn from their responses:

- ▶ According to the stakeholder organisations consulted for this study, the highest number of complaints received during the previous five years concerned fuel prices (51%), followed by fuel quality (31%) and unfair commercial practices (11%).
- ▶ The results of the stakeholder survey clearly point to fuel prices as the most controversial aspect of the vehicle fuels market. In particular, high or increased retail prices, a lack of price transparency or an opaque or non-competitive wholesale market were the most reported problems by the stakeholder organisations.

Since findings related to fuel prices and price transparency have already been presented above, this aspect will not be discussed again here. However, the indications from the surveys that fuel quality may be an issue of concern for consumers in some countries deserves some further consideration.

- ▶ In particular, fuel quality problems experienced by respondents to the consumer survey are notable for their disparity between EU15 and EU12 countries: whereas reports of low quality fuel leading to vehicle performance problems were rather the exception in the EU15 (4% of respondents reported having experienced such a problem), this was less

¹⁵ By the EU12 we refer to the group of Member States which acceded to the EU in 2004 and 2007, namely: Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia, and Romania. By the EU15 we refer to those Member States who acceded to the EU before 2004. Croatia was not yet an EU Member State when this study was commissioned.

the case among EU12 respondents, 17% of whom reported experiencing such a problem.

Countries with the highest incidence of reported problems of this type were Bulgaria and Greece (27% each), Romania (25%) and the Czech Republic (18%). Further evidence in this respect was collected through the stakeholder survey: The list of countries in which at least one stakeholder reported that 25% or more of consumer complaints pertained to fuel quality is as follows: Belgium, Estonia, Greece, Italy, Cyprus, Lithuania, Malta, Poland, Portugal, Slovenia and Finland.

Though Belgium and Finland are clearly outliers relative to the consumer survey results, the other countries listed are either EU12 Member States or, in the case of Greece, Italy and Portugal, among the small group of four EU15 Member States in which 5% or more of consumer survey respondents indicated a problem with low quality fuel.¹⁶

Findings on potentially vulnerable consumer groups

Several of the data collection tools employed for this study allowed us to gain insights with regard to potentially vulnerable consumers. The key findings are presented below.

Participating organisations¹⁷ responses to a stakeholder survey question which asked them to indicate, from a pre-defined list of seven groups, those that they would consider to be vulnerable in the market for vehicle fuels, gave the following result:

- ▶ Among the 70 national-level stakeholders that responded to the survey from EU27 Member States, 35 stated that they consider consumers with little or no disposable income to be vulnerable in the vehicle fuels market.
- ▶ The next most frequently indicated group was consumers living in rural areas, and the third was persons with reduced mobility (e.g. disabled persons and/or older drivers).
- ▶ Next on the list were consumers who drive old vehicles, followed by elderly people; these groups were reported to be vulnerable by 15 and 14 stakeholders, respectively.

¹⁶ When comparing data provided by stakeholders on fuel quality issues with consumer survey findings, it is important to note that 'fuel quality' was not identically defined in the two surveys. Whereas in the consumer survey the item read, "Low quality fuel led to engine/vehicle performance problems", the explanatory note in the stakeholder survey more broadly defined fuel quality to also include general fuel quality complaints. This difference, albeit a minor one, may affect comparability between the results.

¹⁷ Stakeholder organisations contributing to the survey included competition authorities, standardisation authorities, ministries, consumer protection authorities, industry associations, vehicle fuel refiners, retailers, consumer organisations, and automobile associations.

- ▶ The remaining groups, namely people with literacy problems and consumers who buy fuel outside their country of residence, were reported as vulnerable in the market by six and four stakeholders, respectively.

Turning first to consumers with little or no disposable income, it is relatively easy to identify their potential market vulnerability: people with scarce disposable income and those who spend a relatively high percentage of their monthly income on fuel are disadvantaged from the onset, but they are also more troubled by high price levels and price increases. The consumer survey results show that respondents who spend a larger share of their income on fuel are more likely to say that they fill up whenever they can afford it (13% of those who spend 21% or more of their income on fuel, falling to 3% of those who spend no more than 5% of their income on fuel).

Considering some of the other potentially vulnerable groups in more detail, and in conjunction with the socio-demographic analyses of the consumer survey findings, yields a generally mixed picture. When the consumer survey results for various questions are broken down by respondents' age, place of residence, percentage of monthly income spent on fuel, market knowledge, vehicle age and cross-border purchasing experience some findings are contradictory in terms of whether vulnerability exists or whether a particular group is disproportionately burdened by market complexities and problems.

For example, it was hypothesised that consumers residing in villages or rural areas may be disadvantaged relative to their counterparts in urban or metropolitan areas as a result of more limited choice of fuel retailers, fuel types, and higher fuel prices.

In terms of choice in the market, the consumer survey provides some evidence in support of the notion that respondents living in rural areas are more vulnerable:

- ▶ At the EU27 level, 4% of consumer survey respondents reported 'Is the only one in my area' as one of their most important considerations in the selection of a fuel retailer. When broken down by area of residence these findings indicate that 6% of respondents residing in rural areas cited this as a consideration in their choice of retailer, while only 3% of respondents in urban and metropolitan areas did so.
- ▶ Similarly, 14% of respondents residing in rural areas reported the availability of only one type of vehicle-compatible fuel in their area as a main reason for their fuel type selection; this factor was indicated by only 10% of respondents in urban areas and 6% in metropolitan areas, suggesting that fuel type choice is more constrained for consumers living in rural areas.

With respect to the other hypothesized disadvantage facing rural consumers, i.e. higher fuel prices, the price collection and analysis component of this study did not find evidence to support this claim with regard to within-country prices, as the average price indices calculated for regular petrol 95 and regular diesel fuel in rural areas relative to capital cities were both 99.8, meaning that the collected prices in rural areas were approximately 0.2% cheaper than those in capital cities. However, this finding does not take wage or price levels into account. If wages in rural areas of a given country are lower than in the capital city, the rural fuel price, even if slightly cheaper in absolute terms, would be higher in relative-to-income terms. This may particularly be the case in EU12 Member States where rural areas tend to be poorer compared to cities than in EU15 Member States.

Also of interest is the finding that problems when filling up the vehicle were more commonly reported by consumer survey respondents living in metropolitan areas (44%, compared with 38% in urban areas and 34% in rural areas). This is despite the finding that people living in rural areas also tend to drive greater distances (58% drive 10,000 kilometres or more per year) than those residing in urban (51%) or metropolitan areas (50%).

Consumer survey respondents with older vehicles (more than 10 years old) were also less likely to have experienced a problem filling up their vehicle (36%) than those with a vehicle less than five years old or between five and 10 years old (both 40%). However, respondents with older vehicles were found to drive less than those with newer vehicles.

Similarly, the consumer survey results on the incidence of problems among the different age groups reveal a strong pattern, with problems more common among younger people (53% of 18- to 24-year-olds, falling to 31% of those aged 55 or over).¹⁸ In marked contrast, older respondents fared worse than younger ones on the market knowledge assessment questions.¹⁹ However, lower knowledge in this context could also indicate lower awareness of problems encountered in the market, leading to under-reporting of problems in older age groups.

In this context it is also noteworthy that the use of labelling on the pump or vehicle as a main source of information about fuel and vehicle compatibility increases with age. This re-emphasises the need for clear labelling practices (please see the associated recommendations below).

¹⁸ Those in the middle age bands (57% of 25- to 39-year-olds drive 10,000 kilometres or more per year, as do 55% of those aged 40-54) drive greater distances on average than either the younger or older age groups (48% of 18- to 24-year-olds and 48% of those aged 55 or over).

¹⁹ This finding may reflect unfamiliarity with newer fuel types among older respondents, as several of the six assessment statements pertained to fuels like E10 and B7 that contain biofuel content.

Concerning persons with reduced mobility, based on the petrol station visits carried out in the capital cities of six Member States and the mystery shopping-based reviews of comparison websites, potential improvements could address the following issues:

- ▶ The station visit exercise found that many petrol stations lacked handicap-accessible toilets. Indeed, the proportion of visited stations with such facilities ranged from 0% in Rome and Bucharest to 12% in Paris, 24% in Berlin, 56% in Helsinki and 64% in Prague. Overall, 66% of the 150 visited stations had toilets, but only 26% had handicap-accessible ones.
- ▶ Only few of the evaluated comparison websites for vehicle fuel allow consumers to search for petrol stations based on accessibility factors such as the provision of full- or partial-service and handicap-accessible toilets.

Turning next to the experience of consumers who buy fuel in other EU countries, the relevant socio-demographic results of the consumer survey question on problems experienced while filling up the vehicle are again notable in that they run somewhat contrary to the notion of this group as particularly vulnerable.

- ▶ The proportions of respondents reporting having experienced a problem at a petrol station outside their country of residence in the past year (19%) and a problem capable of causing financial detriment at a foreign petrol station (12%) are lower than observed for the similar question on problems experienced in respondents' country of residence (38% and 21%, respectively).
- ▶ Considering the results in more detail, we also see that few respondents who purchase fuel abroad reported experiencing problems with unclear labelling preventing a purchase (3%) or leading to unintended pumping of biofuel (1%) or the wrong fuel type, e.g. petrol instead of diesel (also 1%).

These findings must be qualified though, because those respondents who reported purchasing fuel in other EU countries are still likely to purchase most of the fuel in their country of residence, increasing the likelihood to experience problems there compared to experiencing them abroad. Also, respondents who reported purchasing fuel in other EU countries tended to drive more kilometres per year, be better educated and be more knowledgeable about the vehicle fuels market, according to the survey assessment questions.

Recommendations

The following 11 recommendations provided in Section 9 of this report are based on the key conclusions of the study. They are aimed at improving the functioning of the market from the consumer perspective so that consumers are better able to make informed fuel purchasing decisions.

- ▶ ***Recommendation 1*** - Stakeholders in the vehicle fuels market, including public authorities, industry associations, oil companies and fuel retailers, as well as automobile clubs, should reconsider the difficulty some consumers appear to be experiencing in obtaining clear information on key market aspects, such as the effect on engine performance of new fuel types, and compatibility between fuel type and vehicle. This is especially relevant in the context of the introduction of new fuel types. If the introduction of new fuel types is to be successful in the EU, additional information provision to consumers will be needed. More specifically, it is recommended that the introduction of any new fuel types which require compatible vehicles, and which will be widely sold at petrol stations in a given Member State should be preceded by the provision of information in a consumer friendly way across the EU that allows the consumer to recognise at a filling station across the EU clearly and without any delay or additional effort if his/ her car matches with the fuels offered on the market. This information should then be distributed to consumers through a variety of channels such as car manuals, information at vehicle dealerships and corresponding labelling at both the fuel pump and the car.
- ▶ ***Recommendation 2*** - Consumers are unsure about biofuels' environmental impact, with respondents to the consumer survey seeing both advantages and disadvantages. Concerns such as the indirect land use change impacts of biofuels and its contribution to climate change mitigation will need to be convincingly addressed in consumer's perception if consumer trust is to be regained.²⁰

²⁰ For example, the European Commission in October, 2012 tabled a Proposal for a Directive of the European Parliament and the Council amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources (COM(2012) 595). The aims of the proposal are to limit the contribution that conventional biofuels (with a risk of ILUC emissions) make towards attainment of the targets in the Renewable Energy Directive; improve the greenhouse gas performance of biofuel production processes (reducing associated emissions) by raising the greenhouse gas saving threshold for new installations subject to protecting installations already in operation on 1st July 2014; encourage a greater market penetration of advanced (low-ILUC) biofuels by allowing such fuels to contribute more to the targets in the Renewable Energy Directive than conventional biofuels; and improve the reporting of greenhouse gas emissions by obliging Member States and fuel suppliers to report the estimated indirect land-use change emissions of biofuels. This proposal is currently still under discussion. Available at: http://ec.europa.eu/prelex/detail_dossier_real.cfm?CL=en&DosID=202037#1210630

- ▶ *Recommendation 3* - An EU-wide colour-coding scheme for fuel labelling could be implemented so that the same distinct colours are used at petrol stations across the EU to indicate, on the one hand, regular petrol, and, on the other, regular diesel fuel. As the green (petrol)-black (diesel) scheme is already widely employed and recognised in the six countries in which a sample of petrol stations was visited for this study, these colours may be a natural choice on which to base the system. A similar approach could be taken with other fuel types (e.g. alternative fuels, premium fuels), aiming at a colour labelling that is easily understandable to consumers. Such an EU-wide colour-coding scheme should be simple, clearly visible and easily understandable and it should be placed in a corresponding manner at both the fuel pump and the car. As the market study has revealed problems with the display of the research octane number (RON) at petrol stations, Member States should pay more attention on fuel labelling for all fuel types at the pump. If necessary, EU-wide harmonization regarding the display of relevant fuel denominations could be introduced.
- ▶ *Recommendation 4* - It is recommended that national authorities initiate or maintain efforts to improve the quality of information that comparison websites provide to consumers, and consider establishing accreditation systems for comparison websites, including for vehicle fuels comparison websites. Where no relevant comparison website/app exists, a relevant public authority could itself provide one, or it could commission a suitable organisation, such as automobile club or consumer organisation with this task.
- ▶ *Recommendation 5* - In those countries where vehicle fuel price notification systems do not exist, national governments across the EU, as well as in Iceland and Norway, could consider introducing them. More specifically, retailers could be required to notify their prices for at least regular petrol 95 (or the equivalent, e.g. E10 with 95 RON in Finland) and regular diesel fuel each time those prices are changed. The resulting price database could then form the basis for a publicly administered comparison website/app for fuel prices. The data could also be provided to comparison websites/apps run by automobile clubs, as is now the case in Austria, or to other privately-run comparison websites, as is done in Greece and Spain. In Member States where fuel retailers rapidly change prices (e.g. multiple times per day) and thereby reduce transparency of the vehicle fuels market for consumers, national governments could consider limiting the frequency with which retailers are allowed to increase their fuel prices in one day. For example, a price increase could be allowed only at a predefined, uniform hour (e.g. noon), though retailers could decrease prices without restriction throughout the day. This regulatory model may increase market transparency for consumers and

provide a better basis for consumer choice in an environment of very frequent price changes.

- ▶ **Recommendation 6** - Comparison websites of public authorities could also consider providing their services in the framework of a smart mobility portal. For example, a route planning service could include information on the cheapest petrol station at the route (based on real-time data on prices). If a mobility portal provides mobile applications for smartphones or is linked to relevant services for navigation devices, real-time price data could help making efficient choices of petrol stations. A mobility portal could also provide information on alternative fuels (including prices) and facilitate the use of alternative, more sustainable modes of transport, e.g. through the provision of route options for public transport (bus and railway) and available bicycle routes (where distances and associated time requirements make these modes a realistic alternative). It could provide a platform for car-sharing, or link to relevant services in the area in question, as well as provide tailor made information on suitable combinations of modes, such as combining railway with rent-a-bicycle or rent-a-car. A mobility portal could also be introduced at European level. For example, the Clean Vehicle Portal²¹ is designed to give a detailed and comparable overview of the range of clean vehicles available on the market and classify them according to their life cycle costs. Such an EU portal but focused on mobility and prices could link to national databases for price data.
- ▶ **Recommendation 7** - Governments should monitor market diversity, with a view to maintain non-major brand and independent retailer sectors. It is notable that the price collection conducted for this study indicated the importance of supermarket chains in providing a competitive environment: Sampled supermarket stations were by far the cheapest in those countries where they could be identified, with a price index of 96.9 during the time in which the research was conducted (100 indicates the average price for all stations).
- ▶ **Recommendation 8** - Consumer organisations, automobile clubs and other organisations should be encouraged to report on the performance of various fuel types in their country so that they better inform consumers of any actual differences in performance and environmental effects. Ideally such reports would include performance comparisons between branded and non-branded fuels, as well as comparisons between regular fuel and premium variants sold in a given country.
- ▶ **Recommendation 9** - As individual redress is often difficult in the vehicle fuels market due to problems in establishing the facts, it is recommended

that relevant national authorities consult with automobile associations and consumer organisations on how to improve monitoring of those aspects that are most frequently subject of consumer complaints, and improve related preventive and enforcement measures (e.g. regarding improved labelling at the pump, prevention of fraud etc.). It is recommended that consumer complaints regarding vehicle fuels are classified and reported in regular intervals, following the harmonised methodology for classifying and reporting consumer complaints and enquiries, to establish a better evidence base for possible measures.²² Public authorities and stakeholders should consider ways to improve information provision to consumers regarding 'alternative' fuel types (such as LPG, natural gas and E85) in use in their country, as users of such fuel types have reported a significantly higher incidence of problems (48%) during the previous 12 months, when filling up their vehicle either in their own country or in another EU country, compared to users of diesel and petrol (39% and 38%, respectively).

- ▶ *Recommendation 10* - In cases where the stakeholder surveys indicate that consumers may perceive actual problems regarding the quality of fuels put on the market, these findings should be considered by competent authorities. Based on findings from the consumer and stakeholder surveys, this recommendation appears to be most relevant to some of the EU12 Member States, as well as Greece.
- ▶ *Recommendation 11* - Either voluntarily, or based on regulatory requirements, the proportion of petrol stations with handicap-accessible toilets should be expanded to accommodate the needs of persons with reduced mobility, in light of the essential role these facilities have in safeguarding accessible travel and tourism for disabled people. Operators of comparison websites should expand search functionality in order to allow vulnerable consumers to search for petrol stations that will be able to accommodate their needs.

²² *Recommendation on the use of a harmonised methodology for classifying and reporting consumer complaints and enquiries.* In this respect, the European Commission provides free of charge IT solutions and support to all interested organisations, including on-site IT expert visits, aimed at elaborating customised solutions, to facilitate the adoption of the Recommendation and the data transfer to the relevant Commission services. The text of the recommendation is available at:

http://ec.europa.eu/consumers/strategy/docs/consumer-complaint-recommendation_en.pdf.

3 INTRODUCTION

The Executive Agency for Health and Consumers, acting on behalf of the European Commission (DG SANCO, Directorate Consumer Affairs), commissioned a consumer market study on the functioning of the market for vehicle fuels from a consumer perspective to Civic Consulting, lead Contractor of the Consumer Market Studies Consortium (CMSC). The study was implemented with the support of a subcontractor, TNS Opinion (consumer survey).

3.1.1 Objectives and scope of the study

This study analyses whether the vehicle fuels market is working for consumers and whether they are able to make informed purchasing decisions in the market. In line with the Terms of Reference the analysis:

1. Addresses, in particular, whether consumers are able to make informed choices. This pertains to consumer understanding and transparency of information, including, for example, consumer understanding of information presented on labels at petrol stations, of differences between fuel types, and of the suitability of different fuel types for specific vehicle models;
2. Investigates how to standardise and harmonise labelling-at-the-pump practices following the introduction of new fuel types such as those with biofuel content (e.g. E10 and B7);
3. Focuses on the sustainability of biofuels compared to fossil fuels as perceived by consumers. Also considered is the extent to which environmental / sustainability concerns affect consumers' purchasing decisions;
4. Examines the availability of different fuel and retailer types as well as retail prices.

Part 1 of this report is structured according to the detailed questions provided in the Terms of Reference (TOR). These questions are grouped into the areas of *Consumer information on vehicle fuels*, *Consumer understanding and decision making* and *Single Market choice, price and quality for consumers*. Study questions linked to the third area cover the following issues: a) choice; b) price; and c) problems encountered by consumers, consumers' complaints and redress.

3.1.2 Time period

The study and collection of data refers to the current functioning of the market for vehicle fuels from a consumer perspective. This market is analysed based on data collected in the framework of this study, complemented by data collected through other studies. The study mainly makes use of data collected in the period

September 2012 to April 2013. However, for specific aspects regarding the analysis of vehicle fuel prices the study draws on multiannual data reported by the European Commission through the Market Observatory for Energy, which presents consumer prices and net prices (excluding duties and taxes) of petroleum products in the EU Member States each week.

3.1.3 Approach

The main questions targeted by the study have been answered on the basis of research conducted in all 27 Member States of the European Union, Iceland, and Norway. The research comprised:

- ▶ A consumer survey covering all 29 study countries with a sample size of 27,323;²³
- ▶ A price collection exercise, consisting of three elements:
 - ▷ Collection of price data at the pump by telephone for petrol and diesel in defined time slots at three predefined days of a specified week, for the capital city, a rural area and stations at motorways;
 - ▷ Collection of complementary price data from Comparison websites;
 - ▷ Collection of multiannual weekly national price data reported by the European Commission for Euro-super 95 and diesel fuel through the Market Observatory for Energy (EU27), and data on refined petroleum product quotations from the Platts energy, petrochemicals and metals information provider. This data, which represents average national fuel prices in different Member States, was combined with other relevant data in a regression analysis of factors that may explain divergences in prices between countries;
- ▶ Mystery shopping exercises comprising the following elements:
 - ▷ Petrol station visits covering 25 petrol stations in each of six capital cities: Prague, the Czech Republic; Berlin, Germany; Paris, France; Rome, Italy; Bucharest, Romania; and Helsinki, Finland. Accordingly, a total of 150 stations were visited;
 - ▷ Assessment of fuel labelling at petrol stations;
 - ▷ An evaluation of comparison websites for vehicle fuels and other websites in the 29 study countries (60 comparison websites and 203 websites of fuel retailers, automobile clubs and authorities were covered);

²³ The survey was conducted by means of CAWI (Computer Assisted Web Interviews). In the cases of Malta and Cyprus telephone interviews were held because online panels were not available. The target group for the survey were consumers who drive a vehicle and who are involved in choosing fuel for the vehicle that they drive. A target sample size of approximately 1,000 respondents was set for each country (500 in Cyprus, Luxembourg, Malta and Iceland).

- ▷ Focus groups with mystery shoppers;
- ▶ Interviews with experts and stakeholders, including automobile associations, competition authorities, industry associations and other stakeholders;
- ▶ A survey of stakeholder organisations, including automobile associations, consumer organisations, competition and consumer protection authorities, industry associations and other stakeholders.

For more details regarding the methodological approach, please refer to Parts 2, 3 and 4 of this report.

3.1.4 Structure of the report

Part 1 of this report presents the main findings from the study and is structured as follows:

- ▶ *Section 3* (this section) contains an introduction and brief methodological overview;
- ▶ *Section 4* analyses the availability of consumer information on vehicle fuels;
- ▶ *Section 5* considers consumer understanding and decision-making;
- ▶ *Section 6* offers a comprehensive discussion of consumer choice in the market;
- ▶ *Section 7* analyses vehicle fuel prices in Member States and includes an economic analysis of factors that may explain divergences in prices between countries;
- ▶ *Section 8* is dedicated to the discussion of consumer problems and redress in the vehicle fuels market;
- ▶ *Section 9* comprises the study's key conclusions and recommendations;
- ▶ *Annexes* are also provided and they contain, respectively, complementary information on the economic analysis, references, and the list of stakeholders responding to the survey.

Part 2 of this report presents the methodology and detailed results of the consumer survey.

Part 3 of this report comprises the methodology and results of the price collection exercise.

Part 4 of this report comprises the methodology and results of the mystery shopping exercises.

3.1.5 Acknowledgements

Civic Consulting would like to express its gratitude to all supporters of this study. More specifically, special thanks are due to all of the organisations that responded to our stakeholder survey, as well as to the other stakeholders who provided valuable input through in-depth interviews. In addition, we would like to thank the members of our technical and legal expert groups who provided expert advice and feedback throughout the study.

Finally, we thank the Directorate General for Health and Consumers of the European Commission and other Commission services for the support they provided during the course of the study.

3.1.6 Disclaimer

This report was produced under the Consumer Programme (2007-2013) in the frame of a contract with the Executive Agency for Health and Consumers (EAHC) acting on behalf of the European Commission. The content of this report represents the views of Civic Consulting and is its sole responsibility; it can in no way be taken to reflect the views of the European Commission and/or EAHC or any other body of the European Union. The European Commission and/or EAHC do not guarantee the accuracy of the data included in this report, nor do they accept responsibility for any use made by third parties thereof.

4 CONSUMER INFORMATION ON VEHICLE FUELS

This section of the report analyses the provision of information on vehicle fuels to consumers. The analysis is separated into four parts: general vehicle fuels information (Section 4.1), fuel labelling practices at petrol stations (Section 4.2) price information (Section 4.3), and availability and functioning of price comparison websites (Section 4.4).

4.1 PROVISION OF VEHICLE FUELS INFORMATION TO CONSUMERS

In the context of the overall objective of this study – to analyse whether the vehicle fuels market is working for consumers and whether they are able to make informed purchasing decisions – consumers' ability to access clear information on key market aspects²⁴ is of the utmost importance, because it signals the potential for informed decision-making. To thoroughly consider information provision in this market, this section focuses first on the sources of information available to and used by consumers. Subsequently, it responds to the following questions: given the information sources in use, how easy is it for consumers to find clear information on relevant market topics? And, have consumer awareness campaigns and large-scale media debates, in applicable countries, contributed to the consumer information base?

Key findings of this section are:

1. When asked what their main sources of information about vehicle fuels were, consumer survey respondents indicated the following: information at the pump (fuel labels and other signs) (50%), family / friends / colleagues (29%), information on or next to the vehicle's filling cap (22%), price comparison websites for fuel (22%), and staff working at the petrol station (21%). Stakeholders generally agreed with the effectiveness of these sources, but identified traditional media (television/radio and newspapers/magazines) and fuel retailers' websites as more effective sources than family, friends, colleagues and station staff.
2. Both the consumer survey and stakeholder survey results therefore confirm the central importance of fuel labelling at the pump as an information source. This means that the clarity and, in turn, effectiveness of labelling is of key

²⁴ The consumer survey and stakeholder survey investigated the availability of clear information on six central aspects of the vehicle fuels market: fuel prices, fuel types, fuel quality, fuel-vehicle compatibility, fuels' effects on engine / vehicle performance and fuels' effects on the environment.

importance in terms of informing consumers in this market. The importance placed by both consumer survey respondents and stakeholders on information on or next to the vehicle's filling cap and on information from comparison websites is also notable.

3. Consumer survey respondents are, in general, likely to say that they find it easy to get clear information about fuel types (67%). On the compatibility of different fuel types with their vehicle, there is a broadly even split between those who find it easy to get clear information (41%) and those who don't (49%). On three other market aspects, only a minority finds it easy to get clear information: fuel quality (28%), the effects of particular fuel types on engine or vehicle performance (26%), and the effects of particular fuel types on the environment (25%).
4. The findings of this study suggest a substantial disconnect between the ease with which stakeholders think consumers can gather clear information about key market aspects and the actual difficulty of doing this, as expressed by consumer survey respondents. The disparity is largest for information about fuel-vehicle compatibility: whereas 70% of stakeholders indicated it was easy to find clear information, only 41% of consumer survey respondents thought likewise. For fuel prices, 94% of stakeholders and 77% of consumer survey respondents reported it was easy to obtain clear price information.
5. The trend also holds for information about fuel types (82% of stakeholders, compared to 67% of consumer survey respondents), fuel quality (41%, compared to 28%), and fuels' effects on vehicle performance (34%, compared to 26%). Only for fuels' effects on the environment did a similar proportion (25%) of stakeholders and consumer survey respondents indicate that obtaining clear information was easy.

4.1.1 Sources of information about vehicle fuels

Respondents to the consumer survey and stakeholder survey were asked about the sources of information available in the vehicle fuels market. The relevant findings are presented and compared in this section.

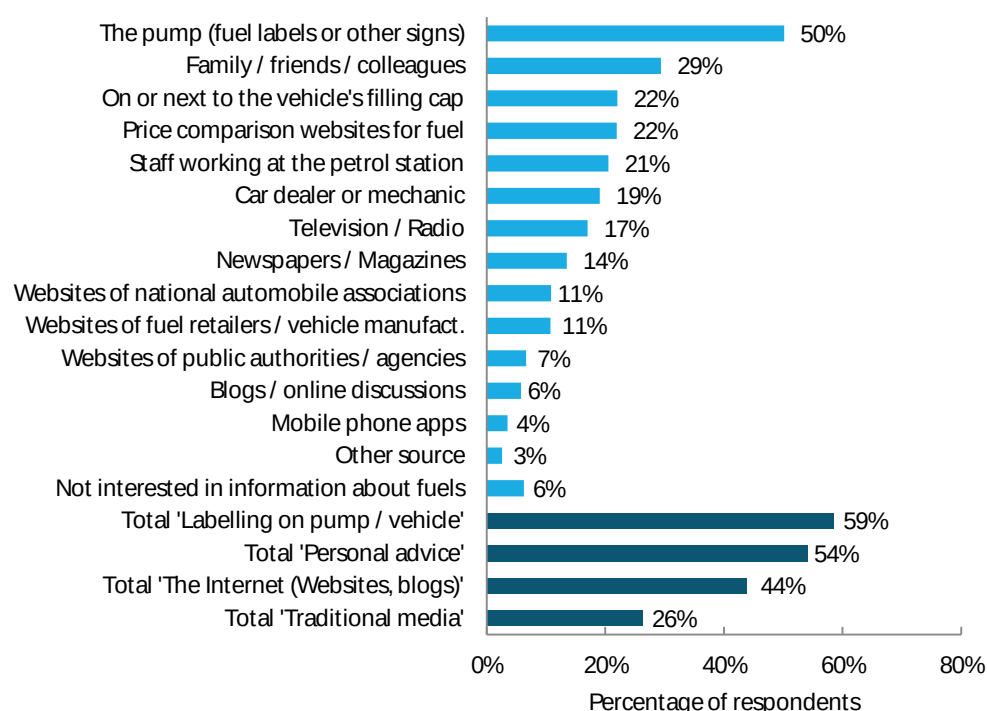
Respondents to the consumer survey were asked to identify their main sources of information about vehicle fuels.²⁵ They were asked to choose up to three main

²⁵ Question Q3: From the following list, which are your main sources of information about vehicle fuels? Please indicate up to three main sources. Television/ Radio; Newspapers/ Magazines; Information at the pump (fuel labels or other signs); Information on or next to the vehicle's filling cap; Websites of fuel retailers / vehicle manufacturers; Websites of [national automobile associations*]; Websites of public authorities/agencies; Price comparison websites for fuel; Mobile phone apps; Blogs / online discussions; Family /

sources from a list of 13. By grouping the individual responses together, we can see that 59% use labelling on the pump or vehicle as a main source of information, while 54% use 'personal advice', 44% the Internet and 26% 'traditional media'. This confirms that the respondents to the consumer survey get information on vehicle fuels from a diverse range of sources.²⁶

Figure 1. Main sources of information about vehicle fuels

Source: Consumer survey, Question 3: From the following list, which are your main sources of information about vehicle fuels? Please indicate up to three main sources. (N= 25797, EU27)
Note: Multiple answers possible.



Country differences and stakeholder responses

When looking at the consumer survey respondents attitudes in the vehicle fuels market, the main variation between countries is in the use of 'personal advice'. This is higher in EU12 countries (68%), especially Bulgaria (74%) and Romania (74%), and lower in EU15 countries (50%), most notably in the UK (39%). It is also lower than average in Iceland (38%).

friends / colleagues; Car dealer or mechanic; Staff working at the petrol station; Other source; I am not interested in information about vehicle fuels; Don't know.

²⁶ The proportion of respondents that reports using online sources may be comparatively high due to the fact that the survey was conducted online in 27 of the 29 countries, as people who participate in online surveys may be especially aware of online tools and information sources.

Labelling on the pump or vehicle is most likely to be chosen as a main source of information by respondents in Estonia (78%), Ireland (70%), Norway (70%) and Finland (69%). The proportion is lowest in Cyprus (19%) and Malta (24%), and is also relatively low in Lithuania (43%) and Greece (44%). No statistically significant differences between respondents in the EU15 and EU12 were observed.

Use of the Internet for information is highest in Austria (73%), Germany (58%), the Czech Republic (57%), Slovakia (57%), Lithuania (57%) and Greece (56%), while respondents in Malta (54%), Luxembourg (48%) and Portugal (45%) are the most likely to use 'traditional media'. No statistically significant differences between respondents in the EU15 and EU12 were observed. A breakdown of results by country can be seen in the table below.

Table 1. Main sources of information about vehicle fuels, analysis by country

Source: Consumer survey, Question 3: From the following list, which are your main sources of information about vehicle fuels? Please indicate up to three main sources. (N= 25797, EU27) Note: Multiple answers possible.

		Total 'Labelling on pump / vehicle'	Total 'Personal advice'	Total 'The Internet (Websites, blogs)'	Total 'Traditional media'	Not interested in information about vehicle fuels	Other
EU27		59%	54%	44%	26%	6%	3%
EU15		58%	50%	44%	25%	8%	3%
EU12		62%	68%	44%	31%	2%	3%
Countries with E10		57%	46%	50%	25%	9%	2%
	BE	60%	48%	44%	32%	7%	1%
	BG	62%	74%	43%	34%	0%	3%
	CZ	62%	60%	57%	36%	1%	2%
	DK	62%	42%	38%	16%	15%	3%
	DE	53%	48%	58%	20%	8%	3%
	EE	78%	63%	35%	36%	3%	4%
	IE	70%	54%	35%	22%	3%	2%
	EL	44%	72%	56%	33%	2%	2%
	ES	58%	64%	35%	22%	5%	3%
	FR	62%	44%	40%	30%	10%	2%
	IT	53%	60%	40%	33%	4%	3%
	CY	19%	57%	17%	41%	6%	5%
	LV	67%	67%	35%	34%	2%	5%
	LT	43%	61%	57%	31%	3%	7%
	LU	66%	47%	36%	48%	3%	1%
	HU	61%	69%	51%	32%	1%	4%
	MT	24%	41%	21%	54%	13%	4%
	NL	57%	46%	45%	17%	12%	2%
	AT	56%	43%	73%	17%	4%	1%
	PL	65%	68%	37%	27%	2%	2%
	PT	61%	57%	45%	45%	2%	2%
	RO	61%	74%	44%	33%	1%	3%
	SI	62%	64%	51%	40%	1%	2%
	SK	62%	60%	57%	35%	2%	3%
	FI	69%	45%	43%	28%	5%	3%
	SE	60%	46%	36%	24%	10%	5%
	UK	63%	39%	35%	19%	11%	3%
	IS	58%	38%	28%	31%	13%	8%
	NO	70%	49%	22%	17%	11%	4%

Socio-demographic differences and potentially vulnerable consumers

There were differences by gender, with women more likely than men to use personal advice as a main information source (61% compared with 47%). Women are less likely than men to use the Internet for this purpose (39% compared with 49%).²⁷

The use of the Internet as a main information source on vehicle fuels varies by level of education. Among respondents to the consumer survey who stopped their education at the age of 15 or younger, only 36% use the Internet for this purpose, rising to 42% of those who finished their education between the ages of 16 and 19, and 46% who finished their education at the age of 20 or above. A full presentation of the results of the consumer survey broken down by socio-demographic characteristics can be found in Part 2 of this study.

Use of the internet to find information on vehicle fuels was lower in rural areas (41%) than in metropolitan areas (47%). However, respondents living in rural areas are more likely to say that they are not influenced by advertisements (70%, compared with 62% in urban and 58% in metropolitan areas).²⁸

Overall, older consumers used different sources, found it easier to find information, and were more likely to find the information provided clear and helpful than younger consumers. For example, personal advice is used as a main information source by 18- to 24-year-olds (63%), to a much greater extent than is the case for other age groups (52% to 54% of those aged 25 or over). Older respondents were more likely to use labelling on the pump or vehicle as a main source of information, with 61% of those aged over 55 using it as opposed to 54% of 18-24 year olds. They were also more likely to find labelling at the pump clearer – both in their country of residence, and abroad.²⁹

In terms of sources of information used by consumers, those who buy fuel abroad frequently (53%) are more likely to use the Internet than those who rarely or never do so (43%). Those buying fuel abroad are also less likely to make use of labelling on the pump or vehicle (44% of those who buy fuel abroad frequently and 53% of those who do so regularly, compared with 60% of those who rarely or never do so).

²⁷ Please note that all socio-demographic differences highlighted in this report are significant at the $p < .05$ level, using standard statistical tools such as Chi-Square or independent t -tests as appropriate.

²⁸ Consumers living in villages/rural areas were also identified as the second most vulnerable group in the market for vehicle fuels overall by respondents of the stakeholder survey.

²⁹ Elderly consumers were also identified as the fourth most vulnerable group in the market for vehicle fuels overall by respondents of the stakeholder survey.

Respondents with newer vehicles (less than 5 years old) are also more likely to use the Internet (46%, compared with 41% with a vehicle more than 10 years old). Socio-demographic differences are displayed in detail in the table below.³⁰

Table 2. Main sources of information about vehicle fuels, analysis by socio-demographic characteristics

Source: Consumer survey, Consumer survey, Question 3: From the following list, which are your main sources of information about vehicle fuels? Please indicate up to three main sources. (N=

Sub-sample		Total 'Labelling on pump / vehicle'	Total 'Personal advice'	Total 'The Internet (Websites, blogs)'	Total 'Traditional media'	Not interested in information about vehicle fuels	Other
Average	EU27	59%	54%	44%	26%	6%	3%
Gender	Male	58%	47%	49%	28%	6%	3%
	Female	59%	61%	39%	24%	7%	2%
Age	18-24	54%	63%	47%	29%	5%	2%
	25-39	56%	54%	46%	25%	7%	2%
	40-54	59%	53%	43%	26%	7%	3%
	55+	61%	52%	42%	27%	6%	3%
Education (Age when stopped)	15 or younger	52%	54%	36%	25%	10%	4%
	16-19	59%	52%	42%	25%	7%	2%
	20 or older	60%	54%	46%	27%	6%	3%
	Still studying	54%	64%	49%	29%	3%	3%
Market knowledge	Least knowledgeable	58%	54%	39%	25%	8%	3%
	More knowledgeable	59%	55%	46%	28%	5%	2%
	Most knowledgeable	63%	51%	56%	26%	4%	3%
Buys fuel in other EU country	Frequently	44%	54%	53%	27%	7%	4%
	Regularly	53%	57%	53%	30%	4%	3%
	Rarely or never	60%	54%	43%	26%	6%	3%

Organisations responding to the stakeholder survey, which was conducted across the EU, Iceland and Norway, were asked similar questions about consumers' sources of information on vehicle fuels. Importantly, though, these questions were phrased so as to approach the topic from a slightly different perspective: whereas consumer survey respondents were asked for their main sources of information on vehicle fuels, stakeholders were asked which sources of information they thought were most effective for consumers. Thus, comparing stakeholders'

³⁰ Please note that for this and following tables displaying consumer survey results, more detailed results are presented in Part 2 of this study.

responses against the consumer survey findings reported above allows for consideration of whether any disconnect exists between what stakeholders see as the key sources of information on vehicle fuels and the sources that are actually being utilised in the market.

Comparison of consumer and stakeholder perspectives

Synthesising results from both surveys, the table below compares the consumer survey and stakeholder survey results for the more general question on main sources of information about vehicle fuels.

Table 3. Main sources of information about vehicle fuels

Source: Consumer survey, Q3: From the following list, which are your MAIN sources of information about vehicle fuels? Please indicate up to three main sources; and stakeholder survey, Q3: Which do you think are the most effective sources of information for consumers about vehicle fuels in your country? (N=25797 for consumer survey and N=70 for stakeholder survey, EU27). Note: multiple answers possible for both the consumer survey and stakeholder survey questions.

Sources of information about vehicle fuels	Consumer survey results	Stakeholder survey results	Rank – consumer survey	Rank – stakeholder survey
The pump (fuel labels or other signs)	50%	66%	1	1
Family / friends / colleagues	29%	7%	2	12
On or next to the vehicle's filling cap	22%	24%	3	4
Price comparison websites for fuel	22%	23%	3	5
Staff working at the petrol station	21%	11%	5	9
Car dealer or mechanic	19%	13%	6	8
Television / radio	17%	30%	7	3
Newspapers / magazines	14%	33%	8	2
Websites of national automobile associations	11%	10%	9	10
Websites of fuel retailers / vehicle manufacturers	11%	23%	9	5
Websites of public authorities / agencies	7%	17%	11	7
Blogs / online discussions	6%	3%	12	13
Mobile phone apps	4%	9%	13	11
Other source	3%	3%	14	13

Comparing the frequencies at which consumer survey respondents and stakeholders indicated each of the individual sources of information, it is clear that agreement exists on the central importance of fuel labels or other signs at the pump as a source of information about vehicle fuels. This information source was indicated by substantially higher percentages of consumer survey respondents and stakeholders (50% and 66%, respectively) than any other source.

Turning to the next highest ranked information sources reveals some differences between stakeholders' assessments of the effectiveness of sources and their reported usage by consumer survey respondents. Specifically, whereas 29% of consumer survey respondents reported family, friends and/or colleagues as a main source of information, this channel was deemed effective for consumers by only 7% of stakeholders. Similarly, only 11% of stakeholders indicated staff working at petrol stations as an effective information source, while 21% of consumer survey respondents reported soliciting the advice of petrol station staff.

On the other hand, information provided on or near the vehicle's filling cap and comparison websites for fuel prices were each indicated as main information sources by 22% of consumer survey respondents and as effective sources of information by, respectively, 24% and 23% of stakeholders. This suggests both the widespread use and effectiveness of these information sources. Indeed, stakeholders ranked these two items as the fourth and fifth most effective sources, behind only fuel labels at the pump and traditional media sources, i.e. television, radio, and newspapers or magazines.

Still, other differences are visible between consumer survey respondents' usage of particular information sources and their effectiveness as assessed by stakeholders. With regard to several information sources, substantially higher percentages of stakeholders thought them to be effective sources of information compared to the percentages of consumer survey respondents that indicated actually using them. These sources include:

- ▶ Television / radio (used by 17% of consumer survey respondents; thought to be an effective source by 30% of stakeholders);
- ▶ Newspapers / magazines (14%; 33%);
- ▶ Websites of fuel retailers / vehicle manufacturers (11%; 23%); and
- ▶ Websites of public authorities / agencies (7%; 17%).

Similarly, 9% of stakeholders indicated mobile phone applications ('apps') as effective information sources, but only 4% of consumer survey respondents reported using them.

4.1.2 Sources of information about fuel and vehicle compatibility

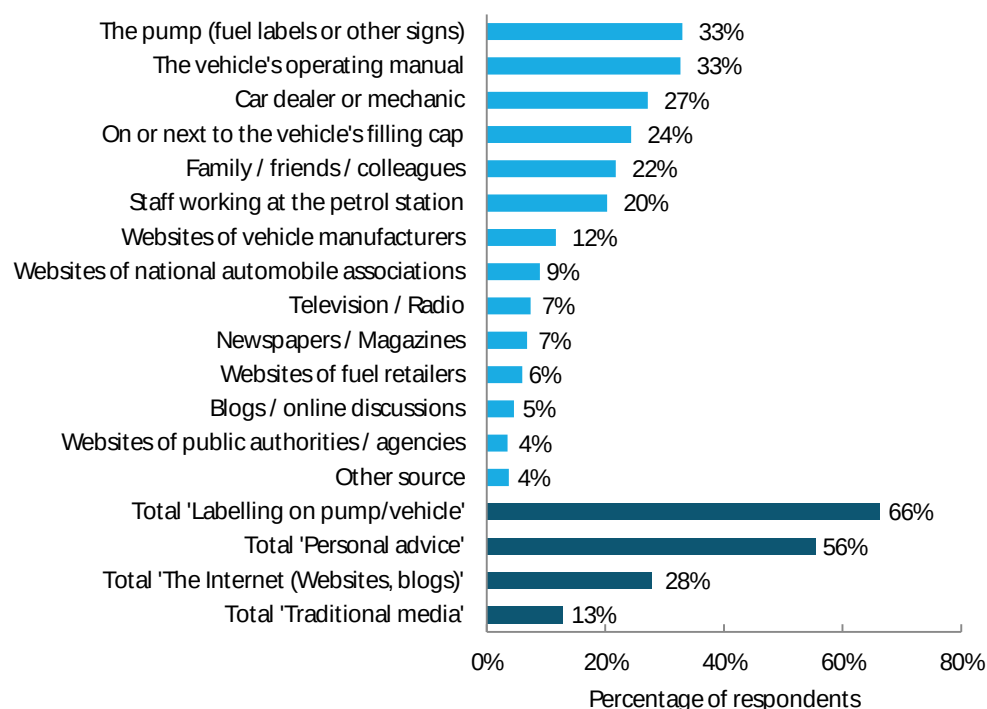
Respondents to the consumer survey and stakeholder survey were asked about the sources of information available regarding fuel types and compatibility with their vehicle. The relevant findings are presented and compared in this section.

When grouping responses, 66% of consumer respondents' use labelling on the pump or vehicle as a main source of information, while 56% use 'personal advice'.

Less frequently used are the Internet (28%) and 'traditional media' (13%), as can be seen in the table, below.

Figure 2. Main sources of information about fuel-vehicle compatibility

Source: Consumer survey, Question 4: From the following list, which are your main sources of information about fuel and vehicle compatibility prior to refuelling the vehicle at the petrol station? Please indicate up to three main sources. (N= 24169, Respondents who were interested in information about fuel in EU27)
Note: Multiple answers possible.



Country differences and stakeholder responses

As can be seen in the detailed table below comparing responses by country, respondents in Estonia (85%), Sweden (81%), Norway (81%) and Denmark (78%) are most likely to use labelling on the pump or vehicle as a main source of information about fuel and vehicle compatibility. The use of personal advice is again more prevalent in EU12 countries, in particular Bulgaria (73%) and Hungary (71%), as well as in Greece (71%). The use of personal advice for information is lowest in the UK (39%) and in Finland (38%). Overall, the proportion that makes use of personal advice is 67% in EU12 countries and 52% in EU15 countries.

Respondents in Germany (46%) and Austria (44%) are most likely to use the Internet as a main source of information about fuel and vehicle compatibility, while use of 'traditional media' is highest in Malta (29%), Portugal (28%) and Luxembourg (25%). No statistically significant differences between respondents in the EU15 and EU12 were observed.

Table 4. Main sources of information about fuel-vehicle compatibility, analysis by country

Source: Consumer survey, Question 4: From the following list, which are your main sources of information about fuel and vehicle compatibility prior to refuelling the vehicle at the petrol station? Please indicate up to three main sources. (N= 24169, Respondents who were interested in information about fuel in EU27) Note: Multiple answers possible.

		Total 'Labelling on pump / vehicle'	Total 'Personal advice'	Total 'The Internet (Websites, blogs)'	Total 'Traditional media'	Other source	Don't know
EU27		66%	56%	28%	13%	4%	0%
EU15		65%	52%	28%	12%	4%	0%
EU12		70%	67%	28%	15%	3%	0%
Countries with E10		62%	49%	36%	13%	4%	0%
 BE		67%	59%	20%	13%	3%	0%
 BG		66%	73%	32%	15%	4%	0%
 CZ		71%	64%	30%	17%	2%	0%
 DK		78%	46%	24%	11%	5%	0%
 DE		56%	54%	46%	11%	4%	0%
 EE		85%	64%	20%	14%	3%	0%
 IE		66%	57%	19%	12%	3%	0%
 EL		59%	71%	35%	14%	2%	0%
 ES		66%	61%	21%	8%	5%	0%
 FR		68%	45%	22%	15%	5%	0%
 IT		61%	59%	23%	16%	4%	0%
 CY		27%	62%	12%	17%	4%	0%
 LV		72%	63%	18%	15%	5%	0%
 LT		62%	60%	38%	19%	7%	0%
 LU		73%	48%	15%	25%	2%	0%
 HU		70%	71%	25%	15%	7%	7%
 MT		41%	46%	12%	29%	4%	0%
 NL		71%	58%	28%	7%	4%	0%
 AT		65%	52%	44%	9%	3%	0%
 PL		69%	66%	26%	14%	2%	0%
 PT		71%	62%	27%	28%	3%	14%
 RO		74%	69%	30%	14%	2%	0%
 SI		73%	67%	29%	17%	3%	0%
 SK		68%	65%	34%	18%	4%	0%
 FI		76%	38%	27%	10%	4%	0%
 SE		81%	44%	17%	8%	4%	0%
 UK		72%	39%	19%	10%	3%	0%
 IS		72%	45%	16%	19%	6%	3%
 NO		81%	48%	12%	8%	5%	0%

Socio-demographic differences and potentially vulnerable consumers

The socio-demographic variations for sources of information about fuel and vehicle compatibility are similar to those observed for general information about vehicle fuels. Women are more likely than men to make use of personal advice (61% compared with 49%), and are less likely to use labelling on the pump or vehicle (63% compared with 69%) or the Internet (24% compared with 32%).

Use of the Internet again increases with level of education, from 23% among those finishing education by the age of 15, to 29% of those ending their education at the age of 20 or older.

Table 5. Main sources of information about fuel-vehicle compatibility, analysis by socio-demographic characteristics

Source: Consumer survey, Question 4: From the following list, which are your main sources of information about fuel and vehicle compatibility prior to refuelling the vehicle at the petrol station? Please indicate up to three main sources. (N= 24169, Respondents who were interested in

Sub-sample		Total 'Labelling on pump / vehicle'	Total 'Personal advice'	Total 'The Internet (Websites, blogs)'	Total 'Traditional media'	Other source
Average	EU27	66%	56%	28%	13%	4%
Gender	Male	69%	49%	32%	15%	4%
	Female	63%	61%	24%	11%	3%
Age	18-24	55%	58%	30%	16%	5%
	25-39	62%	55%	28%	13%	4%
	40-54	67%	56%	28%	11%	4%
	55+	72%	54%	27%	13%	3%
Education (Age when stopped)	15 or younger	66%	57%	23%	15%	5%
	16-19	66%	55%	26%	12%	3%
	20 or older	68%	55%	29%	12%	3%
	Still studying	55%	59%	32%	16%	5%
Market knowledge	Least knowledgeable	65%	56%	23%	13%	4%
	More knowledgeable	67%	56%	30%	13%	3%
	Most knowledgeable	68%	51%	39%	13%	3%
Buys fuel in other EU country	Frequently	59%	58%	36%	21%	3%
	Regularly	59%	59%	37%	18%	5%
	Rarely or never	67%	55%	27%	12%	4%

Comparison of consumer and stakeholder perspectives

The next table contrasts the consumer survey and stakeholder survey results on sources of information about fuel and vehicle compatibility.

Table 6. Main sources of information about fuel and vehicle compatibility

Source: Consumer survey, Q4: Which are your main sources of information about fuel and vehicle compatibility prior to refuelling the vehicle at the petrol station?; and stakeholder survey, Q4: Thinking about fuel and vehicle compatibility, which information sources do you think are the most effective in enabling consumers to confirm that a certain fuel type is compatible / incompatible with their vehicle? (N=24169 for consumer survey and N= 70 for stakeholder survey, EU27). Note: multiple answers possible for both the consumer survey and

Sources of information about fuel-vehicle compatibility	Consumer survey results	Stakeholder survey results	Rank – consumer survey	Rank – stakeholder survey
The pump (fuel labels or other signs)	33%	43%	1	1
The vehicle's operating manual	33%	40%	1	2
Car dealer or mechanic	27%	34%	3	4
On or next to the vehicle's filling cap	24%	37%	4	3
Family / friends / colleagues	22%	1%	5	13
Staff working at the petrol station	20%	16%	6	6
Websites of vehicle manufacturers	12%	23%	7	5
Websites of national automobile associations	9%	13%	8	7
Television / radio	7%	13%	9	7
Newspapers / magazines	7%	13%	9	7
Websites of fuel retailers	6%	10%	11	10
Blogs / online discussions	5%	1%	12	13
Websites of public authorities / agencies	4%	10%	13	10
Other source	4%	3%	13	12

These findings again show cross-survey agreement on fuel labels or other signs at the pump being a critical source of information for consumers. Stakeholders reported at-the-pump labelling as the most effective information source on fuel-vehicle compatibility (43% indicated labelling as an effective source in this regard) and consumer survey respondents indicated using this source as widely as any other to gather applicable information (33% identified information at the pump as a main source of information on fuel types' compatibility with their vehicles).

In terms of other points of congruence between consumer survey respondents and stakeholders, the four main information sources on fuel-vehicle compatibility identifiable in the consumer survey findings are also the four sources indicated by stakeholders as the most effective. In addition to fuel labels or other signs at the pump, this list includes the vehicle's operating manual (main source for 33% of

consumer survey respondents; thought to be an effective source by 40% of stakeholders); a car dealer or mechanic (27%; 34%); and information on or next to the vehicle's filling cap (24%; 37%).

Past this point, however, differences between the consumer survey and stakeholder survey do emerge. For example, just 1% of stakeholders reported family, friends and/or colleagues as an effective source of information on fuel-vehicle compatibility. Nonetheless, 22% of consumer survey respondents indicated relying on family members or other members of social circles for such information. Also, there is again a difference between the percentages of stakeholders that indicated the websites of vehicle manufacturers, automobile associations, fuel retailers and public authorities as effective information sources and the lower percentages of consumer survey respondents that reported using these as main information sources.

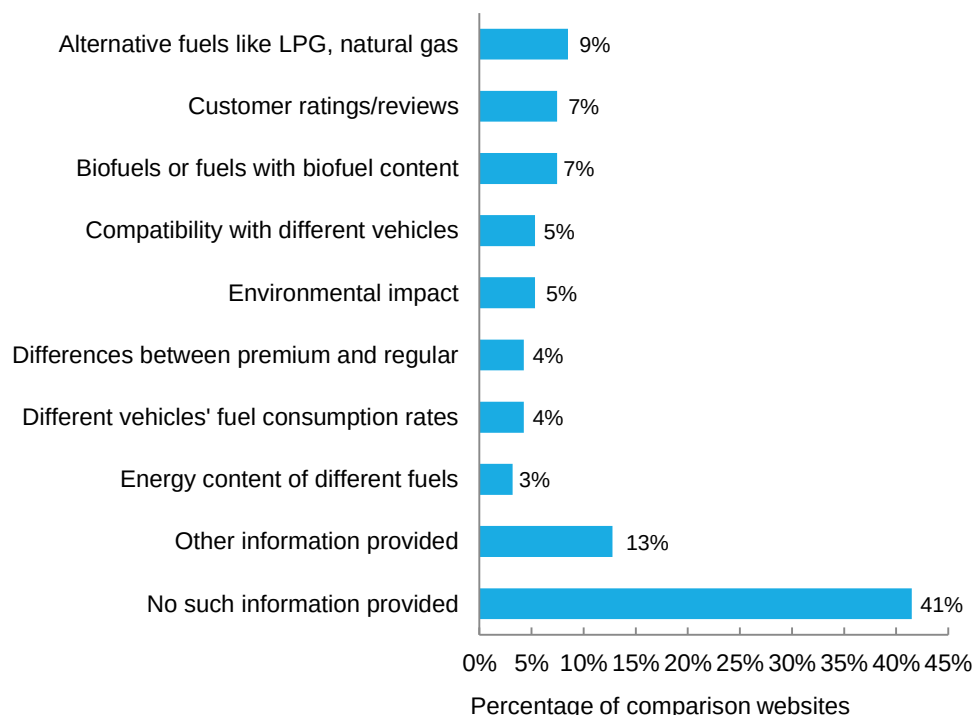
4.1.3 Comparison websites as sources of general information

Additional evidence concerning potential information sources was collected during the mystery shopping exercise. Specifically, that exercise yielded findings on comparison websites; websites of vehicle fuel retailers, public authorities and national automobile clubs as potential sources of information. The findings for the comparison websites are presented first, followed by the assessment of information provision on the other types of websites. The purpose of this latter assessment was to identify the extent to which a sample of these websites in each country provided clear information on key market aspects.

Some comparison websites go beyond their primary price comparison function to also provide their users with general product or market information. To see whether this was frequently the case among the sample of 60 vehicle fuels comparison websites, the mystery shoppers were asked whether the website(s) they evaluated displayed any general information on vehicle fuels.

Figure 3.
Availability of
general
information on
key vehicle fuel
topics

Source: Civic Consulting comparison website evaluation, Question 26. (N=59)
Note: Multiple answers possible.



As seen in the figure above the majority (41%) of the evaluated comparison websites did not provide general information about vehicle fuels; however, the websites that did provide such information addressed a range of topics related to this market. In terms of the topics that were most frequently covered, 9% of the websites offered general information on alternative fuels such as LPG or natural gas;³¹ 7% presented customer ratings / reviews of petrol stations or brands;³² and 7% included information on biofuels or fuels with biofuel content.³³ Less frequently, comparison websites presented information on fuel compatibility with different vehicles (5%), the environmental (climate / air quality) impact of fuels (5%), differences between premium and regular fuels (4%), the fuel consumption rates of different vehicles (4%) and the energy content of various fuel types (3%).

Twelve of the comparison websites addressed one or more other aspect(s) of the vehicle fuels market. The two comparison websites in Austria that are operated by automobile associations reportedly covered a wide range of topics, including cars, fuels, transport and applicable legislation. Meanwhile, a website in Hungary

³¹ These websites operate in the following markets: Austria, Germany, Spain, France, Hungary, Luxembourg, Malta and Slovakia.

³² These websites operated in the following markets: France, Italy, Poland, Romania and Slovakia.

³³ These websites operate in the following markets: Austria, Germany, France, Hungary, Malta and Slovakia.

provided information on vehicle documentation and vehicle tests, as well as a link to a website about fuel prices in other countries.

Several more comparison websites, including ones operating in Germany, Ireland, Italy and Lithuania, provided information about price composition and / or price developments over time, e.g. through statistics or figures showing price trends. Another group of four comparison websites spread across Malta, Portugal and Slovakia provided a range of information, including such topics as vehicle financing, general car advice (e.g. maintenance, cleaning), vehicle performance, and travelling, legal and general advice.

While these findings indicate that, for the most part, the reviewed comparison websites do not provide general market information; this is not a surprising finding given that their main function is to facilitate fuel price comparisons. Nonetheless, some of the reviewed websites do clearly provide a range of relevant information. Next, the focus shifts to retailer, public authority and automobile club websites as potential sources of information on the vehicle fuels market.

4.1.4 Other websites as a source of information

For each of the 29 countries, mystery shoppers searched for information on an array of aspects related to the vehicle fuels market on a selection of websites, covering vehicle fuel retailers, automobile associations and public authorities. The individual aspects were grouped into the following eight categories:

- ▶ Fuel types;
- ▶ Fuel quality;
- ▶ Fuel prices;
- ▶ Compatibility of different fuel types with the vehicle;
- ▶ Effects of particular fuel types on engine / vehicle performance;
- ▶ Environmental impacts of fuels and their sustainability;
- ▶ Potentially vulnerable consumer groups;
- ▶ Potential redress mechanisms for problems experienced by consumers.

Findings are presented in tables according to these categories so that the reader can easily see which categories were addressed by the websites and which less so.

As mentioned previously, the findings are reported by organisation type – retailer websites, in one column, and automobile club and public authority websites, in the other. The figures refer to the percentage of the websites in a given sample, e.g. EU27, EU15 and EU12, which provided clear information on the applicable aspect of the vehicle fuels market, regardless of whether that information was easy or

difficult to find.³⁴ Excluded from the count, then, are only those websites that, according to the mystery shoppers, provided unclear information or none at all.

It is important to bear in mind that this exercise assessed only a selection of seven websites from each country: five of retailers, one of a public authority and one of an automobile club. Nonetheless, the number of websites assessed at the EU27 level is substantial: 135 retailer websites and 54 public authority / automobile club websites.

4.1.4.1 Information on fuel types available

Mystery shoppers began their evaluations of information provision on the selection of retailer, automobile club and public authority websites by first attempting to locate relevant information on fuel types. Within this category, the mystery shoppers sought information on several more specific aspects, namely:

- ▶ Which fuel types are available in the country;
- ▶ Biofuels or fuels with biofuel content, e.g. E10, B7, etc.;
- ▶ Alternative fuels like LPG / GPL / Autogas or natural gas / CNG; and
- ▶ The labelling of fuels at petrol stations.

Considering the findings at the EU27 level (see the first table below), it is clear that of the four aspects listed above, the evaluated retailer websites were most likely to provide clear information on the types of fuel available in a given country (67% of the websites, compared to 32%, 44% and 17% for the three other aspects). In contrast, the public authority and automobile club websites reviewed during the exercise were about equally likely to provide information on fuel type availability (28%), biofuels (30%) and alternative fuels (26%), though none of these topics were clearly addressed by more than a third of the websites.

The aspect least covered on the evaluated websites was that of fuel labelling at petrol stations: relevant and clear information appeared on just 17% of retailer websites and 8% of public authority and automobile club websites. The next sub-sections discuss findings for the four individual aspects in more depth.

³⁴ For each market aspect the mystery shoppers assessed whether information on a given website was "Clear and easy to find"; "Clear but difficult to find"; "Provided but unclear"; or not provided ("No information provided").

Table 7. Fuel types – percentage of websites providing clear information

Source: Civic Consulting evaluation of retailer, automobile club and public authority websites. (N=201/203). Note: (a) Countries where E10 fuel has been introduced (Germany, France, and Finland – assessment based on 15 retailer websites and 2 public authority websites).

	Information on which fuel types are available in your country		Information on biofuels or fuels with biofuel content e.g. E10, B7, etc.		Information on alternative fuels like LPG / GPL / Autogas or Natural gas / CNG		Information on the labelling of fuels at petrol stations	
	Retailer sites	Public authority & auto club sites	Retailer sites	Public authority & auto club sites	Retailer sites	Public authority & auto club sites	Retailer sites	Public authority & auto club sites
EU27	67%	28%	32%	30%	44%	26%	17%	8%
EU15	73%	47%	44%	50%	41%	45%	16%	13%
EU12	60%	4%	17%	4%	47%	4%	19%	0%
IS/NO	80%	0%	40%	25%	20%	25%	0%	0%
E10 ^(a)	67%	83%	73%	67%	40%	67%	27%	50%

Fuel type availability

The retailer websites provided clear information on fuel type availability at a substantially higher rate than the public authority and automobile club websites: 67% to 28% for the EU27 samples. The proportion of retailer websites displaying this type of information was also relatively consistent geographically: 73% in the EU15 and 60% in the EU12. This was not true for the public authority and automobile club websites. While 47% of these websites in the EU15 displayed clear information on fuel type availability, this was the case for only 4% of the EU12 websites.

Biofuels and fuels with biofuel content

Much less of a divide emerged between retailer websites and public authority / automobile club websites when it came to the provision of information on biofuels. Thirty-two percent of retailer websites across the EU27 provided clear and relevant information, and 30% of public authority and automobile club websites did likewise. Again, however, there was a divergence between information availability within the EU15 and EU12, and in this instance it applied

to both groups of websites. Whereas 44% of the EU15 retailer websites and 50% of the EU15 public authority and automobile club websites provided clear information on biofuels, these proportions fell to 17% and 4%, respectively, among the EU12 websites.

Notably, in all three countries where E10 fuel was widely available at the time of research (Germany, France and Finland) at least the public authority or automobile club website that was reviewed provided clear biofuel-related information.

Alternative fuels

Clear information on alternative fuels such as LPG and natural gas was more likely, overall, to be presented on retailer websites (44% to 26%); however, this finding is due to the almost universal non-availability of clear information on public authority and automobile club websites in the EU12 (4%). Within the EU15, both kinds of websites were equally likely to present clear information. Specifically, 45% of public authority and automobile club websites provided information on alternative fuels that was regarded as clear by mystery shoppers, while 41% of the retailer websites in the EU15 sample were assessed in this way.

Fuel labelling at petrol stations

As already mentioned, information provision regarding the labelling of fuels at petrol stations was low relative to the three other fuel type aspects researched. Scarce information was provided on retailer or public authority / automobile club websites, and this held for both the EU15 and EU12 websites, though it is notable that mystery shoppers did not find clear information on this aspect on any of the public authority and automobile club websites in the EU12.

4.1.4.2 Information on fuel prices

Within the category of fuel prices, mystery shoppers searched the sample of retailer, public authority and automobile club websites for information on six aspects:

- ▶ Up-to-date price information from petrol stations;
- ▶ Relative prices of different fuel types (e.g. which tend to be more expensive);
- ▶ How often prices change or are permitted to change by regulatory rules;
- ▶ A component breakdown of retail fuel prices;
- ▶ Short-term price trends; and
- ▶ Long-term price trends.

The proportions of websites on which clear information was presented regarding these aspects are displayed in the next table. Within the EU27 sample, retailer websites were more likely to display up-to-date price information for their petrol stations than information on any of the other aspects (27% compared to 9%, 7%, 16%, 8% and 10%). Public authority and automobile club websites, on the other hand, were equally likely to provide clear information on current prices at petrol stations (22%), the components of retail fuel prices (20%) and long-term price trends (24%); the other three aspects were clearly discussed on between 9% and 13% of these websites. The pattern of public authority and automobile club websites in the EU15 more frequently providing clear information than their counterparts in the EU12 holds for each of the aspects grouped in the fuel prices category. More detailed discussions of the results for each aspect are presented below.

Table 8. Fuel prices – percentage of websites providing clear information

Source: Civic Consulting evaluation of retailer, automobile club and public authority websites. (N=196-203)
Note: (a) Countries where E10 fuel has been introduced (Germany, France, and Finland).

	Up-to-date price information from petrol stations		Relative prices of different fuel types		How often prices change, or can change		Component breakdown of the retail price of fuel		Information on short-term price trends		Information on long-term price trends	
	Retailer sites	Public authority & auto club sites	Retailer sites	Public authority & auto club sites	Retailer sites	Public authority & auto club sites	Retailer sites	Public authority & auto club sites	Retailer sites	Public authority & auto club sites	Retailer sites	Public authority & auto club sites
EU27	27%	22%	9%	13%	7%	9%	16%	20%	8%	13%	10%	24%
EU15	28%	30%	11%	20%	4%	13%	23%	28%	12%	20%	15%	33%
EU12	27%	13%	7%	4%	12%	4%	8%	10%	3%	4%	5%	13%
IS/NO	10%	0%	60%	0%	0%	0%	0%	0%	0%	0%	0%	0%
E10 ^(a)	27%	17%	7%	67%	0%	0%	27%	33%	7%	33%	7%	33%

Up-to-date price information from petrol stations

Overall, retailer websites were slightly more likely to provide clear up-to-date price information than public authority and automobile club websites (27% against 22%). However, for information on the other aspects (such as relative prices, or information on price trends), public authority and automobile club websites were more likely to provide clear information.

That said, retailer websites in the EU15 Member States were slightly less likely (28%) to provide clear information than public authority and automobile club websites (30%). The reverse was the case in EU12 Member States, where only 13% of public authority or automobile club websites provided clear information, compared to 27% of retailer sites.

Relative prices of different fuel types

Information on the relative prices of different fuel types was infrequently provided compared to current price data – just 9% of retailer websites and 13% of public authority / automobile club websites provided topical and clear discussions of relative price differences. As mentioned, there was a noticeable divide between information provision on the public authority and automobile club websites in the EU15 (20%) and EU12 (4%).

Frequency of price changes

Clear information on the frequency of price changes and / or associated regulatory rules was rarely provided on the websites (7% of retailer websites and 9% of public authority and automobile club websites).

Retail price components

The components of retail fuel prices were more likely to be clearly distinguished on EU15 websites, whether they were retailer websites (23% against 8% for the EU12) or public authority / automobile club websites (28% against 10% for the EU12). Overall, public authority and automobile club websites provided this information in a clear manner more frequently than the retailer websites.

Short-term and long-term price trends

Retailer websites were equally unlikely to provide clear information on both short-term³⁵ and long-term³⁶ price trends (8% and 10%, respectively, for the EU27 sample). In contrast, the public authority and automobile club websites more frequently displayed long-term price trends (24% compared to 13%). For both aspects, information provision was less frequent among the samples of EU12 websites than EU15 websites.

³⁵ Defined as a description or figure detailing the development of average fuel prices over the past few days or past week.

³⁶ Defined as a description or figure detailing the development of average fuel prices over the past month(s) or year.

4.1.4.3 Information on fuel quality

The assessment of information provision on a selection of retailer, public authority and automobile club websites proceeded to focus on fuel quality. In this category, mystery shoppers attempted to find clear and relevant information on four additional market aspects:

- ▶ Differences between regular and premium fuels;
- ▶ Differences between branded and non-branded, i.e. generic fuels;
- ▶ Minimum fuel quality standards applicable in their country; and
- ▶ Results of tests concerning fuel quality.

The next table indicates that, overall, clear information on differences between regular and premium fuels was most likely to be presented on the selected websites, particularly retailer websites (33% for EU27). Information on fuel quality was also more likely to be provided on retailer websites, and retailer websites were more likely to provide information concerning the differences between regular and premium fuels than information on the other three aspects listed above (16% of EU27 retailer websites compared to 9% for public authority or automobile club websites).

Each of the four aspects was clearly addressed by less than 1 in 10 of the public authority and automobile club websites (6%, 2%, 9% and 9%). In spite of the low level of information provision on these fuel quality aspects, the proportions for the item 'differences between branded and non-branded fuels' stand out: for the EU27 sample, just 2% of retailer and 2% of public authority and automobile club websites provided clear, pertinent information. The following paragraphs provide additional details on the findings.

Table 9. Fuel quality – percentage of websites providing clear information

Source: Civic Consulting evaluation of retailer, automobile club and public authority websites. (N=202/203)
Note: (a) Countries where E10 fuel has

	Information on differences between regular and premium fuels		Information on differences between branded and non-branded ('generic') fuels		Information on any minimum fuel quality standards applicable in country		Results of tests concerning fuel quality	
	Retailer sites	Public authority & auto club sites	Retailer sites	Public authority & auto club sites	Retailer sites	Public authority & auto club sites	Retailer sites	Public authority & auto club sites
EU27	33%	6%	2%	2%	20%	9%	16%	9%
EU15	33%	10%	4%	3%	22%	13%	16%	13%
EU12	32%	0%	0%	0%	18%	4%	17%	4%
IS/NO	10%	0%	0%	0%	10%	25%	0%	0%

E10 ^(a)	13%	0%	7%	0%	29%	17%	27%	33%

Regular versus premium fuels

Clear information regarding the differences between regular and premium fuels was presented at equal rates on retailer websites in the EU15 and EU12 (33% and 32%, respectively). These proportions were substantially higher than their counterparts among the public authority and automobile club websites, 10% (EU15) and none (EU12) of which provided clear information on this aspect. These latter figures mean that mystery shoppers were unable to locate relevant and clear information on 55 of the 58 public authority and automobile club websites that were selected and reviewed.

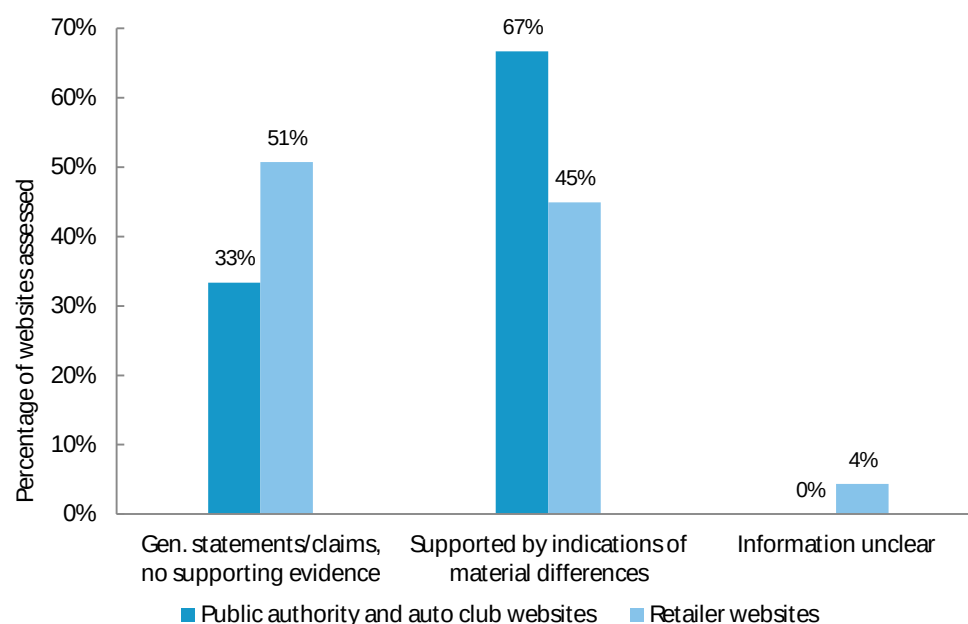
Though the sample size of public authority / automobile club websites is too small to draw robust conclusions, it is notable that when these websites provided clear information on this topic, two out of three supported it with indications of material differences between regular and premium fuels (see next figure).³⁷

³⁷ Regarding information on the differences between regular and premium fuels, and branded and non-branded fuels, mystery shoppers did not aim at judging the quality or scientific soundness of the information provided. Instead, they continued to focus only the clarity of the provided information and, in the case of Question 21 (Figure 4), whether a reference to material differences (e.g. an octane number) was provided. Specifically in Q21, the text asked: "If provided, does this information comprise general statements/claims about the differences between regular and premium fuels or is it supported by indications of material differences such as the octane rating or the additives used in premium fuels?"

Figure 4. Type of information provided on differences between regular and premium fuels

Source: Civic Consulting evaluation of retailer, automobile club and public authority websites, Question 21. (N=72)

Note: Includes only those websites on which relevant information was provided.



Among the retailer websites, this was less common: 45% of these websites supported their comparisons of regular and premium fuels by indicating material differences, but 51% offered only general statements or claims without supporting evidence.

Branded versus non-branded fuels

Amongst the sample of evaluated retailer websites, only a few in three countries were found to present clear information on branded and non-branded fuels. Similarly, clear discussion of this issue was almost completely absent from the evaluated sample of 58 public authority and automobile club websites.

Minimum quality standards were more likely to be clearly presented on retailer than public authority and automobile club sites (20% compared to 9% for the EU27 samples). Among the retailer websites there was little difference in the EU15 and EU12 findings, but a higher proportion of public authority and automobile club websites addressed this issue in the EU15 than the EU12 (13% against 4%).

Tests of fuel quality

Again, retailer websites were slightly more likely than public authority and automobile club websites to clearly display the results of fuel quality tests (16% compared to 9% for the EU27 samples). There was no geographic variation in the retailer website proportions, but public authority / automobile club websites in the

EU12 were less likely to offer clear information than their counterparts in the EU15 (4% compared to 13%).

Those five public authority and automobile club websites that provided test results on fuel quality had either run tests comparing fuels from different brands (2 of 5 websites) or other types of fuel quality tests (3 of 5 websites). In contrast, the 35 retailer websites that provided test results rarely showed comparisons of fuels from different brands (3%), preferring to display results comparing premium and regular fuels (43%) or other test results (54%).

4.1.4.4 Information on compatibility of different fuel types with the vehicle

Mystery shoppers next searched for information on the compatibility of different fuel types with vehicle models. Similar to the previous ones, this category was broken down into five distinct information searches:

- ▶ General fuel-vehicle compatibility;
- ▶ Biofuel-vehicle compatibility;
- ▶ Functionality to determine fuel compatibility with a specific vehicle model;
- ▶ Potential damage from using an incompatible fuel type; and
- ▶ An explanation of what action to take in case of mis-fuelling.

The proportion of the evaluated websites displaying clear and pertinent information was low for all five of these aspects. Only 15% of public authority and automobile club websites in the EU27 sample presented clear discussions of biofuel compatibility, and this was the highest proportion seen for any of the five topics.

Across these topics, the public authority and automobile club websites were slightly more likely to offer applicable information in a clear format; however, this was entirely based on the efforts of the EU15 public authority and automobile club websites, because no relevant information on fuel compatibility was clearly displayed on public authority or automobile club websites evaluated for the EU12. As in the previous sub-sections, the individual findings are presented below.

Table 10. Compatibility of different fuel types with the vehicle – percentage of websites providing clear information

Source: Civic Consulting evaluation of retailer, automobile club and public authority websites. (N=202/203)
Note: (a) Countries where E10 fuel has been introduced

	Compatibility between fuel types and vehicle models		Compatibility of bio-fuel content and vehicle models		Functionality to determine fuel-vehicle compatibility ³⁸		Information on harm of using incompatible fuels		Explanation of what to do if you use incompatible fuel	
	Retailer sites	Public authority & auto club sites	Retailer sites	Public authority & auto club sites	Retailer sites	Public authority & auto club sites	Retailer sites	Public authority & auto club sites	Retailer sites	Public authority & auto club sites
EU27	8%	11%	9%	15%	1%	9%	3%	7%	4%	13%
EU15	9%	21%	15%	27%	1%	17%	4%	13%	4%	23%
EU12	7%	0%	2%	0%	2%	0%	2%	0%	5%	0%
IS/NO	20%	25%	0%	0%	0%	25%	0%	0%	0%	0%
E10 ^(a)	13%	40%	47%	67%	7%	17%	7%	17%	7%	33%

Compatibility between fuel types and specific vehicle models

The low overall rate of information provision on this aspect is readily apparent: only 8% of the evaluated retailer websites across the EU27 provided clear information about basic fuel-vehicle compatibility issues.³⁹ In comparison, 11% of the public authority and automobile club websites that were assessed provided such information.

Biofuel compatibility

More than a quarter (27%) of the public authority and automobile club websites in the EU15 presented clear information on biofuel compatibility; this was the case for 15% of retailer websites in the EU15 sample. Information on this topic was almost entirely absent from the evaluated websites in the EU12 – just 2% of the retailer websites in this sample presented clear and pertinent information. More pertinently, websites in countries where E10 fuel has been introduced (Finland, France, and Germany) provided clear information more often than the average. For example, 67% of public authority websites in these countries presented information on compatibility of biofuel content with specific vehicle models, compared to an EU27 average of 15%.

³⁸ The response options to Question 34 (Does the website have "Functionality that allows you to determine which fuel types are compatible with one specific vehicle model?") differed slightly from those used for the other questions. However, the response options maintained the same pattern of two positive responses and two negative responses. Thus the percentages in the column for Question 34 reflect the proportion of websites whose information provision on the market aspect was assessed positively.

³⁹ For example, the non-compatibility of diesel fuel with a petrol vehicle or vice versa was considered 'basic' compatibility information.

At the country level, Finland was a notable case in that four of the five retailer websites clearly addressed biofuel compatibility. Turning to the public authority and automobile club sample, both of the websites reviewed in Germany provided relevant information in a clear manner, as did the public authority or automobile club websites that were evaluated for France and Finland. These findings further reflect the availability of E10 fuel in Finland, France, and Germany.⁴⁰

Specific fuel-vehicle compatibility

Functionality allowing users to definitively determine the compatibility of different fuel types with their vehicle model was essentially non-existent on the reviewed retailer websites. In contrast, 17% of public authority and automobile club websites in the EU15 provided users with a function to determine which fuel types are compatible with specific vehicle models.⁴¹ This was the same proportion as websites in countries where E10 had been introduced.

Again, few of the reviewed retailer websites (3% in the EU27 sample) contained clear indications of the potential harm that could arise from the use of fuel types incompatible with the vehicle. This information was present on 7% of public authority and automobile club websites evaluated across the EU27.

Nearly a quarter (23%) of the public authority and automobile club websites in the EU15 sample provided clear instructions on what to do in case of mis-fuelling the vehicle with an incompatible fuel type. Conversely, only 4% of the retailer websites reviewed offered this type of information. In the countries where E10 fuel had been introduced, 33% of public authority and automobile club websites presented this information.

4.1.4.5 Information on effects of particular fuel types on range per litre

To assess whether discussions of the effects of particular fuel types on range per litre were presented on the sample of retailer, public authority and automobile club websites, mystery shoppers searched the websites for information on the energy content of different fuel types. Energy content refers to the amount of energy (commonly expressed in megajoules per volume unit) stored in a specified volume of fuel. When used in comparably efficient engines and under similar circumstances a fuel with higher energy content will allow a vehicle to travel further.

⁴⁰ However, the introduction of E10 in Germany encountered several difficulties; consumer problems and uncertainty experienced in Germany following the initial launch of E10 fuel were described by several experts during interviews conducted for this study. It was also covered extensively in the media at the time.

⁴¹ For example, a form that allows you to enter a vehicle model and then responds with the compatible fuel types.

As is visible in the following table, the proportion of retailer websites displaying clear information on various fuels types' energy content was higher than that for the public authority and automobile club websites, both for the EU15 and EU12 samples. Overall, though, the percentage of the evaluated websites on which this type of information was clearly provided was low.

Table 11. Effects of fuel types on range per liter – percentage of websites providing clear information

Source: Civic Consulting evaluation of retailer, automobile club and public authority websites. (N=203)
Note: (a) Countries where E10 fuel has been introduced

Information on the energy content of different fuel types		
	Retailer websites	Public authority & auto club websites
EU27	13%	6%
EU15	12%	10%
EU12	15%	0%
IS/NO	10%	0%
E10 ^(a)	0%	33%

4.1.4.6 Information on environmental impacts of fuels and their sustainability

To examine the prevalence of information provided on the environmental impacts of different fuel types, mystery shoppers searched for information on the following market aspects:

- ▶ Environmental (climate / air quality) impact of different fuel types; and
- ▶ Fuel sustainability, e.g. sustainability concerns about biofuels or fossil fuels.

The findings for these information searches, which are displayed in the table below, show that clear information on the environmental impact and sustainability of fuels was not frequently presented on the evaluated retailer or public authority / automobile club websites. Websites in both categories were more likely to provide clear information on the climate / air quality impact of fuels than on the sustainability of their production, but the divergence in these proportions was minor. A more detailed review of the findings is presented below.

Table 12. Environmental issues – percentage of websites providing clear information

Source: Civic Consulting evaluation of retailer, automobile club and public authority websites. (N=202)
Note: (a) Countries where E10 fuel has been introduced

	Information on the environmental impact of different fuel types		Information on the sustainability of different fuel types	
	Retailer websites	Public authority & auto club websites	Retailer websites	Public authority & auto club websites
EU27	16%	13%	10%	9%
EU15	15%	23%	15%	17%
EU12	17%	0%	5%	0%
IS/NO	20%	25%	20%	25%
E10 ^(a)	0%	17%	0%	0%

Sixteen percent of retailer websites in the EU27 sample presented clear information on the impact of different fuel types on the environment. In comparison, 13% of the public authority and automobile club websites provided such information, though this percentage masks the disparity between information provision on EU15 websites (23%) and EU12 websites (0%).

As mentioned before, fewer of the websites assessed provided clear information on the sustainability of different fuel types' production paths. Only 10% of retailer websites and 9% of public authority / automobile club websites offered this type of discussion. Information was particularly scarce within the EU12, where 5% of retailer and none of the public authority / automobile club websites provided such information.

4.1.4.7 Market aspects where clear information was found by mystery shoppers on selected websites

As the preceding series of tables indicates, mystery shoppers for many countries were only able to find clear information about a limited range of market aspects while reviewing the selected websites.

The following table aggregates the findings for all 25 market aspects researched by mystery shoppers on the websites reviewed in the 29 countries. It is important to note that these findings are not based on the totality of information available on relevant websites in a given country; rather, they are based on the review of a selected sample of five retailer websites, one public authority website and one automobile club website per country. This information is intended to give a sense of the range of market topics about which a consumer might be likely to find clear information by reviewing a group of such websites in his or her country.

Table 13. Summary of findings on information provision, analysis by country

Source: Civic Consulting evaluation of retailer, automobile club and public authority websites. (N=203)
Key: +++ indicates that clear information on most market aspects (22-25) was found; ++ indicates that clear information on a majority of market aspects (13-21) was found; + indicates that clear information on a limited number of market aspects (4-12) was found; and, - indicates that clear information on few or none of the market aspects (0-3) was found.

		Number of market aspects for which clear information was found	
		Retailer websites	Public authority & auto club websites
	BE	+	+
	BG	+	-
	CZ	+	-
	DK	++	+
	DE	++	++
	EE	+	-
	IE	+	+
	EL	+	+
	ES	+	+
	FR	+	++
	IT	+	+
	CY	+	-
	LV	++	-
	LT	+	-
	LU	+	+
	HU	+	-
	MT	-	-
	NL	+	++
	AT	+	++
	PL	+	-
	PT	+	-
	RO	+	-
	SI	++	+
	SK	++	-
	FI	+	++
	SE	+	+
	UK	+	+
	IS	+	-
	NO	+	+

The table above shows that there were several countries for which mystery shoppers were able to obtain clear information about the majority of market aspects on the reviewed retailer websites, public authority / automobile club websites or both. In terms of information provision on retailer websites, Denmark, Germany, Latvia, Slovenia and Slovakia stand out because mystery shoppers were able to find clear information on more than half of the 25 researched market aspects.

Turning to the public authority and automobile club websites, Germany, France, the Netherlands, Austria, and Finland were the countries for which mystery shoppers found clear information on a majority of the researched market aspects.

These countries were a minority, however, and the focus group discussions held with mystery shoppers confirmed that many participants regarded the information provision on the reviewed websites as scarce.

4.1.5 Overall ease of finding information

At the end of the previous section it became clear that, at least in many countries, retailer, public authority and automobile club websites are currently not sufficient sources of information for consumers on many key aspects of the vehicle fuels market. But, as the consumer survey findings on the most frequently utilised information sources indicated earlier, such websites are also not among the sources consumers most frequently reference on the vehicle fuels market. And, indeed, when consumer survey respondents were asked to assess the ease of finding clear information about key market aspects given the totality of sources and information available to them, their indications were relatively positive in comparison to the findings of the review of information provision on retailer, public authority and automobile club websites by mystery shoppers.

Nonetheless, a clear sliding scale is visible in the assessed ease of finding clear information on the different market aspects. Whereas consumer survey findings suggest that it is generally easy to get clear information about fuel types, this is less the case for the aspect of compatibility of different fuel types with the vehicle, and clearly not the case for fuel quality and the effects of particular fuel types on both engine/vehicle performance and the environment. These findings are presented in more detail below.⁴² Then, associated data from the stakeholder survey is displayed and analysed.

The consumer survey findings on the ease of finding clear information about various market aspects, as well as comparing fuel prices, fuel types and fuel quality across petrol stations are largely substantiated by the results of the associated stakeholder survey questions. Again, stakeholders were asked a set of nearly identical questions to those posed to consumer survey respondents. Specifically, they were asked to assess how easy it is for consumers in their country to find clear information about fuel prices, fuel types, fuel quality, fuel-vehicle compatibility and the effects of particular fuel types on both engine / vehicle performance and on the environment. The results of these questions are presented below at both EU- and country-level. To increase comparability, the EU-

⁴² Please note that detailed breakdowns of consumer survey results by socio-demographic variables are available in Part 2 of this study.

level tables also include the EU27 averages from the consumer survey results presented previously.

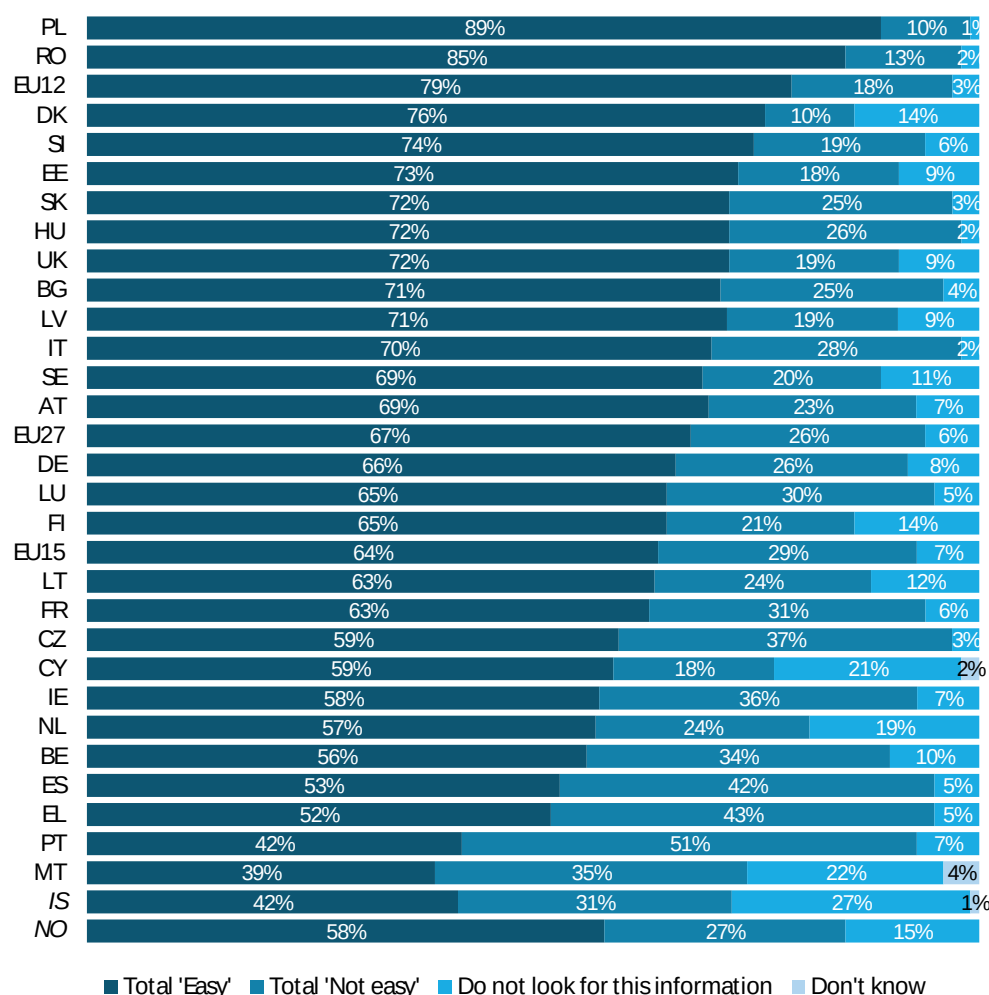
4.1.5.1 Ease of finding clear information about fuel types

Around two in three respondents to the consumer survey say that they find it easy to get clear information about fuel types, such as fuel labels and grades (67%), while 26% say they do not find this easy. Compared to the 77% of consumers finding it easy to get clear information about fuel prices, these results suggest that consumer survey respondents find it easier to get clear information on fuel prices than types.

These proportions are also examined on a per-country basis in the figure, below.

Figure 5. Ease of finding clear information about fuel types, analysis by country

Source: Consumer survey, Question 2.2: In your experience, how easy is it to find clear information about fuel types (e.g. fuel labels and grades)? (N=25797, EU27)



As can be seen in the figure above, respondents in Poland (89%) and Romania (85%) are most likely to say that it is easy to find clear information about fuel types, while the proportions are lowest in Malta (39%), Portugal (42%) and Iceland (42%). Once again, those in EU12 countries are more likely than those in EU15 countries to find it easy (79% compared with 64%).

Socio-demographic differences and potentially vulnerable consumers

Examining socio-demographic variation, results are displayed in detail in the table below.

Table 14. Ease of finding clear information about fuel types, analysis by socio-demographic characteristics

Source: Consumer survey, Question 2.2: In your experience, how easy is it to find clear information about fuel types (e.g. fuel labels and grades)? (N=25797, EU27)

	Sub-sample	Very easy	Fairly easy	Not very easy	Not at all easy	Do not look for this information
Average	EU27	22%	45%	21%	6%	6%
Gender	Male	25%	46%	19%	5%	4%
	Female	19%	45%	22%	6%	8%
Percentage of monthly income spent on fuel	1-5%	21%	44%	20%	6%	8%
	6 - 10%	22%	46%	21%	5%	5%
	11 - 20%	23%	45%	21%	7%	4%
	21% or more	27%	45%	18%	7%	4%
Compare fuel prices	Always / Very often	25%	45%	20%	6%	4%
	Often	18%	49%	22%	5%	6%
	Rarely / Never	19%	41%	20%	6%	13%
Buys fuel in other EU country	Frequently	27%	45%	18%	5%	4%
	Regularly	23%	47%	19%	8%	3%
	Rarely or never	22%	45%	21%	6%	6%
Buys branded fuel	Frequently	24%	46%	20%	5%	5%
	Infrequently / Never	20%	45%	21%	7%	8%
Type of fuel most frequently bought	Petrol	23%	46%	19%	5%	7%
	Diesel	20%	45%	23%	7%	6%
	Other type of fuel	22%	47%	23%	4%	5%
Market knowledge	Least knowledgeable	20%	44%	22%	6%	7%
	More knowledgeable	24%	46%	19%	5%	5%
	Most knowledgeable	23%	48%	20%	5%	4%

As can be seen above, consumer survey respondents who frequently buy branded fuel are more likely to find it easy to get this type of information than those who buy branded fuel infrequently or never (70% compared with 65%). In addition, respondents who use petrol (69%) are more likely to find it easy to get information on fuel types than those who use diesel (65%). Results also showed that men are more likely than women to say they find it easy to get clear information about fuel types (71%, compared with 64%). Respondents also tend to find it easier to get this type of information if they always or very often compare fuel prices (70%) or often do so (67%) rather than rarely or never (60%).

Also, consumers less knowledgeable about vehicle fuels – based on the number of correct answers to Q8 of the consumer survey – had difficulties finding clear information about fuels. For example, 65% of those in the 'least knowledgeable'

group find it easy to get clear information about fuel types, compared with 72% of those in the 'most knowledgeable' group.

Respondents with older vehicles also appeared to find it harder to find clear information on a number of aspects about vehicle fuels. For example, respondents with newer vehicles (less than 5 years old) are more likely to find it easy to find clear information on the effects of fuel types on the environment (28%, compared with 24% with a vehicle more than 10 years old).

Finally, those who spend a larger share of their income on fuel (21% or more) are more likely than other respondents to say they find it easy (71%, compared with 67% of those who spend 20% or less of their income on fuel).

Comparison of consumer and stakeholder perspectives

Comparing consumer and stakeholder perspectives, the table below displays the results for the item 'ease of finding clear information about fuel types'. Across the EU, about two thirds (67%) of consumer survey respondents reported that finding clear information about fuel types was easy. This figure is lower than the proportion of stakeholder survey respondents (82%) that indicated likewise. Accordingly, a modestly higher share of consumer survey respondents (26%) than stakeholders (17%) considered it not easy to find clear information on fuel types.

Table 15. Ease of finding clear information about fuel types, comparison of consumer and stakeholder perspectives

Source: Consumer survey, Q2.2, and Stakeholder survey, Q2.2: In your assessment, how easy is it for consumers in your country to find clear information about fuel types? (N=25797 for consumer survey)

	Consumer survey	Stakeholder survey				
Finding clear information on fuel types	EU27 avg.	EU27 avg.	Competition authorities	Other public authorities	Consumer organisat. & auto clubs	Industry organisat.
Total 'Easy'	67%	82%	86%	86%	78%	81%
Total 'Not easy'	26%	17%	7%	14%	22%	19%
Consumers do not look for this information	6%	2%	7%	0%	0%	0%
Number of stakeholders	n.a.	66	14	7	18	27

As shown in the next table, the list of countries for which at least one stakeholder reported that it was not very easy to find clear information about fuel types comprises Belgium (2), Germany (3), Spain (1), Italy (1), and Portugal (1). In addition, one stakeholder in Malta, the Netherlands and Slovakia indicated that it was not at all easy to find clear information about fuel types. The consumer

survey percentages where respondents found it easy to find clear information about fuel types for the Netherlands (57%), Belgium (56%), Spain (53%), Portugal (42%), and Malta (39%) are all below the EU27 average, which lends support to the expressed concerns of stakeholders in these countries.

Table 16. Ease of finding clear information about fuel types, comparison by country

Source: Stakeholder survey, Question 2.2: In your assessment, how easy is it for consumers in your country to find clear information about fuel types? (N=74).
Notes: * signifies that two stakeholders provided the response, and ** that three stakeholders did so. 'Don't know' refers to instances in which one or more stakeholders indicated this response instead of a rating, and ':' indicates instances in which no stakeholder responded.

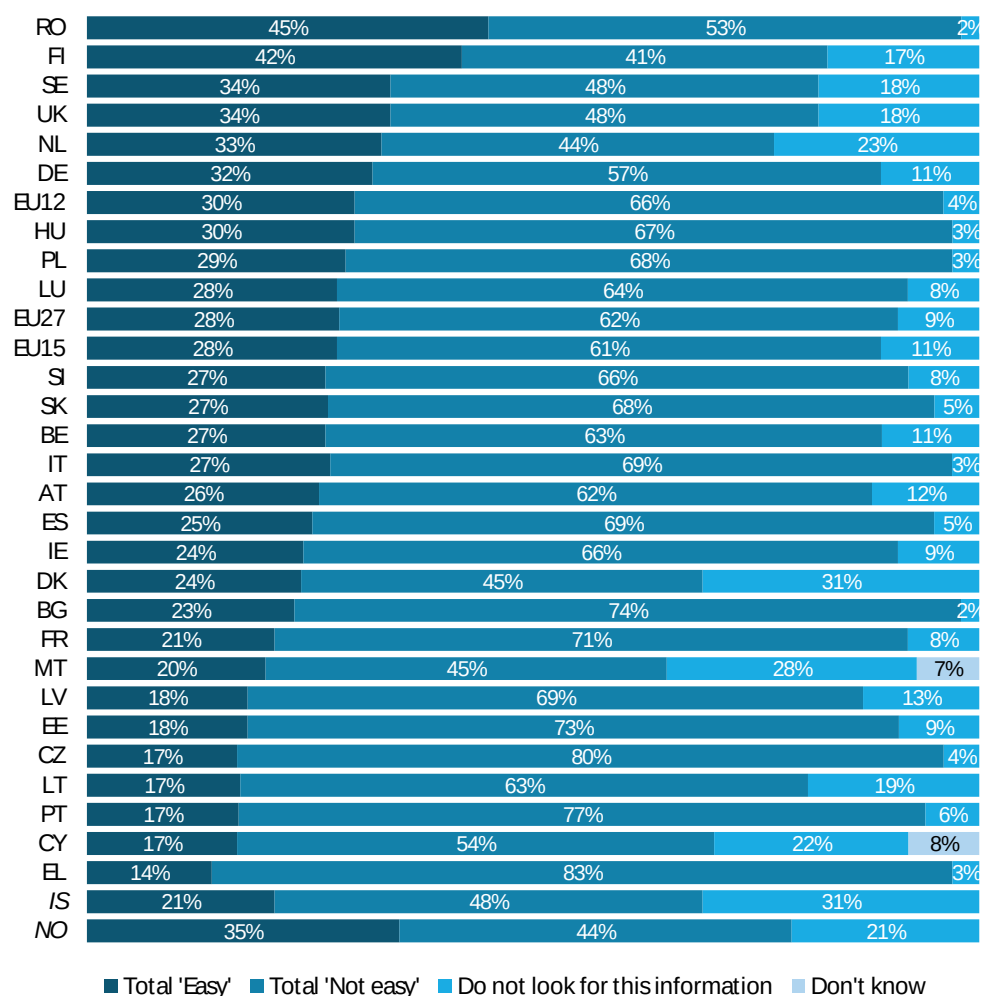
		Competition authorities	Other public authorities	Consumer organisations and auto clubs	Industry organisations
	BE	Very easy	:	Not very easy	Very easy; Fairly easy; Not very easy
	BG	:	:	Very easy	Very easy
	CZ	Very easy	:	:	Very easy
	DK	Fairly easy	:	:	Very easy Fairly easy
	DE	:	:	Not very easy	Very easy; Fairly easy; Not very easy*
	EE	Very easy	:	Very easy; Fairly easy; Don't know	:
	IE	:	Fairly easy	:	Very easy
	EL	Fairly easy	:	Fairly easy*	Very easy
	ES	Very easy	Not very easy	:	Fairly easy
	FR	:	:	:	Very easy
	IT	Consumers do not look for this information	:	Fairly easy Not very easy	Very easy
	CY	Very easy	:	Very easy	:
	LV	:	Fairly easy	:	:
	LT	Don't know	Very easy Fairly easy	Fairly easy	:
	LU	:	Very easy	:	:
	HU	Very easy	:	:	Fairly easy
	MT	Not at all easy	Fairly easy	Fairly easy	:
	NL	:	:	Don't know	Very easy Not at all easy
	AT	:	:	Fairly easy	Fairly easy
	PL	Very easy	:	:	Fairly easy
	PT	:	:	Fairly easy Not very easy	Fairly easy
	RO	Fairly easy	:	Very easy	:
	SI	:	:	Fairly easy	:
	SK	:	:	:	Fairly easy* Not at all easy
	FI	Fairly easy	:	:	:
	SE	Fairly easy	:	Very easy	:
	UK	:	:	:	Fairly easy*
	IS	:	Don't know	Fairly easy	:
	NO	Don't know	:	Very easy	:

4.1.5.2 Ease of finding clear information about fuel quality

In marked contrast to the findings on fuel prices and fuel types, most consumer survey respondents say that they do not find it easy to get clear information about fuel quality (62%), including 24% who say it is not at all easy. Around one in four (28%) say they do find it easy to get clear information about fuel quality. A breakdown of these results by country can be seen in the figure below.

