Final report of the PSA on Fuel Price comparison

Assisting Member States with the implementation of Article 7.3 of Directive 2014/94/EU (Fuel Price Comparison)

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Final report of the PSA on Fuel Price comparison

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European Commission DG Mobility and Transport **Connecting Europe Facility**	**Final report**

1. INFORMATION ON THE ACTION

Grant Agreement Nº	MOVE/B4/SUB/2018-491/CEF/PSA/SI2.798275
Action title	"Assisting Member States with the implementation of Article 7.3 of Directive 2014/94/EU (Fuel Price Comparison)"
PCI (if applicable)	

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EXECUTIVE SUMMARY (EN)

For CEF-Energy only, please provide an executive summary for publication and transmission to interested parties on the results of the activities carried out during the implementation period in relation to the execution of the Action. It should contain

- **a brief description of the Action and of the related activities,**
- **the duration of the Action and of the related activities and**
- **the main outcomes of the Action and of the related activities.**

The "Multi-Annual Work Programme 2014-2020 for financial assistance in the field of the Connecting Europe Facility (CEF) - Transport sector" adopted by the Commission on 26 March 2014 (C(2014) 1921 offers technical assistance to the Member States (MS) for the implementation of Article 7.3 of Alternative Fuel Infrastructure Directive 2014/94/EU (AFID).

The Programme Support Action (PSA) entitled "Assisting Member States in the implementation of a common methodology for alternative fuels unit price comparison in accordance with Directive 2014/94/EU" was initiated on17th of January 2019 and finalised on 30th of September 2020. The aim of the PSA was to assist MS with the implementation of Article 7.3 of the AFID. In specific, the consortium would provide recommendations on fuel prices to enable consumers to compare the fuel/running costs of vehicles with different fuels in a common unit (€/100km). The consortium consisted of Greece (the Coordinator), Cyprus, Germany, Finland, France, Croatia, Netherlands, Portugal and Spain.

The PSA implementation plan was divided in six activities which are the following:

Activity 1: Dissemination of the fuel price methodology in each of the participating Member States

Activity 2: Definition of the contents, format and location of the information on fuel price for comparison, to be displayed at fuelling stations

Activity 3: Pilot action to test different options concerning format, contents and location of fuel prices for comparison at the filling stations

Activity 4: Consistent implementation of the provisions of Article 7.3 of the Alternative Fuel Infrastructure Directive in all MS

Activity 5: Development of a portal/online tool to display fuel prices/costs

Activity 6: Coordination

The duration of the PSA was initially foreseen to be fifteen months (to be finalised on the 30th of April 2020), however the COVID-19 outbreak affected the pilot actions scheduled and resulted in extended the PSA for five months.

In the course of the PSA, several accomplishments were achieved in fields of developing communication channels with the stakeholders of the transport sector, collecting, and assessing the input of over 12700 European consumers regarding the Fuel Price

Comparison (FPC). In this regard, the consortium conducted the recommendations for a consistent implementation of the Art. 7.3 of the AFID and disseminated the outcome of the PSA through the official FPC4Consumers.eu website, by participating in two Alternative Fuel Infrastructure (AFI) meetings as well as by publishing a paper regarding the methodology for price calculations at the Energy in Transport Conference of ASHRAE (2019). The consortium completed the abovementioned Activities and delivered the recommendations to the European Commission on the beginning of July 2020.

This document describes the scope and the objectives of this PSA and it provides a detailed presentation of the main findings of the online and offline surveys performed in the framework of activities 2 & 3. Afterwards, the results of the PSA are presented in relation to the content of information to be displayed, the format of the display as well as the location to be placed. These results led to the recommendations for assisting MS with implementing the Art. 7.3 and applying the Implementing Regulation (EU) 2018/732 on the 7th of December 2020. This document also includes the outcome of each MS regarding the adaptation of the Article and the main challenges faced during the different phases of implementation of the PSA. Finally, the deliverables, which present the actions performed in the framework of each activity, are annexed in the end of the document.

EXECUTIVE SUMMARY (DE)

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- **the main outcomes of the Action and of the related activities.**

Das von der Kommission am 26. März 2014 verabschiedete „Mehrjahresarbeitsprogramm für die finanzielle Unterstützung im Bereich Verkehr der „Connecting Europe Facility" (CEF) für den Zeitraum 2014-2020" (C(2014) 1921) bietet den Mitgliedstaaten (MS) technische Unterstützung für die Umsetzung von Artikel 7 Absatz 3 der Richtlinie über den Aufbau der Infrastruktur für alternative Kraftstoffe (2014/94/EU (AFID).

Die Programmunterstützungsmaßnahme (PSA) „Unterstützung der Mitgliedstaaten bei der Umsetzung einer gemeinsamen Methodik hinsichtlich des auf eine Maßeinheit bezogenen Vergleichspreises nach Richtlinie 2014/94/EU wurde am 17. Januar 2019 initiiert und am 30. September 2020 abgeschlossen. Ziel der PSA war die Unterstützung der MS bei der Umsetzung von Artikel 7 Absatz 3 der AFID. Insbesondere sollte das Konsortium Empfehlungen zu den Berechnungen von Kraftstoffkosten abgeben, um es den Verbrauchern zu ermöglichen, die Kosten unterschiedlicher Energieträger bezogen auf eine gemeinsame Maßeinheit (€/100 km) zu vergleichen. Das Konsortium bestand aus Griechenland (Koordination), Zypern, Deutschland, Finnland, Frankreich, Kroatien, den Niederlanden, Portugal und Spanien.

Der Umsetzungsplan für die PSA beinhaltete folgende 6 Aktivitäten:

Aktivität 1: Bekanntmachung der Kraftstoffkostenmethodik[1] in jedem der teilnehmenden Mitgliedstaaten

Aktivität 2: Festlegung der Inhalte, Formate und örtlichen Platzierung für die an Tankstellen anzuzeigenden Vergleichskosten für Kraftstoffe

Aktivität 3: Pilotmaßnahme zur Erprobung verschiedener Möglichkeiten hinsichtlich des Formats, des Inhalts und der örtlichen Platzierung der Kraftstoffvergleichskosten an Tankstellen

Aktivität 4: Einheitliche Umsetzung der Bestimmungen von Artikel 7 Absatz 3 der Richtlinie über den Aufbau der Infrastruktur für alternative Kraftstoffe in allen MS

[1] In Deutschland hat sich der Begriff „Energiekostenvergleich" für diese Methodik etabliert.

Aktivität 5: Entwicklung eines Portals/webbasierten Instruments zur Darstellung von Kraftstoffkosten

Aktivität 6: Koordination

Die Laufzeit dieser PSA sollte zunächst fünfzehn Monate betragen (geplanter Abschluss am 30. April 2020), wobei der Ausbruch von COVID-19 jedoch zu Verzögerungen bei den angesetzten Pilotmaßnahmen und letztendlich zu einer fünfmonatigen Verlängerung der PSA führte.

Im Laufe der PSA wurden verschiedene Erfolge auf dem Gebiet der Entwicklung von Kommunikationswegen mit den Akteuren des Verkehrswesens erzielt sowie 12 700 europäische Verbraucher zum Kraftstoffpreisvergleich befragt und die Ergebnisse ausgewertet. In dieser Hinsicht folgte das Konsortium den Empfehlungen für eine konsequente Umsetzung von Artikel 7 Absatz 3 der AFID und verbreitete die Ergebnisse der PSA über die offizielle Webseite FPC4Consumers.eu, nahm an zwei Treffen des Ausschusses der Kommission zur Infrastruktur für alternative Kraftstoffe teil und veröffentlichte 2019 anlässlich der Konferenz „Energy in Transport" der ASHRAE ein Dokument über die Methodik von Preisberechnungen. Das Konsortium hat die o.g. Aktivitäten abgeschlossen und der Europäischen Kommission seine Empfehlungen Anfang Juli 2020 übergeben.

Im vorliegenden Dokument werden der Umfang und die Ziele dieser PSA beschrieben; zudem werden die wesentlichen Erkenntnisse aus den im Rahmen der Aktivitäten 2 und 3 erfolgten Online- und Offlinebefragungen detailliert dargestellt. Anschließend werden die Ergebnisse der PSA bezüglich der anzuzeigenden Informationen, des Formats der Anzeigetafel sowie des Ortes, an dem sie anzubringen ist, dargestellt. Diese Ergebnisse führten zu den Empfehlungen zur Unterstützung der MS bei der Umsetzung von Art. 7 Absatz 3 und der Anwendung der Durchführungsverordnung (EU) 2018/732 am 7. Dezember 2020. Das vorliegende Dokument enthält außerdem die Ergebnisse jedes MS hinsichtlich der Umsetzung des Artikels sowie die wesentlichen, in den verschiedenen Umsetzungsphasen der PSA auftretenden Herausforderungen. Abschließend sind die zu erbringenden Leistungen in Form der im Rahmen jeder Aktivität durchgeführten Aktionen am Ende des Dokuments angefügt.

EXECUTIVE SUMMARY (FR)

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- **the duration of the Action and of the related activities and**
- **the main outcomes of the Action and of the related activities.**

Le programme de travail pluriannuel 2014-2020 sur le volet financier du Mécanisme pour l'Interconnexion de l'Europe – Transports adopté par la Commission européenne le 26 mars 2014 (C(2014) 1921) prévoit une assistance aux Etats membres concernant l'application de l'article 7.3 de la directive 2014/94/UE sur le déploiement d'une infrastructure pour carburants alternatifs (AFID).

Le projet d'action support (PSA) intitulé "Assistance aux Etats membres pour la mise en œuvre d'une méthodologie commune de comparaison des prix des carburants alternatifs en application de la directive 2014/94/UE" a été lancé le 17 janvier 2019 et s'est achevé le 30 septembre 2020. L'objectif du PSA était d'assister les Etats membres dans la mise en œuvre de l'article 7.3 de la directive. En particulier, le consortium était chargé d'émettre des recommandations permettant la comparaison des prix des carburants dans une unité commune (€/100 km). Le consortium a réuni la Grèce (qui en assurait la coordination), Chypre, l'Allemagne, la Finlande, la France, la Croatie, les Pays-Bas, le Portugal et l'Espagne.

Le cahier des charges du PSA comprenait les six livrables suivants :

Activité 1 : Diffusion de la méthode de comparaison des prix dans les Etats membres participants

Activité 2 : Définition du contenu, du format et de l'emplacement de la comparaison à afficher dans les stations-service

Activité 3 : Actions pilotes d'évaluation du format, du contenu et de l'emplacement de la comparaison en stations-service

Activité 4 : Application cohérente des dispositions de l'article 7.3 de la directive sur le déploiement d'une infrastructure pour carburants alternatifs dans tous les Etats membres

Activité 5 : Développement d'un portail informatique affichant les prix des carburants

Activité 6 : Coordination

Le PSA devait initialement durer quinze mois (avec un rendu prévu le 30 avril 2020), mais l'épidémie de COVID-19 a affecté le bon déroulement des actions pilotes en stations-service et a conduit à cinq mois d'extension du programme.

Plusieurs avancées sont à mettre au compte du PSA comme l'établissement de relations de travail sur le sujet avec les parties prenantes du secteur des transports et l'interrogation de 12 700 citoyens de l'Union sur la mise en place du dispositif de

comparaison. Dans cette optique, le consortium a établi des recommandations pour une application cohérente de l'article 7.3 de la directive 2014/94 et les a diffusées par l'intermédiaire du site FPC4Consumers.eu, en participant à deux comités AFI et en diffusant un article sur la méthode de calcul des prix en €/100 km à l'occasion de la conférence sur l'énergie dans les transports organisés par ASHRAE en 2019. Le consortium a terminé les activités mentionnées plus haut et transmis ses recommandations à la Commission européenne début juillet 2020.

Ce document décrit le périmètre et les objectifs du PSA et détaille les réponses obtenues lors des sondages menés en ligne et en stations-services dans le cadre des activités 2 et 3. Plus loin sont présentées les conclusions du PSA concernant les informations à présenter dans la cadre de la comparaison, leur format et leur emplacement. Ces résultats ont conduit aux recommandations destinées à assister les Etats membres pour la mise en œuvre de l'article 7.3 et l'application du règlement d'exécution 2018/732 du 7 décembre 2020. Ce document comprend également les propositions de chaque pays pour l'adaptation de l'article 7.3 et les principales difficultés rencontrées lors de l'exécution du PSA. Enfin, les livrables présentant les travaux accomplis pour remplir chaque activité du cahier des charges sont annexés au document.

2. IMPLEMENTATION OF THE ACTION

2.1. Overall completion of the Action

Planned Start/End date[2]		Actual Start/End date		Completion[3]
M1 February 1st, 2019	M15 April 30th, 2020	M1 February 1st, 2019	M20, September 30th, 2020	100%

2.2. Completion per activity

Activity 1	Title[1]	Planned Start/End date[1]		Actual Start/End date		Completion
	Dissemination of the fuel price methodology in each of the participating Member State	M1	M15	M1	M20	100%
Milestone no	**Title[1]**	**Planned date[1]**		**Actual date**		**Reached (Y/N)**
MS02	Informative workshop	M1, M4, M12		M1, M4, M6		Y
MS03	Informative materials	M3		M3		Y
MS04	Website launched	M1		M1		Y
MS11	Technical meetings	Every 2 months		M1,M3,M5,M7,M9,M11,M13,M15,M17,M19		Y

[2] As specified in the Grant Agreement.

[3] The completion of the action and of each activity should be indicated as a percentage.

Activity 2	Title[1]	Planned Start/End date[1]		Actual Start/End date		Completion
	Definition of the contents, format and location of the information on fuel price for comparison, to be displayed at fuelling stations	M2	M7	M2	M9	100%
Milestone no	**Title[1]**	**Planned date[1]**		**Actual date**		**Reached (Y/N)**
MS06	On line questionnaire	M6		M7		Y

Activity 3	Title[1]	Planned Start/End date[1]		Actual Start/End date		Completion
	Pilot action to test different options concerning format, contents and location of fuel prices for comparison at the filling stations	M7	M15	M7	M20	100%
Milestone no	**Title[1]**	**Planned date[1]**		**Actual date**		**Reached (Y/N)**
MS07	Pilots at each MS	M9		M20		Y

Activity 4	Title[1]	Planned Start/End date[1]		Actual Start/End date		Completion
	Consistent implementation of the provisions of Article 7.3 of the Alternative Fuel Infrastructure Directive in all MS	M10	M15	M10	M17	100%

Milestone no	Title[1]	Planned date[1]	Actual date	Reached (Y/N)
MS05	Common Methodology on price calculation	M10	M13	Y
MS08	Initial evaluation of results in relation to Article 7.3 of Directive 2014/94/EU	M15	M17	Y

Activity 5	Title[1]	Planned Start/End date[1]		Actual Start/End date		Completion
	Development of a portal/online tool to display fuel prices/costs	M11	M15	M11	M20	100%
Milestone no	**Title[1]**	**Planned date[1]**		**Actual date**		**Reached (Y/N)**
MS09	Portal launched	M13		M13		Y

Activity 6	Title[1]	Planned Start/End date[1]		Actual Start/End date		Completion
	Coordination	M1	M15	M1	M20	100%
Milestone no	**Title[1]**	**Planned date[1]**		**Actual date**		**Reached (Y/N)**
MS01	Kick off meeting	M2		M2		Y
MS10	Final workshop	M15		M20		Y

2.3. Description of the implementation of the Action, including the actual status at the end of the Action and possible deviations from the planned activities, and, if applicable, compliance with any relevant specific provisions as indicated in the Annex I of the GA

1. Main findings of online and offline surveys

Consumer demand and acceptance is essential for a successful implementation of the fuel price comparison information. Therefore, in **Activity 2** the MS conducted national surveys to study consumers' perceptions of certain elements regarding the idea of the €/100 km price displays, such as the ideal location and update intervals of the information. Additionally, in **Activity 3** the MS performed field research to explore consumer reactions to the price comparison information in the intended real-world context, i.e. at filling stations. In this manner, consumer opinions were considered in the development and finalization of the FPC displays. Besides, stakeholders (representatives of filling stations) were consulted on a national level throughout the PSA. Lastly, the participating MS drew lessons when implementing the pilot actions.

