

A COMMON METHODOLOGY FOR FUEL PRICE COMPARISON AT A COMMON UNIT ALIGNED WITH EU CONSUMERS PERCEPTION

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Overview

The connection between transport and its environmental impact is especially critical in the progress towards sustainable development. The energy demand in the transport section increased by 7% overall throughout the five years to 2020 as reported by EUROSTAT [1]. The numbers of transport services and traffic volume grew respectively [2] with the European fleet to be expanded by around three million cars and trucks annually. In this line, transport sector led to environmental issues as it accounts for the 24% of global carbon dioxide (CO₂) emissions (if we only consider CO₂ emissions from energy) [3]. European Union (EU) is committed to achieve Greenhouse Gas (GHG) emissions reduction to 80–95% below 1990-levels by 2050 and thus initiatives and policy frameworks increase the penetration of eco-friendly vehicles in the market. In this frame, the Alternative Fuels Infrastructure Directive 2014/94/EU [4] (hereinafter referred to as "AFID") introduces a consumer-oriented framework towards alternative fuels (AFs). Following AFID directions, a Programme Support Action (PSA) called "Assisting Member States in the implementation of a common methodology for AFs unit price comparison in accordance with Directive 2014/94/EU - FPC4Consumers" was implemented for delivering a common methodology for comparing fuel prices in euros/100km, aligned with EU consumers' perception. These implementing acts aimed to increase consumer awareness and provide fuel price transparency in a consistent way across the Union, and the display of fuels information should not confuse the consumers. For this purposes, an online questionnaire and pilot actions within EU countries were performed, with almost 8000 consumers preferences evaluated in relation to display format, content and location displayed at filling stations. The evaluation of the responses contributed to the optimisation of Fuel Price Comparison (FPC) displays and the development of the common methodology proposed which was adapted from most of EU countries and applied at the end of 2020.

Methods

The survey was performed in order to evaluate the impact of this information to consumers' perspective in correspondence with AFs. The objective of this study is the understanding of the different trends and approaches about vehicle purchasing, and consequently the assessment of the awareness, or lack of it, concerning AFs in the general public. A basic point scale and closed-ended question combination model was chosen for the assessment of the various different items concerning the study. More specifically, the different items of concern in this survey can be considered as six different groups; demographic, socio-economic, vehicle usage, fuel usage, vehicle purchasing, and environmental awareness. Demographic information was collected for the establishment of the survey sample, such as personal information (e.g. age), knowledge of the AFs, segments of vehicles running with CFs or AFs, and environmental awareness. Questions were also accompanied by additional explanatory information for the facilitation of the user friendly notion.

Results

With a respectable overall response rate, a sample of 7612 was collected. The collected sample consisted of 60.4% males, 39.4% females, and 0.2% other, which is considered indicative of the vehicle owning general population (also see Figure 1. In terms of the participants' age, a 64% were ages between 18 and 55, followed by and 28% ages between 55 and 78, considered also indicative for the vehicle using general population. The

participants were asked to rate how concerned they are about fuel prices. At the overall level, it is shown that 32.9% of the sample is overwhelmingly concerned about fuel prices whereas only 7.7% is not really concerned. In this regard, the prices of all the fuel types concerns the majority of EU citizens leading to the necessity of developing a common and transparent method for displaying FPC of both CFs and AFs. Furthermore, the average distance respondents cover daily is presented in Figure 9. Respondents who cover distances less than 20km are more interested in selecting a cost-effective vehicle (25.6%) compared with respondents covering longer distances (23.7% & 22.5%). They also have the greater share regarding the environmental performance of the vehicle (13.2%). When covering an average distance, factors which present a peak are the fuel costs (20.6%) and the fuel station availability (10.2%). Respondents who drive more than 50km a day are interested in the driving range of the vehicle (17.2%) and they present a decreased share on the environmental performance of the vehicle (12.0%). The results from the online questionnaire paved the way for a transparent, consistent and consumer-oriented methodology for estimating the FPC and communicating it effectively to the public. This section is dedicated to the outline of the FPC common methodology, which was developed and evaluated at pilot actions. The principle formula for the price calculations in €/100km, which is described in the Implementing Regulation (EU) 2018/732 and is tested during this PSA, is the following:

$$FPC\ price\left(\frac{\text{€}}{100km}\right) = Vehicle\ Consumption\left(\frac{\text{fuel unit}}{100km}\right) \cdot Average\ Fuel\ Price\left(\frac{\text{€}}{\text{fuel unit}}\right)$$

The *first factor* refers to the reference WLTP consumption for the compared fuel types and the *second factor* refers to the average price of the compared fuel types.

Conclusions

Reducing the environmental impact of the transport sector is a viable strategy towards sustainability. Transport is responsible for harmful GHG emissions, noise, and climate change. This online survey aimed to provide insights regarding the contents, format and location of the information on fuel prices to be compared and displayed at filling/charging stations by taking into account the perspective of the consumers among EU. The questions asked, offered an insight on how consumers perceive AFs in relation to their costs and environmental impact as well as on their willingness to select a new AFV in their next purchase. In addition, the results allow a better understanding of not only consumers' needs but also their arguments relating to AFs. Therefore, the outcome of the analysis resulted in the identification of recommendations on the most effective ways to communicate to the European consumers the FPC at the fuel station in a transparent and complete manner. Over and above that, all these aspects were taken into consideration as to develop a common methodology for FPC as well as raise awareness in relation to the environmental impact of CF powered vehicles and enhance the penetration of AFs in mobility market. The benefits of the common methodology can be summarized on the fact that there are no assumptions and it is based on the WLTP consumption, which is a common and accessible parameter among all vehicles. Thereby, from this perspective, all vehicles available in the EU mobility market can be incorporated. To conclude, the results from the online questionnaire paved the way for a transparent, consistent and consumer-oriented methodology for estimating the FPC and communicating it effectively to the public.

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