Figure 6. Ease of finding clear information about fuel quality, analysis by country

Source: Consumer survey, Question 2.3: In your experience, how easy is it to find clear information about fuel quality? (N=25797 for EU27)



As can be seen above, the proportion of respondents that does not find it easy to get clear information about fuel quality is highest in Greece (83%), the Czech Republic (80%), Portugal (77%), Bulgaria (74%) and Estonia (73%). Respondents in Romania (45%) and Finland (42%) are most likely to say that they do find it easy. Overall, respondents in EU12 countries are more likely than those in EU15 countries to say they find it difficult (66% compared with 61%).

Socio-demographic differences and potentially vulnerable consumers

As can be seen in the table below, cross-tabulation of results by various socio-demographic variables found that women are more likely than men to say they find it difficult to get clear information about fuel quality (65% compared with 60%).

Table 17. Ease of finding clear information about fuel quality, analysis by socio-demographic characteristics

Source: Consumer survey, Question 2.3: In your experience, how easy is it to find clear information about fuel quality? (N=25797, EU27)

	Sub-sample	Very easy	Fairly easy	Not very easy	Not at all easy	Do not look for this information
Average	EU27	7%	21%	39%	24%	9%
Gender	Male	9%	24%	36%	24%	7%
	Female	5%	19%	41%	24%	11%
Age	18-24	5%	18%	44%	25%	8%
	25-39	6%	19%	40%	26%	10%
	40-54	7%	22%	38%	24%	9%
	55+	8%	24%	36%	22%	9%
Education (Age when stopped)	15 or younger	8%	26%	34%	21%	11%
	16-19	8%	23%	37%	21%	10%
	20 or older	7%	20%	39%	25%	9%
	Still studying	5%	18%	44%	26%	7%
Buys fuel in other EU country	Frequently	13%	26%	35%	20%	6%
	Regularly	10%	27%	37%	22%	4%
	Rarely or never	7%	21%	39%	24%	10%
Buys branded fuel	Frequently	8%	23%	39%	23%	7%
	Infrequently / Never	6%	19%	38%	25%	12%
Type of fuel most frequently bought	Petrol	7%	22%	38%	23%	10%
	Diesel	7%	21%	39%	26%	7%
	Other type of fuel	6%	16%	46%	26%	5%

Those who finished education at an older age are also more likely to say they find it difficult to get this information (64% of those who finished education at the age of 20 or above, compared with 58% of those who ended their education

between the ages of 16 and 19, and 55% who ended their education by the age of 15). This may appear counterintuitive (more educated people finding it more difficult to get information), but this may be because more highly educated people are seeking more detailed or complex information. It is also notable that consumer survey respondents who use diesel (65%) or other types of fuel (72%) are more likely to find it difficult to get clear information on fuel quality than those who use petrol (61%).

Comparison of consumer and stakeholder perspectives

The following table compares consumer survey results with the stakeholder survey findings on fuel quality. Across the EU, 28% of consumer survey respondents indicated that it was easy for them to find clear information about fuel quality in their country. However, 41% of responding stakeholders believed that it was easy for consumers. While it is difficult to reconcile this difference, reasons may include higher awareness among stakeholders regarding the EU fuel standards (EN228/EN590)⁴³ and relevant regulation, such as Directive 2009/30/EC on fuel quality and emissions.⁴⁴

Indeed, consumer organisations and automobile clubs were much less likely to judge it 'easy' (16%) to find such information than the other categories of stakeholders - where, for example, 58% of industry organisations judged finding clear information to be easy.

⁴³ The first set of CEN (European Committee for Standardization) standards in 1993 for automotive fuels were voluntary, but were observed by all fuel suppliers in Europe. Three standards covered automotive fuel quality: EN 590 for diesel, EN 228 for petrol, and EN 589 for automotive LPG. The development of these standards aimed at helping in the creation and expansion of the European market for fuels and biofuels. Standards in this field also play a vital role in reaching Europe's environmental goals regarding promotion of renewable energy sources and greenhouse gases reduction.

⁴⁴ The objectives of this legislation were to further reduce Member States' permitted national emissions of key pollutants, reduce emissions associated with refuelling of petrol cars at service stations and address the sulphur content of fuels.

Table 18. Ease of finding clear information about fuel quality, comparison of consumer and stakeholder perspectives

Source: Consumer survey, Q2.3, and Stakeholder survey, Q2.3: In your assessment, how easy is it for consumers in your country to find clear information about fuel quality? (N=25797)

	Consumer survey	Stakeholder survey				
Finding clear information on fuel quality	EU27 avg.	EU27 avg.	Competition authorities	Other public authorities	Consumer organisat. & auto clubs	Industry organisat.
Total 'Easy'	28%	41%	42%	50%	16%	58%
Total 'Not easy'	62%	49%	42%	50%	68%	38%
Consumers do not look for this information	9%	10%	17%	0%	16%	4%
Number of stakeholders	n.a.	63	12	6	19	26

Stakeholder results were also broken down by country and are shown in detail in the table below. There were several instances in which at least one stakeholder in a country reported that it was not at all easy to find clear information about fuel quality. This was the case for Belgium, Estonia, Greece, Italy, Malta, the Netherlands, Portugal, Slovenia, Sweden, the United Kingdom and Iceland.

In some cases, multiple stakeholders agreed that it was not easy to locate clear information and, excluding responses of 'Don't know' and 'Consumers do not look for this information', there were no contradictory indications, i.e. no stakeholder in these countries reported that it was easy. These countries were the Czech Republic, Estonia, Greece, Spain, Portugal and Slovakia. In each of these cases, excepting Portugal and Slovakia, one of the stakeholders that indicated 'not easy' was a public authority.⁴⁵

In two of these six countries – Slovakia (27%) and Spain (25%) – the proportion of consumer survey respondents that indicated it was easy to find clear information was near the EU27 average of 28% (see Figure 6 above). However, in Estonia (18%), the Czech Republic (17%), Portugal (17%) and Greece (14%) the relatively low proportion of consumer survey respondents that reported ease in finding clear information appears to be in line with the stakeholders' assessments of 'not easy'.

⁴⁵ The other countries for which a public authority stakeholder indicated that it was not very easy to locate clear information about fuel quality were Ireland, Malta and Finland.

Table 19. Ease of finding clear information about fuel quality, comparison by country

Source: Stakeholder survey, Question 2.3: In your assessment, how easy is it for consumers in your country to find clear information about fuel quality? (N=74). Notes: * signifies that two stakeholders provided the response, and ** that three stakeholders did so. 'Don't know' refers to instances in which one or more stakeholders indicated this response instead of a rating, and ':' indicates instances in which no stakeholder responded.

		Competition authorities	Other public authorities	Consumer organisations and auto clubs	Industry organisations
	BE	Consumers do not look for this information	:	Not at all easy	Fairly easy* Not at all easy
	BG	:	:	Fairly easy	Fairly easy
	CZ	Not very easy	:	:	Not very easy
	DK	Fairly easy	:	:	Very easy Fairly easy
	DE	:	:	Fairly easy	Very easy** Not very easy
	EE	Not very easy	:	Not at all easy; Consumers do not look for this inform.; Don't know	:
	IE	:	Not very easy	:	Fairly easy
	EL	Not very easy	:	Not at all easy*	Not very easy
	ES	Not very easy	Not very easy	:	Not very easy
	FR	:	:	:	Fairly easy
	IT	Consumers do not look for this information	:	Not very easy Not at all easy	Very easy
	CY	Don't know	:	Consumers do not look for this information	:
	LV	:	Fairly easy	:	:
	LT	Don't know	Fairly easy Don't know	Not very easy	:
	LU	:	Very easy	:	:
	HU	Fairly easy	:	:	Fairly easy
	MT	Fairly easy	Not very easy	Not at all easy	:
	NL	:	:	Consumers do not look for this information	Not at all easy; Consumers do not look for this inform.
	AT	:	:	Not very easy	Fairly easy
	PL	Very easy	:	:	Fairly easy
	PT	:	:	Not very easy Not at all easy	Not very easy
	RO	Fairly easy	:	Fairly easy	:
	SI	:	:	Not at all easy	:
	SK	:	:	:	Not very easy* Don't know
	FI	Not very easy	:	:	:

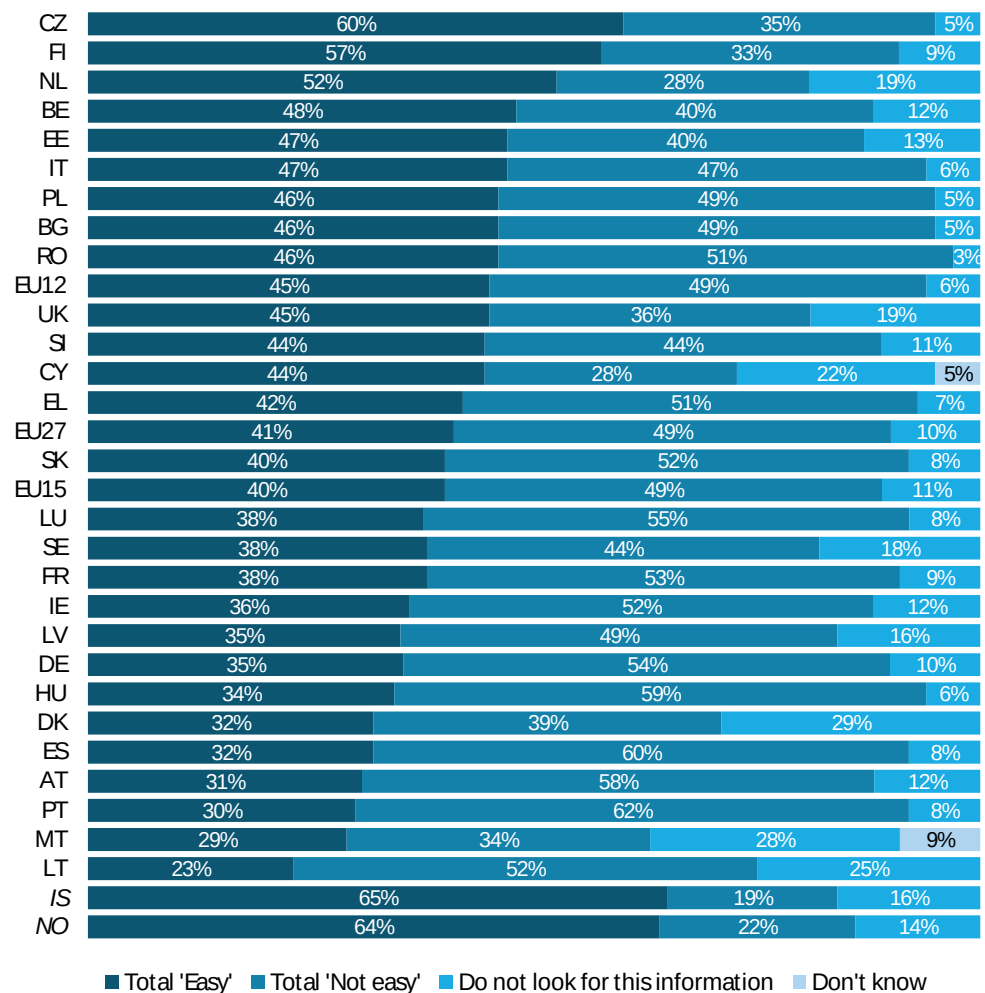
	SE	Don't know	:	Not at all easy	:
	UK	:	:	:	Fairly easy Not at all easy
	IS	:	Don't know	Not at all easy	:
	NO	Don't know	:	Not very easy	:

4.1.5.3 Ease of finding clear information about compatibility of fuel types with the vehicle

A greater proportion of consumer survey respondents find it difficult to get clear information on the compatibility of different fuel types with their vehicle than the proportion finding it easy (49% compared with 41%). Meanwhile, 10% of respondents say they do not look for this type of information.

Figure 7. Ease of finding clear information about fuel-vehicle compatibility, analysis by country

Source: Consumer survey, Question 2.4: In your experience, how easy is it to find clear information about the compatibility of different fuel types with the vehicle? (N=25797 for EU27)



As can be seen in the figure above, the proportion that finds it easy to get clear information about the compatibility of different fuel types with their vehicle is highest in Iceland (65%), Norway (64%) and the Czech Republic (60%). Respondents in Portugal (62%) and Spain (60%) are most likely to find it difficult to get this information. Overall, respondents in EU12 countries are slightly more likely to say they find it easy to get this type of information than those in EU15 countries (45% compared with 40%).

Socio-demographic differences and potentially vulnerable consumers

Examining socio-demographic differences, the proportion of consumer survey respondents that finds it easy to get clear information about the compatibility of different fuel types with their vehicle is higher among men than women (46% compared with 37%). It is also higher among respondents who finished their education at an early age (46% of those who ended education at the age of 15 or below, compared with 41% who stopped their education between the ages of 16 and 19, and 40% who stopped at the age of 20 or above).

Those who buy compare fuel prices frequently are more likely to say it is easy to find this information than those who rarely or never buy do so (44% compared with 34%). These and further details are presented in the table below.

Table 20. Ease of finding clear information about fuel-vehicle compatibility, analysis by socio-demographic characteristics

Source: Consumer survey, Question 2.4: In your experience, how easy is it to find clear information about the compatibility of different fuel types with the vehicle? (N=25797,

	Sub-sample	Very easy	Fairly easy	Not very easy	Not at all easy	Do not look for this information
Average	EU27	11%	30%	31%	18%	10%
Gender	Male	13%	33%	29%	17%	8%
	Female	9%	28%	32%	19%	12%
Education (Age when stopped)	15 or younger	11%	35%	27%	16%	11%
	16-19	11%	30%	30%	17%	12%
	20 or older	11%	29%	31%	19%	10%
	Still studying	9%	32%	34%	16%	8%
Compare fuel prices	Always / Very often	13%	31%	31%	18%	7%
	Often	9%	32%	31%	18%	10%
	Rarely / Never	9%	25%	29%	17%	19%
Buys fuel in other EU country	Frequently	16%	36%	26%	16%	6%
	Regularly	13%	33%	31%	18%	5%
	Rarely or never	10%	30%	31%	18%	11%
Market knowledge	Least knowledgeable	10%	29%	31%	19%	12%
	More knowledgeable	11%	32%	30%	17%	10%
	Most knowledgeable	13%	31%	32%	18%	6%

Vehicle Age	Less than 5 years old	12%	32%	30%	17%	10%
	5 to 10 years old	11%	29%	32%	18%	11%
	More than 10 years old	10%	30%	30%	20%	10%

Comparison of consumer and stakeholder perspectives

Comparing consumer and stakeholder perspectives, the following table reveals that only 41% of respondents indicated that it was easy to find clear information, while 49% said it was not easy. However, more than two thirds (70%) of the organisations that responded to the stakeholder survey across the EU reported that it was easy for consumers to find clear information about the compatibility of different fuel types with their vehicles. Only 25% of stakeholders suggested that this was not easy. Even when the stakeholder survey findings are separated by organisation type, they remain consistently in contrast to the consumer survey findings – at least 62% of the stakeholders of each organisation type indicated that it was easy to find clear information.

Table 21. Ease of finding clear information about fuel-vehicle compatibility, comparison of consumer and stakeholder perspectives

	Consumer survey	Stakeholder survey				
Finding clear information on fuel-vehicle compatibility	EU27 avg.	EU27 avg.	Competition authorities	Other public authorities	Consumer organisat. & auto clubs	Industry organisat.
Total 'Easy'	41%	70%	75%	83%	75%	62%
Total 'Not easy'	49%	25%	25%	17%	20%	31%
Consumers do not look for this information	10%	5%	0%	0%	5%	8%
Number of stakeholders	n.a.	64	12	6	20	26

Source: Consumer survey, Q2.4, and Stakeholder survey, Q2.4: In your assessment, how easy is it for consumers in your country to find clear information about the compatibility of different fuel types with their vehicle? (N=25797 for consumer survey)

Differences between the stakeholder survey and consumer survey results in terms of the ease of finding clear information on this market aspect are also visible in the country-level results (see next table).

As can be seen in the table below, although stakeholders in Belgium, Germany, Spain, Italy and the Netherlands reported that it was not at all easy to find clear information about fuel-vehicle compatibility, three of these countries – the Netherlands, Belgium and Italy – are near the top of the consumer survey ranking in terms of the proportion of respondents that reported it easy to find clear information.

Such disparities in the findings of the two surveys suggest a substantial disconnect between the ease with which stakeholders think consumers can gather clear information about key market aspects and the actual difficulty of doing this.

Table 22. Ease of finding clear information about fuel-vehicle compatibility, comparison by country

Source: Stakeholder survey, Question 2.4: In your assessment, how easy is it for consumers in your country to find clear information about the compatibility of different fuel types with their vehicle? (N=74).
Notes: * signifies that two stakeholders provided the response, and ** that three stakeholders did so. 'Don't know' refers to instances in which one or more stakeholders indicated this response instead of a rating, and ':' indicates instances in which no response was provided.

		Competition authorities	Other public authorities	Consumer organisations and auto clubs	Industry organisations
	BE	Fairly easy	:	Not very easy	Fairly easy* Not at all easy
	BG	:	:	Fairly easy	Very easy
	CZ	Very easy	:	:	Not very easy
	DK	Fairly easy	:	:	Very easy Not very easy
	DE	:	:	Fairly easy	Very easy; Fairly easy*; Not at all easy;
	EE	Not very easy	:	Very easy; Fairly easy; Not very easy	:
	IE	:	Fairly easy	:	Very easy
	EL	Not very easy	:	Very easy*	Fairly easy
	ES	Very easy	Fairly easy	:	Not at all easy
	FR	:	:	:	Fairly easy
	IT	Very easy	:	Fairly easy Not at all easy	Consumers do not look for this information
	CY	Don't know	:	Consumers do not look for this information	:
	LV	:	Fairly easy	:	:
	LT	Don't know	Fairly easy Don't know	Fairly easy	:
	LU	:	Very easy	:	:
	HU	Not very easy	:	:	Consumers do not look for this information
	MT	Fairly easy	Not very easy	Fairly easy	:
	NL	:	:	Not very easy	Fairly easy Not at all easy
	AT	:	:	Fairly easy	Fairly easy
	PL	Fairly easy	:	:	Not very easy
	PT	:	:	Very easy Fairly easy	Fairly easy
	RO	Fairly easy	:	Fairly easy	:
	SI	:	:	Fairly easy	:
	SK	:	:	:	Very easy* Don't know
	FI	Fairly easy	:	:	:
	SE	Don't know	:	Fairly easy	:
	UK	:	:	:	Fairly easy

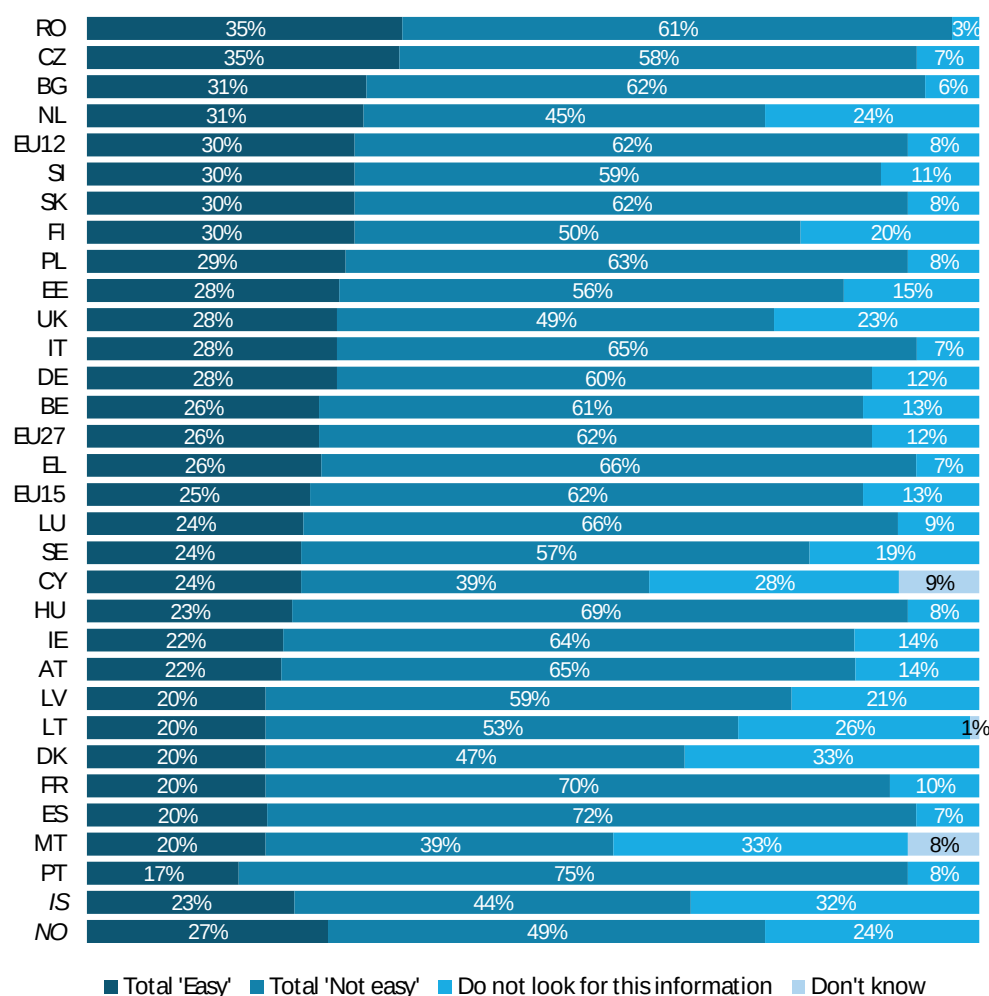
Not very easy				
IS	:	Don't know	Not very easy	:
NO	Don't know	:	Fairly easy	:

4.1.5.4 Ease of finding clear information about effects of fuel types on engine/performance

Most consumer survey respondents say that they do not find it easy to get clear information about the effects of particular fuel types on engine or vehicle performance (62%), including 25% who say it is not at all easy. Around one in four (26%) say they do find it easy to get clear information on this issue, while 12% do not look for this type of information.

Figure 8. Ease of finding clear information about fuels' effects on vehicle performance, analysis by country

Source: Consumer survey, Question 2.5: In your experience, how easy is it to find clear information about the effects of particular fuel types on engine / vehicle performance? (N=25797 for EU27)



As can be seen in the figure above, the proportion that does not find it easy to get clear information about the effects of particular fuel types on performance is highest in Portugal (75%), Spain (72%) and France (70%). Respondents in

Romania (35%) and the Czech Republic (35%) are most likely to say that they do find it easy. Overall, respondents in EU12 countries are slightly more likely than those in EU15 countries to say they find it easy (30% compared with 25%).

Socio-demographic differences and potentially vulnerable consumers

Comparing socio-demographic differences, men are more likely than women to say they find it easy to get clear information about the effects of particular fuel types on engine vehicle performance (30% compared with 22%). In terms of educational level, the proportion that finds it easy ranges from 30% of those who ended their education by the age of 15, to 28% of those ending their education between the ages of 16 and 19, and 24% of those who finished education at the age of 20 or above.

Respondents who always or very often compare fuel prices (28%) or often do so (25%) are more likely to find it easy to get clear information on this issue than those who rarely or never compare prices (21%).

In addition, those who buy branded fuel frequently are more likely to say it is easy to find this information than those who infrequently or never buy branded fuel (28% compared with 23%).

Table 23. Ease of finding clear information about fuels' effects on vehicle performance, analysis by socio-demographic characteristics

Source: Consumer survey, Question 2.5: In your experience, how easy is it to find clear information about the effects of particular fuel types on engine /

	Sub-sample	Very easy	Fairly easy	Not very easy	Not at all easy	Do not look for this information
Average	EU27	6%	20%	37%	25%	12%
Gender	Male	7%	23%	36%	24%	9%
	Female	4%	18%	38%	26%	15%
Education (Age when stopped)	15 or younger	7%	23%	33%	23%	13%
	16-19	6%	22%	35%	24%	13%
	20 or older	5%	19%	38%	26%	11%
	Still studying	5%	20%	40%	25%	11%
Compare fuel prices	Always / Very often	7%	21%	38%	25%	9%
	Often	4%	21%	38%	25%	12%
	Rarely / Never	4%	17%	33%	24%	22%
Buys fuel in other EU country	Frequently	13%	29%	31%	19%	7%
	Regularly	8%	26%	36%	25%	4%
	Rarely or never	5%	20%	37%	25%	13%
Buys branded fuel	Frequently	6%	22%	36%	24%	11%
	Infrequently / Never	5%	18%	38%	26%	14%

Comparison of consumer and stakeholder perspectives

As the following table comparing consumer and stakeholder perspectives shows, 26% of consumer respondents indicated that in their view it was easy for them in their country to find clear information about the effects of particular fuel types on engine / vehicle performance, while for 62% this was 'not easy'. This proportion was lower than the approximately one third (34%) of the stakeholder survey respondents who reported that it was easy for consumers.

Notably, of the different types of stakeholder organisations, a relatively low percentage of consumer organisations and automobile clubs (17%) indicated that it was easy to find clear information.

Table 24. Ease of finding clear information about fuels' effects on vehicle performance, comparative analysis

Source: Consumer survey, Q2.5, and Stakeholder survey, Q2.5: In your assessment, how easy is it for consumers in your country to find clear information about the effects of particular fuel types on engine / vehicle performance? (N=25797 for consumer

	Consumer survey	Stakeholder survey				
Finding clear information about effects on vehicle performance	EU27 avg.	EU27 avg.	Competition authorities	Other public authorities	Consumer organisat. & auto clubs	Industry organisat.
Total 'Easy'	26%	34%	30%	33%	17%	48%
Total 'Not easy'	62%	57%	70%	67%	72%	41%
Consumers do not look for this information	12%	8%	0%	0%	11%	11%
Number of stakeholders	n.a.	61	10	6	18	27

As seen in the next table, at least one stakeholder in Belgium, Germany, Estonia, Greece, Spain, Italy, the Netherlands, Austria, Portugal and Sweden thought it not at all easy for consumers to find clear information about the effects of fuel types on engine / vehicle performance. The consumer survey results for Spain and Portugal appear to confirm stakeholders' relatively negative assessments (see Figure 8 above).

Table 25. Ease of finding clear information about fuels' effects on vehicle performance, comparison by country

Source: Stakeholder survey, Question 2.5: In your assessment, how easy is it for consumers in your country to find clear information about the effects of particular fuel types on engine / vehicle performance? (N=74).

Notes: * indicates instances in which more than one stakeholder provided a given response, i.e. * signifies that two stakeholders provided the response, and ** that three stakeholders did so. 'Don't know' refers to

		Competition authorities	Other public authorities	Consumer organisations and auto clubs	Industry organisations
	BE	Not very easy	:	Consumers do not look for this information	Fairly easy* Not at all easy
	BG	:	:	Fairly easy	Fairly easy
	CZ	Fairly easy	:	:	Not very easy
	DK	Fairly easy	:	:	Very easy Not very easy
	DE	:	:	Not very easy	Very easy; Fairly easy*; Not at all easy
	EE	Not very easy	:	Fairly easy; Not at all easy; Don't know	:
	IE	:	Not very easy	:	Very easy
	EL	Not very easy	:	Not at all easy; Don't know	Not at all easy
	ES	Not very easy	Not at all easy	:	Not at all easy
	FR	:	:	:	Fairly easy
	IT	Don't know	:	Not at all easy; Consumers do not look.	Consumers do not look.
	CY	Don't know	:	Not very easy	:
	LV	:	Not very easy	:	:
	LT	Don't know	Fairly easy Don't know	Not very easy	:
	LU	:	Very easy	:	:
	HU	Don't know	:	:	Consumers do not look for this information
	MT	Fairly easy	Not very easy	Not very easy	:
	NL	:	:	Not very easy	Not very easy Not at all easy
	AT	:	:	Not at all easy	Fairly easy
	PL	Not very easy	:	:	Not very easy
	PT	:	:	Not very easy Not at all easy	Not very easy
	RO	Not very easy	:	Fairly easy	:
	SI	:	:	Not very easy	:
	SK	:	:	:	Very easy; Fairly easy; Not very easy
	FI	Not very easy	:	:	:
	SE	Don't know	:	Not at all easy	:
	UK	:	:	:	Fairly easy; Consumers do

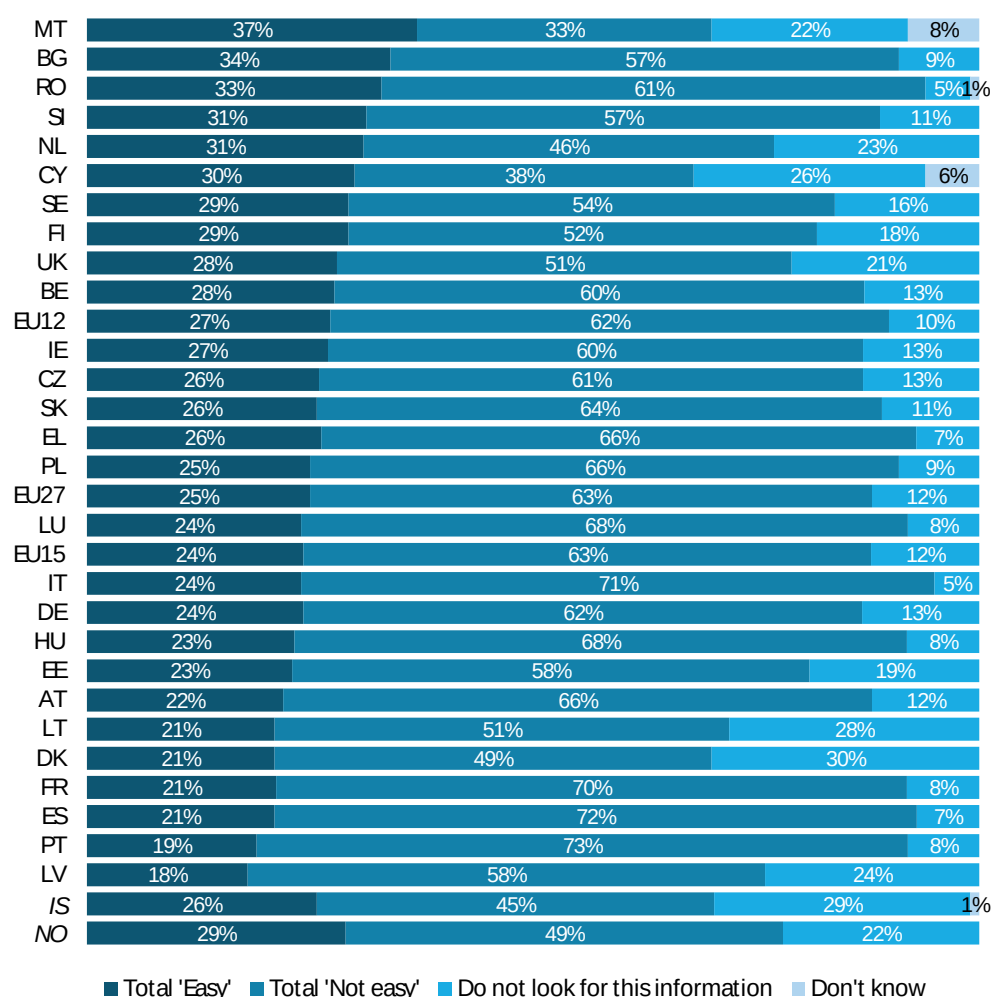
not look				
	IS	:	Don't know	Not very easy
	NO	Don't know	:	Not very easy

4.1.5.5 *Ease of finding clear information about effects of fuel types on the environment*

One in four consumer survey respondents (25%) say that they find it easy to get clear information about the effects of particular fuel types on the environment. Respondents are more likely to say that it is not easy to get this information (63%), with 27% saying it is not at all easy. As can be seen in the figure below, the proportion that does not find it easy to get clear information about the effects of particular fuel types on the environment is highest in Portugal (73%), Spain (72%), Italy (71%) and France (70%). Respondents in Malta (37%), Bulgaria (34%) and Romania (33%) are most likely to say that they do find it easy.

Figure 9. Ease of finding clear information about fuels' effects on the environment, analysis by country

Source: Consumer survey, Question 2.6: In your experience, how easy is it to find clear information about the effects of particular fuel types on the environment? (N=25797 for EU27)



Socio-demographic differences and potentially vulnerable consumers

As can be seen in the table below, consumer survey respondents who use petrol (26%) are more likely to find it easy to get clear information on the effects of particular fuel types on the environment than those who use diesel (23%). In addition, those who buy branded fuel frequently (27%) are more likely to say they find it easy to get clear information on this issue than those who infrequently or never buy branded fuel (22%).

Those who finished education at a younger age are more likely to say they find it easy to get clear information about the effects of particular fuel types on the environment (28% of those who finished education by the age of 15, compared

with 26% of those who ended their education between the ages of 16 and 19, and 24% of those ending their education at the age of 20 or above). Again, this may reflect the type or level of detail being sought by different respondents.

Table 26. Ease of finding clear information about fuels' effects on the environment, analysis by socio-demographic characteristics

Source: Consumer survey Question 2.6: In your experience, how easy is it to find clear information about the effects of particular fuel types on the environment?

	Sub-sample	Very easy	Fairly easy	Not very easy	Not at all easy	Do not look for this information
Average	EU27	6%	20%	36%	27%	12%
Gender	Male	7%	21%	35%	27%	10%
	Female	4%	19%	37%	27%	13%
Education (Age when stopped)	15 or younger	7%	21%	32%	27%	13%
	16-19	6%	20%	36%	25%	13%
	20 or older	5%	19%	37%	28%	11%
	Still studying	5%	22%	35%	27%	10%
Buys fuel in other EU country	Frequently	12%	26%	30%	23%	8%
	Regularly	9%	25%	33%	27%	5%
	Rarely or never	5%	19%	37%	27%	12%
Type of fuel most frequently bought	Petrol	6%	20%	35%	26%	13%
	Diesel	5%	18%	38%	29%	10%
	Other type of fuel	6%	22%	40%	25%	7%
Buys branded fuel	Frequently	6%	21%	35%	27%	11%
	Infrequently / Never	4%	18%	37%	27%	13%
Vehicle Age	Less than 5 years old	6%	21%	36%	26%	11%
	5 to 10 years old	5%	18%	37%	28%	12%
	More than 10 years old	5%	19%	35%	28%	13%

Comparison of consumer and stakeholder perspectives

Comparing consumer and stakeholder perspectives, it was found that across the EU, 23% of responding stakeholders indicated that it was easy to find clear information about the effects of particular fuel types on the environment, while 60% thought it not easy (see next table).

Notably, the stakeholder survey and consumer survey results were nearly identical, differing by only 2% and 3% for, respectively, the 'easy' and 'not easy' EU27 averages.

Table 27. Ease of finding clear information about fuels' effects on the environment, comparative analysis

Source: Consumer survey, Q2.6, and Stakeholder survey, Q2.6: In your assessment, how easy is it for consumers in your country to find clear information about the effects of particular fuel types on the environment? (N=25797 for consumer survey and 65 for stakeholder survey)

	Consumer survey	Stakeholder survey				
Finding clear information about effects on the environment	EU27 avg.	EU27 avg.	Competition authorities	Other public authorities	Consumer organisat. & auto clubs	Industry organisat.
Total 'Easy'	25%	23%	25%	17%	10%	33%
Total 'Not easy'	63%	60%	75%	67%	55%	56%
Consumers do not look for this information	12%	17%	0%	17%	35%	11%
Number of stakeholders	n.a.	65	12	6	20	27

As is visible in the next table, in Belgium, Estonia, Spain, Luxembourg, Hungary, the Netherlands, Portugal and Romania, one stakeholder reported that it was not at all easy to find clear information. In both Germany and Malta, two stakeholders indicated as such, and three did so in Greece.

Of these countries, only the consumer survey figures for Spain, which were 4% below the EU27 average, appear to confirm the stakeholders' relatively negative assessments.

Table 28. Ease of finding clear information about fuels' effects on the environment, analysis by country

Source: Stakeholder survey, Question 2.6: In your assessment, how easy is it for consumers in your country to find clear information about the effects of particular fuel types on the environment? (N=74).

Notes: * indicates instances in which more than one stakeholder provided a given response, i.e. * signifies that two stakeholders provided the response, and ** that three stakeholders did so. 'Don't know' refers to instances in which one or more stakeholders indicated this response instead of a rating, and

		Competition authorities	Other public authorities	Consumer organisations and auto clubs	Industry organisations
	BE	Not very easy	:	Consumers do not look	Not very easy* Not at all easy
	BG	:	:	Fairly easy	Consumers do not look
	CZ	Fairly easy	:	:	Not very easy
	DK	Fairly easy	:	:	Very easy; Not very easy
	DE	:	:	Not very easy	Very easy; Fairly easy; Not at all easy*
	EE	Not very easy	:	Fairly easy; Not very easy; Not at all easy	:
	IE	:	Fairly easy	:	Very easy
	EL	Not at all easy	:	Not at all easy; Consumers do not look	Not at all easy
	ES	Not very easy	Consumers do not look	:	Not at all easy
	FR	:	:	:	Fairly easy
	IT	Not very easy	:	Consumers do not look*	Consumers do not look
	CY	Don't know	:	Consumers do not look	:
	LV	:	Not very easy	:	:
	LT	Don't know	Not very easy; Don't know	Not very easy	:
	LU	:	Not at all easy	:	:
	HU	Don't know	:	:	Not at all easy
	MT	Fairly easy	Not at all easy	Not at all easy	:
	NL	:	:	Not very easy	Fairly easy Not at all easy
	AT	:	:	Consumers do not look	Fairly easy
	PL	Not very easy	:	:	Not very easy
	PT	:	:	Not very easy Not at all easy	Fairly easy
	RO	Not at all easy	:	Consumers do not look	:
	SI	:	:	Not very easy	:
	SK	:	:	:	Very easy; Not very easy; Consumers do not look
	FI	Not very easy	:	:	:

	SE	Not very easy	:	Not very easy	:
	UK	:	:	:	Not very easy*
	IS	:	Don't know	Not very easy	:
	NO	Don't know	:	Fairly easy	:

4.1.6 The role of national awareness campaigns and media debates

Two questions in the stakeholder survey investigated the recent implementation of consumer awareness campaigns on vehicle fuels and the emergence of public debates on related topics. Stakeholders' aggregated responses by country are presented in the following two tables, with the first detailing consumer awareness campaigns and the second, public debates.

As can be seen in the first table, stakeholders indicated that a relevant consumer awareness campaign was on-going or had been run during the past three years in several countries: Denmark, Germany, Greece, Cyprus, the Netherlands, Austria and Portugal.

An evaluation of the comments provided by stakeholders in countries where awareness campaigns were indicated reveals that three of the campaigns centred on fuel prices or price comparisons (Greece, Cyprus and Austria), two on biofuels (Denmark and Germany); and one each on fuel efficiency (the Netherlands) and fuel quality (Portugal).

Table 29.
Consumer
awareness
campaigns on
vehicle fuels in the
past three years

Source: Stakeholder survey, Question 6: Has there been a consumer awareness campaign aimed at improving consumer information on vehicle fuels in your country during the past three years? (N=74). Notes: (a) inconsistent responses, but at least one stakeholder indicated that such a campaign had been run; 'n.a.' refers to cases in which stakeholders indicated 'Don't know'.

		Relevant consumer awareness campaign	Reported focus of campaign
	BE	No	-
	BG	No	-
	CZ	(✓) ^a	Not specified
	DK	(✓) ^a	Information about blending of biofuels in gasoline (up to 5 % bioethanol) and diesel (up to 7 % FAME). The organisation was Energi og olieforum together with the oil companies.
	DE	(✓) ^a	E10 by the Environment Ministry (BMU)
	EE	No	-
	IE	No	-
	EL	(✓) ^a	KEPKA continuously focuses on the high prices of fuels and the rise of fuel prices during the last years. Combined with the economic crisis and the difficult financial situation of consumers in Greece high prices result in energy poverty.
	ES	No	-
	FR	No	-
	IT	No	-
	CY	✓	Ministry of Commerce running a campaign announcing fuel prices in an effort to help fuel sellers have better competition.
	LV	n.a.	-
	LT	(✓) ^a	-
	LU	No	-
	HU	(✓) ^a	Not specified
	MT	No	-
	NL	(✓) ^a	Het Nieuwe Rijden ('the new driving') was a campaign on fuel efficiency and saving fuel, run by the government authorities.
	AT	(✓) ^a	In August 2012 an official fuel price database was installed. Additionally the national automobile associations distribute these prices on their own websites and mobile phone apps and make consumers aware of these possibilities.
	PL	No	-
	PT	(✓) ^a	Campaign, entitled "They are all alike" compared low cost, regular and premium diesel offered to consumers by testing regular and premium diesel from the leading brand and diesel fuel from two low-cost distribution chains (http://www.igualaoilitro.pt/igualaoilitro/en).
	RO	No	-
	SI	No	-
	SK	n.a.	-
	FI	n.a.	-
	SE	No	-

	UK	No	-
	IS	No	-
	NO	No	-

In contrast to the limited number of countries in which consumer awareness campaigns were reported, the number of countries – 20 – in which at least one stakeholder noted large-scale public debates on vehicle fuels-related topics during the past three years is substantially higher (see the next table). Only in Belgium, Estonia, Luxembourg, Romania, Slovakia and the United Kingdom did stakeholders report that such a public debate had not taken place.

As the last four columns of the table highlight, in every country where stakeholders indicated a public debate(s) had been conducted, fuel prices and/or fuel taxes featured as a topic. Fuel quality featured less often as a topic of debate, but stakeholders in the Czech Republic, Portugal and Slovenia indicated that this issue had been widely discussed in the media in their countries. Lastly, stakeholders reported that issues related to biofuels, such as their compatibility with various vehicle models, environmental impacts, sustainability and the introduction of E10 fuel, were the focus of public debates in nine countries, namely Germany, Italy, Lithuania, Malta, Netherlands, Austria, Portugal, Sweden and Norway.

Table 30. Public debates on vehicle fuels in the past three years

Source: Stakeholder survey, Question 7: Has there been a large-scale public debate in the media about vehicle fuels in your country during the past three years? (N=74)
Notes: (a) inconsistent responses, but at least one stakeholder indicated that such a debate had occurred; 'n.a.' refers to cases in which stakeholders indicated 'Don't know'.

		Large-scale public debate on vehicle fuels	Reported topics	Fuel prices	Fuel taxes	Fuel quality	Biofuels, compatibility, sustainability
	BE	No					
	BG	✓	The main debate was focused on the high fuel prices and excise duty rate.	✓	✓		
	CZ	✓	Fuel quality, prices (Fuel prices are generally subject to discussion, very often in the context of economic crises).	✓		✓	
	DK	(✓) ^a					
	DE	✓	Fuel prices and E10 fuel (vehicle / engine compatibility, biofuel sustainability, ethical debate about food versus fuel).	✓			✓

	EE	No				
	IE	(✓) ^a	The price of fuel in Ireland is regularly debated – consumers see reductions in the price of crude oil and wonder why this is not directly passed onto them at the pump.	✓		
	EL	(✓) ^a	Fuel prices.	✓		
	ES	(✓) ^a	Fuel prices, including price practices based on a CNC (National Competition Commission) study which examines asymmetries in the speed at which international prices are passed through to retail prices.	✓		
	FR	✓	Fuel prices, fuel taxes.	✓	✓	
	IT	(✓) ^a	Fuel prices, fuel taxes, fuel consumption, air pollution, fuel company speculative approach, relationship between oil barrel prices and fuel pump costs, excessive quantity of gas stations, mass distribution by major retail brands, "white pumps".	✓	✓	✓
	CY	✓	Fuel prices.	✓		
	LV	n.a.				
	LT	✓	Fuel prices (recent spike, higher prices than in neighbouring countries, dominance of wholesale market by one company, concentration in retail market, concern over potential for abuse of dominance cases or collusive behaviour); biofuel compatibility.	✓		✓
	LU	No				
	HU	n.a.				
	MT	(✓) ^a	Fuel prices and sustainability.	✓		✓
	NL	(✓) ^a	Fuel price increases, future of fuelling, biofuel compatibility with different vehicles, logic	✓	✓	✓

			of new fuel types, fuel taxes.			
	AT	✓	Fuel prices, including the official fuel price database; E10, biofuel sustainability and compatibility with different vehicles.	✓		✓
	PL	(✓) ^a				
	PT	(✓) ^a	Fuel prices, including debate on the relationship between price and (real) quality / performance of fuel; biofuels.	✓	✓	✓
	RO	No				
	SI	✓	Fuel prices and (now and then) fuel quality.	✓	✓	
	SK	No				
	FI	n.a.				
	SE	(✓) ^a	Biofuel sustainability, fuel prices.	✓		✓
	UK	No				
	IS	✓	Fuel prices.	✓		
	NO	✓	Environmental impact, including possible ban against driving with diesel cars in the major cities; a second debate on fuel taxes.		✓	✓

4.1.6.1 Introduction of E10 fuel

Consideration must also be given to the impact of the introduction of E10 fuel in Germany, Finland and France on information provision to consumers. While the introductions of E10 fuel in Finland and France proceeded smoothly, according to stakeholders interviewed for this study, the introduction of E10 fuel in Germany, on the other hand, did not go smoothly. When E10 was introduced on the German market concerns from consumers emerged over possible engine damage to their vehicles. The problems appeared to largely result from incomplete information provision rather than a widespread threat of engine deterioration.⁴⁶ Following the initial uproar over the rollout of E10, more concerted efforts to disseminate this

⁴⁶ Such information was initially lacking as the Germany Energy Blog pointed out in March 2011: "So far, information on which cars can run on the new fuel has not been readily available. More information has been made available on the internet recently, but petrol stations have been reluctant to say which cars can and which cannot use E 10. Instead, people were informed about potential risks and asked to check with their car manufacturer" (German Energy Blog, 2011).

information (through, among other means, declarations from car manufacturers identifying compatible models and similar lists posted at refuelling stations) were made following an emergency 'fuel summit'.⁴⁷

The table below shows the results for the consumer survey questions on the ease of finding clear information on key market aspects. Consumer survey respondents did not indicate that it was easier to obtain clear information in the three countries where E10 fuel is widely available. Indeed, on all five market aspects displayed in the table below, the proportion of respondents in the countries with E10 fuel that reported it easy to find clear information is at or slightly below the EU27 average. On the other hand, one has to consider that with the introduction of E10 the number of fuel types has increased, and this, in turn, has increased the complexity for consumers who use petrol fuel.⁴⁸

Table 31. Ease of finding clear information about key market aspects

Source: Consumer survey, Questions 2.2-2.6. (N=25797, EU27)
Note: Percentages refer to the proportion of consumer survey respondents that indicated either 'very easy' or 'fairly easy'.

	Fuel types	Fuel quality	Fuel-vehicle compatibility	Effects on vehicle performance	Effects on the environment
EU27	67%	28%	41%	26%	25%
EU15	64%	28%	40%	25%	24%
EU12	79%	30%	45%	30%	27%
Countries with E10	65%	28%	37%	24%	23%

4.1.7 Summary - most important sources of information on vehicle fuels for consumers

Overall, the foregoing data provide a clear sense of which types of information sources are addressed to and used by consumers across the EU. The presented data has also made clear which are the most important and effective sources of information, according to consumers and stakeholders. Regarding sources of information about vehicle fuels, consumer survey respondents collectively indicated the following five sources as the main ones utilised:

- ▶ Fuel labels or other signs at the pump;
- ▶ Family, friends, colleagues;
- ▶ Information on or next to the vehicle's filling cap;
- ▶ Comparison websites for fuel prices; and

⁴⁷ For a summary of the initial problems that plagued the launch of E10 fuel in Germany, please see, e.g.: Deutsche Welle (2011) 'Germany calls emergency summit amid organic fuel chaos', March 3, available at: <http://www.dw.de/dw/article/0,,14888490,00.html>.

⁴⁸ Finland does, however, stand out with respect to the findings for fuel quality and fuel-vehicle compatibility, both in comparison to the EU27 average and the two other countries with E10 fuel.

- ▶ Staff working at the petrol station.

Stakeholders generally concurred on the effectiveness of these sources, but in the list of the five most effective sources identified by that survey, 'family, friends, colleagues' and 'staff working at the petrol station' did not feature. In contrast, stakeholders reported traditional media ('television / radio' and 'newspapers / magazines') and 'websites of fuel retailers / vehicle manufacturers' as more effective sources.

With respect to sources of information for consumers about vehicle-fuel compatibility, the four most frequently indicated sources from the consumer survey and stakeholder survey were identical:

- ▶ Fuel labels or other signs at the pump;
- ▶ The vehicle's operating manual;
- ▶ Car dealer or mechanic; and
- ▶ Information on or next to the vehicle's filling cap.

The fifth-ranked source differed among consumer survey respondents and stakeholders, with the former indicating 'family, friends, colleagues' and the latter favouring 'websites of vehicle manufacturers'.

One important conclusion to draw from this data is that both the consumer survey and stakeholder survey results confirm the central importance of fuel labelling at the pump as an information source. This means that the clarity and, in turn, effectiveness of labelling is of key importance in terms of informing consumers in this market. Labelling practices at petrol stations are detailed and assessed in Section 4.2 on labelling at petrol stations and billboard price displays.

The importance placed by both consumer survey respondents and stakeholders on information on or next to the vehicle's filling cap and comparison websites for fuel prices is also notable, as these are information sources whose availability and/or functionality can be relatively easily improved (in notable contrast to sources such as 'family, friends, colleagues'), either voluntarily by market actors, through applicable regulatory rules or via endeavours, such as the launching or accreditation of comparison websites, undertaken by public authorities.

4.1.7.1 Overall ease of finding clear information on market aspects as assessed by consumers

Consumer survey respondents are, in general, likely to say that they find it easy to get clear information about fuel types (67%). On the compatibility of different fuel types with their vehicle, there is a broadly even split between those who find it easy to get clear information (41%) and those who don't (49%). On the other three items, only a minority finds it easy to get clear information: fuel quality

(28%), the effects of particular fuel types on engine or vehicle performance (26%), and the effects of particular fuel types on the environment (25%). These proportions are contrasted with the relevant stakeholder survey findings in the following section.

Another set of consumer survey questions asked consumer survey respondents about the ease of comparing fuel prices, fuel types and fuel quality across petrol stations. In line with the results presented above on the ease of obtaining clear information on these aspects, the findings of the questions on information comparability indicate that consumer survey respondents found it easier to compare fuel prices (39% very easy; 48% fairly easy) than fuel types (18% very easy; 48% fairly easy) and, especially, fuel quality (7% very easy; 23% fairly easy).

The final table in this section summarises the consumer survey and stakeholder survey results on the ease of finding clear information about fuel types, fuel quality, fuel-vehicle compatibility, and fuels' effects on both engine / vehicle performance and the environment.

Table 32. Ease of finding information on various market aspects

Source: Consumer survey, Q2.1-2.6, and Stakeholder survey, Q2.1-2.6. (N=25797 for consumer survey and 61-69 for stakeholder survey, EU27). Note: Items in the table are sorted according to the percentage of survey respondents that indicated clear information was 'easy' (either 'very easy' or 'fairly easy') to find

	Consumer survey, EU27 averages			Stakeholder survey, EU27 averages		
Finding clear information on key market aspects	Total 'Easy'	Total 'Not easy'	'Do not look for info.'	Total 'Easy'	Total 'Not easy'	'Do not look for info.'
Fuel types	67%	26%	6%	82%	17%	2%
Fuel-vehicle compatibility	41%	49%	10%	70%	25%	5%
Fuel quality	28%	62%	9%	41%	49%	10%
Fuels' effects on vehicle performance	26%	62%	12%	34%	57%	8%
Fuels' effects on the environment	25%	63%	12%	23%	60%	17%

On four of the five market aspects there is general alignment between the consumer survey and stakeholder survey findings. More specifically, the results of the two surveys confirm fuel types as the market aspect on which it is easiest to find clear information. Moreover, both the stakeholder and consumer surveys identify fuel quality, fuels' effects on vehicle performance and fuels' effects on the environment – in that order – as the aspects on which it is most difficult to find clear information.

However, it is generally the case that a somewhat higher percentage of stakeholders regarded the finding of clear and relevant information as easy compared to the consumer survey respondents. For example, 82% of stakeholders reported that it was easy to find clear information about fuel types, whereas 67% of consumer survey respondents indicated likewise, a 15% difference.

A key difference between the survey findings relates to the fifth market aspect: vehicle-fuel compatibility. Whereas a large majority (70%) of stakeholders reported that it was easy to find clear information on this aspect, nearly half of consumer survey respondents (49%) indicated the opposite, i.e. 'not easy'.

A final noteworthy point displayed in the preceding table is that a minority of consumer survey respondents (12%) and stakeholders (17%) reported that consumers do not look for information about the effects of particular fuel types on the environment. These percentages were equal to or higher than those observed for the other four market aspects on which data were collected.

4.2 FUEL LABELLING PRACTICES AT PETROL STATIONS

Given the identified importance of fuel labelling at the pump as an information source for consumers, this sub-section uses a range of assessments carried out for this study to understand the clarity of fuel labelling practices at petrol stations. First, data from the consumer survey are presented and then supporting evidence from the stakeholder survey and mystery shopping exercise is displayed.

Key findings of this section are:

1. The vast majority of stakeholders (85%) considered labelling at the pump in their country to be clear. However, consumer survey respondents provided a substantially different impression. While a majority of respondents (69%) indicated that fuel *prices* were clear and understandable at petrol stations in their country of residence, a much lower proportion (38%) reported fuel *types* to be clear and understandable in their country of residence. Similarly, only 38% indicated that it was easy to identify the right fuel for their vehicle. These are potentially concerning results given that providing consumers with the information needed to differentiate fuel types and arrive at reliable conclusions about fuel-vehicle compatibility is a primary task of fuel labelling at petrol stations.
2. Consumer survey respondents found petrol stations located outside of their country of residence more problematic to use than petrol stations in their own country. Respondents were shown a list of seven positive statements about information provision at petrol stations and asked which they agreed with. Whereas 90% of respondents agreed with at least one positive statement and 40% agreed with three or more of the statements regarding petrol stations in their country of residence, those proportions fell to 81% and 29%, respectively, for petrol stations located in other EU countries.⁴⁹
3. More specifically, 38% of consumer survey respondents agree that fuel types are clear and understandable at petrol stations in their country of residence, and the same proportion (38%) agrees that it is easy to identify the right fuel for the vehicle. However, when asked about their experiences at petrol stations abroad, 31% agree that fuel types are clear and understandable, and 26% agree that it is easy to identify the right fuel for the vehicle.

⁴⁹ Thinking about the experiences you had AT PETROL STATIONS in the last 12 months in [YOUR COUNTRY], please indicate all of the statements below that you agree with...Fuel prices are clear and understandable fuel types (e.g. fuel labels and grades) are clear and understandable; Quality of different fuel types is clearly indicated; Effects of particular fuel types on the engine/vehicle performance are clearly indicated; Effects of particular fuel types on the environment (climate/air quality) are clearly indicated; Advertised price is always the same as actual price you pay; It is easy to identify the right fuel for the vehicle; I do not agree with any of these statements; Don't know.

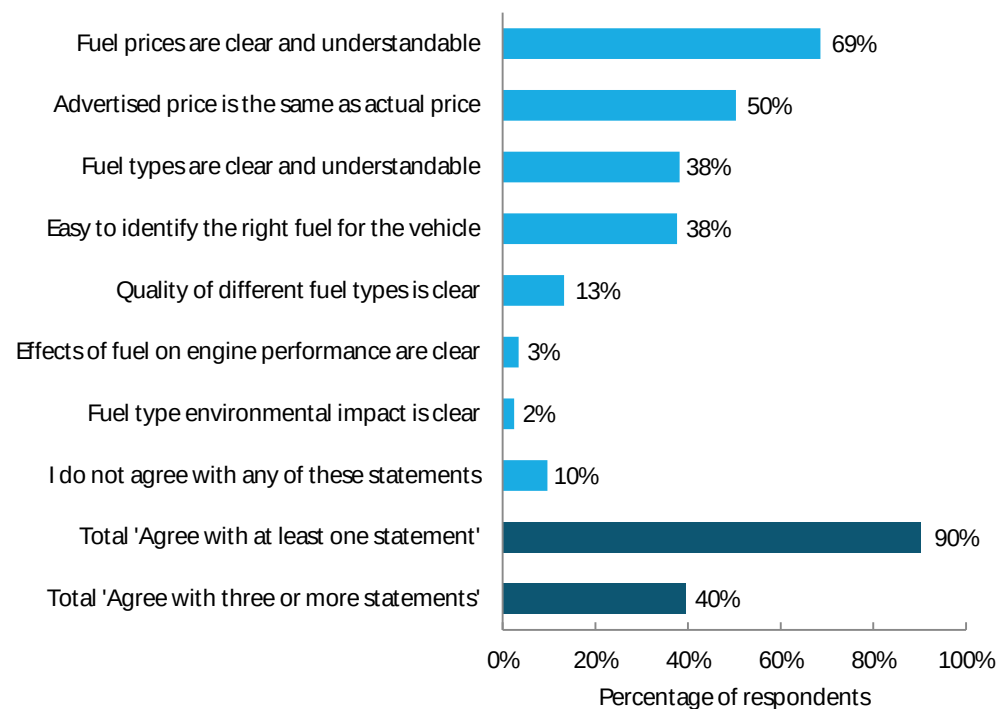
4. The results of the assessment of fuel labelling at the pump during the mystery shopping research make clear that labelling practices can have a major impact on the ease of identifying regular petrol 95 and regular diesel fuel. Both examples of very good labelling and of insufficient labelling were identified and documented.
5. Colour coding for fuel types on the pump and/or on the nozzle was not consistently applied across all of the petrol stations visited during the mystery shopping exercise. While green was the colour most commonly associated with regular petrol 95 (in the case of 66% of all petrol stations that offered regular petrol 95), other colours such as yellow and blue were also used in conjunction with this fuel type (in the case of 15% and 6% of all petrol stations that offered regular petrol 95 respectively). Similarly, mystery shoppers' investigations of the labelling of regular diesel fuel revealed inconsistent colour usage.

4.2.1 Clarity of labelling at the pump

As seen in Section 4.1, survey respondents' main source of information about vehicle fuels is information at the pump. It is therefore important to examine respondents' perceptions of the information they receive at petrol stations. Thinking specifically about petrol stations in their own country, consumer survey respondents were shown a list of seven positive statements and asked which they agreed with. They also had the option of saying that they did not agree with any of the statements (see following figure).

Figure 10.
Experiences at
petrol stations in
country of
residence

Source: Consumer survey, Question 18:
Thinking about the experiences you had at petrol stations in the last 12 months in your country, please indicate all of the statements below that you agree with... (N= 25797, EU27)



More than two in three respondents agree that fuel prices are clear and understandable at petrol stations in their country of residence (69%), while 50% agree that the advertised price is always the same as the actual price paid. In addition, 38% agree that fuel types are clear and understandable, and the same proportion (38%) agrees that it is easy to identify the right fuel for the vehicle.

A smaller proportion (13%) agrees that the quality of different fuel types is clearly indicated, while just 3% of respondents agree that the effects of particular fuel types on engine or vehicle performance are clearly indicated, and 2% that the effects of particular fuel types on the environment are clearly indicated.

Overall, these findings confirm those seen previously: respondents tend to have positive attitudes towards information on price and fuel types, but are less convinced about the information that is available on other issues.

Table 33.
Experiences at
petrol stations in
country of
residence,
comparison by
country

Source: Consumer survey, Question 18:
Thinking about the experiences you had at petrol stations in the last 12 months in your country, please indicate all of the statements below that you agree with...
(N= 25797 for EU27).
Note: Statements with less than 5% of respondents agreeing excluded.

		Fuel prices are clear and understandable	Advertised price is always the same as actual price you pay	Fuel types are clear and understandable	It is easy to identify the right fuel for vehicle	Quality of fuel types is clearly indicated	Total 'Agree with at least one statement'	Total 'Agree with three or more statements'
EU27		69%	50%	38%	38%	13%	90%	40%
EU15		66%	52%	34%	38%	13%	89%	38%
EU12		78%	45%	52%	38%	15%	94%	46%
Countries with E10		62%	59%	35%	38%	13%	90%	38%
 BE		73%	56%	29%	27%	10%	90%	34%
 BG		78%	65%	47%	23%	10%	93%	46%
 CZ		54%	52%	31%	43%	5%	88%	32%
 DK		83%	48%	53%	41%	10%	95%	48%
 DE		53%	59%	37%	39%	12%	87%	37%
 EE		86%	47%	56%	25%	7%	94%	44%
 IE		81%	55%	28%	42%	10%	93%	43%
 EL		61%	28%	29%	14%	11%	79%	21%
 ES		54%	49%	23%	42%	11%	85%	32%
 FR		73%	61%	32%	34%	11%	93%	39%
 IT		64%	42%	31%	27%	14%	89%	29%
 CY		71%	51%	59%	60%	22%	87%	59%
 LV		79%	26%	56%	31%	9%	93%	36%
 LT		80%	35%	48%	27%	14%	92%	37%
 LU		76%	61%	38%	25%	10%	91%	40%
 HU		81%	59%	47%	51%	19%	96%	54%
 MT		67%	49%	45%	48%	37%	83%	56%
 NL		64%	36%	27%	23%	8%	81%	24%
 AT		68%	61%	41%	48%	9%	92%	47%
 PL		83%	28%	57%	36%	15%	95%	42%
 PT		63%	65%	23%	52%	9%	87%	44%
 RO		78%	60%	57%	40%	18%	94%	57%
 SI		88%	65%	60%	51%	18%	97%	65%
 SK		84%	45%	52%	28%	17%	95%	43%
 FI		83%	34%	45%	56%	38%	93%	51%
 SE		80%	43%	35%	45%	11%	92%	42%
 UK		81%	53%	47%	49%	18%	93%	54%
 IS		62%	27%	21%	38%	3%	79%	23%
 NO		85%	45%	33%	56%	10%	94%	45%

In total, 90% of respondents agree with at least one of the positive statements about information at petrol stations. A minority (10%) say that they do not agree with any of the statements. Across the survey as a whole, 40% of respondents agree with three or more of the positive statements about information at petrol stations.

As can be seen in the table above, countries where respondents agreed with three statements or more are Slovenia (65%), Cyprus (59%) and Romania (57%), indicating that respondents in these countries have the most positive views of the experience at petrol stations in their country. Respondents in Greece (21%), the Netherlands (24%) and Iceland (23%) are the least likely to agree with three or more of the statements, indicating more negative views.

Overall, respondents in EU12 countries are more likely than those in EU15 countries to agree with three or more positive statements (46% compared with 38%). The overall figure for countries with E10 fuel (38%) is no different to the figure for other EU15 countries, although this is higher in Finland (51%) than in France (39%) or Germany (37%).

Socio-demographic differences and potentially vulnerable consumers

Comparing socio-demographic characteristics (see Part 2 of this study for more details), men are more likely than women to agree on more positive views indicating three or more of the statements about information at petrol stations (44% compared with 35%). There is also a difference by education level, with those finishing education by the age of 15 less likely to agree with three or more statements (34%, compared with 43% who ended their education between the ages of 16 and 19, and 40% who ended education at the age of 20 or above).

There is no difference between respondents who use petrol and those who use diesel (in each case 40% agree with three or more statements), although respondents who use other types of fuel are less likely to agree with three or more of the statements (33%). Those who buy branded fuel frequently are more likely to agree with three or more statements than those who do so infrequently or never (42% compared with 36%).

Table 34.
Experiences at
petrol stations in
country of
residence, analysis
by socio-
demographic
characteristics

Source: Consumer survey, Question 18: Thinking about the experiences you had at petrol stations in the last 12 months in your country, please indicate all of the statements below that you agree with. (N= 25797, EU27)

Sub-sample		Fuel prices are clear and understandable	Advertised price is always the same as actual price you pay	Fuel types are clear and understandable	It is easy to identify the right fuel for vehicle	Quality of fuel types is clearly indicated	Total 'Agree with three or more statements'
Average	EU27	69%	50%	38%	38%	13%	40%
Gender	Male	69%	53%	41%	42%	16%	44%
	Female	69%	48%	35%	34%	11%	35%
Age	18-24	66%	44%	37%	30%	13%	34%
	25-39	68%	47%	35%	35%	11%	34%
	40-54	68%	50%	37%	39%	13%	38%
	55+	71%	56%	42%	41%	16%	47%
Education (Age when stopped)	15 or younger	65%	42%	32%	36%	14%	34%
	16-19	71%	52%	38%	41%	14%	43%
	20 or older	69%	52%	40%	36%	13%	40%
	Still studying	62%	45%	33%	33%	13%	32%
Percentage of monthly income spent on fuel	1 - 5%	71%	55%	38%	39%	13%	43%
	6 - 10%	68%	51%	40%	39%	14%	40%
	11 - 20%	67%	49%	37%	35%	13%	38%
	21% or more	65%	43%	37%	36%	16%	37%
Buys fuel in another EU country	Frequently	57%	36%	35%	26%	19%	30%
	Regularly	63%	43%	35%	33%	19%	34%
	Rarely or never	70%	52%	39%	39%	13%	41%
Buys branded fuel	Frequently	71%	49%	41%	38%	15%	42%
	Infrequently / Never	66%	52%	34%	36%	11%	36%
Market knowledge	Least knowledgeable	67%	46%	33%	34%	12%	35%
	More knowledgeable	70%	52%	41%	40%	14%	42%
	Most knowledgeable	69%	63%	46%	45%	16%	50%

The stakeholder survey also asked responding organisations to assess the overall clarity of fuel type labelling at the pump in their country. The following figure displays the EU27 results, which are based on the responses of 69 national-level stakeholders (those who did not know or provide answers are not included in the figure).

Comparison of consumer and stakeholder perspectives

Across the EU, 87% of respondents to the stakeholder survey regarded the labelling of fuel types at the pump in their country as very (40%) or fairly (47%) clear. The remaining minority of stakeholders indicated that fuel type labelling at the pump was fairly unclear (9%) or not at all clear (4%).

Consumer organisations and automobile clubs were less likely than other stakeholder types to rate fuel type labelling as very clear (23%, compared to a minimum of 43% among other stakeholder types and a maximum of 47%). They were also the most likely of the stakeholder types to indicate one of the unclear ratings, i.e. 'fairly unclear' or 'not at all clear' (23%, compared to 13% for industry organisations, 7% for competition authorities and 0% for other public authorities).

As shown in the following table, one or more stakeholders in Belgium, Germany, Estonia, Greece, Italy, Malta, Portugal, Slovakia, and the Netherlands assessed fuel type labelling as not at all clear or fairly unclear.

Comparing the consumer survey results for these nine countries in terms of respondents' level of agreement with the statement 'Fuel types are clear and understandable', six EU15 countries in which fuel type labelling was rated as unclear by one or more stakeholders also received relatively negative assessments in the consumer survey.

On the specified consumer survey item, Germany (37% of respondents agreed with the statement 'Fuel types are clear and understandable'), Italy (31%), Belgium (29%), Greece (29%), the Netherlands (27%) and Portugal (23%) all were rated below the EU27 average of 38%. In contrast, those EU12 countries which received an unclear assessment from a stakeholder, namely Estonia (56%), Slovakia (52%), and Malta (45%) all had consumer survey percentages above the EU27 average.

Table 35. Clarity of fuel type labelling at the pump, analysis by country

Source: Stakeholder survey, Question 5:
Overall, do you consider the labelling of fuel types at the pump in your country to be clear? (N=74).
Notes: * indicates instances in which more than one stakeholder provided a given response, i.e. * signifies that two stakeholders provided the response, and ** that three stakeholders did so. 'Don't know' refers to instances in which one or more stakeholders indicated this response instead of a rating, and ':' indicates instances in which no stakeholder

		Competition authorities	Other public authorities	Consumer organisations and auto clubs	Industry organisations
	BE	Yes, fairly clear	:	No, fairly unclear	Yes, fairly clear* No, fairly unclear
	BG	:	:	Yes, fairly clear	Yes, very clear
	CZ	Yes, very clear	:	:	Yes, very clear
	DK	Yes, fairly clear	:	:	Yes, very clear Yes, fairly clear
	DE	:	:	Yes, fairly clear	Yes, very clear** No, fairly unclear
	EE	Yes, very clear	:	Yes, very clear* No, not at all clear	:
	IE	:	Yes, very clear	:	Yes, very clear
	EL	Yes, fairly clear	:	Yes, very clear No, fairly unclear	Yes, very clear
	ES	Yes, very clear	Yes, fairly clear	:	Yes, fairly clear
	FR	:	:	:	Yes, very clear
	IT	Yes, very clear	:	Yes, fairly clear No, fairly unclear	Yes, very clear
	CY	Yes, very clear	:	Yes, very clear	:
	LV	:	Yes, fairly clear	:	:
	LT	Yes, very clear	Yes, very clear Yes, fairly clear	Yes, fairly clear	:
	LU	:	Yes, very clear	:	:
	HU	Yes, fairly clear	:	:	Yes, fairly clear
	MT	No, not at all clear	Yes, fairly clear	Yes, very clear	:
	NL	:	:	Yes, fairly clear	Yes, very clear No, not at all clear
	AT	:	:	Yes, fairly clear	Yes, very clear
	PL	Yes, fairly clear	:	:	Yes, fairly clear
	PT	:	:	Yes, fairly clear No, fairly unclear	Yes, fairly clear
	RO	Yes, very clear	:	Yes, fairly clear	:
	SI	:	:	Yes, fairly clear	:
	SK	:	:	:	Yes, very clear* No, fairly unclear
	FI	Yes, fairly clear	:	:	:
	SE	Yes, fairly clear	:	Yes, fairly clear	:
	UK	:	:	:	Yes, fairly clear*
	IS	:	Don't know	Yes, fairly clear	:
	NO	Don't know	:	Yes, fairly clear	:

4.2.2 Clarity of labelling at the pump abroad

Consumer survey respondents who indicated having bought fuel in an EU country other than their country of residence were asked about their experiences at petrol stations abroad.⁵⁰ They were shown the same list of seven positive statements, and asked which they agreed with, this time thinking only about petrol stations in other EU countries.

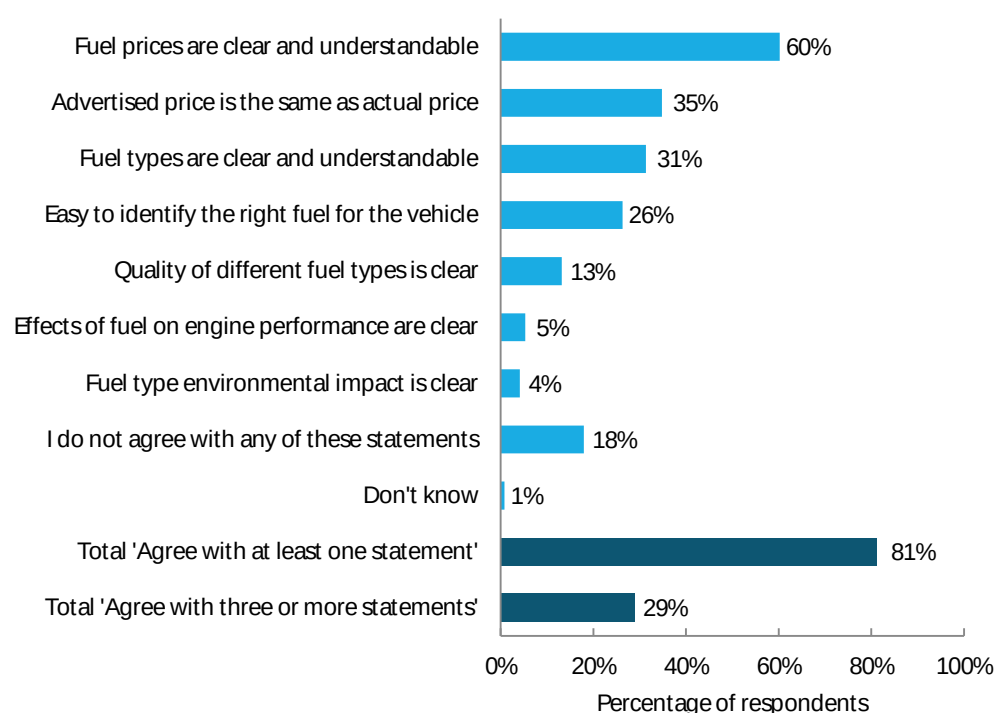
The findings for petrol station experiences in other EU countries correspond closely with those for respondents' own country. Respondents are most likely to agree that fuel prices are clear and understandable in other EU countries (60%), while 35% agree that the advertised price is always the same as the actual price paid. In addition, 31% agree that fuel types are clear and understandable, and 26% agree that it is easy to identify the right fuel for the vehicle. A smaller proportion (13%) agrees that the quality of different fuel types is clearly indicated, while just 5% agree that the effects of particular fuel types on engine or vehicle performance are clearly indicated, and 4% that the effects of particular fuel types on the environment are clearly indicated.

Overall, 81% of respondents agree with at least one of the positive statements about information at petrol stations (down from 90% for stations in their country of residence), and 29% agree with three or more of the statements (down from 40%). These proportions are somewhat lower than seen above in relation to respondents' own country, and a higher proportion (18% compared with 10%) says that they do not agree with any of the statements. This may partially reflect lower levels of familiarity with petrol stations in other countries.

⁵⁰ Question Q19: Thinking about the experiences you had at petrol stations in the last 12 months in ANOTHER EU COUNTRY, please indicate all of the statements below that you agree with.

Figure 11.
Experiences at
petrol stations in
another EU country

Source: Consumer survey, Question 19:
Thinking about the experiences you had at petrol stations in the last 12 months in another EU country, please indicate all of the statements below that you agree with...
(N= 12648, Respondents who buy fuel in another EU country)



As can be seen in the detailed table below, there is a tendency for respondents in EU12 countries to agree with more of the positive statements about petrol stations in other EU countries (41% agree with three or more), compared with those in EU15 countries (24%). The highest proportions agreeing with three or more statements are in Romania (60%) and Malta (57%), while respondents in Sweden (30%), Austria (29%) and Germany (27%) are most likely to say they agree with none of the statements.

In particular, the difference is greatest in Denmark (48% compared with 21%), Austria (47% compared with 20%), the UK (54% compared with 27%), Finland (51% compared with 25%) and Sweden (42% compared with 18%).

By contrast, respondents in the following countries are as likely to agree with three or more statements in relation to other EU countries as their own country: Greece (21% in relation to their own country, compared with 27% in relation to other countries); Romania (57% compared with 60%); Bulgaria (46% compared with 48%) and Malta (56% compared with 57%).

Table 36.
Experiences at
petrol stations in
another EU
country,
comparison by
country

Source: Consumer survey, Question 19: Thinking about the experiences you had at petrol stations in the last 12 months in another EU country, please indicate all of the statements below that you agree with... (N= 12648, Respondents who buy fuel in another EU country)
Note: Statements with less than 5% of respondents agreeing excluded.

		Fuel prices are clear and understandable	Advertised price is always the same as actual price you pay	Fuel types are clear and understandable	It is easy to identify right fuel for vehicle	Quality of different fuel types clearly indicated	I do not agree with any of these statements	Total 'Agree with three or more statements'
EU27		60%	35%	31%	26%	13%	18%	29%
EU15		56%	34%	26%	24%	11%	21%	24%
EU12		73%	36%	48%	34%	19%	8%	41%
Countries with E10		55%	37%	25%	24%	8%	24%	24%
	BE	63%	40%	22%	21%	8%	18%	22%
	BG	75%	51%	47%	22%	25%	6%	48%
	CZ	56%	41%	28%	35%	9%	15%	30%
	DK	58%	25%	32%	21%	6%	23%	21%
	DE	50%	35%	27%	25%	9%	27%	24%
	EE	77%	30%	38%	20%	9%	14%	29%
	IE	70%	39%	31%	34%	19%	13%	38%
	EL	55%	28%	30%	14%	23%	19%	27%
	ES	47%	37%	19%	27%	18%	21%	26%
	FR	63%	42%	20%	21%	7%	19%	22%
	IT	63%	34%	32%	16%	19%	12%	27%
	CY	61%	48%	49%	50%	26%	7%	47%
	LV	72%	17%	39%	22%	10%	12%	24%
	LT	77%	26%	45%	27%	14%	9%	31%
	LU	63%	39%	27%	16%	7%	17%	20%
	HU	77%	43%	42%	43%	21%	7%	45%
	MT	64%	35%	54%	48%	50%	2%	57%
	NL	58%	28%	24%	18%	6%	24%	18%
	AT	49%	28%	24%	29%	5%	29%	20%
	PL	75%	22%	51%	32%	15%	8%	35%
	PT	59%	53%	18%	42%	12%	17%	36%
	RO	75%	55%	58%	39%	32%	5%	60%
	SI	76%	39%	45%	43%	16%	9%	45%
	SK	78%	38%	45%	27%	20%	8%	40%
	FI	59%	18%	24%	37%	18%	19%	25%
	SE	50%	21%	17%	24%	9%	30%	18%
	UK	55%	25%	31%	29%	11%	23%	27%
	IS	52%	17%	15%	30%	4%	26%	18%
	NO	65%	22%	23%	36%	9%	19%	25%

Examining individual statements, it is clear that there is considerable variation at the country level. These differences tend to be between EU15 and EU12 Member States. In many cases, larger countries with neighbours speaking different languages (such as France, Germany, and Spain) showed less agreement with positive statements than EU12 Member States who shared common language or cultural backgrounds (such as the Baltic States). Here, the statements with at least 5% of total respondents agreeing are listed and analysed in detail.

Regarding the statement that “Fuel prices are clear and understandable”, 73% of respondents in EU12 Member States agreed that this was the case, compared to 56% of respondents from EU15 Member States. The Member States with the highest percentages of those agreeing with the statement included Slovakia (78%), Estonia (77%), Hungary (77%), and Lithuania (77%), while respondents in Spain (47%), Austria (49%) and Germany (50%) showed lower rates of agreement.

These differences were less pronounced when respondents were asked whether they agreed with the statement that “advertised price is always the same as actual price you pay”. Here, proportions were relatively similar (34% for EU15 versus 36% for EU12 Member States). However, significant inter-country variation existed. Greater proportions of respondents agreed in Romania (55%), Portugal (53%), and Bulgaria (51%), while the lowest rates of agreement were seen in Latvia (17%), Finland (18%), and Sweden (21%).

When asked whether they agreed with the statement that “fuel types are clear and understandable” at petrol stations in another EU country they had visited in the last 12 months, EU12 Member States (48%) were again more likely to agree than those from EU15 Member States (26%). Respondents were most likely to agree in Romania (58%), Malta (54%), and Poland (51%), and least likely to agree in Iceland (15%), Sweden (17%), and Portugal (18%).

Comparing ease of identifying the right fuel for their vehicle, respondents in EU12 Member States were again (34%) more likely than their counterparts in EU15 Member States (24%) to agree that this was easy. In this case, respondents from Cyprus (50%), Malta (48%), Hungary (43%) and Slovenia (43%) were most likely to agree. In contrast, respondents from Greece (14%), Italy (16%), and Luxembourg (16%) were least likely to agree.

When asked whether the quality of different fuel types was clearly indicated at petrol stations in other EU countries, respondents followed the previous pattern of being more likely to agree in EU12 countries. In this case, countries with high levels of agreement included Malta (50%), Romania (32%), Cyprus (26%), and Greece (23%), while Member States with low levels of agreement included Austria (5%), Denmark (6%), the Netherlands (6%) and Luxembourg (7%), Iceland and Norway also had very low levels (4% and 9%, respectively).

Finally, it is worth noting that countries with E10 fuel tended to fall below both the EU15 and EU12 averages in terms of respondents agreeing to each statement. In particular, this was the case for statements that fuel types are clear and understandable (25%, as opposed to 26% and 48% for EU15 and EU12 Member States respectively), ease of identifying the right fuel for their vehicle, and that quality of different fuel types was clearly indicated in other EU countries they had visited.

Socio-demographic differences and potentially vulnerable consumers

Socio-demographic patterns for experiences at petrol stations abroad mostly correspond with those seen above for petrol stations in respondents' own country. Again, men are more likely than women to agree with three or more of the statements (31% compared with 26%). There is also a difference by education level, with those finishing education by the age of 15 less likely to agree with three or more statements (22%, compared with 29% of those who ended their education between the ages of 16 and 19 and 30% of those who finished education at the age of 20 or above).

Once again, there is no difference between respondents who use petrol and those who use diesel (29% and 30%, respectively, agree with three or more statements), although respondents who use other types of fuel⁵¹ are less likely to agree with three or more of the statements (23%). Those who buy branded fuel frequently are more likely to agree with three or more statements than those who do so infrequently or never (32% compared with 24%).

There are different patterns on some items, however. Respondents who always or very often compare fuel prices (31%) or often do so (28%) are more likely to agree with three or more statements than those who rarely or never do so (23%).

⁵¹ Other types of fuel: LPG / GPL / Autogas, Natural gas / CNG / Erdgas, E85 / E100 or other type of fuel.

Table 37.
Experiences at
petrol stations in
another EU
country, analysis
by socio-
demographic
characteristics

Source: Consumer survey, Question 19: Thinking about the experiences you had at petrol stations in the last 12 months in another EU country, please indicate all of the statements below that you agree with. (N= 12648 Respondents)

	Sub-sample	Fuel prices are clear and understandable	Advertised price is always the same as price you pay	Fuel types are clear and understandable	It is easy to identify the right fuel for the vehicle	Quality of different fuel types is clearly indicated	Total 'Agree with three or more statements'
Average	EU27	60%	35%	31%	26%	13%	29%
Gender	Male	61%	37%	33%	28%	15%	31%
	Female	60%	32%	30%	24%	12%	26%
Age	18-24	57%	31%	32%	19%	15%	27%
	25-39	59%	31%	27%	25%	12%	25%
	40-54	61%	35%	33%	27%	12%	29%
	55+	61%	39%	33%	29%	14%	32%
Education (Age when stopped)	15 or younger	53%	28%	25%	22%	13%	22%
	16-19	61%	35%	30%	30%	12%	29%
	20 or older	62%	35%	33%	26%	13%	30%
	Still studying	55%	35%	29%	22%	18%	26%
Percentage of monthly income spent on fuel	1 - 5%	62%	35%	30%	25%	10%	27%
	6 - 10%	61%	36%	30%	26%	12%	28%
	11 - 20%	59%	36%	33%	27%	15%	31%
	21% or more	61%	34%	37%	29%	20%	33%
Market knowledge	Least knowledgeable	57%	31%	28%	23%	12%	25%
	More knowledgeable	62%	36%	33%	28%	14%	31%
	Most knowledgeable	61%	42%	38%	29%	13%	35%
Compare fuel prices	Always / Very often	61%	37%	33%	27%	14%	31%
	Often	59%	32%	31%	26%	13%	28%
	Rarely / Never	57%	32%	26%	25%	10%	23%
Buys fuel in another EU country	Frequently	59%	31%	32%	24%	20%	31%
	Regularly	65%	41%	37%	26%	17%	35%
	Rarely / Never	60%	35%	31%	27%	12%	28%
Buys branded fuel	Frequently	62%	35%	35%	27%	16%	32%
	Infrequently / Never	57%	35%	26%	25%	9%	24%
Type of fuel most frequently bought	Petrol	60%	33%	33%	25%	13%	29%
	Diesel	61%	38%	29%	28%	14%	30%
	Other type of fuel	59%	31%	28%	24%	10%	23%
Place of residence	Rural area	59%	34%	28%	27%	10%	26%
	Urban area	59%	35%	31%	26%	14%	28%
	Metropolitan area	62%	35%	34%	26%	15%	32%

4.2.3 Labelling practices observed during station visits

Information on labelling practices at the pump were collected during mystery shopping visits to 150 petrol stations located in the capital cities of six Member States. The key results are summarised below.

Mystery shoppers generally found the four petrol types whose labelling they reviewed – regular petrol 95, E10 fuel, petrol 98 and premium petrol – to be clearly labelled at the sample of stations they visited. This was the case at 93% of all petrol stations offering regular petrol 95, 100% of stations offering E10 fuel, 100% offering petrol 98 and 81% offering premium petrol.

In terms of the presence of specific labelling components, however, the results were less positive. For example, mystery shoppers found indications of the maximum content of ethanol in regular petrol 95 at stations in only two of the six cities: Bucharest (19 or 79% of visited stations) and Prague (one station at which an indication was present but unclear). Also, the applicable octane number (RON) of 95 was only found on labelling at the pump at 62% of the visited stations which offered regular petrol 95.⁵²

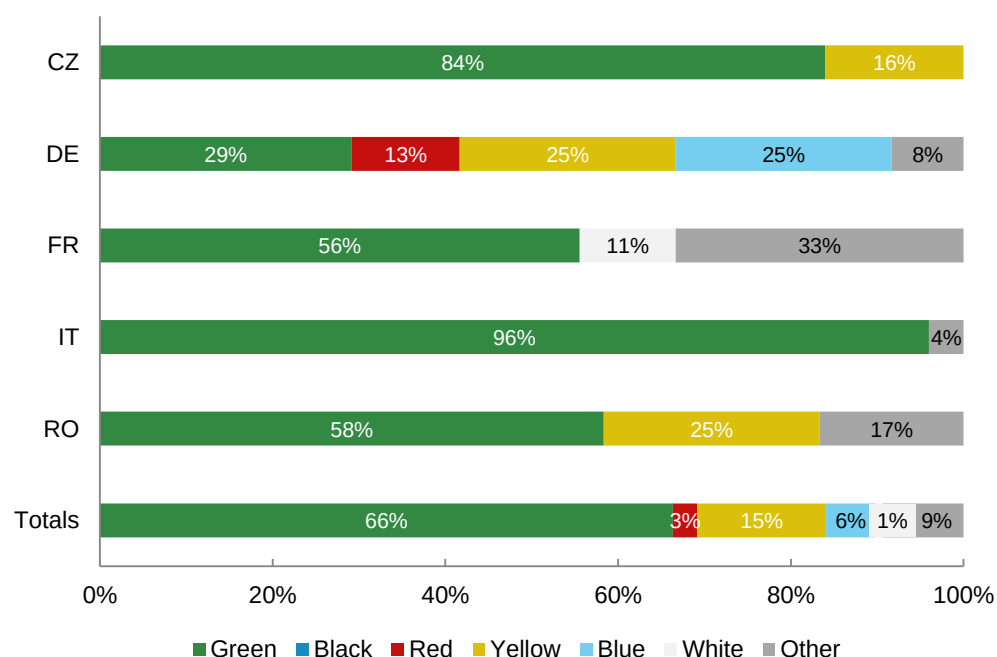
Regarding E10 fuel, only in Paris did petrol stations provide a list of which vehicle types are compatible or non-compatible with E10 at or near the pump; and none of the stations visited in the three countries where E10 fuel is available had placed an indication of potential harm to non-compatible vehicles at or near the pump. Lastly, in Rome and Bucharest, only a portion of the visited stations specified a material difference (e.g. octane number or specification of additives) between premium petrol and regular petrol 95 (33% of stations visited in Rome specified a material difference; 82% of stations visited in Bucharest did so).

It is also clear from the results of the petrol station visits that colour coding for fuel types on the pump and/or on the nozzle was not consistently applied across all of the stations, either within or between the six capital cities. While green was the colour most commonly associated with regular petrol 95 (66% of all stations that offered regular petrol 95), other colours such as yellow (15%) and blue (6%) were also used in conjunction with regular petrol 95. At least one station in each capital city used a colour other than green for this fuel type, though the colour-coding was largely consistent in Rome (96% of stations used green) and Prague (84%). However, in Paris (56%) and Bucharest (58%) less than three fifths of stations used the same colour in association with regular petrol 95; in the case of Berlin (29%), less than one third of stations used the same colour.

⁵² Although standard EN228 on petrol fuel from the European Committee for Standardization (CEN) does call for, among other items, reference to the standard and display of the fuel's octane number (RON) on labelling at the pump, it is important to note that this standard, as well as EN590 which pertains to diesel fuel, is voluntary. Accordingly, unless mandated by national regulations, petrol stations are not required to display the RON at the pump or to specify the maximum content of ethanol in regular petrol 95.

Figure 12.
Colours used on
the pump to
distinguish fuel
types – Regular
petrol 95

Source: Civic
Consulting mystery
shopping visits to
petrol stations in six
capital cities,
Question 11.
(N=107)



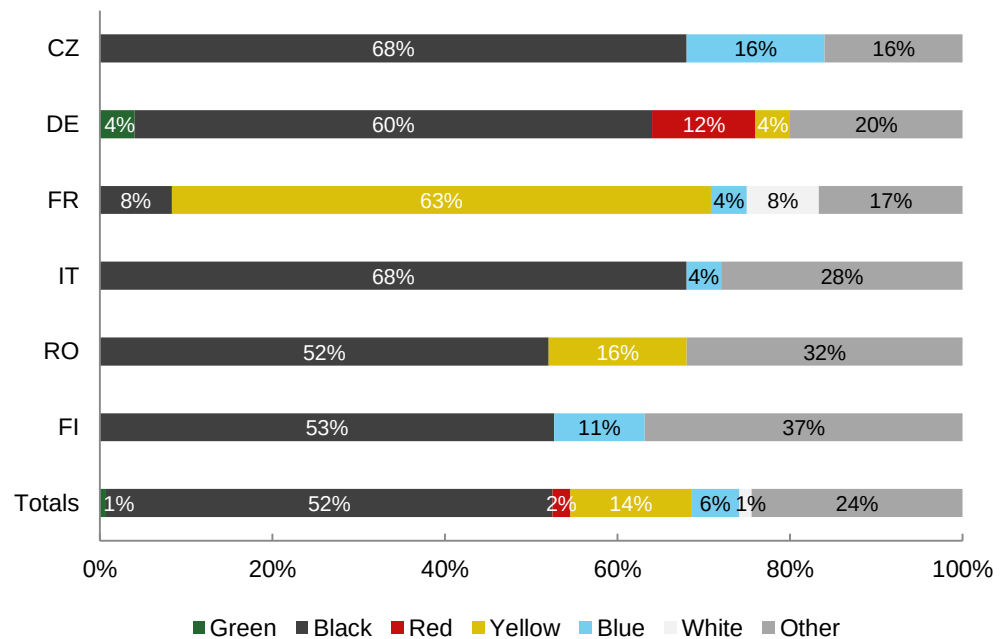
Similarly, mystery shoppers' investigations of the labelling of regular diesel fuel revealed inconsistent colour usage, both within and across the capital city samples. No more than 68% of the petrol stations visited in any of the cities used the same colour in association with this fuel type.⁵³

Although black was overall the colour most widely used in association with regular diesel fuel (52% of all visited stations), and a majority of the stations visited in Prague, Berlin, Rome, Bucharest and Helsinki used this colour, sizeable minorities of stations in these five capital cities, as well as the majority of stations in Paris (63% of stations visited in Paris used yellow to identify this fuel type; just 8% used black) used a different colour or multiple colours.

⁵³ Some of the visited stations used labelling at the pump which included two or more colours. With regard to regular diesel fuel, such multi-coloured labelling often included the colour black, for example, in a chequered flag pattern. This type of labelling has been included in the 'other' category.

Figure 13.
Colours used on
the pump to
distinguish fuel
types – Regular
diesel

Source: Civic
Consulting mystery
shopping visits to
petrol stations in six
capital cities,
Question 11.
(N=143)



This finding of predominant but not exclusive use of green labelling for regular petrol fuel and black labelling for regular diesel fuel is in accordance with the summaries of labelling practices provided by stakeholders.

In interviews conducted for this study, as well as in responses to the stakeholder survey, organisations with knowledge of the vehicle fuels market in their respective countries or at EU-level reported that while the green-black labelling practice is commonly employed by stations in the EU it is a voluntary practice and not universal.

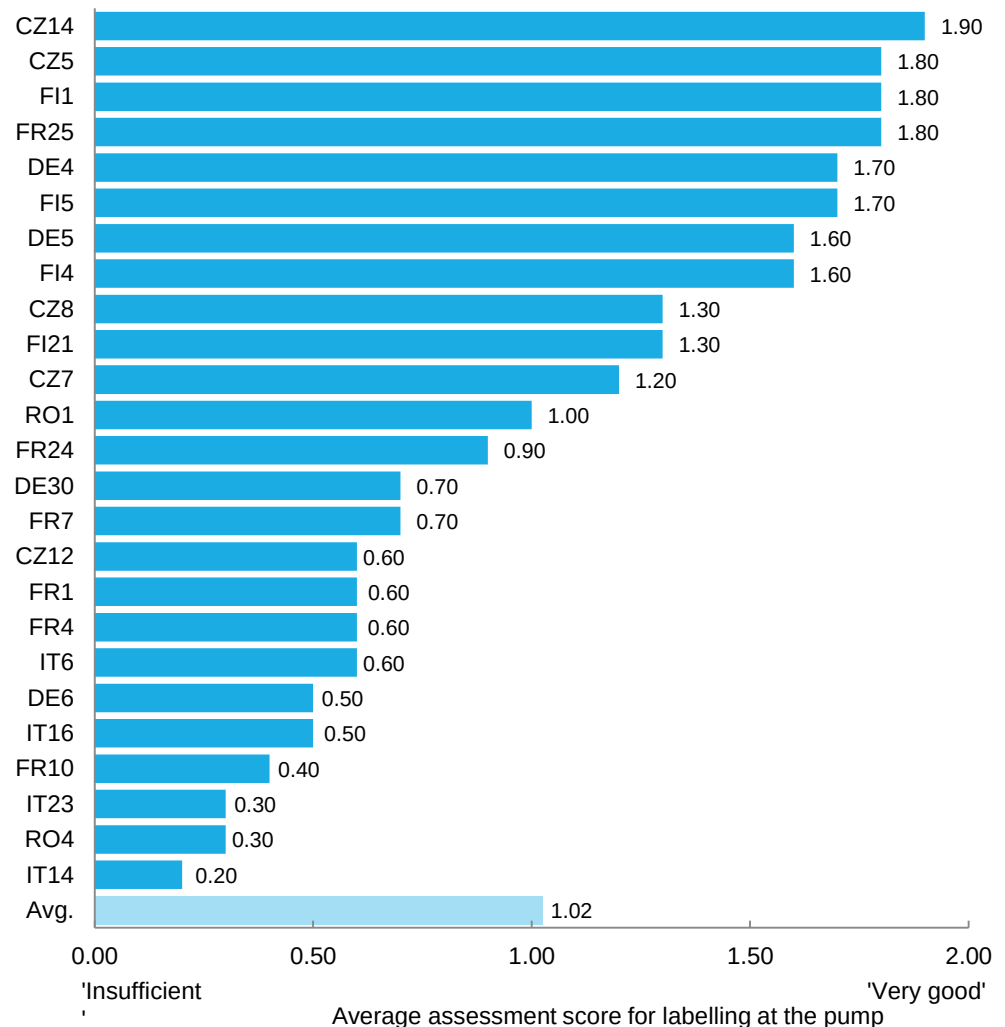
4.2.4 Assessment of labelling at the pump during station visits

As explained in Part 4 of this report, mystery shoppers assessed fuel labelling practices at the pump on basis of photographs taken during the visits to 150 petrol stations located in the capital cities of six Member States, focusing on the ease of identifying regular diesel fuel and regular petrol 95.

The following figure displays the average labelling-at-the-pump score for each station included in the assessment sample, which included a selection of 25 pumps from stations in all countries visited.

Figure 14.
Average
assessment
score for
labelling at the
pump, analysis
by station

Source: Civic
Consulting
assessment of fuel
labelling at petrol
stations. (N=150)



Visible in the above figure is a group of stations whose labelling at the pump practices were regarded as 'very good'. As can be seen, no particular city dominates this list.

