

Consumer survey of the energy label of air-based space heating products

Final Report

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1. Introduction

1.1. Policy context

The mitigation of climate change through an improvement of energy efficiency has been a key objective of the EU for many years, and it is a topic which is growing in importance¹. Back in 2012, an **Energy Efficiency Directive 2012/27/EU**² was introduced to require Member States to set indicative national energy efficiency targets to help the EU reach the 20% energy efficiency target for 2020. The introduction of the “**Clean energy for all Europeans**” package³ in 2018 triggered the amendment of the Energy Efficiency Directive⁴ which updated the policy framework to 2030 and beyond and set an energy efficiency target for 2030 of at least 32.5%⁵.

Given that heating and cooling are the largest sources of energy demand in Europe, **increasing the efficiency of space heaters has become a priority**. This was also outlined in “A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy” introduced as part of the Energy Union Package⁶, a European Commission Communication published in 2015. This also motivated the creation of “An EU Strategy on Heating and Cooling”⁷ in 2016, seeking to integrate efficient heating and cooling into EU energy policies. More recently, the European Commission launched the ambitious **European Green Deal**⁸ and several climate action initiatives have been taken under the Green Deal, including the 2030 Climate Target Plan⁹, through which the Commission raised the EU’s target on greenhouse gas emission reduction by 2030 from 40% to 55% below 1990 levels. Energy efficiency is considered an essential component of the plan and the electrification in buildings plays a central role in a pathway to climate neutrality.

The Commission’s proposal for recasting the EU Directive on Energy Efficiency¹⁰ published in July 2021, focuses on **improving the energy efficiency of space heaters** to meet the Commission’s renewed energy efficiency objectives. As part of this overall objective, an integral part of the EU Strategy for Energy System Integration¹¹ involves the **rolling out of heat pumps** for space heating and cooling to achieve the electrification of buildings. On the legislative barriers, the Council Conclusions on the Renovation Wave of June 2021¹² called on the Commission to “*accelerate the ongoing work on heating and cooling appliances by rescaling energy labels as soon as possible, consider extending the energy labels to all electrical heaters and prepare the phasing out of the least efficient, electricity, gas and other fossil-fuel operated heating and cooling appliances*”.

¹ <https://www.europarl.europa.eu/factsheets/en/sheet/69/energy-efficiency>

² <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1399375464230&uri=CELEX:32012L0027>

³ https://ec.europa.eu/energy/topics/energy-strategy/clean-energy-all-europeans_en

⁴ https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2018.328.01.0210.01.ENG

⁵ Furthermore, under the Governance Regulation 2018/1999, Member States were required to draw up integrated 10-year national energy and climate plans (NECPs), defining how they intended to meet the energy efficiency and other targets for 2030.

⁶ https://eur-lex.europa.eu/resource.html?uri=cellar:1bd46c90-bdd4-11e4-bbe1-01aa75ed71a1.0001.03/DOC_1&format=PDF

⁷ <https://eur-lex.europa.eu/legal-content/GA/ALL/?uri=CELEX:52016DC0051>

⁸ https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0002.02/DOC_1&format=PDF

⁹ https://ec.europa.eu/clima/policies/eu-climate-action/2030_ctp_en

¹⁰ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0558>

¹¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0299&from=EN>

¹² <https://www.consilium.europa.eu/en/press/press-releases/2021/06/11/council-approves-conclusions-on-an-eu-renovation-wave/>

Increasing the energy efficiency of space heating appliances, together with a transition to heat pumps, is thus a pivotal part of the Commission's renewed energy efficiency objectives. This is particularly important considering that space heating is the most important use in the residential sector (63.6%), followed by water heating (14.8%), as shown in Figure 1¹³.

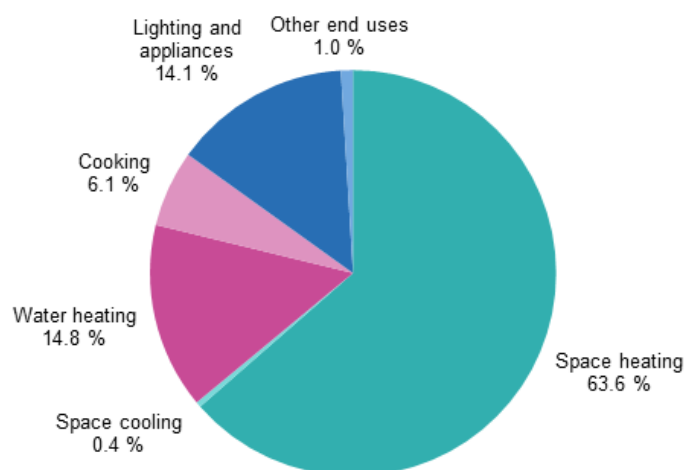


Figure 1 Final energy consumption in the residential sector by use, EU, 2019 (Eurostat)

Local space heating appliances have different energy efficiency levels depending on the technology used. As shown in the Figure below, merging different heater technologies on the same energy efficiency scale would clearly show which ones are more efficient. Indeed, the policy goal is to encourage the use of more efficient technologies and such a merged scale could help achieving that goal.