1.1. Online surveys

An online survey for consumers was conducted to collect information on elements of the FPC information content and its most appealing location on the fuelling stations. Additionally, information was gathered on consumers' overall knowledge regarding alternative fuels. This information was used for in-depth analysis through multiple lenses, including generational, socio-economic, gender, and many others. Furthermore, intending to ensure sizable and adequate samples, MS aimed to collect and analyse responses from minimum 1500 consumers in each of the participating MS whose population is more than 20 million inhabitants and 700 consumers for states with a population less than 20 million. In total, **7612 respondents** participated in the online survey, covering different ages, dwelling environments and vehicles' preferences and needs. In specific, for the analysis, several **independent parameters** were identified including (1) Age, (2) Degree of Urbanisation, (3) Vehicle size used and (4) Daily distance covered. Considering the age of the respondents, three groups are selected. **Σφάλμα! Το αρχείο προέλευσης της αναφοράς δεν βρέθηκε.** summarizes the independent parameters and their categories used for the evaluation of the results.

Table 1 Evaluation of respondents based on the following parameters

Age	Degree of urbanisation	Vehicle size	Daily distance
Young Adults Middle-aged Adults Older Adults	Urban Suburban Rural	Small vehicle Medium vehicle Large vehicle	Short distance Medium distance (Very) Long-distance

The online questionnaire conducted by each of the MS was communicated to the consumers via a user-friendly interface and a simple structure so to ensure maximum engagement. Both anonymizations of the responders and ethical issues were considered to ensure privacy and personal data protection through the whole process. The questionnaire was complied with the relevant EU standards and regulations, with respect to personal data protection and ethical issues.

It is noted that the questions in the online survey did not include *per se* the question about the relevance of FPC information shown particularly in the filling station environment; it was taken as granted, as the filling stations would be the site for delivering FPC information.

The data from the participating MS provided information on how consumers perceive alternative fuels' prices and environmental impacts as well as information on consumers' willingness to consider fuel costs when purchasing a new vehicle. Regarding the current situation in the participating MS, the majority of responders indicated that they cover an average distance of up to 50km daily. They also stated that they currently drive Alternative Fuel Vehicles (AFVs) with a percentage of ~10%, petrol-powered vehicles with a percentage of ~50% and diesel-powered vehicles with a percentage of 40%.

The participants of the online survey were asked to evaluate their knowledge level regarding alternative fuels. The results show the electric-powered vehicles and hybrid electric vehicles to be the most well-known, whereas hydrogen vehicles are the least known alternative fuel vehicles, as shown in Figure 1. Almost half of the responders are interested in learning more about the alternative fuel while it was explicitly stated that 'Further education on this topic is needed'. Responders showed interest in getting informed not only about the fuel costs of the different fuel types but also expressed the "need for really honest and good information about the environmental impact of the various fuels, the costs of car and fuel, etc."

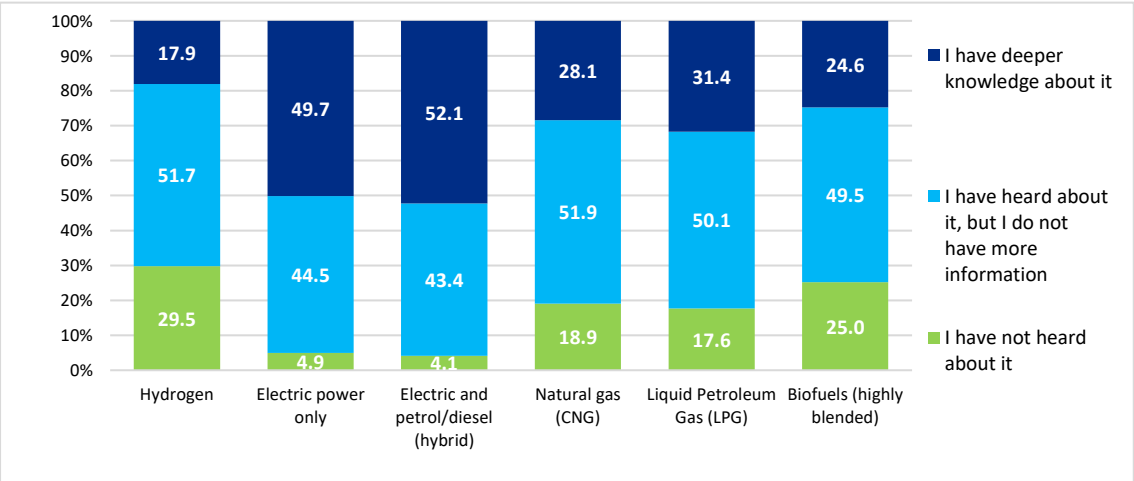


Figure 1. Online questionnaire overall evaluation of the knowledge level of AF

In parallel, the majority of responders expressed their environmental awareness and their will to make fuel consumption choices based on their environmental impact. Considering the comments received by the open feedback section, they

uttered that limited number of filling stations providing alternative fuels are considered an essential limitation for the penetration of alternative fuel-powered vehicles to the market, especially in MS, where drivers tend to cover longer distances in a daily basis. When buying a new car, responders were asked to indicate the factors, which would affect their selection of a new vehicle, between the following options: a) Environmental performance; b) Fuel costs; c) Driving range (how far can this vehicle drive with a full tank or full battery); d) Duration of refuelling/recharging; e) Vehicle price; f) Availability of fuelling stations; g) Resale price and i) None of the above. The overall results show that the two most significant factors are the price of the vehicle with a percentage of 24% and the cost of the fuels with a percentage of 20%. Hence, the FPC is proved essential for facilitating the consumers to compare fuel prices under the same unit. Additionally, the responders were provided with the option h) other, which provided them with an open box to mention other reasons/factors, which would affect their decision. According to results, responders stated that the appearance and comfort of the vehicle is a priority in selecting a new vehicle. In this line, aspects such as driving characteristics, quality of equipment and features, safety and car practicality are considered as well in order to ensure that the new vehicle will be suitable to the buyer's needs. Therefore, the reasons, which affect the willingness of the responders to buy a new vehicle, are proved diverse and numerous and every consumer prioritizes his/her reasons and factors when he/she selects a new vehicle.

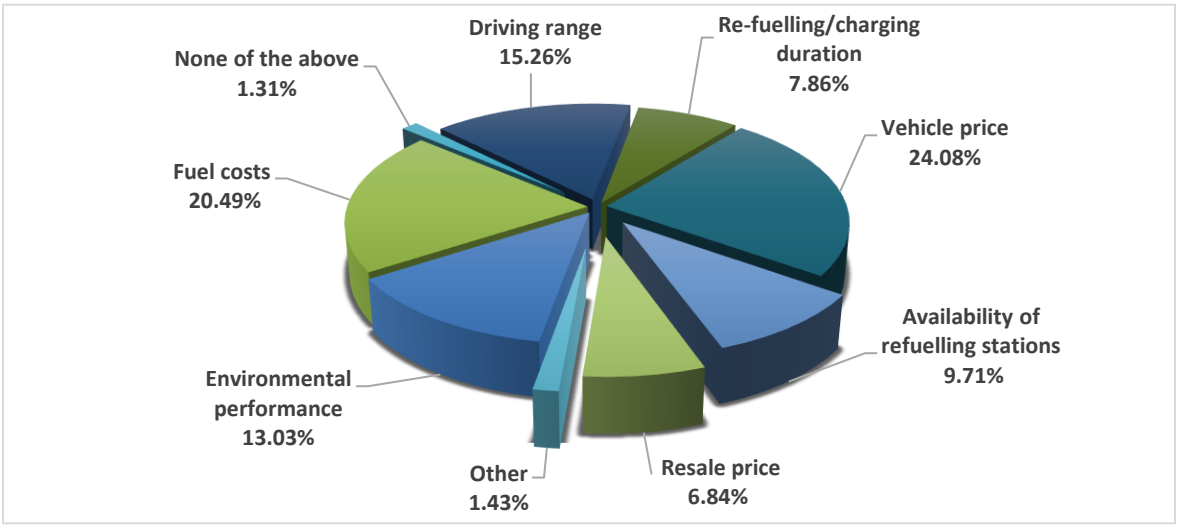


Figure 2. Online questionnaire overall evaluation of factors affecting consumers' willingness to buy a new vehicle

Because of FPC prices (€/100km), a significant percentage of responders ask for more details about the values used for these estimations. In specific, the consumption values used, should be reflected in order to provide comprehensive information to the consumers as well as to "implement the emissions generated for such consumption (NO_x, CO_2, etc.), perhaps depending on the different energy classifications of vehicles and/or (real) consumptions". Considering the purposes of the PSA, responders seek for a holistic study which will consider the current engine technologies in relation to the emissions and consumption and it will provide valuable guidelines, taking into account both environmental considerations and drivers' preferences. In this line, the classification of vehicles

by what they pollute is suggested by the responders. Additionally, the environmental impact of the manufacturing process of new vehicles is essential and more detailed information could be provided in such a study.

In terms of location of the information to be displayed at a filling station, responders indicated that they would prefer to be able to compare fuel prices while they refuel/recharge their vehicle. Besides filling stations, they would prefer to find information regarding the fuel/energy price comparison, in €/100 km, in the following:

- On website/Internet
- At car dealership
- TV/Media/News/Radio

As for the format of the information, it was concluded to be tested in pilots (section 2.2), displaying a table format with the FPC prices of the fuel types, accompanied by contact information in case they needed support with the displayed information. Therefore, these aspects were taken into consideration by the PSA in order to raise awareness about the environmental impact of conventional fuel-powered vehicles and enhance the penetration of alternative fuels in the mobility market.

1.2. Offline surveys (Activity 3)

The offline interviews were oriented to the evaluation of the alternative displaying options for alternative fuel price comparison at filling stations during the pilot action. The consortium concluded to the six pilot schemes (described in D3.3), which aim to assess the effectiveness of the different **formats**:

- Display FPC prices of one segment (€/100km)
- Display FPC prices of three segments (€/100km)

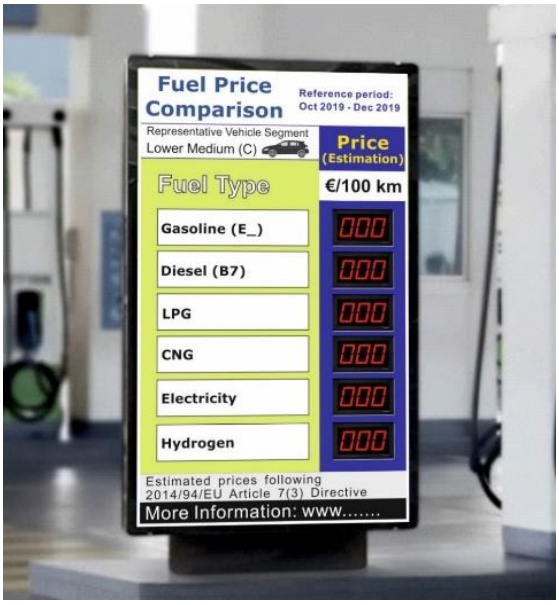


Figure 3. Display of one segment

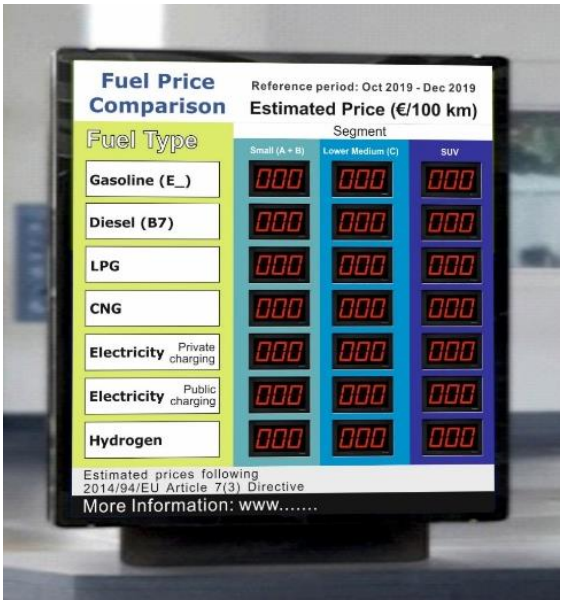


Figure 4. Display of three segments

Figures Figure 3 and Figure 4 depict the initial approach on the different formats, which were tested. The key points, which would require being included, were the following:

- Table with FPC prices (€/100km)
- Indication of the selected type of fuel, which were used (i.e. Diesel B7)
- Reference of the selected segments
- Logo of the PSA project and EU
- Reference to the related AFID
- Indication to the reference period, for which the prices were calculated (i.e. Oct 2019 – Dec 2019)
- Contact information, which would direct consumers to the official website for further information

The participating MS proceeded with designing their formats and translating them to their national language. The figures below illustrate formats, which were used for the pilot actions and the offline interviews. In some MS, a more elaborate explanation was added explaining to consumers the content of the FPC and that it gave an indication of the price. Stakeholders were afraid that otherwise (given the fact that the calculation was based on one vehicle per segment) consumers would be misled. This disclaimer emphasised that the prices indicated can vary per specific situation.