During the focus group discussions held at the conclusion of the mystery shopping exercise, mystery shoppers broadly agreed that the petrol stations whose labelling practices had tended to be clearest were those which utilised certain colour codes, e.g. green for petrol and black for diesel, to differentiate fuel types.

Additionally, for petrol variants, the labels at the best-assessed stations had tended to clearly display the octane number (RON), e.g. 95 or 98.

4.2.5 Summary - overall clarity of fuel labelling at the pump

Comparison of the findings from the different data sets, i.e. consumer survey, stakeholder survey and mystery shopping, reveals mixed results. Clearly, the vast majority of stakeholders (85%) considered labelling at the pump in their country to be clear. However, consumer survey respondents provided a substantially different view. While a majority of the consumers (69%) indicated that fuel prices were clear and understandable at petrol stations a much lower proportion (38%) reported fuel types to be clear and understandable in their country of residence. Similarly, only 38% indicated that it was easy to identify the right fuel for their vehicle. These are potentially concerning results given that providing consumers with the information needed to differentiate fuel types and arrive at reliable conclusions about fuel-vehicle compatibility is arguably the primary task of fuel labelling at petrol stations.

The consumer survey results for other market aspects that could conceivably be communicated to consumers via fuel labelling at petrol stations were more negative. For example, only 13% of respondents reported finding the quality of different fuel types to be clear at petrol stations, and the environmental impact of fuel types was thought to be clear at petrol stations by just 2% of consumer survey respondents.

Consumer survey respondents judged petrol stations located outside of their country of residence more problematic to use than petrol stations in their country. This somewhat less positive experience at petrol stations located outside of consumer survey respondents' country of residence is supported by comments made by mystery shoppers during the focus groups that took place after their assessment of photographs depicting fuel labelling at the pump in six Member States.

Specifically, mystery shoppers noted that when they had assessed labelling in photographs more negatively, it had been partly due to the use of terms specific to the primary languages of the countries in which stations were located. It also emerged during the discussions that the commonly used terms for petrol types in certain countries had led to some misunderstandings. In particular, the term 'super', commonly used to identify regular petrol 95 in Germany, had been confusing for non-residents of that country, as 'super' often refers to premium fuel variants in other countries.

It is important to note, though, that mystery shoppers reached these conclusions applying a cross-border perspective when assessing the photographs of the labelling at the pump.⁵⁴ Difficulty due to the use of a foreign language or

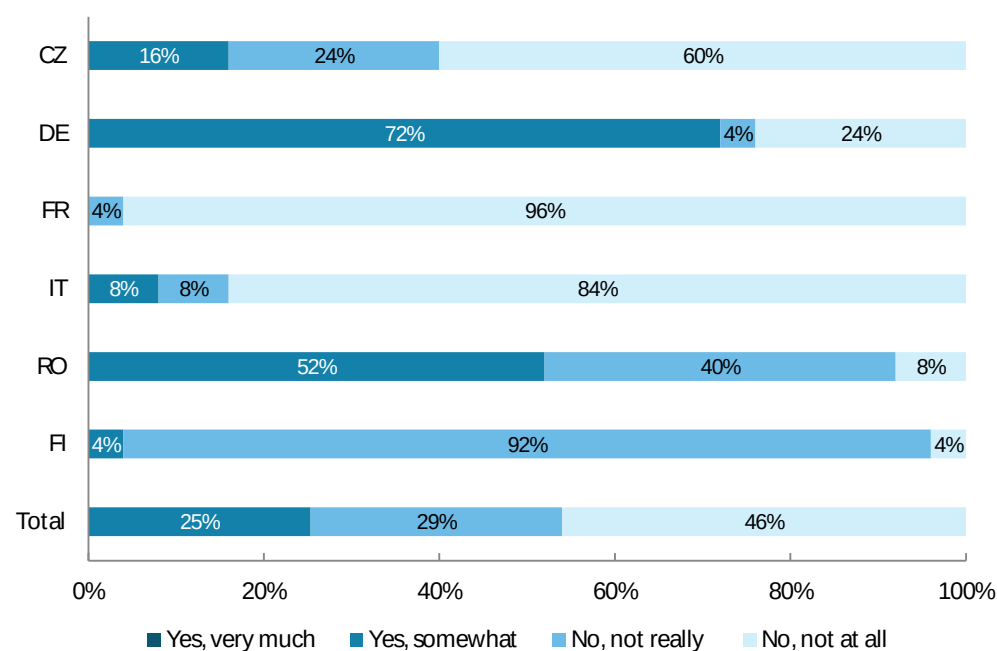
⁵⁴ The assessment of fuel labelling was carried out with a specific focus on cross-border experiences: mystery shoppers, who came from a wide variety of Member States and Iceland, were instructed to assess labelling at the pump in terms of the ease with which

terminology may well be a problem for cross-border shoppers but is likely a non-issue for residents. And, overall, while the mystery shoppers agreed that it might be possible for consumers to initially be confused when trying to distinguish between petrol and diesel fuel, they thought that mis-fuelling would be unlikely as long as sufficient attention were paid to the fuel type selection.

These findings are supplemented by the reported experiences of those mystery shoppers who conducted the petrol station visits. When asked about the risk of confusing the correct petrol type with another type of petrol, these mystery shoppers did report 'somewhat' of a risk at 25% of the visited stations, but such confusion was deemed to not really be a risk at a larger proportion of stations (29%) and no risk at all at nearly half of the stations (46%). This average percentage conceals significant variation at the country level, however (see figure below).

Figure 15. When you searched for the right type of petrol was there a risk of confusing it with other petrol types?

Source: Civic Consulting mystery shopping visits to petrol stations in six capital cities, Question 13. (N=150)

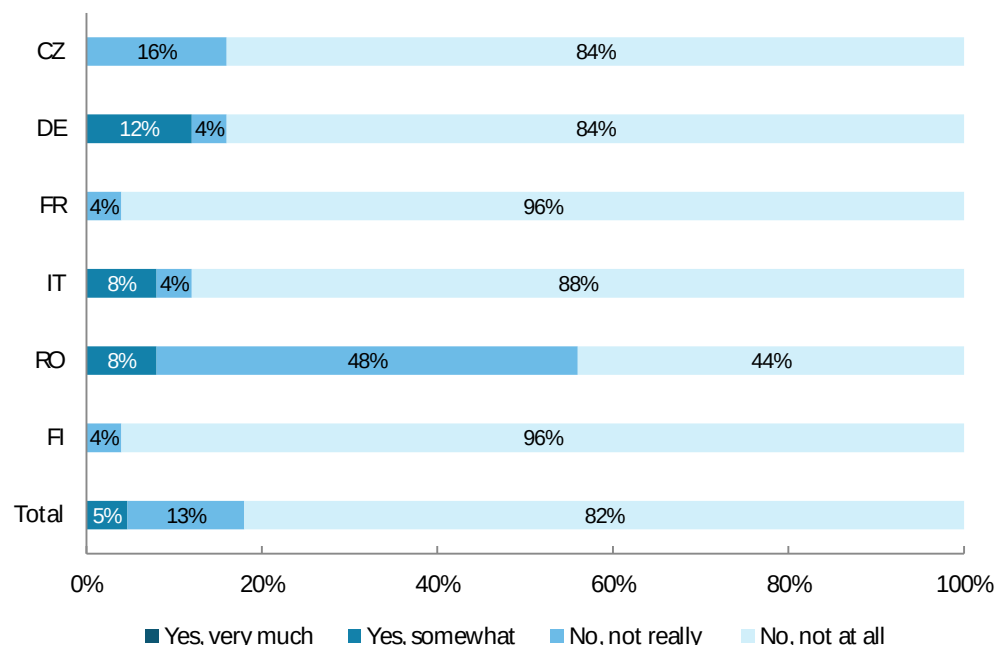


The station visits suggested a lower risk of confusing petrol and diesel fuel: at none of the visited stations was a very high risk cited, and 95% of the stations were judged to not really present a risk (13%) or to present no risk at all (85%). Only 5% of stations were thought to present somewhat of a risk (see figure below).

they, as cross-border shoppers, were able to identify the fuel types. Mystery shoppers who were natives of one of the six countries from which photographs had been taken were asked to hold their opinion until the end of the group discussion, and, in the case of disagreement, the assessment of the other group members was to prevail.

Figure 16. When you searched for the right type of petrol was there a risk of confusing it with diesel fuel?

Source: Civic Consulting mystery shopping visits to petrol stations in six capital cities, Question 14. (N=150)



These findings should not, however, be interpreted as evidence that fuel labelling practices are currently sufficient across the EU. Clearly, some of the country-level results from the station visits, as well as the results of the photograph-based labelling assessment, reveal the existence of problematic labelling practices. In some cases, nearly all mystery shoppers thought it was very easy to identify both of these key fuel types, but labelling at some of the other stations sampled was nearly unanimously regarded as insufficient.

Another argument for both the importance and current imperfection of labelling at the pump originates in the data on mis-fuelling. As shown in Section 8, 3% of consumer survey respondents reported pumping petrol fuel into a diesel vehicle or vice versa due to unclear labelling at the pump, and 3% reported pumping the wrong type of fuel that contained biofuel into their vehicle due to unclear labelling. These problems were reported for petrol stations in respondents' countries of residence and stations in other countries. Additionally, the ADAC automobile club in Germany reports that roadside assistance patrols were dispatched about 5,000 times in one recent year due to consumer mis-fuelling.⁵⁵ In an interview conducted for this study, the UK Automobile Association suggested the problem in the United Kingdom is more severe:

⁵⁵ See: ADAC (2012), 'Wrong tank - what to do?', ADAC Website, available at: <http://www.adac.de/infotestrat/tanken-kraftstoffe-und-antrieb/benzin-und-diesel/falsch-getankt/default.aspx?ComponentId=28479&SourcePageId=48532>.

"Sometimes there's confusion about the way that pumps are marked and we have a big problem with what we call mis-fuelling in the UK. [...] Sometimes that confusion occurs when people are in a hurry. We don't have, for example, standard colour hoses for the fuel, and also the nozzles don't always have standard markings. Or they carry additives, which confuse people. [...] The AA deals with 60,000 mis-fuellings a year, and it is estimated that across the UK it may be as high as 150,000 mis-fuellings a year".

The results of the mystery shopping assessment make clear that labelling practices can have a major impact on the ease of identifying regular petrol 95 and regular diesel fuel. Therefore, improved labelling at stations for both domestic consumers and those from elsewhere in the EU may be an important tool in reducing the incidence of mis-fuelling, as detailed above.

4.3 AVAILABILITY OF PRICE INFORMATION TO CONSUMERS

This section considers consumers' ability to obtain price information through several key sources, namely billboard price displays located near the road at petrol stations; comparison websites that allow consumers to compare fuel prices online; and other relevant websites, i.e. of retailers, public authorities and automobile clubs.⁵⁶

Key findings of this section are:

1. Billboards at petrol stations in the EU are highly common; and referencing these price displays while driving by petrol stations is the price comparison method most frequently reported by consumer survey respondents (79%, compared to 31% and 24%, respectively, for the next most frequently cited price comparison methods: consulting family / friends/ colleagues and price comparison websites for fuels).
2. In a number of countries, regulatory rules have been enacted that require fuel retailers to notify their prices to a publicly administered database which in turn serves as the foundation for one or more comparison websites; the existence of such price transparency systems has been confirmed in Greece, Spain, France, Cyprus, Austria, and Portugal; Germany declared its intention to enact a similar system in late 2012.
3. The percentage of both consumer survey and stakeholder survey respondents that reported it easy to find clear information about fuel prices (77% and 94%, respectively) is higher than for any of the other market aspects researched and discussed previously in Section 4.1 (i.e. fuel types, fuel quality, fuel-vehicle compatibility and the effects of particular fuel types on both engine / vehicle performance and the environment).

4.3.1 Sources of price information

Several sources of price information are in use by consumers. Judging from the data on the price comparison methods in use by consumer survey respondents (for more details, please see Section 4.1), the most commonly used price sources, in addition to comparing prices by driving past petrol stations (79%) and using price comparison websites (24%), are discussions with family, friends, colleagues (31%) and price announcements on the motorway (18%). Websites of fuel retailers and traditional media sources (television / radio and newspapers / magazines) are less commonly reported methods (8% apiece).

⁵⁶ For complementary information on fuel prices, see Section 7. More details on comparison websites are provided in Section 4.4.

Price announcements on the motorway are a further noteworthy source, as nearly a fifth of consumer survey respondents (this proportion was identical for the EU15 and EU12) report using this type of price display to compare prices.

Perhaps the most interesting example of the use of motorway price displays originates in Portugal. There, boards were installed along different motorways to show the prices of the various fuels being sold along the motorway. Specifically, each board displays the current price at the next three petrol stations, allowing consumers to compare and choose appropriately. The idea for the boards was developed in 2004, and they have been in place since mid-2009. A study conducted by the Portuguese competition authority, and covering the years 2009-2011, found that the installation of the motorway price displays preceded a clear decrease in the deviation between maximum and minimum prices along motorways. However, price levels did not decrease significantly, and in some cases even increased slightly.⁵⁷

Several of these sources, namely billboards (i.e. driving past petrol stations), price comparison websites, other relevant websites and price announcements on the motorway, are discussed in more detail below.

4.3.2 Ease of finding information on fuel prices

Results of the consumer survey and stakeholder survey allow for an analysis of the overall ease of finding clear information through the use of those sources. First, the results of the consumer survey are discussed and then complemented by stakeholder survey findings.

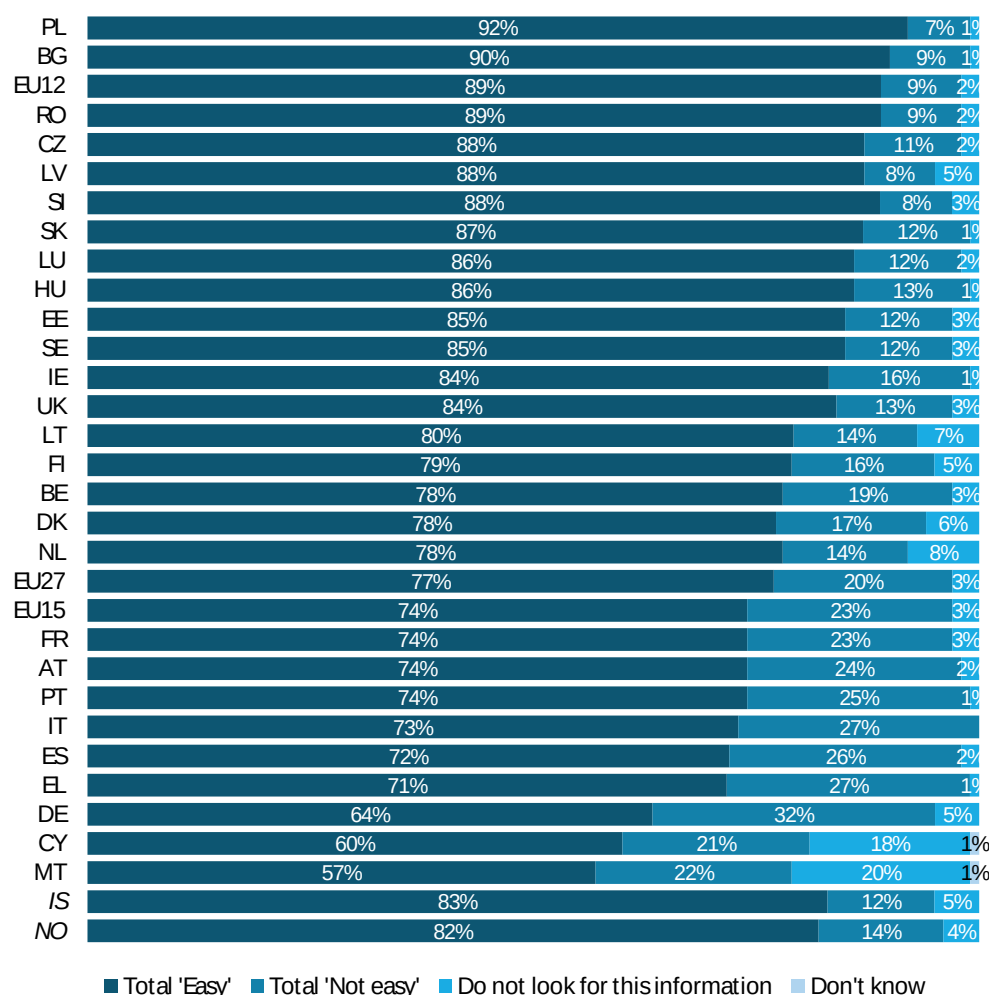
The majority of respondents to the consumer survey (77%) say that they find it very or fairly easy to get clear information about fuel prices, with 33% finding it very easy. One in five (20%) do not find it very or at all easy. As can be seen in the figure below, respondents in Poland (92%) and Bulgaria (90%) are most likely to say that it is easy for them to find clear information about fuel prices, and in these countries a high proportion (60%) says this is very easy. Respondents in Malta (57%), Cyprus (60%) and Germany (64%) are the least likely to find it easy to get clear information on fuel prices.

Overall, respondents in EU12 countries are more likely than those in EU15 countries to find it easy to get clear information (89% compared with 74%).

⁵⁷ In an interview conducted for this study, representatives of the Portuguese competition authority noted some important technical considerations related to the findings of this study, including the challenge of developing counterfactual scenarios against which to compare the real-world price data and the possible need to include data from a longer time period. In other words, it was not possible with the available data to determine the unmediated effect of price displays in the absence of other factors.

Figure 17. Ease of finding clear information about fuel prices, analysis by country

Source: Consumer survey, Question 2.1: In your experience, how easy is it to find clear information about fuel prices? (N=25797 for EU27)



Socio-demographic differences and potentially vulnerable consumers

Examining responses by socio-demographic characteristics,⁵⁸ it was apparent that respondents who frequently buy branded fuel are more likely to find it easy to get this type of information than those who infrequently or never buy branded fuel (79% compared with 74%).

When looking at the findings for potentially vulnerable groups, the one difference is by age group: younger respondents are more likely to say that they find it easy to get clear information about fuel prices, the proportion ranging from 83% among 18- to 24-year-olds, to 74% among those aged 55 or over. However, no other significant differences were found.

⁵⁸ See Part 2 of this study for a detailed tabular presentation of these results.

Comparison of consumer and stakeholder perspectives

Across the EU, 94% of organisations that responded to the stakeholder survey agreed that it was easy to find clear information about fuel prices in their country; just 6% suggested otherwise. These percentages are higher than those seen in the consumer survey findings (77% and 20%, respectively), i.e. a larger proportion of stakeholder than consumer survey respondents reported the gathering of clear information about fuel prices to be easy (following a trend observed for the other market aspects previously detailed in Section 4.1).

The rate at which stakeholders indicated that it was 'easy' to find clear information about fuel prices was consistent across all organisation types, with a minimum of 90% (consumer organisations and automobile clubs) giving this response.

Notably, the percentage of both consumer survey and stakeholder survey respondents that reported it easy to find clear information about fuel prices is higher than for any of the other market aspects discussed (see Table below). This suggests that both consumer survey respondents and stakeholders see the task of gathering clear information about fuel prices as easier than collecting information about other market aspects such as fuel types, fuel quality, fuel-vehicle compatibility and the effects of particular fuel types on both engine / vehicle performance and the environment. Indeed, the only other aspect for which a majority of consumer survey respondents (67%) indicated that it was easy to gather clear information was fuel types; 82% of stakeholders reported it easy to obtain clear information about fuel types and 70% clear information about fuel-vehicle compatibility.

Table 38.
Comparative
analysis, ease of
finding clear
information about
fuel prices

Source: Consumer survey, Q2.1, and Stakeholder survey, Q2.1: In your assessment, how easy is it for consumers in your country to find clear information about fuel prices? (N=25797)

	Consumer survey	Stakeholder survey				
Finding clear information on fuel prices	EU27 avg.	EU27 avg.	Competition authorities	Other public authorities	Consumer organisat. & auto clubs	Industry organisat.
Total 'Easy'	77%	94%	93%	100%	90%	96%
Total 'Not easy'	20%	6%	7%	0%	10%	4%
Consumers do not look for this information	3%	0%	0%	0%	0%	0%
Number of stakeholders	n.a.	69	15	7	20	27

Given the nearly unanimous opinion among stakeholders that finding clear information about fuel prices is easy, there is relatively scarce data to be extracted from a country-level analysis. However, as the following table shows, there were four countries in which a stakeholder reported it not very easy or not at all easy to find such information. These countries were Estonia, Italy, the Netherlands and Slovakia.

Of the countries in this group, only Italy was assessed slightly below the EU27 average by consumer survey respondents (73%, compared to the average of 77%). The figure for the Netherlands (78%) was slightly above the EU27 average, but the high percentages observed for Estonia (85%) and Slovakia (87%) appear to be in discord with the stakeholders' ratings in those countries.

Table 39. Ease of finding clear information about fuel prices, analysis by country

Source: Stakeholder survey, Question 2.1: In your assessment, how easy is it for consumers in your country to find clear information about fuel prices? (N=74).

Notes: * indicates instances in which more than one stakeholder provided a given response, i.e. * signifies that two stakeholders provided the response, and ** that three stakeholders did so. 'Don't know' refers to instances in which one or more stakeholders indicated this response instead of a rating, and '-' indicates instances in

		Competition authorities	Other public authorities	Consumer organisations and auto clubs	Industry organisations
	BE	Very easy	:	Fairly easy	Very easy**
	BG	:	:	Very easy	Fairly easy
	CZ	Very easy	:	:	Very easy
	DK	Fairly easy	:	:	Very easy Fairly easy
	DE	:	:	Fairly easy	Very easy* Fairly easy*
	EE	Very easy	:	Very easy; Fairly easy; Not very easy	:
	IE	:	Fairly easy	:	Very easy
	EL	Fairly easy	:	Very easy Fairly easy	Very easy
	ES	Fairly easy	Very easy	:	Fairly easy
	FR	:	:	:	Very easy
	IT	Not at all easy	:	Fairly easy*	Very easy
	CY	Very easy	:	Fairly easy	:
	LV	:	Fairly easy	:	:
	LT	Fairly easy	Very easy Fairly easy	Very easy	:
	LU	:	Very easy	:	:
	HU	Very easy	:	:	Very easy
	MT	Very easy	Very easy	Fairly easy	:
	NL	:	:	Not very easy	Very easy Fairly easy
	AT	:	:	Fairly easy	Very easy
	PL	Very easy	:	:	Fairly easy
	PT	:	:	Fairly easy*	Very easy
	RO	Fairly easy	:	Very easy	:
	SI	:	:	Very easy	:
	SK	:	:	:	Very easy; Fairly easy; Not very easy
	FI	Fairly easy	:	:	:
	SE	Fairly easy	:	Very easy	:
	UK	:	:	:	Very easy Fairly easy
	IS	:	Fairly easy	Fairly easy	:
	NO	Don't know	:	Very easy	:

4.3.3 Billboard price displays at petrol stations

According to the data collected for this study, 'billboard' price displays that allow consumers to view fuel prices from the adjoining roadway are in widespread use at petrol stations across the EU.

As mentioned above, nearly four fifths of consumer survey respondents reported driving by petrol stations to compare prices, making it by far the most popular price comparison method among respondents. Clearly, billboards are the main facilitator of this price comparison method.

This finding is also supported by responses to the stakeholder survey which indicate that in many Member States the display of prices on billboards is subject to regulatory rules. Indeed, according to stakeholders, these displays are subject to regulation in at least 11 Member States.⁵⁹ These regulations generally stipulate at least that prices must be shown at every station, or are part of broader regulations on display of prices for consumer goods, as is the case in Germany with the *Preisangabenverordnung* (PAngV). However, there also exist regulations with specific requirements for billboards on petrol stations, such as the Spanish *Real Decreto* 248/2001 that regulates the placement and information on signs on toll-roads and highways.

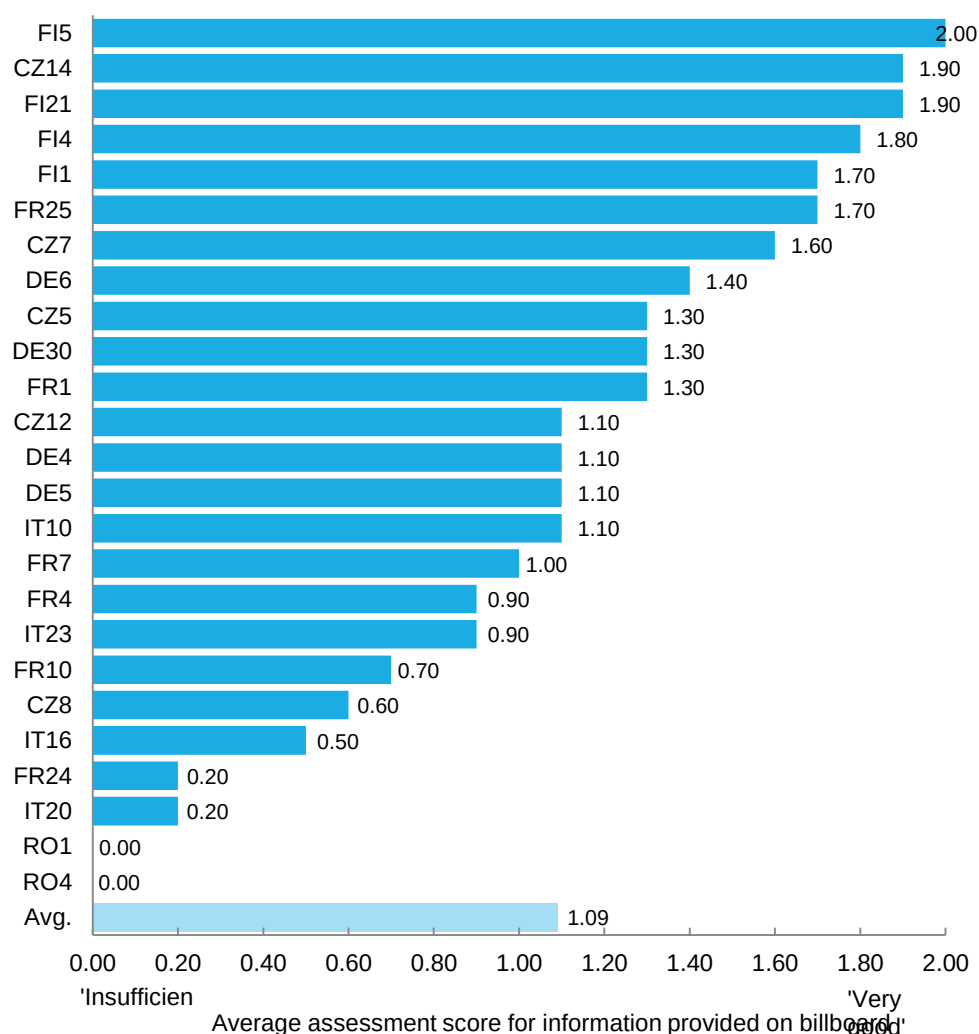
The near-comprehensive presence of billboards at the visited petrol stations in six capital cities located across the EU was evident. According to mystery shopping station visits, billboards displaying fuel prices were present at all of the 150 visited petrol stations, with the lone exception of a station in Paris.

Subsequently, a selection of the billboard photographs taken during the station visits was utilised in the labelling assessment component of the mystery shopping exercise, the results of which are presented below. The following figure displays the average score for each station included in the assessment sample, which included a selection of 25 billboards from stations in all countries visited.

⁵⁹ According to stakeholders, there are 11 Member States where 75% or more of stakeholders who provided an answer stated that there were specific regulatory (i.e. mandatory) rules in place governing the display of prices on billboards at petrol stations. These were Austria, Cyprus, France, Germany, Greece, Ireland, Italy, Luxembourg, Poland, Portugal, and Spain. In a further eight Member States (Belgium, Denmark, Hungary, Iceland, the Netherlands, Norway, Romania, and Slovakia) at least 50% of stakeholders who provided an answer stated that such rules were in place.

Figure 18.
Average
assessment
score for
information
provided on
billboard,
analysis by
station

Source: Civic
Consulting
assessment of fuel
labelling at petrol
stations. (N=250)



As the figure above shows, the information provided on several billboards, mostly those in Helsinki and Prague, was highly regarded by mystery shoppers in terms of its amount and clarity. The focus group discussions, provided insight into why mystery shoppers regarded some stations' billboards as informative and clear and others' as less so.⁶⁰

Favourable factors indicated by the mystery shoppers include the use of clear colour codes to differentiate fuel types; the highly visible display of the octane number (RON), e.g. 95 or 98 for petrol fuel types; and the use of large and clear numbers on billboards, with no or limited advertisements.

⁶⁰ Please note that a range of example pictures to illustrate these discussions are included in Part 4 of this report.

Conversely, mystery shoppers noted in the focus group discussions that more negative assessments of billboards were sometimes tied to the usage of language- or country-specific terms, such as 'Super' to refer to petrol 95 in Germany⁶¹ and terms other than 'diesel' to refer to that fuel type because this terminology decreased the billboards' clarity for cross-border fuel purchasers.

⁶¹ In other countries (for example in Italy), the term 'Super' indicates premium petrol, or petrol with a higher octane rating. According to information from the Automobile Club Association in France, the term 'Super' or 'Eurosuper' is also used as a generic term for Petrol 95 in Belgium, Luxembourg, and Poland.

4.4 AVAILABILITY AND FUNCTIONING OF PRICE COMPARISON WEBSITES

Consumer survey respondents indicated significant usage of fuel price comparison websites in this market. Indeed, consumer survey respondents identified comparison websites as the third most frequently used method of comparing fuel prices (24%), following only 'driving by petrol stations' (79%) and 'family, friends, colleagues' (31%). Therefore, the availability and functioning of price comparison websites was evaluated as part of the mystery shopping exercise. Relevant aspects include the level of price data acquisition, accuracy, and update frequency, level of user-friendliness, the accuracy and comparability of price observations, market coverage, and assessment of overall usefulness.⁶²

Key findings of this section are:

1. During the comparison website evaluation, which was part of the mystery shopping exercise, up to three websites per country that allow for the comparison of vehicle fuel prices were evaluated. In total, 60 comparison websites were evaluated by the mystery shoppers. Only in Slovenia could no such comparison website be found.
2. The larger markets tended to be serviced by more comparison websites. In France, Germany, Italy, and Spain at least three comparison websites for vehicle fuel prices were identified. The notable exception among the large markets is the United Kingdom, where only one properly functioning and available-to-all price comparison website could be identified.
3. Mystery shoppers found that 27 of the 60 comparison websites (45%) provided a clear explanation of the frequency of their price updates, and the indications recorded by mystery shoppers show that the most commonly reported update frequency was once per day (18% of the websites in the full sample). This was followed closely by a frequency of more than once per day (13%).
4. The most commonly reported source of price was crowd sourcing.⁶³ At the time of research more than half (32) of the 60 comparison websites relied on this data channel for some or all of their price data. Twenty-two of the comparison websites received some or all of their price data directly from

⁶² See Part 4 of this study for a detailed listing of results from the mystery shopping exercises.

⁶³ Crowd sourcing refers to functionality that allows users of the website to upload price data based on their observations of or visits to petrol stations. The uploading procedure may utilise SMS, a proprietary mobile phone application, or a form on the comparison website, among other potential methods.

petrol stations, while nine benefited from national regulations that require vehicle fuel retailers to notify relevant authorities of their prices.

5. Mystery shoppers noted very extensive market coverage on 40% of the comparison websites, with fairly extensive coverage on another 37%. The remaining 23% of the websites provided fairly limited (13%) or very limited (10%) coverage.
6. Mystery shoppers assessed more than one third of the reviewed websites as very user-friendly (34%), and another 43% as fairly user-friendly. Only 5% were reported to be not at all user friendly, and 18% were seen by mystery shoppers as not very user-friendly.
7. Price comparisons were rated very easy on the majority of the comparison websites (60%) and fairly easy on a sizeable minority (20%). However, this process was assessed as fairly or very difficult on one fifth (20%), with price comparisons being deemed very difficult on 13% of the websites.
8. Findings on the prevalence of multi-lingual functionality, as well as market coverage, make it clear that most of the comparison websites in this sample were designed for one national market or a portion of that market.
9. An indication of belonging to an accreditation scheme or display of an online trustmark was absent on 58 of the 60 websites (97%), while one website in the Netherlands provided information on an accreditation scheme or trustmark that was assessed as potentially relevant but unclear by a mystery shopper.
10. Mystery shoppers indicated that they found the vast majority (70%) of the comparison websites helpful in terms of allowing for an informed fuel purchasing decision, though they strongly agreed with this statement for only 20% of the websites.

4.4.1 Availability of websites that compare prices for vehicle fuels

During the comparison website evaluation, which was part of the mystery shopping exercise, up to three websites per country that allow for the comparison of vehicle fuel prices were evaluated. In total, 60 comparison websites were evaluated by the mystery shoppers. However, it was not possible – either through pre-exercise desk research or in-exercise searches by the mystery shoppers – to identify three such comparison websites in all 29 countries subject to this study.

The larger markets tended to be serviced by more comparison websites. In France, Germany, Italy, and Spain at least three comparison websites for vehicle fuel prices were identified. The notable exception among the large markets is the

United Kingdom, where only one properly functioning and available-to-all price comparison website could be identified.⁶⁴

In some countries – Belgium, Bulgaria, Czech Republic, Iceland, Ireland, Latvia, Luxembourg and Malta – only one relevant comparison website could be identified. The only country for which a functioning comparison website for vehicle fuel prices could not be identified was Slovenia. This is quite possibly due to the specificities of the Slovenian vehicle fuels market in which fuel prices are regulated by the government and thus change relatively infrequently.⁶⁵

On 31% of the comparison websites sampled there was no (23%) or unclear (8%) information about the type of organisation operating the website. Forty-seven percent of the 60 websites indicated being run by a private company, while 12% reported being operated by a public authority (six national ministries and one regulatory authority) and 7% by an automobile club or association. The remaining 3% of comparison websites indicated being operated by another type of organisation.

4.4.2 Price data acquisition, accuracy and update frequency

This sub-section examines the comparison websites' practices for the acquisition, safeguarding and updating of price data.

As the figure below makes visible, the most commonly reported source of price data among this sample of comparison websites was crowdsourcing.⁶⁶ Indeed, at the time of research more than half (32) of the 60 comparison websites relied on this data channel for some or all of their price data.

Twenty-two of the comparison websites received some or all of their price data directly from petrol stations, while nine benefitted from regulations enacted in their country of operation that require vehicle fuel retailers to notify their prices. The countries in which mystery shoppers found notices on the comparison

⁶⁴ Other fuel price comparison websites were identified in the UK, but they required paid membership or were not deemed usable.

⁶⁵ In Slovenia, fuel prices are set in accordance with the Regulation on the Price Methodology for Petroleum Products, which entered into force on 9 October 2010. In this regulation, the model-based margin for government-regulated petroleum products is set at a fixed amount (EUR 0.08363 for a litre of petrol, EUR 0.07841 for a litre of diesel fuel and EUR 0.05162 for a litre of extra light heating oil).

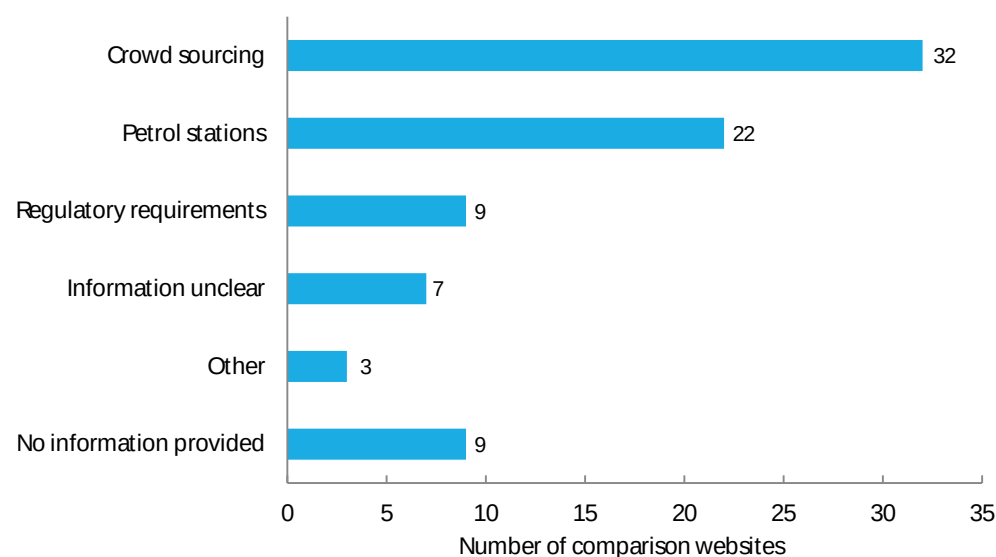
⁶⁶ Crowdsourcing refers to functionality that allows users of the website to upload price data based on their observations of or visits to petrol stations. The uploading procedure may utilise SMS, a proprietary mobile phone application, or a form on the comparison website, among other potential methods.

website(s) of regulatory requirements for their source of price notification were Greece, Spain, France, Cyprus, Austria and Portugal.⁶⁷

For example, in Greece, Paragraph 4 of Article 82 of the market regulations 7/2009 (Government Gazette 1388/V/09) as amended and supplemented by Presidential Decree (PD) 5/2010 (Government Gazette 975/V/10) state that petrol station operators must notify the retail prices of fuel, along with any change in retail prices within seven days of the last update, even if they have not changed, using online or SMS services.

Figure 19. From which source(s) does the comparison website acquire its data?

Source: Civic Consulting comparison website evaluation, Question 22. (N=60)
Note: Multiple answers possible.



Mystery shoppers also reported indications of other data sources on three of the comparison websites. These sources were, for two of the Greek websites, the Ministry of Development, which is the entity that collects the price data petrol stations are required to submit in Greece, and, for one Italian website, the national statistical office.

On seven of the comparison websites data sourcing information was provided but unclear, and nine of the websites did not discuss their data sources. Mystery shoppers recorded some comments regarding the websites with unclear explanations:

- ▶ One website in Cyprus vaguely mentioned "research";
- ▶ A website in Finland reported that it utilised crowdsourcing but the mechanisms were regarded as unclear (they involved an iPhone

⁶⁷ Near the end of 2012, new legislation was enacted in Germany which establishes a 'Market Transparency Agency' (*Markttransparenzstelle für Kraftstoffe*) and requires fuel retailers to notify their prices. The effect that these changes will have on the market, and fuel prices more specifically, remains to be seen. (For more details, see: <http://www.germanenergyblog.de/?p=11333>).

application and perhaps the ability to input prices in a protected part of the website reserved for registered users);

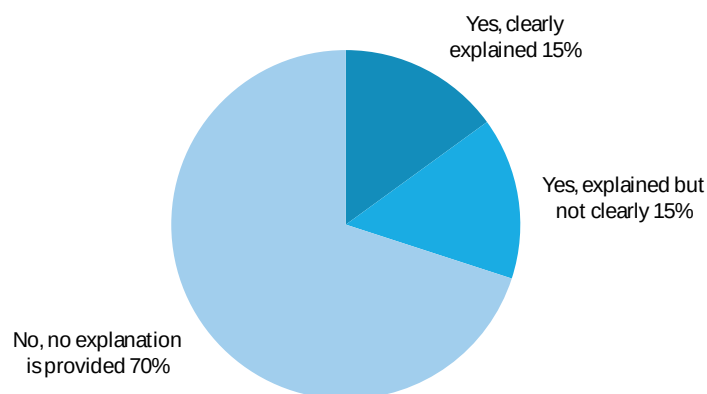
- ▶ Data for one of the websites in Malta was based on several third party sources, including user-supplied prices;
- ▶ One of the websites in the Netherlands, which was run by a car leasing company, noted that its fuel information was based on data from, on average, 250,000 fill-ups;
- ▶ A website in Sweden made use of crowdsourcing but supplemented this source with 'guideline' prices from the retailers' websites.

Other comments recorded by the mystery shoppers show that a number of comparison websites operated by automobile associations or private / unknown owners in Austria, Cyprus, Greece and Spain relied on price data collected by a ministry or other public authority in their country. As mentioned above, in all of these countries, petrol stations are generally required to notify changes in fuel prices.

According to mystery shoppers, 15% of the comparison websites, including websites in Belgium, Spain, France, Lithuania, Poland, Portugal, Romania and Sweden, clearly explained how they safeguarded the accuracy of their vehicle fuel price data. An additional 15% of the websites provided an explanation of this aspect of their operating procedures, but mystery shoppers regarded these explanations as unclear. No discussion of data safeguarding policies was presented on the remaining 70% of the comparison websites.

Figure 20. Is it explained how the comparison website safeguards the accuracy of its data on fuel prices?

Source: Civic Consulting comparison website evaluation, Question 23. (N=60)



Where mystery shoppers noted clear explanations of data safeguarding practices these included:

- ▶ Disclaimers indicating that the website could not take responsibility for or guarantee the accuracy of data because prices were user-generated (i.e.

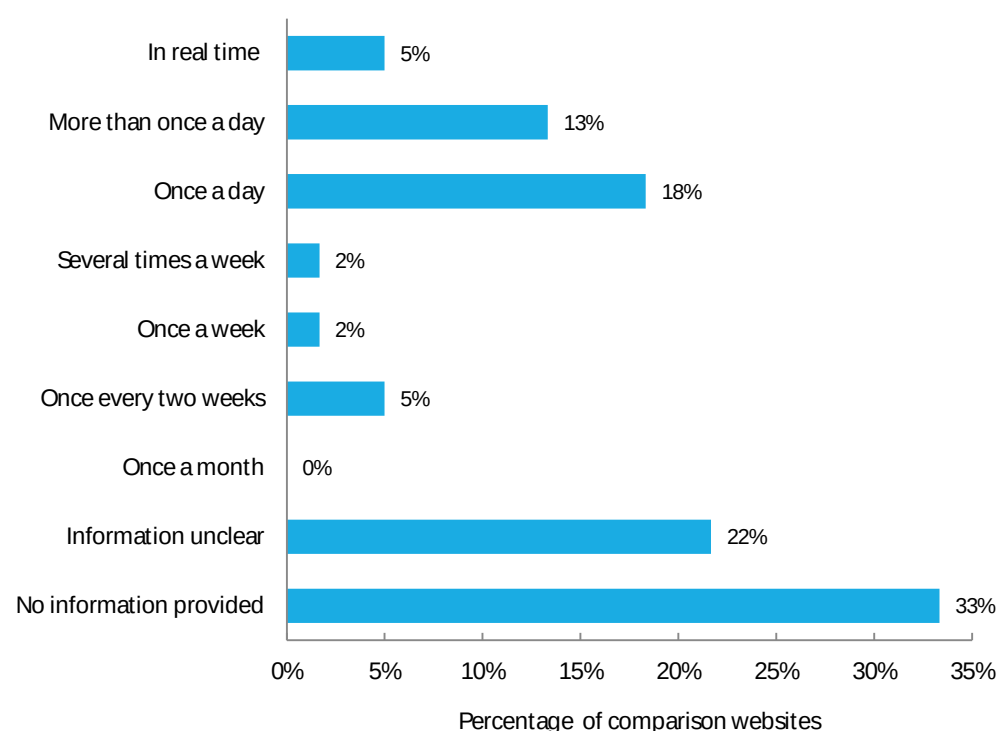
crowdsourced); in some cases these websites encouraged their users or members to correct mistakes, or attempted to limit potential mistakes by restricting who could update prices;

- ▶ Notifications – by a pair of websites utilising crowdsourcing – that though they could not guarantee the accuracy of the price data they did have computer systems in place to monitor suspicious prices;
- ▶ Indications on three websites across Spain, France and Portugal that price data was comprehensive and accurate because petrol stations are required by regulation to notify prices.

Mystery shoppers were also asked to report the frequency of price updates, as according to the information provided by the comparison website.

Figure 21.
Frequency of price updates, according to the information provided on the website

Source: Civic Consulting comparison website evaluation, Question 25. (N=60)



As can be seen in the figure above, 27 of the sixty comparison websites (45%) provided a clear explanation of the frequency of their price updates,⁶⁸ and the

⁶⁸ Although this means that mystery shoppers were unable to locate an explanation of update frequencies on more than half (55%) of the comparison websites, the percentage of websites providing information on the frequency of updates is markedly higher than that found by Civic Consulting among a previous sample of 81 comparison websites covering the Internet service provision market. In that earlier sample, only 10% of comparison websites reported on the scheduling of their price updates (see Civic Consulting, *Consumer market study on the functioning of the market for Internet access and provision from a consumer perspective*, Executive Agency for Health and Consumers, European Commission, 2012, p.112).

indications recorded by mystery shoppers show that the most commonly reported update frequency was once per day (18% of the websites in the full sample). This was followed closely by a frequency of more than once per day (13%).

Five percent of the websites reported the capacity for real-time updating of prices, but another 5% fell toward the other end of the scale, reporting only twice-per-month price updates. At the time of the exercise, the remaining 4% of the websites were revising prices several times per week (2%, 1 website) or once per week (2%, 1 website). Notably, none of the websites reported updating prices less frequently than once every two weeks. Assessing those websites that provided information, this results indicate that the majority – 55% – of comparison websites who provided information updated prices at least once a day.

Restricting the sample to the 27 websites that did report the frequency of their price updates reveals that more than 4 in 5 (81%) indicated a frequency of at least once per day, while 2 in 5 (41%) reported continuous or multiple price updates per day. Of the remaining 19% of the websites in this limited sample, 8% were updating prices at least once a week and 11% were doing so once every two weeks.

The websites which indicated that they provided real-time price updates were located in Austria, Denmark and Portugal. The Austrian and Portuguese websites are based on the regulatory requirement that stations notify their prices, and it was thus feasible for these websites to provide continuous updates.⁶⁹

As mentioned above, this price notification requirement was also noted on comparison websites in Greece, Spain, France and Cyprus, and thus one would expect some of the comparison websites in these countries to also be capable of providing frequent price updates. Indeed, one of the comparison websites in Greece reported that it updates prices more than once per day. Meanwhile, the mystery shoppers for Spain and France reported that the comparison websites provided no or unclear information about the frequency of updates, but given that one comparison website in both of these countries is run by a public authority with access to the price notification data, updates are likely quite frequent. Finally, the comparison websites in Cyprus reported less frequent price updates (once a month).

The price regulation and notification system in Austria is unique in that retailers are only permitted to increase their fuel prices once per day at noon. Then, they must submit the new price to the official database by ten-past the hour. Otherwise, retailers are free to lower prices as often as they want, and they are allowed longer, 30-minute windows in which to notify these price decreases.

⁶⁹ Please note that no comparison websites from Slovenia were reviewed.

Because the website is updated in real-time (except for the 10-minute window at noon during which prices are taken off the website to avoid comparisons between new and old data), consumers have access to complete and current data.⁷⁰

In contrast, the website in Denmark used crowd sourcing for its data acquisition. In reporting real-time updates it thus appeared to be referencing the ability to continuously feed user-reported prices into its price database.

At the time of research, findings indicated that consumers in Austria, Germany, Estonia, Greece, Iceland, Italy and Lithuania had access to at least one comparison website that updated its prices more than once per day. Comments provided by mystery shoppers in relation to some of the websites that provided unclear information about their update frequencies suggest that this was also the case in some additional countries such as Poland, Sweden, Bulgaria, and Spain (especially if one considers non-comprehensive updates based on crowdsourcing (i.e. several websites appeared to update prices as soon as they were reported by a user).

4.4.3 Accuracy and comparability of price observations

Mystery shoppers were also invited to assess the level of difficulty involved in determining whether price observations were up to date.

Again, the comparison websites generally performed well. On almost three quarters of the websites (72%) it was very easy to determine how up-to-date the price observations were, according to the mystery shoppers. On a further 10% of the websites, this process was regarded as fairly easy. Still, nearly one fifth of the websites (18%) rendered it fairly difficult (10%) or very difficult (8%) to establish the age of the price observations they presented.

By examining the comments associated with those websites which were most positively assessed by mystery shoppers on this criterion, we can identify a range of ways in which it is possible to provide a clear indication of how recent price observations are, such as:

- ▶ Consistent inclusion of date and / or time stamps next to each price observation;
- ▶ A calendar showing all observation dates and times presented on the main page of a comparison website;

⁷⁰ The website is run by E-Control Austria, a public authority charged with regulation of the Austrian energy markets. According to an interview conducted with a representative of E-Control Austria for this study, the website garners half a million page views per month, or between 10,000 and 20,000 per day, with some peaks in visitor traffic near public holidays. The price notification regulations pertain only to regular petrol 95 ('Super' in Austria) and regular diesel fuel.

- ▶ Automated time settings which report the time of the last update to the website;
- ▶ Option to see price observation from the last day, last two days, etc. up to the past weeks' worth of observations, with an exact date attached to each result;
- ▶ Indication of the date / time of the observation as well as the user name of the person who entered the price data;
- ▶ Symbols, in addition to the date stamp, which mark the recently updated price observations.

The comments provided by mystery shoppers also allow us to see the factors which led to negative assessments regarding the information on price data updates. Predictably, the absence of any relevant explanation or information was cause for concern on the part of several mystery shoppers. It was also deemed problematic when information on the price updating schedule could only be found on the 'frequently asked questions' page of a website and when the date / time of the observations was written in extremely small font beneath the prices.

Other approaches negatively assessed by the mystery shoppers included:

- ▶ Having to click on a specific price in order to see its observation date, with that date then being difficult to pick out from a conglomeration of other information;
- ▶ The display of a vague statement indicating that prices are up-to-date without specification of actual dates;
- ▶ The use of unexplained colour coding that appeared to be somehow related to the dates of price observations;
- ▶ Appearance of a question mark instead of a concrete time indication like 'today' or 'yesterday'.

Mystery shoppers then assessed whether it was easy or difficult to compare fuel prices.

Price comparisons – the centrepiece of the service provided by these websites – were rated very easy on the majority of the websites (60%) and fairly easy on a sizeable minority (20%). However, the price comparison process was assessed as fairly or very difficult on one fifth (20%) of the websites, with comparisons being deemed very difficult on more than 1 in 10 (13%) of the websites.

Several factors were mentioned by mystery shoppers as contributing to the difficulty of fuel price comparisons:

- ▶ Prices based on volumes other than a litre of fuel, e.g. the savings per 60 litres;

- ▶ Inability to rank the search results by price;
- ▶ Inability to search for prices in the capital city;
- ▶ Insufficient number of recent price observations, i.e. prices from the last week;
- ▶ Failure to specify the default search result ranking, the dates of prices, and whether the observations pertain to regular or premium fuel types;
- ▶ The listing of non-existent stations and price observations that were up to five years old in the default search results.

4.4.4 Market coverage

Mystery shoppers noted very extensive market coverage on 40% of the comparison websites, with fairly extensive coverage on another 37%. The remaining 23% of the websites provided fairly limited (13%) or very limited (10%) coverage.⁷¹

These proportions are similar to those quote for the user-friendliness criterion above, but the proportion of the top rating ('very extensive coverage') falls well short of the rate at which mystery shoppers assigned equivalent ratings to other factors such as fuel type identification, discernibility of the price updating schedule and price comparability.

Several factors appeared to contribute to assessments of fairly or very limited market coverage. One of these was an obviously low number of stations. For example, at the time of the comparison website evaluation exercise one website had listings for less than 10 stations across the entire country.⁷² This effectively rendered meaningful price comparisons impossible. Similarly, a comparison website in another country only covered one leading brand.

On other comparison websites it appeared that some or all of the major brands were absent from the price listings. The comparison websites for one of the Scandinavian markets were thought by the mystery shopper to cover a limited number of stations / prices, and in another case, a comparison website only allowed specific location searches for the capital city and only covered two fuel types (regular diesel and regular petrol). In a final case, a comparison website covered approximately 45 petrol stations in the capital city, whereas the mystery shopper had previously located 80 stations in that city.⁷³ Moreover, no price information was provided for many of the 45 listed stations.

In contrast, many of the comparison websites in those countries which require vehicle fuel retailers to notify their prices were seen by mystery shoppers as offering near-universal market coverage. Comments to this effect were recorded for several comparison websites in Austria, Cyprus, Greece, Spain and Portugal. The mystery shopper for the Netherlands also estimated that almost all of the available petrol stations appeared on two of the evaluated websites.

⁷¹ As an indicator of market coverage, mystery shoppers were asked to consider the various retailer brands present in the lists of petrol stations that they had compiled and called by phone to request fuel prices (see Part 3 for details). Due to this exercise, mystery shoppers were highly familiar with the range of retail brands present in the country they were researching and thus in a position to assess the extent to which the comparison websites covered these companies.

⁷² This comparison website was apparently brand new – it appeared to go live on the Monday or Tuesday of the week in which the mystery shopping exercise was conducted.

⁷³ In preparation for the phone-based price collection exercise. See Section 6 for details.

4.4.5 Language availability and market coverage on comparison websites

Findings on the prevalence of multi-lingual functionality, as well as market coverage, make it clear that most of the comparison websites in this sample were designed for one national market or a portion of that market.

More specifically, only 12% of the comparison websites were available in multiple languages, which means that nearly 9 in 10 (88%) could only be used in one language.

Those comparison websites with multi-lingual interfaces tended to offer one language in addition to the primary / national language of the country they served. So, for example, an Estonian website and a Latvian website were also available in Russian; the Icelandic comparison website was also presented in English, as was an Italian website; and the website evaluated for Malta offered its services in German and Portuguese. The Belgian comparison website was available in both Dutch and French, and it was a Spanish website which provided by far the widest array of languages: Spanish, Catalan, Basque, Galician, English, German, French and Italian.

Less than one in six of the websites (15%) allowed mystery shoppers to search for prices in multiple countries – 85% of the websites were singularly focused on a particular national market or regions within a country.

Among those websites which did cover multiple markets, three allowed for price searches across Belgium, France and Luxembourg.⁷⁴ The comparison website evaluated in Malta could also be used in many other countries, but it was clear to the mystery shopper that the comparison tool focused on the fuel markets in Germany, Ireland, Portugal and the United Kingdom. It was also reported that one of the Slovakian comparison websites allowed price searches in several countries, including Austria, Italy, Hungary, Poland and Slovenia, as well as a few non-EU countries.

Another four comparison websites (one each in Bulgaria, Finland, Lithuania and Slovakia) were reported to provide separate, non-searchable tables or lists containing specific or average prices in other countries; in three of these four cases the price lists covered the EU27, while the Finnish comparison website in this group presented price data for a wider array of European countries and Taiwan.

⁷⁴ These three comparison websites appear to be operated by the same company. Notably, though, the three websites have unique Web addresses, and while the design of the websites is highly similar, they are identifiably 'different' websites.

4.4.6 Membership in accreditation schemes, trustmarks and codes of conduct

An indication of belonging to an accreditation scheme or display of an online trustmark was absent on 58 of the 60 websites (97%), while one website in the Netherlands provided information on an accreditation scheme or trustmark that was assessed as potentially relevant but unclear by a mystery shopper. This comparison website identified itself as a service of a major car leasing company which, in turn, was owned by one of the country's largest financial services providers.

The one comparison website which clearly reported its participation in an accreditation scheme or online trustmark served the Greek market. In fact, it indicated that it was accredited by multiple organisations – the European Association of Directory and Database Publishers (EADP), the Athena Research Centre and the University of Athens (*EKΠΑ*); however, no links were provided by the comparison website to these organisations.

Similarly, no indication of participation in an industry code of conduct could be found on 57 of the 60 comparison websites (95%). The 3 remaining websites (5%) provided some potentially relevant information but it was deemed unclear by the mystery shoppers. Notably, all three comparison websites were located in Austria – the mystery shopper was unsure whether their public status or registration with the Interior Ministry constituted participation in a code of conduct.

These findings of nearly non-existent participation in accreditation schemes and industry codes of conduct are generally in line with previous research on comparison websites carried out by Civic Consulting,⁷⁵ though these participation rates were slightly higher among a sample of 81 Internet service provision comparison websites evaluated in 2011. In that sample, 11% of the comparison websites indicated that they belonged to an accreditation scheme and 5% to an industry code of conduct.

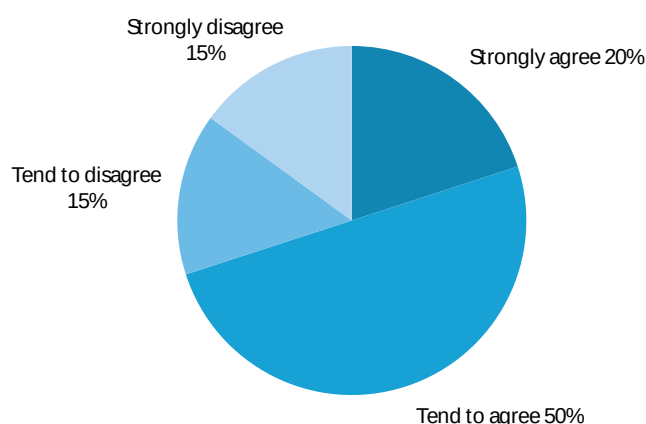
4.4.7 Assessment of overall usefulness

The final assessment question aimed at determining whether mystery shoppers thought the comparison websites constituted useful decision-making tools for consumers.

⁷⁵ See Civic Consulting (2013).

Figure 22. Mystery shoppers' level of agreement with the following statement: "I found this CW to be useful in allowing me to make an informed choice".

Source: Civic Consulting comparison website evaluation, Question 49. (N=60)



Mystery shoppers indicated that they found the vast majority (70%) of the comparison websites helpful in terms of allowing for an informed fuel purchasing decision, though they strongly agreed with this statement for only 20% of the websites. On the other side of the scale, mystery shoppers tended to disagree with application of the statement 'useful in allowing an informed choice' to 15% of the websites, and they strongly disagreed with applying this statement to another 15%.

Several of the comments recorded by mystery shoppers about those comparison websites which were regarded as useful in allowing an informed choice ably summarise the characteristics of well-performing websites:

"The website was easy to navigate and seemed reliable and transparent when it came to up-to-date prices and their source".

"Very easy to use, can be sorted by fuel type, great interface, detailed addresses for gas stations, maps available, price history for every [station]".

"The CW provides information on the prices of all fuel types available in the country. The user can select one fuel type and then his/her location in order to get the cheapest petrol stations in the area. If brand is relevant for the choice, the user can also refer the search to branded petrol stations, so the CW will only show stations of that specific brand in the specific area. The prices on this website are up to date".

"[It has a] comprehensive list of stations, updated prices (prices that are more than 6 days old seem to be removed from the list). It shows the location of the station on the map, which is very useful, [there is] just the right amount of information shown on the main search results page (name of station, price, address, date), and by clicking on "more information" you

can see which other fuels are available at that station and the history of prices in the last year".

An oft-mentioned problem with those websites which were regarded by mystery shoppers as not aiding in an informed choice was that their price data was obsolete. This issue was highlighted in comments associated with websites in three countries. Along similar lines, a website in a fourth country only presented average prices for one brand, a methodology seen as not contributing to an informed choice.

About one comparison website, a mystery shopper stated that although the website was labelled a comparison site it essentially did not offer this service because the "...results are mixed up for the whole country, the results are not dated, and no difference between regular and premium fuel" is specified. This mystery shopper reported that "as a consumer [on this website] I am not informed at all and I can't compare fuel prices". Another mystery shopper also reported that one of the evaluated websites would likely lead inexperienced users toward an incorrect decision about where to buy cheap fuel, because "it does not really work as a tool to find cheap petrol stations, it only helps to compare [general] prices between different fuel types and to see how prices in a specific station develop".

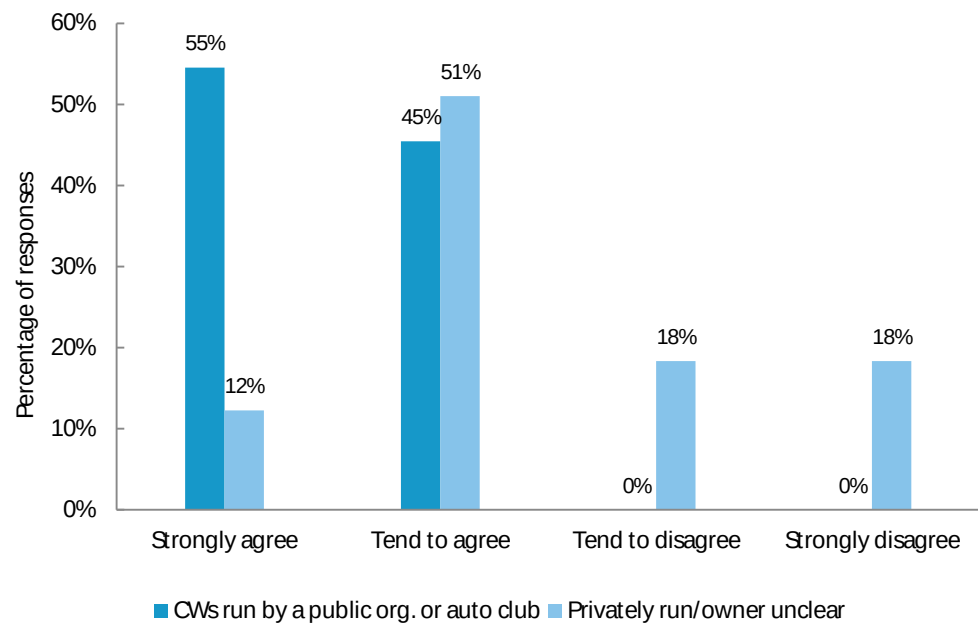
Two of the evaluated websites in another country suffered from lacklustre crowd sourcing, reported a mystery shopper, with users providing price updates too infrequently for the website to allow up-to-date decision-making. This mystery shopper also noted that these websites provided almost no other information about vehicle fuels or individual petrol stations, e.g. whether one could pay with a credit / debit card or if there was a restaurant / store available. The third comparison website in this country was also found insufficient in terms of allowing informed decision-making because the information provided was again not up-to-date. Some prices were listed from seven months prior, and since they were the lowest prices they appeared at the top of the search results. The website used both crowd sourcing and price collection from the websites of fuel retailers, but prices collected through both methods were found to be outdated.

4.4.7.1 Comparative assessment of overall usefulness

On the question of the overall usefulness of the comparison websites in allowing an informed choice in the vehicle fuels market, mystery shoppers found that the websites run by public authorities or automobile clubs performed substantially better.

Figure 23. Mystery shoppers' level of agreement with the following statement: "I found this CW to be useful in allowing me to make an informed choice" – comparative analysis

Source: Civic Consulting comparison website evaluation, Question 49. (N=60)



As is visible above, 100% of the public / automobile club websites received positive ratings on this criterion, with 55% of them receiving the highest rating. On the other hand, only 12% of the privately run websites received the strongly agree assessment, and, in total, 63% were assessed positively. More than one third (36%) of the privately run websites received a negative assessment from the mystery shoppers, with half of these receiving the lowest possible rating.

5 CONSUMER UNDERSTANDING AND DECISION-MAKING

Section 5 of the report examines consumer understanding and decision-making in the vehicle fuels market. Considered first are consumer perspectives on the market and understanding of it (Section 5.1). Subsequently, decision-making with respect to selection of a fuel retailer and fuel type (Section 5.2) is analysed.

5.1 MARKET PERSPECTIVES AND KNOWLEDGE

This section examines knowledge of the market from a consumer perspective. That is, this section explores whether consumers are aware of their choice between fuel types, their understanding of fuel labelling, and the use of biofuels.

The key findings of this section are:

1. Among consumer survey respondents, perceptions toward premium fuels are mixed: whereas 24% agree with the claim that premium fuels are superior in quality to regular fuels and 21% agree with the claim that they considerably improve the performance of the engine or vehicle, 47% agree with the claim that premium fuels are too expensive and 8% agree with the statement that premium fuels offer no benefits relative to regular fuel types. In total, 39% of respondents agree with at least one of the positive claims about premium fuels, while 54% of respondents agree with at least one of the negative claims, and 27% say that they have never used premium fuel.
2. Respondents who are more knowledgeable about fuels are more likely to agree with the alleged disadvantages of biofuels, for example that they are taking land away from food production (62% of those in the 'most knowledgeable' group, compared with 44% of those in the 'more knowledgeable' group and 31% in the 'least knowledgeable' group).
3. Regarding claimed advantages of biofuels, the main advantages perceived by respondents are that biofuels make us less dependent on oil (50%), that they are better for the environment than fossil fuels because they produce fewer air polluting emissions (47%), and that they are renewable, whereas fossil fuels will run out (46%). On the other hand, 15% did not agree with any of the claimed advantages of biofuels.⁷⁶

⁷⁶ The related question in the consumer survey was as follows: "In your opinion, which of the following are the main ADVANTAGES OF BIOFUELS for vehicles? Please indicate up to three advantages, if any. Biofuels..." Answers: a) Are better for the environment than fossil fuels because they produce fewer air polluting emissions b) Are renewable, whereas

4. In the three countries where E10 fuel is widely available (i.e. France, Germany and Finland), the percentage of consumer survey respondents indicating that biofuels have no advantage is, at 29%, substantially higher than the EU average; however, this is due to the high percentage of respondents in Germany reporting this opinion because the percentages for Finland and France are broadly similar to the EU average.
5. Regarding alleged disadvantages of biofuels, consumer survey respondents are most likely to agree with the claim that they are taking land away from food production (40%) and that they are too expensive (38%), while 23% agree with the claim that they lead to the destruction of the rainforests, and 22% that they worsen engine or vehicle performance.
6. Respondents who are more knowledgeable about fuels are more likely to agree with the claimed disadvantages of biofuels, for example that they are taking land away from food production (62% of those in the 'most knowledgeable' group, compared with 44% of those in the 'more knowledgeable' group and 31% in the 'least knowledgeable' group).
7. Generally knowledge of the market is low according to the results of the assessment question: each of the three true statements was correctly identified only by between 25% and 30% of respondents, while each of the false statements was wrongly indicated as correct by at least 15% of respondents. Overall, only 2% of consumer survey respondents correctly identified the three true and three false statements, while just 9% only made one mistake, either by not selecting a true statement or indicating a false one. In the majority of cases (85%), respondents made between two and four mistakes. The 'trick' statement – 'None of the listed statements are correct' – was selected by 25% of respondents.
8. Among potentially vulnerable consumer groups, older respondents are more likely to be in the 'least knowledgeable' group based on the assessment question: 45% of those aged 55 or over and 46% of those aged 40-54, compared with 42% of 25- to 39-year-olds and 37% of 18- to 24-year-olds. This finding may reflect unfamiliarity with newer fuel types among older respondents, as several of the assessment questions pertained to fuels like E10 and B7 with biofuel content.
9. A majority of stakeholders considered it at least fairly easy (86%) to recognise labels and identify fuels, with a similar amount (76%) indicating that it was at least fairly easy to check the compatibility of different fuel types with their vehicle. However, more detailed technical aspects were not considered to be easy to compare, and in particular 45% of stakeholders

fossil fuels will run out c) Help to support farmers in [MY COUNTRY] d) Help to support farmers in developing countries e) Improve engine/vehicle performance f) Make us less dependent on oil g) Biofuels have no advantages h) Other i) Don't know.

indicated that reaching an understanding of the effects of particular fuel types on the environment was 'not at all easy'.

5.1.1 Perspectives on premium fuels

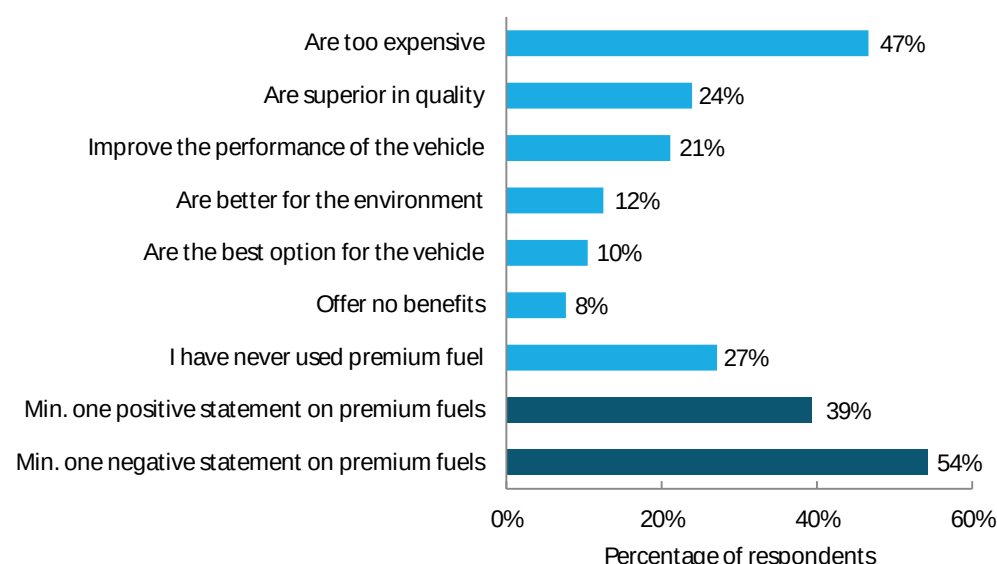
Consumer survey respondents were asked for their opinion and understanding of premium fuels, biofuels, as well as their general knowledge of the market. These results are presented in order below.

Respondents were asked whether they agreed with a number of positive and negative claims about premium fuels (see figure below). Of the positive claims, 24% agree with the claim that premium fuels are superior in quality to regular fuels and 21% agree with the claim that they considerably improve the performance of the engine or vehicle. In total, 39% of respondents agree with at least one of the positive claims about premium fuels.

Around half of respondents agree with the claim that premium fuels are too expensive (47%). Notably, 8% of respondents agree with the other negative claim, specifically that premium fuels offer no benefits relative to regular fuel types. In total, 54% of respondents agree with at least one of the negative claims. Around one in four (27%) say that they have never used premium fuel.

Figure 24.
Perspectives on
claims about
premium fuels

Source: Consumer
survey, Question 5:
Below, please indicate
all statements with
which you agree.
Compared to regular
fuels, premium fuels...
(N= 25797, EU27)
Note: Multiple answers
possible.



Responses were also compared on a per-country basis, as can be seen in the next table. Respondents in Romania (74%), Greece (71%) and Bulgaria (70%) are most likely to agree with at least one of the positive claims about premium fuels, while agreement with one or more of the negative claims is also high in Greece (65%), as well as in Portugal (64%) and Germany (60%).

In some countries, a high proportion of respondents has never used premium fuel: Malta (81%), Sweden (55%), Denmark (51%), Iceland (49%) and Norway (49%). Overall, respondents in EU12 countries are more likely than those in EU15 countries to agree with at least one of the positive claims (60% compared with 34%), and are less likely to agree with at least one of the negative claims (50% compared with 55%).

In general, views tend to be more positive in countries where use of premium fuel is more prevalent. Use of premium fuel is relatively high in Romania, Greece and Bulgaria, where views are more positive, while in Portugal and Germany (where views are more negative), use of premium fuel is lower than average.

Table 40.
Perspectives on
claims about
premium fuels,
analysis by country

Source: Consumer
survey, Question 5:
Below, please indicate
all statements with
which you agree.
Compared to regular
fuels, premium fuels...
(N= 25797 for EU27)
Note: Multiple answers
possible.

		Are too expensive	Are superior in quality	Considerably improve perf. of engine / vehicle	Are better for the environment	Total 'At least one positive statement'	Total 'At least one neg. statement'	I have never used premium fuel
EU27		47%	24%	21%	12%	39%	54%	27%
EU15		47%	20%	17%	10%	34%	55%	29%
EU12		46%	38%	36%	23%	60%	50%	18%
Countries with E10		45%	17%	12%	6%	26%	58%	32%
 BE		42%	13%	11%	10%	26%	54%	32%
 BG		47%	49%	45%	27%	70%	52%	12%
 CZ		35%	38%	33%	12%	56%	37%	29%
 DK		26%	11%	13%	9%	22%	36%	51%
 DE		45%	12%	9%	4%	19%	60%	32%
 EE		30%	29%	20%	16%	40%	38%	41%
 IE		36%	20%	19%	18%	40%	48%	28%
 EL		60%	36%	53%	22%	71%	65%	8%
 ES		51%	35%	26%	18%	52%	55%	22%
 FR		47%	24%	15%	9%	35%	56%	31%
 IT		52%	25%	22%	10%	43%	56%	24%
 CY		33%	22%	24%	18%	40%	36%	11%
 LV		22%	31%	18%	17%	42%	33%	39%
 LT		24%	17%	15%	20%	38%	32%	43%
 LU		44%	18%	19%	13%	32%	57%	27%
 HU		51%	46%	36%	21%	61%	54%	21%
 MT		3%	5%	4%	6%	10%	3%	81%
 NL		44%	4%	7%	8%	16%	54%	37%
 AT		44%	14%	10%	6%	22%	56%	35%
 PL		53%	27%	35%	25%	57%	57%	17%
 PT		47%	16%	17%	9%	29%	64%	25%
 RO		47%	52%	48%	28%	74%	50%	7%
 SI		26%	36%	22%	25%	50%	35%	31%
 SK		43%	45%	29%	21%	59%	47%	23%
 FI		33%	4%	14%	8%	28%	45%	40%
 SE		19%	8%	12%	11%	25%	29%	55%
 UK		47%	20%	16%	8%	32%	54%	32%
 IS		15%	7%	10%	5%	19%	36%	49%
 NO		19%	2%	14%	6%	20%	37%	49%

Socio-demographic differences and potentially vulnerable consumers

Examining socio-demographic characteristics (see table below for more specific details), men are more likely than women to agree with at least one of the negative claims about premium fuels (60%, compared with 49%), while women are more likely to say they have never used premium fuel (32%, compared with 22%). Agreement with one or more of the positive claims about premium fuels is higher among those who buy branded petrol frequently (46%, compared with 29% of those who infrequently or never do so).

Table 41.
Perspectives on
claims about
premium fuels,
analysis by socio-
demographic
characteristics

Source: Consumer survey, Question 5:
Below, please indicate all statements with which you agree. Compared to regular fuels, premium fuels... (N= 25797, EU27)
Note: Multiple answers possible

Sub-sample		Are too expensive	Are superior in quality	Considerably improve perf. of engine / vehicle	Are better for environment	I've never used premium fuel	Total 'At least one positive statement'	Total 'At least one negative statement'
Average	EU27	47%	24%	21%	12%	27%	39%	54%
Gender	Male	50%	26%	21%	12%	22%	40%	60%
	Female	44%	22%	21%	13%	32%	38%	49%
Age	18-24	47%	27%	21%	13%	25%	46%	52%
	25-39	52%	27%	22%	12%	22%	43%	58%
	40-54	49%	24%	21%	13%	25%	39%	57%
	55+	40%	20%	20%	13%	33%	35%	50%
Percentage of monthly income spent on fuel	1 - 5%	43%	19%	16%	9%	34%	31%	52%
	6 - 10%	49%	24%	21%	12%	25%	40%	57%
	11 - 20%	51%	27%	25%	15%	20%	46%	58%
	21% or more	51%	28%	29%	15%	20%	48%	58%
Buys fuel in another EU country	Frequently	47%	31%	26%	17%	16%	54%	52%
	Regularly	45%	29%	22%	21%	17%	48%	54%
	Rarely / Never	47%	23%	21%	12%	28%	38%	54%
Buys branded fuel	Frequently	46%	28%	26%	15%	25%	46%	52%
	Infrequently / Never	48%	17%	14%	8%	30%	29%	58%
Place of Residence	Rural area	47%	20%	17%	9%	30%	33%	55%
	Urban area	46%	24%	22%	13%	28%	40%	53%
	Metropolitan area	48%	27%	24%	15%	24%	44%	55%
Market knowledge	Least knowledgeable	44%	22%	20%	11%	30%	37%	51%
	More knowledgeable	49%	26%	23%	14%	25%	42%	56%
	Most knowledgeable	50%	25%	19%	12%	22%	38%	62%

Perhaps surprisingly given the higher price, respondents who spend a larger share of their income on fuel are more likely to agree with at least one positive statement about premium fuels (48% of those who spend 21% or more of their income, falling to 31% of those who spend no more than 5%). This is mirrored by their actual choice of fuel: use of premium fuels is higher among those who spend a large proportion of their income on fuel (14% of those who spend 21% or more of their income, compared with 8% who spend 20% or less).

Respondents who are more knowledgeable about fuels are more likely to agree with at least one of the negative claims about premium fuels (62% of those in the 'most knowledgeable' group, compared with 56% of those in the 'more knowledgeable' group and 51% in the 'least knowledgeable' group).

Agreement with one or more of the positive claims about premium fuels is higher among those who buy fuel in other EU countries (54% who buy fuel abroad frequently and 48% who regularly do so, compared with 38% who rarely or never do so).

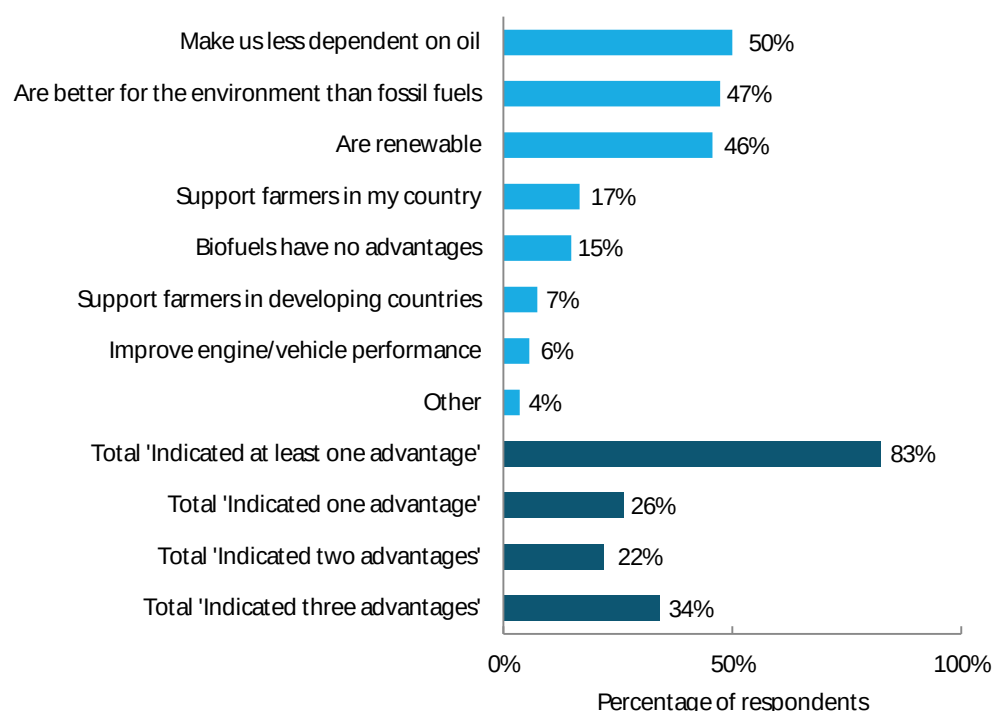
5.1.2 Perspectives on claimed advantages of biofuels

Respondents were asked in two separate questions what they thought were the main advantages of biofuels for vehicles, in each case choosing up to three claims from a pre-defined list of six (see figure below). They could also choose the option that "biofuels have no advantages".

The main advantages perceived by respondents are that biofuels make us less dependent on oil (50%), that they are better for the environment than fossil fuels because they produce fewer air polluting emissions (47%), and that they are renewable, whereas fossil fuels will run out (46%). One in three respondents (34%) report three advantages of biofuels (the maximum number possible), while 15% did not agree with any of the claimed advantages of biofuels.

Figure 25.
Perspectives on
claimed
advantages of
biofuels

Source: Consumer survey, Question 6: In your opinion, which of the following are the main advantages of biofuels for vehicles? Please indicate up to three advantages, if any. Biofuels... (N= 25797, EU27)
Note: Multiple answers possible.



Responses were also broken down by country and can be seen in the table, below. Respondents in Ireland (55%), Greece (53%), Bulgaria (52%) and Romania (50%) are most likely to indicate their agreement with three claims about the advantages of biofuels (the maximum number possible). The proportion that says an advantage of biofuels is that they make us less dependent on oil is highest in Denmark (68%), Finland (65%) and Portugal (65%), while respondents in Finland (67%) and Ireland (60%) are most likely to say they are renewable, whereas fossil fuels will run out. In Romania (70%), Hungary (68%) and Malta (67%), a relatively high proportion agrees with the claim that biofuels are better for the environment than fossil fuels because they produce fewer air polluting emissions. Respondents in Germany (40%), Austria (33%) and Luxembourg (33%) are least likely to agree with any of the claimed advantages of biofuels.

Overall, respondents in EU12 countries are more likely than those in EU15 countries to agree with claimed advantages of biofuels (43% and 32% respectively agree with three of the claims). Specifically, those in EU12 countries are more likely to agree with the claim that biofuels are better for the environment than fossil fuels because they produce fewer air polluting emissions and with the claim that they help to support farmers in their own country. In the countries where E10 fuel is widely available, the percentage of respondents indicating that biofuels have no advantage is, at 29%, substantially higher than the EU average (see following table); however, this is due to the high percentage of respondents in Germany reporting this opinion.

Table 42.
Perspectives on
claimed
advantages of
biofuels, analysis
by country

Source: Consumer survey, Question 6: In your opinion, which of the following are the main advantages of biofuels for vehicles? Please indicate up to three advantages, if any. Biofuels... (N= 25797 for EU27)
Note: Multiple answers possible.

		Make us less dependent on oil	Better for environ. because produce fewer air polluting emissions	Are renewable; fossil fuels will run out	Total 'Indicated at least one advantage'	Total 'Indicated one advantage'	Total 'Indicated two advantages'	Total 'Indicated three advantages'
	EU27	50%	47%	46%	83%	26%	22%	34%
	EU15	50%	45%	45%	81%	27%	22%	32%
	EU12	49%	56%	48%	88%	23%	23%	43%
	Countries with E10	44%	34%	37%	69%	26%	21%	23%
	BE	50%	49%	39%	83%	30%	21%	31%
	BG	62%	62%	53%	92%	17%	24%	52%
	CZ	34%	46%	39%	80%	29%	23%	28%
	DK	68%	61%	33%	89%	26%	27%	36%
	DE	35%	21%	33%	58%	27%	19%	12%
	EE	61%	48%	54%	85%	17%	21%	48%
	IE	60%	56%	60%	93%	23%	15%	55%
	EL	62%	61%	54%	96%	21%	22%	53%
	ES	53%	47%	55%	91%	30%	23%	37%
	FR	53%	51%	40%	83%	25%	23%	35%
	IT	58%	55%	47%	92%	32%	23%	36%
	CY	18%	42%	24%	59%	26%	13%	20%
	LV	46%	41%	29%	81%	26%	24%	31%
	LT	63%	57%	46%	91%	22%	24%	45%
	LU	42%	34%	33%	65%	25%	19%	21%
	HU	54%	68%	54%	95%	20%	30%	44%
	MT	29%	67%	32%	76%	25%	19%	32%
	NL	52%	48%	33%	78%	30%	23%	25%
	AT	42%	27%	34%	65%	25%	20%	20%
	PL	44%	47%	46%	85%	23%	21%	41%
	PT	65%	64%	57%	94%	23%	23%	48%
	RO	56%	70%	53%	94%	21%	23%	50%
	SI	55%	52%	54%	86%	22%	23%	41%
	SK	57%	59%	44%	92%	26%	23%	43%
	FI	65%	45%	67%	86%	19%	26%	41%
	SE	57%	54%	51%	86%	28%	20%	39%
	UK	48%	50%	55%	85%	26%	21%	38%
	IS	59%	51%	42%	84%	29%	16%	38%
	NO	43%	54%	48%	79%	28%	25%	26%

Socio-demographic differences and potentially vulnerable consumers

Examining socio-demographic characteristics, as can be seen in the table below, results found that women are more likely than men to agree with the claim that biofuels are better for the environment than fossil fuels because they produce fewer air polluting emissions (53% compared with 42%), while men are more likely than women to not agree with any of the claimed advantages of biofuels (18% compared with 12%).⁷⁷

Respondents who finished their education at an older age are more likely to say that an advantage of biofuels is that they are renewable, whereas fossil fuels will run out (47% of those who ended their education at the age of 20 or over, compared with 44% of those who ended their education between the ages of 16 and 19 and 39% of those who finished their education by the age of 15).

Respondents who frequently buy branded fuel are also more likely to agree with positive claims about the advantages of biofuels: 37% indicate three advantages (compared with 30% who infrequently or never buy branded fuel), and only 12% do not agree with any of the claimed advantages of biofuels (compared with 19%).

In addition, respondents who spend a larger proportion of their income on fuel are more likely to agree with the claimed advantages of biofuels, especially in being better for the environment because they produce fewer air polluting emissions (53% of those who spend 21% or more of their income on fuel, falling to 43% of those who spend no more than 5%).

Older respondents were more likely to perceive disadvantages to biofuels, such as agreeing with the claim that biofuels are taking land away from food production (49% of those aged 55 or over, falling to 29% of those aged 18-24). In contrast, older respondents are more likely to say that an advantage of biofuels is that they make us less dependent on oil (53% of those aged 55 or over, falling to 44% of 18- to 24-year-olds).

As regards their understanding of biofuels, respondents who are more knowledgeable about fuels are more likely to say they do not agree with any of the claimed advantages of biofuels (21% of those in the 'most knowledgeable' group, compared with 14% of those in the 'more knowledgeable' group and 15% in the 'least knowledgeable' group). As was the case with the claimed advantages and disadvantages of premium fuels, these findings suggest that greater knowledge leads to more negative, rather than more positive, views.

⁷⁷ Please refer to Part 2 of this study for more detailed breakdowns and analysis of this question.

Table 43.
Perspectives on
claimed
advantages of
biofuels, analysis
by socio-
demographic
characteristics

Source: Consumer survey, Question 6: In your opinion, which of the following are the main advantages of biofuels for vehicles? Please indicate up to three advantages, if any. Biofuels... (N= 25797, EU27)
Note: Multiple answers

Sub-sample		Make us less dependent on oil	Better for environ. because produce fewer air polluting emissions	Are renewable; fossil fuels will run out	Biofuels have no advantages	Total 'Indicated at least one advantage'	Total 'Indicated three advantages'
Average	EU27	50%	47%	46%	15%	83%	34%
Gender	Male	53%	42%	47%	18%	81%	34%
	Female	47%	53%	45%	12%	84%	34%
Age	18-24	44%	54%	50%	8%	89%	34%
	25-39	47%	50%	47%	11%	87%	32%
	40-54	51%	48%	46%	15%	82%	34%
	55+	53%	42%	43%	20%	78%	36%
Education (Age when stopped)	15 or younger	47%	50%	39%	14%	81%	34%
	16-19	49%	47%	44%	15%	82%	33%
	20 or older	51%	46%	47%	16%	82%	34%
	Still studying	50%	53%	52%	8%	90%	36%
Percentage of monthly income spent on fuel	1 - 5%	50%	43%	45%	19%	78%	31%
	6 - 10%	52%	46%	46%	15%	83%	35%
	11 - 20%	49%	48%	46%	12%	86%	35%
	21% or more	47%	53%	43%	12%	85%	38%
Buys branded fuel	Frequently	52%	50%	47%	12%	85%	37%
	Infrequently / Never	48%	44%	43%	19%	78%	30%
Market knowledge	Least knowledgeable	49%	49%	42%	15%	82%	33%
	More knowledgeable	51%	48%	48%	14%	84%	36%
	Most knowledgeable	51%	38%	49%	21%	77%	32%

5.1.3 Perspectives on claimed disadvantages of biofuels

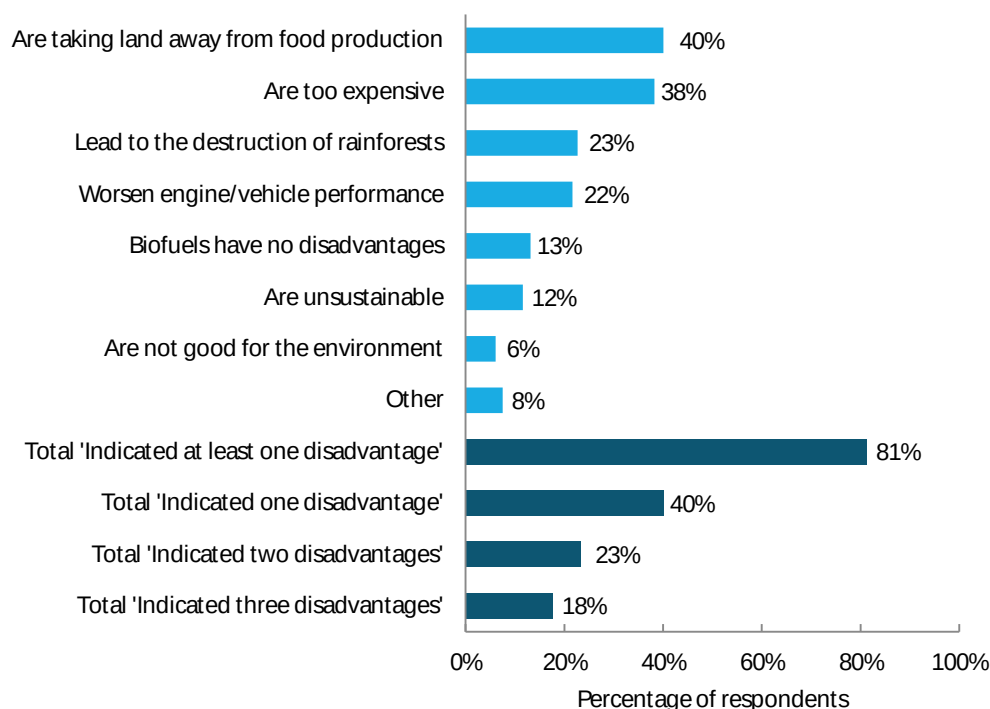
When considering the disadvantages of biofuels, respondents are most likely to agree with the claim that they are taking land away from food production (40%) and that they are too expensive (38%), while 23% agree with the claim that they lead to the destruction of the rainforests, and 22% that they worsen engine or vehicle performance.⁷⁸ In total, 18% of respondents indicate three of the claimed

⁷⁸ Question Q7: In your opinion which of the following are the main disadvantages of biofuels for vehicles? Please indicate up to three disadvantages, if any. Biofuels are taking land away from food production; are too expensive; lead to the destruction of rainforests; worsen engine/vehicle performance; biofuels have no disadvantages; other.

disadvantages of biofuels (the maximum number possible), while 13% do not agree with any of the claimed disadvantages of biofuels.

Figure 26.
Perspectives on
claimed
disadvantages of
biofuels

Source: Consumer survey, Question 7: In your opinion which of the following are the main disadvantages of biofuels for vehicles? Please indicate up to three disadvantages, if any. Biofuels... (N= 25797, EU27)
Note: Multiple answers possible.



The overall level of agreement with claimed disadvantages of biofuels is similar in EU15 and EU12 countries. However, the proportions agreeing with individual statements vary. Respondents in EU15 countries are more likely to agree with the claim that biofuels are taking land away from food production (43% compared with 31%) and that biofuels lead to the destruction of rainforests (26% compared with 10%). However, respondents in EU12 countries are more likely to agree with the claim that biofuels worsen vehicle performance (33% compared with 19%) and that they are unsustainable (16% compared with 10%).

As can be seen in the table below, respondents in Luxembourg (31%), Germany (30%) and Austria (30%) are most likely to indicate three of the claimed disadvantages of biofuels (the maximum number possible), and are particularly likely to agree with the claim that biofuels are taking land away from food production (65% in Germany, 61% in Luxembourg and 60% in Austria).

A large proportion of respondents in Luxembourg also agrees with the claim that biofuels lead to the destruction of rainforests (42%), as is also the case in Sweden (39%), while respondents in Estonia (61%), Belgium (56%) and Bulgaria (55%) are most likely to agree with the claim that they are too expensive. The proportion that does not agree with any of the claimed disadvantages of biofuels is highest in Hungary (23%), Romania (21%) and Portugal (20%).

Table 44.
Perspectives on
claimed
disadvantages of
biofuels, analysis
by country

Source: Consumer survey, Question 7: In your opinion which of the following are the main disadvantages of biofuels for vehicles? Please indicate up to three disadvantages, if any. Biofuels... (N= 25797 for EU27)
Note: Multiple answers possible.

		Are taking land away from food production	Are too expensive	Lead to the destruction of rainforests	Total 'Indicated at least one disadvantage'	Total 'Indicated one disadvantage'	Total 'Indicated two disadvantages'	Total 'Indicated three disadvantages'
EU27		40%	38%	23%	81%	40%	23%	18%
EU15		43%	38%	26%	81%	40%	24%	18%
EU12		31%	40%	10%	81%	41%	23%	16%
Countries with E10		56%	31%	33%	88%	36%	28%	25%
 BE		39%	56%	23%	84%	44%	24%	15%
 BG		34%	55%	12%	86%	38%	27%	21%
 CZ		47%	34%	8%	89%	42%	27%	20%
 DK		38%	41%	14%	74%	41%	19%	14%
 DE		65%	21%	37%	90%	33%	27%	30%
 EE		34%	61%	12%	82%	37%	26%	19%
 IE		36%	48%	25%	80%	39%	19%	22%
 EL		38%	38%	26%	78%	39%	26%	13%
 ES		28%	44%	17%	76%	45%	18%	13%
 FR		45%	43%	28%	85%	39%	29%	17%
 IT		32%	39%	19%	77%	45%	21%	10%
 CY		8%	22%	10%	40%	26%	9%	5%
 LV		28%	39%	7%	83%	44%	24%	14%
 LT		24%	47%	9%	78%	43%	23%	12%
 LU		61%	38%	42%	92%	33%	28%	31%
 HU		34%	32%	15%	70%	36%	20%	14%
 MT		25%	23%	15%	57%	31%	14%	11%
 NL		44%	44%	22%	80%	43%	22%	15%
 AT		60%	41%	30%	92%	33%	28%	30%
 PL		25%	36%	10%	86%	46%	22%	17%
 PT		33%	34%	22%	72%	36%	21%	15%
 RO		27%	47%	10%	73%	38%	22%	14%
 SI		47%	42%	19%	83%	33%	28%	22%
 SK		43%	45%	10%	82%	38%	27%	16%
 FI		49%	42%	35%	87%	35%	28%	24%
 SE		36%	40%	39%	80%	32%	26%	22%
 UK		35%	40%	23%	77%	41%	20%	16%
 IS		33%	38%	13%	66%	34%	18%	15%
 NO		52%	31%	23%	82%	37%	26%	19%

Socio-demographic differences and potentially vulnerable consumers

Men are more likely than women to agree with the claimed disadvantages of biofuels, specifically that they are taking land away from food production (47% compared with 33%). Those who ended their education at a later stage are also more likely to agree with the claim that biofuels are taking land away from food production (43% of those who ended education at the age of 20 or above, compared with 39% of those who finished education at the age of 16-19, and 33% who finished education by the age of 15). Consistent with the results for education level, respondents who are more knowledgeable about fuels are more likely to agree with the claimed disadvantages of biofuels, for example that they are taking land away from food production (62% of those in the 'most knowledgeable' group, compared with 44% of those in the 'more knowledgeable' group and 31% in the 'least knowledgeable' group). These results are presented in more detail in the table, below.

Table 45.
Perspectives on
claimed
disadvantages of
biofuels, analysis
by socio-
demographic
characteristics

Source: Question 7: In your opinion which of the following are the main disadvantages of biofuels for vehicles? Please indicate up to three disadvantages, if any. Biofuels... (N= 25797, EU27)

Note: Multiple answers possible

Sub-sample		Are taking land away from food production	Are too expensive	Lead to the destruction of rainforests	Worsen vehicle performance	Have no disadvantages	Are unsustainable
Average	EU27	40%	38%	23%	22%	13%	12%
Gender	Male	47%	35%	26%	26%	12%	13%
	Female	33%	41%	20%	18%	15%	11%
Age	18-24	29%	43%	21%	22%	12%	13%
	25-39	32%	38%	20%	21%	14%	11%
	40-54	40%	38%	23%	21%	13%	12%
	55+	49%	37%	25%	22%	13%	11%
Education (Age when stopped)	15 or younger	33%	41%	20%	15%	18%	10%
	16-19	39%	38%	21%	21%	15%	10%
	20 or older	43%	37%	24%	23%	12%	12%
	Still studying	32%	44%	23%	20%	11%	15%
% of monthly income spent	1 - 5%	47%	35%	27%	20%	13%	9%
	6 - 10%	41%	38%	23%	23%	13%	12%
	11 - 20%	35%	39%	19%	24%	14%	12%
	21% or more	31%	43%	20%	24%	13%	15%
Market knowledge	Least knowledgeable	31%	40%	18%	19%	16%	10%
	More knowledgeable	44%	38%	24%	23%	11%	12%
	Most knowledgeable	62%	32%	37%	30%	8%	14%
Buys fuel	Frequently	37%	38%	26%	27%	10%	17%

in another EU country	Regularly	37%	41%	20%	30%	10%	14%
	Rarely or never	40%	38%	23%	21%	14%	11%

5.1.4 General knowledge of the market

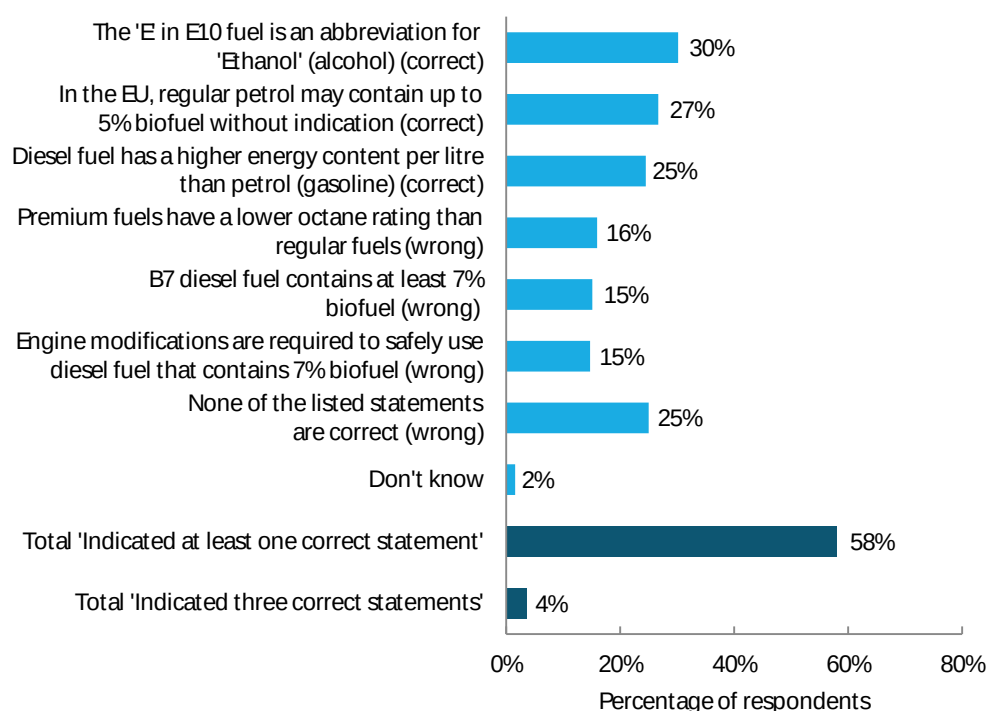
Survey respondents were given a list of six statements about fuels and asked which they thought were true (see figure below). In fact, three of the statements were true and three were false. In addition, they had an option of 'None of the listed statements are correct' (which by definition was false).