	Best Available Technology (BAT) class for space heaters (including packages)
A+++	Packages using renewables
A++	Heat pumps (renewable) Best biomass boiler (renewable)
A+	Gas cogeneration
A	Condensing gas boilers
B	
C	Non-condensing gas boilers
D	Electric resistance

Figure 2 Efficiency rating of new space heating appliances (COM (2016) 51 final¹⁴)

Given the need to encourage energy efficiency and the use of renewable resources, the EU is planning to review and adapt its energy labelling legislation with the objective of improving energy efficiency of products. Under the 2017 Energy Labelling Framework Regulation, the Commission is legally obliged to **review and rescale EU energy labels for key products like local space heaters and air conditioning systems** in the coming years.

¹³ https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_consumption_in_households#Use_of_energy_products_in_households_by_purpose

¹⁴ https://ec.europa.eu/energy/sites/ener/files/documents/1_EN_ACT_part1_v14.pdf

The Commission introduced the first EU labelling legislation in 1992 and since then it has implemented changes to achieve these new objectives. Considering the importance of energy labelling to improve the efficiency of space heaters, as well as to accelerate the rolling out of heat pumps, with the overall aim of reducing air pollution, the European Commission considers the revision of energy labelling requirements as a policy priority. As stated by the EU Action Plan: “Towards Zero Pollution for Air, Water and Soil”, the Commission will promote the integration of the zero-pollution ambition with clean energy and energy efficiency objectives, such as [...] and when reviewing eco- design and energy labelling requirements for heating appliances, as a priority in particular those for solid fuel heating by the beginning of 2024 at the latest”.

Considering this evidence, along with the increased ambitions brought about by the European Green Deal and the obligation under the **Regulation (EU) 2017/1369**¹⁵ to review and rescale EU energy labels for key products, the current labelling of space heaters should be revised. These new labels should return to the A to G scale in order to incentivise both suppliers and consumers to shift to more efficient products. In fact, the current use of separate label scales makes this substitution particularly complicated, given that:

1. The energy label (Figure 2) for **local space heaters** (regulated by Delegated Regulation (EU) n° 2015/1186¹⁶) only covers wood, gas and oil burning fossil fuel local space heaters,
2. Air-to-air **heat pumps** have a separate label (Figure 2) with a different energy labelling scale (regulated by Delegated Regulation (EU) n° 626/2011¹⁷), and
3. **Electric local space heaters** are not subject to energy label requirements.

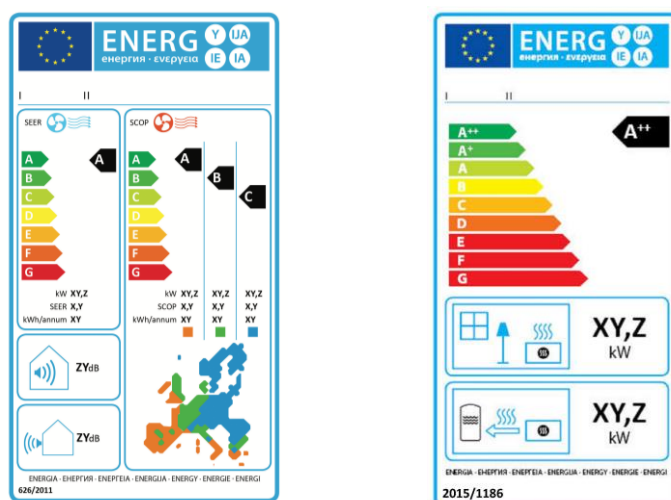


Figure 3 Current labels for local space heaters (left) and air-to-air heat pumps (right)