Figure 5. Greek format

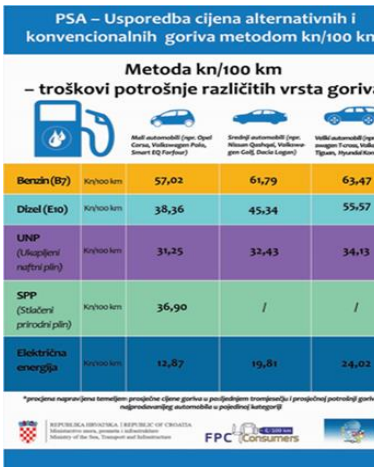


Figure 6. Croatian format

Figure 7. Finnish format

Figure 8. Cypriot format

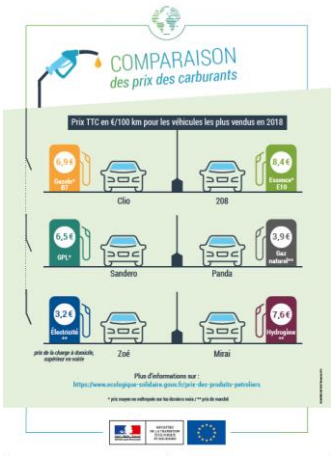


Figure 9. French format

Figure 10. German format

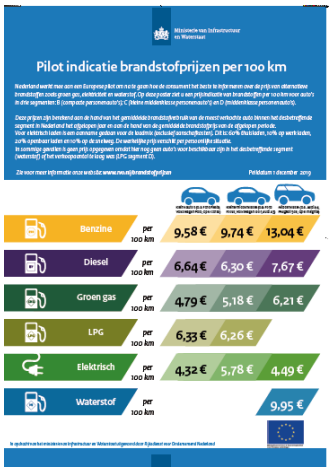


Figure 11. Dutch format

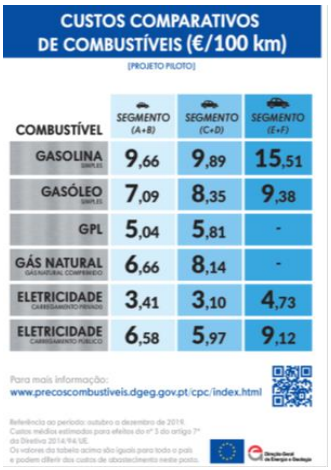


Figure 12. Portuguese format

Figure 13. Spanish format

These formats were optionally displayed on the following alternatives:

- TVs/Monitors
- Banners/Posters
- Informative sheets/leaflets.

These **options** to display these options were selected after the elaboration of the cost and benefits analysis performed in MS level and the consideration of the outcomes of the online survey. Initially, five options were considered such as posters/banners, paper sheets, TVs / computer screens, receipts and totems. Posters and banners would provide diverse benefits such as availability of variable sizes and formats, as well as plenty of options for placing the displays at the filling stations. In parallel, the cost of posters and banners would be relatively low. In addition, paper sheets and leaflets would have the advantage of being visible at the pump on eye-level. However, the disadvantage is the litter it will provide and the need for frequent replacements because of damage. The option of TVs and monitors would consist in having a screen available in the service station, displaying the fuel price comparison either by directly browsing the online tool or by downloading data on a USB stick at the required frequency. The screen display, therefore, better fits the concept of updating the FPC prices every three months, yet the disadvantage might be that the display takes up commercial time and the cost of a new screen is proved significantly high. On the other hand, receipts and totems presented limited advantages as they are mainly used for displaying the actual prices of the provided fuels and adding the FPC could mislead the consumers. Simultaneously, the cost of modifying either receipt or totem was very high while in some cases the legislative framework did not allow any modification. Overall, Figure 14 and Figure 15 depict the analysis for France and the Netherlands.

	Cost	Benefit
A2/A3 Poster		
A4 Paper sheet		
TV/Computer screen		
Receipt		
Totem		

Figure 14 Cost and benefits analysis of France

	Cost	Benefit
Poster/banner		
A4 Paper sheet		
TV/Computer screen		
Receipt		
Totem		

Figure 15 Cost and benefits analysis of the Netherlands

The MS were able to display the FPC prices (€/100km) on the following locations:

- At the pump (i.e. poster, informative sheets/leaflet, banner)
- Outside of the shop, located in the filling station (i.e. poster, banner)
- Inside the shop, located in the filling station (i.e. poster, informative sheets, TVs/monitors)

Figure 16. Pilot FPC displays at (a) France, (b) Germany and (c) Greece

The **content** of information was based on the calculation of the FPC prices (€/100km) taking into account the best-selling vehicle segments from the previous year and the best-selling vehicle models within them as well as the average fuel prices from the previous quarter. Considering the pilot actions, the prices of conventional and alternative fuels were estimated by the following formula:

$$\boldsymbol{FPC}\left(\frac{€}{\boldsymbol{100km}}\right) = \boldsymbol{Vehicle\ Consumption}\left(\frac{\boldsymbol{fuel\ unit}}{\boldsymbol{100km}}\right) \cdot \boldsymbol{Average\ Fuel\ Price}\left(\frac{€}{\boldsymbol{fuel\ unit}}\right) \quad [1]$$

The *first factor* refers to the combined consumption tested by WLTP protocol for the best-selling vehicle per fuel type and segment. The vehicle, which was first in sales the previous year for each segment and fuel type, was selected. In the framework of this PSA, the vehicle categories, which were considered for the FPC price calculations, were the following:

- Mono fuel vehicle (liquid / gas)
- Pure electric vehicle (PEV)
- Fuel cell vehicle (FCV)

Additionally, the consortium decided to use the Bi-fuel gas vehicles for calculating alternative fuel FPC values of CNG in case of limited data derived from the Mono-fuel gas vehicles for a MS.

The *second factor* refers to the average prices of each fuel type in the previous calendar quarter measured in euros/national currency per fuel unit. Taking into account that there are discrepancies in the fuel market at each MS, MS selected the representative reference fuels types for which they calculated the FPC prices (€/100km) in MS level.

The pilot actions started in January 2020 and extended until July 2020 due to COVID-19 situation. Regarding the sample, the MS with population up to 20M inhabitants were supposed to select at least 10 filling stations placed in (1) urban areas, (2) the TEN-T Comprehensive Network and (3) the TEN-T Core Network and interview at least 400 persons. On the contrary, MS with a population of more than 20 M inhabitants were expected to perform the tests at 15 filling stations with the participation of 1000 persons. In total, **5120 customers** participated in the pilot survey. Below it is shown the respondents distribution to the **88 pilot filling stations**.

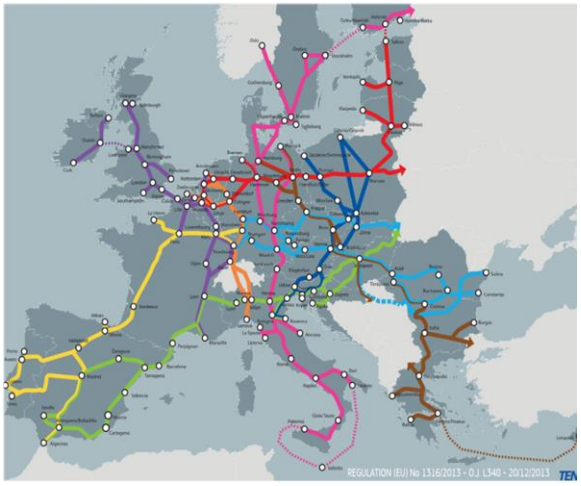


Figure 17 Trans-European Transport Network (TEN-T) connecting cities in the EU

Figure 18 Location of selected pilot test sites (filling stations)

A set of face-to-face interviews, conducted at the fuel stations for increasing the European citizens' involvement and evaluating the type of information consumers are looking at, when purchasing and fuelling their vehicle; the level of awareness regarding alternative fuels; and the understanding and effectiveness of alternative fuels price comparison.

The interview would start by asking the respondents whether they noticed the FPC display at the filling station. The results showed that the majority of respondents did not notice at first the FPC displays with a share of 79.8%, whereas 7.6% of respondents noticed very clearly the FPC displays and 12.7% noticed the FPC displays but they did not give much attention to them. While the share of respondents who noticed the FPC seems limited, this share is

considered promising and effective when compared to similar advertising surveys.

In terms of location, it was shown that placing the FPC on a wall of the filling station's shop was the most noticeable location, in which ~50% of the respondents that were presented this option noticed the displays. Then, the next most appropriate location was outside the shop where 35.9% of the respondents noticed the FPC displays and at the pump (28.0%). On the contrary, locations such as inside the entrance of the shop and at the cashier present the least noticeable places for this display. Figure 19 depicts the results for all the locations that were tested.

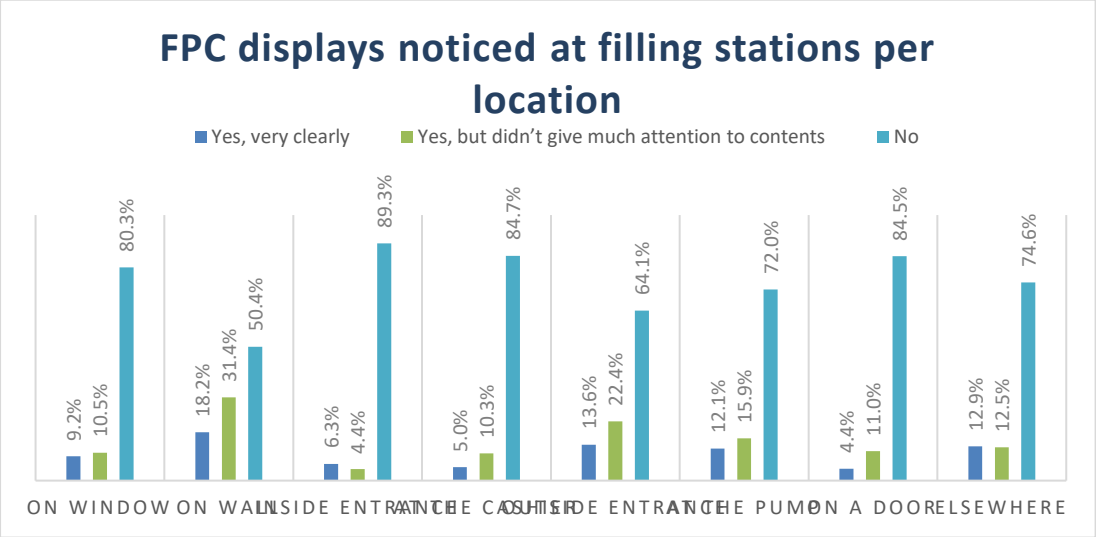


Figure 19 Results per location: Did you notice the FPC display? (4)

The next question was focused on rating how comprehensible the fuel price comparison display was, by given the following alternatives; (1) Easy to understand, (2) Understandable, (3) Difficult to understand, (4) Not at all understandable and (5) I don't know. The results indicated that only 4.8% of the respondents did not understand at all the FPC and 26.6% faced difficulties in understanding the display, whereas 17.1% understood easily the display and 51.5% understood the display. Therefore, it is established that the table form and the general layout of the FPC is comprehensive and communicates the FPC purpose effectively.

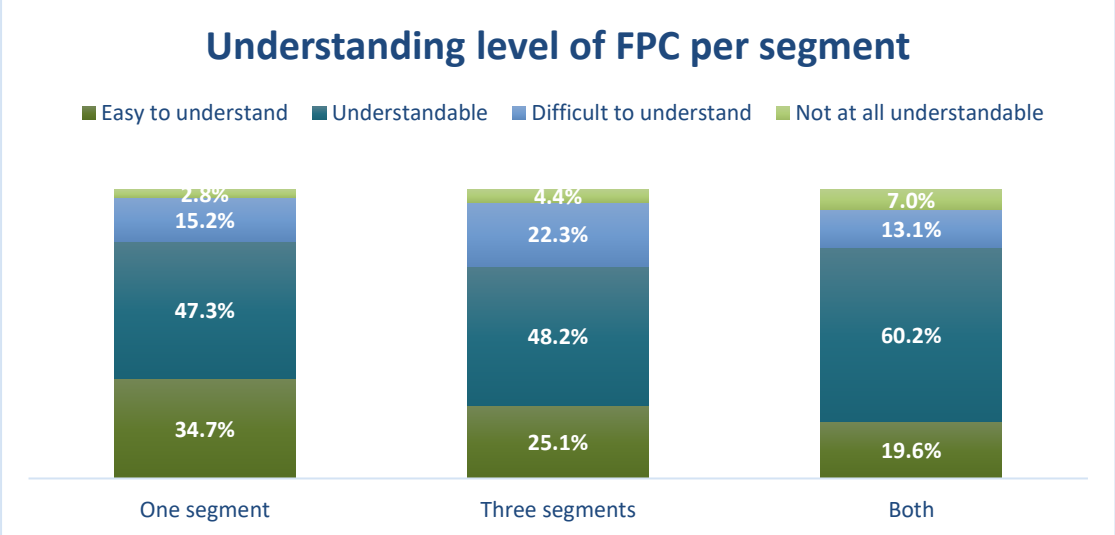


Figure 20 Results per format: How comprehensible is the fuel price comparison display? (5)

In particular, three alternatives were tested; (1) display of one segment, (2) display of three segments and (3) display of both options. In Figure 20, the results on the aggregate level showed that the demonstration of one segment's price was clearer (with a percentage of 44.9%), whereas three-segment display was difficult to understand (with a percentage of 44.3%) and both displays at the same filling station were not at all understandable (with a percentage of 47.4%).

Regarding the content of the FPC, respondents were questioned to compare the €/100km price in correspondence with fuel price they pay for. The majority of respondents (a share of 34.9%) indicated the price similar to their consumption. Also, some MS provided the alternative "Indicates actual fuel used" which was selected by the 1.6% of the total share. It is also very promising that only 9.7% of the respondents considered the displayed prices to be largely overestimated or underestimated. Hence, the *common methodology* is accepted by the majority and it is considered accurate in relation to the respondents' fuel consumption.

Furthermore, consumers were asked what would be the best location for the €/100 km information to be displayed. Likewise, the question was open to any respondents' suggestion. The most common answers concerning the display material were (1) Posters, (2) Leaflets/Flyers and (3) TVs/Monitors. The material that will be selected when implementing the AFID is crucial for achieving the engagement of the majority of consumers at filling stations. According to aggregated results, the majority of respondents prefer either the Monitor option (39.4%) or the Poster option (38.4%). The leaflets and flyers are acceptable with a percentage of 19.8%.

To conclude, the interviews performed in the course of the pilot actions were vital for identifying the most appropriate way of implementing the Art 7.3 of the AFID. Useful insights were gathered and evaluated by the consortium. Therefore, the results of the pilot actions in relation to the outcome of the online survey serve as a basis for the proposed recommendations in chapter 4.

2. Results on the format, content and location of the information to be displayed at the filling stations

This chapter summarizes the results on the FPC displays, based on the outcomes of the online survey and pilot actions, which represent the consumers' perspective, as well as on the propositions and suggestions of the related stakeholders.

2.1. Format

In the framework of the pilot actions, different formats were tested and evaluated. The overall results showed that the most common answers in relation to the display material were (1) Posters, (2) Leaflets/Flyers and (3) TVs/Monitors. The material that would be selected when implementing the AFID is crucial for achieving the engagement of the majority of consumers at filling stations. According to the results, the majority of respondents prefer either the Monitor option (39.4%) or the Poster option (38.4%). The leaflets and flyers are acceptable with a percentage of 19.8%. In some cases, it was pointed out that specific colouring of each fuel type presented as well as bright, sticking colours would attract more consumers and increase the noticeability of the display. Also adding the unit (€/100 km) to all numbers would facilitate the understanding of the prices.

As mentioned before, displaying either one segment or three presented similar results in terms of clear and understandable information, therefore both options could be used for the FPC. In this regard, the displayed information should be focused on the prices as some respondents mentioned that the information displayed is already too much to comprehend in such a short time. They suggested presenting the least information needed for the fuel price comparison.

2.2. Location

Respectively to the format, MS in collaboration with the filling station managers placed the available PC displays in diverse locations. The locations that presented higher noticeability were placing the FPC on the fuel pump, outside the station's shop and on a wall inside the shop. The results indicated that some locations such as near the cashier may not be the most effective places to display the FPC however the majority of consumers distinguish them as the best locations. Therefore, this should be considered when placing the FPC displays at the filling station. Therefore, proposing specific locations for the selected displays, based on consumers' preferences, would facilitate the filling station managers when implementing Article 7.3 of the AFID.