Overall, a significant proportion of respondents exhibited a low knowledge level on this assessment question: only 2% were correct on all six statements (i.e. in correctly identifying the three true and three false statements), while just 9% only made one mistake, either by not selecting a true statement or indicating a false one. In the majority of cases (85%), respondents made between two and four mistakes out of six, or indicated that 'none of the statements are correct' (the equivalent of making three mistakes since three of the statements are true). A further 4% made five or more mistakes or gave a 'don't know' answer.

Each of the three true statements was correctly identified only by between 25% and 30% of respondents, while each of the false statements was wrongly indicated as correct by at least 15% of respondents. The 'trick' statement – 'None of the listed statements are correct' – was indicated by 25% of respondents.

Figure 27.
Assessment of
general market
knowledge

Source: Consumer survey, Question 8: Please indicate all of the statements below which you think are correct. (N= 25797, EU27)
Note: Multiple answers possible.



Respondents were divided into three groups based on their answers: the 'most knowledgeable' respondents, who got no more than one answer incorrect; 'less knowledgeable' respondents, who got two or three incorrect; and the 'least knowledgeable' group, who got four or more incorrect, or gave the answer that 'none of the statements are correct'.

When examined on a per-country basis (see table below), the highest proportions of 'most knowledgeable' respondents are in Germany (28%), Sweden (20%), Finland (18%) and Austria (17%). The proportion of 'least knowledgeable' respondents is highest in Italy (58%), Spain (53%), Belgium (52%), Slovenia (52%) and the UK (51%). Overall, findings are similar between EU15 and EU12 countries.

Table 46.
Assessment of
general market
knowledge,
analysis by country

Source: Consumer survey, Question 8:
Please indicate all of the statements below which you think are correct. (N= 25797 for EU27) Note: Multiple answers possible. Ordered by total 'Most knowledgeable'.

		Total 'Most knowled- geable'	5 wrong answers	4 wrong answers	3 wrong answers	2 wrong answers	1 wrong answer	0 wrong answers
EU27		11%	2%	42%	12%	31%	9%	2%
EU15		12%	2%	42%	11%	31%	10%	2%
EU12		10%	2%	39%	14%	33%	9%	1%
Countries with E10		21%	1%	31%	11%	36%	16%	5%
 DE		28%	1%	25%	9%	38%	21%	7%
 SE		20%	1%	27%	10%	42%	15%	4%
 FI		18%	1%	22%	13%	43%	15%	3%
 AT		17%	2%	34%	13%	34%	14%	3%
 CZ		13%	2%	42%	13%	29%	10%	2%
 DK		13%	1%	42%	9%	30%	11%	3%
 HU		12%	2%	32%	17%	35%	10%	2%
 FR		11%	2%	41%	13%	32%	9%	2%
 LV		11%	1%	40%	12%	33%	10%	1%
 LU		11%	2%	40%	13%	29%	9%	3%
 PL		11%	2%	38%	11%	37%	10%	1%
 IE		10%	3%	39%	17%	30%	9%	1%
 LT		10%	2%	42%	14%	29%	8%	1%
 NL		10%	2%	46%	11%	27%	9%	2%
 SK		9%	2%	42%	14%	28%	8%	1%
 EE		8%	1%	46%	11%	31%	6%	2%
 RO		8%	2%	42%	17%	30%	7%	1%
 BE		7%	3%	49%	13%	25%	6%	1%
 EL		7%	2%	43%	15%	30%	6%	1%
 PT		7%	2%	45%	15%	27%	7%	0%
 BG		6%	5%	44%	18%	26%	5%	1%
 ES		6%	3%	50%	13%	27%	5%	1%
 IT		5%	2%	56%	10%	26%	4%	0%
 UK		5%	2%	49%	12%	30%	4%	1%
 CY		4%	1%	12%	9%	15%	3%	0%
 SI		4%	3%	49%	13%	27%	4%	1%
 MT		3%	1%	16%	6%	10%	3%	0%
 IS		5%	2%	39%	6%	22%	5%	0%
 NO		14%	1%	37%	11%	32%	12%	2%

Socio-demographic differences and potentially vulnerable consumers

Socio-demographic differences are shown below. The greatest differences were between gender, education, income, and total distance driven.

Table 47.
Assessment of
general market
knowledge,
analysis by socio-
demographic
characteristics

Source: Consumer survey, Question 8: Please indicate all of the statements below which you think are correct. (N= 25797, EU27) Note: Multiple answers possible.

	Sub-sample	Total 'Most knowledgeable'	Total 'More knowledgeable'	Total 'Least knowledgeable'
Average	EU27	11%	43%	44%
Gender	Male	15%	45%	38%
	Female	8%	41%	49%
Age	18-24	12%	49%	37%
	25-39	11%	45%	42%
	40-54	11%	42%	46%
	55+	12%	41%	45%
Education (Age when stopped)	15 or younger	8%	39%	52%
	16-19	10%	41%	48%
	20 or older	13%	45%	41%
	Still studying	13%	47%	39%
Percentage of monthly income spent on fuel	1 - 5%	13%	41%	44%
	6 - 10%	12%	44%	43%
	11 - 20%	10%	44%	46%
	21% or more	10%	46%	43%
Compare fuel prices	Always / Very often	12%	44%	43%
	Often	12%	45%	42%
	Rarely / Never	8%	40%	49%
Methods for comparing prices	Using online tools	13%	47%	39%
	Using other methods	11%	42%	46%
Total distance driven per year	Less than 10,000km	9%	42%	47%
	From 10.000 to less than 20,000km	14%	44%	41%
	20,000km or more	13%	45%	41%
Buys branded fuel	Frequently	10%	44%	44%
	Infrequently / Never	13%	43%	43%

When comparing results by socio-demographic characteristics, men are more likely than women to be in the 'most knowledgeable' group (15% compared with 8%), while those educated to an older age tend to be more knowledgeable (13%

of those ending their education at the age of 20 or above are in the 'most knowledgeable' group, compared with 10% who ended their education between the ages of 16 and 19 and 8% who finished education by the age of 15).

Knowledge is greater among those who always, very often or often compare fuel prices (12% in the 'most knowledgeable' group) than those who rarely or never do so (8%). In addition, those who drive greater distances are more likely to be in the 'most knowledgeable' group (13% of those who drive 20,000 or more kilometres per year and 14% of those who drive from 10,000 to less than 20,000 kilometres, compared with 9% who drive less than 10,000 kilometres per year).

The major difference among the potentially vulnerable groups is that older respondents are more likely to be in the 'least knowledgeable' group: 45% of those aged 55 or over and 46% of those aged 40-54, compared with 42% of 25- to 39-year-olds and 37% of 18- to 24-year-olds. Income also plays a role: while 13% of those spending 1-5% of their income every month on fuel were classed in the 'most knowledgeable' group, this fell to 10% for those who spent 21% or more.

Stakeholder perspectives

Stakeholders were asked more specifically to what extent they agreed with the statements that consumers found it easy to “recognise and identify preferred fuel type”, “check the compatibility of different fuel types with their vehicle”, “reach an understanding of the effects of particular fuel types on engine/vehicle performance”, and “reach an understanding of the effects of particular fuel types on the environment”. These aspects help frame the awareness of consumers regarding fuel types, influencing the ease at which general knowledge about the market may be obtained. The distribution of responses can be seen in the table below.

Table 48. Ease of carrying out activities related to aspects of vehicle fuels

Source: Stakeholder survey, Question 8: For each of the following items ... please indicate how easy you think it is for consumers to effectively carry out the activity in your country. (N=70, EU27 national-level stakeholders)
Note: Responses of

Item	Very easy	Fairly easy	Not very easy	Not at all easy
Recognise labels and identify preferred fuel type	36%	50%	12%	3%
Check the compatibility of different fuel types with their vehicle	23%	43%	23%	11%
Reach an understanding of the effects of particular fuel types on engine/vehicle performance	2%	30%	37%	32%
Reach an understanding of the effects of particular fuel types on the environment	2%	14%	39%	45%
Find detailed information on the content of a given fuel type	2%	17%	38%	43%

As can be seen, a majority of stakeholders considered it at least fairly easy (86%) to recognise labels and identify fuels, with a similar amount (76%) indicating that it was at least fairly easy to check the compatibility of different fuel types with their vehicle. However, more detailed technical aspects were not considered to be easy to compare, and in particular 45% of stakeholders indicated that reaching an understanding of the effects of particular fuel types on the environment was 'not at all easy'.

5.2 CONSUMER DECISION-MAKING

This section examines consumer decision making in terms of deciding on a fuel retailer, and between fuel types. Here, the key tasks are to describe consumers' views and experiences with different branding of fuels, how information and marketing influences consumer choice, and what kind of information on fuels would best help consumers make informed choices, and avoid misfuelling.

Key findings of this section are:

1. Almost half of consumer survey respondents say that they usually fill up their vehicle when the tank is nearly empty (46%), while 19% fill up whenever they see a good deal or see that prices have fallen; only 2% fill up on specific days of the week. This suggests somewhat limited potential for consumers to thoroughly compare prices and especially to take advantage of low points in price cycles, because filling up when the tank is nearly empty compels rapid decision-making and lessens the possibility to schedule purchases for certain days.
2. Respondents who are more knowledgeable about fuels are more likely to say they fill up when they see a good deal (26% of those in the 'most knowledgeable' group, compared with 20% of those in the 'more knowledgeable' group and 16% in the 'least knowledgeable' group).
3. Price is the critical factor in consumers' decision-making in terms of retailer selection: 68% of consumer survey respondents indicated 'offers the lowest price' as an important consideration in their choice of a petrol station.
4. Aside from price, key factors in the selection of a particular petrol station include a convenient location (43%) and the offer of a loyalty card or membership scheme (22%), while one in five respondents (20%) use a petrol station nearby when they have nearly run out of fuel.
5. Survey respondents who spend a larger share of their income on fuel are more likely to say that they fill up whenever they can afford it (13% of those who spend 21% or more of their income on fuel, falling to 3% of those who spend no more than 5% of their income on fuel). Related to this, those who spend a greater proportion of their income on fuel are also more likely to compare prices always or very often.
6. Consumers' selection of fuel type also revolves around price: 67% of consumer survey respondents indicated price as the main reason for buying their preferred fuel type.
7. Factors other than price that play a role in fuel type preferences include previous good experience with a given type of fuel (27%), its perceived benefits for engine or vehicle performance (22%) and fuel quality (18%).

8. While fuel quality was a concern cited by consumers, it is important to note that the Fuel Quality Directive (98/70/EC as amended by Directive 2009/30/EC) stipulates rigorous technical standards for vehicle fuel, and this result may be due to a lack of knowledge of the average consumer of these actions, rather than actual indications of problems with fuel quality.
9. One in ten consumer survey respondents say they don't have a choice between fuel types as there is only one type of fuel available in their area that is compatible with their vehicle. This percentage is higher for respondents living in rural areas (14%, compared with 10% in urban and 6% in metropolitan areas).
10. The vast majority (88%) of responding EU27 stakeholders indicated that comparing fuel prices was at least 'fairly easy' in their respective countries. However, timing fuel purchases to take advantage of low points in price cycles was not seen as being particularly easy, with significantly more judging it as not very easy or not at all easy (67%) than not.
11. Only one fifth (19%) of responding EU27 stakeholders were of the opinion that it is easy for consumers in their country to compare the performance of branded fuels, generic / non-branded fuels, and fuels sold at supermarkets.
12. A larger proportion of stakeholders (33%) indicated that it is easy for consumers to compare the performance of premium and regular fuels. However, only 3% of stakeholders regarded this as very easy, and 42% reported it to be not at all easy.

5.2.1 Timing of fuel purchases

Almost half of consumer survey respondents say that they usually fill up their vehicle when the tank is nearly empty (46%).⁷⁹ Around one in four (26%) say they fill up the vehicle whenever it suits them best, but generally well before the tank is empty, while 19% fill up whenever they see a good deal or see that prices have fallen. Six per cent say that they fill up whenever they can afford it, and 2% fill up on specific days of the week.

On a per-country basis, respondents in Luxembourg (80%), Slovenia (72%), Belgium (62%) and the Netherlands (62%) are most likely to fill up their vehicle when the tank is nearly empty. Slovakia shows by far the highest figure for filling up the vehicle whenever it suits the respondent best, but generally well before the tank is empty (51%). Respondents in Denmark (52%) and Germany (46%) are far more likely than those in other countries to fill up when they see a good deal or when prices have fallen.

⁷⁹ Question Q12: When do you usually fill up your vehicle? Please indicate the answer that best describes your situation.

The proportion who says they fill up whenever they can afford it is highest in Romania (38%), and is also relatively high in Hungary (19%), Greece (15%) and Bulgaria (13%). Respondents in Norway (19%), Malta (13%) and Cyprus (13%) are most likely to say they fill up on a specific day of week.

The main differences between EU15 and EU12 countries overall are that those in EU15 countries are more likely to say they fill up when they see a good deal or when prices have fallen (21% compared with 11%), whereas respondents in EU12 countries are more likely to say they fill up when they can afford it (14% compared with 4%). These differences are examined in detail in the table below.

Table 49. When respondents fill up their vehicles, analysis by country

Source: Consumer survey, Question 12: When do you usually fill up your vehicle? Please indicate the answer that best describes your situation.
(N= 25797 for EU27)

		When the tank is nearly empty	Whenever it suits me best, well before tank is empty	Whenever I see a good deal or that prices have fallen	I fill up whenever I can afford it	On a specific day(s) of the week	Other / Don't know
EU27		46%	26%	19%	6%	2%	1%
EU15		47%	25%	21%	4%	3%	1%
EU12		43%	29%	11%	14%	2%	1%
Countries with E10		43%	21%	31%	2%	2%	1%
 BE		62%	20%	12%	3%	1%	1%
 BG		45%	32%	7%	13%	3%	1%
 CZ		51%	20%	17%	10%	1%	1%
 DK		31%	16%	52%	1%	1%	0%
 DE		34%	15%	46%	2%	3%	0%
 EE		49%	31%	13%	6%	0%	1%
 IE		49%	22%	16%	8%	5%	1%
 EL		38%	26%	18%	15%	2%	2%
 ES		51%	30%	8%	6%	4%	1%
 FR		54%	27%	13%	4%	2%	1%
 IT		44%	25%	25%	3%	2%	1%
 CY		52%	26%	2%	5%	13%	1%
 LV		47%	32%	10%	8%	1%	1%
 LT		56%	26%	10%	6%	1%	1%
 LU		80%	12%	4%	2%	1%	1%
 HU		15%	38%	20%	19%	1%	6%
 MT		47%	32%	0%	3%	13%	5%
 NL		62%	29%	5%	2%	2%	1%
 AT		48%	19%	28%	2%	2%	0%
 PL		51%	31%	11%	4%	1%	1%
 PT		59%	19%	11%	4%	6%	1%
 RO		31%	21%	6%	38%	3%	1%
 SI		72%	20%	3%	4%	1%	1%
 SK		36%	51%	5%	6%	1%	0%
 FI		49%	37%	11%	3%	1%	0%
 SE		51%	32%	14%	2%	1%	1%
 UK		50%	30%	10%	7%	3%	1%
 IS		48%	27%	20%	4%	0%	1%
 NO		41%	14%	25%	2%	19%	1%

Socio-demographic differences and potentially vulnerable consumers

As regards socio-demographic characteristics, those who compare prices always or very often are more likely to fill up when they see a good deal (26%, compared with 13% who often compare prices and 4% who rarely or never compare prices).

Table 50. When respondents fill up vehicles, analysis by socio-demographic characteristics

Source: Consumer survey, Question 12: When do you usually fill up your vehicle? Please indicate the answer that best describes your situation. (N= 25797, EU27)

	Sub-sample	When the tank is nearly empty	Whenever it suits me best, well before tank is empty	Whenever I see a good deal or that prices have fallen	I fill up whenever I can afford it
Average	EU27	46%	26%	19%	6%
Gender	Male	45%	26%	19%	6%
	Female	47%	25%	19%	6%
Age	18-24	55%	18%	16%	7%
	25-39	53%	19%	18%	7%
	40-54	47%	25%	19%	6%
	55+	37%	34%	21%	5%
Education (Age when stopped)	15 or younger	42%	32%	15%	7%
	16-19	43%	28%	19%	6%
	20 or older	47%	25%	19%	5%
	Still studying	52%	19%	17%	8%
Percentage of monthly income spent on fuel	1 - 5%	48%	27%	19%	3%
	6 - 10%	44%	27%	20%	5%
	11 - 20%	46%	25%	17%	8%
	21% or more	44%	20%	18%	13%
Compare fuel prices	Always / Very often	41%	24%	26%	6%
	Often	48%	29%	13%	6%
	Rarely / Never	59%	27%	4%	6%
Market knowledge	Least knowledgeable	47%	26%	16%	7%
	More knowledgeable	45%	25%	20%	6%
	Most knowledgeable	43%	25%	26%	4%
Type of fuel most frequently bought	Petrol	45%	25%	19%	7%
	Diesel	46%	27%	18%	5%
	Other type of fuel	55%	23%	13%	6%
Vehicle age	Less than 5 years old	45%	27%	21%	3%
	5 to 10 years old	46%	26%	18%	7%
	More than 10 years old	48%	23%	17%	9%
Buys fuel in another EU country	Frequently	44%	22%	25%	4%
	Regularly	37%	30%	23%	6%
	Rarely or never	47%	26%	18%	6%

In addition, those who ended their education at an earlier age are more likely to say they fill up whenever it suits them but generally well before the tank is empty (32% of those who ended their education by the age of 15, compared with 28% of those who finished education between the ages of 16 and 19, and 25% who ended education at the age of 20 or above). Users of other fuels (not petrol or diesel) are more likely to fill up when the tank is nearly empty (55% compared with 45% of petrol users and 46% of diesel users), while users with lower incomes are much more likely to state that they fill up whenever they can afford it (13% of those whose expenditure on fuel exceeds 21% of their monthly income, compared to 3% for those who spend 5% or less).

Older consumers tended to plan ahead more when choosing to fill up. Younger respondents are more likely to fill up their vehicle when the tank is nearly empty (55% of 18- to 24-year-olds, falling to 37% of those aged 55 or over), and are less likely to fill up whenever it suits them best but generally well before the tank is empty (18% of 18- to 24-year-olds, rising to 34% of those aged 55 or over).

In timing their fuel purchases, respondents with older vehicles (more than 10 years old) are more likely to say they fill up when they can afford it (9%, compared with 3% with a vehicle less than 5 years old).

Respondents who are more knowledgeable about fuels are more likely to say they fill up when they see a good deal (26% of those in the 'most knowledgeable' group, compared with 16% in the 'least knowledgeable' group). The more knowledgeable about fuels are also more likely to choose a petrol station based on price (74% of those in the 'most knowledgeable' group, compared with 66% in the 'least knowledgeable' group).

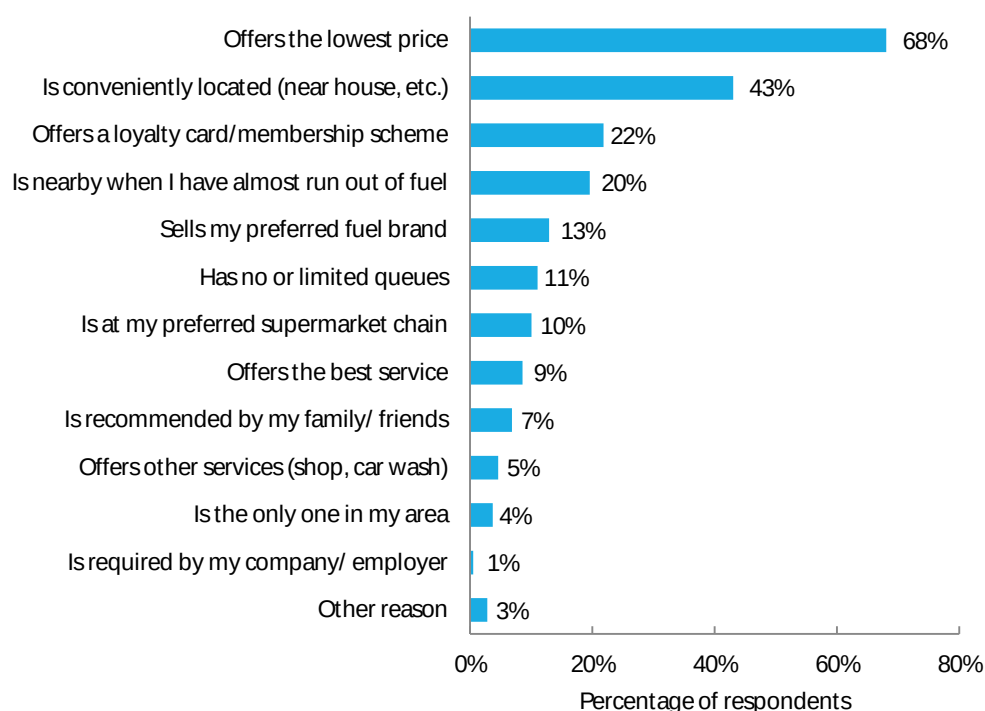
5.2.2 Considerations in choice of petrol station

The main consideration for choosing a particular petrol station is that it offers the lowest price (68%).⁸⁰ The other important considerations are location (43% say it is important that it is conveniently located near home or work) and the offer of a loyalty card or membership scheme (22%). One in five (20%) use a petrol station nearby when they have nearly run out of fuel. The other considerations important to at least 10% of respondents are: that it sells a preferred fuel brand (13%), that there are no or limited queues at the petrol station (11%), and that it is at a preferred supermarket chain (10%).

⁸⁰ Question Q13: When you decide to fill up the vehicle, what are your most important considerations for choosing a particular petrol station? Please indicate up to three considerations.

Figure 28. Most important considerations for choosing a petrol station

Source: Consumer survey, Question 13: When you decide to fill up the vehicle, what are your most important considerations for choosing a particular petrol station? Please indicate up to three considerations. I choose a station that... (N=25797, EU27)
Note: Multiple answers possible.



As can be seen in the table below which sets out the results of top seven statements by country, respondents in EU15 countries are more likely than those in EU12 countries to say that lowest price is a main consideration for choosing a petrol station (72% compared with 54%). Figures are highest in Austria (83%), Portugal (80%), Denmark (79%), Italy (79%) and Germany (78%).

By contrast, respondents in EU12 countries are more likely than those in EU15 countries to choose a petrol station because it sells their preferred brand (24% compared with 10%). Respondents in Romania (28%), Poland (28%) and Bulgaria (27%), as well as Greece (26%), are most likely to say this. Respondents in EU12 countries are also more likely than those in EU15 countries to say that they choose a petrol station because it has been recommended by family, friends or colleagues (16% compared with 5%).

Convenience of location is mentioned most frequently by respondents in Malta (64%), Luxembourg (60%) and Cyprus (57%), while a high proportion of respondents in Estonia (62%), Iceland (55%), Finland (48%) and Lithuania (47%) says that the availability of a loyalty card or membership scheme is an important consideration for them.

Respondents are most likely to say that they choose a petrol station that is nearby when they nearly run out of fuel in Malta (41%), Slovenia (39%), Czech Republic (31%) and Luxembourg (30%). No statistically significant differences between respondents in the EU15 and EU12 were observed.

Table 51. Most important considerations in choice of petrol station, analysis by country

Source: Consumer survey, Question 13: When you decide to fill up the vehicle, what are your most important considerations for choosing a particular petrol station? Please indicate up to three considerations. I choose a station that... (N=25797, EU27)
Note: Multiple answers possible.

		Offers the lowest price	Convenient to house or workplace	Offers a loyalty card / membership scheme	Is nearby when I have almost run out of fuel	Sells my preferred fuel brand	Has no or limited queues	Is at my preferred supermarket chain
EU27		68%	43%	22%	20%	13%	11%	10%
EU15		72%	43%	20%	19%	10%	11%	11%
EU12		54%	43%	27%	22%	24%	11%	5%
Countries with E10		75%	48%	11%	20%	9%	11%	13%
 BE		71%	43%	19%	16%	12%	11%	7%
 BG		42%	39%	43%	18%	27%	13%	3%
 CZ		62%	46%	15%	31%	24%	9%	5%
 DK		79%	41%	11%	22%	9%	15%	3%
 DE		78%	44%	15%	25%	10%	9%	3%
 EE		59%	47%	62%	22%	17%	12%	4%
 IE		75%	37%	14%	20%	9%	13%	4%
 EL		76%	45%	15%	17%	26%	5%	2%
 ES		55%	46%	32%	20%	10%	9%	9%
 FR		72%	53%	4%	13%	9%	13%	28%
 IT		79%	32%	19%	13%	10%	12%	3%
 CY		26%	57%	1%	12%	7%	1%	1%
 LV		50%	56%	41%	18%	17%	9%	3%
 LT		61%	46%	47%	27%	12%	9%	6%
 LU		10%	60%	30%	30%	12%	20%	4%
 HU		64%	43%	31%	19%	14%	12%	5%
 MT		1%	64%	1%	41%	0%	18%	0%
 NL		70%	46%	11%	22%	11%	11%	4%
 AT		83%	42%	14%	29%	5%	8%	2%
 PL		58%	46%	28%	21%	28%	9%	7%
 PT		80%	50%	21%	18%	11%	15%	8%
 RO		49%	34%	20%	20%	28%	13%	4%
 SI		18%	53%	23%	39%	14%	8%	3%
 SK		48%	44%	36%	18%	16%	9%	7%
 FI		64%	49%	48%	27%	5%	18%	3%
 SE		57%	45%	27%	23%	11%	11%	5%
 UK		69%	39%	38%	19%	8%	12%	24%
 IS		46%	41%	55%	15%	4%	7%	2%
 NO		59%	50%	40%	26%	8%	12%	2%

Socio-demographic differences and potentially vulnerable consumers

Detailed results according to socio-demographic characteristics are presented in the table below.

Differences mainly focused on education, market knowledge, and buying fuel outside the country of residence. As can be seen above, respondents who are educated to a higher level are more likely to say location is an important consideration (45% of those who finished education at the age of 20 or above, compared with 42% who ended their education between the ages of 16 and 19 and 34% who finished their education by the age of 15).

There are also differences in terms of how often respondents compare fuel prices. Those who compare prices always or very often are more likely to say that price is important (79%, compared with 66% who compare prices often and 40% who rarely or never do so), and are less likely to mention location (39%, compared with 47% who compare prices often and 50% who rarely or never do so).

As might be expected, respondents who frequently buy branded fuel are more likely to say they choose a petrol station because it sells their preferred brand (18%, compared with 5% of those who buy branded fuel infrequently or never). These respondents are also more likely to be attracted by a loyalty card or membership scheme (26% compared with 15%), while they are less likely than other respondents to say that price is a main consideration (61%, compared with 79% of those who buy branded fuel infrequently or never).

Petrol users are more likely than diesel users to say they choose a petrol station that is nearby when they are about to run out of fuel (21% compared with 17%), while users of other fuel types are more likely to choose somewhere that sells their preferred brand (22%, compared with 13% of petrol and diesel users).

Survey respondents who spend a larger share of their income on fuel are more likely to say that quality of service is important in their choice of petrol station (12% of those who spend 21% or more of their income on fuel, compared with 6-9% who spend 20% or less of their income on fuel), and are less likely to mention location (36% compared with 44%).⁸¹

⁸¹ Please refer to Part 2 of this study for further details.

Table 52. Most important considerations for choosing a petrol station, analysis by socio-demographic characteristics

Source: Consumer survey, Question 13: When you decide to fill up the vehicle, what are your most important considerations for choosing a particular petrol station? Please indicate up to three considerations. I choose a station that... (N=25797, EU27).

Sub-sample		Offers the lowest price	Convenient to my house or workplace	Offers a loyalty card / membership scheme	Is nearby when I have almost run out of fuel	Sells my preferred fuel brand	Has no or limited queues
Average	EU27	68%	43%	22%	20%	13%	11%
Age	18-24	69%	43%	17%	27%	12%	9%
	25-39	69%	42%	23%	22%	11%	10%
	40-54	68%	44%	22%	18%	11%	12%
	55+	67%	43%	23%	17%	16%	12%
Education (Age when stopped)	15 or younger	66%	34%	22%	17%	11%	12%
	16-19	69%	42%	23%	17%	12%	11%
	20 or older	68%	45%	22%	20%	14%	11%
	Still studying	67%	42%	18%	26%	12%	10%
Percentage of monthly income spent on fuel	1 - 5%	69%	44%	21%	19%	10%	11%
	6 - 10%	69%	44%	22%	19%	13%	11%
	11 - 20%	68%	43%	23%	20%	15%	11%
	21% or more	67%	36%	23%	21%	15%	9%
Compare fuel prices	Always / Very often	79%	39%	20%	17%	13%	10%
	Often	66%	47%	24%	20%	13%	11%
	Rarely / Never	40%	50%	24%	25%	11%	13%
Buys branded fuel	Frequently	61%	44%	26%	20%	18%	11%
	Infrequently / Never	79%	42%	15%	20%	5%	11%
Market knowledge	Least knowledgeable	66%	41%	23%	18%	12%	11%
	More knowledgeable	69%	44%	22%	21%	14%	11%
	Most knowledgeable	74%	46%	20%	23%	15%	12%
Type of fuel most frequently bought	Petrol	68%	44%	22%	21%	13%	11%
	Diesel	69%	42%	21%	17%	13%	12%
	Other type of fuel	69%	42%	23%	15%	22%	10%
Buys fuel in another EU country	Frequently	59%	29%	17%	17%	15%	11%
	Regularly	65%	31%	18%	17%	17%	13%
	Rarely or never	69%	45%	22%	20%	13%	11%

5.2.3 Considerations for buying preferred fuel type

Respondents were asked for the main reasons for buying their preferred type of fuel, apart from compatibility with the vehicle. They were offered 11 possible reasons and asked to choose up to three. Price is mentioned most frequently (67%) as a main reason for their fuel type preference, while 27% say it is because of previous good experience with this type of fuel, 22% because it is good for engine or vehicle performance, and 18% say it is because of fuel quality.

While fuel quality was a concern cited by consumers, it is important to note that the Fuel Quality Directive (98/70/EC as amended by Directive 2009/30/EC) stipulates rigorous technical standards for vehicle fuel, and results from the Fuel Quality Monitoring (FQM) system show that the specifications for petrol and diesel laid down have been in general met.⁸² Therefore, this result may be due to a lack of knowledge of the average consumer of these actions, rather than actual indications of problems with fuel quality.

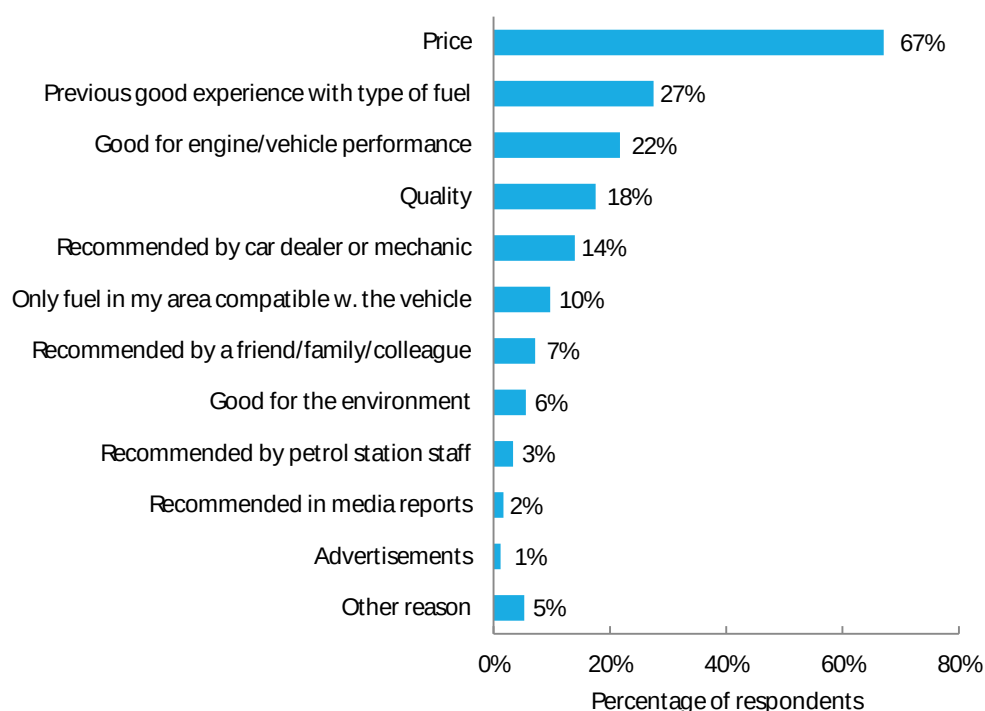
A further 14% say that the fuel type was recommended by a car dealer or mechanic. It is worth noting that 10% of respondents say they don't have a choice as there is only one type of fuel available in their area that is compatible with their vehicle.

The critical importance of price in the selection of fuel types mirrors Q13, in which respondents were most likely to say that price is the most important consideration when choosing a particular petrol station.

⁸² See European Union, COM (2012) 749 final: Quality of petrol and diesel fuel used for road transport in the European Union: Ninth annual report (Reporting year 2010)At: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0749:FIN:EN:PDF>

Figure 29. Main reasons for buying preferred fuel type

Source: Consumer survey, Question 17: Apart from its compatibility with the vehicle, what are the main reasons for buying this fuel type(s)? Please indicate up to three reasons. (N= 25797, EU27)
Note: Multiple answers possible.



The results compared per country are presented in the table below. Price is consistently important across different countries. The highest figures are in Portugal (79%) and the UK (77%). Issues relating to fuel quality tend to be more important in EU12 countries than in EU15 countries. This applies to:

- ▶ Overall fuel quality: 30% in EU12 countries and 14% in EU15 countries, with the highest proportions in Romania (39%), Latvia (37%), Estonia (32%) and Poland (30%);
- ▶ Whether the fuel is good for the engine or vehicle performance: 27% in EU12 countries, compared with 20% in EU15 countries. Respondents in Malta (42%), Bulgaria (33%) and Slovakia (32%) are most likely to say this is important, as are those in Greece (32%);
- ▶ Previous good experience with this type of fuel: 43% in EU12 countries and 23% in EU15 countries, with the highest figures in Poland (49%), Latvia (45%), the Czech Republic (42%) and Estonia (41%).

The findings for countries with E10 fuel are similar to those for other EU15 countries, although respondents in these countries are more likely to mention previous good experience with the preferred fuel type (28% compared with 23% across all EU15 countries). This is due to a higher figure in Germany (37%); the figure is 27% in Finland and just 16% in France.

Table 53. Main reasons for buying preferred fuel type, analysis by country

Source: Consumer survey, Question 17:
Apart from its compatibility with the vehicle, what are the main reasons for buying this fuel type(s)? Please indicate up to three reasons. (N= 25797 for EU27)
Note: Multiple answers possible.

	Price	Previous good experience with this type of fuel	Good for engine / vehicle performance	Quality	Recommended by car dealer or mechanic	Only fuel type offered in area that is compat. with vehicle	Recommended by a friend / family / colleague
EU27	67%	27%	22%	18%	14%	10%	7%
EU15	68%	23%	20%	14%	14%	10%	5%
EU12	64%	43%	27%	30%	15%	9%	14%
Countries with E10	64%	28%	21%	15%	14%	10%	4%
 BE	68%	23%	13%	17%	22%	11%	6%
 BG	65%	38%	33%	28%	10%	7%	18%
 CZ	66%	42%	16%	22%	15%	19%	12%
 DK	72%	16%	18%	7%	15%	15%	5%
 DE	60%	37%	26%	16%	15%	6%	3%
 EE	74%	41%	31%	32%	14%	13%	17%
 IE	73%	25%	19%	13%	12%	21%	10%
 EL	72%	26%	32%	19%	23%	6%	8%
 ES	63%	25%	25%	18%	16%	10%	8%
 FR	70%	16%	13%	13%	12%	14%	5%
 IT	70%	14%	21%	15%	8%	9%	5%
 CY	22%	8%	15%	8%	34%	21%	9%
 LV	63%	45%	28%	37%	13%	11%	16%
 LT	69%	35%	28%	27%	5%	10%	17%
 LU	51%	37%	19%	15%	16%	6%	5%
 HU	71%	38%	22%	26%	9%	7%	13%
 MT	11%	2%	42%	9%	18%	39%	3%
 NL	72%	20%	12%	14%	20%	13%	5%
 AT	68%	33%	20%	12%	19%	7%	4%
 PL	68%	49%	27%	30%	10%	5%	16%
 PT	79%	35%	24%	17%	18%	7%	10%
 RO	56%	40%	29%	39%	24%	7%	11%
 SI	43%	33%	30%	25%	19%	15%	13%
 SK	59%	40%	32%	28%	23%	10%	12%
 FI	62%	27%	19%	16%	17%	11%	11%
 SE	50%	24%	26%	9%	16%	22%	7%
 UK	77%	20%	16%	10%	12%	10%	4%
 IS	49%	22%	9%	6%	2%	24%	3%
 NO	54%	24%	18%	8%	17%	17%	6%

Socio-demographic differences and potentially vulnerable consumers

Social demographic differences are presented in the table, below.

Table 54. Most important considerations for choosing fuel type, analysis by socio-demographic characteristics

Source: Question 17: Apart from its compatibility with the vehicle, what are the main reasons for buying this fuel type(s)? Please indicate up to three reasons. (N= 25797 for EU27)
Note: Multiple answers possible

Sub-sample		Price	Previous good experience with this type of fuel	Good for engine / vehicle performance	Quality	Recommended by car dealer or mechanic	Only fuel offered in area compat. with vehicle	Recommended by a friend / family / colleague
Average	EU27	67%	27%	22%	18%	14%	10%	7%
Age	18-24	66%	24%	19%	21%	11%	11%	14%
	25-39	69%	23%	19%	17%	9%	9%	8%
	40-54	68%	27%	20%	16%	13%	9%	6%
	55+	65%	33%	26%	18%	20%	10%	5%
Percentage of monthly income spent on fuel	1 - 5%	68%	26%	20%	14%	14%	10%	5%
	6 - 10%	67%	28%	23%	18%	14%	9%	7%
	11 - 20%	70%	28%	22%	20%	14%	9%	8%
	21% or more	66%	27%	22%	23%	11%	9%	9%
Compare fuel prices	Always / Very often	72%	29%	23%	19%	14%	8%	7%
	Often	66%	28%	22%	18%	13%	10%	8%
	Rarely / Never	55%	23%	18%	14%	14%	13%	7%
Buys branded fuel	Frequently	62%	30%	25%	22%	16%	10%	8%
	Infrequently / Never	74%	24%	16%	10%	11%	10%	6%
Type of fuel most frequently bought	Petrol	65%	29%	22%	18%	16%	9%	7%
	Diesel	69%	26%	22%	18%	11%	11%	7%
	Other type of fuel	87%	27%	11%	10%	4%	4%	7%
Place of residence	Rural area	69%	26%	18%	14%	12%	14%	6%
	Urban area	67%	27%	22%	18%	14%	10%	7%
	Metropolitan area	66%	30%	24%	20%	15%	6%	8%
Market knowledge	Least knowledgeable	67%	24%	20%	16%	14%	10%	8%
	More knowledgeable	68%	30%	23%	19%	14%	10%	7%
	Most knowledgeable	66%	33%	26%	20%	14%	10%	6%

Diesel users are more likely than petrol users to say that price is important (69%, compared with 65%), and this is higher still among users of other types of fuel (87%). Respondents who buy branded fuel frequently are more likely to value issues relating to quality (for example, 22% say overall quality is important, compared with 10% of those who infrequently or never buy branded fuel), and are less likely to say that price is important (62%, compared with 74% of those who infrequently or never buy branded fuel).

As might be expected, respondents who compare fuel prices frequently are more likely to say price is a main reason for choosing their preferred type of fuel (72% of those who compare prices always or very often, compared with 66% of those who often compare prices and 55% of those who rarely or never do so).

Survey respondents who spend a larger share of their income on fuel are more likely to say that they fill up whenever they can afford it (13% of those who spend 21% or more of their income on fuel, falling to 3% of those who spend no more than 5% of their income on fuel). Related to this, those who spend a greater proportion of their income on fuel are also more likely to compare prices always or very often (ranging from 51% of those who spend no more than 5% of their income on fuel, to 68% of those who spend 21% or more of their income on fuel).⁸³

Older respondents (aged 55 or over) are more likely to value the fuel's effect on engine or vehicle performance (26%, compared with 19% to 20% of those aged under 55) and to say their previous experience with a fuel is important (33%, compared with 24% to 27%). They are also more likely to say they choose a fuel type because of a recommendation by a car dealer or mechanic (20%, compared with 9% to 13%). By contrast, younger respondents (aged 18-24) are more likely than older respondents to choose a fuel type because of a personal recommendation (14%, compared with 5% to 8% of those aged 25 or over).

Respondents who are more knowledgeable about fuels are more likely to compare prices: 61% of those in the 'most knowledgeable' group compare prices always or very often, compared with 55% of those in the 'least knowledgeable' group. Those more knowledgeable about fuels are more likely to use price comparison websites (30% of those in the 'most knowledgeable' group, compared with 21% in the 'least knowledgeable' group).

Despite being more likely to purchase premium and/or branded fuel, those who buy fuel in other EU countries are also more likely to compare prices always or very often (68% who buy fuel in another EU country frequently, compared to 55% who rarely or never do so). Those who rarely or never buy fuel in other EU

⁸³ Please refer to Part 2 of this study for further details.

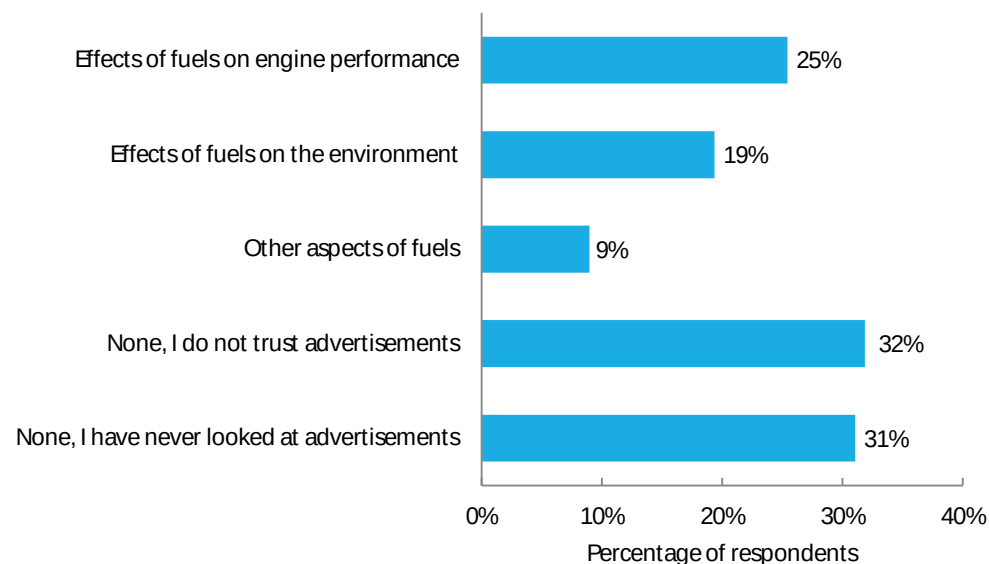
countries (80%) are also more likely to get information from driving by petrol stations than those who do so frequently (63%) or regularly (71%).

5.2.4 Role of advertisements about vehicle fuels

Respondents were asked about the aspects of advertisements about vehicle fuels that can influence their purchasing decision. More than half (63%) say that they are not affected by advertisements about vehicle fuels, either because they do not trust them (32%) or because they have never looked at or listened to them (31%). One in four (25%) say that their purchasing decision can be influenced by advertisements about the effects of fuels on engine or vehicle performance, while 19% say that advertisements about the effects of fuels on the environment can affect them.

Figure 30. Aspects of advertisements that influence fuel purchasing decision

Source: Consumer survey, Question 20: What aspects of advertisements about vehicle fuels can influence your purchasing decision? Please indicate all aspects that are relevant. (N=25797, EU27)
Note: Multiple answers possible.



As can be seen in the table below comparing responses per country, respondents in EU15 countries are more likely than those in EU12 countries to say that they are not affected by advertisements about vehicle fuels (67% compared with 46%). The proportions are highest in Germany (81%), the Netherlands (78%), Austria (78%) and Denmark (76%).

Respondents in EU12 countries are particularly likely to say that they are influenced by advertisements about the effects of fuels on engine / vehicle performance (43%, compared with 21% in EU15 countries), with the highest figures in Bulgaria (54%) and Romania (50%). The proportion saying they are influenced by advertisements about the effects of fuels on the environment is 25% in EU12 countries and 18% in EU12 countries.

Respondents in countries with E10 fuel are more likely than those in other EU15 countries to say that they are not affected by advertisements about vehicle fuels (76% compared with 67% across all EU15 countries). Specifically, respondents in these countries are more likely to say they do not trust any aspects of these advertisements (41% compared with 33% across all EU15 countries).

Table 55. Aspects of advertisements that influence fuel purchasing decision, analysis by country

Source: Consumer survey, Question 20: What aspects of advertisements about vehicle fuels can influence your purchasing decision? Please indicate all aspects that are relevant. (N=25797 for EU27)
Note: Multiple answers possible.

	Ads about effects of fuels on engine performance	Ads about effects of fuels on environment	None, I do not trust any aspects of ads about vehicle fuels	None, I have never looked at or listened to ads about fuels	Ads about other aspects of fuels	Total 'None: does not trust / has not seen or heard an ad about vehicle fuels'
EU27	25%	19%	32%	31%	9%	63%
EU15	21%	18%	33%	34%	8%	67%
EU12	43%	25%	27%	19%	14%	46%
Countries with E10	15%	14%	41%	34%	5%	76%
 BE	16%	15%	25%	46%	8%	71%
 BG	54%	34%	30%	8%	13%	38%
 CZ	44%	17%	24%	24%	7%	49%
 DK	17%	16%	37%	39%	4%	76%
 DE	12%	11%	53%	29%	4%	81%
 EE	41%	18%	24%	27%	14%	51%
 IE	33%	21%	23%	34%	10%	57%
 EL	41%	31%	41%	7%	11%	48%
 ES	35%	26%	29%	22%	11%	51%
 FR	16%	18%	27%	43%	5%	70%
 IT	23%	24%	31%	25%	13%	56%
 CY	14%	13%	31%	33%	4%	63%
 LV	38%	17%	32%	21%	12%	53%
 LT	44%	29%	21%	26%	17%	47%
 LU	24%	28%	29%	32%	6%	61%
 HU	43%	25%	19%	24%	14%	43%
 MT	12%	16%	6%	61%	3%	67%
 NL	15%	10%	20%	58%	5%	78%
 AT	14%	13%	45%	34%	3%	78%
 PL	38%	24%	29%	21%	13%	50%
 PT	38%	33%	36%	13%	12%	49%
 RO	50%	29%	28%	12%	19%	40%
 SI	42%	29%	25%	22%	13%	47%
 SK	44%	25%	25%	19%	12%	44%
 FI	30%	28%	21%	33%	10%	54%
 SE	18%	21%	35%	35%	7%	69%
 UK	17%	11%	22%	52%	8%	74%
 IS	16%	21%	38%	26%	9%	64%
 NO	20%	22%	42%	27%	6%	68%

Socio-demographic differences and potentially vulnerable consumers

As shown on the next page, there are variations in the proportion of respondents saying they are not influenced by advertisements about fuel types.

Those who ended their education by the age of 19 are more likely to say that they are not influenced by these advertisements (68% say they are not influenced, compared with 61% of those ending their education at the age of 20 or above). However, more educated respondents are also less likely to have ever looked at or listened to advertisements about vehicle fuels.

In addition, respondents who infrequently or never buy branded fuel are less likely to say they are influenced (73% say they are not influenced, compared with 56% of those who frequently buy branded fuel).

Respondents who rarely or never compare fuel prices are more likely to say that they are not influenced by advertisements (71%, compared with 61% of those who compare prices always or very often, and 62% of those who often do so). There is also a difference in terms of methods used to compare prices. Those who only use more 'traditional' price comparison methods (66%) are more likely to say they are not influenced than those who use online methods (56%).

However, respondents who spend a greater share of their income on fuel are also more likely to say they are influenced by fuel advertisements (42% of those spending no more than 5% of their income say they are not influenced, compared with 66% to 21% or more of their income on fuel).

Respondents with older vehicles are also less likely to say they are influenced by fuel advertisements (67% of those with a vehicle more than 10 years old, compared with 61% to 62% of those with a newer vehicle).

Those who rarely or never buy fuel in other EU countries are more likely to say that they are not influenced by advertisements (64%) than those who frequently or regularly (51%) do so. This seemed to be reflected in the importance of non-price factors; those who buy fuel abroad frequently (16%) or regularly (13%) are more likely to say that eco-friendly or alternative features were important, compared with those who rarely or never do so (9%).⁸⁴

⁸⁴ Please refer to Part 2 of this study for further details.

Table 56. Aspects of advertisements that influence fuel purchasing decision, analysis by socio-demographic characteristics

Source Consumer survey, Question 20: What aspects of advertisements about vehicle fuels can influence your purchasing decision? Please indicate all aspects that are relevant. (N=25797, EU27)

	Sub-sample	Ads about effects of fuels on engine performance	Ads about effects of fuels on the environment	Ads about other aspects of fuels	None, I do not trust any aspects of ads about fuels	None, never looked at or listened to ads about fuels
Average	EU27	25%	19%	9%	32%	31%
Gender	Male	26%	17%	10%	36%	27%
	Female	25%	22%	8%	28%	35%
Age	18-24	31%	25%	15%	25%	24%
	25-39	27%	20%	11%	31%	28%
	40-54	24%	19%	8%	34%	31%
	55+	23%	18%	6%	33%	36%
Education (Age when stopped)	15 or younger	19%	14%	11%	28%	40%
	16-19	22%	15%	7%	32%	36%
	20 or older	27%	22%	9%	33%	28%
	Still studying	32%	27%	16%	27%	21%
Percentage of monthly income spent on fuel	1 - 5%	20%	16%	6%	34%	37%
	6 - 10%	25%	19%	9%	32%	31%
	11 - 20%	30%	20%	11%	32%	26%
	21% or more	30%	22%	14%	30%	26%
Compare fuel prices	Always / Very often	27%	21%	10%	34%	27%
	Often	27%	19%	8%	31%	30%
	Rarely / Never	19%	16%	7%	27%	44%
Methods of comparing fuel prices	Using online tools	31%	23%	12%	32%	24%
	Using other methods	23%	18%	8%	32%	34%
Buys branded fuel	Frequently	31%	23%	11%	29%	27%
	Infrequently / Never	17%	14%	6%	36%	37%
Vehicle age	Less than 5 years old	25%	20%	10%	31%	30%
	5 to 10 years old	27%	20%	9%	32%	30%
	More than 10 years old	23%	18%	7%	33%	34%
Place of residence	Rural area	20%	16%	7%	33%	37%
	Urban area	26%	19%	10%	31%	32%
	Metropolitan area	29%	22%	10%	33%	25%
Buys fuel in another EU	Frequently	25%	24%	19%	28%	23%
	Regularly	31%	24%	18%	30%	21%

country	Rarely or never	25%	19%	8%	32%	32%

5.2.5 Ease of activities related to consumer decision making

Stakeholders were also asked to what extent they agreed with the statements that consumers found it easy to 'compare fuel prices', 'time fuel purchases to take advantage of low points in price cycles', 'compare the performance of branded fuels, generic fuels, and fuels sold at supermarkets', and 'assess the performance of premium fuels compared to regular fuel'. These aspects help frame the awareness of consumers regarding price, performance of regular and remain fuel types, and therefore decision making. The distribution of responses can be seen in the table below.

Table 57. Ease of carrying out activities related to aspects of vehicle fuels

Source: Stakeholder survey, Question 8: For each of the following items ... please indicate how easy you think it is for consumers to effectively carry out the activity in your country. (N=70, EU27 national-level stakeholders)
Note: Responses of

Item	Very easy	Fairly easy	Not very easy	Not at all easy
Compare fuel prices	33%	55%	10%	2%
Time fuel purchases to take advantage of low points in price cycles	12%	22%	35%	32%
Compare the performance of branded fuels, non-branded / generic fuels and sold at supermarkets	7%	12%	31%	51%
Assess the performance of premium fuels versus branded fuel	3%	30%	25%	41%

As can be seen in the table above, the vast majority 88% of stakeholders indicated that comparing fuel prices was at least 'fairly easy' in their respective countries. However, timing fuel purchases to take advantage of low points in price cycles was not seen as being particularly easy, with more judging it as not very easy or not at all easy (67%) than not.

Only one fifth (19%) of responding EU27 stakeholders were of the opinion that it is easy for consumers in their country to compare the performance of branded fuels, generic/non-branded fuels, and supermarket fuels. Indeed, the majority of stakeholders (51%) reported that this fuel performance comparison is not at all easy. An additional 31% of stakeholders indicated that it is not very easy.

A larger proportion of stakeholders (33%) indicated that it is easy for consumers to assess the performance of premium fuels against regular fuel. However, only

3% of stakeholders regarded this as very easy, and 41% reported it to be not at all easy; 25% suggested it is not very easy.

5.2.6 Summary - key issues affecting fuel purchases

Based on their understanding of the vehicle fuels market and the information they are able to gather, active consumers in this market must often make decisions about which retailer to purchase fuel from, and then which type of fuel to use. In this sense, the vehicle fuels market is arguably a notable one, sharing certain characteristics of markets for services of general interest and essential goods: though the exact purchase rate depends on how often and far consumers drive, fuel purchasing decisions are generally made on a consistent and relatively frequent basis.

This does assume that consumers are not loyal to a particular brand or individual petrol station, in which case their decisions are essentially pre-made, but the fact that only 13% and 10% of consumer survey respondents, respectively, indicated 'sells my preferred brand' and 'is at my preferred supermarket chain' as important considerations for their selection of a petrol station suggests that most were open to purchasing fuel from various retailers.⁸⁵

In more detail, the conclusions of this study on the timing of fuel purchases and retailer selection include:

- ▶ Almost half of consumer survey respondents say that they usually fill up their vehicle when the tank is nearly empty (46%), while 19% fill up whenever they see a good deal or see that prices have fallen; only 2% fill up on specific days of the week. This suggests somewhat limited potential for consumers to thoroughly compare prices and especially to take advantage of low points in price cycles, because filling up when the tank is nearly empty compels rapid decision-making and lessens the possibility to schedule purchases for certain days.
- ▶ The more knowledgeable respondents are about fuels the more likely they are to say they fill up when they see a good deal (26% of those in the 'most knowledgeable' group, compared with 20% of those in the 'more knowledgeable' group and 16% in the 'least knowledgeable' group).
- ▶ The critical factor in consumers' decision-making in terms of retailer selection is price: 68% of consumer survey respondents indicated 'offers the lowest price' as an important consideration in their choice of a petrol station, compared to 43% who indicated location convenience – the next highest ranked consideration.

⁸⁵ This notion is supported by the finding that 68% of respondents to the consumer survey base their station selection on the lowest price.

- ▶ Aside from price, a factor in the selection of a particular petrol station is the offer of a loyalty card or membership scheme (22%), while one in five respondents (20%) use a petrol station nearby when they have nearly run out of fuel.

These findings confirm price as the primary factor on which the selection of petrol stations is based. However, they also suggest that many consumers may in fact be constraining their potential to make decisions based on price by filling up their vehicle when the tank is nearly empty and using a petrol station located nearby at that time. In this sense, it is notable that survey respondents that are more knowledgeable about vehicle fuels were more likely to report filling up when they see a good deal.

But this price-based decision making is also observable in the results for the consumer survey question on premium fuels to which 47% of respondents described premium fuels as too expensive. Digging even deeper into the premium fuels question, we see that despite the fact that 24% described premium fuels as superior in quality and 21% say they improve vehicle performance (and only 8% say they offer no benefit!), just 9% (in Question 16) report only using premium diesel and 8% report using only premium petrol; in other words, respondents think premium fuels are superior (which may or may not be the case) but they won't spend more to buy them.

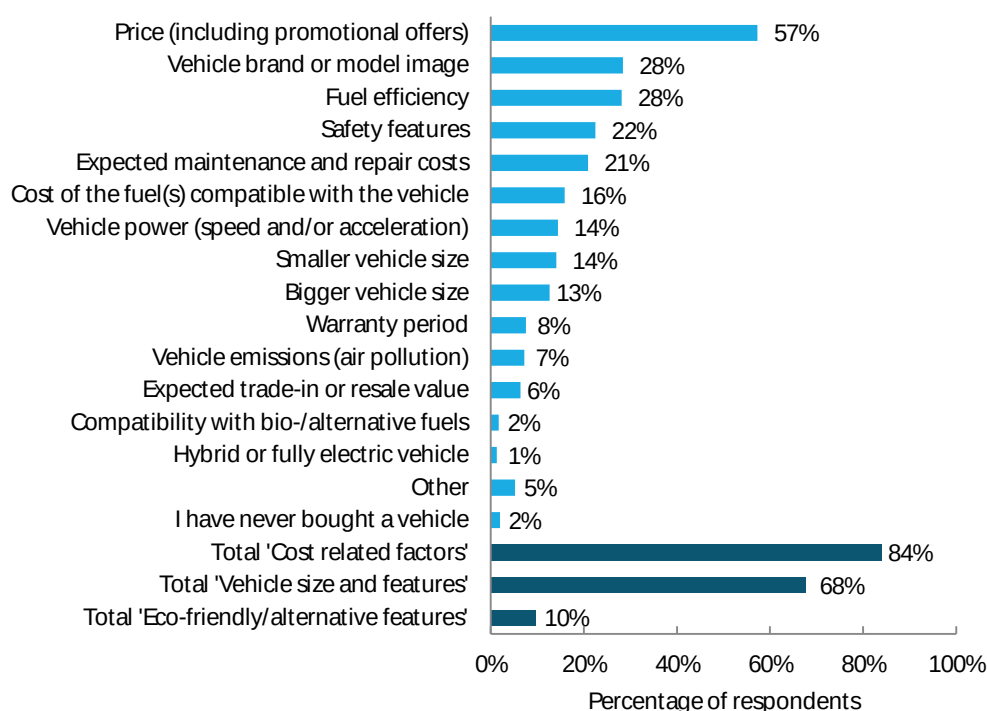
5.2.7 Considerations for vehicle purchases

Respondents were asked for the factors most important in their last vehicle purchase, choosing up to 3 items from a list of 14.⁸⁶ Price ranks highest (mentioned by 57%), followed by vehicle brand or model image (28%), fuel efficiency (28%), safety features (22%), expected maintenance and repair costs (21%), and cost of the compatible fuel (16%). By grouping the individual responses together, we can see that cost-related issues are important to most respondents, while vehicle brand, size and features are also important to a large proportion. Fuel efficiency and costs are the third ranked group of issues, while eco-friendly or alternative features of the vehicle are relatively less important.

⁸⁶ Question Q21: When you last bought a vehicle which of the following factors was most important to you? Please indicate up to three factors.

Figure 31. Most important factors in vehicle purchases

Source: Consumer survey, Question 21: When you last bought a vehicle which of the following factors was most important to you? Please indicate up to three factors. (N= 25797, EU27)
Note: Multiple answers possible.



As can be seen in the detailed table below, the importance of price is consistent across different countries, and the proportions who say that vehicle size and features are important are also similar across different countries.

The main differences are in relation to fuel efficiency, which is mentioned more frequently in EU12 countries than EU15 countries (41% compared with 25%), with the highest figures in Bulgaria (53%), Estonia (52%), Romania (50%) and Poland (50%).

Expected maintenance and repair costs are also more likely to be seen as important in EU12 countries (32%, compared with 18% in EU15 countries), especially Bulgaria (44%), Hungary (39%) and Romania (39%). Respondents are most likely to mention eco-friendly or alternative features in Luxembourg (21%) and Malta (20%).⁸⁷

⁸⁷ Please refer to Part 2 of this study for further details.

Table 58. Most important factors in vehicle purchases, analysis by country

Source: Consumer survey, Question 21: When you last bought a vehicle which of the following factors was most important to you? Please indicate up to three factors. (N= 25797 for EU27)
Note: Multiple answers possible.

	Price (including promotional offers)	Fuel efficiency	Vehicle brand or model image	Safety features	Expected maintenance and repair costs	Cost of fuel(s) compat. with the vehicle	Vehicle power (speed and / or acceleration)
EU27	57%	28%	28%	22%	21%	16%	14%
EU15	59%	25%	28%	23%	18%	16%	14%
EU12	53%	41%	30%	22%	32%	17%	18%
Countries with E10	62%	12%	30%	21%	16%	19%	16%
 BE	64%	25%	28%	21%	13%	12%	12%
 BG	44%	53%	30%	14%	44%	22%	19%
 CZ	52%	5%	20%	25%	34%	16%	24%
 DK	53%	14%	8%	26%	24%	17%	13%
 DE	62%	17%	25%	25%	16%	15%	16%
 EE	62%	52%	26%	18%	35%	10%	12%
 IE	56%	47%	27%	21%	17%	15%	10%
 EL	61%	7%	35%	32%	30%	13%	19%
 ES	57%	16%	36%	31%	19%	16%	19%
 FR	62%	5%	37%	15%	15%	26%	16%
 IT	56%	44%	22%	24%	17%	13%	7%
 CY	39%	9%	40%	19%	12%	11%	10%
 LV	54%	45%	26%	19%	37%	20%	14%
 LT	54%	32%	28%	28%	37%	28%	12%
 LU	47%	30%	31%	35%	12%	11%	17%
 HU	57%	21%	30%	28%	39%	19%	17%
 MT	22%	49%	35%	14%	7%	15%	12%
 NL	56%	35%	18%	15%	18%	9%	12%
 AT	64%	17%	24%	27%	17%	16%	17%
 PL	53%	50%	32%	21%	22%	17%	19%
 PT	59%	21%	34%	25%	31%	21%	12%
 RO	52%	50%	34%	21%	39%	12%	13%
 SI	50%	9%	33%	36%	36%	19%	16%
 SK	57%	45%	25%	26%	27%	14%	21%
 FI	50%	18%	29%	27%	19%	7%	12%
 SE	54%	23%	17%	28%	19%	15%	8%
 UK	57%	42%	28%	17%	19%	12%	11%
 IS	48%	33%	27%	24%	24%	6%	12%
 NO	51%	15%	14%	31%	24%	10%	12%

Socio-demographic differences and potentially vulnerable consumers

As regards socio-demographic characteristics, those who frequently buy branded fuel are more likely to say that fuel efficiency was important (31%, compared with 24% who buy branded fuel infrequently or never). Petrol users are less likely to say fuel efficiency was important (26%, compared with 31% of diesel users), and the same applies to the cost of fuel compatible with the vehicle (10%, compared with 23%). Petrol users were more concerned than diesel users about price when they last bought a vehicle (59% compared with 54%).

In terms of buying a new vehicle, those with newer vehicles (less than five years old) are more likely to say that fuel efficiency was important (31%, compared with 24% of those with vehicles more than 10 years old), as well as vehicle emissions (10%, compared with 4%), and eco-friendly or alternative features (14%, compared with 6%).⁸⁸

Respondents who compare fuel prices always, very often or often are more likely to say that cost issues are important (86% who compare prices always / very often and 85% of those who often do so, compared with 77% who rarely or never compare prices). The same holds for fuel efficiency (30% who compare prices always / very often say it was important and 29% of those who often compare price say fuel efficiency was important, compared with 21% who rarely or never compare prices). A table with the full details relating to these issues can be seen below.

⁸⁸ Please refer to Part 2 of this study for further details.

Table 59. Most important factors in vehicle purchases, analysis by socio-demographic characteristics

Source Consumer survey, Question 21: When you last bought a vehicle which of the following factors was most important to you? Please indicate up to three factors. (N= 25797, EU27). Note: Multiple answers possible.

Sub-sample		Price (including promotional offers)	Fuel efficiency	Vehicle brand or model image	Safety features	Expected maintenance and repair costs	Cost of fuel(s) compat. with the vehicle	Vehicle power (speed and / or acceleration)
Average	EU27	57%	28%	28%	22%	21%	16%	14%
Gender	Male	56%	29%	32%	22%	21%	16%	16%
	Female	56%	27%	25%	23%	21%	15%	13%
Age	18-24	58%	27%	23%	14%	21%	19%	17%
	25-39	58%	28%	26%	19%	21%	17%	15%
	40-54	59%	28%	28%	24%	21%	15%	14%
	55+	56%	29%	33%	27%	20%	14%	13%
Compare fuel prices	Always / Very often	58%	30%	27%	24%	22%	18%	14%
	Often	59%	29%	30%	21%	21%	15%	14%
	Rarely/Never	55%	21%	31%	20%	18%	11%	15%
Buys branded fuel	Frequently	55%	31%	30%	24%	22%	15%	15%
	Infrequently / Never	62%	24%	26%	20%	19%	18%	13%
Type of fuel most frequently bought	Petrol	59%	26%	28%	22%	22%	10%	14%
	Diesel	54%	31%	31%	24%	18%	23%	16%
	Other type of fuel	55%	33%	17%	15%	25%	39%	9%
Vehicle age	Less than 5 years old	55%	31%	30%	25%	17%	15%	15%
	5 to 10 years old	58%	29%	29%	24%	22%	17%	15%
	More than 10 years old	58%	24%	26%	17%	25%	15%	14%
Buys fuel in another EU country	Frequently	45%	24%	25%	19%	16%	13%	14%
	Regularly	49%	32%	30%	26%	20%	15%	16%
	Rarely or never	59%	28%	29%	23%	21%	16%	14%
Market knowledge	Least knowledgeable	56%	28%	28%	22%	20%	15%	13%
	More knowledgeable	58%	29%	28%	23%	22%	16%	15%
	Most knowledgeable	57%	26%	32%	24%	22%	17%	17%

6 CONSUMER CHOICE IN THE MARKET

This section deals with consumer choice in the vehicle fuels market. It explores whether consumers are adequately served by a range of suitable fuels for their vehicles and what influences their choice of petrol stations and fuel type.

6.1 RANGE OF FUEL TYPES AVAILABLE

Key findings of this section are:

1. Across the EU as well as Iceland and Norway, results from the stakeholder survey showed that the most widely available fuel types were regular diesel and unleaded petrol with a RON of 95; the third most widely available was unleaded petrol with a RON of 98. Premium fuel types were in the rule at least widely available, though not to the same extent as the regular fuel types.⁸⁹
2. A large majority of stakeholders reported that certain specific fuel types were available only at a very low (<10%) proportion of stations. These included Natural Gas, E85, E100, and pure Biodiesel (B100). While these were not widely available, considerable proportions of stakeholders did hold these fuels to be available to a limited extent.
3. Though regular petrol and diesel fuel types are more or less widely available in all countries surveyed, significant country variation exists when considering the less widely used types of fuels.
4. Regarding the most common types of vehicle fuels available, consumer survey respondents indicated that they mostly frequently bought petrol (61%), followed by diesel (36%) or other types of fuel (3%). Petrol users were most likely to use only regular petrol (76%), an identical proportion to diesel users who were most likely to only use regular diesel, as opposed to premium or other types of diesel such as biodiesel. The distribution of fuel types bought by survey respondents varied considerably by country - in Greece, for example, the vast majority (93%) of consumer survey respondents bought petrol, compared to only 33% in France.
5. According to the stakeholder survey, the most widely available alternative fuel was LPG and was proportionally chosen over a wider number of countries than E10 fuel. Natural gas and other alternatives were reported to be less widely available.

⁸⁹ However, it is important to note that the study did not attempt to specify whether consumers bought branded or non-branded biofuels.

Consumer choice of fuels is influenced by the availability of different fuel types in Member States. Several questions of the stakeholder survey focused on fuel type availability, supply disruptions, factors influencing fuel purchasing behaviour, and the planned introduction of biofuels.

In regards fuel choice, stakeholders were presented with a list of fuel types and asked to what extent they are available at petrol stations in their respective countries. Respondents could answer that each individual fuel type was available at "almost all stations (>90%)", "widely available (50-90% of stations)", "limitedly available (10-50% of stations)", "available at very few stations (<10%)", or "don't know". The full results are reproduced in the table below.

Table 60. Fuel type availability

Source: Stakeholder survey, Question 11: Which of the following types of fuel are available at petrol stations in your country? (N=80, EU27, IS and NO) Note: Percentages in the table indicate the proportion of stakeholders selecting the answer. They exclude the proportion

Fuel type	Available at almost all stations (>90%)	Widely available (50-90% of stations)	Limitedly available (10-50% of stations)	Available at very few stations (<10% of stations)
Unleaded Petrol (min RON 95)	96%	1%	1%	1%
Regular Diesel	90%	5%	0%	6%
Diesel B7	70%	3%	0%	28%
Unleaded Petrol (min RON 98)	50%	31%	16%	3%
Premium Diesel	39%	20%	36%	5%
Unleaded Petrol (RON >98)	20%	20%	26%	35%
Unleaded Petrol (min RON 91)	16%	0%	11%	73%
E10	15%	9%	12%	65%
LPG/GPL/Autogas	10%	19%	24%	48%
E85	3%	6%	15%	76%
Pure Biodiesel (B100)	3%	0%	8%	89%
Natural Gas / CNG / Erdgas	2%	2%	11%	85%
E100	0%	0%	5%	95%

Across the EU as well as Iceland and Norway, results from the stakeholder survey showed that the most widely available fuel types were regular diesel and unleaded petrol with a RON of 95; the third most widely available was unleaded

petrol with a RON of 98. Premium fuel types were in the rule at least widely available, though not to the same extent as the regular fuel types.⁹⁰

A large majority of stakeholders reported that certain specific fuel types were available only at a very low (<10%) proportion of stations. These included Natural Gas, E85, E100, and pure Biodiesel (B100). While these were not widely available, considerable proportions of stakeholders did hold these fuels to be available to a limited extent. LPG/GPL fuel was at least widely available according to nearly a third of stakeholders; this was slightly more than the availability of E10 fuel, which is concentrated in only a few countries, though it is widely available within these countries.

Though regular petrol and diesel fuel types are more or less widely available in all countries surveyed, significant country variation exists when considering the less widely used types of fuels.⁹¹ The breakdown of stakeholders' views on fuel availability by country is presented the table, below.

⁹⁰ The availability of premium fuel may to a large part depend on marketing strategies of retailers that employ extremeness aversion; that is, more expensive fuels available stimulate existing regular sales, as consumers believe they are saving money.

⁹¹ Indeed, caution should be employed when interpreting overall results, as the numbers of stakeholders varies by country; for example in France, only one stakeholder responded to the survey, compared to five in Germany. The overall figures cited should be considered indicative in character.

Table 61. Range of fuel types available according to stakeholders, per country (all country level stakeholders)

		Petrol (RON 95)	Regular Diesel	Petrol (RON 98)	Premium Diesel	Diesel B7	Petrol (RON >98)	LPG/GPL	Petrol (RON 91)	E10	Natural Gas	E85	Biodiesel B100
	BE	✓✓	✓✓	✓✓	✓✓	(✓✓) ^a	(✓) ^a	(✓✓) ^a	(✓) ^a	-	-	-	-
	BG	✓✓	✓✓	✓✓	✓✓	✓✓	(✓✓) ^a	✓✓	-	-	✓	-	-
	CZ	✓✓	✓✓	(✓✓) ^a	(✓✓) ^a	(✓✓) ^a	(✓✓) ^a	(✓✓) ^a	✓	-	(✓) ^a	✓	(✓) ^a
	DK	✓✓	✓✓	(✓) ^a	(✓✓) ^a	(✓✓) ^a	-	-	(✓✓) ^a	-	-	-	-
	DE	✓✓	(✓✓) ^a	✓✓	(✓✓) ^a	✓✓	(✓✓) ^a	(✓) ^a	-	✓✓	-	-	-
	EE	✓✓	✓✓	✓✓	✓✓	-	✓✓	(✓✓) ^a	(✓✓) ^a	-	-	-	-
	IE	✓✓	✓✓	-	-	-	-	-	✓✓	-	-	-	-
	EL	✓✓	✓✓	✓✓	(✓) ^a	✓✓	(✓✓) ^a	-	(✓) ^a	-	(✓) ^a	-	-
	ES	(✓✓) ^a	✓✓	✓✓	✓✓	(✓✓) ^a	-	-	-	(✓✓) ^a	-	-	-
	FR	✓✓	(✓✓) ^b	✓	✓	✓✓	-	✓	-	✓	-	-	-
	IT	(✓✓) ^a	✓✓	(✓✓) ^a	(✓✓) ^a	(✓✓) ^a	(✓✓) ^a	(✓) ^a	-	-	-	-	-
	CY	✓✓	✓✓	✓✓	✓✓	-	✓	✓✓	-	-	-	-	-
	LV	✓✓	✓✓	✓	✓✓	-	✓✓	(✓✓) ^a	-	✓	-	-	-
	LT	✓✓	✓✓	✓✓	(✓✓) ^a	-	(✓✓) ^a	(✓✓) ^a	-	-	-	(✓) ^a	-
	LU	✓✓	✓✓	✓✓	✓✓	-	✓✓	-	-	-	-	-	-
	HU	✓✓	✓✓	(✓✓) ^a	✓	-	(✓) ^a	-	-	-	-	(✓) ^a	-
	MT	✓✓	✓✓	-	-	✓✓	-	-	✓✓	-	-	-	(✓) ^a
	NL	✓✓	✓✓	(✓✓) ^a	(✓✓) ^a	(✓✓) ^a	✓✓	✓✓	(✓✓) ^a	(✓) ^a	(✓) ^a	-	-
	AT	✓✓	(✓✓) ^b	✓✓	✓	✓✓	✓	-	✓	-	(✓) ^a	-	-
	PL	✓✓	(✓✓) ^a	✓✓	(✓) ^a	✓✓	-	✓✓	-	-	-	-	(✓) ^a

		Petrol (RON 95)	Regular Diesel	Petrol (RON 98)	Premium Diesel	Diesel B7	Petrol (RON >98)	LPG/GPL	Petrol (RON 91)	E10	Natural Gas	E85	Biodiesel B100
	PT	✓✓	✓✓	✓✓	(✓✓) ^a	✓✓	(✓✓) ^a	-	(✓✓) ^a	-	-	-	-
	RO	✓✓	✓✓	✓✓	✓✓	-	✓✓	✓✓	-	-	-	-	-
	SI	✓✓	✓✓	✓	-	-	✓✓	✓	-	-	-	-	-
	SK	✓✓	✓✓	✓✓	(✓✓) ^a	-	-	(✓) ^a	(✓) ^a	-	-	-	-
	FI	-	(✓✓) ^b	-	-	-	-	-	-	✓✓	-	✓✓	-
	SE	✓✓	✓✓	✓✓	✓✓	✓✓	-	-	-	-	-	✓✓	-
	UK	✓✓	✓✓	✓✓	✓✓	✓✓	-	(✓✓) ^a	-	-	-	-	-
	IS	✓✓	✓✓	(✓✓) ^a	-	-	-	-	-	-	-	-	-
	NO	✓✓	✓✓	-	-	-	✓✓	✓✓	-	-	✓✓	-	✓✓

Source: Stakeholder survey, Question 11: Which of the following types of fuel are available at petrol stations in your country? (N=74, EU27, IS, and NO).
Note:

✓✓ = widely available: available at 50% or more of petrol stations, according to stakeholders.

✓ = available at 10-50% of petrol stations, according to stakeholders.

- = available at very few stations, not available at any stations, or no information regarding availability was provided by stakeholders.

(a): contradiction in stakeholder responses in which stakeholders disagreed about extent of availability. (b): contradiction in which stakeholders indicated that a fuel type is not available however fuel type availability was independently verified through mystery shopping exercises or in petrol station visits.

According to stakeholder respondents, by far the most common petrol sold was that of unleaded petrol with a RON of 95, which was widely available at 50% or more of petrol stations in all countries surveyed according to stakeholders, with the exception of Finland, where it has been replaced with 95 octane E10 petrol.

Regular diesel fuel was reported to be available throughout the EU. This category was followed by unleaded petrol with a RON of 98. In Italy, regular diesel fuel was the only type of fuel to be considered by all stakeholders as being widely available, even though stakeholders disagreed about the extent of the availability of other fuel types, including even standard petrol with a RON of 95.

B7 diesel fuel (7% biodiesel) was claimed to be widely available in countries as varied as Bulgaria, Germany, Greece, France, Malta, Austria, Poland, Sweden, and the UK by more than one stakeholder.

Premium petrol with a RON over 98 was reported by stakeholders to be widely available at 50% or more of stations in fewer countries; only in Estonia, Lithuania, Luxembourg, the Netherlands, Romania, and Slovenia. LPG/GPL fuel was reported to be available mostly in EU12 Member States, namely Bulgaria, Czech Republic, Estonia, Latvia, Poland, and Romania, but it was also reported to be widely available in Netherlands, Cyprus, and Belgium.

According to stakeholders and going by the order of the fuels presented in the table above, unleaded petrol with a RON of 91 was only widely available at 50% or more of petrol stations in a few states. However in several of these states (such as Denmark), evidence from stakeholders was contradictory, indicating that supply may be more limited.

This limited availability should be examined from the perspective that petrol with slightly different RON levels below 95 are available; for example, in Denmark unleaded petrol with a RON of 92 is typically sold alongside petrol with a RON of 95, and diesel.⁹²

Fuel with an ethanol content of 10% (E10) was reported to be in wide use in Germany, and Finland, with the stakeholder in France reporting that it was in use at 10 to 50% of stations. This is consistent with available information; while in Germany the introduction and controversy around E10 is well known, in Finland E10 petrol was reported to have gained a 55% market share in 2012.⁹³ This is at

⁹² For example, the 'FDM Benzinpriser' price comparison website allows users to search for prices based on petrol with a RON of 92 ('92 Blyfri'), petrol with a RON of 95 ('95 Blyfri'), and diesel. See: <http://www.fdmbezinpriser.dk/searchprices/1/>

⁹³ According to statistics from the Finnish Petroleum Federation. In 2011, the share of E10 was 48%, even though in Finland, the E10 petrol was introduced on January 1, 2011. See the following link for more details:
http://www.e10bensiiini.fi/en/news/press_releases/finnish_petroleum_federation_e10_petrol_gained_a_55_per_cent_market_share_in_2012.306.news

least partially due to the fact that regular petrol 95 with a 5% ethanol blend is no longer available in Finland. Other fuel types were much rarer. E85 fuel was indicated as being widely available only in the two Nordic countries of Finland and Sweden. The Norwegian stakeholder cited both B100 pure biodiesel and Natural Gas as widely available fuel types in Norway, unique amongst all countries surveyed.

6.1.1 Summary - range of choice in the vehicle fuels market

Overall, the data analysed so far provides a diverse picture of different fuel types available across the EU, Iceland, and Norway. This section includes a summary of the data from consumer and stakeholder respondents, interviews, and other studies.

Regarding the most common types of vehicle fuels available, consumer survey respondents indicated that they mostly frequently bought petrol (61%), followed by diesel (36%) or other types of fuel (3%). Petrol users were most likely to use only regular petrol (76%), an identical proportion to diesel users who were most likely to only use regular diesel, as opposed to premium or other types of diesel such as biodiesel. The distribution of fuel types bought by survey respondents varied considerably by country - in Greece, for example, the vast majority (93%) of consumer survey respondents bought petrol, compared to only 33% in France.

Stakeholders surveyed generally agreed on the widespread availability of these fuel types, and listed the following fuels as most widely available:

- ▶ Unleaded Petrol (min RON 95);
- ▶ Regular Diesel;
- ▶ Unleaded Petrol (min RON 98).

Premium fuel types were in the rule at least widely available, though not to the same extent as the regular fuel types.

In interviews conducted for this study, stakeholders also emphasised the wide availability of basic fuel grades, while the availability of premium fuels depends largely on the extent to which the companies offering them are present in a given country. The availability of biofuels is also expanding, according to the interviewed stakeholders.

The balance between consumer use of diesel and petrol fuel has been changing in recent years. Research from the European Environmental Agency⁹⁴ and the International Council on Clean Transportation⁹⁵ found that the market share of

⁹⁴ EEA, Monitoring CO2 emissions from new passenger cars in the EU: summary of data for 2011, European Environment Agency, 2013.

⁹⁵ ICCT, European Vehicle Market Statistics: Pocketbook 2012.

new diesel cars is 55% on average in the EU, but is as high as 75% for some individual Member States. For example, Belgium, France, and Spain have diesel take-up rates over 70%, while in the Netherlands the rate is much lower, at 28%.⁹⁶ Diesel tends to be the preferred fuel for larger vehicles, while for mini/small and sport vehicles petrol is the more popular choice.

However, this has reflected a move away from petrol cars over the years (See table below) in terms of new vehicles sold. Alternative fuel vehicles (including electric cars) have also increased in level from a very low base. However, these appear to be somewhat dependent on government policies, often experiencing a sudden surge in sales followed by an equally rapid collapse.⁹⁷ Results from this study, which show that 61% of consumer survey respondents use a petrol vehicle, indicate the large extent to which older cars change the overall picture, however.

Table 62. Share of fuel type in new passenger cars, in percent (EU 27)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Petrol	59.2	55.5	51.9	50.7	49.4	47.3	47.4	51.1	45.3	43.4
Diesel	40.7	44.4	47.9	49.1	50.3	51.9	51.3	45.1	51.3	55.2
AFV incl. electric	0.1	0.1	0.2	0.3	0.3	0.7	1.3	3.8	3.5	1.4

Source: European Environmental Agency, 2013, p.8. AFV: Alternative fuel vehicles.

According to the stakeholder survey, the most widely available alternative fuels was LPG and was proportionally chosen over a wider number of countries than E10 fuel. Natural gas and other alternatives were reported to be less widely available.

However, the extent to which alternative fuels, such as LPG, natural gas, E85, and others, are available differs starkly across the Member States. In interviews conducted for this study, lower prices, different tax rates on these fuels and their varying compatibility with vehicles across the Member States were factors reported to explain the divergent availability of these fuels.⁹⁸

⁹⁶ Ibid., p.38.

⁹⁷ Ibid., p.38.

⁹⁸ Previous research for the European Commission on the assessment of the implementation of a European alternative fuels strategy in 2011 also assessed the existing infrastructure for alternative fuels using a comprehensive stakeholder survey. This report highlighted the significant role played by filling stations containing E85 in Sweden, Germany, France, the Netherlands, the Czech Republic, Spain, and Hungary for flex-fuel vehicles (FFVs). See: Exergia, *Assessment of the implementation of a European alternative fuels strategy and possible alternative proposals, Final Report to the European Commission*, 2011.

6.2 FUEL TYPES PURCHASED BY CONSUMERS

This section details the range of choice in the EU, Iceland, and Norway. Specifically, it explores whether consumers in these countries have a similar range of choice of fuels, if there any constraints on choice such as shortages on the supply side, and if so, how these constraints are resolved. To analyse these questions, data from the consumer survey, stakeholder survey, mystery shopping exercises, and desk research conducted for this study is presented.

Key findings of this section are:

1. The majority of consumer survey respondents buy petrol for the vehicle they most frequently drive (61%), while 36% buy diesel and 3% another type of fuel.
2. Petrol users are most likely to use only regular petrol (76%), while 8% use premium petrol and 7% use E10. In total, 10% of respondents use more than one type of petrol.
3. Diesel users are most likely to use only regular diesel (76%), while 9% use premium diesel and 1% use B7 diesel. In total, 12% of respondents use more than one type of diesel. These proportions are almost identical to those seen for use of different types of petrol.
4. In line with these consumer survey findings, results from the stakeholder survey showed that the most widely available fuel types across the EU as well as Iceland and Norway were regular diesel and unleaded petrol with a RON of 95; the third most widely available was unleaded petrol with a RON of 98. Premium fuel types were in the rule at least widely available, though not to the same extent as the regular fuel types.
5. If consumer survey respondents buy a type of fuel other than petrol or diesel, it is likely to be LPG (84% of those that buy another type of fuel), natural gas (8%), or E85 or E100 (6%). However, it is possible to examine differences between EU15 and EU12 countries; this shows that use of LPG / GPL / Autogas is higher in EU12 countries (93%) than EU15 countries (78%), while use of Natural gas / CNG / Erdgas is higher in EU15 countries (11% compared with 4% in EU12 countries).

6.2.1.1 Proportion of petrol versus diesel fuel purchased

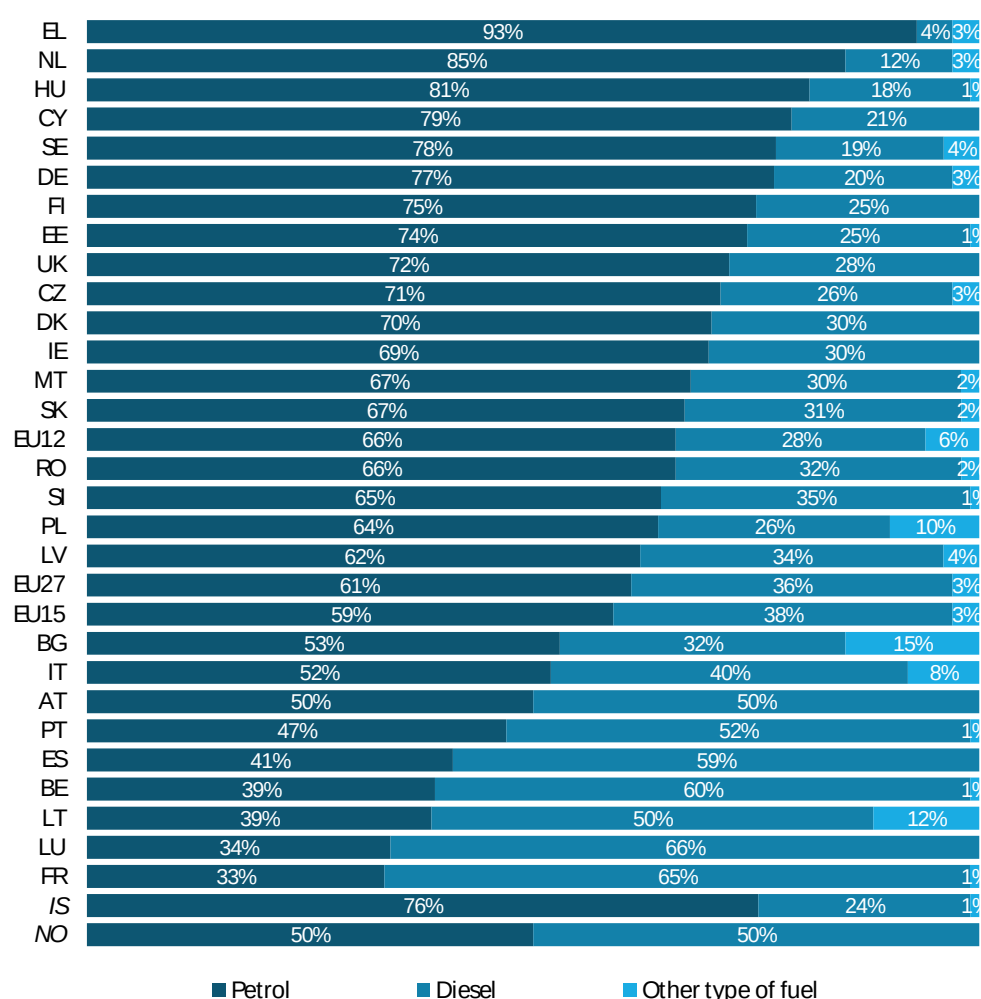
Consumer survey respondents in the EU as well as Iceland and Norway were questioned as to their choice of fuel types, including premium and branded fuels. This can be considered a comprehensive review of which fuels are used across Europe, from the perspective of the respondents. These results are presented

below, and results are summarised on a country basis and cross-tabulated with socio-demographic and other relevant characteristics, the full tables of which can be found in Part 2 of this study.

As shown in the figure below, use of petrol is highest among respondents in Greece (93%), the Netherlands (85%), Hungary (81%) and Cyprus (79%), while diesel is most prevalent in Luxembourg (66%), France (65%) and Belgium (60%). Respondents are most likely to buy other types of fuel in Bulgaria (15%), Lithuania (12%) and Poland (10%).

Figure 32. Type of fuel bought for most frequently driven vehicle, analysis by country

Source: Consumer survey, Question 16: Which type of fuel do you buy for the vehicle you most frequently drive? (N= 25797 for EU27)



Socio-demographic differences and potentially vulnerable consumers

The majority of survey respondents buy petrol for the vehicle they most frequently drive (61%), while 36% buy diesel and 3% another type of fuel.⁹⁹

Men (who tend to drive greater distances) are more likely than women to buy diesel (40% compared with 33%). Type of fuel is linked to distance driven, with those driving more than 20,000 kilometres per year most likely to buy diesel (56%, falling to 26% among those driving less than 10,000 kilometres per year). Those with newer vehicles (less than five years old) are most likely to buy diesel (42%, falling to 24% of those with a vehicle more than 10 years old).

In terms of actual fuel types purchased by respondents to the consumer survey, those in rural areas (41%) are more likely to buy diesel than those in urban (37%) and metropolitan areas (31%). In terms of actual fuel types purchased, older respondents are also more likely to say that they have never used premium fuel (33% of those aged 55 or over, compared with 22% to 25% of those under the age of 55).¹⁰⁰

Table 63. Type of fuel bought for most frequently driven vehicle, analysis by socio-demographic characteristics

Source: Consumer survey, Question 16: Which type of fuel do you buy for the vehicle you most frequently drive? (N= 25797. EU27)

	Sub-sample	Petrol	Diesel	Other type of fuel
Average	EU27	61%	36%	3%
Vehicle age	Less than 5 years old	54%	42%	4%
	5 to 10 years old	59%	38%	2%
	More than 10 years old	72%	24%	4%
Total distance driven per year	Less than 10,000km	72%	26%	2%
	From 10,000 to less than 20,000km	56%	40%	4%
	20,000km or more	40%	56%	4%
Gender	Male	57%	40%	3%
	Female	64%	33%	3%
Age	18-24	65%	32%	3%
	25-39	57%	40%	3%
	40-54	58%	39%	3%
	55+	64%	33%	3%
Place of residence	Rural area	56%	41%	3%
	Urban area	60%	37%	4%
	Metropolitan area	65%	31%	3%

⁹⁹ Question Q16: Which type of fuel(s) do you buy for the vehicle you most frequently drive?

¹⁰⁰ Please refer to Part 2 of this study for further details.

6.2.1.2 *Types of petrol purchased*

Petrol users are most likely to use only regular petrol (76%), while 8% use premium petrol and 7% use only E10.¹⁰¹ In total, 10% of respondents use more than one type of petrol.¹⁰²

The proportions of those using the different fuel types are also shown on a per country basis, in the table below.

Overall, respondents in EU12 countries are more likely than those in EU15 countries to use premium petrol (13% compared with 6%) and to use more than one type of fuel (17% compared with 8%), while use of regular petrol is higher in EU15 countries. Use of regular petrol is highest among respondents in Austria (95%), Portugal (92%), Denmark (91%), Malta (90%) and Norway (90%).

Premium petrol is most common in Romania (31%). In the three countries with E10 fuel, 22% of respondents buy it for the vehicle they most frequently drive. The proportion is higher in Finland (30%) than in France (24%) or Germany (21%).

Respondents in Bulgaria (24%) and Poland (22%) are most likely to say they use more than one type of petrol.

¹⁰¹ E10 fuel is only widely available in three countries: Germany, France and Finland.

¹⁰² Question Q16a: Please select the type of petrol that you buy.

Table 64. Type of petrol bought, analysis by country

Source: Consumer survey, Question 16a: Please select the type of petrol that you buy. (N=15650, Respondents who use petrol in EU27)

	Only use regular petrol	Only use premium petrol	Only use E10	Use petrol, but not sure which type	Use more than one type of petrol	No answer	Total 'Use more than one type of petrol'
EU27	76%	8%	7%	3%	8%	0%	10%
EU15	79%	6%	8%	3%	6%	0%	8%
EU12	68%	13%	1%	4%	15%	0%	17%
Countries with E10	69%	5%	22%	1%	6%	0%	9%
 BE	82%	9%	0%	5%	5%	0%	6%
 BG	62%	12%	0%	4%	23%	0%	24%
 CZ	76%	5%	1%	4%	16%	0%	17%
 DK	91%	3%	0%	2%	5%	0%	5%
 DE	74%	4%	21%	0%	5%	0%	8%
 EE	79%	7%	0%	6%	9%	0%	9%
 IE	73%	5%	1%	16%	6%	0%	7%
 EL	74%	12%	0%	1%	15%	0%	17%
 ES	86%	5%	1%	3%	5%	0%	6%
 FR	58%	9%	24%	4%	8%	0%	12%
 IT	79%	11%	1%	5%	5%	0%	6%
 CY	82%	17%	0%	1%	1%	0%	2%
 LV	70%	12%	2%	8%	10%	0%	11%
 LT	79%	2%	1%	8%	10%	0%	10%
 LU	71%	18%	0%	3%	10%	0%	11%
 HU	87%	2%	0%	2%	10%	0%	10%
 MT	90%	1%	0%	2%	1%	7%	1%
 NL	86%	3%	2%	5%	4%	0%	5%
 AT	95%	2%	0%	1%	1%	0%	2%
 PL	66%	10%	0%	5%	20%	0%	22%
 PT	92%	3%	0%	2%	4%	0%	4%
 RO	55%	31%	1%	3%	11%	0%	13%
 SI	73%	14%	0%	4%	9%	0%	9%
 SK	74%	7%	0%	3%	17%	0%	18%
 FI	44%	14%	30%	5%	10%	0%	12%
 SE	86%	3%	1%	8%	3%	0%	3%
 UK	87%	5%	1%	4%	6%	0%	7%
 IS	83%	3%	0%	6%	9%	0%	10%
 NO	90%	2%	0%	4%	3%	0%	3%

Socio-demographic differences and potentially vulnerable consumers

In terms of socio-demographic variation, details are shown in the table below.

Respondents who buy branded fuel frequently are more likely to use premium petrol (10% compared with 4% who buy branded fuel infrequently or never). Consistent with diesel, use of premium petrol is lower in rural areas (5% compared with 9% in metropolitan areas).

Use of premium petrol is also greater among those with newer vehicles (10% of those with a vehicle less than five years old, compared with 7% of those with a vehicle at least five years old).

Table 65. Type of petrol bought, analysis by socio-demographic characteristics

Source Consumer survey, Question 16a: Please select the type of petrol that you buy. (N=15650, Respondents who use petrol in EU27)

Sub-sample		Only use regular petrol	Only use premium petrol	Only use E10	Use petrol, but not sure which type	Use more than one type of petrol
Average	EU27	76%	8%	7%	3%	8%
Age	18-24	79%	5%	4%	5%	9%
	25-39	77%	8%	6%	3%	9%
	40-54	75%	7%	8%	3%	8%
	55+	76%	9%	7%	3%	7%
Place of residence	Rural area	79%	5%	8%	4%	7%
	Urban area	75%	8%	6%	4%	8%
	Metropolitan area	76%	9%	7%	2%	9%
Percentage of monthly income spent on fuel	1 - 5%	77%	7%	9%	3%	6%
	6 - 10%	78%	7%	7%	3%	8%
	11 - 20%	74%	8%	6%	3%	11%
	21% or more	73%	11%	5%	3%	11%
Buys fuel in another EU country	Frequently	74%	16%	8%	2%	6%
	Regularly	69%	11%	8%	4%	13%
	Rarely or never	77%	7%	7%	3%	8%
Buys branded fuel	Frequently	75%	10%	5%	3%	9%
	Infrequently / Never	78%	4%	10%	4%	7%
Vehicle age	Less than 5 years old	72%	10%	8%	3%	10%
	5 to 10 years old	77%	7%	6%	4%	7%
	More than 10 years old	80%	6%	5%	3%	7%

Use of E10 petrol and socio-demographic characteristics

As E10 fuel is widely available in only three Member States (Finland, France, and Germany), to elaborate a profile of those who buy the most widely available biofuel from those who do not requires that comparisons be restricted only to the consumers in these Member States who buy petrol. As can be seen in the table below, the average share of consumers using E10 exclusively in countries where E10 is sold is substantial, at 25%.

This average finding conceals some variation when socio-demographic characteristics are taken into account. Men are more likely (28%) to only use E10 than women (23%). Age also plays a notable role: younger age groups use E10 less often (17%) than older respondents such as the 40-54 age group (29%). Market knowledge also appears to play a major role, as those classed as 'least knowledgeable' were much less likely (17%) to only use E10 than the other groups (all 29%).