While ecodesign regulations set common EU-wide minimum standards of energy efficiency to exclude the least energy-efficient products in the EU market, **energy labelling regulations are the ones that affect consumer decisions concerning the purchasing of energy efficient appliances**. Ensuring that consumers understand and consider energy labels when purchasing appliances is hence crucial. Therefore, the current labelling rules do not help consumers to easily compare the performance of these different technologies. The review study of regulation 2015/1186 thus intends to propose a merged energy label as one of the policy options. The extended scope would cover combustion, electric and heat

¹⁵ https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2017.198.01.0001.01.ENG&toc=OJ.L:2017:198:TOC

¹⁶ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015R1186>

¹⁷ [Commission Delegated Regulation \(EU\) No 626/2011 of 4 May 2011 supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of air conditioners](#)

pump air heaters. The European consumer associations support this new approach because **a merged label would highlight to consumers the poor performances and high costs of electric heaters**¹⁸.

1.2. Objectives of the study

The **study seeks to investigate whether the proposed merged label will lead consumers to choose more energy efficient options among air heaters.**

Currently, the energy labels provide information that allows consumers to directly compare the energy efficiency of alternatives of the same product type (same technology) with the same heating/cooling output (capacity). Currently, consumers cannot learn from studying the energy efficiency classes which technology is more energy efficient. Showing the energy efficiency of different product types on the same scale should enable consumers to quickly identify the more energy efficient technology. However, the drawback of this approach is that all alternatives of the same product type which were previously shown on a scale from (e.g.) A+++ to D will now populate only a few classes of the efficiency scale (e.g. all heat pumps fall in the top classes), which impairs detailed comparisons of alternatives of the same product type with only the letter of the energy class.

Given this context, the present study aims to address two key objectives:

1. **Understanding:** the study aims to test consumer understanding of information content to be presented on a merged label for space heaters. This will include label elements which are general to all technologies (e.g., energy efficiency and energy consumption) and those of specific technologies (e.g., information concerning air pollutant emission levels in the case of solid fuel local space heaters).
2. **Behavioural change:** the study aims to assess the impact the information proposed may have on consumer behaviour. In particular, it aims to quantify:
 - a. The **substitution effects** that a merged label might have in encouraging the consumer to purchase more efficient space heaters, inside each product group and across different product groups.
 - b. The impact of the information proposed on the **cooling function and GWP for heat pumps** may have on the consumer choice.
 - c. The impact of the information proposed on **air pollutant emissions of combustion local space heaters** may have on the consumer choice.

In the following section, the overall approach and methodologies used are presented.

1.3. Approach and methodology

In order to address these objectives, a consumer survey (N=7248) was performed in six countries in the period from July and August 2022. The countries considered were Italy, Greece, France, The Netherlands, Poland, and Denmark. In each country at least 1200 participants replied to the survey. The sample is representative of the population of the six

¹⁸ https://www.beuc.eu/publications/beuc-x-2019-098_anec_beuc_position_on_local_space_heaters.pdf

countries selected. Among the participants, at least half of them already own or intend to buy a local space heater.

1.3.1. Country sample

The countries were selected ensuring geographical balance and nationally representative samples in relevant age classes. National heating preferences will be taken into consideration, and to the extent possible, countries not covered in the previous consumer survey conducted¹⁹ were selected. To consider national heating preferences, data on sales of efficient heaters in 2018 were collected (Table 1). Although this data is not available for all EU countries, this provides us with an indication of general demand for heating appliances and thus heating preferences in different countries, most of which are pre-selected.

Table 1 Sales of efficient heaters in 2018 (in percentages) for some European countries

	Gaseous fuel condensing boilers	Liquid fuel condensing boilers	Heat pumps	Hybrid heat pumps	Biomass boilers
Austria	47	7	31	0	15
Belgium	92	3	4	0	0
Denmark	51	2	27	0	20
France	79	4	15	0	2
Germany	75	9	13	0	3
Italy	94	0	1	1 ²⁰	0
Netherlands	94	6	0	0	0
Poland	74	0	6	0	20
Spain	93	1	5	0	1
Sweden	1	0	93	0	6

Source: The Association of the European Heating Industry (2020)²¹

In addition, several other variables were considered:

- **Environmental concern.** The extent to which individuals consider environmental protection important will be related to the extent to which they will consider energy labelling and will seek to improve the energy efficiency of their appliances. This variable, based on the Special Eurobarometer 501²², corresponds to the percentage of participants from each country who responded, “Very important” to the question “How important is protecting the environment to you personally?”.
- **Share of final energy consumption in the residential sector by type of end-use, 2019.** To understand demand for heating and cooling in each country, the share of energy consumption for space heating and cooling is taken into account. This data is retrieved from Eurostat (2019)²³.