2.3. Content

The establishment of a common methodology to be used for the calculations of the FPC prices (€/100km) on EU level was proved a challenging task. The consortium proposed a methodology based on two factors as it was also mentioned in the Implementing Regulation (EU) 2018/732 of 17 May 2018. This approach was communicated to the related stakeholders and it was evaluated

in-depth by the consortium to ensure the transparency of results and the clarity of the FPC prices (€/100km) for the consumers.

2.3.1. Evaluation of best-selling vehicle consumption methodology (Option I)

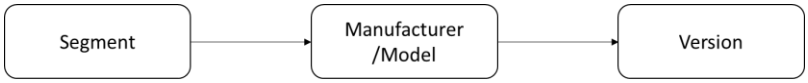
The methodology based on the WLTP consumption of the best-selling vehicle allowed an easy fuel price comparison (see also deliverable D3.3) and corresponded to the way vehicle fuel consumption is communicated to the consumers. However, this method hides significant price differences as the calculations are based on data of single vehicles, which reflect a very low share of the mobility market, in some cases less than 0.01%.

Regarding the provisions of the AFID, the Commission Implementing Regulation (EU) 2018/732 states in recital 8: "Because of the constraints inherent in the display of comparisons in fuel stations, it should be specified that the use of such methodology supposes the establishment of samples of passenger cars that are comparable, at least in view of their **weight** and their **power**, but use different fuels.". In this line, the best-selling vehicles of each segment were compared based on their weight and engine power. The results showed large deviations of almost 500kg and 100kW for compared vehicles in the same segment. Therefore, it is important to highlight that such information could be misleading to the consumer if it does not give a realistic indication of real-world performance.

2.3.2. Evaluation of a best-selling vehicles average consumption methodology (Option II)

Aiming to develop a common methodology, which will allow the fair and harmonized comparison of fuel prices in the EU, the consortium established the following approach.

To begin with, the principle formula for the price calculations is the equation **[1]**. The *first factor* refers to the reference WLTP consumption for the compared fuels and the *second factor* refers to the average price of the compared fuels. To calculate vehicle consumption, the first step is to select the representative vehicles. Here a summary of how vehicle characteristics are understood by the consortium should be clarified. Consider the passenger vehicles that consume a given fuel (petrol, for example). The characteristics of the vehicles, for evaluating the annual sales, should be organized as follows:



The consumption is calculated for at least one segment (and maximum 3 segments), taking into account the sales of the previous year (bestselling segment) Priority should be given to the segment(s) where there are vehicles consuming each of the available fuels, even if it is not the best-selling segment. The consortium decided to increase the sample of vehicles in a segment, in order to ensure the comparability of the different vehicles.

The first option is to choose the best-selling model in a given segment and for a given fuel. Therefore, at least a top 3 of bestselling vehicles is identified per fuel type. This is done on model level (including different versions). Therefore, for

the selected vehicle model, a weighted-average of WLTP consumption of the selected versions will be calculated (equation **[2]**). However, in some cases, the versions may present different consumption values and very different sales number. If necessary, a MS can establish a criterion in order to limit the sample selection of the versions to be included.

The second option, is to use a sample of the best-selling models for a given segment and fuel. In that case, equation [2] has to be applied to each of the best-selling models having in mind the considerations of the previous paragraphs. The "reference vehicle consumption" will be calculated as the sales-weighted average of WLTP combined consumption of at least a top 3 of best-selling vehicle models (based on data availability), considering the previous calendar year (equation **[3]**). Optionally, a MS can use a top 5 of best-selling vehicle models, if there is data availability. In certain cases (such as hydrogen vehicles) due to the lack of models, this sample could be smaller than three / five models (or versions if the first option is chosen). Thus, the vehicle consumption calculated is the sales-weighted average of at least the top 3 best-selling vehicle models in one segment based on the average per selected vehicle models in that segment.

$$Vehicle_{model_i}\left(\frac{fuel\ unit}{100km}\right) = \sum_{j}^{n} WLTP\ combined\ consumption_j \cdot \frac{Sales_j}{Sum(Sales_j)} \quad [2]$$

$$, where\ n = total\ versions$$

$$Reference\ vehicle\ consumption\left(\frac{fuel\ unit}{100km}\right) = \sum_{i}^{m} Vehicle_{model_i} \cdot \frac{Sales_i}{Sum(Sales_i)} \quad [3]$$

$$, where\ m = total\ models$$

The number of models and versions to be considered for calculation purposes may be increased if a Member State has access to reliable statistical data on vehicle sales.

The "reference vehicle consumption" is considered for the fuel types available in the MS. This can also vary per vehicle segment. In cases when a MS does not have a certain fuel type (i.e. hydrogen) at all or there are no available vehicles powered with this fuel type, then this fuel type is evidently left out of the calculation. It is also not displayed on the price comparison itself.

To increase the accuracy of estimations and to ensure the comparability of data, as described in the Implementing Regulation (EU) 2018/732, the vehicle categories, which will be taken into account for the FPC price calculations, are the following:

- Mono fuel vehicle (liquid, gas);
- Pure electric vehicle (PEV);
- Fuel cell vehicle (FCV).

In case of limited data of Mono-fuel gas vehicles, Bi-fuel gas vehicles will be used for alternative fuel FPC values in order to promote the alternative fuels on transportation by allowing the display of more alternative fuel options to the consumers. Hence, flex-fuel vehicle, hybrid electric vehicles and converted vehicles will not be considered for the FPC calculations.

The *second factor* refers to the average prices of the diverse fuel types measured in euros per conventional fuel type unit for the previous calendar quarter of the

year available, based on the implementing regulation (EU) 2018/732. Accordingly, these prices will be updated every three months and they will be used for recalculating the FPC prices (€/100km). In general, conventional fuels are considered the petrol and the diesel, while alternative fuels are determined by Article 2 of the AFID to be the following (1) electricity; (2) hydrogen; (3) biofuels as defined in point (i) of Article 2 of Directive 2009/28/EC; (4) synthetic and paraffinic fuels; (5) natural gas, including biomethane, in gaseous form (compressed natural gas (CNG)) and liquefied form (liquefied natural gas (LNG)); (6) liquefied petroleum gas (LPG).

However, based on the Commission Implementing Regulation (EU) 2018/732 of 17 May 2018 and the Directive 2014/94/EU of the European Parliament and the Council, there are no values for fuel consumption in WLTP certificate for biofuel blends with petrol or diesel and thus MS would have to use their own data to determine such values. Due to lack of data availability, the highly blend biofuels, as well as synthetic and paraffinic fuels, will not be included in the fuel price comparison methodology. Consequently, fuel price comparison under the same unit (€/100km) will apply in the following fuel types: (1) petrol; (2) diesel; (3) electricity; (4) hydrogen; (5) natural gas, including compressed natural gas (CNG); (6) liquefied petroleum gas (LPG).

To conclude, recommendations on estimating these average fuel prices are presented in chapter 4.

2.4. Outcomes on MS level

During the PSA, the participating MS worked on identifying the optimum way of implementing Article 7.3 of AFID. The consortium analysed the current situation for each of the participating MS in relation to the current pricing policies and prepared the ground for the future implementation of the AFID. It is evident that the national characteristics, as well as the regional framework, vary by country, therefore, it is essential to be considered. Hence, the results and insights in MS level are presented in the following sections.

2.4.1. Greece

Findings of online survey

The online survey was launched and the implementation period started on 05/08/19 and ended on 17/09/2019. The total number of questionnaires completed was 706. The main findings are summarized below:

- **Only 6.5% of the respondents are not concerned about the environment and make consumption choices based on their environmental impact;**
- **Intermediate distances** (between 20 km and 50 km) are the average daily trip for 45.5% of the respondents, short distances for 41.3%, while long distances are covered by almost 13% of the respondents;
- **The answer "5 to 10 years" was the most popular standing at 26.8%;**
- The answers "older than 15 years" and "from 6 months to 2 years" accounted for 13.5% and 12% respectively;
- Almost 70% answered that it uses petrol and 29.1% diesel;

- **More than half of the respondents chose the electric power (52,5%) as the less expensive alternative fuel;**
- Among alternative fuels, electricity is by far the best-known;
- **84.3% noted that next time they buy a car they might buy a more expensive car with lower fuel running costs** and only 9.3% said that their decision is based on other factors.

Findings of pilot actions survey

The pilot actions were implemented from 25/02/2020 to 05/07/2020. The period was extended due to COVID-19 travel restrictions. A total of 400 consumers participated in the survey, interviewed at 10 different filling stations. The key findings of the pilot actions were the following:

- **One-fourth of respondents noticed the FPC displays** at the filling stations;
- **Three-fourths of respondents** considered the displayed **information comprehensive;**
- One-fourth indicated that the displayed prices are **similar to the respondents' actual costs**;
- **Two-thirds** stated that such a **display would affect their decision** when buying a new vehicle, and they would **buy an alternative fuel-powered vehicle**.

Findings on implementation pilot

During the implementation of the pilot actions, the main issues were the following:

- The data collection and the calculation of the mean WLTP required a lot of time and effort due to the transition period between NEDC and WLTP as well as limited public data for transport;
- Electricity billing methods vary significantly (€/charge, €/kWh etc.) leading to the extra burden when estimating the average electricity price for the previous quarter. The establishment of a unify billing method is therefore proposed;
- Communication with the filling stations to provide them with the FPC takes time and often led to tailor-made solutions; Even though the filling stations were volunteering to participate in the pilot, most only took measures after a visit from the government or the person performing the survey;

Greece position is that the FPC has great potential for increasing consumers' environmental awareness and contributing to the transition to alternative fuels. It is considered an effective way to leverage consumers through relatively low prices in choosing alternative fuel-powered vehicles. The cost of applying the displays at the filling stations is low and the application does not require any expertise. Even though the majority of consumers (given the survey results) did not notice the displays at first, their periodic visit at the filling stations guarantees that they will notice it at some point. On the contrary, the issues pointed out during the implementation of the action, are focused on limited data availability and raise awareness for improving the data collection infrastructure

both in the national and European level. Greece aims for an extended application of Article 7.3 of the AFID to the majority of the filling stations to achieve better results.

2.4.2. Croatia

Findings of pilot action survey

The pilot action in Croatia was implemented in January and February of 2020, and it took place at 10 filling stations located both at TEN-T Core and Comprehensive corridors and urban areas, aiming to cover all regions of Croatia. The key findings of the pilot action in which participated 400 respondents showed that:

- 43% of respondents did not notice the comparison of fuel prices at a gas station, 33% of respondents noted the view but did not pay attention to the content and 24% of respondents noted the view with understanding.
- The majority of respondents (51%) consider the fuel price comparison to be understandable
- Most would prefer a monitor and poster as best location for the the€/100 km information
- Most own a vehicle between 5 and 10 years old, which in 95% of cases is powered by conventional fuels
- Most respondents said that this kind of information could influence their choice when they buy a new car
- Respondents prefer the FPC at the pump when refuelling vehicles because they have enough time to study the FPC information without being distracted by other information through advertisements.
- Respondents showed a preference for the price comparison of one segment's prices because it seems more memorable.

Finding on implementation pilot

The main issues during the implementation of the pilot actions:

- Difficulties to compute an average electricity price because charging at public filling stations is still mostly free of charge
- FPC could mislead consumers
- The obligation may represent an unnecessary administrative burden
- The staff working at filling stations does may not have the necessary expertise to answer possible questions
- The lack of space duo to advertising posters

Croatian position

The Republic of Croatia cooperated well with the owners of filling stations, who were willing to compromise and cooperate, provided that the obligation to compare fuel prices would not impose excessive cost on them.

With the establishment of the national online tool, filling stations will easily download materials on and display them at their points of sale. The frequency of display updates should be extended to more than 3 months (to annual basis).

Republic of Croatia considers that the fuel price comparison can thus raise consumer awareness of the benefits of using alternative fuels, but additional

activities are needed to increase this percentage (e.g. fuel price comparison at the car dealership).

2.4.3. Cyprus

Findings of online survey

The on-line survey was conducted in September 2019. The total number of the questionnaires completed was 750.

The analysis of the survey showed that the vast majority of the consumers in Cyprus, use their car very often, more than once a week (97%) (most of them daily), using fuel petrol and diesel (99%) and they are very, or somewhat, concerned about the environment and make consumption choices based on their environmental impact. Most of the drivers are overwhelmingly or very concerned about fuel prices. Half of the drivers have heard about the alternative fuels but they do not have deeper knowledge. Only one in three drivers have deeper knowledge for electricity and even less for other alternative fuels; specifically, lack of knowledge is observed for the use of Hydrogen as a fuel.

Most of the drivers would prefer to see the fuel price comparison information about €/100 km next to existing pricing displays (57%), or on a wall screen visible from the fuelling pumps (41%). In addition, most of the consumers would like to find information regarding the fuel prices in €/100 km on internet/websites/ social media/applications and they believe that the adequate frequency of price updates under €/100km methodology is one per month or more often.

More than half of the drivers, stated that, at their next car purchase they might buy a more expensive car with lower fuel running costs.

Findings of pilot actions survey

In Cyprus the pilot action was implemented in February of 2020 in 10 filling stations. The survey took place in all pilot implementing filling stations with 407 responders. The analysis of the survey showed that regardless of the location of the information displayed, the majority of the responders did not notice the fuel price comparison display (69%) and even if they noticed, they did not pay much attention to its content (16%). Of those noticing the information, the vast majority stated that it was easy to understand or understandable (86%). Only 14% of the responders found difficult to understand the information or not at all understandable. Most of the responders would not prefer another display and did not provide any suggestions for the location. Some suggestions varied between several location options with most prevalent the options near/on the petrol pumps and at the entrance of the petrol station. For the critical question, whether the fuel price comparison display would influence their choice at the next car purchase, 44% of the responders would not be influenced at all, 34% would definitely be influenced and about 20% may be influenced.

FPC Main points and /or issues

-The lack of data regarding vehicle consumptions due to the transition period between NEDC and WLTP raised issues for the calculation of the mean values.

-Fuel distributing companies expressed concerns that the FPC will cause confusion to the consumers with the fuel prices of the filling station. Therefore, it was agreed that all the stations will use the same display format and it should be clear that the prices are indicative and calculated by the Ministry of Energy.

-Communicating and providing filling stations with posters/banners etc was time consuming. The given frequency for updating the information, every three months, will cause increased burden and cost and it is unnecessary.

-The electricity price for home and public charging is very similar, thus, the mean value of the two prices was used.

Cyprus Position

Based on the experience gained from pilot actions and the results of relative surveys conducted, Cyprus believes that the FPC prices display could trigger consumers to look for vehicles with lower fuel running costs. This, eventually, will turn the consumers' sight towards the alternative fuels. The information to be displayed shall not be confusing for customers, which means that in our point of view only one category should be displayed in filling stations. Further information could be given through a website. Also, the frequency of updating the information displayed could be lower (e.g. annually) due to the reasons below:

a) The prices are indicative

b) The scope of the FPC is to compare conventional vs alternative fuels and

c) High frequency might cause risk for misunderstanding or confusion due to late updating the FPC prices and unremoved old posters.