Table 66. Purchase of E10, analysis by socio-demographic characteristics

Source: Consumer survey, Question 16a: Please select the type of petrol that you buy. (N= 3034, respondents from E10 Member States only)

	Sub-sample	Only uses E10	Uses different petrol, more than one type, or not sure
Average	E10 MS	25%	75%
Gender	Male	28%	72%
	Female	23%	77%
Age	18-24	17%	83%
	25-39	24%	76%
	40-54	29%	71%
	55+	26%	74%
Percentage of monthly income spent on fuel	1 - 5%	28%	73%
	6 - 10%	25%	75%
	11 - 20%	25%	75%
	21% or more	21%	78%
Market knowledge	Least knowledgeable	17%	83%
	More knowledgeable	29%	71%
	Most knowledgeable	29%	71%
Place of residence	Rural area	24%	76%
	Urban area	26%	74%
	Metropolitan area	25%	75%
Total distance driven per year	Less than 10,000km	24%	76%
	From 10,000 to less than 20,000km	27%	74%
	20,000km or more	27%	73%

6.2.1.3 Types of diesel purchased

Diesel users are most likely to use only regular diesel (76%), while 9% use premium diesel and 1% use B7 diesel.¹⁰³ In total, 12% of respondents use more than one type of diesel. These proportions are almost identical to those seen for use of different types of petrol. Use of premium diesel is higher among those who buy branded fuel frequently (13% compared with 3% who do so infrequently or never).

As can be seen in the table below, use of regular diesel is highest among respondents in Germany (92%), Malta (90%) and Austria (89%). Premium diesel is most common in Romania (39%), Greece (35%) and Cyprus (29%). In addition, respondents in Poland (27%), Bulgaria (25%) and Slovakia (22%) are more likely than those in other countries to use more than one type of fuel. In some countries, a large proportion of respondents is not sure which type of diesel they use: Sweden (28%), Estonia (24%) and Finland (21%).

Overall, respondents in EU12 countries are more likely than those in EU15 countries to use premium diesel (20% compared with 7%) and to use more than one type of diesel (21% compared with 10%), while use of regular diesel is higher in EU15 countries (80% compared with 55% in EU12 countries).

¹⁰³ Question Q16b: Please select the type of diesel that you buy.

Table 67. Type of diesel bought, analysis by country

Source: Consumer survey, Question 16b: Please select the type of diesel that you buy. (N= 9303, Respondents who use diesel in EU27)

	Only use regular diesel	Only use premium diesel	Use diesel, but not sure which type	Only use B7 diesel	Only use B100 (pure biodiesel)	Use more than one type of diesel	No answer	Total 'Use more than one type of diesel'
EU27	76%	9%	6%	1%	0%	10%	0%	12%
EU15	80%	7%	5%	1%	0%	8%	0%	10%
EU12	55%	20%	8%	1%	1%	18%	0%	21%
Countries with E10	80%	6%	6%	0%	0%	10%	0%	11%
 BE	72%	9%	12%	0%	0%	8%	0%	9%
 BG	53%	16%	8%	1%	2%	23%	0%	25%
 CZ	68%	11%	5%	0%	1%	17%	0%	20%
 DK	79%	4%	9%	0%	1%	8%	0%	8%
 DE	92%	2%	3%	1%	0%	2%	0%	3%
 EE	64%	7%	24%	0%	0%	5%	0%	6%
 IE	73%	6%	17%	1%	1%	5%	0%	6%
 EL	47%	35%	4%	2%	0%	16%	0%	19%
 ES	77%	12%	3%	1%	1%	8%	0%	10%
 FR	75%	8%	6%	0%	0%	13%	0%	15%
 IT	84%	6%	1%	1%	0%	9%	0%	10%
 CY	65%	29%	5%	1%	1%	0%	0%	1%
 LV	60%	10%	16%	0%	0%	14%	0%	15%
 LT	65%	2%	18%	1%	0%	14%	0%	16%
 LU	82%	9%	3%	0%	0%	7%	0%	8%
 HU	76%	5%	5%	0%	0%	15%	0%	16%
 MT	90%	1%	0%	0%	1%	1%	9%	1%
 NL	85%	2%	8%	2%	0%	4%	0%	6%
 AT	89%	2%	7%	1%	0%	2%	0%	3%
 PL	55%	19%	5%	2%	1%	23%	0%	27%
 PT	87%	4%	2%	0%	1%	8%	0%	10%
 RO	39%	39%	8%	1%	1%	15%	0%	17%
 SI	58%	20%	18%	0%	1%	5%	0%	8%
 SK	58%	10%	11%	1%	0%	21%	0%	22%
 FI	63%	4%	21%	0%	0%	12%	0%	13%
 SE	56%	4%	28%	2%	1%	11%	0%	13%
 UK	85%	3%	7%	0%	0%	6%	0%	7%
 IS	85%	1%	13%	0%	0%	1%	1%	1%
 NO	80%	3%	12%	0%	0%	5%	0%	6%

Socio-demographic differences and potentially vulnerable consumers

Use of premium diesel is lower in rural areas (6%, compared with 12% in metropolitan areas), as can be seen below.

Table 68. Type of diesel bought, analysis by socio-demographic characteristics

Source Consumer survey, Question 16b: Please select the type of petrol that you buy. (N=9303, Respondents who use petrol in EU27)

Sub-sample		Only use regular diesel	Only use premium diesel	Use diesel, but not sure which type	Only use B7 diesel	Only use B100 (pure biodiesel)
Average	EU27	76%	9%	6%	1%	0%
Age	18-24	74%	12%	8%	1%	1%
	25-39	77%	8%	5%	1%	0%
	40-54	77%	8%	5%	1%	0%
	55+	75%	9%	6%	0%	0%
Place of residence	Rural area	79%	6%	7%	0%	0%
	Urban area	75%	9%	6%	1%	0%
	Metropolitan area	74%	12%	4%	1%	1%
Percentage of monthly income spent on fuel	1 - 5%	79%	7%	6%	0%	0%
	6 - 10%	77%	8%	5%	1%	0%
	11 - 20%	77%	10%	5%	1%	1%
	21% or more	67%	14%	6%	1%	0%
Buys fuel in another EU country	Frequently	73%	14%	5%	4%	2%
	Regularly	60%	21%	5%	2%	2%
	Rarely or never	77%	8%	6%	1%	0%
Buys branded fuel	Frequently	72%	13%	5%	1%	1%
	Infrequently / Never	82%	3%	7%	0%	0%

Otherwise, differences tended to be small. In terms of age groups, younger groups (aged 18-24) were more likely to only use premium diesel fuel than older groups. In terms of income, those who spent 21% or more of their monthly income on fuel were paradoxically twice as likely (14%) to only use premium diesel than those who only spend 1-5% of their monthly income (7%).

Unsurprisingly, this was consistent with those consumers buying branded fuel; 13% of consumers who bought branded fuel frequently only used premium diesel, compared to 3% of those who infrequently or never bought branded fuel. This is attributable to the fact that branded fuel is typically sold with a premium fuel option, or is only a premium fuel.

6.2.1.4 Other fuel types purchased

If respondents buy a type of fuel other than petrol or diesel, it is likely to be LPG¹⁰⁴ (84%), natural gas¹⁰⁵ (8%), or E85 or E100 (6%).¹⁰⁶ No analysis by country or socio-demographic groups has been carried out, because of the small number of respondents indicating the use of one of these fuel types. However, it is possible to examine differences between EU15 and EU12 countries; this shows that use of LPG / GPL / Autogas is higher in EU12 countries (93%) than EU15 countries (78%), while use of Natural gas / CNG / Erdgas is higher in EU15 countries (11% compared with 4% in EU12 countries).

6.2.1.5 Use of branded fuel

A plurality of respondents (33%) mostly buy branded fuel, and 27% always buy it. Another 28% sometimes buy branded fuel, while 11% only buy non-branded fuel.¹⁰⁷

Respondents in Cyprus (94%), Luxembourg (87%), Romania (86%) and Hungary (80%) are most likely to buy branded fuel all or most of the time. In Malta, a large proportion of respondents say that they only buy non-branded fuel (66%). The proportion is also relatively high in France (28%) and Austria (23%).

Overall, the proportion that buys branded fuel all or most of the time is higher in EU12 countries than in EU15 countries (77% compared with 56%).

¹⁰⁴ Also frequently referred to as GPL or autogas.

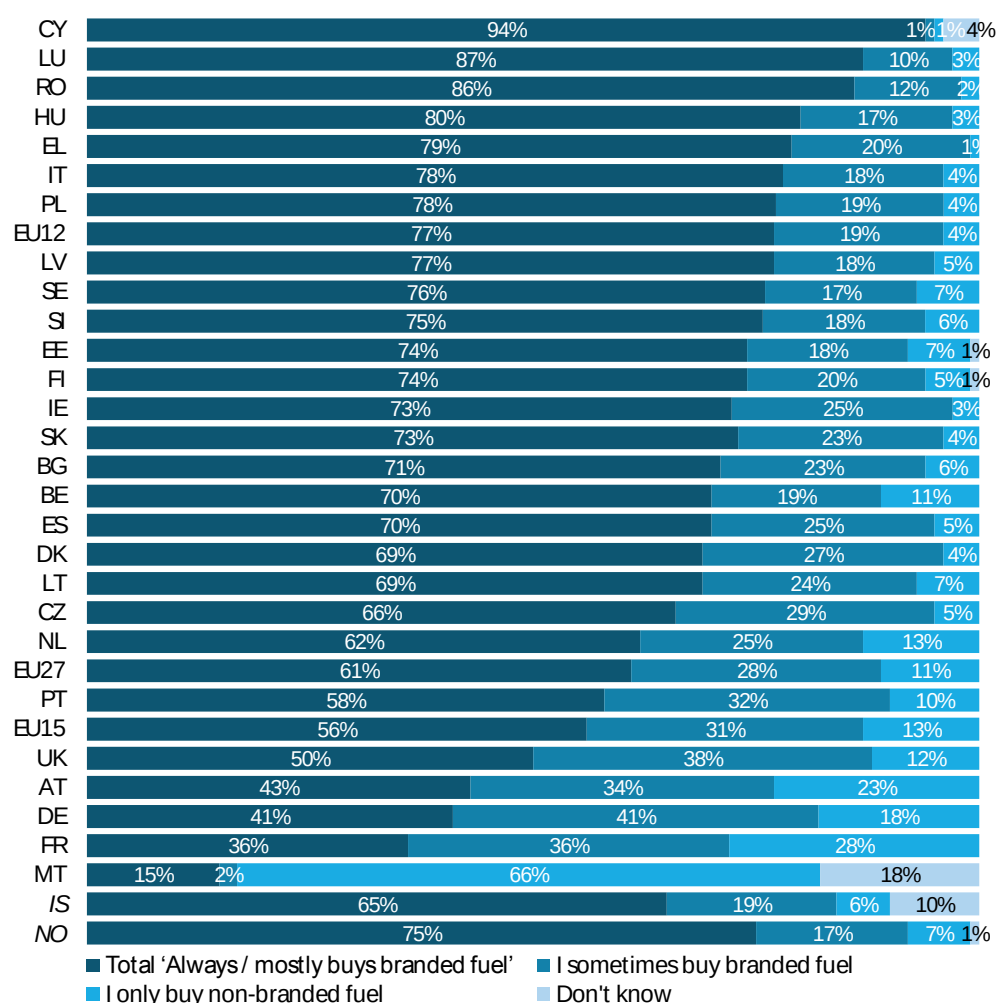
¹⁰⁵ Also frequently referred to as CNG or Erdgas.

¹⁰⁶ Question Q16c: Please select the type of fuel that you buy.

¹⁰⁷ Question Q15: Do you buy branded fuel or non-branded fuel (i.e. fuel from independent petrol stations)?

Figure 33. Use of branded or non-branded fuel, analysis by country

Source: Consumer survey, Question 15: Do you buy branded fuel or non-branded fuel (i.e. fuel from independent petrol stations)? (N= 25797 for EU27)



Socio-demographic differences and potentially vulnerable consumers

Petrol users are slightly more likely than diesel users to buy branded fuel most or all of the time (62%, compared with 59%, while 63% of users of other fuel types buy branded fuel most or all of the time).

Regarding fuel types bought, respondents who are more knowledgeable about fuels are less likely to buy branded fuel most or all of the time (54% of those in the 'most knowledgeable' group, compared with 62% in the 'least knowledgeable' group).

Those who buy fuel in other EU countries are also more likely to buy branded fuel all or most of the time (73% who buy fuel frequently in other EU countries, and 60% who rarely or never do so).

Table 69. Use of branded or non-branded fuel, analysis by socio-demographic characteristics

Source: Consumer survey, Question 15: Do you buy branded fuel or non-branded fuel (i.e. fuel from independent petrol stations)? (N= 25797, EU27)

Sub-sample		Total 'Always / mostly buys branded fuel'	I always buy branded fuel	I mostly buy branded fuel	I sometimes buy branded fuel	I only buy non-branded fuel
Average	EU27	61%	27%	33%	28%	11%
Place of residence	Rural area	53%	23%	31%	31%	15%
	Urban area	61%	27%	34%	28%	11%
	Metropolitan area	67%	32%	35%	25%	8%
Buys fuel in another EU country	Frequently	73%	35%	38%	19%	7%
	Regularly	64%	24%	39%	27%	9%
	Rarely or Never	60%	27%	33%	29%	11%
Type of fuel most frequently bought	Petrol	62%	28%	34%	28%	11%
	Diesel	59%	27%	33%	29%	12%
	Other type of fuel	63%	21%	42%	31%	6%
Market knowledge	Least knowledgeable	62%	29%	33%	27%	11%
	More knowledgeable	61%	27%	34%	28%	11%
	Most knowledgeable	54%	22%	33%	34%	12%

6.3 OTHER ASPECTS OF CONSUMER CHOICE

This subsection examines other relevant aspects of consumer choice, presenting the results of the mystery shopping exercises, constraints on fuel supply from the view of stakeholders, services available for consumers with reduced mobility, and the introduction of biofuels changing the degree of choice.

Key findings of this section are:

1. In terms of the availability of regular petrol 95, all of the 25 visited petrol stations in Prague, Berlin and Rome, as well as 24 out of 25 (96%) in Bucharest, offered this fuel type. In contrast, it was only available at around a third (9) of the 25 visited stations in Paris (36%) and was not available at all in Helsinki. However, overall, the majority of the visited petrol stations did not sell premium petrol. Only at 36 of the 150 stations (24%) was premium petrol definitely offered
2. Among the 150 visited stations, regular fuel diesel was offered at 141 of the stations. This accounts for 94% of the visited stations offering this type of fuel. Premium diesel was available at 20%, or at 30 of the 150 the visited stations. Stations in Bucharest offered the highest proportion of premium diesel (15 of the 25, or 60%).
3. Regarding fuel supply disruptions, stakeholders in several countries identified fuel supply disruptions over the previous five years which could have led to temporary price spikes or shortages. Reasons given for supply interruptions were varied. However a general factor contributing to supply squeezes is that of record high oil prices, along with the on-going economic crisis.
4. The introduction of E10 in several European countries is at different stages and is of importance in considering future fuel choice availability. As expected, stakeholders in Finland, France, and Germany, indicated that it was already introduced in their countries. There were also indications of E10 being available in Spain, but this could not be independently confirmed. A majority of stakeholders who answered claimed that E10 was planned to be introduced in Austria, Bulgaria, Denmark, Hungary, Iceland, Poland, and Sweden

6.3.1.1 *Assessment of fuel choice availability at station visits*

A further relevant source of information is the results of the petrol station visits conducted in the capital cities of six Member States. A specific aspect was assessing the fuel type availability at the 150 petrol stations visited.

Mystery shoppers checked whether the following fuel types were available at each station:

- ▶ Regular petrol 95;
- ▶ E10 fuel;
- ▶ Petrol 98;
- ▶ Premium petrol with an octane number greater than 98;
- ▶ Regular diesel;
- ▶ Premium diesel;
- ▶ Other types of fuel.

A summary of the findings are presented below, by fuel type. Full details, including a description of the methodology used, is available in Part 4 of this study.

Regular petrol 95

In terms of the availability of regular petrol 95, all of the 25 visited petrol stations in Prague, Berlin and Rome, as well as 24 out of 25 (96%) in Bucharest, offered this fuel type. In contrast, it was only available at around a third (9) of the 25 visited stations in Paris (36%) and was not available at all in Helsinki.

The non and limited availability of regular petrol 95 in Helsinki and Paris, respectively, is due to the fact that this formerly common fuel type has been completely or widely replaced by E10 (which also has an octane number of 95). At the time of research, E10 was also widely available at stations in Berlin, and Germany more broadly, but stations in that country still offered a non-E10 variant of petrol 95.

E10 petrol

Whereas E10 fuel was not available at any of the visited petrol stations in Prague, Rome and Bucharest, it was available at all of the visited stations in Helsinki and most of the stations in Paris (64%, or 16 of 25). This fuel type was also available at all of the visited stations in Berlin, with the exception of one station where it was temporarily not in stock.¹⁰⁸ In total, E10 was available at 65 of the 150 visited stations (43%).

¹⁰⁸ This petrol station did not offer E10 at the time of the mystery shoppers' visit because of construction work.

Petrol 98

With the exception of Rome, where it was classified as a 'premium' fuel, petrol 98 was available in at least some of the visited stations in the five other capital cities. Petrol 98 was most commonly available in Paris, where 84% of the visited petrol stations (21 of 25) offered this fuel type, though this proportion may have been superseded by Helsinki – only 64% (16) of the visited stations in Helsinki clearly sold petrol 98, but it was unclear whether this fuel type was available at another 28% (7) of the stations.¹⁰⁹ In Berlin, 56% (or 14) of the visited petrol stations offered petrol 98.

In Prague (32%, or 8 of 25) and Bucharest (24%, or 6 of 25) the proportion of stations selling petrol 98 was even lower, as less than a third of the visited petrol stations in these cities offered this type of petrol.

Overall, petrol 98 was available at 65 of the 150 visited petrol stations (43%). Slightly more than half (51%, or 77) did not sell this type of fuel, and at another 5% of the stations (8 of 150) it was not clear whether petrol 98 was available.

Premium petrol

Mystery shoppers were provided with the following definition of premium petrol: it refers to petrol that is typically more expensive than regular petrol and has a high octane rating (RON > 98); often it also contains additives. 'Premium' petrol is often marketed with specific terms such as 'Ultimate', 'V-Power', etc.

The sample of stations visited in Bucharest stands out markedly as having the highest proportion of stations that sold premium petrol at the time of the visits (68%, or 17 of 25). Premium petrol was also available at almost half of the visited petrol stations in Berlin (44%, or 11 of 25) and at a fifth of the ones visited in Prague (20%). In the latter city, several stations were clearly marketing a premium variant of petrol 95, indicating that it offered engine / vehicle performance benefits relative to the regular petrol 95. The price for these 'premium' petrol 95 variants was higher than that of their regular 95 counterparts; however, they are not included in this figure because they did not comply with the definition for premium petrol used for this exercise.

Premium petrol was not available among the stations in the Paris sample, and it was only rarely available in Rome, where three of the visited stations (12%)

¹⁰⁹ Some of the petrol stations in Helsinki offered a fuel type which appeared to be labelled as premium petrol, but the labelling did not indicate an octane number – only the maximum content of ethanol (E5) was provided. As 5% by volume is now a common value for the maximum content of ethanol for petrol with an octane number of 98, this fuel type was unlikely to be a premium according to the definition used for the station visits (which required premium petrol to have an octane number higher than 98, see definition provided in the next sub-section).

offered it. At 7 of the 25 stations visited in Helsinki (28%) mystery shoppers reported that it was not clear whether premium petrol was being offered. As previously discussed in relation to petrol 98, a petrol variant at these seven stations was labelled as a premium fuel without any indication of its octane number. It was thus impossible for the mystery shoppers to reliably determine whether the offered fuel was petrol 98 or premium petrol with a higher octane number. The remaining 72% of visited petrol stations in Helsinki (18 of 25) did not sell premium petrol.

Overall, the majority of the visited petrol stations did not sell premium petrol. Only at 36 of the 150 stations (24%) was premium petrol definitely offered.

Regular diesel

Among the 150 visited stations, regular fuel diesel was offered at 141 of the stations. This accounts for 94% of the visited stations offering this type of fuel. All of the 25 visited stations in Prague, Berlin and Rome offered regular diesel. Regular diesel was offered at 23 of the 24 (96%) visited stations in Paris and at 23 of the 25 (92%) visited stations in Bucharest. This was followed by 20 of the 25 (80%) visited stations in Helsinki.

Premium diesel

Premium diesel was available at 20%, or at 30 of the 150 the visited stations. Stations in Bucharest offered the highest proportion of premium diesel (15 of the 25, or 60%). 44%, or 11 of the 25 visited stations in Berlin offered premium diesel. The proportion of stations offering premium diesel was significantly lower in Prague and Rome where 12%, or 3 of the 25 visited stations offered this type of fuel. None of the visited stations in Paris or Helsinki sold premium diesel.

Other types of fuel

LPG fuel was available at 16%, or at 24 of the 150 visited stations. In Berlin and Bucharest the proportion of stations selling LPG fuel was highest (36%, or at 9 of the 25 stations). In Paris and Prague the proportion of stations offering LPG petrol was significantly lower (17%, or at 4 of 24 and 8%, or at 2 of the 25 visited stations respectively). LPG fuel was not available at any of the petrol stations visited in Rome or Helsinki.¹¹⁰

E85 was available at a limited number of petrol stations in Paris, Prague and Helsinki. In Paris 8,3%, or at 2 of the 24 visited petrol stations offered Super

¹¹⁰ It should be noted that in this case, absence of evidence is not evidence of absence. The website <http://www.mylpg.eu> lists several stations selling LPG fuel around Rome, although LPG is not used as a motor vehicle fuel in Finland.

Ethanol (E85). In Prague the proportion was slightly lower. 8%, or at 2 of the 25 visited stations sold E85. Only one station (4%) offered this type of fuel in Helsinki. E85 was not available in Berlin, Rome or Bucharest. Overall the availability of E85 was only confirmed at 5 of the 150 visited stations.

One of 25 (4%) stations visited in Berlin and Prague sold compressed natural gas (CNG). CNG fuel was not offered in Paris, Rome, Bucharest or Helsinki. Overall, the sale of CNG accounted for 1.3% of the visited stations.

6.3.1.2 Supply constraints on fuel type choice

Regarding fuel supply disruptions, stakeholders in several countries identified fuel supply disruptions over the previous five years which could have led to temporary price spikes or shortages. Supply interruptions were identified in Bulgaria, Greece, France, Italy, Cyprus, Lithuania, the Netherlands, Portugal, Slovakia, and the United Kingdom. Mostly standard fuel types such as Unleaded Petrol were affected, though in Slovakia the supply interruptions identified included Natural Gas. Also, not all supply interruptions actually resulted in fuel shortages; shortages were experienced only in Greece, France, Italy, Portugal, Slovakia, and the United Kingdom, according to stakeholders.

Reasons given for supply interruptions were varied. In Bulgaria, one stakeholder explained that in 2011, the government deprived the major refinery in the country of its license due to failure to comply with legal requirements.¹¹¹ In Greece, France, Italy, and Portugal strikes were cited as the major cause of shortages. Industrial action was not only carried out by workers; in Malta, fuel supply disruptions were due to industrial actions by petrol station owners according to a stakeholder.

A general factor contributing to supply squeezes is that of record high oil prices, along with the on-going economic crisis (See Section 7.3 for an overview of price trends). The influence that these factors make on consumer choice is analysed in Section 6.

6.3.1.3 Introduction of biofuels

The introduction of E10 in several European countries is at different stages and is of importance in considering future fuel choice availability. As expected, stakeholders in Finland, France, and Germany, indicated that it was already introduced in their countries. There were also indications of E10 being available in Spain, but this could not be independently confirmed. A majority of stakeholders who answered claimed that E10 was planned to be introduced in Austria, Bulgaria, Denmark, Hungary, Iceland, Poland, and Sweden.

¹¹¹ See: <http://www.reuters.com/article/2011/07/27/bulgaria-lukoil-idUSL6E7IR0BX20110727>

According to stakeholders, the introduction of E10 was not planned in Estonia, Greece, Malta, Norway, and Slovenia. However, in some countries – namely Cyprus, Estonia, Greece, Ireland, and Malta – a majority of stakeholders did not know or did not respond to this question.

The introduction of B7 diesel fuel was more split between the situations where it was already in use, and where it was not planned to be introduced. The introduction of B7 diesel fuel is, according to stakeholders, planned to be introduced only in a few countries; only in Romania did a majority of stakeholders state that it was planned to be introduced. This is despite the fact that unlike E10 fuel requiring newer vehicles, B7 diesel can be used in all diesel vehicles.¹¹² However, stakeholders in Austria, Belgium, Denmark, Germany, France, Spain, and Sweden stated that it was already in use in these countries.

Problems relating to the introduction of biofuels

Regarding experienced or foreseen problems in the vehicle fuels market as a result of the introduction of biofuels, stakeholders overall were relatively split in terms of opinion, with a similar proportion indicating problems (35%) as those not indicating problems (39%). However, stakeholders from industry associations were more likely to expect such problems, with 52% of all such stakeholders foreseeing problems of some kind, compared to 21% of public or competition authorities, though it should be noted that the latter category of stakeholders had a large proportion (54%) of those who did not know or refused to give an answer to this question (see Table 70 below).¹¹³

When compared with the numbers from other groups, it is notable that stakeholders from the three Member States where E10 fuel has already been introduced did not differ substantially. However, there were only six stakeholders from these three Member States (Germany, Finland, and France) who expressed an opinion, so these results are difficult to generalise.

Table 70. Problems from introduction of biofuels

Source: Stakeholder survey, Q16: Have you experienced or do you foresee problems emerging in the vehicle fuels market as a result of the introduction of biofuels? (N=59).

Stakeholder type	Yes, major problems	Yes, minor problems	No	Total (N)
Public or competition authority	9%	36%	55%	11
Consumer organisation or auto club	13%	25%	63%	16

¹¹² European Automobile Manufacturers Association (ACEA), 'Vehicle compatibility with new fuel standard E10 for petrol', available at:

http://www.acea.be/news/news_detail/vehicle_compatibility_with_new_fuel_standard/

¹¹³ Note: Table includes responses from EU level stakeholders as well as from Norway and Iceland but excludes those who stated that they did not know or did not answer the question.

Industry association	34%	19%	47%	32
From E10 countries (DE, FR, FI)	17%`	33%	50%	6

6.4 SUMMARY - MOST IMPORTANT FACTORS INFLUENCING CONSUMER CHOICE

As seen in Section 5.2, consumer survey respondents indicated that fuel price was by a substantial margin the primary factor in *retailer selection*, while brand loyalty was quite weak, according to respondents. However, it was also seen that many consumers may be constraining their ability to make price-based decisions, as they only fill up their vehicle when the tank is nearly empty, and so make a choice based on convenience (closest petrol station) instead.

One claim from stakeholders is that consumers tended to value location, good service and convenience, rather than simply price. Relating results from station visits to those from the consumer survey concerning range and quality of service provides additional insights in this respect.

For example, in the Czech Republic, where only self-service stations were found by mystery shoppers in Prague, the proportion of consumer survey respondents choosing a station because of better service was relatively low (9%); but in Italy and Romania, where a mixture of service levels were present, these percentages were notably higher (14% and 25%).

Meanwhile, brand loyalty differed strongly between countries. In Romania and the Czech Republic, levels were higher, as indicated by about one quarter of respondents who noted 'sells preferred brand' as one of the most important considerations for choosing a particular petrol station (28% and 24%, respectively). In contrast, in Finland level of brand loyalty was extremely low (5%). In other words, multiple factors appear to affect choice of fuel retailers, and these factors differ widely by country.

Turning to selection of *fuel type*, consumers only have a choice of fuel type if in addition to regular fuel other compatible fuel types are available. For example, in the case of a consumer using regular petrol 95 for his or her car, alternative choices could be higher octane variants (petrol 98), premium petrol or E10. This study confirms the widespread availability of most common fuel types across Europe, including higher octane and premium variants of petrol and premium diesel. Only one in ten consumer survey respondents say they don't have a choice between fuel types as there is only one type of fuel available in their area that is compatible with their vehicle. This percentage is higher for respondents living in rural areas (14%, compared with 10% in urban and 6% in metropolitan areas).

As with retailer selection, consumers' selection of fuel type revolves around price: 67% of consumer survey respondents indicated price as the main reason for buying their preferred fuel type. For a more detailed analysis of consumer decision making, please refer to section 5.2. Factors other than price that play a role in fuel type preferences include previous good experience with a given type

of fuel (27%), its perceived benefits for engine or vehicle performance (22%) and fuel quality (18%).

In the view of respondents to the stakeholder survey, consumer behaviour in the market is influenced by the marketing practices of fuel retailers to a significant extent. A quarter (26%) of all stakeholders stated that behaviour was 'very significantly' influenced by marketing practices, while 39% of all stakeholders believed that it was 'fairly significantly' influenced. Only 8% of stakeholders stated that behaviour was very insignificantly, or not at all, so influenced.

The emphasis of stakeholders' comments in the survey tended to depend on whether they represented industry, public authorities, or consumer organisations. For example, stakeholders from public authorities took a more general view, emphasising the role played by fuel retailers promoting fuel products by offering customers bonuses in the form of a cheap car wash, coupons for types of purchases other than fuel purchases, or discounted item purchases. One stakeholder indicated that in their country, almost half of the consumers bought fuel with discount cards issued by major fuel operators.

Other comments from stakeholders highlighted structural market issues, where large retailers had more power in the market. For example, some stakeholders highlighted that in their country, only two companies had a major market share, while the smaller ones had less influence on the market.

However, industry organisations tended to emphasise the role of price in influencing consumers choice of retailer and/or fuel, with several emphasising that price was the only important factor to the consumer. Some industry stakeholders did raise alternative points though, such as the importance of convenience and quality of stations themselves.

Stakeholders were also asked whether the on-going economic crisis was impacting on fuel purchase behaviour. The majority (68%) of stakeholders who provided an answer felt that the on-going economic crisis was impacting consumers' fuel purchasing behaviour fairly or very significantly. In only a few countries did a number of stakeholders state that there was no impact; these were countries potentially less affected by the economic crisis, namely Belgium, Denmark, Germany, and Austria.¹¹⁴

¹¹⁴ Unemployment is one of the clearest socio-economic consequences of financial and economic crises. Therefore, countries less affected by the economic crisis should have lower unemployment rates and relatively minor changes in employment rates before and after a crisis. Going by the unemployment rate for 2012, these countries (Belgium, Denmark, Germany, and Austria) had unemployment rates 2.9-6.2% below the EU27 average (of 10.5%), and these rates showed only minor variation since the economic crisis in 2008, with the exception of Denmark, where unemployment rose from 3.4% in 2008 to 7.5% in 2012. (Eurostat statistics, code tsdec450).

Stakeholders were additionally asked to indicate what specific consequences the economic crisis had on consumer behaviour. Of all stakeholders surveyed, including respondents in Iceland and Norway, the most frequently mentioned consequence was that of purchasing less fuel overall (53%), followed by purchasing fuel from stations with lower prices (43%), using public transport (33%), purchasing less premium fuel (30%), switching to more fuel-efficient vehicles (30%), using bicycles (24%), purchasing less branded fuel (18%), car sharing / pooling (14%), and walking more (11%).

The choice of fuel type is therefore influenced by availability, price and finally perception of consumers of benefits and quality of relevant fuel types, including biofuels and premium fuels.

Findings reveal mixed opinions toward both biofuels and premium fuels among consumer survey respondents. From the perspective of biofuel uptake or acceptance among EU consumers a few of the findings are particularly worth recalling (for in-depth results, please refer to Sections 5.1.1 and 5.1.2 above):

- ▶ Attitudes of consumers towards biofuels are ambiguous, with 83% of respondents indicating at least one advantage, and a similar proportion (81%) indicating at least one disadvantage.
- ▶ Respondents who possess relatively more knowledge about the vehicle fuels market are more likely to agree with the claimed disadvantages of biofuels, such as that they are taking land away from food production.
- ▶ Lastly, the findings of the knowledge assessment portion of the consumer survey appear to indicate insufficient knowledge of newer fuel types with biofuel content, as four of the six statements included in the assessment were linked to fuels with biofuel content, such as E10 and B7.

Consumer perception of premium fuels is somewhat similar, with consumer survey results showing ambiguity and more negative attitudes if knowledge levels increase (see Section 5.1.1 for more details):

- ▶ Whereas 24% of consumer survey respondents agree with the claim that premium fuels are superior in quality to regular fuels and 21% agree with the claim that they considerably improve the performance of the engine or vehicle, 47% agree with the claim that premium fuels are too expensive and 8% agree with the other negative claim, specifically that premium fuels offer no benefits relative to regular fuel types. In total, 39% of respondents agree with at least one of the positive claims about premium fuels, while 54% of respondents agree with at least one of the negative claims, and 27% say that they have never used premium fuel.
- ▶ Respondents who are more knowledgeable about fuels are more likely to agree with at least one of the negative claims about premium fuels (62%

of those in the 'most knowledgeable' group, compared with 56% of those in the 'more knowledgeable' group and 51% in the 'least knowledgeable' group).

As mentioned before, stakeholders surveyed find to a large majority that it is not easy to reach an understanding of the effects of particular fuel types on engine/vehicle performance (37% found it not very easy, 32% not at all easy). They also think that consumer behaviour in the market is influenced by the marketing practices of fuel retailers to a significant extent. A quarter (26%) of all stakeholders stated that behaviour was 'very significantly' influenced by marketing practices, while 39% of all stakeholders believed that it was 'fairly significantly' influenced. Only 8% of stakeholders stated that behaviour was very insignificantly, or not at all, so influenced.

In the vehicle fuels market consumers pay a significant price premium for premium fuel compared to regular fuel (detailed in Section 7), while it is unclear to which extent material quality differences exist between the fuels sold that would lead to measurable performance differences. Opinions on this issue are not necessarily consistent between fuel industry representatives and independent observers, and in absence of regular and independent testing with multiple types of vehicles and under different road conditions claims of better quality are often considered a matter of marketing and customer segmentation. At least in the recent independent tests carried out in Portugal and in previous tests by the German automobile club, 'premium' fuels were not found to be substantially superior in quality,¹¹⁵ in spite of the widespread perception in this respect, as evidenced by consumer survey results.

It can be concluded that, while in many markets competition can ensure that price serves as a good signal of quality, and consumers can choose a product in line with their quality preferences, this is not necessarily the case for the vehicle fuels market, where objective and comparable information on quality is scarce. More information about deciding between fuel types can be found in Section 5.

¹¹⁵ The study carried out by the consumer organisation DECO Proteste in Portugal tested four different diesel fuel types – two from a leading brand and two from supermarket fuel retailers using four identical cars (see: <http://www.igualaoilitro.pt/igualaoilitro/en>). The cars were each driven 12,000 kilometres during the course of one month, with fuel purchased in different gas stations and the drivers, who were unaware of the brand being tested, alternating between the vehicles each day. The study found "a similar effect on the accumulation of deposits and in engines' wear" and an insignificant difference in fuel consumption, which ranged from 6.41 and 6.43 litres per 100 kilometres for the leading brand's two diesel fuels to 6.45 and 6.54 litres per 100 kilometres for the supermarket fuels. The earlier (2004) ADAC study comparing the performance of premium and regular diesel fuels did find slightly increased engine power from the premium diesel (1.6 to 4.5%) and a similar 1.0 to 5.6% reduction in fuel consumption; however, the ADAC concluded that the slight performance improvements came at the cost of a significant price premium (see: <http://www.adac.de/infotestrat/tanken-kraftstoffe-und-antrieb/benzin-und-diesel/premiumkraftstoffe/default.aspx?ComponentId=33085&SourcePageId=61719&tabid=tab1>).

7 VEHICLE FUEL PRICES

This section of the report explores how consumers compare fuel prices, before describing the extent to which divergences in fuel prices within and between countries could be observed. We then present the results of an economic analysis of possible explanatory factors for price differences between countries. The section is structured as follows: ease of price comparability across the EU, Iceland, and Norway (Section 7.1), price divergences within and between countries (Section 7.2), trends in fuel prices (Section 7.3), and explanatory factors for price changes and divergences between countries (Section 7.4).

7.1 COMPARABILITY OF PRICES

This section utilises a range of data collected for this study to answer the key question of how easy it is for consumers to compare prices of fuels between different retailers. First, data from the consumer survey are presented exploring how often, where, and why consumers compare vehicle fuel prices. Following this, supporting evidence from the stakeholder survey is displayed.

Key findings for this section are:

1. According to results from the consumer survey, more than half of survey respondents say that they compare fuel prices always or very often (56%), with 31% always doing so. One in five rarely or never compares fuel prices (19%).
2. The extent to which respondents compare fuel prices is related to the amount they drive. Those who drive 10,000 kilometres or more per year are more likely to compare prices always or very often than those who drive less than 10,000 kilometres per year (59% compared with 53%). Those who buy fuel in other EU countries are also more likely to compare prices always or very often (68% who buy fuel in another EU country frequently, 59% who do so regularly and 55% who rarely or never do so).
3. Respondents who indicated having compared fuel prices were asked how they make comparisons. The by far most common method for comparing fuel prices is to drive by petrol stations (79%), while 31% of respondents talk to family, friends or colleagues. In total, 35% of respondents use some form of online method, most commonly price comparison websites for fuels (24%). Price announcements on the motorway are used by 18%.

4. In general, respondents in EU12 countries are more likely than those in EU15 countries to make use of information from family, friends and colleagues (41% compared with 28%), from television or radio programmes (16% compared with 6%) and newspaper or magazine reports (15% compared with 6%). Findings are generally consistent across different socio-demographic groups. One difference is that men are more likely than women to use price comparison websites (27% compared with 20%), and are less likely to get information from family, friends and colleagues (25% compared with 36%).
5. Regarding fuel prices, the vast majority of these respondents say that it is easy to compare information (87%), including 39% who say it is very easy. Just 13% do not find it very or at all easy to compare information on fuel prices.
6. Stakeholders were asked to estimate how easy they thought it was for consumers to effectively compare fuel prices in their country; choices ranged from "very easy" to "not at all easy". A large majority of stakeholders stated that this was easy - 30% claiming that it was "very easy" and 50% that it was "fairly easy".

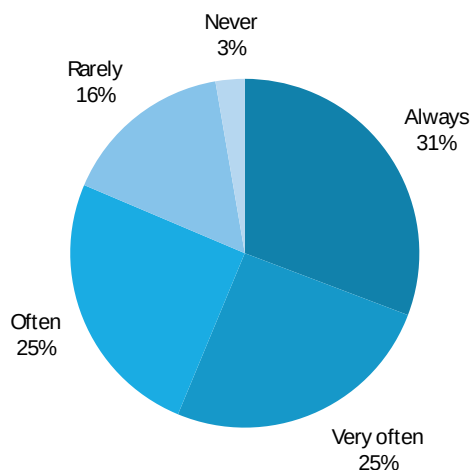
7.1.1 Frequency of price comparisons

More than half of survey respondents say that they compare fuel prices always or very often (56%), with 31% always doing so. Twenty-five per cent often do so.¹¹⁶ One in five rarely or never compares fuel prices (19%).

¹¹⁶ Question Q9: How often do you compare fuel prices?

Figure 34.
Frequency of fuel
price comparisons

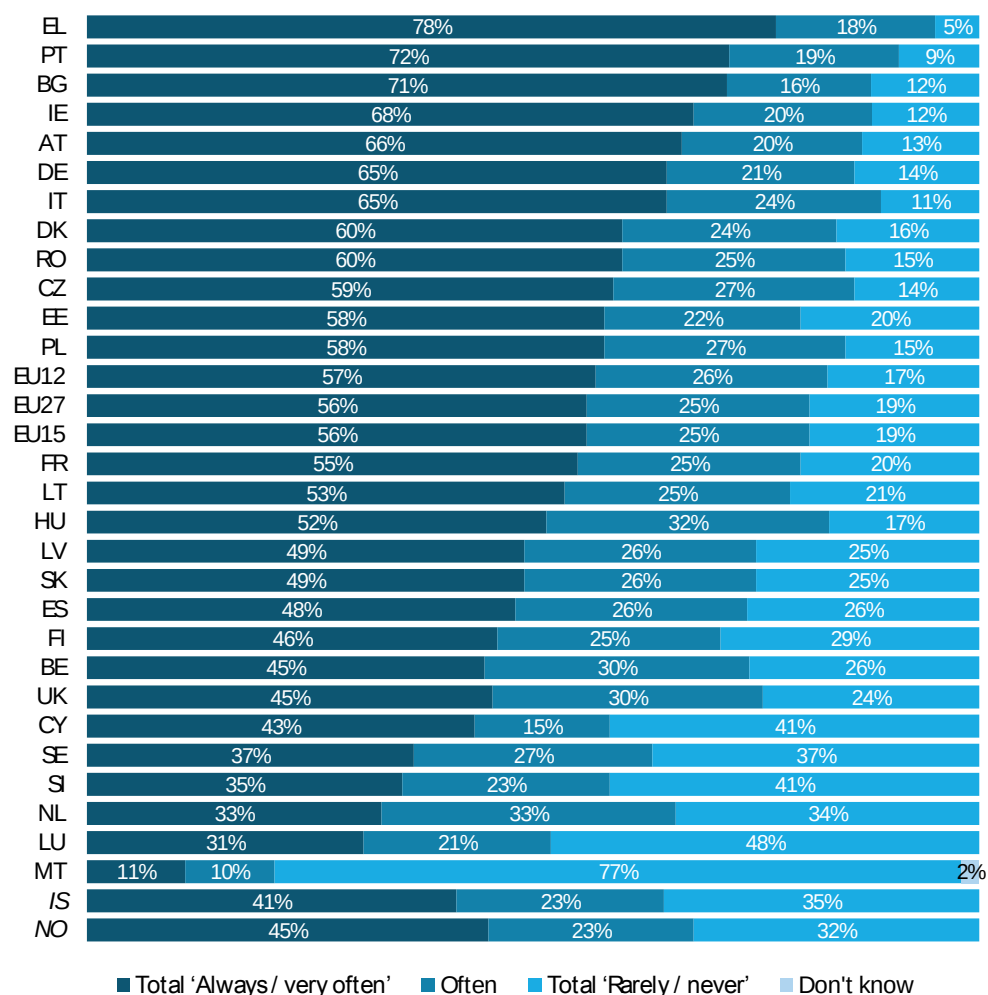
Source: Consumer
survey, Question 9:
How often do you
compare fuel prices?
(N= 25797, EU27)



There is some variation between respondents in different countries. In Greece (78%), Portugal (72%) and Bulgaria (71%), a large proportion of respondents compares fuel prices always or very often. By contrast, in Malta 77% of respondents rarely or never compare fuel prices. Luxembourg (48%), Cyprus (41%) and Slovenia (41%) also contain a large proportion of respondents that rarely or never compares fuel prices. Overall, figures are very similar between respondents in EU15 countries (where 56% compare prices always or very often) and EU12 countries (57%).

Figure 35.
Frequency of fuel
price comparisons,
analysis by country

Source: Consumer
survey, Question 9:
How often do you
compare fuel prices?
(N= 25797 for EU27)



Socio-demographic differences and potentially vulnerable consumers

The extent to which respondents compare fuel prices is related to the amount they drive. As can be seen in the table below, those who drive 10,000 kilometres or more per year are more likely to compare prices always or very often than those who drive less than 10,000 kilometres per year (59% compared with 53%).

Table 71.
Frequency of fuel
price comparisons,
analysis by socio-
demographic
characteristics

Source Consumer
survey, Question 9:
How often do you
compare fuel prices?
(N= 25797, EU27)

	Sub-sample	Always	Very often	Often	Rarely	Never
Average	EU27	31%	25%	25%	16%	3%
Gender	Male	31%	25%	25%	16%	2%
	Female	30%	26%	25%	16%	3%
Age	18-24	27%	26%	27%	18%	3%
	25-39	28%	26%	26%	16%	3%
	40-54	31%	25%	25%	16%	2%
	55+	34%	25%	24%	15%	3%
Paid for the majority of fuel	Paid by the respondent	32%	25%	25%	16%	3%
	Paid by other person or company	26%	26%	27%	18%	3%
Percentage of monthly income spent on fuel	1 - 5%	29%	22%	25%	20%	4%
	6 - 10%	31%	27%	26%	15%	2%
	11 - 20%	34%	27%	25%	12%	2%
	21% or more	42%	26%	19%	11%	2%
Buys fuel in another EU country	Frequently	43%	25%	17%	12%	3%
	Regularly	30%	29%	29%	10%	2%
	Rarely or never	30%	25%	25%	16%	3%
Total distance driven per year	Less than 10,000km	29%	24%	26%	18%	3%
	From 10.000 to less than 20,000km	32%	27%	25%	14%	2%
	20,000km or more	34%	27%	23%	13%	3%
Buys branded fuel	Frequently	29%	26%	26%	17%	3%
	Infrequently / Never	34%	25%	24%	15%	3%
Type of fuel most frequently bought	Petrol	30%	25%	26%	16%	3%
	Diesel	32%	26%	24%	15%	3%
	Other type of fuel	34%	21%	28%	15%	1%

Respondents who pay for their fuel themselves are more likely to compare prices than those who don't (57% compared with 52%). There are also differences by the type of fuel used by respondents. Those who buy branded fuel frequently are less likely to compare prices always or very often (55%, compared with 59% who

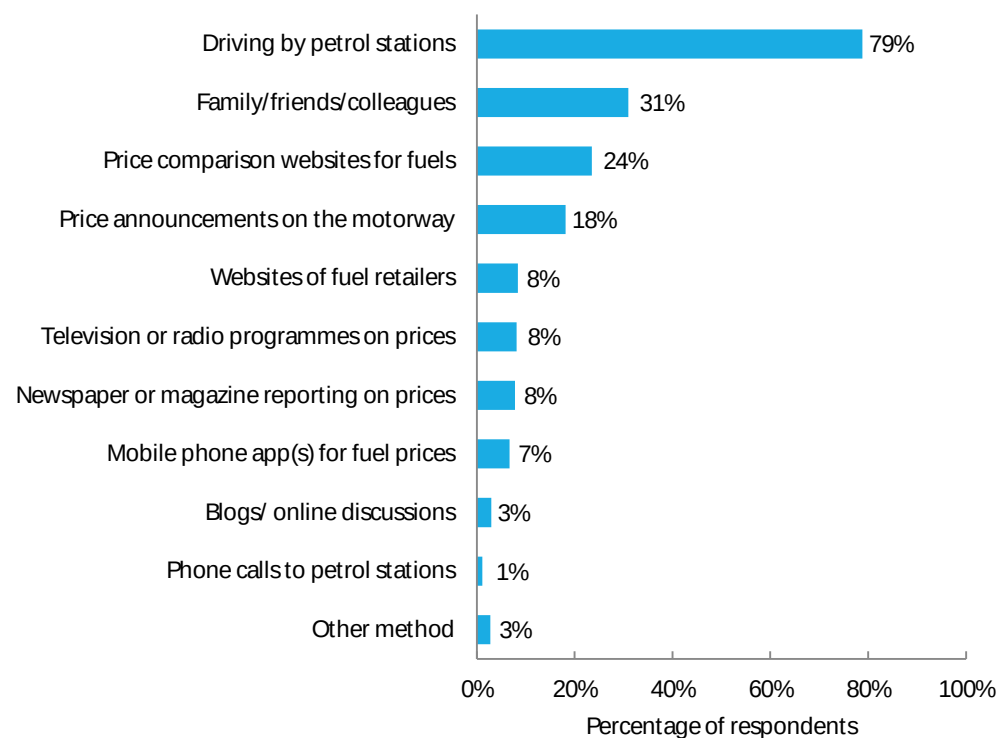
infrequently or never buy branded fuel). Respondents who use diesel (58%) are more likely to compare prices always or very often than those who use petrol (55%) or other types of fuel (55%). Younger respondents are less likely to compare prices by driving by stations (73% of 18- to 24-year-olds, rising to 82% of those aged 55 or over), and are more likely to make use of family, friends and colleagues (41% of 18- to 24-year-olds, falling to 26% of those aged 55 or over).

7.1.2 Methods of price comparisons

Respondents who indicated having compared fuel prices were asked how they make comparisons.¹¹⁷ The results are presented below.

Figure 36. Method of comparing fuel prices

Source: Consumer survey, Question 10: How do you compare fuel prices? Please indicate up to three methods. (N= 25100, Respondents who compare fuel prices in EU27)
Note: Multiple answers possible.



As shown below, respondents are most likely to compare fuel prices by driving by petrol stations in Finland (91%), Norway (90%), Lithuania (89%), Ireland (89%) and Denmark (88%). Respondents in the Czech Republic (48%), Bulgaria (45%), Ireland (45%), as well as in Greece, Poland and Portugal (all 42%) are more likely to make use of information from family, friends or colleagues.

¹¹⁷ Question Q10: How do you compare fuel prices? Please indicate up to three methods.

Table 72. Method of comparing fuel prices, analysis by country

Source: : Consumer survey, Question 10: How do you compare fuel prices? Please indicate up to three methods. (N= 25100 for respondents who compare fuel prices in EU27)
Note: Multiple answers possible.

	Driving by petrol stations	Family / friends / colleagues	Price comparison websites for fuels	Price announcements on the motorway	Websites of fuel retailers	Television / radio programmes on prices	Newspaper or magazine reporting on fuel prices
EU27	79%	31%	24%	18%	8%	8%	8%
EU15	80%	28%	23%	18%	7%	6%	6%
EU12	73%	41%	26%	18%	12%	16%	15%
Countries with E10	83%	25%	26%	15%	7%	6%	4%
 BE	73%	21%	32%	28%	9%	13%	7%
 BG	71%	45%	18%	19%	14%	24%	14%
 CZ	77%	48%	34%	15%	10%	15%	11%
 DK	88%	20%	15%	23%	3%	2%	3%
 DE	86%	24%	27%	5%	8%	5%	4%
 EE	69%	38%	13%	66%	12%	20%	19%
 IE	89%	45%	17%	12%	5%	6%	5%
 EL	79%	42%	35%	19%	9%	5%	8%
 ES	72%	33%	19%	19%	10%	5%	5%
 FR	78%	27%	25%	27%	6%	7%	4%
 IT	82%	32%	13%	28%	6%	5%	6%
 CY	71%	21%	5%	11%	2%	12%	7%
 LV	47%	32%	17%	49%	9%	22%	9%
 LT	89%	36%	24%	22%	12%	9%	12%
 LU	54%	15%	10%	40%	7%	38%	27%
 HU	45%	37%	45%	9%	10%	31%	21%
 MT	48%	18%	9%	6%	5%	35%	29%
 NL	77%	22%	17%	43%	9%	3%	6%
 AT	84%	20%	40%	4%	5%	3%	4%
 PL	82%	42%	24%	21%	10%	8%	15%
 PT	77%	42%	28%	29%	14%	16%	19%
 RO	77%	39%	18%	14%	16%	18%	14%
 SI	40%	34%	31%	15%	25%	45%	25%
 SK	55%	39%	41%	12%	20%	27%	21%
 FI	91%	26%	28%	26%	3%	2%	7%
 SE	81%	21%	15%	34%	5%	6%	9%
 UK	81%	27%	25%	5%	7%	6%	8%
 IS	73%	25%	19%	17%	8%	11%	30%
 NO	90%	20%	5%	24%	2%	1%	6%

The use of price comparison websites is highest in Hungary (45%), Slovakia (41%) and Austria (40%), while it is lowest in Cyprus (5%), Norway (5%), Malta (9%) and

Luxembourg (10%). The use of price announcements on the motorway is much higher in some countries, particularly Estonia (66%), Latvia (49%), the Netherlands (43%) and Luxembourg (40%), while it is very low in Austria (4%), Germany (5%), the UK (5%) and Malta (6%).

As can be seen in the table above, the proportion using media reports (television, radio, newspapers or magazines) is particularly high in Slovenia (45% television or radio, 25% newspapers or magazines), Luxembourg (38% and 27%), Malta (35% and 29%), Hungary (31% and 21%) and Slovakia (27% and 21%).

In general, respondents in EU12 countries are more likely than those in EU15 countries to make use of information from family, friends and colleagues (41% compared with 28%), from television or radio programmes (16% compared with 6%) and newspaper or magazine reports (15% compared with 6%).

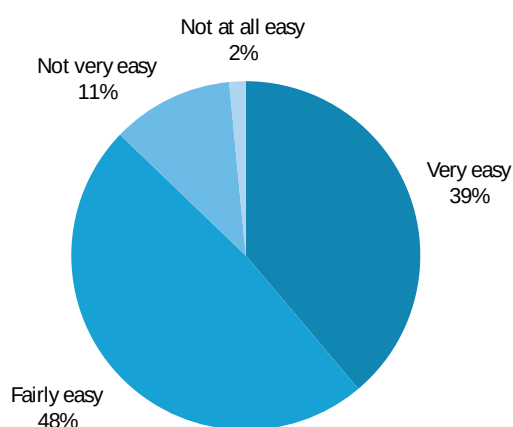
Findings are generally consistent across different socio-demographic groups. One difference is that men are more likely than women to use price comparison websites (27% compared with 20%), and are less likely to get information from family, friends and colleagues (25% compared with 36%).

7.1.3 Ease of price comparisons

Regarding fuel prices, the vast majority of these respondents say that it is easy to compare information (87%), including 39% who say it is very easy. Just 13% do not find it very or at all easy to compare information on fuel prices.

Figure 37. Ease of comparing fuel prices across petrol stations

Source: Consumer survey, Question 11.1:
How easy is it to compare information about the following across different petrol stations: fuel prices?
(N=25100, Respondents who compare fuel prices in EU27)

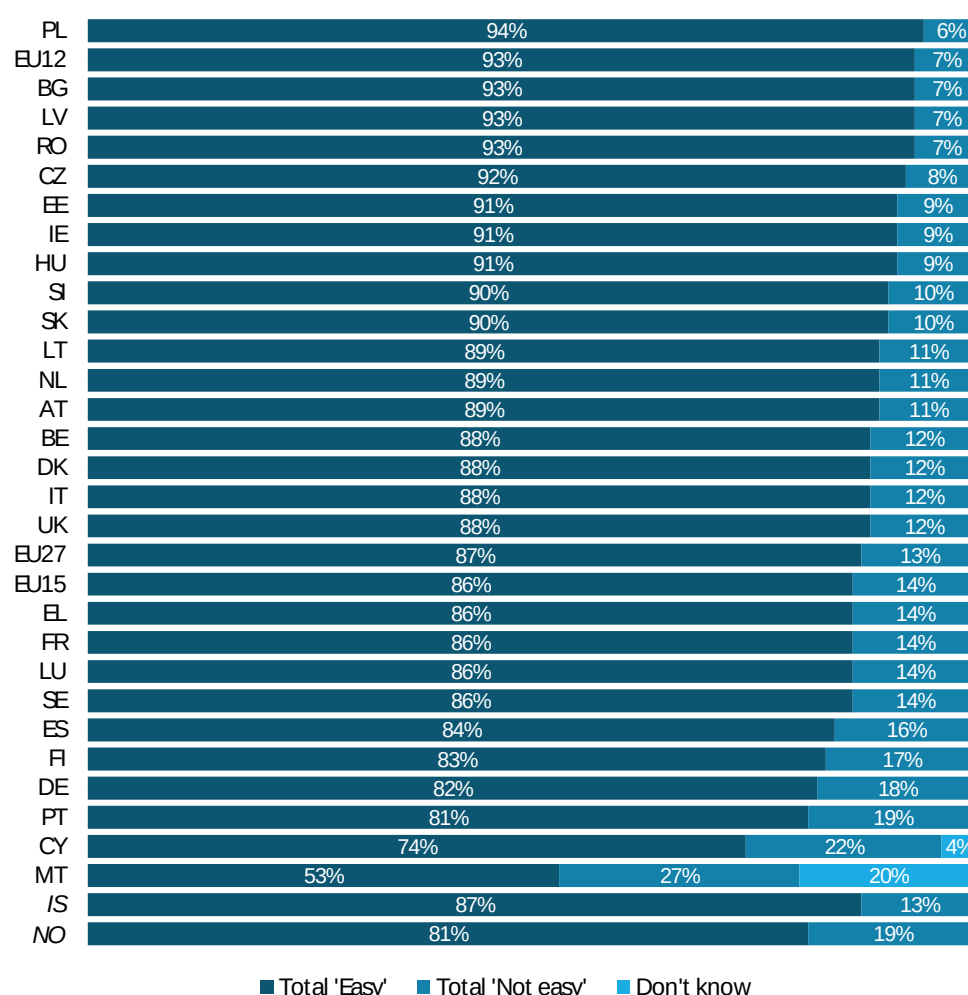


Respondents are most likely to find it easy to compare information on fuel prices in Poland (94%), Bulgaria (93%), Latvia (93%) and Romania (93%), while respondents in Cyprus and Malta are least likely to find it easy to get this information (74% and 53% respectively). Overall, respondents in EU12 countries

are more likely than those in EU15 countries to say they find it easy (93% compared with 86%). The figure for countries with E10 fuel (84%) is similar to that in other EU15 countries.

Figure 38. Ease of comparing fuel prices across petrol stations, analysis by country

Source: Consumer survey, Question 11.1: How easy is it to compare information about the following across different petrol stations: fuel prices? (N=25100 for respondents who compare fuel prices in EU27)



Stakeholders were also asked to estimate how easy they thought it was for consumers to effectively compare fuel prices in their country; choices ranged from "very easy" to "not at all easy". A large majority of stakeholders stated that this was easy - 30% claiming that it was "very easy" and 50% that it was "fairly easy". Only 11% claimed that it was not easy, and the remaining stakeholders declined to give an opinion.

Specific issues were highlighted by stakeholders. In Lithuania, a competition authority made the distinction between online price comparison and visiting petrol stations, in that price comparison was easier online, although Lithuania did not have a centralised fuel price comparison website. The Hungarian Competition Authority stakeholder also emphasised that it was easier for consumers who

regularly used the internet to compare prices. A consumer organisation in Austria also cited the role played by the official database of prices, but noting that only the lowest prices are available to compare, limiting consumer choice to some extent.

The importance of prices clearly marked on billboards was highlighted by an industry association in Germany, but in Ireland the National Consumer Agency claimed that it was easy for consumers to compare prices in their locality, but harder to compare local prices against the national level, in part because of difficulties in collecting data and generating appropriate statistics.

Stakeholders in Slovenia and Malta stated that prices were the same across the country, making comparing prices somewhat futile for consumers. In Estonia, the opposite problem was experienced – prices were seen as changing frequently, making comparison difficult.

Socio-demographic differences and potentially vulnerable consumers

Comparing results by socio-demographic characteristics, respondents who compare prices always or very often (45%) are more likely to find it very easy than those who compare prices often (31%) or rarely / never (29%). There are no differences according to the methods used to compare fuel prices (i.e. between those who use online versus other methods).

Despite the higher proportions of older respondents often comparing prices, younger respondents (aged 18-24) are more likely than older respondents to find it easy to compare information on fuel prices (47% find it very easy, falling to 35% among those aged 55 or over).¹¹⁸ A detailed presentation of these differences can be seen in the table on the following page.

¹¹⁸ Please note that only statistically significant differences are summarised in the text. For a chart of confidence intervals at different group sizes, please refer to Annex A.

Table 73. Ease of comparing fuel prices across petrol stations, analysis by socio-demographic characteristics

Source: Question 11.1:
How easy is it to compare information about the following across different petrol stations: fuel prices?
(N=25100, Respondents who compare fuel prices in EU27)

Sub-sample		Very easy	Fairly easy	Not very easy	Not at all easy	Total 'Easy'
Average	EU27	39%	48%	11%	2%	87%
Gender	Male	40%	48%	11%	2%	88%
	Female	38%	49%	12%	1%	87%
Age	18-24	47%	44%	7%	1%	92%
	25-39	42%	47%	10%	1%	89%
	40-54	37%	49%	12%	2%	86%
	55+	35%	50%	13%	2%	85%
Percentage of monthly income spent on fuel	1 - 5%	37%	49%	12%	2%	86%
	6 - 10%	38%	49%	12%	1%	87%
	11 - 20%	39%	48%	11%	1%	88%
	21% or more	45%	44%	8%	2%	89%
Compare fuel prices	Always / Very often	45%	44%	10%	1%	89%
	Often	31%	56%	12%	1%	87%
	Rarely / Never	29%	52%	16%	3%	81%
Vehicle age	Less than 5 years old	37%	49%	12%	2%	87%
	5 to 10 years old	39%	48%	11%	2%	87%
	More than 10 years old	41%	47%	10%	1%	88%

7.2 PRICE DIFFERENCES WITHIN AND BETWEEN COUNTRIES

The intensity with which consumers compare prices and try to identify the cheapest retailer in their area (thereby increasing competitive pressure) will depend, among others, on price differences between different retailers and retailer types. This section presents results primarily from the price collection exercise, in which we collected fuel prices directly from selected petrol stations in all 27 Member States, Iceland, and Norway.

Key findings of this section are:

1. Overall, the average price index for regular petrol 95 in rural areas relative to capital cities is 99.8, meaning that the collected fuel prices across the 29 countries tended to be slightly cheaper in rural areas than in the sampled stations in the capital cities;¹¹⁹ conversely, the average regular petrol 95 price index for petrol stations sampled along motorways in the 29 countries is 101.3.
2. These regional price findings are substantiated by the results for regular diesel fuel: the average rural price index for all 29 countries is 99.8 and the average motorway price index, 101.7.
3. In sum, then, the collected fuel prices were approximately 0.2% cheaper in rural areas than in capital cities and 1.3%-1.7% more expensive along motorways than in the capital cities.
4. Only in a handful of countries did the average daily price for regular petrol 95 (taking into account all stations sampled in the capital city, along motorways and in a rural area) remain constant between Monday, Wednesday and Friday; generally, though the average price changed by less than 1% between Monday and Friday of a given week. Exceptions include four countries where the average price fell by more than 1% between Monday and Friday (up to 1.4% lower); and four other countries where the average price increased by more than 1% during the course of the week (up to 5.9% higher).
5. Likewise, the average daily price for regular diesel fuel was lower on Friday than on Monday in 14 countries; the opposite was true in 12 countries; and no change was observed in only three countries. The average price difference between Monday and Friday exceeded 1% in six countries: Bulgaria, Germany, Spain, Luxembourg, Malta and Norway.
6. The collected price data was also used to analyse price differentials between different types of fuel retailers. The price differentials for regular petrol 95 based on data from 28 countries (excluding France, which was a significant

¹¹⁹ For this analysis, 100 indicates the average price of the sampled stations in the capital city.

outlier due to the prices charged by several petrol stations located in central Paris) reveal that, on average, non-major brands and independent fuel retailers sold this fuel type at lower prices than major brands. Specifically the price index for non-major brands and independent retailers is 99.6, compared to 100.2 for major brands, with 100 indicating the average price for all sampled stations. However, supermarket stations were by far the cheapest, according to the collected data: the price index for the sampled supermarket stations, based on countries where they could be identified, was 96.9 during the week in which the research was conducted.

7. The retailer-type price differentials are highly similar for regular diesel fuel: the price index for non-major brands and independents (excluding France again) is 99.6, while it is 100.2 for major brands and 97.6 for supermarkets.
8. Turning to the average prices found at manned and unmanned stations reveals that unmanned (or 'automatic') petrol stations nearly always sold fuel at lower prices than their manned counterparts. In fact, with respect to regular petrol 95 prices, the average price at unmanned stations was lower in 13 of the 14 countries in which prices were collected from unmanned stations. Only in Greece was the average price for regular petrol 95 higher at unmanned stations than manned stations. On average across these 14 countries, unmanned stations sold regular petrol 95 for 1.9% less than manned stations.
9. This finding also holds for the average price of regular diesel fuel. In this case, relevant price data was collected from unmanned stations in 13 countries, and in each of these countries the average price was lower at unmanned stations than at manned stations. Across the 13 countries, the average unmanned station's price for regular diesel fuel was 2.7% below that of the average manned station.
10. In the two countries – Germany and France – in which both regular petrol 95 (with maximum 5% ethanol by volume) and E10 fuel with a RON of 95 were available, E10 was between 2.5% (Germany) and 7.2% (France) cheaper than the blend with lower biofuel content. In Germany the actual average prices were 1.59 Euro for regular petrol 95 and 1.55 Euro for E10, while the average prices in France were 1.64 Euro and 1.53 Euro, respectively.
11. As one would expect, premium petrol and premium diesel were always more expensive, where available, than regular petrol 95 and regular diesel fuel, respectively. The cost difference for premium petrol compared to petrol 95 ranged from 6.1% in Italy (or 1.92 Euro compared to 1.80 Euro) to 8.3% in the Czech Republic (39.63 Czech crowns compared to 36.35 Czech crowns); for premium compared to regular diesel the range was from 1.8% in Finland (1.55 Euro compared to 1.53 Euro) to 9.3% in Germany (1.60 Euro compared to 1.45 Euro).

7.2.1 Background: Price changes and cycles in the vehicle fuels market

The prices consumers pay to fuel their vehicles are actually the last in a chain of prices, which includes the crude oil price, spot market price and the wholesale price. Several factors can affect this chain and thereby drive price level changes, including:

- ▶ Supply disruptions (due to natural disasters, armed conflicts / security issues);
- ▶ Demand compared to supply (locally or internationally);
- ▶ Supply chain inefficiencies; and
- ▶ Market power.¹²⁰

Partly as a result of these supply side factors, consumers are confronted with frequent price fluctuations for vehicle fuel products. Additionally, prices can change as a result of retailers' pricing strategies. Retailers engage in such pricing strategies because in a market profoundly characterised by relatively homogeneous products and therefore relatively straightforward consumer searches, price differences are of key importance in terms of influencing consumers' decision-making.¹²¹ The end result, from the consumer perspective, is rapid price change at the pump. These price changes may not only occur on a weekly basis, but multiple times per day. In fact, consumers in Germany have actually reported situations in which they ended up paying more than expected at the pump because a price increase was implemented between the time they drove into the refuelling station and the moment they lifted the pump to initiate the purchase.¹²² E-Control Austria, the regulatory authority which operates a fuel price comparison website in Austria that is based on notified price data from retailers (required by law), reported that petrol stations operated by the five major brands sometimes change their prices 10-15 times per day.¹²³

Pump-level price changes do not always correlate to increasing or decreasing costs further up the supply chain. Indeed, there is a robust and still developing subset of literature focused on questions related to asymmetric pricing and price

¹²⁰ OECD (2009) 'Policy Roundtables: Competition Policy for Vertical Relations in Gasoline Retailing', Competition Law & Policy OECD, available at: <http://www.oecd.org/dataoecd/1/22/43040511.pdf>.

¹²¹ Hosken, D. S., R.S. McMillan, and C. T. Taylor (2008) 'Retail Gasoline Pricing: What Do We Know?', Federal Trade Commission, Washington, DC, available at: <http://www.ftc.gov/be/workpapers/wp290.pdf>.

¹²² ADAC (2012), 'Price increase after driving into gas station', ADAC Website, available at: <http://www.adac.de/infotestrat/tanken-kraftstoffe-und-antrieb/probleme-tankstelle/default.aspx>.

¹²³ Interview E-Control Austria.

cycles. Asymmetric pricing refers to situations in which retail prices rise more rapidly after cost increases than they decline following cost decreases. Academic studies in this vein are thus sometimes referred to as the 'rockets and feathers' literature.¹²⁴ As Hosken *et al* point out, the findings of this literature are mixed and may depend on the methodology and datasets used: some research efforts confirm the rising rockets and falling feathers hypothesis, while others do not robustly find such a pricing pattern.¹²⁵

Recent outgrowths of this literature are empirical studies that test for 'Edgeworth' cycles.¹²⁶ These are price cycles that typically last longer than a week and are characterised by "sharp price increases ... followed by a gradual reduction of retail prices" as firms sequentially under-price each other until further cuts become too expensive. A 'war of attrition' then ensues before one firm raises its prices and the others do the same.¹²⁷ The existence of such cycles at the retail level has been quantitatively documented in the United States, Canada, and Australia, among other countries.¹²⁸ Importantly, Noel suggests that these cycles can work to the benefit of consumers, assuming their purchases are well-timed.¹²⁹

This literature summary hints at the intricacy of pricing strategies confronting consumers in the retail vehicle fuels market. The notion of price cycles is important because it suggests that in countries where such cycles do exist, a well-informed consumer needs to take into account far more than just the cheapest price on a given day. To exemplify this need, results of research from Norway and Germany clearly reveal 'cheap' and 'expensive' days of the week. For the Norwegian market, Foros and Steen identify noon on Mondays as the time at which retailers across the country simultaneously increase their prices. Those prices then generally and slowly decline during the course of the week to hit their

¹²⁴ For examples, see Borenstein, S., A. Cameron and R. Gilbert (1997), 'Do Gasoline Prices Respond Asymmetrically to Crude Oil Price Changes', *Quarterly Journal of Economics*, 112, pp. 305-339; West, D. & A. Eckert (2004) 'Retail Gasoline Price Cycles across Spatially Dispersed Gasoline Stations', *Journal of Law and Economics*, 47, pp. 245-73; Galeotti, M., A. Lanza, and M. Manera (2003) 'Rockets and Feathers Revisited: An International Comparison on European Gasoline Markets', *Energy Economics*, 25, pp. 175-190; and M. Lewis (2011) 'Asymmetric Price Adjustment and Consumer Search: An Examination of the Retail Gas Market', *Journal of Law and Economics*, 52(3), pp. 409-449.

¹²⁵ Hosken, McMillan, and Taylor (2008).

¹²⁶ See Maskin, E. and J. Tirole (1988) 'A theory of dynamic oligopoly II: Price competition, kinked demand curves and Edgeworth cycles', *Econometrica*, 56, pp. 571-599.

¹²⁷ Foros, Ö. and F. Steen (2012) 'Vertical control and price cycles in gasoline retailing', available at: http://blogg.nhh.no/beccle/wp-content/uploads/2012/03/20120216Foros_Steen_Gasoline-2.pdf.

¹²⁸ Based on Noel, M. and M. Lewis (2009) 'The speed of gasoline price response in markets with and without Edgeworth cycles', *Review of Economics and Statistics*, 93(2), pp. 672-682; and communication with M. Noel.

¹²⁹ Communication with M. Noel; also noted on his website: <http://www.econ.ucsd.edu/~mdnoel/>.

lowest levels over the weekend and on Monday morning.¹³⁰ Conversely, Fridays were reported to be the most expensive day of the week in Germany in 2011.¹³¹ Prices may also diverge substantially between motorway and 'normal' street refuelling stations.

Differences in price levels between and within countries were therefore the focus of an extensive price collection exercise conducted in the framework of the study, covering price differentials per defined area (metropolitan, motorway, rural), day of the week, retailer type, and unmanned stations. Price differences between particular fuel types identified during the mystery shopping station visits to six countries are also presented.

7.2.2 Mystery shopping – price collection exercise

For this study, we collected prices from petrol stations by telephone for a sample of stations in the capital city, in a rural area and from stations at motorways.¹³² We collected price data for each of the selected fuel types in defined time slots on three days of a specified week (on Monday, 26 November 2012, Wednesday, 28 November 2012, and Friday, 30 November, 2012). We also aimed at covering, in each selected area, at least two leading brands and independent retailers. This allowed us to get an understanding of the price dispersion between different areas and between stations located at motorways and other stations. We also obtained information on price dispersion in a given area, both at a given point in time and throughout a week, thereby reflecting a possible price cycle. Finally, the collected data allowed us to obtain price differentials between leading brands and independent retailers.

The table above shows the total number of price observations collected from petrol stations by phone.

Table 74. Price observations collected from petrol stations by phone

Sample	Day 1 sample (Monday)	Day 2 sample (Wednesday)	Day 3 sample (Friday)	All days

¹³⁰ Foros and Steen (2012).

¹³¹ ADAC (2012) 'Montags günstig tanken', available at: <http://www.adac.de/infotestrat/tanken-kraftstoffe-und-antrieb/kraftstoffpreise/medienberichte/default.aspx?ComponentId=62337&SourcePagelId=54981>. This weekly pricing pattern holds for 2008, 2009 and 2010 as well, although in 2010 the cheapest day was Sunday rather than Monday.

¹³² Prices for rural areas were collected in one regional market per country. We applied a definition used by the German competition authority, which defines a regional market as a circle with a radius of 25 km, to be extended where necessary to allow for a large enough sample. A rural area may include one or more small cities. In the case of very small countries (e.g. Malta), this definition covers a large portion of the country, in which case we considered the country to represent one region/market alone. In these cases it is therefore not meaningful to differentiate price levels between these areas.

Source: Civic Consulting.

All observations	3877	3715	3723	11315
Total petrol	2019	1944	1906	5869
Total diesel	1858	1771	1817	5446
Total city	1512	1425	1449	4386
Total rural	1319	1291	1284	3894
Total motorway	1046	999	990	3035
City petrol	793	750	742	2285
City diesel	719	675	707	2101
Rural petrol	682	680	660	2022
Rural diesel	637	611	624	1872
Motorway petrol	544	514	504	1562
Motorway diesel	502	485	486	1473

The price collection results are generally shown for the entire sample of 29 countries, which comprises the EU27 Member States, as well as Iceland and Norway; however, when comparing the average fuel prices at manned and unmanned petrol stations, only those countries where unmanned stations were identified and included in the database are listed in the results table. Similarly, only in those countries where mystery shoppers were able to collect data from a supermarket/hypermarket were price differentials able to be calculated.

The findings are presented in the following order:

- ▶ Price differentials between selected areas;
- ▶ Price differentials between retailers;
- ▶ Price differentials between manned and unmanned stations; and
- ▶ Price differentials between days of the week.

7.2.3 Price differentials between selected areas

This sub-section focuses on fuel price differences between three selected areas within countries, specifically the capital city, a rural area(s) and motorways. Because mystery shoppers called for regular petrol 95 and regular diesel fuel prices at petrol stations in each pre-defined area type, the collected price data have allowed us to analyse price differences between those areas.

Prices for rural areas were collected in one regional market per country, chosen on a random basis. We applied a definition used by the German competition authority, which defines a regional market as a circle with a radius of 25 km centred on a randomly-selected city with a population of less than 100,000 people, to be extended where necessary to allow for a large enough sample. A rural area may include one or more small cities, as long as they have a population of less than 100,000 people. In the case of very small countries (e.g. Malta), this

definition covers a large portion of the country, in which case we consider the country to represent one region/market alone. In these cases it is therefore not meaningful to differentiate price levels between regions. In larger countries (such as France and Germany), two rural areas were chosen, so as to better reflect the geographic and economic differences in the country.

The price differentials presented in the following table are expressed as percentages of the average price for the capital city. This has been done by setting the average price across all stations in the capital city for regular petrol 95 (Table 75) and regular diesel fuel (Table 76) equal to 100. Then the average prices for the rural area(s) and motorways are expressed in relation to the relevant capital city average, for example, as 102.1, which indicates an average price 2.1% higher than the capital city price in a given country. Notably, these area price averages are based on all price observations collected throughout the week, i.e. through the relevant telephone calls made on each of three days. The total number of observations which feeds into these calculations is 11,315, with 5,869 pertaining to regular petrol 95 and 5,446 linked to regular diesel fuel.

The first table below shows regular petrol 95 prices by selected area for the 29 countries surveyed. As discussed, the average price of regular petrol 95 in the capital city across all three days has been set to 100. This allows for the evaluation of price differences between selected areas without the interference of different currencies or price level variations among countries.

Table 75. Price differentials between selected areas for regular petrol 95, analysis by country

Source: Civic Consulting price collection from petrol stations. (N=5,869)
Notes: (a) All petrol stations in Malta were considered to reside within one area.

	Capital city sample	Rural area sample	Difference rural-capital city	Motorway sample	Difference motorway-capital city
Average	100.0	99.8	-0.2	101.3	1.3
 BE	100.0	97.9	-2.1	103.7	3.7
 BG	100.0	100.9	0.9	100.6	0.6
 CZ	100.0	98.2	-1.8	101.7	1.7
 DK	100.0	99.6	-0.4	101.1	1.1
 DE	100.0	99.8	-0.2	102.3	2.3
 EE	100.0	100.0	0.0	99.7	-0.3
 IE	100.0	97.6	-2.4	99.4	-0.6
 EL	100.0	101.5	1.5	103.5	3.5
 ES	100.0	101.5	1.5	101.5	1.5
 FR	100.0	96.0	-4.0	98.4	-1.6
 IT	100.0	97.6	-2.4	98.5	-1.5
 CY	100.0	100.4	0.4	99.9	-0.1
 LV	100.0	99.4	-0.6	100.1	0.1
 LT	100.0	102.0	2.0	102.5	2.5
 LU	100.0	100.0	0.0	100.0	0.0

 HU	100.0	99.6	-0.4	105.3	5.3
 MT	100.0	n.a.(a)	n.a.(a)	n.a.(a)	n.a.(a)
 NL	100.0	99.9	-0.1	104.5	4.5
 AT	100.0	103.2	3.2	110.6	10.6
 PL	100.0	100.5	0.5	100.7	0.7
 PT	100.0	98.9	-1.1	100.0	0.0
 RO	100.0	99.0	-1.0	98.2	-1.8
 SI	100.0	99.8	-0.2	100.0	0.0
 SK	100.0	99.8	-0.2	100.6	0.6
 FI	100.0	100.4	0.4	100.2	0.2
 SE	100.0	99.8	-0.2	100.2	0.2
 UK	100.0	100.6	0.6	102.9	2.9
 IS	100.0	99.9	-0.1	100.0	0.0
 NO	100.0	100.3	0.3	100.5	0.5

With respect to regular petrol 95, the average price in rural areas was cheaper than the average capital city price in 17 of the 29 countries. This was most notably the case in France, where the average price for petrol in rural areas in our sample was 4% below the average price in Paris. Other countries in which the average rural price was relatively far below the average capital city price include Ireland (2.4%), Italy (2.4%) and Belgium (2.1%).

In two countries – Estonia and Luxembourg – the average price of regular petrol 95 at the rural petrol stations in the sample was equal to the average price at the capital city stations.

In the 10 remaining countries, the average rural price was higher than the average capital city price. The country which stands out in this regard is Austria, where the average rural price in our sample was 3.2% above the average price in Vienna. Greater than a 1% difference in average prices was also observed in Greece (1.5%), Spain (1.5%) and Lithuania (2.0%).

Overall for the 29 countries, the average price index for the rural areas relative to the capital cities is 99.8. The lower prices on average may be explained by the tendency of average income to be higher in capital cities than in other parts of the country, and prices may also be influenced by the relative level of centralisation of infrastructure to transport and sell fuel products.

From the findings for the samples of stations located along motorways, it is clear that the average motorway price for regular petrol 95 was higher than the average capital city price in the vast majority of countries. Indeed, only in six countries was the average motorway price below that of the capital city, and in only three of these countries – France (98.4), Italy (98.5) and Romania (98.2) – was the difference more than 1%.

In several countries, namely Luxembourg, Portugal, Slovenia and Iceland, the average motorway price for regular petrol 95 was similar to that in the capital city.

In the 19 other countries, the average motorway price in our sample was higher than the average capital city price. In some cases, e.g. Austria (110.6), Hungary (105.3), the Netherlands (104.5), Belgium (103.7) and Greece (103.5), the average price difference was more than 3%.

The average index for stations located along motorways in the 29 countries is 101.3, suggesting that motorway prices are generally more expensive than those in capital cities and rural areas.

The next table displays the indexed average prices by selected area for regular diesel fuel. As in the preceding table, the index sets the average price for regular diesel fuel across all sampled petrol stations in the capital city of each country to 100.

Table 76. Price differentials between selected areas for regular diesel fuel, analysis by country

Source: Civic Consulting price collection from petrol stations. (N=5,446)
Notes: (a) All petrol stations in Malta were considered to reside within one area.

	Capital city sample	Rural area sample	Difference rural-capital city	Motorway sample	Difference motorway-capital city
Average	100.0	99.8	-0.2	101.7	1.7
 BE	100.0	99.2	-0.8	104.6	4.6
 BG	100.0	100.5	0.5	100.4	0.4
 CZ	100.0	99.1	-0.9	100.8	0.8
 DK	100.0	99.9	-0.1	102.7	2.7
 DE	100.0	100.5	0.5	104.4	4.4
 EE	100.0	99.4	-0.6	99.7	-0.3
 IE	100.0	97.7	-2.3	101.8	1.8
 EL	100.0	101.3	1.3	103.7	3.7
 ES	100.0	100.0	0.0	101.5	1.5
 FR	100.0	95.1	-4.9	101.7	1.7
 IT	100.0	100.0	0.0	100.0	0.0
 CY	100.0	100.6	0.6	100.3	0.3
 LV	100.0	100.2	0.2	100.4	0.4
 LT	100.0	99.5	-0.5	100.1	0.1
 LU	100.0	99.9	-0.1	99.9	-0.1
 HU	100.0	99.8	-0.2	104.1	4.1
 MT	100.0	n.a.(a)	n.a.(a)	n.a.(a)	n.a.(a)
 NL	100.0	98.5	-1.5	103.5	3.5
 AT	100.0	101.0	1.0	107.4	7.4
 PL	100.0	100.1	0.1	101.1	1.1
 PT	100.0	100.7	0.7	101.2	1.2

	RO	100.0	99.6	-0.4	100.7	0.7
	SI	100.0	99.6	-0.4	100.0	0.0
	SK	100.0	99.7	-0.3	99.8	-0.2
	FI	100.0	102.3	2.3	101.7	1.7
	SE	100.0	99.7	-0.3	100.0	0.0
	UK	100.0	100.1	0.1	102.7	2.7
	IS	100.0	99.8	-0.2	100.2	0.2
	NO	100.0	101.2	1.2	102.2	2.2

Consideration of the indexed average diesel prices by selected area makes clear that they follow the same general trend as prices for regular petrol 95. For regular diesel fuel, the average rural index for all 29 countries is 99.8 (identical to the result for regular petrol 95), and, for motorways, it is 101.7 – only slight more than the petrol result of 101.3.

In terms of differences between average rural prices for regular diesel fuel and those seen in the capital cities, France (95.1) and Ireland (97.7) again stand out in our sample as having the lowest average rural prices relative to those observed in their capital cities. In contrast, four countries – Finland (102.3), Greece (101.3), Norway (101.2) and Austria (101.0) – showed average rural prices 1% or more above those in their capital cities.

Only three in countries in our sample –Estonia (99.7), Slovakia (99.8) and Luxembourg (99.9) – were average motorway prices for regular diesel fuel lower than average capital city prices, and in all of these cases the difference was less than 0.3%.

Conversely, in Austria (107.4), Belgium (104.6), Germany (104.4) Hungary (104.1), Greece (103.7) and the Netherlands (103.5) the average motorway price was at least 3% higher than the average capital city price. Five of these six countries are the same ones for which this finding held in regard to regular petrol 95.

7.2.4 Price differentials between retailer types

In each country, mystery shoppers also ascertained whether stations contacted were operated by major brands, non-major brands and independents, or by supermarkets/hyper-markets. They did so by performing desk research and verification through relevant online resources, as necessary. Based on this data, we have calculated average prices for major brands, non-major brands/independents, and supermarkets/hyper-markets in the different countries. Prices have been converted into percentages, whereby the petrol price index for the entire country is set to 100, and the average price index of each retailer type compared directly, as can be seen in the table below.

Table 77. Price differentials between retailer types for regular petrol 95, analysis by country

Source: Civic Consulting price collection from petrol stations. (N=5,868).
Note: Prices for France are influenced by several stations located in central Paris that were substantially above the capital city average - in March 2013 results were verified through follow-up research.

	Petrol price index – entire country	Non-major brands and independents	Major brands	Supermarkets / hyper-markets
Average	100.0	100.2	100.2	97.0
Average w/o FR ^(a)	100.0	99.6	100.2	96.9
 BE	100.0	100.4	100.7	94.9
 BG	100.0	99.8	100.0	n.a
 CZ	100.0	98.5	100.4	n.a
 DK	100.0	99.8	100.0	n.a
 DE	100.0	99.2	100.1	n.a
 EE	100.0	100.3	100.0	n.a
 IE	100.0	100.0	99.9	101.7
 EL	100.0	99.7	100.2	n.a
 ES	100.0	99.9	100.2	95.6
 FR	100.0	114.8	99.5	97.9
 IT	100.0	99.8	100.1	96.6
 CY	100.0	100.8	100.0	n.a
 LV	100.0	99.9	100.1	n.a
 LT	100.0	100.5	99.9	n.a
 LU	100.0	99.7	100.0	n.a
 HU	100.0	97.5	100.3	n.a
 MT	100.0	100.0	n.a	n.a
 NL	100.0	98.1	100.5	95.5
 AT	100.0	97.8	101.2	92.9
 PL	100.0	99.8	100.2	97.5
 PT	100.0	99.6	100.1	94.4
 RO	100.0	99.3	100.0	n.a
 SI	100.0	n.a	100.0	99.7
 SK	100.0	99.4	100.1	99.4
 FI	100.0	n.a	100.0	n.a
 SE	100.0	n.a	100.0	n.a
 UK	100.0	100.2	100.9	97.5
 IS	100.0	99.8	100.0	n.a
 NO	100.0	100.6	99.9	n.a

For regular petrol 95, in most countries prices were lower in service stations owned by non-major brands and independents, and lower again in supermarkets and hyper-markets. Notably in France, non-major brand prices were substantially above (114.8) prices for other types of retailers. However, this appeared to be a significant outlier due to the high price charged by several stations in central Paris, and most were owned by non-major brands or were independent.

The countries in our sample with the lowest average prices for non-major brands and independents compared to major brands were Hungary (97.5), Austria (97.8), and the Czech Republic (98.5).

Table 78. Price differentials between retailer types for regular diesel fuel, analysis by country

Source: Civic Consulting price collection from petrol stations. (N=5,446).
Note: Prices for France are influenced by several stations located in central Paris that were substantially above the capital city average - in March 2013 results were verified through follow-up research.

		Diesel price index – entire country	Non-major brands and independents	Major brands	Supermarkets / hyper-markets
Average		100.0	99.8	100.2	97.5
Average w/o FR		100.0	99.6	100.2	97.6
	BE	100.0	102.4	100.6	94.1
	BG	100.0	99.0	100.1	n.a
	CZ	100.0	98.7	100.4	97.8
	DK	100.0	97.7	100.5	n.a
	DE	100.0	99.6	100.1	n.a
	EE	100.0	99.0	100.1	n.a
	IE	100.0	100.1	100.0	101.4
	EL	100.0	99.6	100.1	n.a
	ES	100.0	100.1	100.1	97.3
	FR	100.0	104.8	100.5	96.6
	IT	100.0	99.6	100.0	98.7
	CY	100.0	100.3	100.0	n.a
	LV	100.0	100.1	99.9	n.a
	LT	100.0	99.7	100.1	n.a
	LU	100.0	100.0	100.0	n.a
	HU	100.0	98.4	100.5	97.9
	MT	100.0	100.0	n.a	n.a
	NL	100.0	98.6	100.3	95.3
	AT	100.0	97.3	100.9	94.1
	PL	100.0	99.8	100.2	97.3
	PT	100.0	100.5	99.8	n.a
	RO	100.0	99.8	100.0	n.a
	SI	100.0	n.a	100.0	99.5
	SK	100.0	99.3	100.2	99.5
	FI	100.0	n.a	100.0	n.a
	SE	100.0	n.a	100.0	n.a
	UK	100.0	100.7	100.6	97.9
	IS	100.0	100.2	100.0	n.a
	NO	100.0	100.6	99.9	n.a

In contrast, the average price of petrol 95 sold by non-major brands and independents in our sample was higher than that of major brands in Belgium (100.4), Cyprus (100.8), Estonia (100.3), Lithuania (100.5), and the UK (100.2).

Regarding supermarkets, results were more limited because the mystery shoppers were able to collect prices from supermarket or hypermarket fuel retailers from only 13 countries. However, in all of these countries with the exception of Ireland (101.7), prices were cheaper than the national average. These differences were most pronounced in Austria (92.9), Portugal (94.4), and Belgium (94.9).

As before, price differentials were also calculated for diesel fuel. The table above displays these by country.

Consideration of the indexed average diesel prices by retailer makes clear that they follow the same general trend as prices for regular petrol 95. For regular diesel fuel, the average non-major/independent index for all countries in our sample except France is 99.6 (identical to the result for regular petrol 95), and, for supermarkets, it is 97.6 – only slightly more than the petrol result of 96.9.

In terms of differences between average independent/non-major retailer prices for regular diesel fuel and the country average, Austria (97.3), Hungary (98.4), and the Czech Republic (98.7) stand out as having the lowest average prices in our sample relative to those observed overall. In contrast, Belgium (102.4) and France (104.8) showed average independent prices 1% or more above the average for other retailer types.

Only in Ireland (101.4) were prices in supermarkets and hypermarkets more expensive than the country average. The lowest supermarket prices, on average, were seen – similarly to the petrol prices – in Austria (94.1), Belgium (94.1), and the Netherlands (95.3). It is also interesting to note that in Belgium (100.6) and Austria (100.9), the average prices for major brands were concurrently the highest in the countries surveyed.

7.2.5 Price differentials between manned and unmanned stations

In countries where they could be identified, mystery shoppers also contacted unmanned petrol stations to collect prices for both fuel types, i.e. regular petrol 95 and regular diesel fuel. They did so by calling the contact number of the retailer running the unmanned station or network of unmanned stations and following up by email, if necessary. Based on this data, we have calculated average prices for both manned and unmanned stations in the applicable countries. These average prices are based on data from all selected areas of each country and all three days of the week. The prices are expressed in local currencies and are inclusive of different fuel levies. The average is based on the percentage difference observed in each country.

The following table presents the average prices at manned and unmanned stations for regular petrol 95 (prices of local currencies have been converted to Euro).

Table 79. Average prices for regular petrol 95 at manned and unmanned stations, analysis by country (prices in Euro)

Source: Civic Consulting price collection from petrol stations. (N=3,046)
Notes: (a) Average prices for manned and unmanned stations cannot be developed due to the inclusion of different currencies in the sample; Figures analysed in

	Manned stations sample	Unmanned stations sample	Percent difference manned-unmanned
Average	n.a.(a)	n.a.(a)	-1.9%
 BE	1.63	1.53	-6.1%
 DK	1.60	1.58	-1.0%
 EE	1.32	1.32	-0.4%
 EL	1.69	(1.71)	1.3%
 ES	1.38	(1.36)	-1.4%
 LV	0.95	0.95	-0.7%
 LT	1.39	1.37	-1.4%
 NL	1.78	1.72	-3.1%
 AT	1.45	(1.34)	-7.3%
 SI	1.48	(1.47)	-0.3%
 FI	1.63	1.63	-0.1%
 SE	1.68	1.65	-1.5%
 IS	1.53	1.52	-0.5%
 NO	1.96	1.88	-4.5%

In 13 of the 14 countries for which price observations from unmanned stations were collected, the unmanned stations, on average, sold regular petrol 95 at slightly too significantly lower prices than the manned stations in the same country. This was most notably the case in Belgium and Austria, where prices at unmanned stations were, on average, 6.1% and 7.3% cheaper than at manned stations. Only in Greece was the average price at unmanned stations higher than that at manned stations, but this finding is based on a limited number of price observations at unmanned stations.

Overall, the average percentage difference in the price offered by unmanned and manned stations was -1.9%, indicating an average price at unmanned stations in our sample nearly 2% below that observed at manned stations.

The next table presents the average price findings for regular diesel fuel at manned and unmanned stations.

Table 80. Average prices for regular diesel fuel at manned and unmanned stations, analysis by country (prices in Euro)

Source: Civic Consulting price collection from petrol stations. (N=2,707)
Notes: (a) Average not calculated as national currencies used in certain countries. Figures enclosed in parentheses are based on fewer than 10 price observations.

	Manned stations sample	Unmanned stations sample	Percent difference manned-unmanned
Average	n.a.(a)	n.a.(a)	-2.7%
 BE	1.50	1.40	-7.3%
 DK	1.50	1.45	-3.6%
 EE	1.40	1.39	-0.2%
 ES	1.37	(1.33)	-3.0%
 LV	0.96	0.95	-1.0%
 LT	1.32	1.32	-0.2%
 NL	1.50	1.44	-3.6%
 AT	1.46	(1.37)	-6.0%
 SI	1.40	(1.39)	-0.5%
 FI	1.56	(1.52)	-2.4%
 SE	1.71	1.68	-1.4%
 IS	1.59	1.58	-0.4%
 NO	1.85	1.76	-5.1%

In those 13 countries where price observations were collected from unmanned stations, the average price at those stations was unanimously lower than the average price at manned stations. Again, this was most notably the case in Belgium (7.3% lower) and Austria (6.0% lower), though the average price at unmanned stations was also substantially lower in Norway (5.1%).

Overall, the average difference was -2.7% for regular diesel fuel, indicating that prices at unmanned stations in our sample tended to be almost 3% lower for this fuel type.

In sum, these findings indicate that both regular petrol 95 and regular diesel fuel were consistently less expensive at unmanned stations surveyed during this price collection exercise than at the manned stations.

7.2.6 Price differentials between days of the week

Because mystery shoppers called to collect prices for both fuel types on three days of the week, the collected data have also allowed for the development of price differentials between those days. For these differentials, the average price across all stations surveyed in a given country on Day 1 has been set to 100, and then the average prices for Day 2 and Day 3 have been related to that index.

The following table shows these results for regular petrol 95. The arrows in the final two columns indicate price increases or decreases relative to the previous day. This allows for visual insight into the types of price cycles witnessed in the countries.

Table 81. Price differentials between days of the week for regular petrol 95, analysis by country

Source: Civic Consulting price collection from petrol stations. (N=5,869)

		Day 1 sample (Monday, Nov. 26)	Day 2 sample (Wednesday, Nov. 28)	Day 3 sample (Friday, Nov. 30)	Difference Day 2-Day 1	Difference Day 3-Day 2
 BE		100.0	100.0	99.9	=	↓
 BG		100.0	99.9	99.2	↓	↓
 CZ		100.0	100.2	99.4	↑	↓
 DK		100.0	99.1	98.6	↓	↓
 DE		100.0	99.6	99.2	↓	↓
 EE		100.0	99.7	99.4	↓	↓
 IE		100.0	100.1	99.8	↑	↓
 EL		100.0	100.0	100.0	=	=
 ES		100.0	101.4	101.3	↑	↓
 FR		100.0	99.6	98.8	↓	↓
 IT		100.0	100.1	100.2	↑	↑
 CY		100.0	100.0	100.0	=	=
 LV		100.0	100.5	100.0	↑	↓
 LT		100.0	100.0	99.8	=	↓
 LU		100.0	100.0	98.6	=	↓
 HU		100.0	100.1	99.7	↑	↓
 MT		100.0	104.7	105.9	↑	↑
 NL		100.0	99.9	99.9	↓	=
 AT		100.0	100.0	99.2	=	↓
 PL		100.0	100.0	99.9	=	↓
 PT		100.0	100.0	100.0	=	=
 RO		100.0	100.1	98.6	↑	↓
 SI		100.0	101.3	101.2	↑	↓
 SK		100.0	100.1	100.1	↑	=
 FI		100.0	99.7	99.4	↓	↓
 SE		100.0	99.2	99.4	↓	↑
 UK		100.0	99.5	99.6	↓	↑
 IS		100.0	99.8	99.0	↓	↓
 NO		100.0	99.9	101.8	↓	↑

The figures for Day 2 indicate a nearly equal mix of average price increases and decreases relative to Day 1. In 11 countries the average price for regular petrol 95 was lower on Day 2 (Wednesday) than Day 1 (Monday), but in 10 countries the average price for this fuel type increased from Day 1 to Day 2. In the remaining eight countries the average regular petrol 95 price was static.

This pattern changes substantially when one considers the changes in the average price between Day 2 and Day 3 (Friday): in 19 of the countries the

average price for regular petrol 95 fell between Day 2 and Day 3, in 5 countries it increased, and in five it did not change.

Comparing the average Day 3 prices against those for Day 1, one sees that in 19 countries the average price in our sample was lower at the end of the week than at the beginning; in contrast, the average price was higher at the end of the week in six countries and the same in the remaining four. Generally, average price changed by less than 1% between Day 1 and Day 3. Exceptions include Denmark (98.6), France (98.8), Luxembourg (98.6) and Romania (98.6), where the average price fell by more than 1% between Day 1 and Day 3; and Spain (101.3), Malta (105.9), Slovenia (101.2) and Norway (101.8), where the average price increased by more than 1%.

Overall, there were seven countries in which the average price for regular diesel fuel in our sample decreased both from Day 1 to Day 2 and from Day 2 to Day 3: Bulgaria, Denmark, Germany, Estonia, France, Finland and Iceland. In contrast, there were two countries in which the average price increased to Day 2 and again to Day 3: Italy and Malta. In all other countries prices were consistent throughout the week (Greece, Cyprus, Portugal) or the price changes were mixed, e.g. a price increase was followed by a decrease.

The next table presents the price differentials by day of the week for regular diesel fuel. Again, the average Day 1 price serves as the index for each country, and the arrows in the last two columns indicate price increases or decreases relative to the prior day.

Table 82. Price differentials between days of the week for regular diesel fuel, analysis by country

Source: Civic Consulting price collection from petrol stations. (N=5,446)

		Day 1 sample (Monday, Nov. 26)	Day 2 sample (Wednesday, Nov. 28)	Day 3 sample (Friday, Nov. 30)	Difference Day 2-Day 1	Difference Day 3-Day 2
	BE	100.0	101.1	100.2	↑	↓
	BG	100.0	99.9	98.6	↓	↓
	CZ	100.0	100.0	100.0	=	=
	DK	100.0	100.1	100.5	↑	↑
	DE	100.0	99.8	98.6	↓	↓
	EE	100.0	100.0	100.1	=	↑
	IE	100.0	102.5	100.7	↑	↓
	EL	100.0	99.8	99.6	↓	↓
	ES	100.0	102.5	103.5	↑	↑
	FR	100.0	99.5	99.3	↓	↓
	IT	100.0	99.5	100.1	↓	↑
	CY	100.0	100.1	100.1	↑	=
	LV	100.0	100.5	100.1	↑	↓
	LT	100.0	99.8	99.8	↓	=
	LU	100.0	100.0	98.7	=	↓
	HU	100.0	99.9	100.1	↓	↑
	MT	100.0	95.7	97.1	↓	↑
	NL	100.0	100.2	100.0	↑	↓
	AT	100.0	99.2	99.9	↓	↑
	PL	100.0	99.9	99.7	↓	↓
	PT	100.0	98.8	100.1	↓	↑
	RO	100.0	100.3	99.7	↑	↓
	SI	100.0	100.6	100.6	↑	=
	SK	100.0	100.0	100.0	=	=
	FI	100.0	99.9	99.6	↓	↓
	SE	100.0	99.0	99.7	↓	↑
	UK	100.0	99.3	99.4	↓	↑
	IS	100.0	100.5	100.5	↑	=
	NO	100.0	96.4	98.9	↓	↑

The average price for regular diesel fuel among the sampled stations decreased between Day 1 (Monday) and Day 2 (Wednesday) in 15 countries; it increased in another 10 countries; and in the remaining four, it stayed constant. Approximately the same mix of price movements describes the price changes from Day 2 to Day 3 (Friday): the average price of regular diesel decreased in 12 countries, increased in 11 and remained the same in six.