¹⁹ <https://ec.europa.eu/transparency/expert-groups-register/core/api/front/document/56125/download>

²⁰ Italy is the largest EU market for hybrid heat pumps.

²¹ https://www.ehi.eu/fileadmin/user_upload/user_upload/Heating_Market_Report_2020.pdf

²² https://data.europa.eu/data/datasets/s2257_92_4_501_eng?locale=en

²³ [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Share_of_final_energy_consumption_in_the_residential_sector_by_type_of_end-use_2019_\(%25\)_T3.png](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Share_of_final_energy_consumption_in_the_residential_sector_by_type_of_end-use_2019_(%25)_T3.png)

- Given the high reliance on natural gas as an energy carrier for heating and cooling, the **prices of natural gas** are also reported²⁴ (data retrieved from Eurostat, 2021 S1).
- Finally, **economic promotion schemes for fossil fuel and renewable energy domestic heating systems** are in force as of 30 November 2020²⁵. When studying the impact of new energy labels it is important to control for this potential confounding factor, considering that schemes promoting substitution of the current heating system with more energy efficient versions may be strong incentives in some countries.

Based on the above criteria, the selected countries are the following:



Figure 4 Selected countries

- Two southern countries (Greece and Italy), one eastern country (Poland), two western countries (the Netherlands and France) and one Nordic country (Denmark), thereby ensuring **geographical balance**.
- Three countries with an above-average environmental concern (Denmark, France, and Greece) and three with a below-average level (the Netherlands, Italy, and Poland), thus allowing us to quantify the substitution effect in countries with **varying levels of environmental concern**.
- Countries with **varying space heating and cooling consumption** (e.g., Italy has an above-average space heating consumption, while Greece has an above-average (significantly above) space cooling consumption), serving as a proxy of varying climatic conditions.
- Two countries with a gas price below the EU-27 average (the Netherlands and Denmark), one with a price almost equal to the average (Italy) and three with a price above the average (France, Greece, and Poland). This will allow us to capture the

²⁴ Consumption: Band D2: 20 GJ < Consumption < 200 GJ; Unit: Kilowatt-hour; Excluding taxes and levies; Currency: Purchasing Power Standard

²⁵ https://www.coolproducts.eu/wp-content/uploads/2020/12/Analysis-of-Fossil-Fuel-Incentives-in-Europe_FINAL.pdf

extent to which the price of gas incentivises energy efficient purchasing of heating systems.

- Three countries with significant economic promotion schemes regarding several domestic heating systems (France, Greece, and Italy) and three with relatively smaller incentive schemes (Denmark, the Netherlands, and Poland, although to a lesser extent). This will give us an indication of **how the substitution effect is impacted by differing national incentive schemes.**
- **Countries with varying preferences regarding heating systems.** For example, in Poland and Denmark there is a higher demand for biomass boilers. While in Italy there is limited demand for biomass, it has the largest EU market for hybrid heat pumps. In addition, while gas condensing technologies dominate throughout, countries with varying reliance on these technologies are included (e.g., while in the Netherlands and Italy 94% of 2018 sales relied on gas, in Denmark this was only 51%, as 27% bought heat pumps instead).

1.3.2. Respondent sample

Overall, 7248 citizens participated in the online experiment. The main descriptive statistics are reported in **Error! Reference source not found.2** below. We report age, gender, education, marital status, household's yearly income, and the labour market status of participants. Overall, 13.12% of participants are in the first age group; 65.31% are in the second age group, and 21.56% are in the third age group. The sample is quite balanced in terms of reported gender, as 45.88 defined themselves as male and 50.68% as female. The share of single in the sample is 33.53%, 55.71% are married or in a civil partnership, and the remaining are either separated/divorced or widowed. 15.19% declare his/her income to be lower than 10'000 euros, 38.27% to be between 10'000 and 30'000 euros, 26.82% to be between 30'000 and 50'000 euros, 17.85% to be between 50'000 and 150'000 euros, and 1.86% to be above 150'000 euros. Finally, 68.18% are employed, 9.92% are in search of a job, 6.93% are students, and the remaining are retired or fall into other labour categories.