2.4.4. Finland

Findings of online survey

The online survey was run August 12th through 23rd 2019. In total 725 people responded. The most important results are as follows:

- 69% of the respondents are at least somewhat concerned about the environment and adapt their consumption accordingly.
- 88% of the respondents are at least somewhat concerned about fuel prices. Almost a quarter (24%) report being even overwhelmingly concerned.
- Over half of the respondents consider electric power (55%) and hybrid (56%) to be less expensive than conventional fuels.
- 51% of the respondents did not consider fuel prices when they last bought a car. 13 % considered but decided to opt for a less expensive car with higher costs and over a third (36%) chose a more expensive vehicle with lower fuel running costs.
- When considering a new car for the next time, 57% claim they might buy a more expensive car with lower fuel costs.
- The most important factors influencing the purchase of a car seem to be vehicle price (86% claim it to have an effect) and fuel prices (65%).

- Regarding the location of comparison prices at fuelling stations, consumers prefer next to existing pricing displays (60%) and on a wall visible from the pump (55%). Some 60% also mention spontaneously that they would want to see this information on the Internet.

Findings of pilot action - consumers

Pilots were run in the last two weeks of February and over 400 people were interviewed at fuelling stations.

- 51% of the respondents did not notice the FPC display, regardless of the display tower's significant size and location often next to the pump (250 cm tall and 60 cm wide on each side)
- Despite the poor spontaneous visibility, 87% of the pilot respondents considered the information easy to understand.
- Some 50% of the people believe the indicative prices of FPC depict their fuel consumption well while 23% cannot say. Those driving older vehicles state more often that the FPC shown underestimates their consumption.
- It should be noted that the sample represents mostly petrol and diesel car drivers' opinions as they cover 94% of the sample.
- Comparing to those who drive over 15-yer-old cars, those whose car is under 5 years old see more often an opportunity that the information would have an effect on the purchase of their next car (35% see the info would have an effect vs. 27%, respectively).

Findings of pilot action - fuel providers

- Opinions vary depending on the retailer - retailers operate with very different models and logics.
- Comments regarding monitors: some find monitors a cost effective and an easy-to update solution while others point out that monitors are not in their control as they are outsourced and used for commercial purposes. When monitors are not controlled by the fuel retailer, a relevant question is who would be responsible for purchasing the advertising space at the fuelling station.
- A uniform (national) appearance for the price comparison information was supported to boost the identifiability of the displays.
- For safety reasons, some stations must keep the pump area free from any additional material such as stands and posters. In environments where the rest of the service station is not in control of the fuelling retailer, it is unclear where and how the information could be presented.
- In Finland there is a motive power tax that is dependent on car weight and thus cannot be included in these comparison prices. This is believed to cause confusion among consumers as the comparison prices shown do not correlate with real car use costs.

- Also, the indicative values are believed to cause confusion when they are communicated in an environment where real time prices are normally used.
- This FPC methodology eliminates other means of showing comparison prices.
- FPC at fuelling stations is considered and administrative burden for fuel retailers and is not believed to add value to the customer experience at the fuelling station
- Problems with the information base (charging points, gas prices) are believed to distort the comparison price information.

Important notes for further consideration:

- The intention of the fuel price comparison is considered good; however, stakeholders see that the information at fuelling stations is severely misplaced. The comparison prices may create confusion in an environment where people are used to seeing real time prices of that specific stations. Bringing indicative price that do not base on the location specific prices is considered confusing.
- Different retailers have different standards regarding the pump environment which means that it is impossible to enforce 100% percent uniform implementation. Therefore, it is necessarily that retailers can adapt the fuel price comparison displays according to their specific environment.
- As the pilot shows, the visibility of the info at fuelling stations is low even when the displays are of significant size, and to maximise the effectiveness of the information, future actions should be directed to influencing consumers also when purchasing or considering the purchase of a new vehicle.

2.4.5. France

Fuel prices calculation in €/100 km raises two main issues:

- **The lack of data regarding vehicle consumptions for 2018 car registrations** due to the recent implementation of the WLTP protocol. However, this problem should not be faced with post-2018 registrations.
- **The lack of data regarding the prices of alternative fuels**. For CNG and hydrogen, this is because these markets are at the stage of emergence. **The respective shares of public charging and home charging are not quantified for electricity, and the prices charged for public charging are unknown** for now. Alongside, it has to be noted as regards with alternative fuel pricing that the government and the stakeholders acknowledge the need to ultimately collect and release charged prices in the territory, as it is currently done for conventional fuels. On a longer-term, this approach should be extended to all fuels available at public filling stations to ensure fuel price transparency.

The online survey (1507 respondents) was conducted in September 2019.

The main findings of the online survey are:

- **Two-thirds of the respondents are somewhat concerned about the environment and make consumption choices based on their environmental impact;**
- **Two-thirds of the respondents are somewhat concerned about fuel price**s;
- More than 82% of respondents drive less than 50 km daily;
- Petrol and Diesel represent 95% of the fuel used in respondents' cars;
- For the most part, respondents refuel/recharge their vehicle once or less than once per 15 days,
- **The vehicle price is the first element that affects consumers' willingness when buying a vehicle;**
- Among alternative fuels, electricity is by far the best-known;
- **Electricity is perceived as the less expensive alternative fuel, followed by highly blended biofuels and then hydrogen. Natural gas and LPG are perceived as the most expensive ones.**

The **offline survey** was conducted in February 2020 (1703 respondents interviewed in 14 filling stations located in the TEN-T network or urban areas). **Tested displays were non-segmented A5 flyer, A2 poster** (segmented and non-segmented)**, and monitor** (segmented and non-segmented). **The implementation of the offline survey stressed that**:

- **The A5 format corresponds to the maximum size that can sometimes be used when placed on a pump** due to lack of place. Thus, the displayed information must be minimised. In addition, too much information will drown the message to get out that is to say the attractive prices of some alternative fuels.
- **The fuel price comparison will not be permanent when displayed on a screen**. In fact, monitors are used for complying with other display obligations, and for advertising purposes the rest of the time. A reduction in the display duration of the advertisement or investment made to purchase a screen dedicated to the fuel price comparison display will have a financial burden. This financial burden will have to be assessed if this option is the sole consideration.

The highlights of the offline survey are that about 1 respondent out of 8 noticed the fuel price comparison and that the best location to display the fuel price comparison from a consumer point of view is the pump. In addition, survey results clearly identify the following French consumers' common way of thinking: "pump = price & shop = service". However, it is critical to bear in mind that consumers do not have our expert comprehensive vision on the topic. We have to take a step back towards surveys results to set up a mechanism, which has to be effective, relevant and proportionate. Moreover, this mechanism must fit in filling stations landscape, and must not create an excessive burden for operators. It is important to notice that fuel suppliers want to avoid a display on the pump at all costs. Their main arguments are:

- The lack of space (unpractical if to be shown on each pump - too much burden);
- The practical aspect of this location display (it is the one that requires the greatest effort in terms of maintenance due to potential related hazards/environmental impacts);

- The confusion caused in consumers' minds if there is a coexistent display of indicative prices and prices charged.

In view of these arguments, in particular, fuel suppliers ask for flexibility on where to show the fuel price comparison in the pump area if this is the selected location.
Other findings of the offline survey are:

- 13% of respondents noticed the display (22% in the best case, which corresponds to the A5 flyer when displayed on a pump);
- About 3 respondents out of 4 found the display easily understandable (particularly A5 flyers);
- Non-segmented displays are considered as the most easily understandable (strongly driven by A5 flyers), and as the more accurate considering prices assessment;
- About 3 respondents out of 10 think that the fuel price comparison could influence their choice when buying a new car.

France position is that the obligation should impose the least possible burden whilst raising the consumers' awareness of the attractive prices of alternative fuels. Also, several options regarding the display mode must be offered to operators (in view of matching stations configuration in particular)**. Also, the frequency of display updates should be extended to more than 3 months.** An update on an annual basis is preferred as it has the benefit of harmonising the data reference periods of both fuel prices and car registration/consumption. Moreover, it offers the possibility of being able to use electricity prices for household consumers communicated semi-annually to Eurostat (refer to Regulation (EU) 2016/1952 of the European Parliament and of the Council of 26 October 2016 on European statistics on natural gas and electricity).

Least but not last, consistent implementation of the dispositions of article 7.3 of the AFID throughout the Union is needed, and the adoption of a quantitative criterion to precise a uniform number of "obliged filling stations" ensures this consistency. **It is** then **crucial the definition of "manned/unmanned station" is left to the MS discretion to match national petroleum logistic set-up**. One of the French filling stations features is that many of them are fully automated and located in the supermarkets/hypermarkets vicinity, with the only available staffs nearby being one of the stores. These filling stations (unlike those fully automated without any staff at a near-distance) cannot be exempted from the obligation in view of their substantial market shares. In addition, an exemption of these filling stations would lead to inequity with respect to operators involved in fuel distribution (oil producers mostly operating manned filling station vs oil purchasers overlooking most of the supermarket-based filling-stations), and potential market distortion.

2.4.6. Germany

Pilot
As part of the German pilot project phase which took place at 15 filling stations, an online and offline survey were conducted and four workshops were organized

with representatives from the energy and mineral oil industry and consumers associations. For the pilot action different versions of posters, roll-ups / banners, pump toppers, monitors, brochures, magnetic strips, payment plates, customer stoppers were designed and tested directly at the pump and/or various positions in the shop.

Online survey
From February 12th to March 10th 2020, 1,500 people were interviewed online. The results have shown that behaviour of the drivers in Germany is characterized by a relatively low daily mileage. Almost every second respondent covered a maximum of 20 km per day with his or her vehicle and another 40% between 20 km and 50 km. For the majority of respondents, with this usage behaviour, alternative drives and fuels could be a suitable option for everyday mobility. According to the online survey, more than 80% of consumers have no knowledge of CNG, LPG, hydrogen or biofuels. Even for battery-electric vehicles, less than 50% of those surveyed have knowledge of these types of drive.

On-site survey
The on-site surveys were carried out from February 22nd to March 11th 2020 at the 15 participating filling stations. A systematic random selection of 1,055 people was asked about the effectiveness of different means of communication at the petrol stations. An average of 50-100 people per filling station were interviewed. The results show that only 10% saw the FPC considering the various options and locations tested. Overall, the interviewed consumers preferred a poster of the FPC directly next to the actual price information at the pump (65%), while 12% would rather favour a monitor at a different location at the petrol station. 55% of consumers also responded that the additional information on FPC would influence their next vehicle choice in such a way that fuel costs are given a higher priority than other factors.

Stakeholder feedback
Representatives of various companies and associations participated very actively in the workshops during the course of the pilot actions. Also, stakeholders from fuel suppliers' associations were cooperative while providing access to 15 filling stations to test the FPC in various forms and to conduct interviews with their customers.
From the point of view of the mineral oil associations, the FPC is too complex to be shown at the filling station and is only of interest in the process of purchasing a new car. The FPC display may create a high burden for petrol station operators and cashiers. For this reason, the FPC display should be performed in a neutral, flexible and easy to implement way. The frequency of the updates should also be minimized in order to reduce personnel and operating costs. Finally, according to the mineral oil associations in Germany, the FPC information should be performed on-line, i.e., the filling stations should be solely obliged to inform about the existent FPC website.
For the consumer associations, drivers may benefit from the FPC at all filling stations. The consumer associations stated that the fuel pump (place of refuelling) was the best place to perceive the FPC. However, it should be guaranteed that the FPC display will not be confusing for or misunderstood by the consumers. The interlinking with further information via digital channels was perceived as important as well. The consumer associations also recommend an EU-wide monitoring of the FPC display in order to assess its effectiveness.

Germany's position

The existent lack of information on alternative fuels, which was identified nationally and EU-wide through extensive surveys, confirm the usefulness of the introduction of the FPC display.

As part of the FPC working group, **Germany supported a binding and consistent implementation of the FPC throughout the EU.** For this, it was important to define harmonized rules for the application of the Art. 7.3 AFID concerning the format, location and extent of this obligation.

First of all, it is very important **to differentiate the actual fuel prices from the FPC prices**. For this reason, the FPC display should contain a disclaimer explaining its purpose. In Germany, the FPC prices will be designated as "costs", in order to not confuse the consumers.

Analysing the results of the survey at the national and EU level, most of the respondents favoured the location near/at the fuel pump for the FPC display. However, **considering that the place the fuel pump may be limited and the placement of posters should not hamper the visibility of the drivers, more display options should be offered**. A larger flexibility on this matter may increase the acceptance of the obligation by the filling station operations and hereby its compliance.

Small gas stations, unmanned filling stations and charging stations should be excluded from the obligation to display the FPC. In concrete terms, **filling stations that have less than the national average number of multi-product fuel dispensers (MPD) should not be required to comply with the provisions of the Art. 7.3 AFID.** The minimum requirement of 10 % of filling stations that must display the FPC should be achieved with this criterion. A voluntary adhesion to the FPC may be yet possible for filling stations that do not fall under this rule.

Germany proposed that the FPC should be updated annually, since there is no official data for all energy carriers on a quarterly basis (this would be case, for example, of electricity prices in the public charging stations in Germany). Moreover, taking into the account that the purpose of the FPC is solely to provide information on the existent fuels and the fuel prices usually do not experience major changes throughout a year, **a lower update frequency should be discussed in the next AFID revision**.

Finally, Germany recommended a transition period of six months after the official application day of the Implementing Regulation (EU) 2018/732 (also considering the updated deadlines from the Implementing Regulation (EU) 2020/858).

2.4.7. The Netherlands

Findings survey consumers during pilot action

423 Surveys were conducted during the pilot action at 10 filling stations across the country. The most relevant results are the following:

- **Only 2% of the consumers interviewed noticed the FPC at the station;**
- **6% Saw the FPC at the station but did not give it much attention;**
- **50% believed the FPC was easy to understand;**

- **39% believed the FPC was understandable;**
- **Consumers prefer a poster or a screen on which the FPC is displayed;**
- **The poster is seen significantly more often than the information via narrowcasting;**
- **Showing one or three segments does not have any significant difference in impact or understanding;**
- **About two-thirds of the customers do not think that they will be influenced by the given information.**

Stakeholders view on compliance and implementation; findings stakeholders during pilot action

An important aspect to take into account is the filling stations when drawing up lessons for implementation. Eventually, they need to be able to comply with the obligation in the least burdensome way. Stakeholders (representatives of the sector) were involved throughout the PSA. This was also a requirement of the GA. The following main issues were raised, and dealt with where possible when designing the pilot action:

- The FPC will mislead consumers as they see real-time prices at the pump;
- The FPC will lead to a lot of questions amongst consumers burdening the personnel at the stations;
- The FPC is a communication from the government and should be provided by government;
- The FPC interferes with our marketing policy and leads to opportunity costs;
- The PFC is a price calculation based on a set of averages. It should be communicated with a clear disclaimer that it does not reflect a specific situation.

During the pilot, the FPC had a clear disclaimer. A national website was in place to inform all relevant parties on how the FPC was calculated and gave consumers the possibilities to also look at other issues, such as the TCO's. Also, at all filling stations flyers were provided to facilitate the personnel in case many questions were asked.