Considering the average price at the end of the week (Day 3) against that observed at the beginning of the week (Day 1), it is clear that the average price in our sample was lower in 14 countries at the end of the week than it had been at the beginning. The opposite was true in 12 countries, and no change in the average price was observed in three.

The Day 1 to Day 3 average price difference exceeded 1% in only six countries: Bulgaria (98.6), Germany (98.6), Spain (103.5), Luxembourg (98.7), Malta (97.1) and Norway (98.9)

Overall, the average price for regular diesel fuel among the sampled stations decreased both from Day 1 to Day 2 and from Day 2 to Day 3 in six countries: Bulgaria, Germany, Greece, France, Poland and Finland. Conversely, it increased to Day 2 and again to Day 3 in Spain and Denmark. The average price of regular diesel fuel was consistent across all three days in only the Czech Republic and Slovakia.

7.2.7 Price differentials between particular fuel types

The mystery shopping station visits carried out for this study in six capital cities (Prague, Berlin, Paris, Rome, Bucharest, and Helsinki) enabled a detailed on-site comparison of prices of different fuel types (in addition to the two fuel types for which results were presented above).

Different petrol fuel blends (Regular Petrol 95, E10, Petrol 98, and Premium Petrol) were available in different cities, though not all were available or purchased; for example in Helsinki no regular petrol 95 was available. A total of 25 station visits were made in each city over the course of one or two days.¹³³ The average price of each fuel type, the percentage difference between the bought price and regular petrol 95, and the number of observations, is presented below.

¹³³ As the dates of the visits differed by country, a cross-country comparison of fuel prices is not possible with this dataset.

Table 83. Station visit survey – percentage price difference of fuels as compared to regular petrol (in Euro)

Source: Station visit survey (N=149)

Country	Fuel type	Average price	Min-Max	% diff. with reg. Petrol 95	No. of obs.
 CZ	Regular Petrol 95	1.43	1.32-1.53	n.a.	22
	E10	n.a.	n.a.	n.a.	0
	Petrol 98	1.53	1.47-1.57	6.6%	7
	Premium Petrol	1.56	1.51-1.61	8.3%	3
 DE	Regular Petrol 95	1.59	1.55-1.62	n.a.	25
	E10	1.55	1.51-1.58	-2.5%	24
	Petrol 98	1.64	1.59-1.68	2.7%	13
	Premium Petrol	1.71	1.64-1.77	6.8%	11
 FR	Regular Petrol 95	1.64	1.51-1.93	n.a.	9
	E10	1.52	1.46-1.60	-7.3%	14
	Petrol 98	1.62	1.48-1.85	-1.4%	21
	Premium Petrol	n.a.	n.a.	n.a.	0
 IT	Regular Petrol 95	1.80	1.73-1.86	n.a.	25
	E10	n.a.	n.a.	n.a.	0
	Petrol 98	n.a.	n.a.	n.a.	0
	Premium Petrol	1.92	1.92-1.92	6.1%	1
 RO	Regular Petrol 95	1.34	1.32-1.36	n.a.	22
	E10	n.a.	n.a.	n.a.	0
	Petrol 98	1.47	1.46-1.48	8.9%	3
	Premium Petrol	1.46	1.41-1.50	8.2%	15
 FI	Regular Petrol 95	n.a.	n.a.	n.a.	0
	E10	1.66	1.63-1.69	n.a.	25
	Petrol 98	1.71	1.68-1.74	n.a.	16
	Premium Petrol	n.a.	n.a.	n.a.	0

Regular petrol 95 was available in all cities visited with the exception of Helsinki. It was also the most available of all fuels in the other cities, with the exception of Paris, where Petrol 98 was the most widely available fuel. E10 fuel was available in most (24) stations in Berlin, 14 stations in Paris, and all stations in Helsinki. Petrol 98 was more limited - it was only seen in 7 stations in Prague, 13 in Berlin, 16 in Helsinki, and only three in Bucharest. However, it was the most widely available of all fuels in Paris. Premium petrol was additionally most widely available in Bucharest, and Berlin. However, in Italy and Prague it was available at only a few stations, while in Helsinki and Paris it was not at all available.

The actual prices on the billboards were also recorded in the station visits, not just the availability of the fuels. As might be expected, premium petrol and petrol

98 blends tended to be more expensive than regular petrol 95 blends, usually around 6-9% more expensive. The only exception was in Paris, where Petrol 98 was both more widely available and cheaper by 1.4%. In contrast, E10 blends were usually significantly cheaper. In Berlin, prices were cheaper by 2.5%, while in Paris they were 7.3% cheaper. In Helsinki, there was no regular petrol 95 price to compare to.

The price of regular and premium diesel fuel blends were also recorded; the exact prices can be seen in the table below.

Table 84. Station visit survey – percentage price difference of fuels as compared to regular diesel (in Euro)

Source: Station visit survey (N=149)

Country	Fuel type	Average price	Min-Max	% diff. with reg. Diesel	No. of obs.
 CZ	Regular Diesel	1.43	1.37-1.51	n.a.	25
	Premium Diesel	1.51	1.46-1.57	5.0%	4
 DE	Regular Diesel	1.45	1.41-1.48	n.a.	25
	Premium Diesel	1.60	1.55-1.66	9.3%	10
 FR	Regular Diesel	1.46	1.33-1.76	n.a.	23
	Premium Diesel	1.51	1.43-1.55	3.3%	11
 IT	Regular Diesel	1.71	1.64-1.79	n.a.	25
	Premium Diesel	1.83	1.79-1.89	6.6%	4
 RO	Regular Diesel	1.38	1.35-1.41	n.a.	23
	Premium Diesel	1.45	1.38-1.48	4.2%	19
 FI	Regular Diesel	1.53	1.48-1.59	n.a.	20
	Premium Diesel	1.55	1.50-1.59	1.8%	5

Regular diesel was very widely available in petrol stations in all cities visited, but the availability of premium diesel was more limited. In Bucharest, it was widely available, but in Paris and Berlin it was only available in about half of stations visited. In Rome, Helsinki, and Prague, it was only available in four or five stations, out of 25 in total.

Regarding price, premium diesel was universally more expensive than regular diesel, as may be expected. The smallest difference was in Helsinki, where it was only 1.8% more expensive, while the greatest difference was in Berlin, where it was 9.3% more expensive.

7.3 TRENDS IN FUEL PRICES

This subsection is concerned with the following questions:

- ▶ Was there any significant decrease or increase in average fuel prices in a country over the last few years? How could the development of competition between retailers explain this evolution?
- ▶ Has the use of biofuels led to price increases at the pump?

This subsection uses a series of analyses to examine recent changes in retail prices, and in particular, whether some countries deviate from the general trend in any way. To support these analyses, data from the stakeholder survey is used together with weekly data on vehicle fuel prices from 2005 to 2012, available for all EU countries.

Key findings of this section are:

1. From the mid-1980s to September 2003, the inflation-adjusted price of a barrel of crude oil was generally under 25 USD per barrel. However, the price has not returned to this level since then. During 2003, the price rose above 30 USD, then reached 60 USD by August 2005, and peaked at 145 USD in July 2008. In contrast to the oil shocks experienced in 1970s, many commentators consider that the price run-up of 2003–2008 stems predominantly from strong demand confronting stagnating world production, rather than physical disruptions in supply (such as those of 1973 and 1979).
2. In terms of average prices of untaxed petrol (Euro-super 95), differences between EU15 and EU12 Member States are very minor, with average yearly prices rising by about 72% between 2005 and 2012.
3. Several Member States had relatively high prices in comparison to others in 2012. These include Belgium (0.75 Euro), Portugal (0.75 Euro), Cyprus (0.76 Euro), Denmark (0.78 Euro), Malta (0.79 Euro), where average prices of petrol without taxes were over 0.75 Euro/litre in 2012. However, this has not consistently been the case. In 2005, the Member States with the highest average prices were Malta (0.48 Euro), the Netherlands (0.47 Euro), and Luxembourg (0.45 Euro); the more recent relative price positions appeared to form after 2009.
4. In 2012, the lowest pre-tax prices were seen in Austria (0.68 Euro), Romania (0.68 Euro), the UK (0.68 Euro), Bulgaria (0.70 Euro), Slovenia (0.70 Euro), the Czech Republic (0.71 Euro), Estonia (0.71 Euro), and Poland (0.71 Euro), where average prices of petrol without taxes were all under 0.71 Euro/litre in 2012. This set of countries was slightly differently ordered in 2005. In that year, the countries with the lowest average prices were the UK (0.39 Euro), Estonia

- (0.39 Euro), the Czech Republic (0.40 Euro), Germany (0.40 Euro), Slovenia (0.40 Euro), Latvia (0.41 Euro), Lithuania (0.41 Euro), Sweden (0.41 Euro), and Slovakia (0.41 Euro).
5. For untaxed diesel prices, average prices increased in the EU overall by 67% from 2005 to 2012. As with petrol prices, there was little difference overall between EU15 and EU12 Member States.
 6. The most expensive Member States for petrol fuel including all taxes in 2012 were Belgium (1.65 Euro), Germany (1.65 Euro), Denmark (1.70 Euro), Sweden (1.71 Euro), the Netherlands (1.76 Euro) and Italy (1.79 Euro), all notably above the EU average. This constellation appears to have remained relatively stable over time: in 2005, the most expensive Member States were also Denmark (1.21 Euro), Belgium (1.22 Euro), Germany (1.22 Euro), Italy (1.23 Euro), the Netherlands (1.35 Euro), with the addition of the UK (1.27 Euro).
 7. The majority of stakeholders who provided an answer did not consider the introduction of E5 petrol to have significantly affected the price levels of fuel. However, the introduction of E10 fuel was found by most of those stakeholders who answered to have significantly affected price levels; and a number of stakeholders found this to be the case for the introduction of B7 biodiesel. Some stakeholders expanded on these effects, highlighting a degree of variety between countries in taxation and statutory requirements for biofuels, leading to variations in price.

7.3.1 Changes in fuel prices over time

7.3.1.1 Recent global trends and context

From the mid-1980s to September 2003, the inflation-adjusted price of a barrel of crude oil was generally under 25 USD per barrel. However, the price has not returned to this level since then. During 2003, the price rose above 30 USD, then reached 60 USD by August 2005, and peaked at 145 USD in July 2008. The economic crisis then caused demand for energy to shrink in late 2008, with oil prices falling from the July 2008 high of 147 USD to a December 2008 low of 32 USD. Oil prices then stabilised by October 2009 and established a trading range between 60 USD and 80 USD. Prices then increased through 2010 and 2011 to 125 USD per barrel in April 2011, to then remain broadly within the 100-120 USD range through to January 2013.¹³⁴

¹³⁴ See <http://www.wtrg.com/prices.htm>; see also European Commission, Evolution of oil and petroleum product prices and taxation levels during the year 2008 in the European Union, 2008.

In contrast to the oil shocks experienced in 1970s, many commentators consider that the price run-up of 2003–2008 stems predominantly from strong demand confronting stagnating world production, rather than physical disruptions in supply (such as those of 1973 and 1979). Evidence indicates that despite occasional dramatic world events, global oil production in the 2000s has been stable.¹³⁵ But while global supply has stagnated, global demand was growing strongly, to which economic growth in major emerging economies such as China and India is considered to have contributed significantly.¹³⁶ This is also evidenced by the fact that oil prices increased during 2003–2008 when the spare capacity levels of the Organisation of Petroleum Exporting Countries (OPEC) were relatively low. Low spare capacity limits OPEC's ability to respond to demand and price increases, while high spare capacity indicates a withholding of production, potentially for price management purposes.¹³⁷

Indeed, evidence indicates that demand in recent years has stemmed increasingly from non-OECD countries, led by China, as their economic growth has a strong impact on oil consumption. On the other hand, while the supply side strongly depends on OPEC production targets, production capacity and spare production capacity, it has been increasingly associated with several key concerns, including peak oil (the point in time when the maximum rate of petroleum extraction is reached) and more generally declining output rates of mature oilfields, but also new technologies such as hydraulic fracturing. Moreover, national oil companies (NOCs) appear to benefit from an increasing influence in the petroleum sector, in light of their sovereign control over considerable resources yet to be developed and produced.¹³⁸ According to some estimates, NOCs control more than 90% of the world's oil and gas reserves;¹³⁹ this leads to questions as to the extent to which the NOCs will adequately develop reserves to meet growing world demand.

Furthermore, policies in relation to climate change and energy security have a substantial impact on oil prices. While considerable uncertainty continues to surround energy market developments, the availability and affordability of oil as well as alternative sources of energy is highly affected by related climate and energy policy targets set in this regard, which will also thereby significantly impact fuel prices.

¹³⁵ Hamilton, D, Causes and Consequences of the Oil Shock of 2007–08, 2009

¹³⁶ Ibid.; see also Bolton, Oil prices, Standard Note SN/SG/2016, 17 June 2013

¹³⁷ See: <http://www.eia.gov/finance/markets/supply-opeccfm>

¹³⁸ See: <http://www.pwc.com/gx/en/oil-gas-energy/national-oil-companies/index.jhtml>

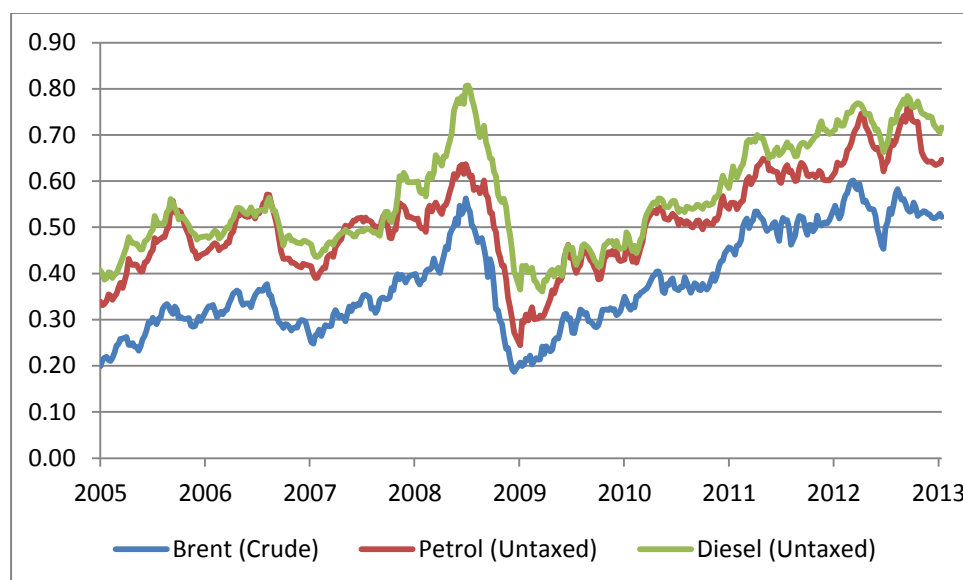
¹³⁹ See: <http://www.bain.com/publications/articles/national-oil-companies-reshape-the-playing-field.aspx>

7.3.1.2 Recent trends in retail prices in the EU

The last several years have also been characterised by high price volatility. The evolution of this trend can be seen in the figure below. The Market Observatory for Energy presents consumer prices and net prices (excluding duties and taxes) of petroleum products in the EU member states each week. This figure displays a time series of crude (Brent) oil prices, as well as the prices excluding taxes experienced by consumers.

Figure 39.
Wholesale and
untaxed retail
fuel prices in the
EU, (in
Euro/litre).

Source: Market
Observatory for
Energy, Thomson-
Reuters Datastream.



Average fuel prices were broken down by Member State. In the following tables, the average price per year for each country is shown, followed by the relative percentage change in price from 2005 to 2012. These tables show diesel and petrol fuel prices, both without and with taxes included in order to reflect the final price shown to the consumer. All EU Member States are represented (for Bulgaria and Romania data is available only since 2008, and they are therefore not considered when calculating average changes since 2005).

Table 85. Untaxed average petrol prices in the EU, 2005-2012 (Euro-super 95, in Euro/litre).

Source: Market Observatory for Energy, European Commission.
Note: Bulgaria and Romania excluded from certain calculations as data not available for some years.

	2005	2006	2007	2008	2009	2010	2011	2012	Change (%)
Average	0.42	0.48	0.49	0.56	0.42	0.53	0.65	0.73	72%
EU15	0.43	0.48	0.49	0.56	0.42	0.53	0.66	0.73	72%
EU12	0.42	0.49	0.49	0.56	0.42	0.53	0.64	0.72	72%
 BE	0.42	0.48	0.49	0.57	0.42	0.54	0.66	0.75	76%
 BG	n.a	n.a	n.a	0.50	0.38	0.50	0.61	0.70	n.a
 CZ	0.40	0.46	0.47	0.56	0.42	0.54	0.65	0.71	75%
 DK	0.43	0.48	0.50	0.56	0.46	0.58	0.72	0.78	82%
 DE	0.40	0.45	0.47	0.52	0.41	0.51	0.63	0.73	84%
 EE	0.39	0.45	0.46	0.53	0.40	0.50	0.61	0.71	83%
 IE	0.42	0.48	0.48	0.57	0.40	0.51	0.66	0.71	67%
 EL	0.45	0.51	0.51	0.59	0.44	0.54	0.67	0.74	65%
 ES	0.43	0.48	0.50	0.57	0.44	0.55	0.67	0.74	73%
 FR	0.38	0.45	0.46	0.54	0.40	0.52	0.64	0.71	85%
 IT	0.46	0.51	0.52	0.59	0.46	0.57	0.70	0.76	66%
 CY	0.44	0.51	0.53	0.59	0.46	0.56	0.69	0.76	71%
 LV	0.41	0.47	0.48	0.58	0.42	0.53	0.65	0.73	76%
 LT	0.41	0.48	0.48	0.56	0.42	0.54	0.66	0.73	77%
 LU	0.45	0.50	0.51	0.57	0.43	0.54	0.66	0.74	66%
 HU	0.42	0.47	0.49	0.56	0.42	0.53	0.65	0.74	76%
 MT	0.48	0.62	0.57	0.65	0.53	0.57	0.70	0.79	63%
 NL	0.47	0.52	0.56	0.62	0.44	0.53	0.65	0.74	56%
 AT	0.44	0.48	0.49	0.53	0.39	0.50	0.61	0.68	56%
 PL	0.43	0.48	0.48	0.55	0.40	0.51	0.61	0.71	67%
 PT	0.43	0.50	0.51	0.58	0.45	0.56	0.67	0.75	77%
 RO	n.a	n.a	n.a	0.55	0.41	0.52	0.63	0.68	n.a
 SI	0.40	0.46	0.47	0.54	0.40	0.51	0.63	0.70	78%
 SK	0.41	0.47	0.47	0.55	0.42	0.53	0.63	0.72	76%
 FI	0.41	0.47	0.48	0.57	0.44	0.55	0.66	0.73	81%
 SE	0.41	0.45	0.45	0.49	0.38	0.49	0.62	0.72	75%
 UK	0.39	0.45	0.46	0.52	0.36	0.49	0.61	0.68	74%

As can be seen in the table above, differences between EU15 and EU12 Member States are very minor, with average yearly prices rising by about 72% between 2005 and 2012.

Several Member States had relatively high prices in comparison to others in 2012. These include Belgium (0.75 Euro), Portugal (0.75 Euro), Cyprus (0.76 Euro), Denmark (0.78 Euro), Malta (0.79 Euro), where average prices of petrol without

taxes were over 0.75 Euro/litre in 2012. However, this has not consistently been the case. In 2005, the Member States with the highest average prices were the Netherlands (0.47 Euro), Malta (0.48 Euro), and Luxembourg (0.45 Euro); the more recent relative price positions appeared to form after 2009.

In 2012, the lowest pre-tax prices were seen in Austria (0.68 Euro), Romania (0.68 Euro), the UK (0.68 Euro), Bulgaria (0.70 Euro), Slovenia (0.70 Euro), the Czech Republic (0.71 Euro), Estonia (0.71 Euro), and Poland (0.71 Euro), where average prices of petrol without taxes were all under 0.71 Euro/litre in 2012.

This set of countries was slightly differently ordered in 2005. In that year, the countries with the lowest average prices were the UK (0.39 Euro), Estonia (0.39 Euro), the Czech Republic (0.40 Euro), Germany (0.40 Euro), Slovenia (0.40 Euro), Latvia (0.41 Euro), Lithuania (0.41 Euro), Sweden (0.41 Euro), and Slovakia (0.41 Euro).

In terms of changes in price over the time period, lower than average increases were recorded in the Netherlands (56%), Austria (56%), Malta (63%), Luxembourg (66%), and Italy (66%), from 2005-2012. Higher than average price increases were recorded in Finland (81%), Denmark (82%), Estonia (83%), Germany (84%), and France (85%).

These differences change when looking at fuel prices with all taxes included. In the table below, average petrol prices in the EU from 2005 to 2012 are displayed for each Member State.

Table 86. Average petrol prices in the EU, 2005-2012, all taxes included. (Euro-super 95, in Euro/litre)

Source: Market Observatory for Energy, European Commission.
Note: Bulgaria and Romania excluded from certain calculations as data not available for some years.

	2005	2006	2007	2008	2009	2010	2011	2012	Change (%)
Average	1.05	1.12	1.15	1.23	1.08	1.26	1.42	1.53	46%
EU15	1.14	1.22	1.24	1.33	1.17	1.34	1.51	1.63	42%
EU12	0.91	0.99	1.01	1.11	0.98	1.15	1.30	1.40	55%
 BE	1.22	1.29	1.32	1.42	1.24	1.40	1.54	1.65	35%
 BG	n.a	n.a	n.a	1.02	0.88	1.02	1.17	1.28	n.a
 CZ	0.95	1.05	1.06	1.23	1.03	1.25	1.41	1.46	53%
 DK	1.21	1.28	1.30	1.39	1.28	1.44	1.61	1.70	40%
 DE	1.22	1.28	1.34	1.39	1.26	1.39	1.53	1.65	35%
 EE	0.78	0.87	0.88	1.05	0.92	1.11	1.24	1.36	74%
 IE	1.05	1.12	1.12	1.24	1.11	1.30	1.48	1.62	54%
 EL	0.89	0.98	1.01	1.13	1.00	1.43	1.67	1.75	96%
 ES	0.96	1.04	1.05	1.13	1.01	1.16	1.32	1.43	48%
 FR	1.16	1.24	1.27	1.37	1.21	1.34	1.50	1.57	35%
 IT	1.23	1.29	1.30	1.39	1.23	1.36	1.55	1.79	46%
 CY	0.86	0.94	0.95	1.03	0.88	1.04	1.21	1.32	53%
 LV	0.81	0.88	0.91	1.03	0.96	1.09	1.28	1.41	74%
 LT	0.83	0.90	0.90	1.04	1.02	1.18	1.32	1.41	70%
 LU	1.02	1.08	1.12	1.19	1.03	1.16	1.29	1.39	36%
 HU	1.05	1.05	1.10	1.18	1.00	1.22	1.37	1.48	41%
 MT	0.92	1.10	1.04	1.15	1.12	1.19	1.38	1.48	62%
 NL	1.35	1.41	1.46	1.54	1.35	1.49	1.64	1.76	30%
 AT	1.03	1.09	1.12	1.22	1.04	1.19	1.36	1.45	40%
 PL	1.00	1.02	1.11	1.25	0.96	1.13	1.24	1.36	37%
 PT	1.15	1.28	1.32	1.40	1.23	1.37	1.54	1.64	44%
 RO	n.a	n.a	n.a	1.02	0.84	1.06	1.23	1.27	n.a
 SI	0.92	1.00	1.03	1.08	1.05	1.20	1.29	1.48	60%
 SK	0.96	1.05	1.11	1.24	1.11	1.25	1.44	1.54	60%
 FI	1.22	1.29	1.30	1.45	1.28	1.43	1.56	1.67	37%
 SE	1.18	1.23	1.24	1.31	1.12	1.34	1.54	1.71	45%
 UK	1.27	1.34	1.38	1.36	1.12	1.36	1.54	1.68	32%

As can be seen above, the increases and decreases in the prices are notable. The different prices reflect differing taxation regimes, economic and geographic conditions. This can be seen in the differences between the EU15 and EU12 Member States, where prices in EU12 Member States are notably lower than in the EU15 despite similar untaxed prices. However, the price of taxed petrol fuel has increased in the EU12 more than in the EU15 during the same period.

The most expensive Member States for petrol fuel including all taxes in 2012 were Belgium (1.65 Euro), Germany (1.65 Euro), Finland (1.67 Euro), the UK (1.68 Euro), Denmark (1.70 Euro), Sweden (1.71 Euro), the Netherlands (1.76 Euro) and Italy (1.79 Euro), all notably above the EU average.

This constellation appears to have remained relatively stable over time: in 2005, the most expensive Member States were also Denmark (1.21 Euro), Belgium (1.22 Euro), Germany (1.22 Euro), Italy (1.23 Euro), the UK (1.27 Euro), and the Netherlands (1.35 Euro).

Examining diesel prices now, the table below shows a similar distribution of prices to the untaxed average petrol prices over the time period:

Table 87. Untaxed average diesel prices in the EU, 2005-2012. (in Euro/litre)

Source: Market Observatory for Energy, European Commission.
Note: Bulgaria and Romania excluded from certain calculations as data not available for some years.

	2005	2006	2007	2008	2009	2010	2011	2012	Change (%)
Average	0.47	0.52	0.52	0.67	0.44	0.55	0.71	0.78	67%
EU15	0.47	0.52	0.52	0.67	0.45	0.56	0.71	0.78	66%
EU12	0.46	0.52	0.51	0.67	0.44	0.55	0.70	0.77	69%
BE	0.47	0.51	0.52	0.68	0.43	0.56	0.71	0.78	67%
BG	n.a	n.a	n.a	0.60	0.39	0.51	0.66	0.74	n.a
CZ	0.45	0.51	0.51	0.68	0.45	0.57	0.71	0.77	72%
DK	0.45	0.51	0.52	0.66	0.45	0.58	0.74	0.79	75%
DE	0.45	0.49	0.50	0.65	0.43	0.54	0.69	0.78	75%
EE	0.44	0.49	0.49	0.65	0.41	0.52	0.66	0.75	72%
IE	0.48	0.54	0.53	0.70	0.44	0.54	0.70	0.76	58%
EL	0.49	0.55	0.55	0.72	0.50	0.62	0.77	0.84	70%
ES	0.47	0.52	0.52	0.68	0.46	0.58	0.73	0.79	66%
FR	0.44	0.49	0.49	0.64	0.41	0.53	0.68	0.74	68%
IT	0.53	0.56	0.55	0.71	0.48	0.59	0.74	0.80	53%
CY	0.48	0.53	0.54	0.69	0.47	0.57	0.75	0.82	71%
LV	0.44	0.50	0.51	0.68	0.43	0.55	0.71	0.78	75%
LT	0.45	0.51	0.50	0.66	0.44	0.57	0.72	0.80	76%
LU	0.47	0.52	0.52	0.67	0.44	0.55	0.70	0.77	64%
HU	0.47	0.52	0.52	0.68	0.46	0.56	0.72	0.79	69%
MT	0.50	0.59	0.56	0.71	0.47	0.53	0.72	0.78	57%
NL	0.48	0.53	0.54	0.70	0.43	0.53	0.70	0.77	61%
AT	0.47	0.51	0.50	0.65	0.43	0.53	0.67	0.74	56%
PL	0.46	0.50	0.50	0.66	0.43	0.55	0.68	0.76	65%
PT	0.47	0.53	0.53	0.69	0.47	0.59	0.75	0.81	74%
RO	n.a	n.a	n.a	0.67	0.45	0.55	0.69	0.76	n.a
SI	0.44	0.49	0.49	0.65	0.41	0.52	0.67	0.74	66%
SK	0.44	0.51	0.50	0.66	0.44	0.56	0.71	0.79	80%
FI	0.47	0.52	0.51	0.70	0.48	0.60	0.75	0.80	72%
SE	0.47	0.52	0.50	0.64	0.42	0.55	0.70	0.80	69%
UK	0.44	0.50	0.49	0.64	0.41	0.51	0.66	0.75	69%

For untaxed diesel prices, average prices increased in the EU overall by 67% from 2005 to 2012. As with petrol prices, there was little difference overall between EU15 and EU12 Member States. As of 2012, the lowest average untaxed prices were recorded in Austria (0.74 Euro), Bulgaria (0.74 Euro), Slovenia (0.74 Euro), Estonia (0.75 Euro), and the UK (0.75 Euro), while the highest average prices were reported in Greece (0.84 Euro), Cyprus (0.82 Euro), Portugal (0.81 Euro), Italy, Lithuania, and Sweden (all at 0.80 Euro).

Again, comparing prices with taxes included, a similar chart can be seen below:

Table 88. Average diesel prices in the EU, 2005-2012, all taxes included (in Euro/litre).

Source: Market Observatory for Energy, European Commission.
Note: Bulgaria and Romania excluded from certain calculations as data not available for some years.

	2005	2006	2007	2008	2009	2010	2011	2012	Change (%)
Average	0.96	1.03	1.04	1.23	0.97	1.13	1.34	1.45	50%
EU15	1.01	1.07	1.09	1.28	1.01	1.17	1.39	1.50	49%
EU12	0.89	0.96	0.96	1.17	0.92	1.08	1.27	1.38	55%
 BE	0.99	1.02	1.03	1.21	0.95	1.14	1.37	1.46	48%
 BG	n.a	n.a	n.a	1.09	0.84	0.98	1.17	1.27	n.a
 CZ	0.93	1.02	1.03	1.29	0.99	1.21	1.39	1.45	56%
 DK	1.03	1.10	1.10	1.29	1.05	1.21	1.41	1.49	45%
 DE	1.06	1.11	1.16	1.33	1.07	1.20	1.38	1.49	40%
 EE	0.79	0.87	0.86	1.15	0.91	1.10	1.26	1.37	74%
 IE	1.03	1.10	1.08	1.29	1.02	1.22	1.41	1.55	50%
 EL	0.89	0.96	0.98	1.22	0.97	1.24	1.47	1.54	73%
 ES	0.90	0.96	0.97	1.15	0.91	1.07	1.27	1.37	52%
 FR	1.02	1.08	1.09	1.28	1.00	1.14	1.33	1.40	37%
 IT	1.13	1.17	1.16	1.35	1.08	1.21	1.44	1.71	51%
 CY	0.84	0.90	0.91	1.09	0.83	1.00	1.25	1.35	62%
 LV	0.80	0.87	0.90	1.10	0.92	1.06	1.27	1.37	71%
 LT	0.82	0.89	0.88	1.10	0.89	1.02	1.23	1.33	62%
 LU	0.84	0.92	0.93	1.12	0.85	0.99	1.17	1.26	50%
 HU	1.02	1.02	1.05	1.24	0.96	1.16	1.36	1.50	48%
 MT	0.86	0.99	0.95	1.14	0.96	1.04	1.30	1.37	60%
 NL	1.02	1.08	1.10	1.30	1.00	1.15	1.35	1.45	41%
 AT	0.95	1.01	1.03	1.24	0.97	1.10	1.33	1.41	49%
 PL	0.92	0.98	0.99	1.23	0.84	1.06	1.22	1.36	48%
 PT	0.94	1.05	1.08	1.27	1.00	1.15	1.37	1.45	55%
 RO	n.a	n.a	n.a	1.10	0.83	1.03	1.24	1.32	n.a
 SI	0.91	0.96	0.97	1.14	1.01	1.15	1.24	1.36	50%
 SK	0.97	1.06	1.11	1.34	1.10	1.11	1.34	1.44	48%
 FI	0.97	1.02	1.02	1.26	0.99	1.13	1.37	1.55	60%
 SE	1.08	1.15	1.13	1.34	1.04	1.25	1.51	1.67	54%
 UK	1.33	1.40	1.42	1.50	1.17	1.39	1.60	1.76	32%

Diesel prices appear consistent with their petrol counterparts. Again, EU12 Member States are somewhat cheaper for the end consumer, with a degree of harmonisation noticeable over a period of several years. The most expensive Member States in 2012 were Ireland (1.55 Euro), Sweden (1.67 Euro), Italy (1.71 Euro), and the UK (1.76 Euro), while the cheapest were in Luxembourg (1.26 Euro),

Bulgaria (1.27 Euro), Romania (1.32 Euro), Lithuania (1.33 Euro), Cyprus (1.35 Euro), Poland, and Slovenia (both at 1.36 Euro).

7.3.2 Impact of introduction of biofuels on price levels

The time series data presented above refers to the most common vehicle fuel types (Euro-super 95 and regular diesel). Similar data is not available for other fuel types, including biofuels. The impact of the introduction of biofuels on price levels was therefore explored through the stakeholder survey.

The majority (83%) of stakeholders who provided an answer did not consider the introduction of E5 petrol to have significantly affected the price levels of fuel. However, the introduction of E10 fuel was found by 67% of stakeholders who answered to have significantly affected price levels; and a number of stakeholders found this also to be the case for the introduction of B7 biodiesel (note that large percentages of surveyed stakeholders did not have an opinion, and results have therefore to be interpreted with care).

Some stakeholders expanded on these effects by noting a range of tax and statutory requirements for biofuels which to lead to price variations.

On one extreme, a stakeholder from Portugal noted that E5 had not yet been introduced, although the introduction of a 2.5% bioethanol blend from 2015 was planned. This was not independently confirmed, however. A frequent reason given by stakeholders for price increases as a result of E5 was that fuel taxes had increased, or that no tax concessions had been granted for bioethanol, even though it was more expensive to produce; this was mentioned by stakeholders in Belgium, Bulgaria, Germany, and Denmark. In Denmark, the stakeholder explained that although the fuel price is set in litres, the tax on bioethanol is in energy units compared to petrol. Therefore, there is a lower energy tax on petrol and no CO₂-tax, which combines to raise the price of bioethanol relative to petrol. However, in Austria, a consumer organisation highlighted the opposite decision: tax rates were increased for the older non-E5 petrol fuel mixtures, while for the new E5 mixtures they were decreased.

As regards the introduction of E10 blends (in Finland, France, and Germany), a European level industry association explained that although E10 fuel prices had been reduced to the regular petrol 95 level in Germany, this had been preceded by an increase of ~4 cent per litre in the price. A reason for this was given by another stakeholder from a German industry association, who referenced the problems regarding the introduction of E10, in that it had to be offered at a lower price than E5 in order to motivate consumers to switch to the new blend.

Information on the introduction of B7 biodiesel blends was more limited. In Portugal, one stakeholder noted since 2011 biodiesel was no longer exempt from

specific taxes, causing a price increase of around 2-3 cents per litre. Another stakeholder from Portugal estimated that the statutory introduction of B7 was responsible for an average increase of 4 cents per litre in diesel fuel. This analysis cited the removal of a tax exemption related to biodiesel, as well as an increase in the cost of the raw material in world markets. In Denmark, one stakeholder claimed that higher production prices (for FAME based biodiesel) in the wider market increased the price of B7 compared to standard diesel.

These findings tend to indicate that the introduction of specific biofuels may, in certain cases, have an impact on price levels; however the absence of directly comparable cases in which biofuels were not introduced (to approximate a counterfactual situation) prevents further conclusions from being drawn.

7.4 ANALYSIS OF EXPLANATORY FACTORS FOR PRICE CHANGES AND DIVERGENCES BETWEEN COUNTRIES

A key question for this study is to what extent explanatory factors for price changes and divergences between countries can be identified. As has been shown in Section 7.2, price variability between countries is considerable, with average untaxed petrol prices ranging from 0.68 Euro in Austria to 0.79 Euro per litre in Malta in 2012. Therefore, this sub-section discusses changes in the market structure of fuel retailing and then presents the results of a detailed economic analysis considering relevant factors that may account for these price changes.¹⁴⁰

Key findings for this section are:

1. In general, the number of petrol stations has been declining in most major Western European States. According to data from Unione Petrolifera, the highest decline was in the UK, where the number of petrol stations declined by 74% from 1973 to 2011. One exception to this trend is in Spain, where the numbers of stations have moderately increased since 1990, reflecting the less developed infrastructure. However, market consolidation has increased at a slower pace in the last five years, with one study noting that 4,573 service stations had closed across Europe from 2007 to 2012, which is a lower level than from 2001 to 2006.
2. As can be seen in the table below, the share of stations owned by oil companies or major brands varies considerably, but generally the share of these stations tends to form the majority of the market. In the sample for which data is available, countries which do not have a commanding share of oil companies or major brands in the market tend to be EU12 Member States – as in Bulgaria, the Czech Republic, and Poland.
3. The use of unmanned stations, where there is no staff at the forecourt, also varies between Member States. Across Europe, according to one study,¹⁴¹ there were 10,234 unmanned service stations in Europe representing a 7.7% share of all service stations across Europe. Overall, this number has been slightly increasing, but large differences exist in the market shares of the Member States where unmanned stations make up a proportion of the market.
4. Major components of the final consumer prices are due to fuel taxes and VAT rates, which differ among the different member states. Differences in pre-tax prices are much less than those of post-tax prices, which shows that national tax policies explain much of the observed differences in prices experienced by

¹⁴⁰ The economic analysis was conducted in cooperation with Prof. Ralf Dewenter of the Düsseldorf Institute for Competition Economics, University of Düsseldorf.

¹⁴¹ Supra.

consumers. The countries with the highest price components are generally EU15 Member States, with absolute highest levels (for petrol) seen in the Netherlands, Italy, Greece, Sweden, and the UK.

5. In line with the main hypotheses, the variable with the most power in predicting the final pre-tax prices of vehicle fuels is the Brent crude oil price, followed by fuel taxes and level of income. Adding demand measures as explanatory variables decreases the sample size and number of groups, but emphasise some interesting results. However, because of the high correlation between the demand measures and total number of stations and other variables, it is not possible to precisely identify the impact of demand on prices based on this data.
6. The economic analysis indicates that greater shares of branded stations and supermarket stations are associated with lower prices, and a greater share of unmanned stations is associated with higher average weekly petrol/diesel prices in the sampled countries (excluding taxes and excise duties), *ceteris paribus*, i.e. all other things being equal. However, data limitations meant that the sample sizes involved for analyses involving competition measures were significantly smaller than for the other analyses, and the available samples tended to cover some Member States better than others. Therefore, these results have to be interpreted with great caution, and the lack of relevant data for a more detailed analysis highlights the need for improved data collection at the EU level for essential competition relevant data.
7. As a further robustness check, historical wholesale prices provided by Platts were used in addition to, and instead of the Brent crude oil price for all models. The significant covariates are consistent with the models using Brent data. This indicates that the Brent crude oil price is a useful primary indicator in predicting consumer prices, and using wholesale price data does not change the conclusions drawn from the models.
8. The results of the economic analysis also indicate that the regulatory interventions in Austria, namely the requirement that all fuel retailers notify each of their price changes, and the associated law permitting only one price increase per day, are associated with lower price levels *ex post*. The regressions conducted for this study show a reduction by 3.0% to 3.6% with respect to petrol prices and a reduction by 1.5% to 2.5% with respect to diesel fuel prices induced by the 2011 pricing regulation. The analysis is therefore able to provide some evidence that the Austrian pricing rule and internet platform have led to a decrease in fuel prices in this country compared to the control group of other EU countries. However, a full identification of specific effects is not possible given the limitations of the data.

7.4.1 Introduction: Changes in the market structure of fuel retailing

There have been significant changes in the structure of the fuel retailing market over recent decades. These changes include the overall number of petrol stations in each country, increasing market share of unmanned stations and supermarkets selling fuel, as well as the changing ratio of independent fuel retailers to those of major brands.

Number of petrol stations

In general, the number of petrol stations has been declining in most major Western European States. According to data from Unione Petrolifera, the highest decline was in the UK, where the number of petrol stations declined by 74% from 1973 to 2011.¹⁴² One exception to this trend is in Spain, where the numbers of stations have moderately increased since 1990, reflecting the less developed infrastructure (see figure below). However, market consolidation has increased at a slower pace in the last five years, with one study noting that 4,573 service stations had closed across Europe from 2007 to 2012, which is a lower level than from 2001 to 2006.¹⁴³

The reduction in petrol stations has been attributed to the trend among large oil companies to divest their less profitable sites as they rationalise their retail assets to focus on more profitable activities upstream. The recent slowdown in the decline of petrol stations may indicate that consolidation has reached a peak, as total fuel volumes sold has remained relatively stable despite the decline, particularly in Belgium, Germany, Italy, Norway and Poland.¹⁴⁴ For the purposes of the analysis, all other things being equal, it would be expected that a decrease in the number of petrol stations would lead to less price competition.

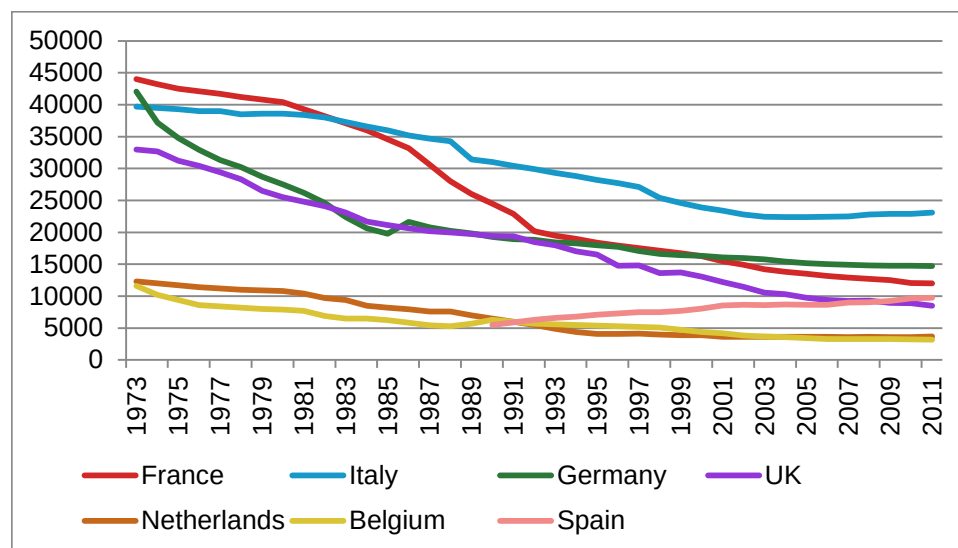
¹⁴² Unione Petrolifera, Annual Report 2012.

¹⁴³ CBRE/Datamonitor, *MarketView: European Petroleum Retail Sector*, September 2012.

¹⁴⁴ Ibid.

Figure 40. Number of petrol stations in selected countries, 1973-2011.

Source: Unione Petrolifera, Civic Consulting.



Types of retailers and market share

Regarding market concentration, there are also large differences between countries. The share of stations not branded by major oil companies as provided by stakeholders and other data collected for this study varies considerably between countries but provides an insight into the market structure of a number of Member States.

As can be seen in the table below, the share of stations owned by oil companies or major retail brands varies considerably, but generally the share of these stations tends to form the majority of the market. In the sample for which data is available, countries which do not have a commanding share of oil companies or major brands in the market tend to be EU12 Member States – as in Bulgaria, the Czech Republic, and Poland.

In terms of the share of the market taken by non-major brands or independents, these tend to be inversely related to the share of branded stations, as would be expected. However, for a few countries, the share of stations owned by supermarkets has a significant influence. This is certainly the case for France, where 42.0% of stations were owned by supermarkets or hypermarkets such as Carrefour. Relatively high percentages were also seen in the UK (14.4%), Portugal (8.0%), and Germany (3.0%).

As research has shown, aggressive fuel pricing by supermarket chains may have an impact on the margins of smaller fuel retailers, to the extent they are increasingly less attractive to operate.¹⁴⁵ Therefore, a larger share of

¹⁴⁵ As noted e.g. in the Pöyry survey of the competitive aspects of oil and oil product markets in the EU (2009), the effective entry of hypermarkets has placed downward pressure on

supermarket stations may on the one hand drive down prices, but may also cause a loss of retailer choice for consumers, over time.

Table 89.
Comparison of
market structure,
by country (2012)

Source: CBRE /
Datamonitor data, Civic
Consulting. Note: * -
Latest year for which
data is available used.

		Share of branded stations	Share of four largest companies	Share of supermarkets	Share of unmanned stations
	BE	63.2%	48.5%	0.0%	18.6%
	BG	30.0%	25.0%	0.0%	2.2%
	CZ	35.3%	25.9%	2.0%	
	DK	95.0%	78.5%	0.0%	65.9%
	DE	62.5%	45.4%	3.0%	4.6%
	ES	74.0%*	-	3.0%	-
	FR	42.0%	63.7%	42.0%	8.8%
	IT	90.0%	73.4%	1.0%	0.7%
	CY	99.6%	-	-	-
	HU	63.9%	58.8%	0.0%	0.6%
	NL	76.9%	48.1%	0.0%	23.7%
	AT	73.5%	56.0%	0.0%	10.8%
	PL	53.0%	43.1%	2.4%	2.8%
	PT	64.0%	-	8.0%	-
	RO	58.0%*	-	0.0%	0.2%*
	SK	66.0%	-	2.6%	2.3%
	SE	78.4%	-	-	61.1%
	UK	65.9%	47.4%	14.4%	2.9%

The use of unmanned stations, where there is no staff at the forecourt, also varies between Member States. Across Europe, according to one study,¹⁴⁶ there were 10,234 unmanned service stations in Europe representing a 7.7% share of all service stations across Europe. Overall, this number has been slightly increasing, but large differences exist in the market shares of the Member States where unmanned stations make up a proportion of the market. As can be seen from the table above, for the limited data which is available, the share of unmanned stations ranges from less than 1% (in Italy and Hungary), to as much as 65.9% in Denmark, and 61.1% in Sweden. According to previous research,¹⁴⁷

margins in several countries as the hypermarkets themselves see fuel retailing as part of a wider customer strategy and are therefore able and willing to accept lower margins.

¹⁴⁶ Supra.

¹⁴⁷ Supra.

fuel retailers that have expanded their unmanned operations include the grocery chains Tesco, ABC, and Colruyt, Scandinavian retailers Neste, Statoil, and St1, as well as large oil companies such as Esso and Q8.

In conclusion, a number of structural changes have been observed over the past years (and decades) in the fuel retailing market. The influences these elements may have are explored in section 7.4.2, which presents the results of the economic analysis conducted in the framework of this study.

7.4.1.1 Retail price of fuels with and without tax

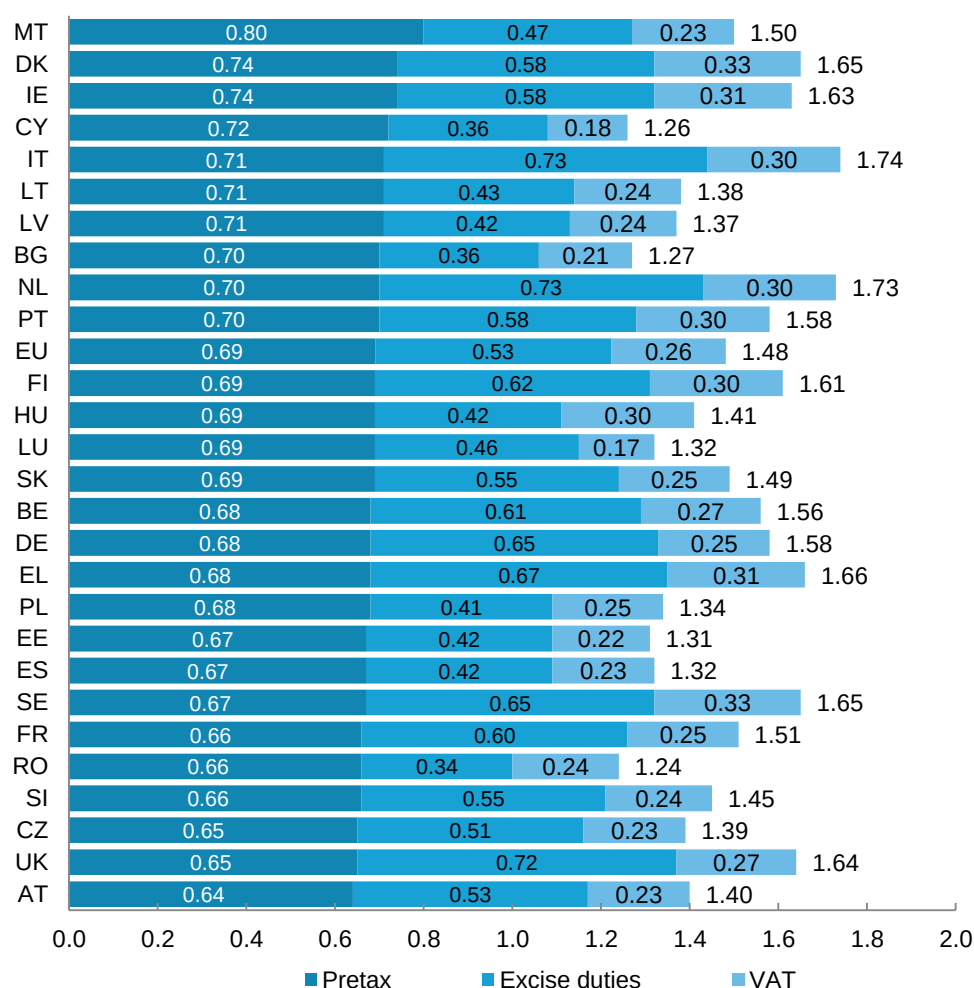
Major components of the final consumer prices are due to fuel taxes and VAT rates, which differ among the different member states. The figure below shows the average pre-tax retail price and the tax and excise component for petrol across the EU27 during December 2012.¹⁴⁸

As can be seen, differences in pre-tax prices are much less than those of post-tax prices, which shows that national tax policies explain much of the observed differences in prices experienced by consumers. The countries with the highest price components are generally EU15 Member States, with absolute highest levels seen in the UK, Sweden, Denmark, Greece, the Netherlands, and Italy.

¹⁴⁸ Please note that these values are an average of the period from 1st to the 31st December 2012 only, and not the entire year, as is the case with Tables 85 and 86.

Figure 41.
Average petrol
prices with and
without taxes
and excise,
December 2012.

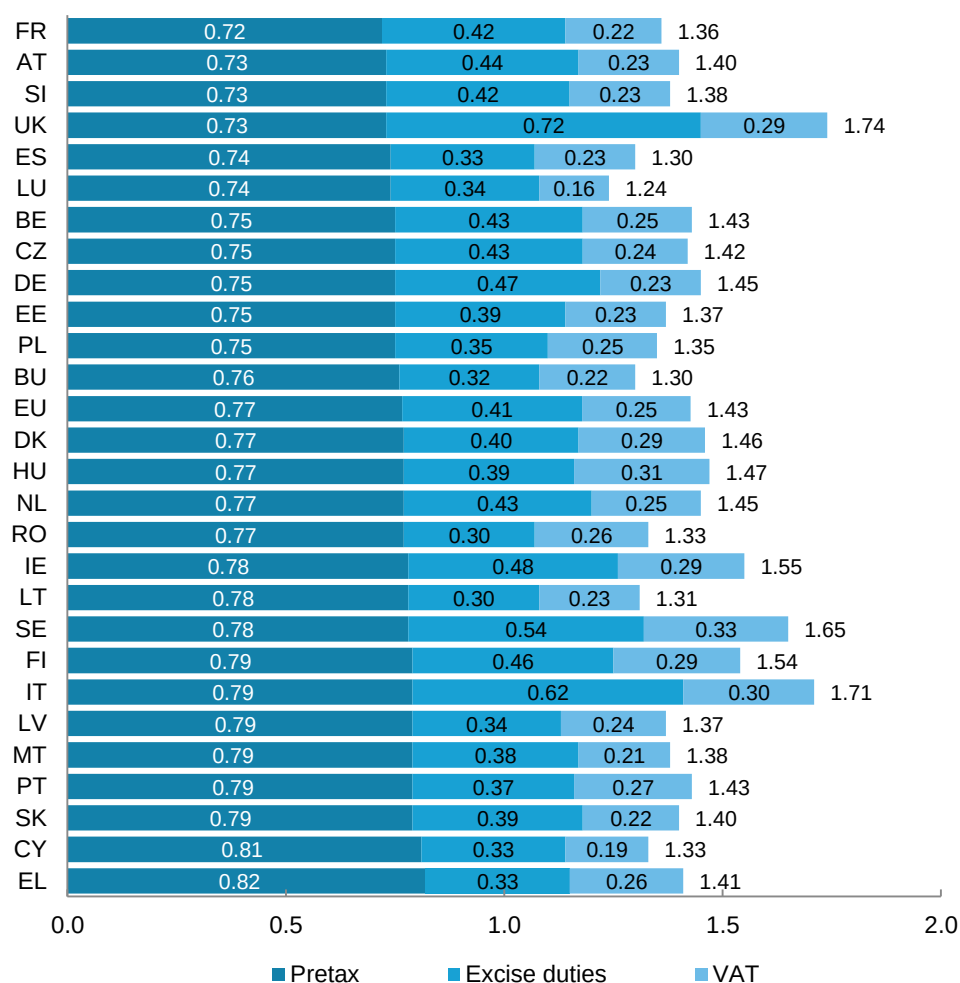
Source: EU Oil
Bulletin, Civic
Consulting.



The picture is rather similar for diesel prices, which can also be seen in the figure below. As before, pre-tax prices moved in a narrower range than post-tax prices, while the ranking of countries is similar – EU15 Member States predominate, though this time the UK clearly leads, followed by Italy, Sweden, and Ireland.

Figure 42.
Average diesel
prices with and
without taxes
and excise,
December 2012.

Source: EU Oil
Bulletin, Civic
Consulting.



7.4.2 Economic analysis of vehicle fuel prices

This section aims at analysing the most relevant features of European vehicle fuels markets for this study: price differences between countries, and the impact of regulatory interventions on price.

First, an analysis of price differences between the 27 Member States is conducted in order to determine the main drivers of differences in prices over time and between countries. For this purpose, fixed effects panel regression techniques are used which are the most suitable to the available data. Specific hypotheses are listed in the relevant sections below, but it would be expected that greater degrees of competition (as measured by number of stations, share of stations owned by major brands or oil companies, share of supermarket stations, share of unmanned stations) tend to keep margins lower, resulting in lower pre-tax prices.

Second, an analysis of the Austrian pricing rule on fuel price levels will be carried out in order to determine the effectiveness of such a rule. The Austrian regulation is especially interesting because of its simple applicability and the rather low regulatory costs. Here, the specific hypothesis is that the introduction of the pricing rule causes a reduction in the pre-tax price, compared to other Member States.

7.4.2.1 Economic analysis of factors that may explain divergences in prices between countries

The first step of our analysis is to use panel data on fuel prices to analyse possible determinants of price differences between Member States and over time. By these means, macroeconomic factors are examined, including:

- ▶ Income per capita;
- ▶ Labour cost;
- ▶ Industrial production;
- ▶ Population and population density;
- ▶ Consumer prices.

In addition, other market specific factors that may explain differences in prices are examined, and these include:

- ▶ Crude oil prices;
- ▶ The extent of competition in the market;
- ▶ General demand factors;
- ▶ Fuel taxation levels.

Panel data has some advantages over cross-sectional or time series data. Cross-sectional analysis does not encompass the crucial time aspect, while a pure time series analysis would not distinguish between the variations in price between countries, but can only focus on one country or the EU as a whole.

Because information is available for different cross-sectional units (i.e. Member States) as well as for different points in time (i.e. for a number of weeks in the case of fuel prices) using a panel regression approach has a number of advantages, including allowing for more variability, more accuracy, is well suited to control for the impact of omitted variables, to mention only a few.¹⁴⁹ As prices are available for multiple years in a weekly frequency, various time series properties such as trends and cyclical patterns can be used to filter series in advance.

¹⁴⁹ See Hsiao, 2007, for an overview of the advantages and challenges of panel data.

Panel data techniques using fixed effects models allow observed and unobserved heterogeneity to be accounted for. That is, such techniques can include observable variables at all levels of aggregation and furthermore control for factors that cannot be observed directly. By this means, not only price differentials but also the main drivers of these differences can be detected. Using panel data therefore allows us to determine variations within as well as between Member States and thereby overcome possible data limitations of time series or cross-sectional data.¹⁵⁰

7.4.2.2 Data sources

The data used for both the analysis of price differences between countries as well as for the analysis of regulatory intervention is collected from various sources: Fuel prices for European Member States are available from the Weekly Oil Bulletin provided by the European Commission.¹⁵¹ For the relevant period 2005 to 2013 prices are available for all Member States apart from Bulgaria and Romania (for which prices are only available starting from 2008). European Member States report average pump prices for Euro-Super 95 petrol as well as for diesel oil on a weekly basis to the EC. Member States have to report fuel prices for 1000 litres based on a weighted average net of duties and taxes on each Monday. Prices reported are typically collected on the same day and are weighted using regional prices.

While fuel prices are collected with and without duties and taxes, we use prices without duties or taxes for matters of comparability. Our sample consists of price information over the period January 3, 2005 to January 14, 2013 (for Bulgaria and Romania: January 7, 2008 to January 14, 2013). Hence, we collected 395 observations for each of the 25 countries that acceded before 2005, and up to 248 observations for Bulgaria and Romania. Descriptive statistics for all variables used in the analyses are presented in Section 7.4.2.4 below.

As shown in Section 7.2, prices in different European countries show very similar patterns. Fuel prices rose from 2005 to 2008, falling to a new low in 2009, and then increasing again to a new high in 2012. Across the EU, while average pre-tax prices ranged from the extremes of 0.68 (Austria) to 0.78 (Malta) Euro, the majority of countries were close to the average price of 0.73 Euro. Therefore, one of the most important driving factors should be the crude oil and petrol wholesale prices, respectively. Crude oil is of course the most important input factor for petrol as well as for diesel oil.

¹⁵⁰ In addition to fixed effects models we also used random effects models in order to analyse the impact of time invariant factors. However, Hausman tests rejected the adequacy of random effects models. Therefore only fixed-effects models are reported.

¹⁵¹ See: http://ec.europa.eu/energy/observatory/oil/bulletin_en.htm.

As crude oil prices and wholesale prices are most important input prices for fuels, weekly crude oil prices in Euro per 1000 litres (LBRENT) are used as the major explanatory variable in our analysis. Crude oil prices are available for the whole sample period on a weekly basis and are extracted from Thomson Reuters' Datastream. For additional robustness checks, we also used Platts data (PLATTSP, PLATTSD) which are also reported on a weekly basis for both petrol and diesel.¹⁵²

Moreover, monthly industrial production indices (INDPROD), monthly consumer price indices (HICP), quarterly labour costs indices (LABORCOST), yearly population count (POP_YR), population density (POP_DENSITY)¹⁵³ and quarterly per capita income (INCOME) were obtained from Eurostat. Gas station counts were combined from multiple sources and are provided on a yearly basis.¹⁵⁴

In addition to the measures described above we also added the following variables in order to determine causes for possible price differences between countries (see below for descriptive statistics):

INDTAX _{it}	which is the sum of (petrol or diesel) fuel duties and taxes in country <i>i</i> at time <i>t</i> (on a weekly basis), based on changes recorded in Oil Bulletin data;
VAT _{it}	which is the percentage of Value Added Tax (VAT) charged, based on changes recorded in Oil Bulletin data;
NOSTATIONS _{it}	which is the total number of gas stations in a country <i>i</i> at time <i>t</i> (on a yearly basis);
SHARE_BRAND _{it}	which is the share of stations branded by major oil companies in country <i>i</i> at time <i>t</i> (on a yearly basis);
SHARE_C4 _{it}	which is the share of stations owned by the four largest fuel retailers in country <i>i</i> at time <i>t</i> (on a yearly basis);
SHARE_SUPER _{it}	which is the share of super- or hyper-market stations in country <i>i</i> at time <i>t</i> (on a yearly basis);
PETROLCARS _{it}	which is the number of petrol cars in country <i>i</i> at time <i>t</i> (on a yearly basis); and
DIESELCARS _{it}	which is the number of diesel cars in country <i>i</i> at time <i>t</i> (on a yearly basis).

¹⁵² Platts: Gasoline Prem Unleaded 10ppmS FOB Rdam Barge, ULSD 10ppmS FOB Rdam Barge.

¹⁵³ As data was only available until 2011, a linear term was used to predict the data for 2012 to ensure sufficient observations.

¹⁵⁴ Unione Petrolifera, CBRE, and stakeholder survey response data.

Total number of stations (NOSTATIONS) as well as shares of branded stations (SHARE_BRAND), market share of the four biggest retailers (SHARE_C4), share of unmanned stations (SHARE_UNMAN) and supermarket stations (SHARE_SUPER) are used as measures of competition intensity.

7.4.2.3 Hypotheses

First of all, we expect that macro-economic and control variables will have their expected signs. That is, we expect higher levels of income, higher consumer prices, higher labour costs, and higher levels of industrial production to be associated with higher prices, and a greater population density to be associated with lower prices.

Furthermore, the number of (petrol and diesel) cars which are registered in a country i at time t are considered demand side variables. Therefore, with a higher number of cars also the demand for fuels should be greater. At the same time, and this can be a drawback of the use of these measures, the factors are also correlated with a countries' size or wealth. For this reason, per-capita household income on a quarterly basis, as well as country population and population density, are included as control variables.

More problematically, these variables may also measure possible decreases in average costs. With an increasing number of cars and stations average costs are likely to decrease because of economies of scale as well as economies of scope and absolute cost advantages. While increasing demand should lead to higher prices, lower average costs should naturally lead to lower fuel prices. Therefore, the effects of these variables are hard to predict. In addition, figures on car ownership are also only available on a yearly basis which leads to rather low variation of these variables. Unfortunately, there were no other variables available for this study which could be regarded good measures for fuel demand.¹⁵⁵

As noted previously, we expect that greater competition reduces margins and results in lower prices for the consumer. Therefore, we expect that the total number of stations as a measure of competitive pressure has a negative impact on prices, when controlled for population and other factors. Unmanned stations face lower costs and are therefore able to set lower prices than other stations. For this reason a tougher price competition should result. Therefore, the share of unmanned stations is also expected to have a negative effect.

¹⁵⁵ Certain other measures such as fuel volumes sold were explored, but did not provide further explanatory value as measures of demand due to issues with multicollinearity, data availability, or endogeneity.

The effect of higher shares of supermarket stations is more complex: supermarket stations typically set relatively low fuel prices in order to stimulate car drivers to simultaneously use the retail store of such stations, but the aggressive pricing may impact on the margins of other fuel retailers, making operations less attractive and resulting in a more restricted choice for consumers.

We furthermore expect that the share of stations branded by major oil companies has a positive impact on prices. Major companies are suspected to act as price leaders and set higher prices than independent and other stations. We also use the well-known C4 ratio, which measures the percentage of the market controlled by the four largest retailers - regardless of whether they are supermarkets, oil companies, or other retailers.

However, a drawback of these variables is that all of the discussed competition measures tend to be highly correlated with each other and are accompanied by issues of data availability. Additionally, this information is only available on a yearly basis. Therefore, lower sample sizes when using these variables along with potential multicollinearity may result in greater standard errors and a loss of model stability.¹⁵⁶

7.4.2.4 Results - descriptive statistics

As can be seen in the table below, the sample size of some variables was low in comparison to others. The table displays unit of measurement, number of observations, and average values for each (untransformed) variable. The standard deviation is presented as a measure of the variance in each variable.

In general, the number of observations is sufficient for most variables, but there are severe data availability issues for a number of variables. These include the C4 ratio (with 1,963 observations), supermarket share (3,047), and share of branded stations (3,831). In the case of supermarket and branded share these missing values were due to missing values for entire countries, while the C4 ratio only included data for 2011-2012 for most countries included. While this is most serious for measures of competition, there is also missing data for the variables measuring number of stations and average income. Using listwise regression techniques, when data for one variable is missing, then regressions cannot be performed on the data, even when observations for all other variables already exist.

¹⁵⁶ Multicollinearity occurs when several explanatory variables are highly correlated with each other. This can cause an inflation of standard errors and a model whereby coefficients are unstable, making it difficult to know which variable is really responsible for the changes in the dependent variable. As a general guide, the problem primarily occurs when the variables in question are more highly correlated with each other than they are with the dependent variable. However, simultaneous use of these variables may also lead to a higher explanatory power of the regression in the case that all of these variables are important determinants of the left hand side variable.

Apart from this, the variables reflect the diversity of conditions in Europe, and over time. The Platts data for example, reflects lower figures than the pre-tax price alone as reported by Oil Bulletin data, as the wholesale component will be a lower price than the full product. There is also wide variation in income, with lower incomes in EU12 countries, particularly Bulgaria and Romania, while countries like Luxembourg have much higher ones.

VAT shows much less variance than excise duties, ranging from 15% to 27%, depending on location and time. Indices of competition levels also varied, with the share of branded stations ranging from 30% to 100%, while the C4 measure of competition intensity ranged from 15% to 79%. Full results can be seen below.

Table 90.
Descriptive
statistics of
variables used

Source: Civic Consulting; based on data from European Commission, Eurostat, CBRE/Datamonitor, desk research and stakeholder survey.
Note: EU27.
Unweighted figures used as basis of mean values.

	Variable name	Unit	Observations	Mean	Min.	Std. Dev.	Max.
Dependent variables	PETROL_WO	€/1000l	10,370	538.62	226.38	118.20	860.51
	DIESEL_WO	€/1000l	10,370	584.24	335.92	127.56	933.00
Macro-economic variables	BRENT	€/1000l	10,665	381.57	189.74	105.36	610.11
	PLATTS_P	€/1000l	5,265	451.55	202.66	120.92	690.77
	PLATTS_D	€/1000l	5,265	485.43	252.02	126.98	690.96
	INDPROD	Index, EU 2005=100	10,270	103.59	48.80	14.14	143.59
	INCOME	Quarterly in €/cap.	9,819	5991.70	600.00	3777.32	21600.00
	LABORCOST	Index, EU 2005=100	10,563	98.82	46.00	13.41	148.70
	PRC_HICP	Index, EU 2005=100	10,665	111.97	96.05	10.97	152.21
	POP_YR	Number, in '000,000	10,317	18.3	0.40	22.8	82.5
	POP_DENSITY	Number per km2	10,615	173.93	17.20	244.29	1334.61
	STATIONS	Number	8,008	5562.58	235	5448.16	23000.00
	VAT	Percent	10,665	0.20	0.15	0.03	0.27
	INDTAX_P	€/1000l	10,665	477.20	275.07	138.22	746.55
	INDTAX_D	€/1000l	10,446	368.96	233.78	90.81	743.14
Demand and competition measures	TOTALCARS	in '000	7,078	8725.91	234.94	12159.5	46570.00

PETROLCA ARS	in '000	5,801	6644.2 2	125.10	8663.6 0	35919.0 0
DIESELCA RS	in '000	5,801	3232.9 1	32.00	4485.4 6	15922.0 0
SHARE_B RAND	Percent	3,389	0.68	0.30	0.20	1.00
SHARE_C 4	Percent	1,668	0.55	0.25	0.15	0.79
SHARE_U NMAN	Percent	6,633	0.10	0.00	0.18	0.66
SHARE_S UPER	Percent	3,438	0.05	0.00	0.13	0.52

The next two tables focus on bivariate correlations between the variables used in this study. These provide a first indication of relative associations that could be explored, but also indicate problems of multicollinearity or incorrect coding, should they exist. The first table below focuses on price and macro-economic variables, while the second compares prices and measures of demand and competition.

Table 91. Correlation matrix of fuel prices and macro-economic variables

	PETROL- WO	DIESEL- WO	PLATTS-P	PLATTS-D	BRENT	INDPROD	INCOME	LABOR- COST	PRC-HICP	POPL-YR	POP- DENSITY
PETROL-WO	1.00										
DIESEL-WO	0.94	1.00									
PLATTS-P	0.94	0.90	1.00								
PLATTS-D	0.93	0.96	0.96	1.00							
BRENT	0.93	0.94	0.98	0.98	1.00						
INDPROD	0.18	0.22	0.31	0.36	0.18	1.00					
INCOME	0.08	0.07	0.05	0.05	0.07	0.08	1.00				
LABORCOST	0.47	0.46	0.30	0.32	0.48	0.07	0.21	1.00			
PRC-HICP	0.47	0.47	0.34	0.34	0.53	0.06	-0.27	0.54	1.00		
POP-YR	-0.06	-0.04	-0.02	-0.02	-0.01	0.01	0.06	0.07	-0.17	1.00	
POP-DENSITY	0.14	-0.03	0.00	0.00	0.01	-0.06	0.01	0.08	-0.14	-0.01	1.00

Source: Civic Consulting.

Table 92. Correlation matrix of fuel prices and tax, demand, and competition variables

	PETROL- WO	DIESEL- WO	INDTAX-P	INDTAX-D	VAT	STATIONS	PETROL- CARS	DIESEL- CARS	SHARE- BRAND	SHARE-C4	SHARE- UNMAN
PETROL-WO	1.00										
DIESEL-WO	0.94	1.00									
INDTAX-P	0.15	0.16	1.00								
INDTAX-D	0.13	0.14	0.77	1.00							
VAT	0.13	0.16	0.23	0.14	1.00						
STATIONS	-0.03	-0.02	0.30	0.36	-0.19	1.00					
PETROLCARS	-0.03	-0.01	0.51	0.62	-0.11	0.86	1.00				
DIESELCARS	0.05	0.05	0.39	0.45	-0.15	0.89	0.84	1.00			
SHAREBRAND	-0.08	-0.09	0.20	0.07	0.18	0.12	0.27	0.34	1.00		
SHARE-C4	-0.16	-0.18	0.29	0.12	0.55	0.08	-0.27	-0.20	0.82	1.00	
SHARE-UNMAN	0.06	0.04	0.29	0.09	0.61	-0.22	-0.19	-0.25	0.49	0.61	1.00

Source: Civic Consulting.

As can be seen in the first table above, zero-order correlations highlight some strong (and expected) correlations: petrol and diesel prices are highly correlated with the Brent price. Interestingly, the crude Brent price is slightly more correlated with the diesel price than the petrol price. It is also, as expected, highly correlated with the Platts data.

Macro-economic variables have the expected sign: industrial production index is moderately and positively associated with higher fuel prices, while income is less so; but labour costs are more strongly associated, as are consumer prices. A higher population appears to be associated with lower prices, while population density appears to have only a weak effect (for diesel prices), but is associated with higher petrol prices.

In the second table displayed above, as expected, excise duties and VAT are positively associated with price, while number of cars is also correlated strongly and positively with number of stations. Also as hypothesised, higher levels of competition intensity are associated with lower prices, as going by simple correlation procedures.

7.4.2.5 Key results of the panel regressions - baseline models and demand measures

Results of the panel regressions are presented in the tables below. The first table presents baseline models, which attempt to measure the influence of macro-economic and taxation values only. The second table adds measures of demand to these baseline models.

Overall, as expected, measures of income and crude oil price explain most of the variance in the final untaxed price for petrol and diesel. The influence of the number of stations (controlled for population and other macroeconomic variables) is ambiguous, but a higher number of cars is associated with a lower final untaxed price, *ceteris paribus*.

To analyse the determinants of price differences, we first run a number of fixed effects models by regressing the log of the fuel prices on different demand measures (LSTATIONS, LDIESELCARS, LPETROLCARS) as well as on macroeconomic and time varying country specific variables (such as LPOP_YR, LINCOME, LBRENT, VAT, LINDTAX_P)¹⁵⁷ and time dummies to account for cyclical changes. At this stage we ignore a possible impact of competition side variables.

¹⁵⁷ Note that a number of variables are log-transformed in order to better approximate the normal distribution and be suitable for regression analysis. These variables are prefixed by the letter 'l' (as in 'LINCOME' instead of 'INCOME').

As can be seen from the table below, general model fit is acceptable, as the within- R^2 measure is quite high, between 0.91 and 0.92 for the four petrol based models (P1 to P4), and 0.93 to 0.95 in the diesel variants (D1 to D4).¹⁵⁸

In terms of the specific models, the models in the first table can be considered as 'baseline' models containing only macroeconomic variables (P1/D1), and including the macroeconomic variables and the tax indicators (P2/D2). They already account for the bulk of the predictive power and variables generally accord with the expected signs (i.e. the direction of their impact on petrol and diesel prices is as could be expected).

In the models, the variable with the most predictive power is the Brent crude oil price, followed by fuel taxes and level of income. Increasing income has a positive association with fuel prices, in line with the expectation that higher income leads to higher demand and therefore higher prices. Increases in labour costs, as expected, are generally associated with higher fuel prices. Consumer prices - as measured by the HICP index - are associated with higher fuel prices, while population and population density have different effects depending on the model used.

Interpretation is straightforward: a 1% increase in Brent crude price is associated with a 0.63% increase in final petrol fuel price in the baseline model P1, for example. The coefficients in question are also stable when adding tax variables to the models. Notable is the significant predictive power of VAT and excise duties. Higher VAT taxes are associated with higher pre-tax prices of petrol (as said before, the regression uses *pre-tax* prices of both Euro-super 95 as well as diesel fuel as dependent variable). This seems to indicate that in countries in which VAT taxes increase, the pre-tax price also increases. However, excise duties and other taxes have the opposite effect on both petrol and diesel in the first model series.

Adding number of cars as explanatory variables (as a measure of demand) decreases the sample size and number of countries, but reach some interesting results. Although number of stations has different effects depending on model used, overall it is positively associated with average price levels. However, higher numbers of cars are associated with lower prices.

¹⁵⁸ Models beginning with "P" denote models where petrol/gasoline prices are the dependent variable, while models beginning with "D" denote models where diesel prices are the dependent variable.

Table 93. Fixed effects regressions of untaxed petrol/diesel prices and macroeconomic variables

Source: Civic Consulting; based on data from European Commission, Eurostat, desk research and stakeholder survey. Note: Bootstrapped p-values presented as follows:
* = $p < 0.05$ *** = $p < 0.01$

Variable type	Item	Variable name	Model P1	Model P2	Model D1	Model D2
Covariates	Crude price, Brent (Log)	LBRENT	0.6292***	0.6290***	0.4709***	0.4720***
	Industrial production index	INDPROD	-0.0004***	-0.0004***	-0.0002***	-0.0003***
	Income (Log)	LINCOME	0.0432***	0.0618***	0.0734***	0.0865***
	Labour cost index	LABORCOST	0.0004***	0.0004**	0.0001	0.0000
	HICP	PRC_HICP	0.0002	-0.0001	0.0009***	0.0013***
Explanatory variables	Population	LPOP_YR	0.0261	0.0261	-0.1426**	-0.1297*
	Population density	LPOP_DENSITY	-0.1485*	-0.1192	0.0469	0.0719
	VAT	VAT	-	0.4768***	-	0.0228
	Excise duties (Log)	LINDTAX_P	-	0.0388***	-	0.0619***
Other	Constant		7.1762	7.1347	7.0428	6.9418
	R ²		0.92	0.92	0.94	0.95
	No. of observations		9044	9044	9044	9044
	No. of Member States		25	25	25	25

Because of the high correlation between the demand measures and total number of stations and other variables, it is not possible to precisely identify the impact of demand on prices based on this data. The number of cars is negatively connected to prices, which may indicate that this is a measure for decreasing average cost in larger and more motorised economies, but it is hard to identify number of stations as playing a conclusive role.

Table 94. Fixed effects regressions of untaxed petrol/diesel prices and measures of demand

Source: Civic Consulting; based on data from European Commission, Eurostat, desk research and stakeholder survey. Note: Bootstrapped p-values presented as follows:
* = p<.05, **p<.01, ***p<.005

Variable type	Item	Variable name	Model P3	Model P4	Model D3	Model D4
Covariates	Crude price, Brent (Log)	LBRENT	0.6694***	0.6713***	0.4891***	0.4899***
	Industrial production index	INDPROD	-0.0005***	-0.0005***	-0.0005***	-0.0005***
	Income (Log)	LINCOME	0.1857***	0.2072***	0.1591***	0.1744***
	Labour cost index	LABORCOST	0.0000	0.0000	-0.0001	-0.0001
	HICP	PRC_HICP	0.0032***	0.0029***	0.0051***	0.0050***
	Population (Log)	LPOP_YR	-0.5275	-0.4173	-0.6189***	-0.5697***
Explanatory variables	Population density (Log)	LPOP_DENSITY	0.6129***	0.5998	0.5956***	0.6667***
	VAT	VAT	-	0.0935	-	0.0354
	Excise duties (Log)	LINDTAX_P/D	-	0.0593*	-	0.0379
	Number of stations (Log)	LNO_STATIONS	0.0659***	0.0715***	-0.0000	0.0038
	Petrol/Diesel cars (Log)	L/DPETROLCARS	-0.3598***	-0.3472***	-0.0411***	-0.0423***
	Constant		10.3963	8.6546	10.3887	9.3021
Other	R ²		0.91	0.91	0.93	0.93
	No. of observations		4019	4019	4019	4019
	No. of Member States		16	16	16	16

With the exception of number of stations, a general observation on the diesel regression models is that coefficients generally follow the same sign as for petrol / petrol price models.

7.4.2.6 Results - factors indicating different levels of competition

Turning to measures of competition (such as share of branded, supermarket, and unmanned stations), overall results are consistent with the earlier models in terms of control variables and covariates such as VAT and excise duties. However, higher shares of branded stations are significantly associated with lower fuel prices, which is contrary to the hypothesis earlier. Also somewhat counter-intuitively, greater shares of unmanned stations are associated with higher prices.

To further analyse the determinants of price differences, we ran a number of additional fixed effects models by regressing the log of the fuel prices on different competition measures (LSTATIONS, SHAREBRAND, SHARESUPER) as well

as on macroeconomic and time varying country specific variables and time dummies. At this stage we ignore possible impacts of demand side or taxation variables. By these means we are able to identify the impact of competition measures without reducing the sample unreasonably. We use different specifications in order to check the robustness of the models or, put differently, to analyse to what extent results change with varying specifications. Robust results can be interpreted as some evidence for reliable outcomes.

Detailed results of the regressions are presented in the tables below. As indicated before, with increasing income one would expect a higher demand and therefore higher prices. Indeed, log of income displays a significant and positive coefficient, as expected (see tables), and in line with the earlier demand models.

Also consistent with the models focusing on consumer demand measures, crude oil price as measured by the Brent variable is the main driving factor of petrol rates over time.¹⁵⁹

However, when considering measures of competition, great caution must be observed. For example, in the case of the C4 share, information is available for 15 countries only for 2010 and 2011, leading to a less balanced panel due to the limited sample size.

Bearing these limitations in mind, a higher share of branded stations is associated with lower prices, and is also statistically significant. This is unexpected, since evidence from the price collection exercise for this study clearly shows that prices from independent or non-major brand retailers were lower than the national average for 16 out of the 25 countries for which data was available.

Also somewhat unexpected is the share of unmanned stations, which shows a consistently positive association with price - this may be related to the fact that unmanned stations are more strongly represented in EU15 Member States, the coefficient perhaps also capturing a residual income effect. Indeed, when examining the C4 data, the coefficient is negative, though not statistically significant. The share of supermarket stations meanwhile, is negatively associated with average prices as expected and is statistically significant.

For supermarket stations, data is limited to only a limited number of years with a number of countries missing any data, leading to a smaller and unbalanced sample. The variation of these variables was sometimes very low or even non-existent (for example, where relevant sources confirmed that no supermarket

¹⁵⁹ To overcome problems arising from heteroskedasticity as well as autocorrelation we calculate standard errors using bootstrapping methods.

stations were present in the market for a number of years).¹⁶⁰ The share of unmanned stations, meanwhile has more data available for more countries.

Table 95. Fixed effects regressions of untaxed petrol prices and measures of competition

Source: Civic Consulting; based on data from European Commission, Eurostat, desk research and stakeholder survey. Note: Bootstrapped p-values presented as

Variable type	Item	Variable name	Model P5	Model P6	Model P7	Model P8
Covariates	Crude price, Brent (Log)	LBRENT	0.6638***	0.6827***	0.6683***	0.6478***
	Industrial production index	INDPROD	-0.0005***	-0.0008***	-0.0009***	-0.0012***
	Income (Log)	LINCOME	0.1521***	0.1333***	0.1272***	0.0945***
	Labour cost index	LABORCOST	-0.0004*	0.0003***	0.0002	0.0003
	HICP	PRC_HICP	-0.0054***	0.0023	0.0013***	-0.0061***
	Population	LPOP_YR	-0.4335	0.6926	0.1807	0.0635
Explanatory variables	Population density	LPOP_DENSITY	0.9145***	-2.3751***	-0.2202	0.5262*
	Major brand share	SHARE_BRAND	-0.1993***	-	-	-
	Share C4	SHARE_C4	-	-0.0163	-	-
	Share unmanned	SHARE_UNMAN	-	-	0.1320***	-
	Share supermarkets	SHARE_SUPER	-	-	-	-0.4720***
	Constant		10.0109	2.6778	3.3636	-0.5472
Other	R ²		0.93	0.92	0.93	0.93
	No. of observations		2703	1412	5788	2618
	No. of Member States		16	14	16	13

Turning to diesel prices similar results can be observed (see table below), although some of the covariates are no longer statistically significant, or have

¹⁶⁰ The Pöyry survey of oil product markets in the EU (2009, p.115) found that the majority of countries with lower gross retail margins have a higher share of hypermarket stations or vice versa. However, some countries do not follow this expectation. The report postulates that the range of margins for countries with low hypermarket penetration suggests that there may be a pivotal point at which hypermarket pricing begins to affect incumbent players' pricing and operating decisions. While this penetration has resulted in major adjustments and cost efficiencies amongst competitors in the French and British markets, the existence of low margins in other countries where hypermarkets are not dominant (Germany, Sweden and Austria in this case) suggests that other fundamental cost drivers, or alternative effective competitive models exist.

changed sign. Again, one should keep in mind the significant data limitations of the competition measures which makes reliable estimations challenging. Both the number of observations as well as the number of countries vary strongly with different specifications, nevertheless, results for the macroeconomic covariates are surprisingly stable.

Table 96. Fixed effects regressions of untaxed diesel prices and measures of competition

Source: Civic Consulting; based on data from European Commission, Eurostat, desk research and stakeholder survey. Note: Bootstrapped p-values presented as

Variable type	Item	Variable name	Model D5	Model D6	Model D7	Model D8
Covariates	Crude price, Brent (Log)	LBRENT	0.5241***	0.5285***	0.4988***	0.5257***
	Industrial production index	INDPROD	-0.0003***	-0.0001	-0.0005***	-0.0007***
	Income (Log)	LINCOME	0.1394***	0.0733*	0.1316***	0.0861***
	Labour cost index	LABORCOST	-0.0003*	-0.0002	0.0001	-0.0001
	HICP	PRC_HICP	0.0006	0.0028*	0.0013***	0.0062***
	Population	LPOP_YR	-0.6696***	0.7262	-0.6824***	-0.5226**
Explanatory variables	Population density	LPOP_DENSITY	0.9244***	-0.8338*	0.5845***	0.8361***
	Major brand share	SHAREBRAND	-0.1872***	-	-	-
	Share C4	SHARE_C4	-	-0.0854	-	-
	Share unmanned	SHARE_UNMAN	-	-	0.0250	-
	Share supermarkets	SHARE_SUPER	-	-	-	0.2113***
	Constant		10.7701	-4.3628	12.2955	7.9984
Other	R ²		0.95	0.94	0.95	0.96
	No. of observations		2703	1412	5788	2618
	No. of Member States		16	14	16	13

7.4.2.7 Robustness checks

In order to further check the robustness of the results of the estimates with respect to competition measures, we also ran a number of regressions using additional explanatory variables such as the CPI and aggregated fuel volumes

sold (by country and year).¹⁶¹ Again, the major outcomes are surprisingly stable. Variables are again only available for varying time periods which led to strongly varying number of observations.

As a further robustness check, historical prices from Platts were used instead of the Brent crude oil price for all models. It was found that the significant covariates were consistent with the models using Brent data. This indicates that the Brent crude oil price is a useful primary indicator in predicting consumer prices, and using wholesale price data does not change the conclusions drawn from the models.

Overall, the relatively poor availability of data restricts the determination of the main driving factors of fuel price differences between European Member States to some extent. In particular, it is difficult to draw conclusions about the association between market structure and price based on national data. It is likely that all but the smallest Member States contain many local geographic markets for petrol and diesel fuel. Variations in price and structure across these local markets cannot be captured adequately using average national statistics.

Therefore, these results have to be interpreted with great caution, and the lack of relevant data for a more detailed analysis highlights the need for improved data collection at the EU level for essential competition relevant data.

7.4.3 Economic analysis of regulatory interventions

This section analyses the effects of a specific regulatory intervention on petrol prices: the Austrian regulation on petrol price which has committed gas stations to increase prices only once a day at noon beginning in January 2011, and at the same time introduced an internet platform where all Austrian petrol stations are forced to post their prices in advance (see below for more details). For the purpose of this study the Austrian regulation is well suited as an example for a regulatory intervention, as: (a) Austria, in contrast to other countries, implemented only a pricing rule rather than fixed price regulation such as Luxembourg; (b) no other EU countries have introduced similar legislation; and c) the Austrian regulation was introduced during the period under scrutiny (2005-2013), and therefore data is available for a pre-regulation period as well as for a regulation period. Both characteristics are essential for an analysis of the pricing effectiveness of the implemented pricing rule. Hence, the Austrian pricing rule is the only European fuel price regulation which can be analysed adequately in the framework of this study.¹⁶²

¹⁶¹ Results are not reported here, as they did not provide additional insights.

¹⁶² Luxembourg, in contrast, applies a direct regulation of fuel prices over the whole sample period. It is therefore neither possible nor useful to analyse the impact of prices. On the one hand the applied difference-in-differences method can only be used when data is available

The Austrian regulation aims at restricting the frequency of price changes rather than determining exact price levels. Firms are therefore still able to set their petrol prices independently from any regulatory price cap but are restricted with respect to the number of price increases. This type of intervention can be regarded as relatively light-handed especially in comparison to other regulations when regulatory authorities directly set fuel price levels (e.g. Luxembourg) or restrict prices to be left completely unchanged for 24 hours (e.g. Western Australia). However, it is a priori not clear whether or not Austrian regulation has indeed led to lower prices over time. An analysis of the impact of the regulatory intervention has to take into account a counterfactual situation which would have been taken place without regulation. As this counterfactual situation is, of course, not observable for Austria, we use information on comparable (European) markets which have not introduced such a pricing rule. For this reason, we apply difference-in-difference methods to compare Austrian petrol prices with prices from other European countries, i.e. to identify the treatment effect of regulation.

7.4.3.1 *The Austrian pricing rule*

In July 2009 the Austrian Government introduced a regulation on petrol price which has committed gas stations to increase prices only once a day. The regulatory approach was asymmetric in a sense that stations were however allowed to decrease prices any number of times. Until December 2010 fuel stations of different types were permitted to raise prices at different points in time, depending on their business model: While 24-hours gas stations could rise prices only at 12 o'clock at night, stations with restricted opening hours were able to increase prices only at the opening hour, while unmanned stations had to rise prices at exactly 8:30 am. Of course, this asymmetry in price setting made it at least possible that 24-hours stations set price signals which could have then been followed by others. Moreover, raising prices at night or at opening hours may lead to high prices, as many drivers typically refuel their cars in the morning hours when commuting.

In 2011 the Austrian Government changed the pricing rule such that from January on all fuel stations were only able to increase prices at noon. Additionally, the Austrian regulatory authority introduced an internet platform (www.spritpreise.at) where all Austrian petrol stations are forced to post their prices in advance. An expected effect of this regulation is that price volatility will be lowered as prices can only be increased once a day. However, the effects of the pricing rule on price levels are somewhat more difficult to predict. In case that gas stations' behaviour follows some kind of tacit collusion one would expect that under the pricing rule

for regulation and non-regulation periods. On the other hand, analysing price regulation in Luxembourg would, by no means, determine the effectiveness of the regulation method but rather the behaviour of the regulatory authority. Similar arguments apply for Belgium and Slovenia.

all competitors will set optimal (collusive) price levels at the same time. Hence, Edgeworth cycles, as a typical pricing behaviour of fuel markets, are still likely to occur, at least in case that there is only one peak a day.¹⁶³ In sum the invention of the pricing rule would lead to the same result as without regulation as long as demand is not too volatile.

However, in many countries there is more than one peak in demand for petrol during a day. Many consumers use the opportunity to filling their cars when commuting, either before or after work. Consequently, one can frequently observe two peaks a day. In case that price increases are only allowed at noon (when demand is rather low) price cycles cannot be applied to conduct tacit collusion as optimal prices are lower than during a peak. Setting high prices instead in respect to the peak in the afternoon would most probably lead to a demand shift. Drivers are then expected to fill their cars in the morning hours. Profit maximization would therefore most probably result in setting optimal average prices which should lie noticeably under the collusive price without regulation and are expected to be constant over daytime.

Moreover, in most European countries there are two kinds of gas stations: the large chains branded by major oil companies as well as by smaller independent providers. While branded stations are suspected to act as price leaders in sense of tacit collusion, smaller independent firm rather act as competitive fringe firms.¹⁶⁴ This asymmetry leads to a situation where large stations raise prices more or less at the same time, while independent stations raise prices after a certain time. Hence, in case that a competitive fringe exists it is likely that prices corrode at a higher speed. Fringe firms are then expected to decrease prices faster to benefit from the high prices set by larger stations. Colluding firms in turn are then expected to take the pricing behaviour of fringe firms into account when setting optimal prices. Overall, prices are possibly lower under regulatory intervention.

The intention to establish an internet platform was to increase market transparency for consumers and therefore reduce transaction costs.¹⁶⁵ Consumers should be able to compare prices before driving to a station and therefore be able to choose the cheapest offers. However, internet platforms have positive effects not only on vertical but also on horizontal transparency, meaning that not only consumers but also competitors are always well informed about the structure of their rivals' petrol prices. In case that gas stations set prices according to tacit collusion, they are able to use the platform to notice any price changes in the

¹⁶³ Edgeworth price cycles are characterized by sharp price increases. After the price level increased, prices go down as a result of competition in many small steps (see Noel, 2011, for a non-technical discussion of the concept of Edgeworth price cycles).

¹⁶⁴ See: Bundeskartellamt, 2011.

¹⁶⁵ See: Bundeswettbewerbsbehörde, 2011.

market. Both price increases and price decreases can be observed immediately. A respective internet platform can then improve transparency and can also serve as a tool for stabilizing collusive behaviour. While the invention of a pricing rule comes at relatively low costs, setting up a database on petrol prices produces significantly higher costs.

7.4.3.2 Additional data

Following the methodology described in Annex A, to identify the effects of the pricing rules on price levels in Austria, we follow Dewenter and Heimeshoff (2012) by applying the so called difference-in-differences (DiD) framework.¹⁶⁶ The aim of the DiD method is to observe differences in an outcome variable (here fuel prices) over time in both a treatment group (Austria) and a control group (other European countries). By this means, we are able to account for a counterfactual situation which is unobserved for the treatment group. Furthermore, the panel structure of our data also allows us to compare differences between Member States before and after the introduction of the rules in Austria. Analysing the differences between a treatment group and a control group before and after the introduction of the pricing rules enables us to identify the so called treatment effect, which is solely caused by the regulation. The method is well established in economics and much more effective than ignoring counterfactual situations. The use of DiD with panel data is in particular a powerful tool for estimating treatment effects.

To account for regulatory interventions in Austria we built a dummy variable AUSTRIA which is equal to one for Austria and zero for other Member States. REG is a dummy indicating the regulation period (January 2011 to January 2013). Note that this variable is the same for all Member States. REGAUS is the product of AUSTRIA and REG, respectively.

As some additional variable in order to account for time effects we furthermore use a linear time TREND as well as dummy variables for each week (WEEK1-WEEK52) as well as YEAR dummies.

As can be seen from the correlation matrix (see previous section), there is only limited correlation between the covariates – except between some of the macroeconomic variables. That is, there is only a low hazard of multicollinearity. However, correlations between fuel prices and covariates are somewhat higher. Not surprisingly, especially LBRENT but also regulations dummies show a correlation with petrol and diesel prices which are noteworthy.

Besides Austria also Luxembourg applies a regulation of fuel prices. However, in contrast to Austria prices are set directly by the regulator. Moreover, as can be

¹⁶⁶ See Angrist and Pischke, 2009, and Wooldridge, 2010 for a description of the method.

seen from the stakeholder survey, Belgium and Slovenia also apply some kind of regulations on fuel prices. While Belgium uses a system setting maximum retail prices,¹⁶⁷ the system of regulation applied in Slovenia is less clear.¹⁶⁸ In case that there are Member States used as members of the control group which regulate fuel prices in the sample, results would be biased towards a seemingly too low impact of REGAUS. We thus take this possible bias into account in the following analysis and repeat regressions with and without other regulated countries.

7.4.3.3 Results of analysis without covariates

Using the first set of regressions to analyse the impact of regulatory interventions in Austria on fuel yields interesting results. We first use simple difference-in-differences regressions to analyse the impact of the Austrian pricing rules, ignoring any possible impact of external factors (i.e. without using covariates, see Equation (2) above).

As can be seen in the table below, both petrol prices as well as diesel prices have been lower in Austria, before and after the introduction of the pricing rule. Differences vary between 2.5% and 6.9%.¹⁶⁹ However, price gaps were greater after regulation. Consequently, both petrol prices as well as diesel fuel prices have decreased after introducing the Austrian pricing rule (see DiD parameters in the last column of the table below). While petrol prices fell by about 3.8% in comparison to the non-regulation period and in comparison to the control group, diesel prices decreased by about 3.0%. Both coefficients are statistically significant at all conventional levels of significance.¹⁷⁰ Both price decreases could possibly be induced by the regulation introduced in January 2011.

Table 97.
Difference-in-
differences without
controls,
Regulation 2011.

Non-regulation period			Regulation period			Difference
Control	Treated	Diff	Control	Treated	Diff	DiD

Source: Civic Consulting.
N=10,370. Note: Bootstrapped p-values are given in parentheses

¹⁶⁷ Maximum retail prices in Belgium are calculated on the basis of a formula accounting for refinery gate price, distributors margin, payments to address environmental degradation, social and strategic reserve funds, excise duties, and VAT. This system is intended to stabilize prices, rather than reducing them.

¹⁶⁸ Unfortunately, only a non-public authority responded to the survey. The type and extend of regulation can therefore not be verified.

¹⁶⁹ As the left hand side variable is in logarithms and the right hand side variables are dummies we are able to interpret the coefficients approximately as percentage changes.

¹⁷⁰ As testing for autocorrelation indicated the presence of first-order autocorrelation, we used bootstrapping methods to calculate the standard errors in order to prevent biased estimates caused by autocorrelation or heteroskedasticity. Accounting for autocorrelation is especially important when using difference-in-differences methods to prevent considerable biases (see Bertrand et al. 2004).

Petrol (p-value)	6.171 (0.00)	6.140 (0.00)	-0.032 (0.00)	6.534 (0.00)	6.465 (0.00)	-0.069 (0.00)	-0.038 (0.00)
Diesel (p-value)	6.256 (0.00)	6.231 (0.00)	-0.025 (0.01)	6.610 (0.00)	6.556 (0.00)	-0.054 (0.00)	-0.030 (0.01)

As some of the countries in our sample (Luxembourg, Belgium and Slovenia) apply at least some kind of regulation, we repeated the above regression with a smaller sample where the “regulated” countries are skipped from the sample. In these tests, it was found that the estimates of the DiD coefficients were very similar to the former ones and therefore support the initial results.

7.4.3.4 Results of analysis with covariates

As mentioned before the simple model without using covariates does not include important control variables such as crude oil prices which determine fuel prices to a large extent. However, these preliminary results indicate that there might be indeed a negative influence of regulation on fuel prices. It seems therefore worthwhile to extend the analysis to a more comprehensive model. We thus include a number of control variables which are assumed to be driving factors of fuel prices.

In order to account for macroeconomic factors and demand measures we include variables such as INCOME, INDPROD, CPI, and LABORCOST. As a supply side variable we use the BRENT crude oil price. Additionally, we use the share of unmanned station (SHAREUNMAN) as a covariate. Additionally, we use linear TREND, YEAR and WEEK dummies to account for time effects and cyclical behaviour.

As can be seen from the table below, a negative and statistically significant impact of the Austrian pricing rule on fuel prices can be observed in all of the regressions (REGAUS). The results towards the DiD parameter are also robust, independently which specification is used. Overall, a decrease in petrol prices due to regulation in comparison to other European countries of about 4.48% to 4.95% can be found throughout the different regressions. Moreover, the results are significant at all usual levels of confidence. Again the pricing rule seems to be effective with respect to price decreases. While during the regulation period (REG) prices are higher by about 7-8%, Austrian fuel prices (AUSTRIA) are always lower in comparison to other countries. However, the pure treatment effect measured by REGAUS lies always around 4%.

Also the control variables show more or less the expected signs. The logarithm of BRENT has a positive and statistically significant impact on fuel prices which is not surprising as crude oil prices are assumed to be one of the driving factors of petrol and diesel prices. The HICP has a negative impact (for petrol models) on

fuel prices. INDPROD as well as LINCOME show more conflicting results, but their relative predictive influence on the model is low. LABORCOST has a negative impact on prices.

Somewhat surprisingly, also the share of unmanned stations (SHAREUNMAN) is again (see Section 7.4.2.6 above) positively connected to fuel prices. Normally, one would expect that a higher share would also lead to lower prices. As unmanned stations face lower costs a higher number should lead to lower prices and therefore to increased competition. As stated above, a possible explanation would be that unmanned stations are over-represented in EU15 Member States and the coefficient therefore perhaps captures a residual income effect.