The filling stations that participated during the pilot were also interviewed. This led to the following findings:

- Several entrepreneurs indicate that they do not want to be forced to display the price comparison information. Respondents indicate that they already have to adhere to so many rules. Respondents have little confidence that the price comparison will have an impact;
- The obligation costs the entrepreneur time and advertisement income;
- A three-monthly update at unmanned stations was deemed impossible; not all filling stations also own the store making it difficult to find a location to display the FPC.
- The poster is best seen when the information is displayed near the pump. However, these are valuable places according to the respondent, which an entrepreneur does not like to give away freely. Extra posters at a pump are often not possible due to road safety. An additional display with a poster can influence the turning circle that is required to drive away, or it

can obstruct the view. Also, municipal regulations sometimes prohibit certain communication at the pump.
- Most respondents indicate that narrowcasting is the only feasible option. Arguments raised against posters are that the distribution, maintenance and replacement will cost money.
- Stakeholders do not see the added value of transmitting the prices through a portal. They prefer to receive (if obliged) the update by mail.

Findings government on implementation pilot
During the execution of the pilot actions, the participating MS experienced in a smaller scope the possible issues that can arise when implementing article 7.3. The main issues were the following:

- The calculation of the mean (or average) WLTP took more time than foreseen given the transition period between NEDC and WLTP
- All filling stations use different formats for communication. There is no one specific format that can cover the entire market for either poster of the screen;
- Communication with the filling stations to provide them with the FPC takes time and often led to tailor-made solutions;
- Providing the filling stations with posters is burdensome and does not work well for filling stations located at the highway;
- Even though the filling stations were volunteering to participate in the pilot, most only took measures after a visit from the government or the person performing the survey;
- The support for the FPC varies a lot. Most filling stations do not support the FPC, those that do show the FPC at a lot of locations in the pump;
- Other stakeholders are possibly interested in showing the FPC. It is therefore important to make it available for them through a website.

Based on the findings of the pilot action, The Netherlands believes the FPC has little effect at the pump. The pilot also made clear that implementation of the obligation will be burdensome for MS and filling stations, especially if the FPC needs to be updated every three months. The pilot also made clear that efforts would be needed on MS side to ensure that the FPC will be hanged at the stations. On the long run, the AFID should take into account the lessons learned of the PSA. The logical way forward would be to strike this obligation in a recast of the directive. Given that the FPC proved to have no impact, any action would be disproportionate. In the short run, the FPC should be implemented in the least burdensome way. To make this possible, the Netherlands believes that an obligation that would require the FPC information at filling stations to be changed every three months is unreasonably burdensome for both the filling stations and the MS, given the FPC does not have the intended effect. The only viable way forward would be to show an example of the FPC at filling stations (static information) and to refer to a website where the FPC is updated every three months. This proposal has been submitted to the legal services of the EC.

2.4.8. Portugal

Findings of online survey The Portuguese questionnaire was available online from the 1st of August until the 15th of September, as required by the consortium contract. During that period, 490 answers were collected, which is

below the target of 700. August is traditionally a holiday month and it is therefore very difficult to catch people's attention to this type of exercise. To overcome this problem, a series of meetings were organised with relevant stakeholders where the project was presented, the methodology for calculation of fuel cost comparison was discussed and there were actions taken to engage the stakeholders in disseminating the questionnaire. It is believed that the answers to the questionnaire can be complemented by the information collected at those meetings, as well as at the workshop, to get a good understanding of the general perception on fuel cost comparison (see more details in the report of deliverable D1.4).

We can summarize the **main finding of the questionnaire** as follows:

- around 70% of respondents drive, on average, more than 20 km per day;
- 92 % of respondents are worried or very worried about fuel prices;
- 76% of respondents refuel or recharge their cars at least once every fortnight.

With regard to the information on €/100 km:

- 71% state they would like to see monthly updates on costs,
- 80% prefer standard price display options (near current prices or in place visible from pump).

Findings of pilot action's survey

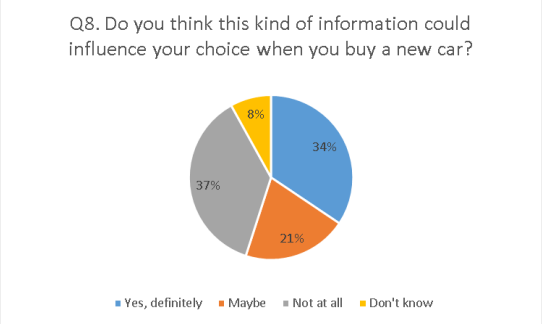
The pilot actions were taken in 12 filling stations in TEN-T network and urban areas, as required by the project contract. Of these 12 filling stations, 2 were located in supermarkets. In Portugal this type of filling station is very popular because they normally have the lowest prices in the market. They are normally smaller self-service stations with a drive-through cashier and selling mainly petrol and diesel.

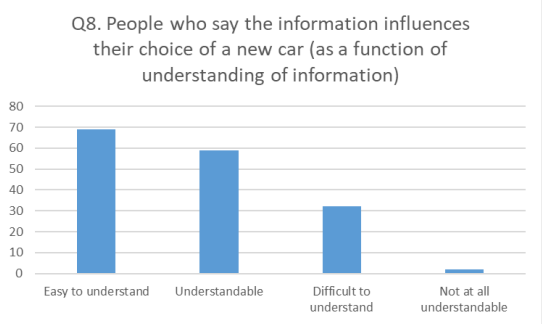
The method used for the pilot action was based on testing all possible combinations of the chosen location, format and content. The one and three column price comparisons were produced in the form of large and small paper posters as well as electronic files for LED and monitor displays. The information was displayed near the cashier, inside the shop, near the entrance of the shop, near the pumps, as well as indoor and outdoor electronic boards or monitors. A few conclusions regarding the national results for the pilot test, which may differ from the overall EU results, should be highlighted:

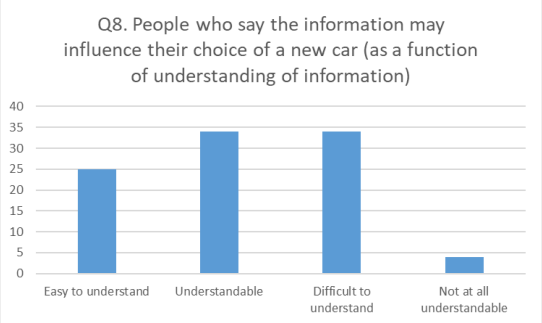
1. The overwhelming majority of respondents (86%) did not see the information, independently of format or location;
2. Almost half of those who saw the information (47%) did so at supermarket pumps;
3. The majority of respondents (67%) found the information understandable (38%) or easy to understand (29%);
4. For the consumers exposed to the one column display, 45% found the information easy to understand and 33% found it understandable. For the

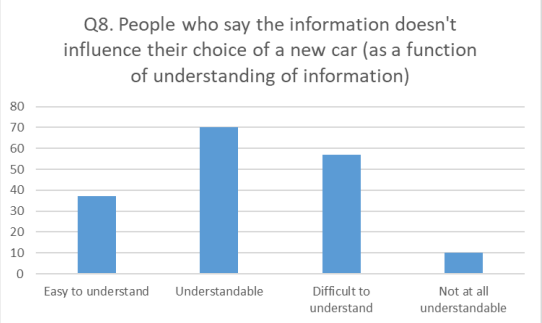
case of the three-column display only 12% found it easy to understand and 43% found it understandable.

5. There is a clear positive correlation between the stated influence of the information on the purchase of a new vehicle and the understanding of the information (see graphs below).









6. For the consumers exposed to the 1 column display, 33% say their consumption is similar to the displayed values, while for the consumers exposed to the three-column display 39% say the consumption is similar.

Portugal's position

Portugal's position, sustained on the results of the surveys and discussions with stakeholders, is the following:

- In most fuel stations, the FPC display has to compete with a lot of other information, which is a barrier for consumer perception. Only in the supermarket pumps (that don't have a shop and therefore no publicity or products on sale) does the FPC achieve a reasonable visibility. Apart from that particular type of pump, we find no clear best option for format or location.
- The general opinion of the stakeholders that have been consulted during the project, is that the FPC information could have a more significant impact if displayed at car retail shops than in fuel stations.
- Understanding of the information is easier for the one column display. Extra columns do not appear to add any significant gains to the consumer's perception.
- Understanding of the information seems to be crucial for achieving the purposes of the Directive i.e. creating a favourable consumer perception towards alternative fuels.

- Future implementation should take the necessary measures to increase public understanding of FPC.
- The FPC display should not represent an additional burden for fuel retailers, neither in terms of significant extra expenses nor logistic organization of the fuel station space.
- Portugal is using the resources of the PSA to assemble a tool for automatic calculation and dissemination of the FPC in every quarter of the year.
- Small pumps in remote areas or that do not sell alternative fuels should not have to display the FPC prices.

2.4.9. Spain

Findings of online survey

The online survey was launched on the Ministry for the Ecological Transition webpage August 2019 and answers were collected during two months. The total number of questionnaires completed during those months was 404, however more than 1.000 answers were collected during the following months. The main findings are summarized below:

- **80% of the respondents were concerned or very concerned about the environment and make consumption choices based on their environmental impact;**
- 62% of the respondents use diesel and 29% gasoline. Only 4% use alternative fuels.
- **Around 50 – 60% of the users have little knowledge of alternative fuels, but having heard about them.**
- 53% of users believe that EUR/100 km prices should be shown beside actual prices.
- 59% of the respondents prefer buying a more expensive car with a cheaper fuel.

Findings of pilot actions survey

The pilot actions were planned to be performed during the months of March and April of 2020 however COVID-19 social distant measures prevent the actions to be initiated. At the moment of the elaboration of these actions are being performed in 15 petrol stations in Spain with the collaboration of main Spain's fuel operators. Conclusions will be sent to the PSA consortium as soon as possible.

Stakeholder feedback

The representatives of the oil industry, which are the most affected by the implementation of art.7.3 expressed the following concerns:

- In the oil industry opinion, the objective of art. 7.3 should be helping the consumer in their car purchase decision, providing clear, useful and relevant information.
- Showing EUR/100 km information in the filling stations would cause doubts, confusion and disorientation in the users. Prices in different units, corresponding to different time periods and alternative fuels not sold in the filling stations would cause this confusion. As a result, the oil industry suggests these prices to be shown only in a web portal

substituting the informative information with just a link to the webpage.

- Nevertheless, in the case that showing the EUR/100km information in the filling station is unavoidable, this information should comply with the following requisites:
  homogeneous, truthful, representative and based on public information.
- Selection of fuel stations affected by the obligation should comply the following: Stations with high sales (more than 5 million litres per year), freedom to choose the information format and location should be granted as long as this information is visible for drivers. Information should be the same for all filling stations affected

FPC methodology was also discussed with Spain Association of car and tracks manufacturers resulting into these comments:

- Representativeness of country vehicles market should include not just new selling vehicles but all vehicles in use. However, lack of WLTP data for old vehicles and number of vehicles is a barrier.
- It is agreed that model selection should include a weighted average of at least Top-3 most selling vehicles for each technology selected taking into account similar model weight and power characteristics, not necessarily in the same segment.
- Price for electricity should represent a price of recharging service equivalent to the fuel refuelling in terms of refuelling time. However, lack of ultra-fast recharging points is an obstacle.

Spain position

Spain considers that methodology and recommendations proposed by the PSA final guidelines are a valid way to implement AFID Directive obligations taking into account member states heterogeneous market situations and following a cost-efficient way for fuel retailers.

Spain is currently working in developing the regulation needed to implement this methodology. Meanwhile a national information tool (webpage) is being developed by the Ministry for the Ecological Transition, which will contain a downloadable panel with EUR/100 km average prices in Spain taking calculated following the methodology proposed by the PSA. This information will also be completed with a vehicle models database. This panel will have to be downloaded by fuel stations operators and shown in the site when regulation enter into force. Typology of fuel stations and format and location of the panel to be written in the regulation are currently being discussed however, they will follow the PSA recommendations.

2.4. Conclusions on results of the Action, including the impact of the possible deviation on 1) the objectives of the action, 2) the completion of the planned activities and 3) the cost-breakdown

1. Recommendations for harmonised implementation of Article 7.3 of Directive 2014/94/EU

This chapter summarizes the recommendations of the PSA, regarding the implementation of Article 7.3 of Directive 2014/94/EU. These recommendations derive from the cooperation of the consortium, the interactions of the related stakeholders, as well as the preliminary results derived from the pilot actions and the online questionnaire survey.

1.1. Content of the information to be displayed at the filling stations

Regarding the content of information, it is mentioned in the Implementing Regulation (EU) 2018/732 that the equation [1] shall be used for the calculation of the FPC prices. The consortium evaluated different approaches to specify the factors of the equation in the most effective way and ensure the fair and accurate comparison of fuel prices. Therefore, *option II* (see sub-section 2.3.2) is recommended as a feasible and effective methodology to calculate the FPC prices.

1.1.1. Vehicle consumption

The reference vehicle consumption is determined by the best-selling vehicles average consumption methodology (*option II*). According to this, the following recommendations are proposed:

Sample Selection:

- ✓ Select at least one segment (and maximum 3 segments) for price calculations;
- ✓ Base the selection on its market sales and its coverage of available fuel types;
- ✓ Select at least the top 3 best-selling vehicles in the selected segment(s) on model level (including different versions) for each fuel type. In certain cases (as hydrogen vehicles) due to the lack of models, this sample could be smaller;
- ✓ The selected vehicles should fall under the following vehicle categories: (1) Mono-fuel vehicle (liquid, gas), (2) Pure electric vehicle (PEV) and (3) Fuel cell vehicle (FCV). In the case of limited data, Bi-fuel gas vehicles can be used instead of mono-fuel gas vehicles.

Data Collection:

- ✓ Use WLTP consumption data related to the combined cycle only;

- ✓ In case there is no WLTP consumption data for a specific vehicle model, exclude the model from the sample;
- ✓ In case there is no WLTP consumption data for a specific best-selling vehicle, exclude the vehicle. It is possible to use the fourth vehicle in sales;
- ✓ In case there is no vehicle sold for a specific fuel type, this fuel type will not be displayed.

Calculation Method:

- ✓ Calculate the average WLTP consumption of available model versions of each selected best-selling vehicle;
- ✓ Calculate the weighted average consumption of the selected best-selling vehicles for each fuel type;
- ✓ This is considered as the reference consumption for each fuel type.

1.1.2. Average fuel prices per conventional unit

Sample Selection:

- ✓ Apply the FPC to the following fuel types: (1) petrol, (2) diesel, (3) electricity, (4) hydrogen, (5) compressed natural gas (CNG) and (6) liquefied petroleum gas (LPG).

Data Collection:

- ✓ Collect fuel prices for the aforementioned fuel types measured in euros per conventional fuel type unit for the last calendar quarter of the year.

Calculation Method:

- ✓ Estimate the average prices for each fuel type;
- ✓ In respect with electricity, one single price (based on the average price at home and public charging mix) is preferable for the display;
- ✓ However, for MS that cannot provide one single price, it is acceptable to display different prices for public access charging points and for home charging;
- ✓ If public charging is not available, the average price of the home charging only will be displayed.