Table 98.
Difference-in-
differences with
covariates, petrol
prices, 2011
regulation.

Source: Civic Consulting; based on data from European Commission, Eurostat, desk research and stakeholder survey.
Note:.. Bootstrapped p-values presented as follows:
* = p<.05, **p<.01, ***p<.005

Variable type	Item	Variable name	Model DDP1	Model DDP2	Model DDP3	Model DDP4
Regulation	Austria = 1	AUSTRIA	- 0.0323***	- 0.0355***	- 0.0355***	- 0.0302***
	Regulation period 2011	REG	0.0199***	0.0190***	0.0234***	0.0199***
	Regulation Austria	REGAUS	- 0.0448***	- 0.0472***	- 0.0479***	- 0.0495***
Covariates	Crude price, Brent (Log)	LBRENT	0.6678***	0.6695***	0.6583***	0.6875***
	HICP	HICP	-	- 0.0011***	- 0.0012***	-0.0008**
	Industrial production index	INDPROD	-	-	0.0005***	0.0002
	Income (Log)	LINCOME	-	-	-0.0054**	0.0068**
	Labour cost	LABORCO ST	-	-	0.0013***	0.0004***
	Share of unmanned stations	SHAREUN MAN	-	-	-	- 0.0240***
	Constant		3.7970	3.8987	3.8560	3.7144
Other	R ²		0.83	0.84	0.84	0.86
	No. of observations		8774	8774	8299	5246

To sum up, the effect of the Austrian pricing rules on price levels is found to be negative and surprisingly robust. Independently of the specification used a statistically as well as economically significant impact is detectable by about -3.0% to -3.6%. Unfortunately, the number of observations is (in some specifications considerably) reduced due to a lack of data availability for some variables. But still, results do not differ significantly also with much lower numbers of observations. The Austrian regulation seems therefore to be an adequate tool to reduce prices to some extent, especially when considering the rather low costs which are connected with that simple rule.

When repeating the regression with diesel prices (see table below), all regressions show again negative and statistically as well as economically significant impacts of regulation on diesel prices. Prices decrease by 1.5% to 2.5% depending on model specifications.

Overall, from the results of the difference-in-differences estimations one can conclude that the Austrian pricing rule seems to be an efficient tool to reduce fuel prices in comparison to other European countries. The results are relatively robust against variations in specifications, samples and covariates.

As a result, the regressions conducted for this study show a reduction by 3.0% to 3.6% with respect to petrol prices and a reduction by 1.5% to 2.5% with respect to diesel fuel prices induced by the 2011 pricing regulation. The analysis is therefore able to provide some evidence that the Austrian pricing rule and internet platform have led to a decrease in fuel prices in this country compared to the control group of other EU countries. However, a full identification of specific effects is not possible given the limitations of the data.

Table 99.
Difference-in-differences with covariates, diesel prices, 2011 regulation.

Source: Civic Consulting; based on data from European Commission, Eurostat, desk research and stakeholder survey.
Note: Bootstrapped p-values presented as follows:
* = p<.05, **p<.01, ***p<.005

Variable type	Item	Variable name	Model DDD1	Model DDD2	Model DDD3	Model DDD4
Regulation	Austria = 1	AUSTRIA	- 0.0251***	- 0.0236***	- 0.0199***	- 0.0154***
	Regulation period 2011	REG	0.0316***	0.0321***	0.0410***	0.0347***
	Regulation Austria	REGAUS	- 0.0332***	- 0.0321***	- 0.0376***	- 0.0365***
Covariates	Crude price, Brent (Log)	LBRENT	0.6928***	0.6920***	0.6683***	0.6863***
	HICP	HICP	-	0.0005***	0.0005**	0.0021***
	Industrial production index	INDPROD	-	-	0.0011***	0.0010***
	Income (Log)	LINCOME	-	-	-0.0052**	-0.0017*
	Labour cost	LABORCOST	-	-	0.0019***	0.0008***
	Share of unmanned stations	SHAREUNMAN	-	-	-	-0.0122
	Constant		3.8322	3.7848	3.6393	3.5077
Other	R ²		0.83	0.83	0.85	0.87
	No. of observations		8774	8774	8299	5246

8

CONSUMER PROBLEMS AND REDRESS

This section presents the study's findings on the frequency and nature of problems experienced by consumers in the vehicle fuels market, including the resulting consumer detriment in monetary terms. The second part highlights issues and problems related to potentially vulnerable consumers. The final part of the section then reviews findings on the availability and use of redress mechanisms.

8.1 INCIDENCE AND NATURE OF PROBLEMS

This sub-section considers both the frequency with which consumers experience problems in the vehicle fuels market as well as the most common types of problems that occur and their adverse monetary impact on consumers.

Key findings of this section are:

1. In total, 43% of survey respondents say that they have experienced a problem during the previous 12 months, when filling up their vehicle either in their own country or in another EU country.
2. Overall, 24% of respondents who provided an answer regarding the problem they had experienced either at home or abroad stated that they had to wait in a queue to fill up the vehicle; 10% had a problem at an unmanned station and found nobody to help; 9% said that low quality fuel led to engine or vehicle performance problems; 7% received less fuel in the tank than they paid for; 6% paid higher than advertised price for fuel; 5% could not identify fuel due to unclear labelling; 5% could not buy E10 or B7 because they were uncertain of compatibility; 3% pumped petrol into a diesel vehicle or vice versa due to unclear labelling; and 3% incorrectly pumped a biofuel because of unclear labelling. When considering only those problems which resulted in financial detriment,¹⁷¹ 28% of respondents claimed that they had encountered such a problem.
3. One in three (32%) of those respondents who indicated a problem or problems that could have resulted in financial detriment (either in their own country or

¹⁷¹ No help with problems at unmanned station (4%), Fuels were only labelled in the local language (4%), Low quality fuel impacted engine performance (2%), I received less fuel in the tank than I paid for (2%), I paid a higher than advertised price for fuel (2%), Incorrect invoice / receipt (2%), Unclear labelling led to pumping wrong fuel (1%), Unclear labelling led to pumping biofuel (1%) were all considered as problems that may cause financial detriment.

abroad) say that they experienced no financial loss. 31% experienced a loss of less than 20 Euro, while 23% incurred a loss of between 20 and 99 Euro. Some respondents incurred larger financial losses, with one in ten (12%) of those respondents who indicated a problem or problems that could have resulted in financial detriment suffered a self-reported loss of between 100 and 999 Euro and one in fifty (2%) a loss of 1,000 Euro or more. The mean loss of those who reported actually incurring a financial loss was 176 Euro.

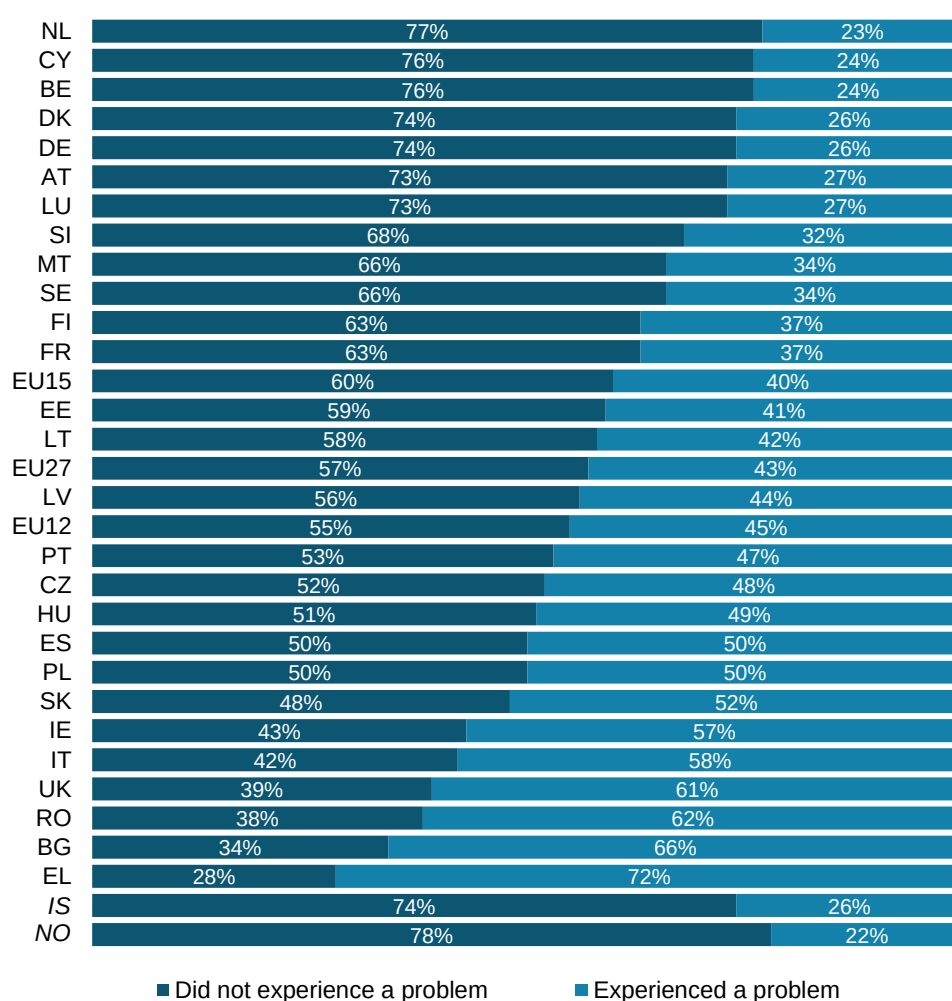
4. Overall, respondents in EU12 countries were more likely than those in EU15 countries to have experienced a problem of some kind when filling up their vehicle in their country of residence (45% compared with 35%) and specifically to have experienced a problem that could result in financial detriment (32% compared with 18%). In particular, problems with low quality fuel were more likely to be reported by respondents in EU12 countries than in EU15 countries (17% compared with 4%).
5. The type of fuel bought has a clear bearing on the frequency of problems encountered. While there is little difference between petrol and diesel consumers in terms of incidence, consumers who purchase other types of fuel (such as LPG or E85) experience more frequent problems (53%, compared to 43% for petrol / diesel users).
6. According to the aggregated responses of national-level stakeholder organisations in the EU27 that had received consumer complaints during the previous five years, fuel prices were the subject of the majority of those complaints (51%), with fuel quality being the second most complained about market aspect (31%) and potentially unfair commercial practices third (11%).
7. The stakeholder survey results lend support to the notion that fuel quality may be an area of concern in some Member States: at least one stakeholder reported that 25% or more of consumer complaints pertained to fuel quality in the following countries: Belgium, Estonia, Greece, Italy, Cyprus, Lithuania, Malta, Poland, Portugal, Slovenia and Finland. Though Belgium and Finland are clearly outliers relative to the consumer survey results, the other countries listed are either EU12 Member States or, in the case of Greece, Italy and Portugal, among the small group of four EU15 Member States in which 5% or more of consumer survey respondents indicated a problem with low quality fuel.
8. The results of the stakeholder survey clearly point to fuel prices as the most controversial aspect of the vehicle fuels market. In particular, high or increased retail prices, a lack of price transparency or an opaque or non-competitive wholesale market were the most reported problems by the stakeholder organisations.

8.1.1 Incidence of problems

Consumer survey respondents were separately asked whether they had experienced problems when filling up their vehicle in their country of residence and another EU country during the previous year. Combining responses to those two questions allows for the derivation of an overall incidence of problems experienced by respondents during the period. These findings are presented in the figure below. In total, 43% of survey respondents say that they have experienced a problem during the previous 12 months, when filling up their vehicle either in their own country or in another EU country.

Figure 43.
Incidence of
problems in own
or another EU
country, analysis
by country

Source: Consumer survey, combined results of Questions 22 and 23 (N=25797 for EU27)



As shown in the figure above, respondents in Greece (72%), Bulgaria (66%), Romania (62%), the UK (61%) and Italy (58%) are most likely to say they have experienced a problem when filling up their vehicle. Problems are least common among respondents in Germany (26%), Denmark (26%), Belgium (24%), Cyprus (24%), the Netherlands (23%), and Norway (22%).

Overall, respondents in EU12 countries are more likely than those in EU15 countries to say they have experienced a problem (45% compared with 40%). The proportion is also lower in countries in which E10 fuel is widely available (33%).

Turning to specific problems, 24% of respondents who provided an answer regarding the problem they had experienced either at home or abroad stated that they had to wait in a queue to fill up the vehicle; 10% had a problem at an unmanned station and found nobody to help; 9% said that low quality fuel led to engine or vehicle performance problems; 7% received less fuel in the tank than they paid for; 6% paid higher than advertised price for fuel; 5% could not identify fuel due to unclear labelling; 5% could not buy E10 or B7 because they were uncertain of compatibility; 3% pumped petrol into a diesel vehicle or vice versa due to unclear labelling; and 3% incorrectly pumped a biofuel because of unclear labelling. When considering only those problems which resulted in financial detriment,¹⁷² 28% of respondents claimed that they had encountered such a problem.

Socio-demographic differences and potentially vulnerable consumers

In terms of incidence of problems encountered both at home and abroad, respondents who spend a larger share of their income on fuel are more likely to experience problems (29% of those who spend no more than 5% of their income on fuel, compared to 62% of those who spend 21% or more of their income).

Respondents who spend 21% or more of their income on fuel are also more likely to encounter problems that may result in financial detriment (47%, falling to 15% of those who spend no more than 5% of their income on fuel).

There is a clear age pattern, with fewer reported problems among older people (60% of 18- to 24-year-olds, falling to 34% of those aged 55 or over). Younger respondents are more likely to report problems that may result in financial detriment (44%, falling to 21% of those aged 55 or over).

Consumers living in metropolitan areas were more likely to have problems (49%), compared to those who lived in urban (41%) or rural (39%) areas. They were also proportionately more likely to experience a problem resulting in financial detriment.

Respondents with older vehicles (more than 10 years old) are less likely to have had a problem (39%) than those with a vehicle between no more than 5 years old

¹⁷² No help with problems at unmanned station (4%), Fuels were only labelled in the local language (4%), Low quality fuel impacted engine performance (2%), I received less fuel in the tank than I paid for (2%), I paid a higher than advertised price for fuel (2%), Incorrect invoice / receipt (2%), Unclear labelling led to pumping wrong fuel (1%), Unclear labelling led to pumping biofuel (1%) were all considered as problems that may cause financial detriment.

(46%). Consistent with this finding, respondents with newer vehicles (less than 5 years old) are more likely to say they incurred a financial loss (31%) than those with a vehicle between 5 and 10 years old (27%), and those with a vehicle more than 10 years old (26%).

Those who buy fuel in other EU countries are more likely to experience problems (54% of those who frequently buy fuel abroad compared with 40% of those who rarely or never do so). Those who buy fuel in other EU countries frequently (42%) are also more likely to say they had a problem that may result in financial detriment than those who rarely or never buy fuel abroad (25%).

Finally, the type of fuel bought has a clear bearing on the frequency of problems encountered. While there is little difference between petrol and diesel consumers in terms of incidence, consumers who purchase other types of fuel (such as LPG or E85) experience more frequent problems (53%, compared to 43% for petrol / diesel users). They are also more likely to experience problems leading to financial detriment (36%, versus 28% for petrol and 29% for diesel).

Table 100.
Incidence of
problems in own or
another EU
country, analysis
by socio-
demographic
characteristics

Source: Consumer
survey, composite
results of Questions 22
and 23 (N=5797 for
EU27)

	Sub-sample	Experienced at least one problem	Experienced problem resulting in financial detriment
Average	EU27	43%	28%
Gender	Male	42%	28%
	Female	44%	28%
Age	18-24	60%	44%
	25-39	50%	35%
	40-54	42%	27%
	55+	34%	21%
Place of residence	Rural area	39%	25%
	Urban area	41%	27%
	Metropolitan area	49%	33%
Percentage of monthly income spent on fuel	1 - 5%	29%	15%
	6 - 10%	42%	28%
	11 - 20%	51%	35%
	21% or more	62%	47%
Buys fuel in another EU country	Frequently	54%	42%
	Regularly	53%	42%
	Rarely or Never	40%	25%
Type of fuel most frequently bought	Petrol	43%	28%
	Diesel	43%	29%
	Other type of fuel	53%	36%
Vehicle age	Less than 5 years	46%	31%

old		
5 to 10 years old	43%	27%
More than 10 years old	39%	26%

Station visits

Mystery shopping exercises in several capital cities also provided insight into the problems experienced by consumers buying fuel abroad. While purchasing fuel, mystery shoppers searched for any labelling or signs at the petrol station which appeared in a language other than the country's primary one. Overall, only about one third (34%) of the visited petrol stations displayed labels or signs in another language. However, the proportion differed substantially depending on the city sample. For example, 100% of the visited stations in Helsinki had labels or signs in a language other than Finnish. In Rome, 68% of the visited stations offered labels or signs in a language other than Italian, and 24% of the stations visited in Prague had labels or signs in a language other than Czech. In the Prague cases, the secondary language was English and/or German, while in Rome, the mystery shoppers noted the use of English words in fuel labelling.

However, among the 75 stations visited in the other three cities, namely Berlin, Paris and Bucharest, just three stations, and none in Berlin, displayed labels or signs in a language other than the country's primary one.

For those visited petrol stations at which labels or signs did appear in another language, mystery shoppers were asked whether this information proved helpful in choosing the right fuel type. Overall, the information available in another language was regarded as helpful at 43% of the applicable stations, including all of the Rome stations at which it was provided and 83% of the Prague stations at which it was available.

The proportions shown for Paris and Bucharest are based on only one and two stations, respectively, but the non-helpfulness of the foreign language information at visited stations in Helsinki is notable, because such information was available at all 25 visited stations in that city. The reason that the mystery shoppers did not find this information helpful in Helsinki is that it was only available in Swedish, a language which neither of them spoke. In contrast, where information was provided in another language at visited stations in the Czech Republic that language, as mentioned above, was generally English or German, which are more widely understood.

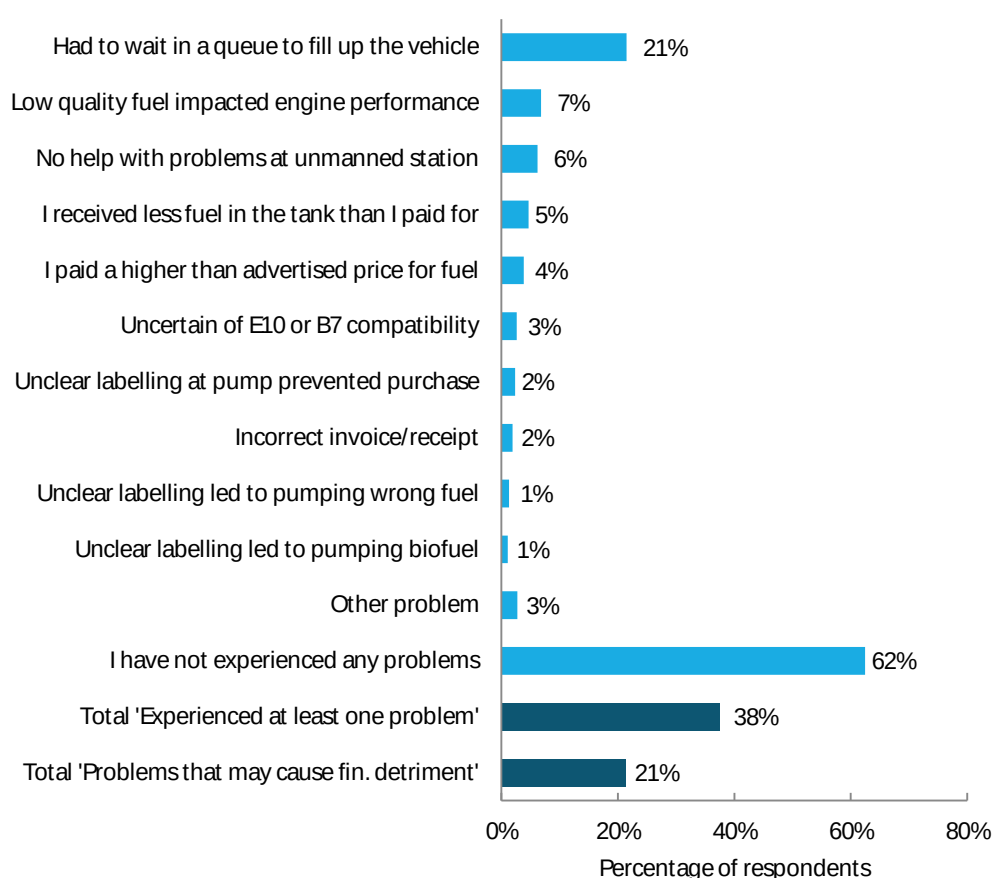
Both consumer survey and stakeholder survey respondents were asked about the types of problems most commonly experienced or complained about in the vehicle fuels market. The results of those survey questions are presented below.

8.1.2 Problems experienced in country of residence

In total, 38% of consumer survey respondents say that they have experienced a problem during the previous 12 months, when filling up their vehicle in their own country (rather than in another EU country). The most commonly reported problem was often having to wait in a queue to fill up the vehicle (21%). Notably, 21% mentioned one of the problems that could result in financial detriment, such as receiving less fuel in the tank than they paid for (5%) or buying low quality fuel that led to engine or vehicle performance problems (7%).

Figure 44.
Incidence of
problems in
country of
residence

Source: Consumer survey, Question 22: During the past 12 months, have you experienced any of the following problems when filling up your vehicle in your country? (N=25797, EU27)
Note: Multiple answers possible.



The proportions who experienced a problem of some kind in their own country are almost identical to those outlined above for problems overall. To a large extent, this reflects the fact that most problems are experienced in respondents' own country, rather than in another EU country.

Overall, respondents in EU12 countries were more likely than those in EU15 countries to have experienced a problem of some kind (45% compared with 35%) and specifically to have experienced a problem that could result in financial

detriment (32% compared with 18%). In particular, problems with low quality fuel were more likely to be experienced by respondents in EU12 countries than in EU15 countries (17% compared with 4%).

Table 101.
Incidence of
problems in
country of
residence, analysis
by country

Source: Consumer survey, Question 22:
During the past 12 months, have you experienced any of the following problems when filling up your vehicle in your country? (N=25797, EU27)

Note: Multiple answers possible.

		Often had to wait in queue to fill up vehicle	Low quality fuel led to performance problems	Found nobody to help with problem at unmanned station	I have not experienced any problems	Total 'Experienced at least one problem'	Total 'Problems that can result in financial detriment'
EU27		21%	7%	6%	62%	38%	21%
EU15		22%	4%	5%	65%	35%	18%
EU12		21%	17%	9%	54%	45%	32%
Countries with E10		13%	2%	3%	75%	25%	12%
 BE		7%	2%	6%	80%	20%	15%
 BG		16%	27%	12%	46%	54%	47%
 CZ		23%	18%	4%	56%	44%	27%
 DK		9%	1%	6%	82%	18%	12%
 DE		12%	1%	2%	79%	21%	9%
 EE		14%	9%	10%	68%	32%	23%
 IE		36%	9%	7%	49%	51%	27%
 EL		21%	27%	6%	39%	61%	53%
 ES		23%	3%	9%	61%	39%	21%
 FR		14%	3%	5%	70%	30%	16%
 IT		27%	7%	9%	52%	48%	32%
 CY		1%	4%	3%	82%	17%	16%
 LV		12%	12%	8%	63%	37%	28%
 LT		8%	9%	7%	69%	31%	24%
 LU		10%	2%	3%	80%	20%	11%
 HU		16%	13%	8%	60%	40%	29%
 MT		6%	3%	8%	77%	20%	16%
 NL		8%	1%	3%	82%	18%	10%
 AT		7%	2%	5%	84%	16%	11%
 PL		25%	15%	7%	55%	45%	29%
 PT		36%	5%	3%	56%	44%	16%
 RO		22%	25%	16%	46%	54%	42%
 SI		16%	8%	4%	73%	27%	17%
 SK		22%	13%	11%	57%	43%	28%
 FI		15%	3%	5%	71%	29%	17%
 SE		10%	2%	6%	78%	22%	15%
 UK		42%	4%	3%	50%	50%	15%
 IS		5%	1%	8%	76%	23%	19%
 NO		9%	1%	4%	82%	18%	11%

As can be seen in the table above, problems that may result in financial detriment are most common in Greece (53%), Bulgaria (47%) and Romania (42%), while the same three countries show the highest figures of respondents reporting problems with low quality fuel that impacted on engine performance (27% in Bulgaria and Greece, 25% in Romania). Respondents in the UK (42%), Ireland (36%) and Portugal (36%) are most likely to say they experienced problems with queuing.

Turning to socio-demographic characteristics, those who drive greater distances are more likely to experience problems that may result in financial detriment (26% of those who drive more than 20,000 kilometres per year, compared with 19% to 22% of those who drive 20,000 kilometres or less).

Problems that may result in financial detriment are also more common among those who frequently buy branded fuel (24%, compared with 16% of those who infrequently or never do so), and among those who use other types of fuel (29%) rather than diesel (23%) or petrol (20%).

Table 102.
Incidence of
problems in
country of
residence, analysis
by socio-
demographic
characteristics

Source: Consumer
survey, Question 22:
During the past 12
months, have you
experienced any of the
following problems
when filling up your

Sub-sample		Often had to wait in queue to fill up vehicle	Low quality fuel led to performance problems	Found nobody to help with problem at unmanned station	I have not experienced any problems	Total 'Experienced at least one problem'	Total 'Problems that can result in financial detriment'
Average	EU27	21%	7%	6%	62%	38%	21%
Gender	Male	21%	8%	5%	63%	37%	22%
	Female	22%	6%	7%	62%	38%	21%
Age	18-24	28%	10%	9%	48%	52%	32%
	25-39	25%	9%	6%	57%	43%	25%
	40-54	22%	6%	6%	64%	36%	19%
	55+	17%	5%	6%	70%	30%	16%
Place of residence	Rural area	18%	5%	5%	67%	33%	18%
	Urban area	22%	6%	6%	63%	37%	20%
	Metropolitan area	24%	9%	7%	57%	43%	25%
Percentage of monthly income spent on fuel	1 - 5%	17%	2%	4%	72%	27%	12%
	6 - 10%	20%	7%	6%	64%	36%	20%
	11 - 20%	26%	10%	7%	55%	45%	27%
	21% or more	27%	14%	9%	47%	53%	36%
Type of fuel most frequently bought	Petrol	22%	7%	6%	63%	37%	20%
	Diesel	20%	7%	7%	62%	38%	23%
	Other type of fuel	23%	13%	5%	54%	46%	29%
Buys branded fuel	Frequently	21%	8%	7%	61%	39%	24%
	Infrequently or Never	22%	5%	5%	65%	35%	16%
Total distance driven per year	Less than 10,000 km	22%	6%	6%	64%	36%	19%
	From 10,000 to less than 20,000 km	21%	7%	6%	63%	37%	22%
	20,000 km or more	22%	9%	7%	59%	41%	26%
Buys fuel in another EU country	Frequently	18%	11%	8%	48%	52%	38%
	Regularly	21%	12%	11%	50%	50%	35%
	Rarely or never	22%	6%	6%	64%	36%	20%

8.1.3 Problems experienced abroad

One in five respondents who indicate having bought fuel abroad (19%) says they have experienced at least one problem in another EU country when filling up their vehicle during the previous 12 months. This includes 13% who experienced a problem that may result in financial detriment.¹⁷³ No individual type of problem was experienced by more than 6% of respondents.

¹⁷³ No help with problems at unmanned station (4%), Fuels were only labelled in the local language (4%), Low quality fuel impacted engine performance (2%), I received less fuel in the tank than I paid for (2%), I paid a higher than advertised price for fuel (2%), Incorrect invoice / receipt (2%), Unclear labelling led to pumping wrong fuel (1%), Unclear labelling led to pumping biofuel (1%) were all considered as problems that may cause financial detriment.

Figure 45.
Incidence of
problems in
another EU
country

Source: Consumer survey, Question 23:
During the past 12 months, have you experienced any of the following problems when filling up your vehicle in another EU country? (N=12648, Respondents who buy fuel in another EU country in EU27)
Note: Multiple answers possible.

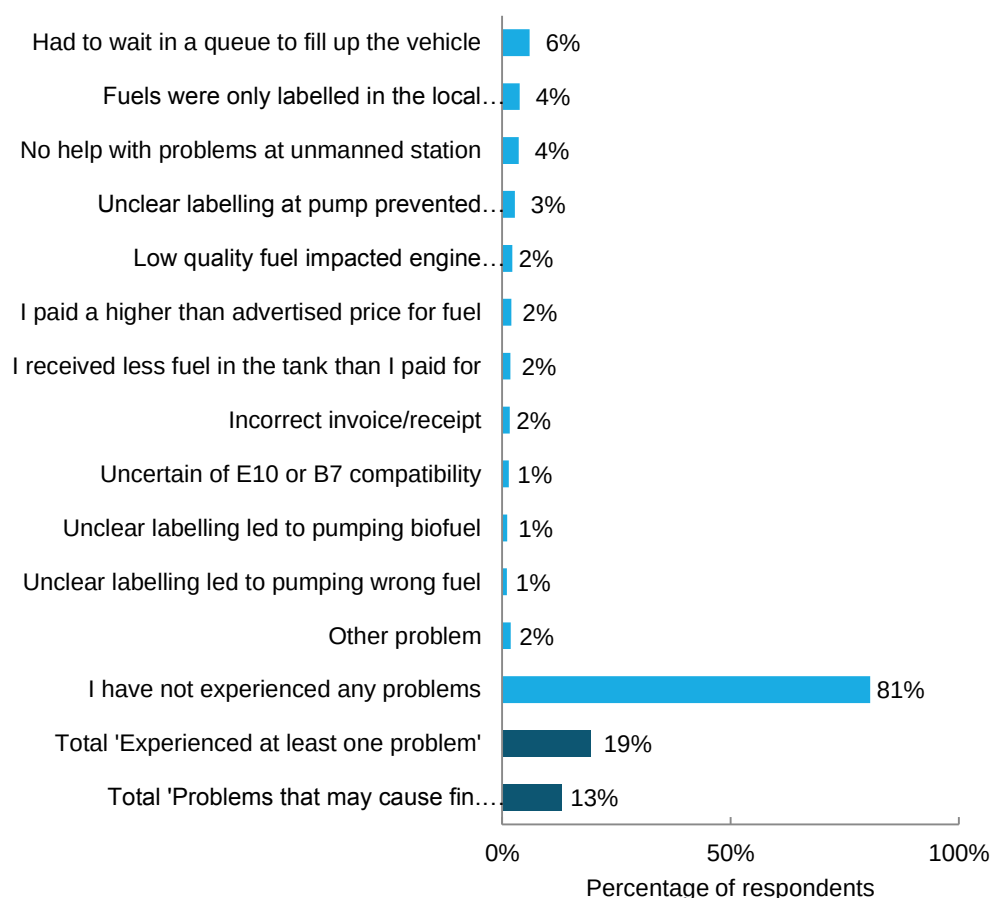


Table 103.
Incidence of
problems in
another EU
country, analysis
by country of
residence

Source: Consumer survey, Question 23:
During the past 12 months, have you experienced any of the following problems when filling up your vehicle in another EU country? (N=12648 for EU27) Note: Multiple answers possible.

Overall, respondents from EU12 countries were more likely than those from EU15 countries to have experienced problems in another EU country (22% compared with 18%), and specifically to have experienced a problem that may result in financial detriment (15% compared with 12%).

	Often had to wait in queue to fill up vehicle	Found nobody to help with problem at unmanned station	Difficulty choosing right fuel – labels only in local language	I have not experienced any problems	Total 'Experienced at least one problem'	Total 'Problems that can result in financial detriment'
EU27	6%	4%	4%	81%	19%	13%
EU15	6%	3%	4%	81%	18%	15%
EU12	6%	4%	4%	78%	22%	12%
Countries	5%	2%	3%	86%	14%	7%

Table 103.
Incidence of
problems in
another EU
country, analysis
by country of
residence

Source: Consumer survey, Question 23: During the past 12 months, have you experienced any of the following problems when filling up your vehicle in another EU country? (N=12648 for EU27) Note: Multiple answers possible.

		Often had to wait in queue to fill up vehicle	Found nobody to help with problem at unmanned station	Difficulty choosing right fuel – labels only in local language	I have not experienced any problems	Total 'Experienced at least one problem'	Total 'Problems that can result in financial detriment'
with E10							
	BE	4%	2%	2%	88%	12%	6%
	BG	7%	5%	7%	70%	30%	23%
	CZ	5%	3%	4%	83%	17%	10%
	DK	4%	3%	4%	87%	12%	7%
	DE	4%	2%	3%	88%	12%	7%
	EE	2%	4%	3%	88%	12%	8%
	IE	10%	8%	4%	76%	23%	15%
	EL	5%	7%	9%	68%	31%	26%
	ES	8%	7%	4%	74%	26%	20%
	FR	6%	2%	2%	83%	17%	8%
	IT	10%	6%	5%	68%	31%	21%
	CY	1%	0%	0%	92%	5%	2%
	LV	2%	4%	4%	83%	17%	12%
	LT	3%	3%	2%	82%	18%	12%
	LU	5%	3%	2%	83%	17%	10%
	HU	6%	5%	3%	82%	18%	12%
	MT	0%	1%	0%	84%	4%	2%
	NL	5%	1%	4%	88%	12%	6%
	AT	5%	4%	4%	84%	16%	10%
	PL	7%	4%	4%	77%	23%	17%
	PT	8%	1%	2%	86%	14%	6%
	RO	6%	5%	6%	76%	24%	15%
	SI	4%	2%	2%	87%	12%	8%
	SK	6%	6%	4%	79%	21%	15%
	FI	3%	1%	4%	86%	13%	8%
	SE	3%	4%	4%	84%	15%	12%
	UK	6%	4%	5%	78%	22%	16%
	IS	1%	2%	1%	87%	10%	6%
	NO	2%	1%	1%	93%	7%	4%

Respondents in Bulgaria, Greece and Italy are most likely to say they experienced problems in another EU country. The proportion who experienced at least one type of problem is 31% in Greece and Italy and 30% in Bulgaria. The lowest percentages of problems experienced in other EU countries were reported by respondents in Malta (4%), Cyprus (5%), Norway (7%), and Iceland (10%). A

cluster of European Member States (Belgium, Denmark, Germany, Estonia, the Netherlands, and Slovenia) also reported fewer problems abroad (all 12%).

When taking into account only those problems that could result in financial detriment for the consumer, a similar pattern was seen. Problems that may lead to a financial detriment were experienced by 26% of respondents in Greece, 23% in Bulgaria and 21% in Italy.¹⁷⁴ The lowest rate of problems was experienced by respondents in Malta (2%), Cyprus (2%), Norway (4%), Iceland (6%), Belgium (6%), Portugal (6%), the Netherlands (6%), Denmark (7%), and Germany (7%).

Problems in other EU countries are, of course, frequently linked to the amount that people drive abroad. Respondents who buy fuel in other EU countries frequently (37%) or regularly (33%) are more likely to experience problems than those who rarely or never buy fuel abroad (15%). The same pattern applies specifically in relation to problems that may result in financial detriment (29% of those who frequently fuel abroad, 23% of those who regularly do so, and 9% of those who rarely or never buy fuel abroad).¹⁷⁵

For all types of problems, poorer, younger, and respondents living in metropolitan areas tend to report more problems (see table below). The age of the vehicle also plays a role, with owners of vehicles less than 5 years old experiencing more problems (24% experience at least one problem) than older cars (16%).

¹⁷⁴ Again, respondents were able to report more than one type of problem at this question; as a result, the proportion of respondents who mentioned problems that could result in financial detriment (EU average 12%) is lower than the sum of the individual responses shown. No help with problems at unmanned station (4%), Fuels were only labelled in the local language (4%), Low quality fuel impacted engine performance (2%), I received less fuel in the tank than I paid for (2%), I paid a higher than advertised price for fuel (2%), Incorrect invoice / receipt (2%), Unclear labelling led to pumping wrong fuel (1%), Unclear labelling led to pumping biofuel (1%) were all considered as problems that may cause financial detriment.

¹⁷⁵ This paragraph references the socio-demographic grouping of respondents who rarely or never buy fuel abroad in order to maintain consistency with text throughout the report; however, in this context, it is the respondents who 'rarely' buy fuel abroad who have reported experiencing problems at petrol stations in other EU countries.

Table 104.
Incidence of
problems in
another EU
country, analysis
by socio-
demographic
characteristics

Source: Consumer survey, Question 23: During the past 12 months, have you experienced any of the following problems when filling up your vehicle in another EU country? (N=12648, Respondents who buy fuel in another EU

Sub-sample		Often had to wait in queue to fill up vehicle	Found nobody to help with problem at unmanned station	Difficulty choosing right fuel – labels only in local language	I have not experienced any problems	Total 'Experienced at least one problem'	Total 'Problems that can result in financial detriment'
Average	EU27	6%	4%	4%	81%	19%	13%
Gender	Male	6%	3%	4%	80%	20%	13%
	Female	6%	4%	4%	81%	19%	12%
Age	18-24	10%	6%	6%	70%	30%	21%
	25-39	5%	3%	4%	78%	22%	16%
	40-54	6%	4%	4%	81%	19%	12%
	55+	5%	3%	3%	85%	14%	9%
Percent of monthly income spent on fuel	1 - 5%	4%	2%	2%	88%	12%	6%
	6 - 10%	6%	3%	4%	82%	18%	12%
	11 - 20%	7%	5%	4%	76%	24%	16%
	21% or more	9%	6%	7%	69%	31%	21%
Buys fuel in another EU country	Frequently	10%	6%	6%	63%	37%	29%
	Regularly	10%	5%	8%	67%	33%	23%
	Rarely / Never	5%	3%	3%	85%	15%	9%
Place of residence	Rural area	5%	3%	3%	83%	17%	11%
	Urban area	6%	3%	4%	81%	19%	12%
	Metropolitan area	6%	4%	4%	78%	22%	14%
Vehicle age	Less than 5 years old	7%	5%	4%	76%	24%	16%
	5 to 10 years old	5%	3%	4%	83%	16%	11%
	More than 10 years old	5%	3%	3%	84%	16%	10%

8.1.4 Complaints received by stakeholders

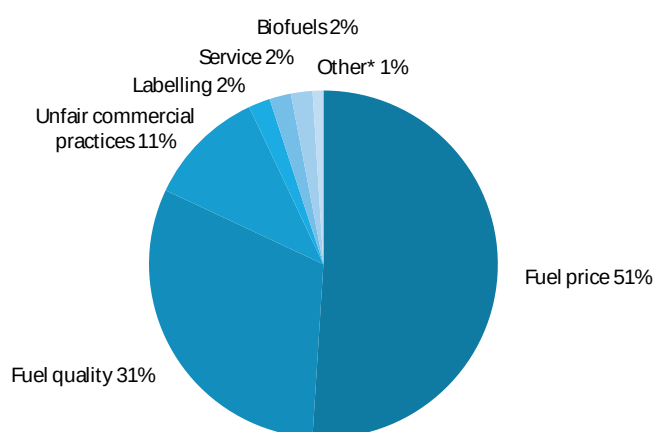
To supplement the consumer survey questions on problems experienced in the vehicle fuels market, respondents to the stakeholder survey were requested to provide data on any consumer complaints they had received, as well as qualitative descriptions of any trends visible in that complaints data and the main problems they have observed in this market. By comparing the results of these stakeholder survey questions with the consumer survey findings presented above,

some general conclusions on key consumer problems in the market can be developed.

The following figure displays the aggregated responses of national-level stakeholder organisations in the EU27 that had received consumer complaints during the previous five years and were able to indicate the proportion of each complaint type that they had received.

Figure 46. Subject matter of consumer complaints received by stakeholders

Source: Civic Consulting stakeholder survey, Question 17B: Of the relevant complaints your organisation has received from consumers in the past five years, please estimate the percentage that best fit into each of the following categories. (N=70)
Note: * Includes petrol station accessibility, fuel availability, and time spent on fuel purchases and other.



As the figure shows, fuel prices were the subject of the majority of those complaints (51%), with fuel quality being the second most complained about market aspect (31%) and unfair commercial practices third (11%). Other problems such as being subjected to inadequate fuel labelling or poor service, or experiencing problems related to biofuels or fuels with biofuel content were much less frequently complained about by consumers, according to this stakeholder survey data.

Stakeholders substantiated these findings in their responses to subsequent questions on trends in the types of complaints received from consumers and the main problems confronting consumers. In their replies to these qualitative questions, the majority of responding stakeholders' referenced factors related to fuel prices, e.g. high or increased retail prices, a lack of price transparency or an

opaque or non-competitive wholesale market. Thus, the results of the stakeholder survey clearly point to fuel prices as the most controversial aspect of the vehicle fuels market.

Section 7 of this report has already provided a detailed analysis of fuel prices, but it is worth discussing fuel quality in more detail here due to the stakeholder survey findings indicating that this market aspect also receives relatively frequent consumer complaints in at least some countries. Moreover, as stated above, fuel quality was the second most frequently experienced problem among consumer survey respondents at petrol stations in their country of residence (after queuing).

As can be recalled from the consumer survey results presented above, there was a notable disparity in the findings on fuel quality. While reports of low quality fuel leading to vehicle performance problems were rare in the EU15 (4% of respondents reported having experienced such a problem at a petrol station in their country of residence), this was less the case among EU12 respondents, 17% of whom reported experiencing such a problem.

More specifically, the highest proportions of respondents reporting problems with low quality fuel that led to engine / vehicle performance problems occurred in Bulgaria (27%), Greece (27%) and Romania (25%). Continuing this list so that it comprises all countries in which 10% or more of consumer survey respondents reported this problem yields the following: the Czech Republic (18%), Poland (15%), Hungary (13%), Slovakia (13%) and Latvia (12%). So, among the eight countries with the highest frequencies of reported fuel quality problems, all are EU12 Member States except Greece. Indeed, among the EU12 Member States only two – Cyprus and Malta – had relatively low proportions of respondents (4% and 3%, respectively) that reported fuel quality problems, because in Estonia (9%), Lithuania (9%) and Slovenia (8%) this problem was also cited at frequencies above the EU27 average. Aside from Greece, Ireland (9%), Italy (7%) and Portugal (5%) stand out as the only other EU15 Member States in which the proportion of respondents reporting this problem was at or above 5%.

With these consumer survey findings in mind, we can compare them to the data provided by stakeholders on fuel quality issues. In comparing these two data sources, it is important to note that 'fuel quality' was not identically defined in the two surveys. Whereas in the consumer survey the item read, "Low quality fuel led to engine/vehicle performance problems", the explanatory note in the stakeholder survey more broadly defined fuel quality to also include general fuel quality complaints. This difference, albeit a minor one, may affect comparability between the results. It is also important to note that only those stakeholders that reported having received consumer complaints during the previous five years could provide data on the breakdown of those complaints by subject matter; therefore, comprehensive data is not available at the country-level. Still, the

available results do suggest that fuel quality may be a legitimate area of concern in some Member States.

For example, the list of those countries in which at least one stakeholder reported that 25% or more of consumer complaints pertained to fuel quality is as follows: Belgium, Estonia, Greece, Italy, Cyprus, Lithuania, Malta, Poland, Portugal, Slovenia and Finland. Though Belgium and Finland are clearly outliers relative to the consumer survey results, the other countries listed are either EU12 Member States or, in the case of Greece, Italy and Portugal, among the small group of four EU15 Member States in which 5% or more of respondents indicated a problem with low quality fuel.

Some additional evidence can be derived from stakeholders' responses to a survey question which requested that they summarise the main problems encountered by consumers in the market for vehicle fuels. One or more stakeholders in Belgium, Estonia, Greece, Lithuania, Poland, Portugal and Slovenia mentioned fuel quality as a problem, as did one EU-level industry association. Indeed, one EU-level stakeholder qualified this in stating that *"Fuel quality monitoring is carried out perhaps once a year (FQMS) so ensuring year-round fuel quality compliance with the standard is difficult."*

One of the Estonian organisations noted that the problem had decreased in recent years, and the Polish organisation indicated that fuel quality is only "sometimes" a problem. In another survey question on trends in the types of consumer complaints received in the past five years, organisations from Greece and Lithuania were the only ones to reference fuel quality as a notable topic. Again, aside from Greece and Portugal, these lists are heavy on EU12 Member States. However, it is important to consider, as was noted by a public authority from Lithuania, that consumers' concerns about fuel quality may be unfounded because engine or vehicle performance problems can also result from a vehicle's condition.

Nonetheless, given that the findings of the surveys conducted for this study do indicate some consumer and stakeholder concerns regarding fuel quality, this market aspect may merit further investigation in the relevant countries, primarily in some of the EU12 Member States and Greece (see Section 9 for specific recommendation).

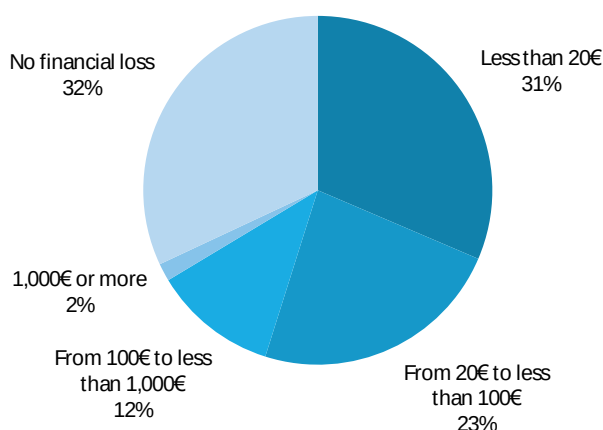
8.1.5 Monetary detriment resulting from problems

Consumer survey respondents who indicated having experienced a problem or problems that could have resulted in financial detriment (either in their own country or abroad) were asked to estimate the total financial loss they incurred as a result of the problem(s).¹⁷⁶

One in three (32%) say that they experienced no financial loss. However, 31% experienced a loss of less than 20 Euro, while 23% incurred a loss of between 20 and 99 Euro. Some respondents incurred larger financial losses, with 12% reported to have suffered a loss of between 100 and 999 Euro and 2% a loss of 1,000 Euro or more. The mean loss was 176 Euro.¹⁷⁷

Figure 47. Total financial loss incurred from problems

Source: Consumer survey, Question 26: Thinking again about the problem(s) you experienced when filling up your vehicle during the past 12 months, please estimate the total financial loss you incurred as a result of the problem(s). (N= 5883, Respondents who experienced at least one problem that may cause financial detriment in EU27)



As can be seen in the table below, respondents in Greece (85%), Bulgaria (82%) and Italy (80%) are most likely to say they experienced a financial loss, while the

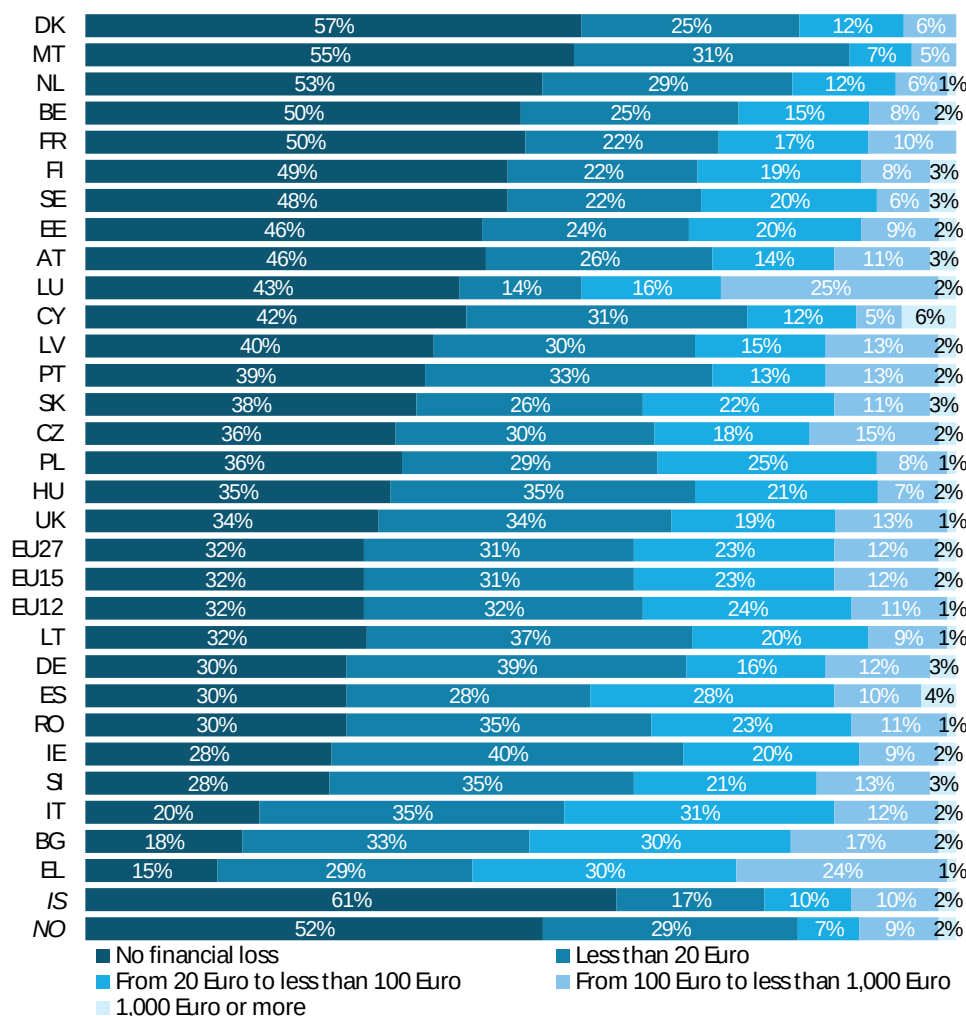
¹⁷⁶ Question Q26: Thinking again about the problem(s) you experienced when filling up your vehicle during the past 12 months, please estimate the total financial loss you incurred as a result of the problem(s).

¹⁷⁷ On average the mean loss for all consumers who reported a loss was 176 Euro which is reduced to 75 Euro if we only consider those who experienced a loss different from zero but up to 1,000 Euro. The median loss in both cases was somewhat lower, at 35 Euro. This figure includes only the EU27 Member States. Including Iceland and Norway, the mean loss was 178 Euro.

proportion is lowest in Iceland (39%) and Denmark (43%). There is no difference between EU15 and EU12 countries (in each case 68% experienced a financial loss).

Figure 48. Total financial loss incurred from problems, analysis by country

Source: Consumer survey, Question 26: Thinking again about the problem(s) you experienced when filling up your vehicle during the past 12 months, please estimate the total financial loss you incurred as a result of the problem(s). (N= 5883 for respondents who experienced at least one problem that might cause financial losses in EU27)



Socio-demographic differences and potentially vulnerable consumers

Respondents who frequently buy branded fuel are also more likely to say they incurred a financial loss (71%, compared with 61% who buy branded fuel infrequently or never), along with respondents who buy other fuel types (78%, compared with 69% of petrol users and 66% of diesel users).

Respondents are more likely to say they incurred a financial loss if they spend a large proportion of their income on fuel. Around three quarters of those who spend 21% or more and 11-20% of their income on fuel (74% and 76%

respectively) say they've suffered a financial loss, compared with 67% of those who spend 6-10% and 62% of those who spend up to 5% of their income on fuel.

Respondents are more likely to say they incurred a financial loss if they buy fuel frequently (81%) or regularly (79%) in other EU countries (compared with 65% who rarely or never do so).

Finally, respondents with newer vehicles (less than 5 years old) are more likely to say they incurred a financial loss (72%) than those with a vehicle between 5 and 10 years old (67%), and those with a vehicle more than 10 years old (64%).

The average (mean) value of the financial loss incurred from problems was also calculated for different socio-demographic group. These results add more detail to the previous findings. For example, while those who spent a higher percentage (21% or more) of their monthly income on fuel faced the highest average financial losses (359 Euro), those who spent only 1-5% of their monthly income on fuel suffered an average loss of 265 Euro. And, while consumers who bought diesel were overall less likely to experience a financial loss as a result of problems, the average loss for those who did was nearly twice (257 Euro) that of those who bought petrol (132 Euro).

Table 105. Total financial loss incurred from problems, analysis by socio-demographic characteristics

Source: Consumer survey, Question 26: Thinking again about the problem(s) you experienced when filling up your vehicle during the past 12 months, please estimate the total financial loss you incurred as a result of the problem(s). (N= 5883, Respondents who experienced at least one problem that might cause financial losses in EU27.)

Sub-sample		I experienced no financial loss as a result of the problem(s)	Incurred some financial loss	Less than 20 Euro	From 100 Euro to less than 1,000 Euro	1,000 Euro or more	Average financial loss (Euro)
Average	EU27	32%	68%	31%	12%	2%	176
Gender	Male	30%	70%	32%	12%	2%	197
	Female	34%	66%	30%	11%	2%	154
Percent of monthly income spent on fuel	1 - 5%	38%	62%	33%	10%	1%	265
	6 - 10%	33%	67%	33%	10%	1%	113
	11 - 20%	24%	76%	33%	13%	2%	115
	21% or more	26%	74%	27%	16%	5%	359
Buys fuel in another EU country	Frequently	19%	81%	28%	18%	4%	272
	Regularly	21%	79%	24%	22%	4%	245
	Rarely / Never	35%	65%	33%	10%	1%	153
Buys branded fuel	Frequently	29%	71%	33%	12%	2%	179
	Infrequently / Never	39%	61%	29%	11%	2%	166
Type of	Petrol	31%	69%	33%	10%	1%	132

fuel most frequently bought	Diesel	34%	66%	28%	13%	2%	257
	Other type of fuel	22%	78%	35%	13%	0%	72

Comparison of consumer and stakeholder perspectives

Organisations that responded to the stakeholder survey were asked whether they had calculated, or had access to information on, the monetary detriment consumers experience as a result of problems they encounter in the vehicle fuels market. Only the Spanish competition authority and the automobile club in Austria provided detailed responses that included links to relevant reports.

The Austrian study was published in mid-2008 by the competition authority and aimed to analyse consumer (monetary) detriment resulting from a lagged decrease of retail fuel prices following wholesale price decreases. The analysis determined that following a given change in Platts quotations, reductions in prices at domestic petrol stations occurred about two days later than price increases.¹⁷⁸ Slower 'pass-through' of wholesale price decreases relative to price increases would, all else being equal, lead to increased gross profits for supply side operators, at the expense of consumer welfare.

Notably, though, the study published by the competition authority in Spain found that the "empirical evidence of the rockets and feathers phenomenon in Spain is not decisive. In its study Banco de España did not find significant evidence that this phenomenon was occurring in Spain, although other studies highlighted in the CNC's Automotive Fuel Report supported the existence of these asymmetries".¹⁷⁹ Overall, the conclusions in the literature on the rockets and feathers (or asymmetric pricing) effect are mixed, as shown in Section 7.

Considering the consumer survey and stakeholder survey findings on financial detriment leads to two important points. First, among the minority of consumer survey respondents that experienced a problem with the potential to cause financial detriment, the losses were generally limited: 86% of these respondents experienced no loss (32%), lost less than 20 Euro (31%) or between 20 and 100 Euro. Second, per the stakeholder survey, price levels are the more likely cause of significant consumer welfare decreases in this market. In this sense, detriment could possibly derive from non-competitive pricing (e.g. as a result of tacit

¹⁷⁸

See:

<http://www.bwb.gv.at/Untersuchungen/Seiten/SpritpreisuntersuchungRotterdam.aspx>.
Regarding Platts, see also economic analysis, Section 7.

¹⁷⁹ CNC, 'Follow-up report on the CNC's automotive fuel report', Comision Nacional de la Competencia, 9th March 2011. See also CNC, *Report monitoring the automotive fuel distribution market in Spain*, Comision Nacional de la Competencia, June 2012.

collusion or price setting) or from asymmetric retail pricing relative to changes in crude or wholesale prices.

8.1.6 Reports of unfair commercial practices

Of the 45 stakeholder organisations that provided an assessment, 8 (18%) reported very or fairly common use of unfair commercial practices (mostly from the category' consumer organisations and automobile clubs). In contrast, 17 (38%) reported that there were no unfair commercial practices in use in their country, and an additional 14 (31%) indicated that such practices were used very rarely.

Another six organisations (13%) reported fairly rare use of such practices by relevant companies. The remaining organisations either reported that they did not know whether such practices were in use (28 organisations) or did not respond to the question (7 organisations).¹⁸⁰

These findings are shown at country level in the following table.

¹⁸⁰ In addition to the 70 national-level stakeholder organisations from EU Member States and four organisations based in Iceland or Norway (bringing the number of national-level stakeholder organisations to 74), the figures presented here include survey responses from six EU-level organisations (i.e. represent a total of 80 responses).

Table 106. Stakeholder reporting of potentially unfair commercial practices, analysis by country

Source: Stakeholder survey, Question 22: Please provide your assessment of the extent to which unfair commercial practices are used by petrol stations or fuel retailers in your country. (N=74)

Notes: * signifies that two stakeholders provided the response, and ** that three stakeholders did so. 'Don't know' refers to instances in which one or more stakeholders indicated this response instead of a rating, and ':' indicates instances in which no response was provided.

		Competition authorities	Other public authorities	Cons. organisations and auto clubs	Industry organisations
	BE	Don't know	:	Very rare	Very common; Don't know*
	BG	:	:	Don't know	There are no unfair practices used; Don't know
	CZ	Fairly rare	:	:	Fairly common
	DK	There are no unfair practices used	:	:	There are no unfair practices used; Don't know
	DE	:	:	Fairly rare	There are no unfair practices used **; Don't know
	EE	Don't know	:	Very rare; There are no unfair practices *	:
	IE	:	There are no unfair practices used	:	There are no unfair practices used
	EL	Don't know	:	Very rare; Don't know	Don't know
	ES	Don't know	Fairly rare	:	Fairly common
	FR		:	:	Don't know
	IT	Don't know	:	Fairly common; Don't know	There are no unfair practices used
	CY	Don't know	:	Very rare	:
	LV		Don't know		:
	LT	Don't know	Don't know*	Fairly rare	:
	LU	:	There are no unfair practices used	:	:
	HU	Very rare	:	:	Very rare
	MT	:	Very rare	There are no unfair practices used	
	NL	:	:	Very rare	Very rare
	AT	:	:	Don't know	There are no unfair practices used
	PL	:	:	:	Don't know
	PT	:	:	Very common; Very rare	There are no unfair practices used
	RO	Very rare	:	There are no unfair practices used	:
	SI	:	:	Very rare	
	SK	:	:	:	Very rare*
	FI	Fairly rare	:	:	:
	SE	Don't know	:	Fairly common	:
	UK	:	:	:	There are no unfair practices used;

Don't know				
	IS	:	Fairly rare	Fairly common
	NO	Don't know	:	Fairly common

Practices alleged to be unfair by those eight organisations that reported either very or fairly common use of unfair commercial practices include the following:¹⁸¹

- ▶ Coordination of retail prices / price changes;
- ▶ Inaccurate measuring of the amount of fuel pumped (e.g. less fuel dispensed than paid for by the consumer);
- ▶ Misleading, incomplete, or inaccurate price information;
- ▶ Misleading, incomplete, or inaccurate information regarding fuel quality, fuel economy, or the effects of different fuel types on engine power, the environment or vehicle maintenance costs;
- ▶ Fuel contamination and dilution;
- ▶ Refusal to handle guarantee issues on non-fuel products;
- ▶ Limited supply of fuel types.

Distinct practices reported as unfair by other stakeholders – i.e. those that indicated fairly or very rare use of such practices – include the following:

- ▶ Rapid increase of retail prices when crude oil prices rise, but not the other way around;
- ▶ Price adjustments not done in accordance with regulations;
- ▶ Reporting of a lower than actual price;
- ▶ The sale of untaxed fuel;
- ▶ Non-verifiable statements about fuel quality or grades;
- ▶ Mixing of different fuel types.

It is important to note that these alleged practices could not be independently verified. However, some practices reported by stakeholders are reflected in consumer survey results. For example, regarding the alleged practice of inaccurately measuring the amount of fuel pumped (reported from two consumer organisations and one consumer protection authority, from Greece, Italy and Estonia)¹⁸² it can be noted that 5% of respondents to the consumer survey reported having received less fuel in the tank than they paid for at a petrol

¹⁸¹ Some of these stakeholders indicated more than one potentially unfair commercial practice; identical practices are only listed once. Please note that the term 'unfair commercial practice' is applied here as used by the reporting organisation, which may go beyond the legal concept of 'unfair commercial practice'.

¹⁸² Either reported as unfair practice or as a reason for complaints.

station (in their country of residence, EU average). In Greece, this figure was 29%, in Italy 8%, and in Estonia 5%. Other countries from which respondents reported this problem relatively frequently are Bulgaria (19%), Romania (10%) and Ireland (10%). Stakeholders referred quite cautiously to this problem, as did the consumer organisation from Greece that mentioned this issue, stating : "Consumers believe that they have been charged for quantities that have not been put into their tank". As the quote makes clear, it is inherently difficult to verify these claims, because confirming inaccurate measurements requires metrological expertise and equipment, as well as appropriate sampling plans. It is therefore not possible to come to any firm conclusion in this respect.

Another practice mentioned by stakeholders - indicating a lower than actual price - is also reflected in consumer survey results, where 4% of consumer survey respondents reported having paid a higher than advertised price for fuel at a petrol station in their country of residence. The two countries with the highest number of consumers reporting this problem were Italy (11%) and Greece (8%). In this case, some independent verification was possible during the station visits in six countries conducted in the framework of the mystery shopping exercise, which also covered Italy (though not Greece). Mystery shoppers checked the consistency of price information presented at the pump and on the billboard with the actual price they paid for fuel. As the following text reveals, the results of 150 station visits conducted in the capital cities of six Member States did not suggest that price inconsistencies are a substantial problem in this market. However, it is notable that the only instance in which a higher price was charged than indicated (the service charge was not included in the price per litre on the billboard), was documented at a petrol station in Rome.

8.1.7 Consistency of advertised price with price charged - evidence from station visits

As the final step in their visit to each of the 150 visited stations in six countries, mystery shoppers bought a small amount of fuel and checked the consistency of price data presented on the billboard, at the pump and on their receipt. These prices were almost always consistent in each of the six countries.

Overall, prices on the billboard, at the pump and on the receipt were identical at 97% of the 150 visited stations. Inconsistencies emerged only at two stations in Rome, one station in Bucharest and one station in Helsinki. In the Helsinki case, the price on the receipt was actually lower than the one advertised on the billboard.

This was also the case at a Bucharest station, where the billboard price was 5.92 but the price on the pump and on the receipt was 5.90. In one of the cases in Rome, the receipt showed a 0.10 Euro lower price than what had been displayed at the pump; in the other case, the billboard indicated a price for regular petrol 95

that did not include the charge for service, i.e. the price per litre with service was not included on the billboard.

8.2 POTENTIALLY VULNERABLE CONSUMER GROUPS IN THE VEHICLE FUELS MARKET

This section details the issues facing potentially vulnerable consumer groups in the vehicle fuels market in different Member States. Specifically, we consider whether there are specific groups that can be considered more vulnerable in relation to the fuel market than the majority of consumers, e.g. people with low income, or with older cars. Also, whether people living in rural areas are particularly disadvantaged by the more limited offer of fuels is investigated.

The main questions asked are whether there are specific groups that can be considered more vulnerable in relation to the fuel market than the majority of consumers, e.g. people with low income, or with older cars, and secondly whether people living in rural areas particularly affected by limited fuels offer, and to what extent do they pay more to get the same product.

Key findings for this section are:

1. Among the 70 national-level stakeholders that responded to the survey from EU27 Member States, 35 indicated that they consider consumers with little or no disposable income to be vulnerable in the vehicle fuels market. The next most frequently indicated group was consumers living in rural areas, and the third was persons with reduced mobility (e.g. disabled persons or older drivers). Next on the list were consumers who drive old vehicles and elderly people; these groups were reported to be vulnerable by 15 and 14 stakeholders, respectively.
2. Even though toilets were available at 66% of all petrol stations visited in the capitals of six countries during the mystery shopping exercise, only 26% of the stations had bathrooms designed to be handicap-accessible, according to station personnel. Only a few stakeholders (5%) stated that stations in their country are completely accessible. However, the majority of stakeholders who provided an answer (61%) felt that they are sufficiently accessible.
3. Price comparison websites and other relevant websites faced a variety of problems related to accessibility for those with problems of vision.
4. Turning first to consumers with little or no disposable income, it is relatively easy to identify the potential market vulnerability: people with scarce disposable income and those who spend a relatively high percentage of their

monthly income on fuel are disadvantaged from the start, but they are also more troubled by high price levels and price increases. The consumer survey results show that respondents who spend a larger share of their income on fuel are more likely to say that they fill up whenever they can afford it (13% of those who spend 21% or more of their income on fuel, falling to 3% of those who spend no more than 5% of their income on fuel). The financial cost of problems encountered are also greater.

5. In terms of choice in the market, the consumer survey provides some evidence in support of the notion that respondents living in rural areas are less privileged. Not only were consumer survey respondents living in rural areas more likely to list 'is the only one in my area' as one of their most important considerations in the selection of a fuel retailer, 14% of respondents residing in rural areas reported the availability of only one type of vehicle-compatible fuel in their area as a main reason for their fuel type selection; this factor was indicated by only 10% of respondents in urban areas and 6% in metropolitan areas, suggesting that in some regards fuel type choice is more constrained for consumers living in rural areas.
6. With respect to the other hypothesized disadvantages facing rural consumers, i.e. higher fuel prices, the price collection and analysis component of this study did not find evidence to support this claim.
7. Turning next to the experience of consumers who buy fuel in other EU countries, the relevant socio-demographic results of the consumer survey question on problems experienced while filling up the vehicle are again notable in that they run somewhat contrary to the notion of this group as particularly vulnerable, consistent with stakeholder responses.
8. Socio-demographic differences between respondents who purchase fuel abroad and those who less frequently or never do further complicate the process of drawing reliable conclusions. What is clear from the 150 petrol station visits and mystery shoppers' statements during the focus group discussion regarding the labelling assessment is that the use of language fuel terminology in another language can lead to less certainty in terms of identifying one's preferred vehicle fuel type.

8.2.1 Consumer and stakeholder perspectives

Responses to the consumer survey were cross-tabulated with socio-demographic status of respondents, thereby providing an insight into the needs of potentially vulnerable consumers, such as those on a low income, those with older vehicles, those living in rural areas, those purchasing fuel abroad, and older consumers. Results relating to fuel choice issues and problems are presented below.

Consumers with low income

According to results from the consumer survey, consumers with low income use more premium fuels, are more likely to experience problems, and suffer heavier financial detriment than those with higher incomes. Key results include:

- ▶ Use of premium petrol is higher among those who spend a large proportion of their income on fuel (11% of those who spend 21% or more of their income, compared with 7% of those who spend 20% or less).
- ▶ Use of premium diesel is higher among those who spend a large proportion of their income on fuel (14% of those who spend 21% or more of their income, compared with 8% who spend 20% or less).
- ▶ Respondents who spend a larger share of their income on fuel are more likely to experience problems (ranging from 29% of those who spend no more than 5% of their income on fuel, to 55% of those who spend 21% or more of their income).
- ▶ Respondents who spend 21% or more of their income on fuel are more likely to experience problems that may result in financial detriment (36%, falling to 12% of those who spend no more than 5% of their income on fuel).
- ▶ In terms of financial loss experienced, those who spend more of their monthly income on fuel appeared to suffer heavier losses. Whereas only 10% of those who spend less than 5% of their monthly income on fuel suffered financial loss of 100 to 1,000 Euro, 16% of those who spend 21% or more of their monthly income suffered such a loss. In average terms, this meant that those who spent 21% of their monthly income on fuel suffered an average loss of 359 Euro, compared to an overall average loss of 176 Euro.
- ▶ Respondents are more likely to say they incurred a financial loss if they spend a large proportion of their income on fuel. Around a quarter of those who spend 21% or more and 11-20% of their income on fuel (74% and 76% respectively) say they've suffered a financial loss, compared with 67% of those who spend 6-10% and 62% of those who spend up to 5% of their income on fuel.

Consumers with older vehicles

Consumers driving older vehicles are more likely to buy petrol, and less likely to buy premium fuels, but are also less likely to encounter problems. Key results of the consumer survey regarding consumers with older vehicles include:

- ▶ Those with newer vehicles (less than five years old) are most likely to buy diesel (42%, falling to 24% of those with a vehicle more than 10 years old).

- ▶ Use of premium petrol is greater among those with newer vehicles (10% of those with a vehicle less than five years old, compared with 7% of those with a vehicle at least five years old).
- ▶ Respondents with older vehicles (more than 10 years old) are less likely to have had a problem (35%) than those with a vehicle between no more than 10 years old (39%).

Consumers living in rural areas

Key results of the consumer survey regarding consumers living in rural areas include:

- ▶ Those consumer respondents in rural areas (41%) are more likely to buy diesel than those in urban (37%) and metropolitan areas (31%). However, use of premium petrol is lower in rural areas (5% compared with 8% in urban and 9% in metropolitan areas).
- ▶ Use of premium diesel is also higher in metropolitan areas (12%, compared with 9% in urban areas and 6% in rural areas), while respondents living in rural areas are less likely to buy branded fuel all or most of the time (53%, compared with 61% of those in urban areas and 67% of those in metropolitan areas).

Consumers purchasing fuel abroad

Key results of the consumer survey regarding consumers purchasing fuel abroad include:

- ▶ Respondents who purchase fuel in other EU countries are more likely to use premium petrol (16% of those who frequently buy fuel abroad use premium petrol, compared with 11% who regularly do so, and 7% who rarely or never do so).
- ▶ Respondents who buy fuel in other EU countries are more likely to use premium diesel (14% of those who buy fuel frequently in other EU countries use premium diesel and 21% who do so regularly, compared with 8% who rarely or never do so).
- ▶ Those who buy fuel in other EU countries are more likely to buy branded fuel all or most of the time (73% who buy fuel frequently in other EU countries, 64% who do so regularly and 60% who rarely or never do so).
- ▶ Those who buy fuel in other EU countries are more likely to experience problems (54% of those who frequently buy fuel abroad and 53% who regularly do so, compared with 37% of those who rarely or never do so).

Older consumers

Key results of the consumer survey regarding older consumers include:

- ▶ Those in the middle age bands are most likely to buy diesel (40% of those aged 25-39 and 39% of those aged 40-54, compared with 32% of 18- to 24-year olds and 33% of those aged 55 or over).
- ▶ Respondents aged 18-24 are less likely to use premium petrol (5% compared with 7% to 9% of those aged 25 or over).

Stakeholders were asked which groups of consumers they considered most vulnerable in the market for vehicle fuels. The results are presented below:

Table 107.
Vulnerable
consumer groups,
according to
stakeholders.

Source: Stakeholder survey, Question 24: Which of the following groups of consumers would you consider to be vulnerable in the market for vehicle fuels?

Item	Percentage
Consumers with little or no disposable income	48%
Consumers living in villages / rural areas	30%
Persons with reduced mobility	28%
Elderly people	24%
Consumers who drive old vehicles	20%
Consumer with literacy problems	11%
Consumers who buy fuel outside of country of residence	6%
I do not consider any of the groups vulnerable in this market	15%
Don't know	13%

When asked if they had noted any problems in the market for vehicle fuels that are disproportionately experienced by vulnerable groups in consumers, the largest proportion of all stakeholders who answered the question stated that they did not know (47%), while 34% stated that such problems never occurred. Only 19% stated that such problems occurred at all, with some of these (11% of stakeholders) saying that such problems occurred very often, or quite often. When asked to describe the most common problems they had personally noted which affected specific groups of consumers, a number of stakeholders cited persons with low incomes experiencing problems due to fuel price increases (either because of crude oil price increases, or rises in excise duties and VAT), and residents in rural areas. One stakeholder commented on price differences across Austria, relevant for consumers living in villages or rural areas.

Stakeholders were also asked whether petrol stations in their country are in general sufficiently accessible to persons with reduced mobility, such as disabled or older persons. Only a few stakeholders (5%) stated they are completely accessible. However, the majority of stakeholders who provided an answer (61%) felt that they are sufficiently accessible. The remainder (12%) stated that petrol

stations were either not sufficiently, or not at all accessible to persons with reduced mobility.

Stakeholders cited various examples of accessibility problems in petrol stations. One competition authority in Belgium found that pumps and payment terminals may be placed too high for wheelchair users. In one interview conducted for this study, a stakeholder from a consumer organisation also noted that "there are other difficulties [...] when you buy self-serve: you have to use a card, and then most of the little machines that are used in gas stations are very badly conceived and very difficult to read, particularly for older people. [...] They are absolutely not conceived for an aging population or people who are wearing glasses, in particular when you have bifocal glasses."

A consumer organisation stakeholder in Romania stated that there were no toilets for people with disabilities in Romanian petrol stations - a statement which was supported by evidence from the station visits in Bucharest. In two other Member States - Portugal and Germany - petrol stations were claimed to be usually barrier-free. However, during station visits in Berlin only 24% of stations provided toilets for people with disabilities.

Stakeholders were also asked whether there existed any specific regulatory or self-regulatory rules which already applied to accessibility of petrol stations for those with reduced mobility (or any other vulnerable consumers). Regarding specific rules for accessibility (e.g. handicap accessible bathrooms), 21% of all stakeholders stated that regulatory and/or self-regulatory rules were in place. The few stakeholders who elaborated on this stated that general rules on accessibility for disabled persons also applied to petrol stations, while one stakeholder noted that these rules were only in place on motorway stations.

8.2.2 Services available in petrol stations for vulnerable consumers

Several data points relating to aspects of accessibility and vulnerable consumer groups were collected in petrol station visits by mystery shoppers. As well as examining clarity of labelling (see Section 4.2.1), the level of service, access to disabled toilets, and availability of written material in alternative languages was recorded. While the level of service has been summarised previously, specific service relevant to vulnerable consumers is presented separately below.

Even though toilets were available at 66% of all visited petrol stations, only 26% of the stations had bathrooms designed to be handicap-accessible, according to station personnel. Major differences are again visible among the six samples. In Bucharest and Berlin, toilets were available at all of the visited petrol stations; this was true for 88% of the visited stations in Helsinki and 80% of those visited in Prague. Conversely, toilets were only available at 6 (24%) of the visited stations in Paris and a single (4%) station in Rome. In terms of the availability of

handicap-accessible toilets, they were most common in Prague (64% of visited stations) and Helsinki (56%) and not at all available among the stations visited in Rome and Bucharest.

While purchasing fuel, mystery shoppers searched for any labelling or signs at the petrol station which appeared in a language other than the country's primary one. Overall, only about one third (34%) of the visited petrol stations displayed labels or signs in another language. However, the proportion differed substantially depending on the city sample. For example, 100% of the visited stations in Helsinki had labels or signs in a language other than Finnish. In Rome, 68% of the visited stations offered labels or signs in a language other than Italian, and 24% of the stations visited in Prague had labels or signs in a language other than Czech. In the Prague cases, the secondary language was English and/or German, while in Rome, the mystery shoppers noted the use of English words in fuel labelling.

However, among the 75 stations visited in the other three cities, namely Berlin, Paris and Bucharest, just three stations, and none in Berlin, displayed labels or signs in a language other than the country's primary one.

For those visited petrol stations at which labels or signs did appear in another language, mystery shoppers were asked whether this information proved helpful in choosing the right fuel type. Overall, the information available in another language was regarded as helpful at 43% of the applicable stations, including all of the Rome stations at which it was provided and 83% of the Prague stations at which it was available.

The proportions shown for Paris and Bucharest are based on only one and two stations, respectively, but the non-helpfulness of the foreign language information at visited stations in Helsinki is notable, because such information was available at all 25 visited stations in that city. The reason that the mystery shoppers did not find this information helpful in Helsinki is that it was only available in Swedish, a language which neither of them spoke. In contrast, where information was provided in another language at visited stations in the Czech Republic that language, as mentioned above, was generally English or German, which are more widely understood.

8.2.3 Information for potentially vulnerable consumer groups on selected websites

Also of interest in this exercise was whether the retailer, public authority and automobile club websites provided information that could be of aid for consumer groups that are potentially vulnerable in the vehicle fuels market. Accordingly, mystery shoppers searched the sample of websites for text on two additional aspects:

- ▶ Information aimed at providing for the needs of vulnerable consumers; and
- ▶ Information designed to help consumers with purchasing fuel abroad.

Neither of these aspects was discussed on retailer websites (see the next table) – only 1% of retailer websites in the EU27 sample provided relevant information in a clear manner. In contrast, 9% of public authority and automobile club websites across the EU27 clearly presented information that could be of assistance to vulnerable consumer groups, and 20% of the websites in this group provided clearly worded help with cross-border fuel purchases.

However, both of these proportions disguise the geographic divide whereby it was much more likely for these market aspects to be addressed on public authority and automobile club websites in the EU15 than EU12 (e.g. 30% of the websites in the EU15 sample offered information on purchasing fuel abroad, while only 8% in the EU12 sample did the same).

Regarding the provision of information aimed at the needs of vulnerable consumer groups, the evaluated public authority website and automobile club website in the Netherlands stood out, because they both offered clear information designed to help consumers with fuel purchases abroad.

Table 108.
Assistance for
vulnerable groups
of consumers –
percentage of
websites providing
clear information

Source: Civic Consulting evaluation of retailer, automobile club and public authority websites. (N=203)
Note: (a) Countries where E10 fuel has been introduced (Germany, France, and Finland)

	Information aimed at providing for the needs of vulnerable groups of consumers		Information designed to help consumers with purchasing vehicle fuels elsewhere in the EU	
	Retailer websites	Public authority & auto club websites	Retailer websites	Public authority & auto club websites
EU27	1%	9%	1%	20%
EU15	0%	17%	0%	30%
EU12	2%	0%	3%	8%
IS/NO	0%	0%	0%	0%
E10 ^(a)	0%	17%	0%	50%

8.2.3.1 Accessibility of comparison websites

A well-functioning website should be usable by as wide an audience as possible. Of course, some potential users have sight impairments, such as farsightedness (hyperopia) or partial / full colour blindness, which can make websites challenging to read and use for these consumers, although they may be perfectly fit to drive a vehicle. Accordingly, mystery shoppers were asked to run a pair of basic accessibility tests – based on components of the W3C Web Accessibility initiative – on each of the evaluated price comparison websites.

The first test had mystery shoppers increase the font size setting in their browser and then assess whether the enlarged font size rendered the front page or main search page of the website they were evaluating at that time less usable. In the second test, which simulated some of the potential issues that could confront users with partial or full colour-blindness, mystery shoppers utilised a browser extension to temporarily convert the front page and main search page of the website to grey scale. They then assessed whether sufficient contrast between the design elements remained or if the pages had instead become less usable. Results of the exercise are summarised below (for more details, please refer to Part 4 of this study):

- ▶ *Font size increases:* When the mystery shoppers attempted to increase the font size on the comparison websites' front pages, the displayed font did not change in 43% of instances. In an additional 3% of the front page tests, something else unexpectedly happened, i.e. a change other than an increase in font size occurred. When the font size did increase, the websites' front pages remained as usable as before in 63% of the cases; however, their usability decreased slightly in 25% of instances. Moreover, in 12% of instances, usability decreased significantly (6%) or the pages became altogether unusable (6%). Findings for the attempted font size increases on the websites' main search pages yielded similar results.
- ▶ *Conversions to grey scale:* Nine in ten (90%) of the websites' front pages were reported to be equally usable following the grey scale conversion, but usability decreased slightly in 10% of the instances. None of the websites' front pages became unusable or suffered a significant decrease in usability during this test. The results of the grey scale test were highly similar when it was carried out on the websites' main search pages.
- ▶ *Search options:* Considering those search options that might be of relevance for disabled persons or persons with reduced mobility,¹⁸³ namely the ability to search for full-service stations (at which a staff member is available to fuel the vehicle), unmanned stations and stations that provide for the needs of disabled persons, only on four of the 60 evaluated comparison websites were mystery shoppers able to search by at least one of these criteria. The one comparison website on which it was possible to search for stations that provided for the needs of disabled persons served the Italian market. However, in order to access this information the mystery shopper needed to click on the name of the fuel station, so this was essentially a manual search process carried out after the initial search.

¹⁸³ Persons with reduced mobility were identified as the third most vulnerable group of consumers in the market for vehicle fuels overall by stakeholder survey respondents.

8.2.3.2 Accessibility of other relevant websites

Results of a similar exercise in all 29 countries subject to this study focusing on the accessibility of other relevant websites – fuel retailers, automobile association and a relevant public authority website – can be summarised as follows (again, more details are provided in Part 4 of this study):

- ▶ **Font size increases:** Only in about half of the instances was it possible for mystery shoppers to increase the font size on the tested Web pages. When the font size did increase, the websites' front pages were equally usable in 64% of instances. In 18% of cases usability decreased slightly, and in an additional 11% it decreased significantly. Seven percent of the front pages became unusable following the font size increase.
- ▶ **Conversions to grey scale:** Following the grey scale conversion, 93% of the front pages were equally usable, according to mystery shoppers, and none of the pages became unusable. Only in 6% of the trials did usability decrease slightly; in 1% (2 cases) it decreased significantly.

8.2.4 Summary - Most vulnerable consumer groups in the vehicle fuels market

Several of the data collection tools employed for this study have allowed for the investigation of the market situation confronting potentially vulnerable groups of consumers. The key findings from these investigations are presented below.

- ▶ Among the 70 national-level stakeholders that responded to the survey, 35 indicated that they consider consumers with little or no disposable income to be one of the most vulnerable groups in the vehicle fuels market. The next most frequently indicated group was consumers living in rural areas, and the third was persons with reduced mobility (e.g. disabled persons or older drivers). Next on the list were consumers who drive old vehicles and elderly people; these groups were reported to be vulnerable by 15 and 14 stakeholders, respectively.
- ▶ The remaining groups, namely people with literacy problems and consumers who buy fuel outside their country of residence, were reported as vulnerable in the market by only six and four stakeholders, respectively.

Turning first to consumers with little or no disposable income, it is relatively easy to identify the potential market vulnerability: people with scarce disposable income and those who spend a relatively high percentage of their monthly income on fuel are disadvantaged from the start, but they are also more troubled by high price levels and price increases. The consumer survey results show that respondents who spend a larger share of their income on fuel are more likely to say that they fill up whenever they can afford it (13% of those who spend 21% or more of their income on fuel, falling to 3% of those who spend no more than

5% of their income on fuel). The financial cost of problems encountered are also greater.

While there is no easy remedy for this situation, these findings have been taken into account in previous recommendations. Clearly, it is important to facilitate price information provision and thereby price comparisons so that consumers for whom fuel purchases constitute a substantial financial burden can reliably select the lowest-priced retailer in their area. It is also essential that prices are based on competitive markets, so that consumers do not pay artificially high prices. On these points, relevant recommendations can be found in Section 9. Considering some of the other potentially vulnerable groups in more detail, and in conjunction with the socio-demographic analyses of the consumer survey findings, yields a generally mixed picture. That is to say, when the consumer survey results for various questions are broken down by respondents' age, place of residence, percentage of monthly income spent on fuel, market knowledge, vehicle age and cross-border purchasing experience some findings are contradictory in terms of whether vulnerability exists or whether a particular group is disproportionately burdened by market problems.

Consumers living in rural areas, and older consumers

It has been hypothesised that consumers residing in villages or rural areas are disadvantaged relative to their counterparts in urban or metropolitan areas as a result of more limited choice in fuel retailers and/or fuel types, as well as higher fuel prices resulting from factors like increased transport costs or reduced levels of competition, the study's findings lend support to the former claim but not the latter.

In terms of choice in the market, the consumer survey provides some evidence in support of the notion that respondents living in rural areas are less privileged. Not only were consumer survey respondents living in rural areas more likely to list 'is the only one in my area' as one of their most important considerations in the selection of a fuel retailer, 14% of respondents residing in rural areas reported the availability of only one type of vehicle-compatible fuel in their area as a main reason for their fuel type selection; this factor was indicated by only 10% of respondents in urban areas and 6% in metropolitan areas, suggesting that in some regards fuel type choice is more constrained for consumers living in rural areas.

With respect to the other hypothesized disadvantages facing rural consumers, i.e. higher fuel prices, the price collection and analysis component of this study did not find evidence to support this claim. In fact, the average price indices calculated for regular petrol 95 and regular diesel fuel in rural areas relative to

capital cities were both 99.8, meaning that the collected prices in rural areas were approximately 0.2% cheaper than those in capital cities.¹⁸⁴

Also of interest, and running counter to the notion of rural consumers as particularly vulnerable in the market, is the finding that problems when filling up the vehicle were more commonly reported by consumer survey respondents living in metropolitan areas (43%, compared with 37% in urban areas and 33% in rural areas), though this may reflect the greater choice available to those in metropolitan areas.

Similarly, the consumer survey results on the incidence of problems among the different age groups reveal a strong pattern, with problems more common among younger people (52% of 18- to 24-year-olds, falling to 30% of those aged 55 or over). In marked contrast, older respondents fared worse than younger ones on the market knowledge assessment questions.¹⁸⁵

In this context it is also noteworthy that the use of labelling on the pump or vehicle as a main source of information about fuel and vehicle compatibility increases with age. The proportion of survey respondents using this as a main source of information ranges from 55% among 18- to 24-year-olds, to 72% among those aged 55 or over.

It is also important to note older consumer survey respondents' increased reliance on labelling on the fuel pump or vehicle as a main source of information about fuel and vehicle compatibility. This re-emphasises the need for clear labelling practices (please see the associated recommendations in Section 9).

Buying fuel in other EU countries

Turning next to the experience of consumers who buy fuel in other EU countries, the relevant socio-demographic results of the consumer survey question on problems experienced while filling up the vehicle are again notable in that they run somewhat contrary to the notion of this group as particularly vulnerable, consistent with stakeholder responses.

Considering the results in more detail, we see that few respondents who purchase fuel abroad reported experiencing problems with unclear labelling preventing a

¹⁸⁴ Note that this find does not take wage or price levels into account. If wages in rural areas of a given country are lower than in the capital city, the rural fuel price, even if slightly cheaper in absolute terms, would be higher in relative-to-income terms.

¹⁸⁵ In more detail, these results were as follows: Older respondents are more likely to be in the 'least knowledgeable' group based on the assessment question: 45% of those aged 55 or over and 46% of those aged 40-54, compared with 42% of 25- to 39-year-olds and 37% of 18- to 24-year-olds. This finding may reflect unfamiliarity with newer fuel types among older respondents, as several of the six assessment statements pertained to fuels like E10 and B7 that contain biofuel content.

purchase (3%) or leading to unintended pumping of biofuel (1%) or the wrong fuel type, e.g. petrol instead of diesel (also 1%).

These findings must be qualified though, because those respondents who reported purchasing fuel in other EU countries are still likely to purchase most of the fuel in their country of residence, increasing the likelihood to experience problems there compared to experiencing them abroad. Also, respondents who reported purchasing fuel in other EU countries tended to drive more kilometres per year, be better educated and be more knowledgeable about the vehicle fuels market, according to the survey assessment questions.

These socio-demographic differences between respondents who purchase fuel abroad and those who less frequently or never do further complicate the process of drawing reliable conclusions. What is clear from the 150 petrol station visits and mystery shoppers' statements during the focus group discussion regarding the labelling assessment is that the use of language fuel terminology in another language can lead to less certainty in terms of identifying one's preferred vehicle fuel type.

8.3 AVAILABILITY AND USE OF REDRESS MECHANISMS

This part of the report presents findings on redress mechanisms, namely their availability and usage rates. Also addressed is consumer satisfaction with complaint handling via these redress mechanisms.

Key findings of this section are:

1. Respondents who experienced a problem when filling up their vehicle were asked what action they took in response. The majority of respondents (72%) say that they did not take any action, while 28% took some form of action, most commonly a complaint to the petrol station (23%). Approximately equal proportions of those respondents who took action in response to the problem(s) they experienced say they were satisfied (47%) and dissatisfied (51%) with the final result.
2. Younger respondents are more likely to say they took action (32% of 18- to 24-year-olds, compared with 29% of 25- to 39-year-olds, 25% of 40- to 54-year-olds and 26% of those aged 55 or over); respondents who frequently buy branded fuel are also more likely to say they took action (31%, compared with 21% who infrequently or never do so).
3. Approximately equal proportions of those respondents who took action in response to the problem(s) they experienced say they were satisfied (47%) and dissatisfied (51%) with the final result.
4. Younger respondents are more likely to say they were satisfied with the result of the action they took (54% of 18- to 24-year-olds, falling to 40% of those aged 55 or over), while people living in metropolitan areas (44%) were less likely to be satisfied than those living in urban or rural areas (49%).
5. Respondents who are most knowledgeable about fuels are more likely to be satisfied: 55% of those in the 'most knowledgeable' group were satisfied, compared with 48% of those in the 'more knowledgeable' group and 44% of those in the 'least knowledgeable' group.
6. Relevant ADR entities exist in a majority of surveyed countries according to stakeholders. However, given the consumer survey findings of often low amounts of self-reported financial detriment, and possible difficulties in establishing the facts (e.g. regarding low quality fuel impacting on engine performance or unclear labelling leading to pumping wrong fuel), the role to be played by ADR entities in the vehicle fuels market is unclear. The nature of the problems identified by this study suggest this market as one in which preventive measures such as improved fuel labelling at the pump and

enforcement of applicable regulations are more relevant than ex post dispute resolution.

8.3.1 Information on redress mechanisms for problems experienced by consumers

In their final search for information on the retailer, public authority and automobile club websites selected for this exercise, mystery shoppers attempted to find details on potential redress mechanisms utilisable by consumers who experience problems in the fuels market (see the following table).

This type of information was as likely to be presented clearly on retailer websites as on public authority and automobile club websites (26% and 25%, respectively, for the EU27 samples). Nearly a third of the public authority / automobile club websites in the EU15 (31%) provided clear details on redress mechanisms, while this was the case for 17% of the EU12 websites. Conversely, a slightly higher proportion of retailer websites in the EU12 (28%) addressed this issue than in the EU15 (24%).

Table 109.
Potential redress mechanisms – percentage of websites providing clear information

Source: Civic Consulting evaluation of retailer, automobile club and public authority websites. (N=202)
Note: (a) Countries where E10 fuel has

Information on potential redress mechanisms should one experience a problem with vehicle fuels or at a petrol station		
	Retailer websites	Public authority & auto club websites
EU27	26%	25%
EU15	24%	31%
EU12	28%	17%
IS/NO	30%	25%
Countries with E10 ^(a)	27%	50%

8.3.2 Consumer use of potential redress mechanisms

Consumer survey respondents who experienced a problem when filling up their vehicle, either in their country of residence or another EU country, were asked what action they took in response.¹⁸⁶ The majority of respondents (72%) say that they did not take any action, while 28% took some form of action, most commonly a complaint to the petrol station (23%). However, only 5% complained to relevant third parties such as a consumer organisation or public authority.

¹⁸⁶ Question Q24: Referring to the problem(s) that you experienced when filling up your vehicle during the past 12 months, what action did you take?

Men are more likely than women to say they took action of some kind after experiencing a problem (30%, compared with 25%). In addition, respondents who frequently buy branded fuel are more likely to say they took action (31%, compared with 21% who infrequently or never do so).

Despite the fact that older respondents are less likely to encounter problems, once problems were encountered, older respondents are less likely to say they took action (32% of 18- to 24-year-olds, compared with 26% of those aged 55 or over). Finally, older respondents are less likely to say they were satisfied with the result of the action they took (54% of 18- to 24-year-olds, falling to 40% of those aged 55 or over).

Respondents with older cars are also less likely to say that they took some kind of action after experiencing a problem (34% of those with a vehicle less than five years old, compared with 21% of those with a vehicle more than 10 years old).

Regarding income, the proportion of those who take action to resolve these problems is also higher among those who spend a larger proportion of their income on fuel (34% of those who spend 21% or more of their income on fuel, falling to 20% of those who spend no more than 5%).

The proportion of those who use redress mechanisms is also higher among respondents who buy fuel abroad frequently (52%) or regularly (44%), rather than rarely or never (24%).

In terms of country differences, as shown in the table below, respondents in Greece (51%), Malta (45%), Bulgaria (44%) and Italy (44%) are most likely to have taken some form of action after experiencing a problem when filling up their vehicle.

The figure is lowest in the Netherlands (8%), Portugal (15%), France (17%), Denmark (19%) and the UK (19%). Overall, respondents in EU15 countries are more likely than those in EU12 countries to have taken some form of action (29% compared with 24%).

Table 110. Action taken in response to problem(s), analysis by country

Source: Consumer survey, Question 24:
Referring to the problem(s) that you experienced when filling up your vehicle during the past 12 months, what action did you take? (N= 10072 for respondents who experienced at least one problem in EU27)
Note: Multiple answers possible.

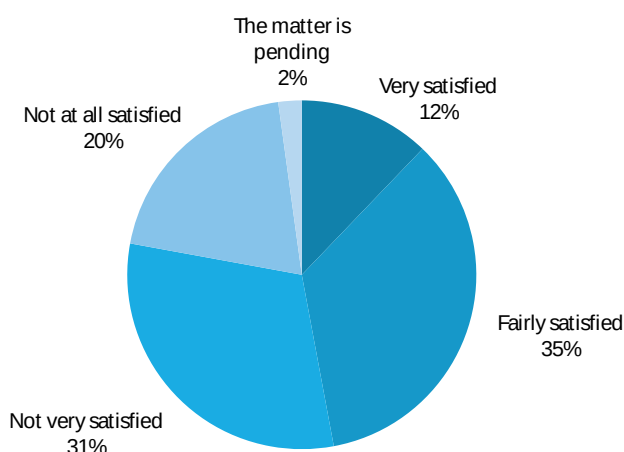
		Complained to petrol station	Complained to consumer organisation	Complained to public authority / agency	I took no action	Total 'Took at least one action'
EU27		23%	3%	2%	72%	28%
EU15		23%	4%	2%	71%	29%
EU12		21%	3%	2%	76%	24%
Countries with E10		16%	3%	1%	80%	20%
 BE		14%	3%	3%	80%	20%
 BG		37%	5%	4%	56%	44%
 CZ		23%	0%	1%	75%	25%
 DK		16%	1%	0%	81%	19%
 DE		18%	4%	1%	76%	24%
 EE		17%	2%	0%	80%	20%
 IE		27%	2%	2%	69%	31%
 EL		45%	4%	6%	49%	51%
 ES		29%	6%	2%	61%	39%
 FR		14%	1%	1%	83%	17%
 IT		36%	6%	4%	56%	44%
 CY		37%	0%	0%	62%	37%
 LV		20%	2%	0%	76%	24%
 LT		18%	1%	1%	77%	23%
 LU		17%	2%	2%	78%	22%
 HU		19%	1%	0%	79%	21%
 MT		45%	1%	0%	53%	45%
 NL		7%	0%	1%	91%	8%
 AT		21%	2%	2%	73%	27%
 PL		20%	3%	2%	77%	23%
 PT		15%	1%	1%	85%	15%
 RO		17%	4%	2%	79%	21%
 SI		21%	3%	1%	77%	23%
 SK		23%	1%	2%	74%	26%
 FI		19%	1%	1%	78%	21%
 SE		24%	1%	1%	71%	29%
 UK		14%	2%	1%	81%	19%
 IS		28%	0%	3%	67%	32%
 NO		18%	1%	1%	79%	21%

8.3.3 Satisfaction with results obtained by pursuing redress

Consumer survey respondents who experienced a problem when filling up their vehicle and took action in response were asked how satisfied they were with the final result.¹⁸⁷ Approximately equal proportions say they were satisfied (47%) and dissatisfied (51%).

Figure 49.
Satisfaction with
result of action
taken in response
to problem(s)

Source: Consumer survey, Question 25: When you took action concerning the problem(s), how satisfied were you with the final result? (N=2774, Respondents who took action concerning the problem(s) in EU27)



While the proportions of the least and most knowledgeable groups encountering problems are very similar (37% versus 38%), respondents who are most knowledgeable about fuels are more likely to be satisfied with action taken to address the problem: 55% of those in the 'most knowledgeable' group were satisfied, compared with only 44% of those in the 'least knowledgeable' group.

In addition, respondents who buy fuel abroad frequently (69%) or regularly (51%) are more likely to say they were satisfied (compared with 42% of those who rarely or never do so), as are those with newer vehicles (54% of those with a vehicle less than five years old, compared with 41% to 42% of those with a vehicle five or more years old).¹⁸⁸

As can be seen in the figure below, when grouping responses on a country basis, consumer respondents in Malta (82%), Belgium (71%) and Finland (71%) are most likely to say they were satisfied with the result of action they took, while

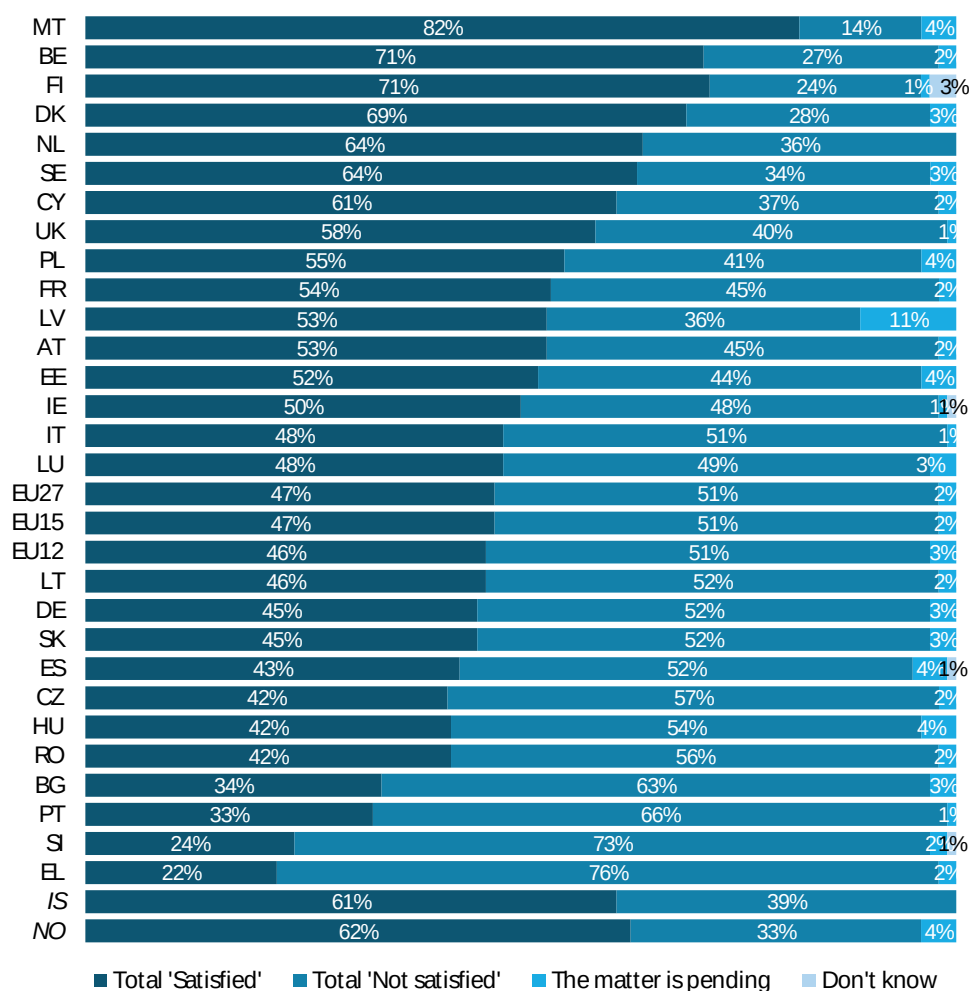
¹⁸⁷ Question Q25: When you took action concerning the problem(s), how satisfied were you with the final result?