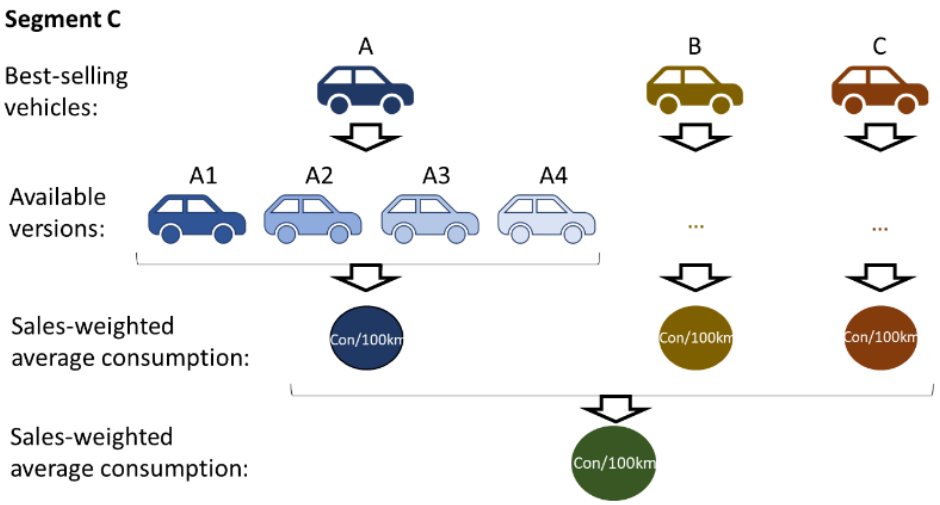


Figure 21. Example of WLTP consumption calculation

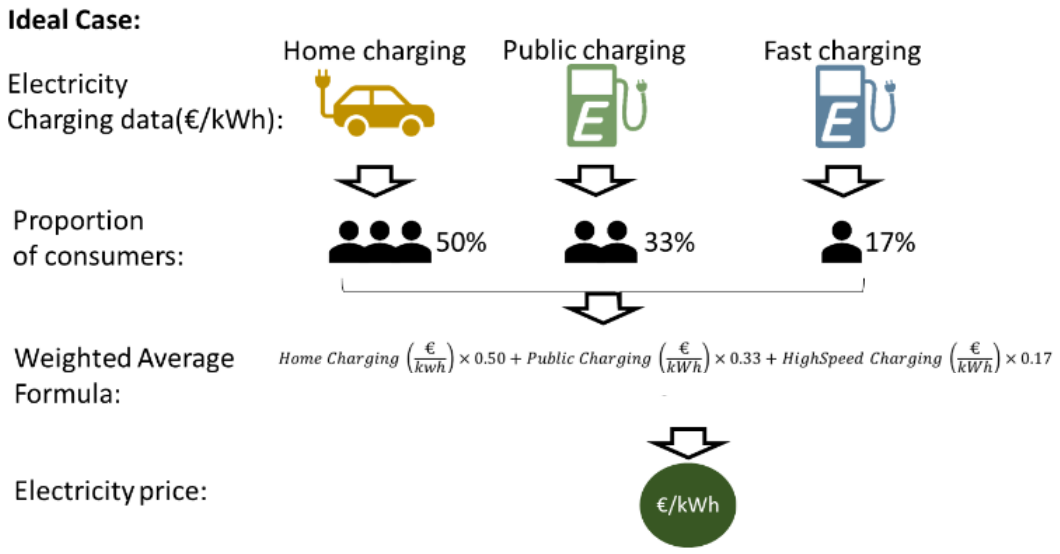


Figure 22 Example of electricity price calculation

1.2. Format in which the information must be displayed

The format of the FPC displays was investigated during pilot actions and formulated after evaluating the comments received by the respondents. The main aims of the format are to attract the consumers to read the display and ensuring the engagement of consumers without confusing or misleading them.

Design of display:

- ✓ The FPC will be in a table form;
- ✓ Clear FPC display with intense colours and a plain font.

Level of information:

- ✓ Contain the information of at least one vehicle segment However, MS can present up to three segments;
- ✓ Segment selection is based on market sales and coverage of different fuels;
- ✓ The displayed information is proposed to be brief and direct.

Level of information:

- ✓ Link to a website with further information
- ✓ Reference period of calculations
- ✓ Displayed segment(s)
- ✓ Clear indication that the prices are estimations

1.3. Location of displaying the fuel prices at the filling stations

The main aim is to provide a price comparison system within the EU, which will be economically reasonable, proportionate, practicable and compatible with national and regional rules. Thus, the FPC prices (€/100km) should not interfere with devices such as totems or receipts. Recommendations were formed after the completion of pilot actions and the evaluation of the relevant results.

The FPC is proposed to be displayed on either posters/banners or monitors. Each MS and in particular the filling station operators should be able to select the most appropriate means of display, based on the availability of equipment (i.e. monitors), filling station configuration, the legislation and regulation restrictions as well as the cost of implementation.

According to pilot results, **the most appropriate locations to display the FPC (reach maximisation) are: (1) near/at the fuel pump, (2) near the station's shop entrance and (3) inside the shop, located in the filling station**. **The MS are recommended to select at least one of these locations to display the FPC at filling stations.** MS may leave the choice to the managers of the filling stations between one or more of these locations to limit financial burden on the one hand, and to fit the configuration of the filling station on the other hand.

1.4. Type of filling stations (Art 7.3 indicates "where appropriate")

According to Article 7.3 of the AFID, the fuel comparison information shall be displayed "where appropriate" when fuel prices are displayed at a fuel station. The consortium proposes that unmanned filling stations should be exempted from display obligations due to the implementation costs and the requirement to update the displays frequently. In particular, two approaches were developed, which left to discretion of the MS to decide which would be the best option for displaying FPC prices:

Option I:

At least the following manned filling stations should display the FPC prices (€/100km):

[1] **represent at least the 10% of the manned filling stations in the MS.** Selection criteria are defined at MS level,

[2] **giving priority to filling stations which provide at least three different fuel types out of which at least one alternative fuel type** mentioned in Art. 2 of the AFID and it is measured by the WLTP protocol. In this line, the highly blended biofuels, the synthetic and the paraffinic fuels are not considered for the filling station selection and are not displayed.

Option II:

The application of the AFID **should exempt unmanned filling stations and filling stations that have less than A* multi-product fuel dispensers (MPD)** from display obligations due to the implementation costs and the requirement to update the displays frequently**. All remaining stations should display the FPC prices (€/100km)**

The number A* is determined at MS level. It is recommended to select the average number of MPD at MS level. In any case, the number of filling stations that follow Art 7.3 should **not be less than 10% of the filling stations in the MS**.

1.5. Online tool development

The implementing regulation states the following: "Member States have the possibility to make use of the opportunities offered by digitalisation such as online tools. Such tools should provide the opportunity to obtain individual

information for all or most models of vehicles existing in the market. Such a tool would also offer the possibility to add other information." In this line, the GA sets out the requirements of the PSA on an online tool:

- the **methodology** defined to calculate the average fuel costs for the vehicle samples in euros/national currencies per 100 km,
- the determination of the **average fuel costs** expressed in euros/national currencies per conventional unit (e.g. litre, kilogram, kWh),
- the **fuel consumption data** based on the World Harmonized Light Vehicles Test Procedure (WLTP),
- the **environmental performance** of alternative fuels vehicles concerning vehicles running with conventional fuels, based on applicable emission legislation (such as RDE),
- the **average fuel prices** expressed in **€/100 km**, for the selected samples of vehicles.

Apart from that, a short description of the segmentation in MS level is suggested to be included in order to facilitate consumers who are not familiar with segments definition as the portal is categorised in function of these segments.

An additional measure, which is currently under investigation, will be to develop a dedicated online platform regularly updated, where consumers will be able to search for the fuel price comparison information to several criteria, such as the car model, engine power, car usage (urban or rural driving environment), driving behaviour, location etc. Almost fifty percent of the consumers who participated in the online survey indicated that a website would be a more appropriate location to compare fuel prices apart from filling stations. In this direction, related stakeholders suggest utilizing this online platform to inform the consumers about the total cost of ownership based on EU wide average data from official sources. In specific, the integration of information related to the fuel prices, the energy content of fuels and vehicle costs and efficiency is suggested.

The consortium is oriented to the development of an online tool aiming to fulfil the requirements of the GA and the AFID. Hence and two alternatives are currently investigated as follows:

- Master online tool
- National online tools

The first option is to develop a master online tool, which will present information of all the MS regarding the fuel price comparison. This information will be available in both English and the national language of each MS. The second option is to develop national online tools, which will display fuel price comparison information of each specific MS. Thus, MS will be able to personalize their online tool in order to enhance visitors/consumers understanding.

Even though both options would increase consumers' possibilities to get information on the costs of alternative fuels, Master online tool presented difficulties in terms of implementation and maintenance. Accordingly, the MS are recommended to develop a national online tool to display nationwide fuel price comparison information. Each MS will be able to personalize the online tool in order to enhance surfers' understanding. **Based on the experience of this,**

the online tool should comprise the requirements set out by the GA (see above).

Apart from that, a short description of the segmentation in MS level is suggested to be included. Also, the integration of information related to the fuel prices, the energy content of fuels and the vehicle costs and efficiency is suggested where feasible (based on outcomes of Activities 2 & 3). The online tool must provide information at least in the national language. Therefore, **the online tool is proposed to include at least the abovementioned bullets, and each MS can provide additional information if needed**.

2. Conclusions

This document presents the purpose of the PSA as well as its context and objectives. It outlines the approach and methodology followed. It includes the findings, analysis, and substantiated conclusions for the selected format and content. It also describes the constitution of the sample to be displayed for FPC and for the most appropriate locations of the information to be displayed at the filling stations. The guidelines for a harmonized implementation of Art. 7.3 of AFID 2014/94/EU, which contain a proposal on the format, content and sample of representative models to be displayed at the filling stations. These guidelines also indicate how to comply with the concept of "where appropriate" established in Art. 7.3 of AFID 2014/94/EU. Lastly, it includes the software proposed for the online tool application and specific guidelines for the tasks included in the Activity 5 (online tool development).

The FPC4Consumers PSA is focused on providing assistance to MS with the implementation of Art. 7.3 of AFID 2014/94/EU. This Article establishes requirements for MS in the field of consumer information, which is considered key to accelerate the transition towards low and zero emission mobility.

Through this PSA, MS investigated variable options of providing information on fuel prices to allow consumers to compare between the fuel/running costs of vehicles with different fuels in a common unit. For that purpose, the method of "euros/national currencies per 100 km" is applied, as established in the Commission Implementing Regulation on Fuel Price Comparison, which is expected to be adopted on 2 May 2018.

The consortium responded to the requirements of the Action and complied with the provisions the Article by:

- supporting a consistent implementation of the provisions of Article 7.3 of AFID 2014/94/EU in the EU;
- defining effective options for the format, contents and location of the information to be displayed at the filling stations on the basis of the methodology adopted by the Commission Implementing Regulation;
- carrying out pilot actions to assess consumer perspective concerning the format, contents and location of the information to be displayed at the filling stations on fuel prices for comparison and to provide recommendations/guidelines for a harmonized implementation of Article 7.3 of the Directive;
- encouraging MS in making information available to consumer at the filling/charging stations and also via digital tools (such as for example, a dedicated website and/or user application);

- informing and raising awareness of alternative fuel suppliers, media and consumers on the methodology described in the Commission Implementing Regulation.

Essential objective of this PSA was the comparison of fuel prices in €/100km at filling stations to be explained in terms of content, format and location. In this regard, detailed information is provided in relation to how it is appropriate to implement Art. 7.3 in order to accomplish optimum results and fulfil the purposes of the AFID. In parallel, the scope and core elements of developing a national online tool are presented.

The recommendations rely on the lessons learned during the PSA and the consideration of the provisions of the Art. 7.3 of the AFID. In particular, a significant share of consumers across the participating MS as well as several stakeholders from the mobility industry and fuel suppliers were involved in the PSA and their reactions and opinions were taken into account. This consistent interaction with all interested parties resulted in a holistic harmonised approach which allows an effective comparison among the available fuel types without misleading the consumers and imposing unnecessary financial burden to the filling station operators.

To conclude, the main principle of the proposed recommendations is to enable MS to apply the provisions of the AFID efficiently and achieve optimum results. Hence, **this document summarizes the actions performed and the recommendations provided by the consortium for the consistent implementation of the Art. 7.3 of the AFID, fully complied with PSA contract requirements, related to AFI Directive and Commission Implementing Regulation.**

3. VISIBILITY OF UNION FUNDING

3.1. What measures have been taken to publicize the Action, including EU funding (GA II.7.1)?

One of the important objectives of this project is to disseminate the FPC aims and principles to compare variable types of fuels already available in EU market, as widely as possible. In order to further prepare the consumers for the results of this project, a dissemination strategy was developed, including:

- **Website**: An official website (http://fpc4consumers.eu/)was launched, facilitating the communication between the consortium as well as between the consortium and the interesting parties, by publishing newsletters, press releases and the outcome of the actions (i.e. Recommendations on implementing Art 7.3).

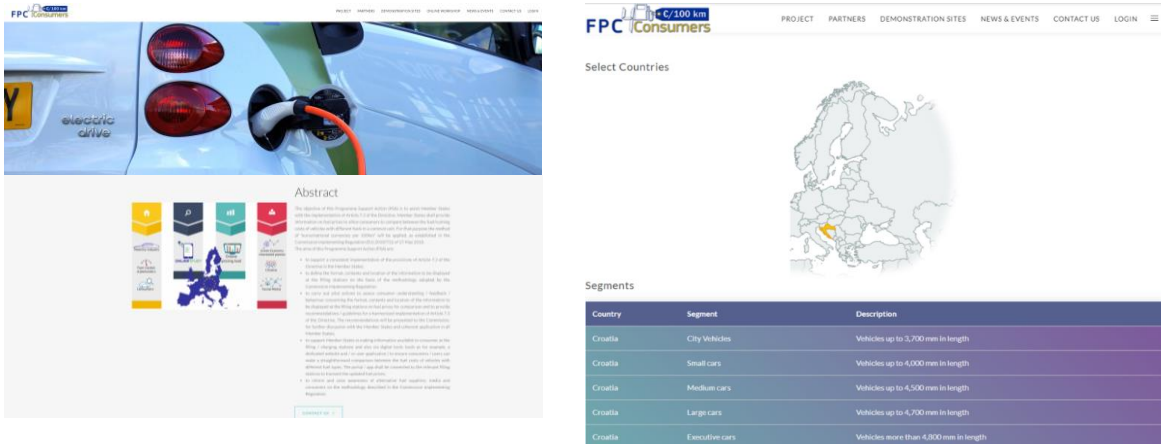


Figure 23 FPC4Consumers Website

- Expanding the features offered by the web site of FPC4consumers, it was decided to develop a **progressive web application (PWA)** in order to inform the visitors instantly about all news related to the project.

  PWA is focused on mobile devices offering a range of advantages comparing to a typical web site:
  - short loading time
  - good performance in poor network conditions
  - small size
  - app-like features (add-to-home screen, offline mode, push notifications)
  - avoid app aggregators (Google Play, App Store, etc.)
  - instant updates

Within the framework of the project two main functionalities are foreseen to be adopted in the application

- The online tool,
- The price updates using push notifications

At the first visit of a consumer to the site, a prompt will be displayed informing the user to install the application (procedure might be slightly different for iPhones). As soon as the user accepts all the relevant pop ups for allowing notifications and the installation of the application, a new icon will be shown on the phone desktop. From this point the end user will be able to access the new features. Any time a new set of prices is uploaded to the website, a new push notification will be shown in the device urging the consumer to view more details.

- **Pamphlets, flyers and posters**: They were used as means for advertising the project, thus raising awareness among the relevant stakeholders. This included producing a high-quality PDF that was put on the website and included in the electronic dissemination activities. These advertisement materials were distributed on the events and technical meeting, supporting both the stakeholders' recruitment and the dissemination activities.

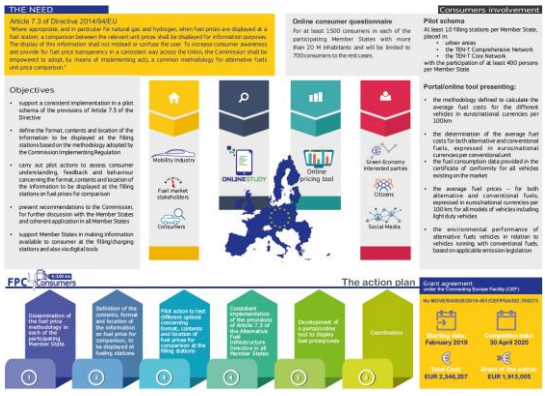


Figure 24 FPC4Consumers pamphlet version 1

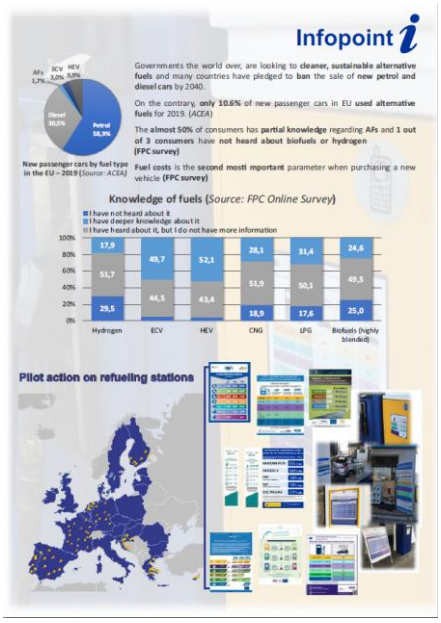


Figure 25 FPC4Consumers pamphlet version 2

- **Social media** (Facebook, YouTube): An FPC4Consumers account was set-up and managed in various social media; which was an integral part of the dissemination strategy as it promoted the FPC and even broadcasted the final online workshop.

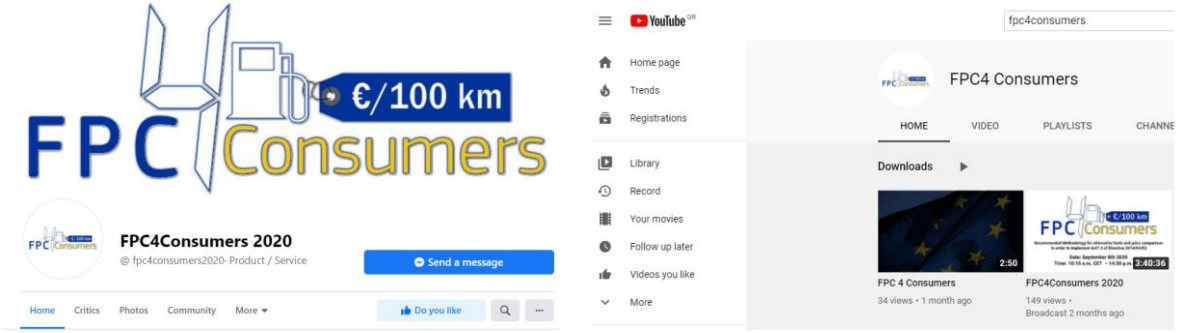


Figure 26 FPC4Consumers social media (left: Facebook, right: YouTube)

- **Newsletter**: The "FPC4CONSUMERS Newsletter" was published periodically throughout the duration of the PSA on the official website.

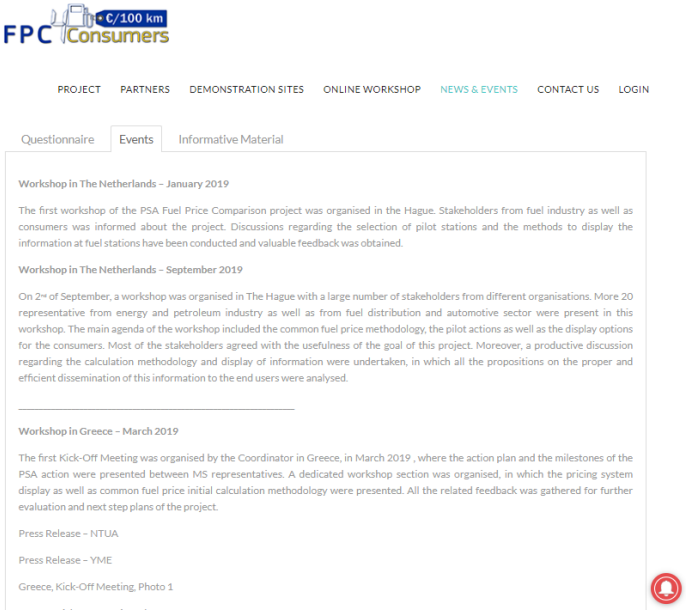


Figure 27 FPC4Consumers newsletter on website

- **Press releases**: The latest news was presented to the public and stakeholders. The goal was to inform the wider public about the rationale of the methodology and practical use/impact of the fuel price information provided.

- **PSA workshops**: They targeted at the fast and efficient establishment of a wide network for delivering the information needed to the consumers.

Figure 28 FPC4Consumers Kick-off meeting

- **Scientific articles** in impacted as well as proceedings in international conference relevant to fuel market and industry, such as the Energy in Transport conference from ASHRAE in 2019.

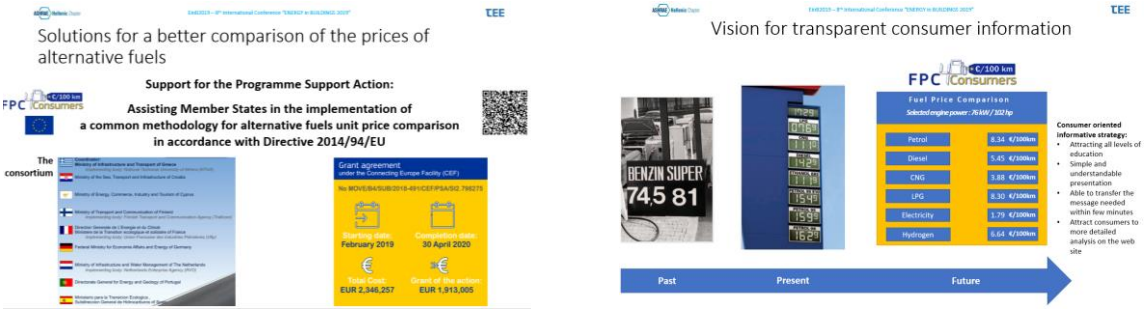


Figure 29 FPC4Consumers article in the Energy in Transport conference from ASHRAE in 2019

Throughout the dedicated **workshops** all the relevant stakeholders have been informed regarding the targets and objectives of the project and the link between the project and the industry have become strength. A well establish communication channel has been successfully created, facilitating and enhancing the further promotion of the "FPC4Consumers" project to the public, raising its awareness. The MS performed actions in order to disseminate the outcome of the activities carried out in the framework of the project to the relevant stakeholders (from consumers to industry). In total, 36 workshops were performed in the framework of disseminating the FPC purposes. Additionally, the consortium presented the objectives of the action as well as the main results at two Alternative Fuel Infrastructure (AFI) meeting to representatives of all European MS.

Figure 30 Technical workshops in Greece and France

In parallel, actions were performed, focused on the development of a consolidated action plan, which included the involvement of the pilot activities to further disseminate the project to the relevant stakeholders. The implementation of the pilot actions is described in detail in chapter 3.

Finally, the FPC4Consumers online workshop was performed on the 8th of September, 2020. Throughout the event, the consortium performed actions to disseminate the outcome of the activities carried out in the framework of the PSA to the relevant stakeholders (from consumers to industry). The recommendations on implementing the Art. 7.3 were presented in detail and questions / concerns by the participants were addressed. The online workshop was completed successfully and a recorded version will be available on the FPC4Consumers website as well as the FPC4Consumers YouTube channel for further dissemination.

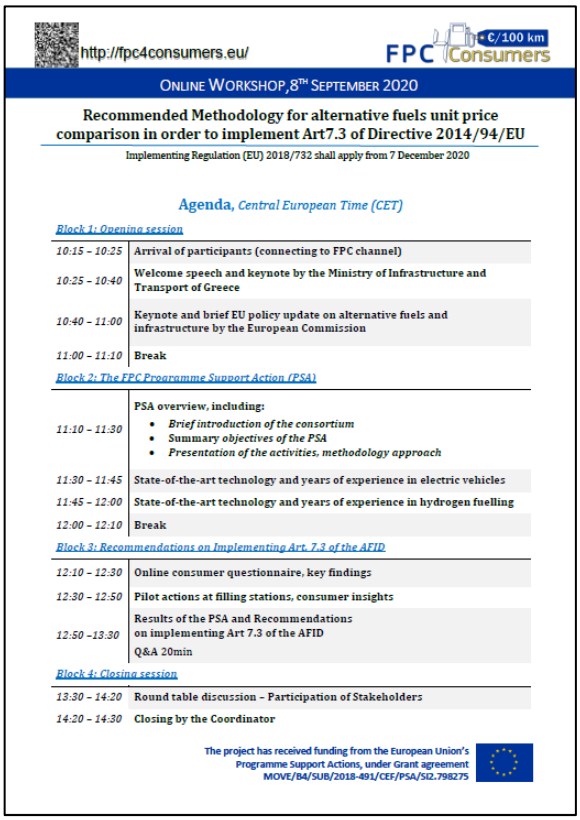


Figure 31 FPC4Consumers Final Online Workshop

4. OTHER SOURCES OF EUROPEAN UNION FUNDS

4.1. If applicable, provide information about other sources of EU funds (CEF, ERDF, Cohesion Fund, H2020, TEN, EEPR, EIPA, etc.) used for the project of common interest / global project (e.g. previous or subsequent phases not covered by the Grant Agreement).

n/a

5. COMPLIANCE WITH EU LEGISLATION

5.1. Environmental information: overview of environmental aspects, compliance with EU and national legislation, possible issues during the implementation of the Action and measures taken.

n/a

5.2. Where relevant, information on the compliance with EU legislation regarding other matters (notably public procurement, competition, regulatory matters, etc…).

In the framework of the PSA, numerous data were collected and processed in order to draw conclusions in relation to the objectives of the Action. The data can be distinguished in three main categories; (1) statistic data regarding transport (vehicles' characteristics, etc.), (2) market data (vehicles sales, brands, etc.) and (3) personal data gathered from the online survey, the pilot actions and the workshops.

Statistic data (1) used for determining the FPC prices were mainly referring to vehicles' characteristics, such as the fuel/energy consumption and it was obtained by **public** sources (i.e. technical specification sheets). The data were used only for statistic estimation in the framework of the Action and was not published or used for the purposes of direct marketing.

Market data (2) (vehicles sales, brands, etc.) were not published in order to ensure that the activities of the PSA comply with the Misleading and Comparative Advertising

Directive (2006/114) of the European Parliament and of the Council of 12 December 2006 concerning misleading and comparative advertising (OJ L 376, 27.12.2006, pp. 21–27). In particular, comparative advertising between the different vehicle brands and models was avoided on the FPC displays and on the online tools. This type of advertising is only permitted when it is not misleading. It can be a legitimate means of informing consumers of what is in their interests.

Personal data (3) was obtained in compliance with the Regulation (EU) 2016/679 Of the European Parliament and Of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation - **GDPR**). In particular, the data collected by the online survey and the interviews at pilot actions, was obtained after informing the respondents that their data was going to be collected and used for evaluating consumers' perspective on the Fuel Price Comparison (Article 12). It was clarified in a concise, transparent, intelligible and easily accessible way that the data would be processed by the consortium and that anonymization would be ensured. In addition, the respondents participated in the surveys were EU individuals across multiple Member States, therefore a representative of each MS (participating authority or implementing body) was appointed in case it needed to communicate with data protection authorities In the course of the technical meetings and the workshops, participation lists were formed including the full name of the participants, the organisation they represent and their contact details. The lists were used for documentation purposed and no advertising was sent that to the processing of their personal data for direct marketing purposes. Finally, the participation lists as well as the documentation of the FPC4Consumers PSA were processed, stored and distributed through third-party services (i.e. Microsoft Office 365) which have a standard data processing agreement and comply with GDPR.

5.3. For CEF-Energy only and if applicable: please provide information on any possible update of the CBCA decision relating to the project

n/a

6. EXPECTED RESULTS

6.1. This section shall include the planned results for each of the activities, combine with the quantifiable deliverables of the Action for each of the activities

List of the deliverables:

Deliverable No.	Description	Dissemination Level
D1.1	Project website which will be developed and hosted by the Coordinator	CONFIDENTIAL
D1.2_V1	Informative material (pamphlet and poster). The material will be prepared by the Coordinator. MS will translate it to their language	PUBLIC
D1.2_V2	Informative material (pamphlet and poster). The material will be prepared by the Coordinator. MS will translate it to their language	PUBLIC
D1.3	Workshop at each MS at the start of the Programme Support Action to disseminate the approaches for the activities and to create links with the fuel industry	CONFIDENTIAL
D1.4	Midterm Workshop at each MS to present the progress of the developed approaches	CONFIDENTIAL
D1.5	A final dissemination event with the EC, stakeholders and participating Member States	PUBLIC
D2.1	Definition of the contents, format and location of the information on fuel price for comparison, to be displayed at fuelling stations	PUBLIC
D2.2	Report on online consumer questionnaire, and exploitation of the relevant results	CONFIDENTIAL
D3.1	Action Plan, methodology for data exchange and harmonization	PUBLIC
D3.2	Online tool presenting the methodology defined to calculate the average fuel costs for the different vehicles in euros/national currencies per 100 km	CONFIDENTIAL

D3.3	Pilot test sites for each MS, as detailed described in activity 3	CONFIDENTIAL
D3.4	Raw data of consumers feedback collected at the fuel stations	CONFIDENTIAL
D4.1	Detailed analysis and evaluation of the results from actions 1 to 3, identification of factors with the most statistical significance, roadmap for optimum development of activity 5 portal	CONFIDENTIAL
D4.2	Guidelines for boosting user acceptance on the proposed transparent fuel pricing system	PUBLIC
D5.1	Beta version of the portal displaying fuel prices/costs	CONFIDENTIAL
D5.2	Final version of the portal	CONFIDENTIAL
D6.1	Activity Continuation Plan	CONFIDENTIAL
D6.2	"Recommendations/guidelines" (from activity 4)	PUBLIC
D6.3	"Final Report"	PUBLIC

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