¹⁸⁸ Please refer to Part 2 of this study for further details.

those in Greece (22%) and Slovenia (24%) were least likely to be satisfied. There are no significant differences between EU15 and EU12 countries.

Figure 50.
Satisfaction with
result of action
taken in response
to problem(s),
analysis by country

Source: Consumer survey, Question 25: When you took action concerning the problem(s), how satisfied were you with the final result? (N=2774, Respondents who took action concerning the problem(s) in EU27)



8.3.4 Alternative Dispute Resolution (ADR) in the vehicle fuel market

Stakeholders provided sometimes contradictory information about the extent to which relevant ADR entities were available in a given country, but in 17 of the 29 countries studied, one or more stakeholders indicated in its response that at least a limited number of applicable entities were available. Only in Denmark, Ireland, France, the Netherlands, Austria, Slovenia, Slovakia and Sweden did stakeholders unanimously concur that no relevant entities were available. Additionally, in the Czech Republic, Latvia, Luxembourg and the United Kingdom, stakeholders reported not knowing whether relevant ADR entities existed. Some of the comments provided by stakeholders suggest they were referencing general ADR entities rather than ones specifically developed for the fuels/energy market.

To the extent that ADR is available to consumers who experience problems in the vehicle fuels market, its potential utility will depend on the financial detriment incurred and the type of problem. While consumer survey findings on financial detriment show that more than a third (38%) of consumer survey respondents report having experienced a vehicle fuels-related problem during the prior year, they also reveal that a smaller proportion (21%) experienced a problem that could lead to financial detriment. Moreover, among those respondents who reported actually incurring a financial loss, the majority indicated the amount to be below 100 Euro.

Given the often low amounts of self-reported financial detriment, and possible difficulties in establishing the facts (e.g. regarding low quality fuel impacting on engine performance or unclear labelling leading to pumping wrong fuel), the extent to which consumers in the vehicle fuel market will benefit from improved or more widely available Alternative Dispute Resolution (ADR) systems remains to be seen.¹⁸⁹ The consumer survey findings, as well as the nature of the problems identified by this study, suggest this market as one in which preventive measures such as improved fuel labelling at the pump and enforcement of applicable regulations are more relevant than ex post dispute resolution.

¹⁸⁹ On 12 March 2013, the European Parliament voted to support new legislation on Alternative Dispute Resolution (ADR), which will ensure that consumers can turn to quality alternative dispute resolution entities for all kinds of contractual disputes that they have with traders; no matter what they purchased and whether they purchased it domestically or across borders (Directive 2013/11/EU of the European Parliament and of the Council of 21 May 2013 on alternative dispute resolution for consumer disputes and amending Regulation (EC) No 2006/2004 and Directive 2009/22/EC (Directive on consumer ADR), OJ L 165, 18.6.2013, p.63 Regulation (EU) No. 524/2013 of the European Parliament and of the Council of 21 May 2013 on online dispute resolution for consumer disputes and amending Regulation (EC) No 2006/2004 and Directive 2009/22/EC (Regulation on consumer ODR), OJ L 165, 18.6.2013, p.1).

9 CONCLUSIONS AND RECOMMENDATIONS

This final section of the report presents the key conclusions of the study and puts forward a series of recommendations based on these findings. The recommendations are aimed at improving the functioning of the market from the consumer perspective so that consumers are better able to make informed fuel purchasing decisions.

The conclusions and recommendations based on the key conclusions of this study are presented in the following sections:

- ▶ Facilitating information provision and informed decision-making;
- ▶ Ensuring consumer choice and price competition;
- ▶ Addressing consumer problems.

9.1 FACILITATING INFORMATION PROVISION AND INFORMED DECISION-MAKING

The structure of this section corresponds to the basic steps one needs to take to purchase vehicle fuel. Accordingly, the following section deals with the process of gathering information on vehicle fuels; consumer perceptions of premium fuels and biofuels; information provision at the pump; and how consumers select a retailer.

9.1.1 Information provision and perceptions of vehicle fuels

The conclusions and recommendations on information regarding how consumers find information on vehicle fuels are divided into three sub-sections.

The first pertains to the sources and ease of obtaining clear information on various aspects of the vehicle fuels market. The second sub-section provides context on that decision-making process by presenting the study's key conclusions on consumer perceptions of premium fuels and biofuels, and the third sub-section focuses only on information provided at the pump, i.e. fuel labelling and other signs at petrol stations.

Fuel labelling at the pump is the most important information source for consumers and stakeholder survey respondents, both in terms of general vehicle fuels information as well as information on fuel-vehicle compatibility.

9.1.1.1 Sources used and overall ease of obtaining clear information

In order to make informed purchasing decisions, consumers across the EU need clear information on key aspects of vehicle fuels such as:

- ▶ Fuel prices;
- ▶ Fuel types (e.g. fuel labels and grades);
- ▶ Fuel quality;
- ▶ Compatibility of different fuel types with the vehicle;
- ▶ Effects of particular fuel types on engine/vehicle performance;
- ▶ Effects of particular fuel types on the environment (climate/air quality).

This study looks at both the main sources of information used by consumers, as well as their usefulness, i.e. the ease with which clear information can be found.

The relevant findings include:

- ▶ When asked what their main sources of information about vehicle fuels were, consumer survey respondents indicated the following:
 - ▷ Information at the pump (fuel labels or other signs) (50%);
 - ▷ Family / friends / colleagues (29%);
 - ▷ Information on or next to the vehicle's filling cap (22%);
 - ▷ Price comparison websites for fuel (22%); and
 - ▷ Staff working at the petrol station (21%).

Stakeholders generally agreed with the effectiveness of these sources, but identified traditional media (television / radio and newspapers / magazines) and fuel retailers' websites as more effective sources than family, friends, colleagues and station staff.

- ▶ Both the consumer survey and stakeholder survey results therefore confirm the central importance of fuel labelling at the pump as an information source. This means that the clarity and, in turn, effectiveness of labelling is of key importance in terms of informing consumers in this market.
- ▶ The importance placed by both consumer survey respondents and stakeholders on information on or next to the vehicle's filling cap and on information from comparison websites is also notable.
- ▶ Consumer survey respondents are, in general, likely to say that they find it easy to get clear information about fuel types (67%). On the compatibility of different fuel types with their vehicle, there is a broadly even split between those who find it easy to get clear information (41%)

and those who don't (49%). On three other market aspects, only a minority finds it easy to get clear information: fuel quality (28%), the effects of particular fuel types on engine or vehicle performance (26%), and the effects of particular fuel types on the environment (25%).

- ▶ The findings of this study suggest a substantial disconnect between the ease with which stakeholders think consumers can gather clear information about key market aspects and the actual difficulty of doing this, as expressed by consumer survey respondents. The disparity is largest for information about fuel-vehicle compatibility: whereas 70% of stakeholders indicated it was easy to find clear information, only 41% of consumer survey respondents thought likewise. For fuel prices, 94% of stakeholders and 77% of consumer survey respondents reported it was easy to obtain clear price information.
- ▶ The trend also holds for information about fuel types (82% of stakeholders, compared to 67% of consumer survey respondents), fuel quality (41%, compared to 28%), and fuels' effects on vehicle performance (34%, compared to 26%). Only for fuels' effects on the environment did a similar proportion (25%) of stakeholders and consumer survey respondents indicate that obtaining clear information was easy.
- ▶ Generally, knowledge of the market is low according to the results of the assessment question. In the majority of cases (85%), respondents made between two and four mistakes (out of six possible). Each of the three true statements was correctly identified only by between 25% and 30% of respondents, while each of the three false statements was wrongly indicated as correct by at least 15% of respondents. The 'trick' statement – 'None of the listed statements are correct' – was selected by 25% of respondents.¹⁹⁰

Three important and interrelated points emerge from these findings.

- 1) Of the information sources highlighted by the consumer and stakeholder surveys, agreement is visible on the importance of three sources whose availability and/or usefulness can be improved through policy responses more

¹⁹⁰ The related question in the consumer survey was as follows: "Please indicate all of the statements below which you think are CORRECT." Answers: a) Premium fuels have a lower octane rating than regular fuels [wrong] b) B7 diesel fuel contains at least 7% biofuel [wrong] c) Engine modifications are required to safely use diesel fuel that contains 7% biofuel [wrong] d) Diesel fuel has a higher energy content per litre than petrol (gasoline) [true] e) In EU Member States, regular petrol may contain up to 5% biofuel without indication [true] f) The 'E' in E10 fuel is an abbreviation for 'Ethanol' (alcohol) [true] g) None of the listed statements are correct [wrong] h) Don't know. Respondents were divided into three groups based on their answers: the 'most knowledgeable' respondents, who got no more than one answer incorrect; 'less knowledgeable' respondents, who got two or three incorrect; and the 'least knowledgeable' group, who got four or more incorrect, or gave the answer that 'none of the statements are correct'.

easily than that of the other frequently cited information sources. These three sources are:

- ▷ Information at the pump (fuel labels or other signs);
 - ▷ Information on or next to the vehicle's filling cap; and
 - ▷ Price comparison websites for fuel.
- 2) A plurality of consumer survey respondents expressed difficulty in finding clear information about the compatibility of different fuel types with their vehicle, and a majority reported this to be the case for three other aspects: fuel quality and the effects of particular fuel types on both engine / vehicle performance and the environment.
- 3) A potentially problematic disconnect has emerged between the consumer survey findings and stakeholders' responses. This suggests that consumers may be experiencing more difficulty obtaining the requisite information on vehicle fuels than is currently appreciated.

9.1.1.2 *Perceptions of premium and biofuels*

Premium fuels often promise benefits like improved performance in exchange for a higher price, and the introduction of biofuels may give rise to consumer confusion as to whether or not to buy them instead of regular fuel types. With regard to consumer survey respondents' opinions of premium fuels and biofuels, the relevant findings of this study include:

- ▶ Among consumer survey respondents, perceptions toward premium fuels are mixed: whereas 24% agree with the claim that premium fuels are superior in quality to regular fuels and 21% agree with the claim that they considerably improve the performance of the engine or vehicle, 47% consider that premium fuels are too expensive and 8% agree with the statement that premium fuels offer no benefits relative to regular fuel types.
- ▶ Regarding claimed advantages of biofuels, the main advantages perceived by respondents are that biofuels make us less dependent on oil (50%), that they are better for the environment than fossil fuels because they produce fewer air polluting emissions (47%), and that they are renewable, whereas fossil fuels will run out (46%). On the other hand, 15% did not agree with any of the claimed advantages of biofuels.¹⁹¹

¹⁹¹ The related question in the consumer survey was as follows: "In your opinion, which of the following are the main ADVANTAGES OF BIOFUELS for vehicles? Please indicate up to three advantages, if any. Biofuels..." Answers: a) Are better for the environment than fossil fuels because they produce fewer air polluting emissions b) Are renewable, whereas fossil fuels will run out c) Help to support farmers in [MY COUNTRY] d) Help to support farmers in developing countries e) Improve engine/vehicle performance f) Make us less dependent on oil g) Biofuels have no advantages h) Other i) Don't know.

- ▶ In the three countries where E10 fuel is widely available, the percentage of consumer survey respondents indicating that biofuels have no advantage is, at 29%, substantially higher than the EU average.¹⁹²
- ▶ Regarding alleged disadvantages of biofuels, consumer survey respondents are most likely to agree with the claim that they are taking land away from food production (40%) and that they are too expensive (38%), while 23% agree with the claim that they lead to the destruction of the rainforests, and 22% that they worsen engine or vehicle performance.¹⁹³
- ▶ Respondents who are more knowledgeable about fuels are more likely to agree with the alleged disadvantages of biofuels, for example that they are taking land away from food production (62% of those in the 'most knowledgeable' group, compared with 44% of those in the 'more knowledgeable' group and 31% in the 'least knowledgeable' group).

Considering the availability of information on vehicle fuels, and the difficulty experienced by some consumers of obtaining clear information on various aspects of the vehicle fuels market leads to the following recommendation:

Recommendation 1:

- Stakeholders in the vehicle fuels market, including public authorities, industry associations, oil companies and fuel retailers, as well as automobile clubs, should reconsider the difficulty some consumers appear to be experiencing in obtaining clear information on key market aspects, such as the effect on engine performance of new fuel types, and compatibility between fuel type and vehicle. This is especially relevant in the context of the introduction of new fuel types. If the introduction of new fuel types is to be successful in the EU, additional information provision to consumers will be needed.
- More specifically, it is recommended that the introduction of any new fuel types which require compatible vehicles, and which will be widely sold at petrol stations in a given Member State should be preceded by the provision of information in a consumer friendly way across the EU that allows the consumer to recognise at a

¹⁹² However, this is due to the high percentage of respondents in Germany reporting this opinion because the percentages for Finland and France are broadly similar to the EU average.

¹⁹³ The related question in the consumer survey was as follows: "In your opinion which of the following are the main DISADVANTAGES OF BIOFUELS for vehicles? Please indicate up to three disadvantages, if any. Biofuels..." Answers: a) Are not good for the environment b) Are taking land away from food production (leading to food price increases or food shortages) c) Lead to the destruction of rainforests d) Are too expensive e) Worsen engine/vehicle performance f) Are unsustainable g) Biofuels have no disadvantages h) Other i) Don't know.

filling station across the EU clearly and without any delay or additional effort if his/ her car matches with the fuels offered on the market. This information should then be distributed to consumers through a variety of channels such as car manuals, information at vehicle dealerships and corresponding labelling at both the fuel pump and the car.

The survey reveals mixed opinions toward both premium fuels and biofuels among consumers. From the perspective of biofuel uptake or acceptance among EU consumers, the following findings are particularly noteworthy:

- ▶ The relatively high proportion of respondents in Germany who reported biofuels as having no advantages (40%) is notable because Germany is currently one of three Member States in which E10 fuel is widely available.¹⁹⁴
- ▶ The findings of the knowledge assessment portion of the consumer survey appear to indicate insufficient knowledge of newer fuel types with biofuel content, as four of the six statements included in the assessment were linked to fuels with biofuel content, such as E10 and B7.
- ▶ However, the finding that respondents who possess relatively more knowledge about the vehicle fuels market are more likely to agree with the alleged disadvantages of biofuels, such as that they are taking land away from food production, suggests that consumers across the EU currently perceive disadvantages of biofuels even as they become better known.

Taking into account these concerns leads to the following recommendation:

Recommendation 2

- Consumers are unsure about biofuels' environmental impact, with respondents to the consumer survey seeing both advantages and disadvantages. Concerns such as the indirect land use change impacts of biofuels and its contribution to climate change mitigation will need to be convincingly addressed in consumer's perception if consumer trust is to be regained.¹⁹⁵

¹⁹⁴ This finding is likely related, at least to some extent, to the problematic launch of E10 in Germany described in Section 4.1.3.

¹⁹⁵ For example, the European Commission in October, 2012 tabled a Proposal for a Directive of the European Parliament and the Council amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources (COM(2012) 595). The aims of the proposal are to limit the contribution that conventional biofuels (with a risk of ILUC emissions) make towards attainment of the targets in the Renewable Energy Directive;

9.1.1.3 Information provision at the pump

Consumer and stakeholder survey respondents reported fuel labelling at the pump to be the primary source for both general information about vehicle fuels and more specific information about fuel-vehicle compatibility.

The relevant findings of this study on experiences with labelling at the pump include:

- ▶ The vast majority of stakeholders (85%) considered labelling at the pump in their country to be clear. However, consumer survey respondents provided a substantially different impression. While a majority of consumers (69%) indicated that fuel *prices* were clear and understandable at petrol stations, a much lower proportion (38%) reported fuel *types* to be clear and understandable in their country of residence. Similarly, only 38% of consumers indicated that it was easy to identify the right fuel for their vehicle. These are potentially concerning results given that providing consumers with the information needed to differentiate fuel types and arrive at reliable conclusions about fuel-vehicle compatibility is a primary task of fuel labelling at petrol stations.
- ▶ Consumer survey respondents found petrol stations located outside of their country of residence more problematic to use than petrol stations in their own country. Respondents were shown a list of seven positive statements about information provision at petrol stations and asked which they agreed with. Whereas 90% of respondents agreed with at least one positive statement and 40% agreed with three or more of the statements regarding petrol stations in their country of residence, those proportions fell to 81% and 29%, respectively, for petrol stations located in other EU countries.¹⁹⁶

improve the greenhouse gas performance of biofuel production processes (reducing associated emissions) by raising the greenhouse gas saving threshold for new installations subject to protecting installations already in operation on 1st July 2014; encourage a greater market penetration of advanced (low-ILUC) biofuels by allowing such fuels to contribute more to the targets in the Renewable Energy Directive than conventional biofuels; and improve the reporting of greenhouse gas emissions by obliging Member States and fuel suppliers to report the estimated indirect land-use change emissions of biofuels. This proposal is currently still under discussion. Available at: http://ec.europa.eu/prelex/detail_dossier_real.cfm?CL=en&DosID=202037#1210630

¹⁹⁶ Thinking about the experiences you had AT PETROL STATIONS in the last 12 months in [YOUR COUNTRY], please indicate all of the statements below that you agree with...Fuel prices are clear and understandable fuel types (e.g. fuel labels and grades) are clear and understandable; Quality of different fuel types is clearly indicated; Effects of particular fuel types on the engine/vehicle performance are clearly indicated; Effects of particular fuel types on the environment (climate/air quality) are clearly indicated; Advertised price is always the same as actual price you pay; It is easy to identify the right fuel for the vehicle; I do not agree with any of these statements; Don't know.

- ▶ More specifically, 38% of consumer survey respondents agree that fuel types are clear and understandable at petrol stations in their country of residence, and the same proportion (38%) agrees that it is easy to identify the right fuel for the vehicle. However, when asked about their experiences at petrol stations abroad, 31% agree that fuel types are clear and understandable, and 26% agree that it is easy to identify the right fuel for the vehicle.
- ▶ The results of the assessment of fuel labelling at the pump during the mystery shopping research make clear that labelling practices can have a major impact on the ease of identifying regular petrol 95 and regular diesel fuel.
- ▶ In some cases insufficient labelling can contribute to consumer errors, as evidenced by the annual number of mis-fuellings in Germany and the United Kingdom. The ADAC automobile club in Germany reports that roadside assistance patrols were dispatched about 5,000 times in one recent year due to consumer mis-fuelling.¹⁹⁷ In the UK, the Automobile Association (AA) reported that it deals with 60,000 mis-fuellings a year.¹⁹⁸ While these numbers seem to be considerable, they have to be interpreted in light of the large number of vehicles in use in these countries. Most consumers do not mis-fuel their vehicle, and incidents of mis-fuelling clearly involve an element of inattention on the side of the consumer. On the other hand, in the cases in which mis-fuelling occurs it does lead to considerable (preventable) detriment for the affected consumer.
- ▶ Already some measures to prevent such errors have been taken into consideration by fuel retailers and vehicle manufacturers. For example, several stakeholders interviewed for this study reported widespread use of a green-black colour scheme on pumps or nozzles to indicate, respectively, petrol and diesel fuels. To some extent, this colour-coding was observed during the station visits that were carried out in the capital cities of six countries for this study, however:
 - ▷ While green was the colour most commonly associated with regular petrol 95 (66% of all sampled stations that offered regular petrol 95), other colours such as yellow (15%) and blue (6%) were also used in conjunction with this fuel type.
 - ▷ At least one station in each capital city of the six countries where station visits took place used a colour other than green, though the

¹⁹⁷ See: ADAC (2012), 'Wrong tank - what to do?', ADAC Website, available at: <http://www.adac.de/infotestrat/tanken-kraftstoffe-und-antrieb/benzin-und-diesel/falsch-getankt/default.aspx?ComponentId=28479&SourcePagelId=48532>.

¹⁹⁸ In an interview conducted for this study, the UK Automobile Association reported that the AA deals with 60,000 mis-fuellings a year, and it estimated that across the UK this number may be as high as 150,000 mis-fuellings a year.

colour-coding was largely consistent in Rome (96% of sampled stations used green) and Prague (84%). However, in Paris (56%) and Bucharest (58%) less than three fifths of stations used the same colour in association with regular petrol 95; in the case of Berlin (29%), less than one third of stations used the same colour.

- ▷ Although nowadays diesel nozzles are too large for the opening on petrol vehicles, helping to prevent this type of misfuelling, one can still pump petrol into a diesel vehicle.¹⁹⁹

Despite the existence of such potentially helpful mechanisms, the key findings presented above, as well as the (limited) available data on mis-fuellings, strongly suggest that labelling practices at many petrol stations could be improved to the benefit of consumers, especially those consumers who make cross-border fuel purchases.

The findings also suggest that provision of information on fuel types and on their compatibility with different vehicle models is a key area for improvement. However, communicating these and other complex issues at the pump in summary form may prove to be difficult.

The establishment of compatibility between fuel type and vehicle model, and the successful identification of different fuel types, is an activity that must be successfully undertaken by consumers when visiting petrol stations. Therefore, improving this aspect of fuel labelling practices is an especially important objective. In this respect, a key measure could be an EU-wide colour-coding scheme for fuel labelling, which would go beyond the labelling recommendations included in the recently revised European Standard EN228 and related industry commitments.²⁰⁰ This conclusion is in line with a suggestion put forward by the CARS 21 High Level Group in 2012, which noted that a "simple colour or symbol code system (in addition to the standardised labelling recommendation for E5 and

¹⁹⁹ According to research by the German automobile club ADAC, in some cases it is still possible to pump diesel into petrol vehicles (listed are Chrysler 300 C, Citroen C1 und C4, Lexus IS 250 und RX 400H, Mazda 5, Mitsubishi Colt, Nissan 350 Z Roadster, Peugeot 107, Seat Toledo II, Skoda Octavia II, Smart forfour Brabus, Toyota Aygo, VW Golf V). See: <http://www.adac.de/infotestrat/tanken-kraftstoffe-und-antrieb/benzin-und-diesel/falsch-getankt/default.aspx?ComponentId=28479&SourcePageId=48532>

²⁰⁰ In interviews conducted for this study, multiple stakeholders reported on-going work at the EU-level with respect to fuel labelling. These efforts have included an EU stakeholder dialogue on fuel transport with the oil/car industry, which reportedly led to a commitment to facilitate a harmonised approach towards a pump labelling developed in course of the work on the fuel standards. The recently revised EN228 includes recommendations for fuel labelling at the pump. However, it does not include a colour coding scheme as suggested above.

E10 currently discussed in CEN) could be proposed to allow consumers to verify vehicle and fuel compatibility".²⁰¹

This leads to the following recommendation:

Recommendation 3:

- An EU-wide colour-coding scheme for fuel labelling could be implemented so that the same distinct colours are used at petrol stations across the EU to indicate, on the one hand, regular petrol, and, on the other, regular diesel fuel. As the green (petrol)-black (diesel) scheme is already widely employed and recognised in the six countries in which a sample of petrol stations was visited for this study, these colours may be a natural choice on which to base the system. A similar approach could be taken with other fuel types (e.g. alternative fuels, premium fuels), aiming at a colour labelling that is easily understandable to consumers.
- Such an EU-wide colour-coding scheme should be simple, clearly visible and easily understandable and it should be placed in a corresponding manner at both the fuel pump and the car.
- As the market study has revealed problems with the display of the research octane number (RON) at petrol stations, Member States should pay more attention on fuel labelling for all fuel types at the pump. If necessary, EU-wide harmonization regarding the display of relevant fuel denominations could be introduced.

Not only would implementation of the second part of this recommendation assist consumers by rendering the material differences (or similarities) between petrol types clearer, it would also provide valuable information for cross-border fuel purchasers who might otherwise be confused – as was suggested by participants in the labelling assessment component of the mystery shopping exercise – by the use of national-level terminology in place of the fuel's RON.²⁰²

9.1.2 Timing purchases and selecting a retailer

Based on their understanding of the vehicle fuels market and the information they are able to find, active consumers in this market need to regularly make

²⁰¹ CARS 21 High Level Group on the Competitiveness and Sustainable Growth of the Automotive Industry in the European Union, Final Report 2012, p45. Available at: http://ec.europa.eu/enterprise/sectors/automotive/files/cars-21-final-report-2012_en.pdf

²⁰² For example, 'Super' is the common term for petrol 95 in Germany, and the octane number for this fuel type was clearly displayed at only 52% of the stations visited in Berlin. While such labelling practices would be unlikely to cause problems for a resident of Germany, they could do so for a visitor from another Member State.

decisions about which retailer to purchase fuel from. In this sense, the vehicle fuels market shares certain characteristics of markets for services of general interest and essential goods.²⁰³ though the exact purchase rate depends on how often and far consumers drive, fuel purchasing decisions are generally made on a consistent and relatively frequent basis, and are often unavoidable for consumers (e.g. because of the unavailability of suitable public transport etc.).

Results of this study indicate that most consumers are *not* loyal to a particular fuel brand or individual petrol station. Only 13% and 10% of consumer survey respondents, respectively, indicated 'sells my preferred brand' and 'is at my preferred supermarket chain' as important considerations for their selection of a petrol station. This suggests that most consumers were open to purchasing fuel from various retailers.²⁰⁴

- ▶ Instead, price is the critical factor in consumers' decision-making in terms of retailer selection: 68% of consumer survey respondents indicated 'offers the lowest price' as an important consideration in their choice of a petrol station.
- ▶ Aside from price, key factors in the selection of a particular petrol station include a convenient location (43%) and the offer of a loyalty card or membership scheme (22%).

In more detail, key findings on the timing of fuel purchases and retailer selection show that:

- ▶ Almost half of the consumer survey respondents say that they usually fill up their vehicle when the tank is nearly empty (46%), while 19% fill up whenever they see a good deal or see that prices have fallen; only 2% fill up on specific days of the week. This suggests somewhat limited potential for consumers to thoroughly compare prices and especially to take advantage of low points in price cycles, because filling up when the tank is nearly empty compels rapid decision-making and lessens the possibility to schedule purchases for certain days.
- ▶ The more knowledgeable respondents are about fuels the more likely they are to say they fill up when they see a good deal.²⁰⁵

²⁰³ It is for this reason that this study recommends specific actions, which might not be needed in other sectors that do not share the common characteristics with markets for services of general interest and essential goods.

²⁰⁴ This notion is supported by the finding that 68% of respondents to the consumer survey base their station selection on the lowest price.

²⁰⁵ 26% of those in the 'most knowledgeable' group indicated they filled up when they saw a good deal, compared with 20% of those in the 'more knowledgeable' group and 16% in the 'least knowledgeable' group.

- ▶ Survey respondents who spend a larger share of their income on fuel are more likely to say that they fill up whenever they can afford it (13% of those who spend 21% or more of their income on fuel, falling to 3% of those who spend no more than 5% of their income on fuel).

These findings confirm price as the primary factor on which the selection of petrol stations is based. However, they also suggest that many consumers may in fact be constraining their potential to make decisions based on price by filling up their vehicle when the tank is nearly empty and using a petrol station located nearby at that time. In this sense, it is notable that survey respondents that are more knowledgeable about vehicle fuels were more likely to report filling up when they see a good deal, while respondents who spend a larger share of their income on fuel were more likely to say that they fill up whenever they can afford it.

Such behaviour in terms of the timing of fuel purchases should be taken into account by recommendations related to the provision of price information. Assuming that many consumers will continue to wait until filling up their vehicle is an immediate necessity, the focus should be on recommendations that improve the availability and functionality of sources, such as price comparison websites, that can be quickly utilised to comprehensively compare up-to-date prices within a given area.²⁰⁶ The next section looks into the availability of price information and is followed by recommendations.

9.1.2.1 *Availability of price information*

The relevant findings include:

- ▶ The percentage of both consumer survey and stakeholder survey respondents that reported it easy to find clear information about fuel prices (77% and 94%, respectively) is higher than for any of the other market aspects researched (i.e. fuel types, fuel quality, fuel-vehicle compatibility and the effects of particular fuel types on both engine / vehicle performance and the environment).²⁰⁷
- ▶ Referencing billboard displays while driving by petrol stations is the price comparison method most frequently reported by consumer survey respondents.²⁰⁸

²⁰⁶ Of course, consideration should be given to the fact that not all consumers may be able to access the internet easily. In this case, price comparison services could provide alternative access methods, such as by telephone.

²⁰⁷ See also Section 4.3.

²⁰⁸ 79%, compared to 31% and 24%, respectively, for the next most frequently cited price comparison methods: consulting family / friends/ colleagues and price comparison websites for fuels.

These findings identify driving by petrol stations (and referencing billboard displays) as the price comparison method most frequently used by consumer survey respondents. These types of price displays are ubiquitous at petrol stations in the EU. Although the mystery shopping exercise conducted in the framework of this study indicated that there are significant differences in terms of the clarity of information provided on billboards, it is questionable whether this would provide sufficient reason for regulatory intervention, as consumers generally find it easy to find clear information about fuel prices. However, if industry bodies would agree to define minimum requirements in terms of clarity and type of information provided on petrol station billboards in relevant codes of conduct, this might in the mid- to long-term lead to notable improvements. This could especially be the case for consumers from abroad, who would have fewer difficulties in identifying the relevant fuel types if e.g. the RON for all petrol fuels was to be included on the billboard (as was the case on some of the most positively assessed billboards).

It is notable that the reported ease of comparing prices as evidenced in the results of the consumer survey contrasts with the fact that fuel prices were the subject of the majority of the complaints (51%) received by the stakeholder organisations during the previous five years. Complaints concerned alleged high or increased retail prices, which might indicate a lack of price transparency, and opaque or non-competitive wholesale markets.

Even if price displays are clear, price transparency may be limited in a situation where prices at fuel retailers change multiple times per day, as was reported for example from Austria. E-Control Austria, the regulatory authority, reported that petrol stations operated by the five major brands sometimes change their prices 10-15 times per day.²⁰⁹ This means that if consumers base their selection of retailer on price, the framework for their decision-making can change multiple times per day.

A possible approach to address this situation in those countries where rapid price changes can be observed is to set up price comparison websites which provide up-to-date price information online.²¹⁰ In several countries they have become a tool for regulators to increase price transparency. In these countries, regulatory rules have been enacted that require fuel retailers to notify their prices to a publicly administered database which in turn serves as the foundation for one or more comparison websites. The existence of such price transparency systems has been

²⁰⁹ Interview with E-Control Austria.

²¹⁰ The term price comparison website is here understood broadly and also includes mobile applications for smart-phones (apps) that compare prices, as well as navigation devices with relevant functionalities.

confirmed in Greece, Spain, France, Cyprus, Austria, and Portugal while Germany declared its intention to enact a similar system in late 2012.²¹¹

Several important conclusions regarding the availability and usefulness of comparison websites for the vehicle fuels market were produced by the mystery shopping exercise:

- ▶ During the comparison website evaluation, which was part of the mystery shopping exercise, up to three websites per country that allow for the comparison of vehicle fuel prices were evaluated. In total, 60 comparison websites were evaluated by the mystery shoppers.²¹²
- ▶ Mystery shoppers found that 27 of the 60 comparison websites (45%) provided a clear explanation of the frequency of their price updates, and the indications recorded by mystery shoppers show that the most commonly reported update frequency was once per day (18% of the websites in the full sample). This was closely followed by a frequency of more than once per day (13%).
- ▶ The most commonly reported source of price was crowd sourcing.²¹³ At the time of research more than half (32) of the 60 comparison websites relied on this data channel for some or all of their price data. Twenty-two of the comparison websites received some or all of their price data directly from petrol stations, while nine benefited from national regulations that require vehicle fuel retailers to notify relevant authorities of their prices.
- ▶ Mystery shoppers noted very extensive market coverage on 40% of the comparison websites, with fairly extensive coverage on another 37%. The remaining 23% provided fairly limited (13%) or very limited (10%) coverage.
- ▶ Findings on the prevalence of multi-lingual functionality, as well as market coverage, make it clear that most of the comparison websites in this sample were designed for one national market or a portion of that market.

²¹¹ See: http://www.bundeskartellamt.de/wDeutsch/aktuelles/presse/2012_12_04.php. It is notable that a similar approach is now suggested at EU level in the area of bank accounts. For the first time, a proposal tabled by the Commission in May 2013 would establish an obligation on Member States to ensure that consumers have access to at least one website comparing payment account fees, and to establish an accreditation scheme for private operators of such websites; See: Proposal for a Directive on the comparability of fees related to payment accounts, payment account switching and access to payment accounts with basic features, COM(2013) 266 final.

²¹² Only in Slovenia could no such comparison website be found.

²¹³ Crowd sourcing refers to functionality that allows users of the website to upload price data based on their observations of or visits to petrol stations. The uploading procedure may utilise SMS, a proprietary mobile phone application, or a form on the comparison website, among other potential methods.

- ▶ Mystery shoppers assessed more than one third of the reviewed websites as very user-friendly (34%), and another 43% as fairly user-friendly. Only 5% were reported to be not at all user friendly, and 18% were seen by mystery shoppers as not very user-friendly.
- ▶ Price comparisons were rated very easy on the majority of the comparison websites (60%) and fairly easy on a sizeable minority (20%). However, this process was assessed as fairly or very difficult on one fifth (20%), with price comparisons being deemed very difficult on 13% of the websites.
- ▶ Mystery shoppers found the vast majority (70%) of the comparison websites helpful in terms of allowing for an informed fuel purchasing decision, though they strongly agreed with this statement for only 20% of the websites.

The above findings show that many comparison websites were well assessed by mystery shoppers, despite the fact that several listed out of date price observations or whose functionality limited their usefulness to consumers. When based on up-to-date and comprehensive data, comparison websites offer the ability to comprehensively compare prices nearly instantly, and thereby offer significant advantages compared to other methods used:

- ▶ Driving by petrol stations to compare prices is a method that, at least in cities of any notable size (i.e. with cities with many petrol stations), inherently returns incomplete information. Even if one concludes that a consumer can gain a comprehensive understanding of the pricing available driving by stations, this method will require substantially more time than using a well-functioning comparison website to identify the lowest price in the area. It is also notable that if consumers drive longer distances in an effort to find a station with lower fuel price the financial effect may quickly become negative, even if the price difference is notable.²¹⁴ In addition this behaviour may lead to unnecessary emissions of carbon dioxide and is therefore not sensible from an environmental perspective.
- ▶ Consumers may acquire, through months or even years of experience, knowledge of the cheapest petrol station(s) in their area. However, such conclusions can also be faulty due to non-comprehensive information, imperfect analysis or the status quo effect under which consumers, once they have identified what they regard to be the cheapest local station, frequent it regardless of subsequent price levels.

²¹⁴ For example, if the price difference is 2 Eurocent per litre and the driver refuels 40l, savings are 80 cents. Cost per km for an average car is 25 to 35 cent. So deviations of more than 3 km would cost more than the savings.

- Indeed, reliance on billboards or assumptions about the cheapest stations in a given area may lead to 'mistakes' in price comparisons which feedback from comparison websites could help to correct.²¹⁵ Comparison websites for fuel prices can allow consumers to check their purchasing decisions, or ingrained station-selection behaviour, against objective fuel price data.

When comparing websites run by public authorities or automobile clubs with privately run comparison websites, mystery shoppers assessed their performance substantially better: All evaluated public/automobile club websites received positive ratings on this criterion, with 55% of them receiving the highest rating. On the other hand, only 12% of the privately run websites received the highest rating, and, in total, close to two thirds were assessed positively, with the remaining privately run websites receiving a negative rating.

This indicates that there may be a role for public authorities in improving market transparency through provision or facilitation of comparison websites. It is notable that the usage of fuel price comparison websites among consumer survey respondents is above the EU27 average in Austria (40%, compared to the average of 24%) and Greece (35%), two countries in which public authorities operate well-functioning comparison websites based on price data that fuel retailers are required to submit.²¹⁶

The mystery shopping results detailed above also indicate that there is room for improvement in terms of the quality of existing comparison websites in many countries.²¹⁷

²¹⁵ As Thaler and Sunstein point out, an important way to help improve decision-making performance is through feedback: "Well-designed systems [to improve the architecture of consumer choice] tell people when they are doing well and when they are making mistakes". Thaler, R. H. and Sunstein, C.R. (2008). *Nudge: Improving decisions about health, wealth and happiness*. London: Penguin Books, pp. 99, 108.

²¹⁶ Consumer survey respondents reported less frequent usage of comparison websites in the other countries with this type of price notification system: 28% of respondents in Portugal indicated using comparison websites to compare fuel prices, while 25% did so in France, 19% in Spain and 5% in Cyprus.

²¹⁷ The mystery shoppers noted a need for additional or improved search criteria on 28 of the comparison websites. Participants in the exercise also frequently recommended an increase in the amount of general market information or advice that the websites provided to their users (16 websites). The next most commonly requested improvement was more up-to-date prices or that websites more clearly indicate the sources of their price data (15 websites). Next, two concerns were noted 12 times apiece by the mystery shoppers and they both pertain to the display of search results. One was improved station mapping or location functions and the other, improved presentation of the main search results page(s), including more transparent dating of price observations. Similarly, the presentation of more detailed information about individual stations was seen as a necessity on nine of the websites. Please refer to –Section 2.3.11 in Part IV of this study for further details.

Expanded availability and coverage, improved search criteria, more general market information or advice, more up-to-date prices, and clearer data sources among vehicle fuels comparison websites would provide better price information to consumers and enable better choices between retailers.

A general recommendation concerning comparison websites for vehicle fuel therefore pertains to their inconsistent and sometimes limited availability by country:²¹⁸

Recommendation 4:

- It is recommended that national authorities initiate or maintain efforts to improve the quality of information that comparison websites provide to consumers, and consider establishing accreditation systems for comparison websites, including for vehicle fuels comparison websites. Where no relevant comparison website/app exists, a relevant public authority could itself provide one, or it could commission a suitable organisation, such as automobile club or consumer organisation with this task.²¹⁹

Reliable comparison websites can greatly help consumers in choosing between fuel retailers, and they could be promoted in order to increase awareness of their availability. Results of the mystery shopping exercise indicate that public authorities and automobile clubs may have a role to play in this, as evidenced by the finding that a higher proportion of comparison websites run by these types of

²¹⁸ Desk research conducted for the mystery shopping-based review of comparison websites aimed to identify three such websites per country; however, this number was found in only 12 countries: Austria, Cyprus, France, Germany, Greece, Hungary, Italy, the Netherlands, Norway, Poland, Spain and Sweden.

²¹⁹ In order ensure the transparency and reliability of comparison tools the European Commission has set up a Multi-Stakeholder Dialogue on Comparison Tools (MSDCT), composed of representatives from consumer organisations, from national regulators and enforcers as well as from the business sector, including CT operators. The dialogue issued a report which puts forward recommendations on the functioning of comparison tools. As a result the Commission has recently launched an in-depth study on the coverage, functioning and consumer use of comparison tools and third-party verification schemes for such tools. The results will be available in summer 2014 and will feed into the Commission's decision on the way forward. The full report issued by the MSDCT can be found at the following link: http://ec.europa.eu/consumers/documents/consumer-summit-2013-msdct-report_en.pdf

organisations was assessed positively by mystery shoppers.²²⁰ On the other hand, several privately run websites were also positively assessed.

As noted in the recommendation, this suggests the potential for public authorities to establish accreditation systems for comparison websites, and/or to provide the price data necessary for their operation, if a requirement for fuel retailers to notify their prices to the relevant public authority is introduced (see recommendation below).

Moving beyond the basic development of comparison websites there is the important issue of which data sources these websites should use. Of the 60 comparison websites reviewed for this study, 32 reported using crowd sourcing for some or all of their price data, 22 reported receiving at least some price data from petrol stations, and 9 indicated that they had access to prices submitted in accordance with regulatory requirements.²²¹ The comparison websites in this last group are of particular note. Crowd sourcing requires an active user base, and may result in incomplete market coverage outside of populous areas.

Direct data provision from petrol stations puts the organisational onus on the comparison website, because it becomes responsible for establishing data provision agreements with each retail brand or individual petrol station; and again, this can lead to incomplete market coverage if some brands / retailers decline to provide their prices (or, in the worst case, communicate incomplete or misleading data).

In contrast, comparison websites with access to up-to-date price data provided by all or nearly all fuel retailers in their country due to a related regulatory requirement are able to provide comprehensive price comparison functionality, thereby significantly increasing the transparency of pricing in the vehicle fuels market.

The results of the economic analysis also indicate that the regulatory interventions in Austria, namely the requirement that all fuel retailers notify each of their price changes, and the associated law permitting only one price increase per day, are associated with lower price levels *ex post*.

²²⁰ For 55% of the reviewed public authority / automobile club comparison websites mystery shoppers strongly agreed with the statement "I found this comparison website to be useful in allowing me to make an informed choice". This was the case for only 12% of the privately run comparison websites. Additionally, no mystery shopper disagreed with the usefulness statement with regard to any of the public authority / automobile club comparison websites, but mystery shoppers either tended to disagree with the statement or strongly disagreed with it for 36% of the privately run websites.

²²¹ Additionally, there were reports of other data sources on three comparison websites and unclear indications regarding data sources on seven. Nine of the comparison websites did not discuss their data sources. These figures mean that some of the comparison websites were using multiple sources of price data.

The analysis conducted for this study shows a reduction by 3.0% to 3.6% with respect to petrol prices and a reduction by 1.5% to 2.5% with respect to diesel fuel prices induced by the 2011 pricing regulation. The analysis is therefore able to provide some evidence that the Austrian pricing rule and internet platform have led to a decrease in fuel prices in this country compared to the control group of other EU countries. However, a full identification of specific effects is not possible given the limitations of the data.

We now turn to policy recommendations based on these key findings. Regulatory rules on fuel prices do exist in several Member States, including Belgium, Luxembourg, Malta and Slovenia. These regulatory regimes generally employ price 'ceilings' or maxima to limit the prices that retailers can set.²²²

In contrast, the previously mentioned regulatory intervention in Austria does not directly concern price levels, but rather increases price transparency through a requirement to notify price changes to the relevant authority (see above) and a limitation concerning which time of the day a price increase can take place. As a consequence, consumers know precisely when retailers are permitted to increase their prices and can act accordingly. Based on the economic analysis carried out for this study it appears that this 'light intervention' has lowered vehicle fuel price levels in Austria (for details, see Section 7.4).²²³

This leads to the following recommendations:

Recommendation 5:

- In those countries where vehicle fuel price notification systems do not exist, national governments across the EU, as well as in Iceland and Norway, could consider introducing them.
- More specifically, retailers could be required to notify their prices for at least regular petrol 95 (or the equivalent, e.g. E10 with 95 RON in Finland) and regular diesel fuel each time those prices are changed.²²⁴

²²² At least in Belgium and Slovenia retailers are free to price their fuels below the maxima.

²²³ It should be noted that in this respect the effects of the once-per-day price increase law and the regulatory requirement on price notification cannot be separately analysed; it may be the case that the price notification system has also contributed to lower price levels through its competition-enhancing transparency effects.

²²⁴ For example, in Austria retailers have 10 minutes at noon each day to increase prices and notify the change, while they have 30 minutes during the remainder of the day to notify any price decreases. When developing price notification regulations, governments could consider exempting small retailers so as to minimise a disproportionate impact of compliance costs. This has been done in Portugal, where fuel retailers dispensing less than 500 cubic metres per year are not required to participate in the price notification system. However, these smaller retailers should still be allowed to voluntarily submit their prices, if they wish so to attract possible customers. Regardless of whether smaller retailers are exempted from the requirements, it is recommended that relevant public authorities hold

- The resulting price database could then form the basis for a publicly administered comparison website/app for fuel prices. The data could also be provided to comparison websites/apps run by automobile clubs, as is now the case in Austria, or to other privately-run comparison websites, as is done in Greece and Spain.
- In Member States where fuel retailers rapidly change prices (e.g. multiple times per day) and thereby reduce transparency of the vehicle fuels market for consumers, national governments could consider limiting the frequency with which retailers are allowed to increase their fuel prices in one day. For example, a price increase could be allowed only at a predefined, uniform hour (e.g. noon), though retailers could decrease prices without restriction throughout the day. This regulatory model may increase market transparency for consumers and provide a better basis for consumer choice in an environment of very frequent price changes.²²⁵

If an accreditation scheme for comparison websites was introduced, it may be possible as a further step to provide price data only to accredited websites, thereby providing a strong incentive for accreditation.

Another important detail to consider for the provision of comprehensive price data notified by retailers to third parties is whether users' searches should reveal all price observations, the concern being that this could facilitate tacit collusion, by increasing the ability of retailers to monitor each other.

The approach taken by the public authority comparison website in Austria to address this concern is to only display the cheapest prices in a given area. The introduction of these schemes may of course entail additional regulatory and implementation costs.

Lastly, recommendations for advanced functionality components on comparison websites can be put forward, to combine price information with information on alternative modes of transport, which are more sustainable than individual motorized vehicles:

consultations with a range of fuel retail companies prior to implementation of a price notification system in order to reach agreement on fully functional yet 'light' price transmission mechanisms. An interview with an E-Control Austria representative conducted for this study revealed that such consultations were held in Austria and yielded productive results that paved the way for implementation of the price notification system.

²²⁵ The introduction of this model was accompanied by lower vehicle fuel price levels in Austria, as evidenced by the economic analysis conducted for this study. Further research, using daily or hourly data if available, would be helpful in confirming this analysis.

Recommendation 6:

- Comparison websites of public authorities could also consider providing their services in the framework of a smart mobility portal. For example, a route planning service could include information on the cheapest petrol station at the route (based on real-time data on prices). If a mobility portal provides mobile applications for smartphones or is linked to relevant services for navigation devices, real-time price data could help making efficient choices of petrol stations.
- A mobility portal could also provide information on alternative fuels (including prices) and facilitate the use of alternative, more sustainable modes of transport, e.g. through the provision of route options for public transport (bus and railway) and available bicycle routes (where distances and associated time requirements make these modes a realistic alternative). It could provide a platform for car-sharing, or link to relevant services in the area in question, as well as provide tailor made information on suitable combinations of modes, such as combining railway with rent-a-bicycle or rent-a-car.
- A mobility portal could also be introduced at European level. For example, the Clean Vehicle Portal²²⁶ is designed to give a detailed and comparable overview of the range of clean vehicles available on the market and classify them according to their life cycle costs. Such an EU portal but focused on mobility and prices could link to national databases for price data.

²²⁶ See: <http://www.cleanvehicle.eu/>

9.2 ENSURING PRICE TRANSPARENCY AND COMPETITION

This section considers the study's key conclusions on vehicle fuels pricing in order to compile recommendations with the aim of improving price transparency and potentially increasing competition on prices.

First, we consider the key results of the price collection exercise in which mystery shoppers collected 11,314 fuel price observations over the course of one week by calling petrol stations in all 29 countries subject to this study. Petrol stations in three distinct areas were sampled in each country, usually the capital city, a rural area, and along a motorway.

- ▶ Overall, the average price index for regular petrol 95 in rural areas relative to capital cities is 99.8, meaning that the collected fuel prices across the 29 countries tended to be slightly cheaper in rural areas than in capital cities; conversely, the average regular petrol 95 price index for petrol stations located along motorways in the 29 countries is 101.3.
- ▶ These regional price findings are substantiated by the results for regular diesel fuel: the average rural price index for all 29 countries is 99.8 and the average motorway price index, 101.7.
- ▶ In sum, then, the collected fuel prices were approximately 0.2% cheaper in rural areas than in capital cities and 1.3%-1.7% more expensive along motorways than in the capital cities.
- ▶ Only in a handful of countries did the average daily price for regular petrol 95 (taking into account all stations sampled in the capital city, along motorways and in a rural area) remain constant between Monday, Wednesday and Friday; generally, though the average price changed by less than 1% between Monday and Friday during the week in which the research was conducted. Exceptions include four countries where the average price fell by more than 1% between Monday and Friday (up to 1.4% lower); and four other countries where the average price increased by more than 1% during the course of the week (up to 5.9% higher).
- ▶ Likewise, the average daily price for regular diesel fuel was lower on Friday than on Monday in 14 countries; the opposite was true in 12 countries; and no change was observed in only three countries. The average price difference between Monday and Friday exceeded 1% in only six countries: Bulgaria, Germany, Spain, Luxembourg, Malta and Norway.
- ▶ The collected price data was also used to analyse price differentials between different types of fuel retailers. The price differentials for regular petrol 95 based on data from 28 countries (excluding France, which was a significant outlier due to the prices charged by several petrol stations located in central Paris) reveal that, on average, non-major brands and independent fuel retailers sold this fuel type at lower prices

than major brands. Specifically the price index for non-major brands and independent retailers is 99.6, compared to 100.2 for major brands, with 100 indicating the average price for all stations. However, supermarket stations were by far the cheapest, according to the collected data: the price index for supermarket stations, based on countries where they could be identified, was 96.9 during the week in which the research was conducted.

- ▶ The retailer-type price differentials are highly similar for regular diesel fuel: the price index for non-major brands and independents (excluding France again) is 99.6, while it is 100.2 for major brands and 97.6 for supermarkets.
- ▶ Turning to the average prices found at manned and unmanned stations reveals that unmanned (or 'automatic') petrol stations nearly always sold fuel at lower prices than their manned counterparts. In fact, with respect to regular petrol 95 prices, the average price at unmanned stations was lower in 13 of the 14 countries in which prices were collected from unmanned stations. Only in Greece was the average price for regular petrol 95 higher at unmanned stations than manned stations. On average across these 14 countries, unmanned stations sold regular petrol 95 for 1.9% less than manned stations.
- ▶ This finding also holds for the average price of regular diesel fuel. In this case, relevant price data was collected from unmanned stations in 13 countries, and in each of these countries the average price was lower at unmanned stations than at manned stations. Across the 13 countries, the average unmanned station's price for regular diesel fuel was 2.7% below that of the average manned station.

Presented next are the findings on average price differences between different fuel types, which are based on data collected during visits to 150 petrol stations spread across the capital cities of 6 Member States.

- ▶ As one would expect, premium petrol and premium diesel were always more expensive, where available, than regular petrol 95 and regular diesel fuel, respectively. The cost difference for premium petrol compared to petrol 95 ranged from 6.1% in Italy to 8.3% in the Czech Republic; for premium compared to regular diesel the range was from 1.8% in Finland to 9.3% in Germany.
- ▶ As might be expected, petrol 98 blends tended to be more expensive than regular petrol 95 blends, usually around 6-9% more expensive. The only exception was in Paris, where petrol 98 was both more widely available and cheaper by 1.4% compared to regular petrol 95.
- ▶ In the two countries – Germany and France – in which both regular petrol 95 (with maximum 5% ethanol by volume) and E10 fuel with a RON of 95

were available, E10 was between 2.5% (Germany) and 7.2% (France) cheaper than the blend with lower biofuel content. In Germany the actual average prices were 1.59 Euro for regular petrol 95 and 1.55 Euro for E10, while the average prices in France were 1.64 Euro and 1.53 Euro, respectively.

The recommendation with respect to price levels in the vehicle fuels market pertains to market structure:

Recommendation 7:

- Governments should monitor market diversity, with a view to maintain non-major brand and independent retailer sectors. It is notable that the price collection conducted for this study indicated the importance of supermarket chains in providing a competitive environment: Sampled supermarket stations were by far the cheapest in those countries where they could be identified, with a price index of 96.9 during the time in which the research was conducted (100 indicates the average price for all stations).

The reasoning behind this recommendation is that, as shown in Section 7, fuel prices at the sampled supermarkets and at non-major brand retailers were, on average, lower than prices at major brand retailers. The existence of a range of retailer types should therefore drive competition.

9.2.1 Deciding on a fuel type

Another major decision consumers need to make in the vehicle fuels market is that to decide on the fuel type to purchase for their vehicle. The first section below provides context on that decision-making process by presenting the study's key conclusions on consumer perceptions of premium fuels and biofuels. Subsequently, the consumer survey findings on the main reasons underlying fuel type preferences are displayed. Relevant recommendations are elaborated in both sections.

9.2.1.1 Consumer preferences regarding fuel types

Here, we turn to consumer survey respondents' indications regarding the considerations underlying their fuel type preferences. The relevant findings include:

- ▶ Regarding the most common types of vehicle fuels available, consumer survey respondents indicated that they mostly frequently bought petrol (61%), followed by diesel (36%) or other types of fuel (3%). Petrol users

were most likely to use only regular petrol (76%), an identical proportion to diesel users who were most likely to only use regular diesel, as opposed to premium or other types of diesel such as biodiesel. The distribution of fuel types bought by survey respondents varied considerably by country - in Greece, for example, the vast majority (93%) of consumer survey respondents bought petrol, compared to only 33% in France.

- ▶ As with retailer selection, consumers' selection of fuel type also revolves around price: 67% of survey respondents indicated price as the main reason for buying their preferred fuel type.
- ▶ Factors other than price that play a role in fuel type preferences include previous good experience with a given type of fuel (27%), its perceived benefits for engine or vehicle performance (22%) and fuel quality (18%). Only 6% of consumers indicated that they bought their preferred fuel type because it was good for the environment.
- ▶ One in ten consumer survey respondents say they don't have a choice between fuel types as there is only one type of fuel available in their area that is compatible with their vehicle. This percentage is higher for respondents living in rural areas (14%, compared with 10% in urban and 6% in metropolitan areas).
- ▶ Only one fifth (19%) of responding EU27 stakeholders were of the opinion that it is easy for consumers in their country to compare the performance of branded fuels, generic/non-branded fuels, and supermarket fuels. Indeed, the majority of stakeholders (51%) reported that this fuel performance comparison is not at all easy. An additional 31% of stakeholders indicated that it is not very easy.

While in many markets competition can ensure that price serves as a good signal of quality, this is not necessarily the case for the vehicle fuels market. This is because in the vehicle fuels market consumers pay a significant price premium for premium fuel compared to regular fuel,²²⁷ while it is unclear to which extent material differences exist between the fuels sold that would lead to measurable performance differences.

Opinions on this issue are not necessarily consistent between fuel industry representatives and independent observers, and in absence of consistent and independent testing with multiple types of vehicles and under different road conditions claims of better quality are often considered a matter of marketing and customer segmentation.

²²⁷ See Section 7 for details.

At least in the recent independent tests carried out in Portugal and in previous tests by the German automobile club, premium fuels were not found to be substantially superior in performance,²²⁸ in spite of the widespread perception in this respect, as evidenced by consumer survey results.

This leads to the following recommendation:

Recommendation 8:

- Consumer organisations, automobile clubs and other organisations should be encouraged to report on the performance of various fuel types in their country so that they better inform consumers of any actual differences in performance and environmental effects. Ideally such reports would include performance comparisons between branded and non-branded fuels, as well as comparisons between regular fuel and premium variants sold in a given country.

9.3 ADDRESSING CONSUMER PROBLEMS

The conclusions and recommendations related to the problems experienced by consumers in the vehicle fuels market are presented below. The first sub-section pertains to the incidence and types of problems, while the second focuses on those groups of consumers considered potentially vulnerable in the market.

9.3.1 Incidence and types of problems

Regarding the incidence and types of problems reported by consumer survey respondents, key conclusions of this study include:

²²⁸ The study carried out by the consumer organisation DECO in Portugal tested four different diesel fuel types – two from a leading brand and two from supermarket fuel retailers using four identical cars. The cars were each driven 12,000 kilometres during the course of one month, with fuel purchased in different gas stations and the drivers, who were unaware of the brand being tested, alternating between the vehicles each day. The study found "a similar effect on the accumulation of deposits and in engines' wear" and an insignificant difference in fuel consumption, which ranged from 6.41 and 6.43 litres per 100 kilometres for the leading brand's two diesel fuels to 6.45 and 6.54 litres per 100 kilometres for the supermarket fuels (see: <http://www.igualaoilitro.pt/igualaoilitro/en>). The earlier (2004) ADAC study comparing the performance of premium and regular diesel fuels did find slightly increased engine power from the premium diesel (1.6 to 4.5%) and a similar 1.0 to 5.6% reduction in fuel consumption; however, the ADAC concluded that the slight performance improvements came at the cost of a significant price premium (see: <http://www.adac.de/infotestrat/tanken-kraftstoffe-und-antrieb/benzin-und-diesel/premiumkraftstoffe/default.aspx?ComponentId=33085&SourcePageId=61719&tabid=tab1>).

- ▶ In total, 43% of survey respondents say that they have experienced a problem during the previous 12 months, when filling up their vehicle either in their own country or in another EU country.
- ▶ While there is little difference between petrol and diesel consumers in terms of incidence, consumers who purchase other types of fuel (such as LPG or E85) experience more frequent problems (53%, compared to 43% for petrol / diesel users). They are also more likely to experience problems leading to financial detriment (36%, versus 28% for petrol and 29% for diesel).
- ▶ Overall, 24% of respondents who provided an answer regarding the problem they had experienced either at home or abroad stated that they had to wait in a queue to fill up the vehicle; 10% had a problem at an unmanned station and found nobody to help; 9% said that low quality fuel led to engine or vehicle performance problems; 7% received less fuel in the tank than they paid for; 6% paid higher than advertised price for fuel; 5% could not identify fuel due to unclear labelling; 5% could not buy E10 or B7 because they were uncertain of compatibility; 3% pumped petrol into a diesel vehicle or vice versa due to unclear labelling; and 3% incorrectly pumped a biofuel because of unclear labelling. When considering only those problems which resulted in financial detriment,²²⁹ 28% of respondents claimed that they had encountered such a problem.
- ▶ One in three (32%) of those respondents who indicated a problem or problems that could have resulted in financial detriment say that they experienced no financial loss. 31% experienced a loss of less than 20 Euro, while 23% incurred a loss of between 20 and 99 Euro. Some respondents incurred larger financial losses, as one in ten (12%) of those respondents who indicated a problem or problems that could have resulted in financial detriment suffered a self-reported loss of between 100 and 999 Euro and one in fifty (2%) a loss of 1,000 Euro or more. The mean loss of those who reported actually incurring a financial loss was 176 Euro, with a median loss of 35 Euro.
- ▶ Respondents who experienced a problem when filling up their vehicle were asked what action they took in response. The majority of respondents (72%) say that they did not take any action, while 28% took some form of action, most commonly a complaint to the petrol station (23%). Approximately equal proportions of those respondents who took

²²⁹ No help with problems at unmanned station (4%), Fuels were only labelled in the local language (4%), Low quality fuel impacted engine performance (2%), I received less fuel in the tank than I paid for (2%), I paid a higher than advertised price for fuel (2%), Incorrect invoice / receipt (2%), Unclear labelling led to pumping wrong fuel (1%), Unclear labelling led to pumping biofuel (1%) were all considered as problems that may cause financial detriment.

action in response to the problem(s) they experienced say they were satisfied (47%) and dissatisfied (51%) with the final result.

Given the often low amounts of self-reported financial detriment, and possible difficulties in establishing the facts (e.g. regarding low quality fuel impacting on engine performance or unclear labelling leading to pumping wrong fuel), the extent to which consumers in the vehicle fuel market will benefit from improved Alternative Dispute Resolution (ADR) systems remains to be seen.²³⁰ It appears that the types of reported problems might be better addressed through preventive measures such as improved labelling and colour coding at the pump, to the extent that they refer to labelling practices (see recommendations above); or that they are most adequately addressed through administrative enforcement of existing legislation, to the extent that problems refer to unfair commercial practices (such as differences between price charged and advertised price) or fraud (where consumers receive less fuel in the tank than they pay for).

In any case the large proportion of consumers that either did not take any action in response to a problem, or were dissatisfied with the final results when they took action, indicates that problems in the vehicle fuels markets should be further monitored by authorities and representatives of consumer interests. In addition, the finding depicting a notable imbalance between problems experienced by users of the traditional fuel types – diesel and petrol – and users of what are often termed 'alternative' fuel types such as LPG, natural gas and E85, deserves to be further explored, and to the extent that it is related to a lack of consumer information, remedied by appropriate means. This leads to the following recommendation:

Recommendation 9:

- As individual redress is often difficult in the vehicle fuels market due to problems in establishing the facts, it is recommended that relevant national authorities consult with automobile associations and consumer organisations on how to improve monitoring of those aspects that are most frequently subject of consumer complaints, and improve related preventive and enforcement measures (e.g. regarding improved labelling at the pump, prevention of fraud etc.).
- It is recommended that consumer complaints regarding vehicle fuels are classified and reported in regular intervals, following the harmonised

²³⁰ On 12 March 2013, the European Parliament voted to support new legislation on Alternative Dispute Resolution (ADR), which will ensure that consumers can turn to quality alternative dispute resolution entities for all kinds of contractual disputes that they have with traders; no matter what they purchased and whether they purchased it domestically or across borders (Proposal for a Directive on alternative dispute resolution for consumer disputes , COM(2011) 793 final).

methodology for classifying and reporting consumer complaints and enquiries, to establish a better evidence base for possible measures.²³¹

- Public authorities and stakeholders should consider ways to improve information provision to consumers regarding 'alternative' fuel types (such as LPG, natural gas and E85) in use in their country, as users of such fuel types have reported a significantly higher incidence of problems (53%) during the previous 12 months, when filling up their vehicle either in their own country or in another EU country, compared to users of diesel and petrol (43% each).

The last part of this recommendation links to the earlier one concerning improved information provision on biofuels (see above).

Another potentially concerning result is the apparent divide between the EU15 and EU12 findings. Not only did a larger proportion of respondents in the EU12 report experiencing a problem, but nearly double the proportion reporting a problem that could lead to financial detriment can be observed.

To gather additional information on problems in the vehicle fuels market, organisations that responded to the stakeholder survey were asked to provide both consumer complaints data (if available) and qualitative indications of consumer problems observed in their country. Several additional conclusions can be drawn from their responses:

- ▶ According to the stakeholder organisations consulted for this study, the highest number of complaints received during the previous five years concerned fuel prices (51%), followed by fuel quality (31%) and unfair commercial practices (11%).
- ▶ The results of the stakeholder survey clearly point to fuel prices as the most controversial aspect of the vehicle fuels market. In particular, high or increased retail prices, a lack of price transparency or an opaque or non-competitive wholesale market were the most reported problems by the stakeholder organisations.

Since findings and recommendations related to fuel prices and price transparency have already been presented above, this aspect will not be discussed again here.

²³¹ Recommendation on the use of a harmonised methodology for classifying and reporting consumer complaints and enquiries. In this respect, the European Commission provides free of charge IT solutions and support to all interested organisations, including on-site IT expert visits, aimed at elaborating customised solutions, to facilitate the adoption of the Recommendation and the data transfer to the relevant Commission services. The text of the recommendation is available at:

http://ec.europa.eu/consumers/strategy/docs/consumer-complaint-recommendation_en.pdf.

However, the indications from the surveys that fuel quality may be an issue of concern for consumers in some countries deserves some further consideration.

In particular, fuel quality problems experienced by respondents to the consumer survey in their own country are notable for their disparity between EU15 and EU12 Member States: whereas reports of low quality fuel leading to vehicle performance problems were rather the exception in the EU15 (4% of respondents reported having experienced such a problem), this was less the case among EU12 respondents, 17% of whom reported experiencing such a problem.

Countries with the highest incidence of reported problems of this type were Bulgaria and Greece (27% each), Romania (25%) and the Czech Republic (18%). Further evidence in this respect was collected through the stakeholder survey: The list of countries in which at least one stakeholder reported that 25% or more of consumer complaints pertained to fuel quality is as follows: Belgium, Estonia, Greece, Italy, Cyprus, Lithuania, Malta, Poland, Portugal, Slovenia and Finland. Though Belgium and Finland are clearly outliers relative to the consumer survey results, the other countries listed are either EU12 Member States or, in the case of Greece, Italy and Portugal, among the small group of four EU15 Member States in which 5% or more of consumer survey respondents indicated a problem with low quality fuel.²³²

Given that the findings of the surveys indicate some consumer and stakeholder concerns regarding fuel quality, this market aspect may merit further investigation in the relevant countries.

This leads to the following recommendation:

Recommendation 10:

- In cases where the stakeholder surveys indicate that consumers may perceive actual problems regarding the quality of fuels put on the market, these findings should be considered by competent authorities. Based on findings from the consumer and stakeholder surveys, this recommendation appears to be most relevant to some of the EU12 Member States, as well as Greece.

²³² When comparing data provided by stakeholders on fuel quality issues with consumer survey findings, it is important to note that 'fuel quality' was not identically defined in the two surveys. Whereas in the consumer survey the item read, "Low quality fuel led to engine/vehicle performance problems", the explanatory note in the stakeholder survey more broadly defined fuel quality to also include general fuel quality complaints. This difference, albeit a minor one, may affect comparability between the results.

9.3.2 Findings on potentially vulnerable consumer groups

Several of the data collection tools employed for this study have allowed to gain some insights with regard to potentially vulnerable consumers. The key findings are presented below.

Participating organisations²³³ responses to a stakeholder survey question which asked them to indicate, from a pre-defined list of seven groups, those that they would consider to be vulnerable in the market for vehicle fuels, gave the following result:

- ▶ Among the 70 national-level stakeholders that responded to the survey from EU27 Member States, 35 stated that they consider consumers with little or no disposable income to be vulnerable in the vehicle fuels market.
- ▶ The next most frequently indicated group was consumers living in rural areas, and the third was persons with reduced mobility (e.g. disabled persons and/or older drivers).
- ▶ Next on the list were consumers who drive old vehicles, followed by elderly people; these groups were reported to be vulnerable by 15 and 14 stakeholders, respectively.
- ▶ The remaining groups, namely people with literacy problems and consumers who buy fuel outside their country of residence, were reported as vulnerable in the market by six and four stakeholders, respectively.

Turning first to consumers with little or no disposable income, it is relatively easy to identify their potential market vulnerability: people with scarce disposable income and those who spend a relatively high percentage of their monthly income on fuel are disadvantaged from the onset, but they are also more troubled by high price levels and price increases. The consumer survey results show that respondents who spend a larger share of their income on fuel are more likely to say that they fill up whenever they can afford it (13% of those who spend 21% or more of their income on fuel, falling to 3% of those who spend no more than 5% of their income on fuel).

While there is no easy remedy for this situation, these findings have been taken into account in previous recommendations. Clearly, it is important to facilitate price information provision and thereby price comparisons so that consumers for whom fuel purchases constitute a substantial financial burden can reliably select the lowest-priced retailer in their area.

²³³ Stakeholder organisations contributing to the survey included competition authorities, standardisation authorities, ministries, consumer protection authorities, industry associations, vehicle fuel refiners, retailers, consumer organisations, and automobile associations.

It is also essential that prices are based on competitive markets, so that consumers do not pay artificially high prices.

Considering some of the other potentially vulnerable groups in more detail, and in conjunction with the socio-demographic analyses of the consumer survey findings, yields a generally mixed picture. When the consumer survey results for various questions are broken down by respondents' age, place of residence, percentage of monthly income spent on fuel, market knowledge, vehicle age and cross-border purchasing experience some findings are contradictory in terms of whether vulnerability exists or whether a particular group is disproportionately burdened by market complexities and problems.

For example, it was hypothesised that consumers residing in villages or rural areas may be disadvantaged relative to their counterparts in urban or metropolitan areas as a result of more limited choice of fuel retailers, fuel types, and higher fuel prices.

In terms of choice in the market, the consumer survey provides some evidence in support of the notion that respondents living in rural areas are more vulnerable:

- ▶ At the EU27 level, 4% of consumer survey respondents reported 'Is the only one in my area' as one of their most important considerations in the selection of a fuel retailer. When broken down by area of residence these findings indicate that 6% of respondents residing in rural areas cited this as a consideration in their choice of retailer, while only 3% of respondents in urban and metropolitan areas did so.
- ▶ Similarly, 14% of respondents residing in rural areas reported the availability of only one type of vehicle-compatible fuel in their area as a main reason for their fuel type selection; this factor was indicated by only 10% of respondents in urban areas and 6% in metropolitan areas, suggesting that fuel type choice is more constrained for consumers living in rural areas.

With respect to the other hypothesized disadvantage facing rural consumers, i.e. higher fuel prices, the price collection and analysis component of this study did not find evidence to support this claim with regard to within-country prices, as the average price indices calculated for regular petrol 95 and regular diesel fuel in rural areas relative to capital cities were both 99.8, meaning that the collected prices in rural areas were approximately 0.2% cheaper than those in capital cities. However, this finding does not take wage or price levels into account. If wages in rural areas of a given country are lower than in the capital city, the rural fuel price, even if slightly cheaper in absolute terms, would be higher in relative-to-income terms. This may particularly be the case in EU12 Member States where rural areas tend to be poorer compared to cities than in EU15 Member States.

Also of interest is the finding that problems when filling up the vehicle were more commonly reported by consumer survey respondents living in metropolitan areas (44%, compared with 38% in urban areas and 34% in rural areas). This is despite the finding that people living in rural areas also tend to drive greater distances (58% drive 10,000 kilometres or more per year) than those residing in urban (51%) or metropolitan areas (50%).

Consumer survey respondents with older vehicles (more than 10 years old) were also less likely to have experienced a problem filling up their vehicle (36%) than those with a vehicle less than five years old or between five and 10 years old (both 40%). However, respondents with older vehicles were found to drive less than those with newer vehicles.²³⁴

Similarly, the consumer survey results on the incidence of problems among the different age groups reveal a strong pattern, with problems more common among younger people (53% of 18- to 24-year-olds, falling to 31% of those aged 55 or over).²³⁵ In marked contrast, older respondents fared worse than younger ones on the market knowledge assessment questions.²³⁶ However, lower knowledge in this context could also indicate lower awareness of problems encountered in the market, leading to under-reporting of problems in older age groups.

In this context it is also noteworthy that the use of labelling on the pump or vehicle as a main source of information about fuel and vehicle compatibility increases with age. This re-emphasises the need for clear labelling practices.

Concerning persons with reduced mobility, based on the petrol station visits carried out in the capital cities of six Member States and the mystery shopping-based reviews of comparison websites, potential improvements could address the following issues:

- ▶ The station visit exercise found that many petrol stations lacked handicap-accessible toilets. Indeed, the proportion of visited stations with such facilities ranged from 0% in Rome and Bucharest to 12% in Paris, 24% in Berlin, 56% in Helsinki and 64% in Prague. Overall, 66% of the

²³⁴ Respondents with older vehicles (more than 10 years old) are more likely to drive less than 10,000 kilometres per year (55%, compared with 46% of those with a vehicle between 5 and 10 years old, and 44% with a vehicle less than 5 years old).

²³⁵ Those in the middle age bands (57% of 25- to 39-year-olds drive 10,000 kilometres or more per year, as do 55% of those aged 40-54) drive greater distances on average than either the younger or older age groups (48% of 18- to 24-year-olds and 48% of those aged 55 or over).

²³⁶ In more detail, these results were as follows: Older respondents are more likely to be in the 'least knowledgeable' group based on the assessment question: 45% of those aged 55 or over and 46% of those aged 40-54, compared with 42% of 25- to 39-year-olds and 37% of 18- to 24-year-olds. This finding may reflect unfamiliarity with newer fuel types among older respondents, as several of the six assessment statements pertained to fuels like E10 and B7 that contain biofuel content.

150 visited stations had toilets, but only 26% had handicap-accessible ones.

- ▶ Only few of the evaluated comparison websites for vehicle fuel allow consumers to search for petrol stations based on accessibility factors such as the provision of full- or partial-service and handicap-accessible toilets.

Turning next to the experience of consumers who buy fuel in other EU countries, the relevant socio-demographic results of the consumer survey question on problems experienced while filling up the vehicle are again notable in that they run somewhat contrary to the notion of this group as particularly vulnerable.²³⁷

The proportions of respondents reporting having experienced a problem at a petrol station outside their country of residence in the past year (19%) and a problem capable of causing financial detriment at a foreign petrol station (12%) are lower than observed for the similar question on problems experienced in respondents' country of residence (38% and 21%, respectively). Considering the results in more detail, we also see that few respondents who purchase fuel abroad reported experiencing problems with unclear labelling preventing a purchase (3%) or leading to unintended pumping of biofuel (1%) or the wrong fuel type, e.g. petrol instead of diesel (also 1%).

These findings must be qualified though, because those respondents who reported purchasing fuel in other EU countries are still likely to purchase most of the fuel in their country of residence, increasing the likelihood to experience problems there compared to experiencing them abroad. Also, respondents who reported purchasing fuel in other EU countries tended to drive more kilometres per year, be better educated and be more knowledgeable about the vehicle fuels market, according to the survey assessment questions. In more detail these findings are as follows:

- ▶ Those respondents driving 20,000 kilometres or more per year were most likely to buy fuel abroad (60%, compared with 54% of those driving at least 10,000 but less than 20,000 kilometres, and 41% of those driving less than 10,000 kilometres per year).

²³⁷ Again, respondents were able to report more than one type of problem at this question; as a result, the proportion of respondents who mentioned problems that could result in financial detriment (12%) is lower than the sum of the individual responses shown in Figure 51. No help with problems at unmanned station (4%), Fuels were only labelled in the local language (4%), Low quality fuel impacted engine performance (2%), I received less fuel in the tank than I paid for (2%), I paid a higher than advertised price for fuel (2%), Incorrect invoice / receipt (2%), Unclear labelling led to pumping wrong fuel (1%), Unclear labelling led to pumping biofuel (1%) were all considered as problems that may cause financial detriment.

- ▶ Those who ended education at the age of 20 or above were also more likely to buy fuel in other EU countries (53%, compared with 44% of those ending their education between the ages of 16 and 19, and 43% who finished their education by the age of 15).
- ▶ Respondents who are more knowledgeable about fuels were more likely to buy fuel in other EU countries: 59% of those in the 'most knowledgeable' group, compared with 51% of those in the 'more knowledgeable' group and 44% of those in the 'least knowledgeable' group.

These socio-demographic differences between respondents who purchase fuel abroad and those who less frequently or never do further complicate the process of drawing reliable conclusions. What is clear from the focus group discussion regarding the labelling assessment is that the use of language fuel terminology in another language can lead to less certainty in terms of identifying one's preferred vehicle fuel type. On this point, multiple recommendations relevant for cross-border fuel purchasers have already been presented above, including those on the colour-coding of fuel labels and the inclusion of the octane number (RON) on labelling for all petrol types.

This leads to the following recommendation:

Recommendation 11:

- Either voluntarily, or based on regulatory requirements, the proportion of petrol stations with handicap-accessible toilets should be expanded to accommodate the needs of persons with reduced mobility, in light of the essential role these facilities have in safeguarding accessible travel and tourism for disabled people.
- Operators of comparison websites should expand search functionality in order to allow vulnerable consumers to search for petrol stations that will be able to accommodate their needs.

Finally, in line with the 'smart regulation' approach of the European Commission²³⁸ it is recommended that the implementation of any measures taken on the basis of the conclusions and recommendations presented in this section are subject to public consultations and impact assessments, to the extent that they entail regulatory action and would impose significant costs on public authorities, consumers, or retailers.

²³⁸ See: http://ec.europa.eu/smart-regulation/index_en.htm

ANNEX A. REFERENCES

ADAC, 2012. *Montags günstig tanken*, available at: <http://www.adac.de/infotestrat/tanken-kraftstoffe-und-antrieb/kraftstoffpreise/medienberichte/default.aspx?ComponentId=62337&SourcePagelId=54981>

ADAC, 2012. *Price increase after driving into gas station*, ADAC Website, available at: <http://www.adac.de/infotestrat/tanken-kraftstoffe-und-antrieb/probleme-tankstelle/default.aspx>.

ADAC, 2012. *Wrong tank - what to do?*, available at: <http://www.adac.de/infotestrat/tanken-kraftstoffe-und-antrieb/benzin-und-diesel/falsch-getankt/default.aspx?ComponentId=28479&SourcePagelId=48532>

ADAC. *Edle Tropfen fürs Auto - Premium-Kraftstoffe*, available at: <http://www.adac.de/infotestrat/tanken-kraftstoffe-und-antrieb/benzin-und-diesel/premiumkraftstoffe/default.aspx?ComponentId=33085&SourcePagelId=61719&tabid=tab1>

Bolton, *Oil prices*, Standard Note SN/SG/2016, 17 June 2013.

Borenstein, S. , Cameron, A. and Gilbert, R. 1997. *Do Gasoline Prices Respond Asymmetrically to Crude Oil Price Changes*, Quarterly Journal of Economics, 112, pp. 305-339;

CBRE/Datamonitor, 2012. *MarketView: European Petroleum Retail Sector*, September 2012.

Civic Consulting, 2012. *Consumer market study on the functioning of the market for Internet access and provision from a consumer perspective*, Executive Agency for Health and Consumers, European Commission.

CNC - Comision Nacional de la Competencia, 2011., *Follow-up report on the CNC's automotive fuel report*, 9th March 2011.

CNC - Comision Nacional de la Competencia, 2012. *Report monitoring the automotive fuel distribution market in Spain*, June 2012.

Deutsche Welle. 2011. *Germany calls emergency summit amid organic fuel chaos*, March 3 2011, available at: <http://www.dw.de/dw/article/0,,14888490,00.html>.

E10 petrol - E10. *Finnish Petroleum Federation: E10 petrol gained a 55 per cent market share in 2012*, available at: http://www.e10bensini.fi/en/news/press_releases/finnish_petroleum_federation_e10_petrol_gained_a_55_per_cent_market_share_in_2012.306.news

EEA - European Environment Agency, 2013. *Monitoring CO2 emissions from new passenger cars in the EU: summary of data for 2011.*

Energy Information Administration (EIA). *What Drives Crude Oil Prices? An analysis of 7 factors that influence oil markets, with chart data updated monthly and quarterly*, available at: <http://www.eia.gov/finance/markets/supply-opeclcfm>

European Automobile Manufacturers Association (ACEA), *Vehicle compatibility with new fuel standard E10 for petrol*, available at: http://www.acea.be/news/news_detail/vehicle_compatibility_with_new_fuel_standard/

European Commission, 2008. *Evolution of oil and petroleum product prices and taxation levels during the year 2008 in the European Union.*

European Commission, 2010. *Commission Recommendation of 12.5.2010 on the use of a harmonised methodology for classifying and reporting consumer complaints and enquiries*, Brussels, available at: http://ec.europa.eu/consumers/strategy/docs/consumer-complaint-recommendation_en.pdf.

European Commission, 2012. *CARS 21 High Level Group on the Competitiveness and Sustainable Growth of the Automotive Industry in the European Union*, Final Report 2012, p45. Available at: http://ec.europa.eu/enterprise/sectors/automotive/files/cars-21-final-report-2012_en.pdf

European Commission, 2012. *Quality of petrol and diesel fuel used for road transport in the European Union: Ninth annual report*, published under Article 8 of Directive 98/70/EC, as amended by Directive 2003/17/EC, available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0749:FIN:EN:PDF>

European Union, *COM (2012) 749 final: Quality of petrol and diesel fuel used for road transport in the European Union: Ninth annual report (Reporting year 2010)*, available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0749:FIN:EN:PDF>

Exergia, 2011. *Assessment of the implementation of a European alternative fuels strategy and possible alternative proposals, Final Report to the European Commission.*

Foros, Ö. and F. Steen, 2012. *Vertical control and price cycles in gasoline retailing*, available at: http://blogg.nhh.no/beccl/wp-content/uploads/2012/03/20120216Foros_Steen_Gasoline-2.pdf.

Galeotti, M., A. Lanza, and M. Manera, 2003. *Rockets and Feathers Revisited: An International Comparison on European Gasoline Markets*, Energy Economics, 25, pp. 175-190;

Germany Energy Blog, 2011. *REMIT: Bundestag Adopts Bill on Market Transparency Agency for Gas and Electricity Wholesale Market*, March 2011 available at: <http://www.germanenergyblog.de/?p=11333>).

Hamilton, D. (2009), *Causes and Consequences of the Oil Shock of 2007–08*.

Hosken, D. S., R.S. McMillan, and C. T. Taylor, 2008. *Retail Gasoline Pricing: What Do We Know?*, Federal Trade Commission, Washington, DC, available at: <http://www.ftc.gov/be/workpapers/wp290.pdf>.

Hsiao, C., "Panel data analysis—advantages and challenges," TEST: An Official Journal of the Spanish Society of Statistics and Operations Research, Springer, vol. 16(1), pages 1-22, May 2007.

ICCT, 2012. *European Vehicle Market Statistics: Pocketbook*.

Irina Ivanova and Tsvetelia Tsoleva, 2011. *UPDATE 3-Bulgaria forces LUKOIL Neftochim refinery shutdown*, available at: <http://www.reuters.com/article/2011/07/27/bulgaria-lukoil-idUSL6E7IROBX20110727>

Jorge Leis, John McCreery and Juan Carlos Gay, 2012. *National oil companies reshape the playing field*, available at: <http://www.bain.com/publications/articles/national-oil-companies-reshape-the-playing-field.aspx>

M. Lewis, 2011. *Asymmetric Price Adjustment and Consumer Search: An Examination of the Retail Gas Market*, Journal of Law and Economics, 52(3), pp. 409-449.

Maskin, E. and J. Tirole, 1988. *A theory of dynamic oligopoly II: Price competition, kinked demand curves and Edgeworth cycles*, Econometrica, 56, pp. 571-599.

Noel, M. and M. Lewis, 2009. *The speed of gasoline price response in markets with and without Edgeworth cycles*. Review of Economics and Statistics, 93(2), pp. 672-682;

OECD, 2009. *Policy Roundtables: Competition Policy for Vertical Relations in Gasoline Retailing*. Competition Law & Policy OECD, available at: <http://www.oecd.org/dataoecd/1/22/43040511.pdf>.

Price Waterhouse Coopers. *The emergence of national oil companies*, available at: <http://www.pwc.com/gx/en/oil-gas-energy/national-oil-companies/index.jhtml>

Thaler, R. H. and Sunstein, C.R., 2008. *Nudge: Improving decisions about health, wealth and happiness*. London: Penguin Books, pp. 99, 108.

Unione Petrolifera, *Annual Report 2012*.

West, D. and A. Eckert, 2004. *Retail Gasoline Price Cycles across Spatially Dispersed Gasoline Stations*, Journal of Law and Economics, 47, pp. 245-73.

Wooldridge, J.M, *Econometric analysis of cross section and panel data*, MIT Press, 2010.

ANNEX B. ECONOMIC ANALYSIS

This annex contains information on the methodology relating to the consumer survey and the economic analysis.

STATISTICAL MARGINS DUE TO SAMPLING PROCESS

The following table presents the statistical margins used in this study to assess significance. The left-most column represents the number of observations (sample size) required to reach the requisite confidence interval value, while the top row represents various confidence interval values. In this study, a 95% confidence interval is used as is standard statistical practice. The cells of the table contain the minimum percentage difference required for the null hypothesis to be rejected.

For example, when the sample size is N=500, then the minimum percentage difference required to reject the null hypothesis at a 95% confidence interval is 1.9%. This is then statistically significant at the $p<.05$ level.

Table 111.
Statistical margins
due to the
sampling process

Source: TNS Opinion,
Civic Consulting.
Note: First column lists
various sample sizes,
while first row lists
relevant confidence
intervals.

	5% 95%	10% 90%	15% 85%	20% 80%	25% 75%	30% 70%	35% 65%	40% 60%	45% 55%	50% 50%
N=50	6.0	8.3	9.9	11.1	12	12.7	13.2	13.6	13.8	13.9
N=500	1.9	2.6	3.1	3.5	3.8	4.0	4.2	4.3	4.4	4.4
N=1000	1.4	1.9	2.2	2.5	2.7	2.8	3.0	3.0	3.1	3.1
N=1500	1.1	1.5	1.8	2.0	2.2	2.3	2.4	2.5	2.5	2.5
N=2000	1.0	1.3	1.6	1.8	1.9	2.0	2.1	2.1	2.2	2.2
N=3000	0.8	1.1	1.3	1.4	1.5	1.6	1.7	1.8	1.8	1.8
N=4000	0.7	0.9	1.1	1.2	1.3	1.4	1.5	1.5	1.5	1.5
N=5000	0.6	0.8	1.0	1.1	1.2	1.3	1.3	1.4	1.4	1.4
N=6000	0.6	0.8	0.9	1.0	1.1	1.2	1.2	1.2	1.3	1.3
N=7000	0.5	0.7	0.8	0.9	1.0	1.1	1.1	1.1	1.2	1.2
N=7500	0.5	0.7	0.8	0.9	1.0	1.0	1.1	1.1	1.1	1.1
N=8000	0.5	0.7	0.8	0.9	0.9	1.0	1.0	1.1	1.1	1.1
N=9000	0.5	0.6	0.7	0.8	0.9	0.9	1.0	1.0	1.0	1.0
N=10000	0.4	0.6	0.7	0.8	0.8	0.9	0.9	1.0	1.0	1.0
N=11000	0.4	0.6	0.7	0.7	0.8	0.9	0.9	0.9	0.9	0.9
N=12000	0.4	0.5	0.6	0.7	0.8	0.8	0.9	0.9	0.9	0.9
N=13000	0.4	0.5	0.6	0.7	0.7	0.8	0.8	0.8	0.9	0.9
N=14000	0.4	0.5	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.8
N=15000	0.3	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.8

METHODOLOGY FOR PANEL REGRESSIONS

In order to analyse price differentials between Member States and over time, we use fixed effects panel models to allow for observed as well as for unobserved heterogeneity. More exactly, fixed effects techniques are suitable to account for observable variables at all levels of aggregation and furthermore control for factors that cannot be observed directly. However, fixed effects models are only able to control for unobserved heterogeneity as long as this heterogeneity is constant over time. Using country specific fixed effects allow us to exclude all time-invariant country characteristics and reduce possible concerns about endogeneity.²³⁹ By these means, the main drivers of price differences can be detected.

In order to analyse price differences we estimate the following model:

$$(1) \quad \ln(p_{it}) = \alpha_0 + x'_{it} \beta + u_i + \varepsilon_{it},$$

where

p_{it} is a vector of pre-tax fuel prices (in logarithms), where i = country
and
 t = time,

α_0 is an intercept (to be estimated),

x_{it} is a matrix of explanatory variables,

β is a vector of coefficients (to be estimated),

u_i is a vector of country specific fixed effects (to be estimated) and

ε_{it} a vector of errors.

In order to compare price differences between countries pre-tax prices of both Euro-super 95 as well as diesel fuel have to be considered. All regressions have therefore to be conducted twice: at first using petrol prices as dependent variable and then using diesel prices, subsequently.

As the left hand side (dependent) variable, fuel prices, is given in logarithms, interpretation of the k coefficients to be estimated ($\beta = \beta_1, \dots, \beta_k$) as follows. In

²³⁹ As time-invariant factors are excluded, it is of course not possible to analyse the effects of such factors using fixed effects models.

the case where the explanatory variables are also given in logarithms, the coefficients of the explanatory variable can directly be interpreted as elasticity.

For example, in the hypothetical case where $\log(\text{price Euro-super 95}) = 4.822 + 0.467\log(\text{brent})$, then for each 1% increase in Brent price, the final price of Euro-super 95 at the pump increases by 0.467%. In the case where the explanatory variable is a share, the coefficient can also be interpreted as a quasi-elasticity. To illustrate, suppose that $\log(\text{price Euro-super 95}) = 4.822 + 0.013\text{share\_brand}$. This would mean that for each additional percent of the share of branded retailers in the market, there is an 1.3% (100×0.013) increase in the final price of Euro-super 95, all other things being equal.

Finally, in the case that dummy variables are used as explanatory variables, coefficients can be interpreted as percentage change of the left hand side variable if the dummy variable takes the value of one instead of zero.

METHODOLOGY FOR ANALYSIS OF REGULATORY INTERVENTION

Analysing the impact of the Austrian regulatory intervention on petrol prices in 2009 and 2011, respectively, is no trivial task. A major general concern in analysing policy measures and regulatory interventions is that it is not clear what would have happened without such an intervention. That is, the counterfactual situation cannot be observed. In case of Austria it is therefore not clear which prices would result if the regulation have not been applied. As the intervention can only be included by a dummy variable²⁴⁰ also many other events that took place in the same period can also be measured by this variable. Identification of the policy effect is therefore challenging. As both the 2011 pricing rule as well as the Austrian internet platform were both introduced at the same time, it is not possible to identify the single effects without using additional information.²⁴¹

Moreover, fuel prices are rather volatile and are affected by many determinants. As seen in the previous economic analysis, fuel prices depend on crude oil prices and macroeconomic conditions. But also other factors such as the degree of competition, the structure of demand and costs have an impact on fuel prices. Additionally, we have to ensure, that measured price changes do not depend on institutional differences others than fuel price regulations. It is important to take into account at least the main drivers to prevent a misspecification and an omitted variable bias.

To identify the effects of the pricing rules on price levels in Austria, we follow Dewenter and Heimeshoff (2012) by applying the so called difference-in-differences (DiD) framework.²⁴² The aim of the DiD method is to observe differences in an outcome variable (here fuel prices) over time in both a treatment group (Austria) and a control group (other European countries). By this means, we are able to account for a counterfactual situation which is unobserved for the treatment group. Furthermore, the panel structure of our data also allows us to compare differences between Member States before and after the introduction of the rules in Austria. Analysing the differences between a treatment group and a control group before and after the introduction of the pricing rules enables us to identify the so called treatment effect, which is solely caused by the regulation. The method is well established in economics and much

²⁴⁰ Which is a binary variable with outcome "1" for intervention and "0" for no intervention.

²⁴¹ However, a similar internet information platform is also used in Western Australia along with a similar but also different enough pricing rule. Wang (2009) shows that the Western Australian regulation was only successful for a couple of month before prices rose again on a collusive level, neither the pricing rule nor the platform led to a sustainable lower price level. For this reason, one can assume that the impact of such platforms is rather limited. Hence, it is unlikely that the platform is responsible for strong price decreases (see Dewenter & Heimeshoff, 2012; Wang, 2009).

²⁴² See Angrist and Pischke, 2009, and Wooldridge, 2010 for a description of the method.

more effective than ignoring counterfactual situations. Especially DiD using panel data is a powerful tool for estimating treatment effects.

As a first step we use a simple regression model to determine the effects of regulation ignoring other factors such as macroeconomic and country specific variables. Using the panel structure of the data our first regression equation is:

$$(2) \quad p_{it} = \alpha_0 + \alpha_1 REG_t + \alpha_2 AUSTRIA_i + \alpha_3 REGAUS_{it} + \varepsilon_{it},$$

where

p_{it}	is the fuel price in country i at time t ;
α_0	is an intercept;
REG	is a dummy equal to one for the regulation period (either 2009-2013 or 2011-2013);
AUSTRIA	is a dummy indicating the country of Austria;
REGAUS	(=REG x AUSTRIA) measures the difference-in-differences between treatment and control groups as well as regulation and non-regulation periods; and
ε_{it}	is an idiosyncratic error term.

As REG is equal to one for the regulation period, REG measures the price changes from January 2011 onwards. AUSTRIA in contrast is only equal to one if Austrian prices are considered and zero otherwise. Therefore, AUSTRIA measures the price differences between Austria and other countries. Hence, REGAUS is equal to unity if the regulation took place in Austria. REGAUS therefore measures the difference between both differences (see below for a more detailed explanation).

In a second step also other factors are taken into account in order to control for heterogeneity between Member States that could possible drive the differences in prices:

$$(3) \quad p_{it} = \alpha_0 + \alpha_1 REG_t + \alpha_2 AUSTRIA_i + \alpha_3 REGAUS_{it} + x'_{it} \beta + \varepsilon_{it},$$

where x'_{it} includes a number of different macroeconomic and country specific variables and β is a vector of coefficients.

As the so called difference-in-differences parameter (DiD, see Table 98 below), REGAUS measures the impact of regulation as a difference between the

difference of regulation and non-regulation periods of the treatment group on the one hand and the control group on the other hand, the pure effect of regulatory interventions can be identified as

$$DiD = (p_{treat,reg} - p_{treat,non-reg}) - (p_{control,reg} - p_{control,non-reg}).$$

That is, REGAUS measures the difference between the difference in prices between regulation and non-regulation periods in Austria and the difference in prices between regulation and non-regulation periods in other European countries. In case that prices have behaved similar in other countries during the regulation period the Austrian regulatory intervention cannot be responsible. In case that the Austrian prices are lower (i.e. REGAUS has a negative sign) the pricing rule was effective.

Table 112.
Difference-in-
differences
(expected values)

Source: Civic
Consulting.

	Non-regulation period	Regulation period	Difference
Treatment group	$\alpha_0 + \alpha_2 + x'_{it} \beta$	$\alpha_0 + \alpha_1 + \alpha_2 + \alpha_3 + x'_{it} \beta$	$\alpha_1 + \alpha_3$
Control group	$\alpha_0 + x'_{it} \beta$	$\alpha_0 + \alpha_1 + x'_{it} \beta$	α_1
Difference	α_2	$\alpha_2 + \alpha_3$	α_3

Overall, the difference-in-differences method is well suited to identify possible effects of regulatory intervention in this case as Austrian petrol prices can be compared to prices from 24 other European countries. We can moreover control for a number of external factors. However, as explained above, we are not able to differentiate exactly between the impact of pricing rule on the one hand and the effect of the internet platform on the other hand.

ANNEX C. STAKEHOLDERS

Table C1. Names of organisations that responded to the stakeholder survey

Response #	Name of stakeholder organisation
1	ADAC e.V.
2	AFM+E Aussenhandelsverband für Mineralöl und Energie
3	ANWB
4	Apetro – Associação Portuguesa de Empresas Petrolíferas
5	Asociatia pentru Protectia Consumatorilor din Romania (APC – Romania)
6	Associação de Consumidores de Portugal
7	Association for the use of the renewable and alternative resources
8	Association of Consumers' Protection UGANDI
9	Austrian Petroleum Industry Association (APIA)
10	AUTOMOBILE CLUB D'ITALIA
11	Autorità Garante della Concorrenza e del Mercato
12	Belgian Competition Authority (Directorate general)
13	Belgian Petroleum Federation
14	BOVAG (petrol & carwash department)
15	Bulgarian petroleum and gas association
16	Bundesverband Freier Tankstellen e.V. (bft) (Association of Independent Petrol Stations in Germany)
17	CECRA
18	Comisión Nacional de la Competencia
19	Commission for the Protection of Competition
20	Competition Council
21	Competition Council of the Republic of Lithuania
22	Consumer Advisory Centre in Tallinn
23	Consumer Organization "The Quality of Life" – EKPIZO
24	CYPRUS AUTOMOBILE ASSOCIATION
25	Cyprus Consumers' Association
26	Czech Association of Petroleum Industry and Trade
27	Deco Proteste
28	Energi- og olieforum
29	Ensus
30	Estonian Competition Authority
31	European Automobile Manufacturers Association (ACEA)
32	EUROPIA – a Division of CONCAWE – representing the European Oil Industry (refinery and marketing)
33	FEBIAC

34	FEDERAUTO
35	Felag islenskra bifreidaiegenda (Icelandic Automobile Association)
36	Forbruker Europa
37	fuel 21 GmbH &Co KG
38	Green Source
39	HELLENIC COMPETITION COMMISSION
40	Hellenic Petroleum Marketing Companies Association
41	Hungarian Competition Authority (GVH)
42	Hungarian Petroleum Association
43	Hveiti
44	Hyundai Motor Europe
45	Icelandic Standards
46	Irish Petroleum Industry Association
47	KEPKA CONSUMERS PROTECTION CENTER
48	Konkurransetilsynet - the Norwegian Competition Authority
49	lvs
50	Mineralölwirtschaftsverband e.V.
51	MRA
52	National Association of Financial Services Consumers
53	National Consumer Agency
54	NGVA Europe (Natural & bio Gas Vehicle Association)
55	OeAMTC (Oesterreichischer Automobil, Motorrad- und Touringclub)
56	Office for Competition
57	Office for the Protection of Competition
58	Office of Competition and Consumer Protection (UOKiK)
59	Polska Organizacja Przemysłu i Handlu Naftowego (Polish Organisation of Oil Industry and Trade)
60	Slovensky plynarensky priemysel, a.s., Bratislava, Slovak Republic
61	Spanish Ministry of Industry, Energy and Tourism
62	State Consumer Rights Protection Authority of the Republic of Lithuania
63	State Non Food Products Inspectorate under the Ministry of Economy of The Republic of Lithuania
64	Swedish Competition Authority
65	Tartu Consumer Advice and Information Centre
66	Test-Aankoop
67	The Danish Competition and Consumer Authority
68	The Finnish Competition and Consumer Agency
69	The Society of Motor Manufacturers and Traders Limited
70	the Swedish Automobile Association
71	TLN
72	Touring Club Malta
73	Toyota Motor Europe

74	UFIP (Union Française des Industries Pétrolières)
75	Union Luxembourgeoise des consommateurs
76	Union of Bulgarian Motorists (UAB)
77	Unione Nazionale Consumatori (UNC)
78	Unione Petrolifera
79	ZAP SR
80	ZPS - Zveza potrošnikov Slovenije (Slovene Consumers' Association)