Table 2 Total sample - Descriptive statistics

	Total N = (7,248)
Age group	
18 – 24	951 (13.12%)
25 – 54	4734 (65.31%)
55 – 65	1563 (21.56%)
Gender	
Male	3543 (48.88%)
Female	3673 (50.68%)
Other	21 (0.29%)
Prefer not to respond	11 (0.15%)
Marital status	
Single (never married)	2430 (33.53%)

Married or in civil union 4038 (55.71%)

Separated/Divorced 634 (8.72%)

Widowed 146 (2.01%)

House income

10'000 Euro – 29'999 Euro 2774 (38.27%)

30'000 Euro – 49'999 Euro 1944 (26.82%)

50'000 Euro – 149'999 Euro 1294 (17.85%)

150'000 Euro or above 135 (1.86%)

Employment status

Employed 4942 (68.18%)

In search of job 719 (9.92%)

Student 502 (6.93%)

Retired 497 (6.86%)

Other 588 (8.11%)

Table 33 Total sample - By country

	IT	GR	FR	NL	PL	DK	Total
	(N = 1223)	(N = 1200)	(N = 1205)	(N = 1203)	(N = 1212)	(N = 1205)	(N = 7248)

Gender

Male	585 (47.8%)	586 (48.8%)	581 (48.2%)	618 (51.4%)	576 (47.5%)	597 (49.5%)	3543 (48.9%)
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Female	633 (51.8%)	612 (51.0%)	620 (51.5%)	577 (48.0%)	635 (52.4%)	596 (49.5%)	3673 (50.7%)
Other	3 (0.2%)	0 (0.0%)	2 (0.2%)	6 (0.5%)	1 (0.1%)	9 (0.7%)	21 (0.3%)
Prefer not to respond	2 (0.2%)	2 (0.2%)	2 (0.2%)	2 (0.2%)	0 (0.0%)	3 (0.2%)	11 (0.2%)
Age groups							
18-24	147 (12.0%)	158 (13.2%)	173 (14.4%)	148 (12.3%)	142 (11.7%)	183 (15.2%)	951 (13.1%)
25-54	790 (64.6%)	795 (66.3%)	767 (63.7%)	780 (64.8%)	834 (68.8%)	768 (63.7%)	4734 (65.3%)
55-65	286 (23.4%)	247 (20.6%)	265 (22.0%)	275 (22.9%)	236 (19.5%)	254 (21.1%)	1563 (21.6%)
Level of education							
Primary	122 (10.0%)	14 (1.2%)	11 (0.9%)	26 (2.2%)	33 (2.7%)	298 (24.7%)	504 (7.0%)
High school	590 (48.2%)	382 (31.8%)	486 (40.3%)	617 (51.3%)	539 (44.5%)	218 (18.1%)	2832 (39.1%)
Some years of university (not completed)	119 (9.7%)	118 (9.8%)	143 (11.9%)	150 (12.5%)	98 (8.1%)	201 (16.7%)	829 (11.4%)
University degree completed	206 (16.8%)	515 (42.9%)	360 (29.9%)	305 (25.4%)	273 (22.5%)	400 (33.2%)	2059 (28.4%)
Post-graduate (master, PhD, other)	186 (15.2%)	171 (14.3%)	205 (17.0%)	105 (8.7%)	269 (22.2%)	88 (7.3%)	1024 (14.1%)
Marital status							
Married or in Civil Partnership	637 (52.1%)	627 (52.3%)	682 (56.6%)	638 (53.0%)	819 (67.6%)	635 (52.7%)	4038 (55.7%)
Single (Never married)	477 (39.0%)	448 (37.3%)	396 (32.9%)	417 (34.7%)	267 (22.0%)	425 (35.3%)	2430 (33.5%)
Separated/ Divorced	89 (7.3%)	106 (8.8%)	114 (9.5%)	127 (10.6%)	81 (6.7%)	117 (9.7%)	634 (8.7%)
Widowed	20 (1.6%)	19 (1.6%)	13 (1.1%)	21 (1.7%)	45 (3.7%)	28 (2.3%)	146 (2.0%)
Household's income (€)							
9.999 or below	148 (12.1%)	318 (26.5%)	136 (11.3%)	72 (6.0%)	337 (27.8%)	90 (7.5%)	1101 (15.2%)

10.000 - 29.999	531 (43.4%)	674 (56.2%)	489 (40.6%)	320 (26.6%)	502 (41.4%)	258 (21.4%)	2774 (38.3%)
30.000 - 49.999	373 (30.5%)	178 (14.8%)	398 (33.0%)	428 (35.6%)	270 (22.3%)	297 (24.6%)	1944 (26.8%)
50.000 - 149.999	157 (12.8%)	19 (1.6%)	170 (14.1%)	353 (29.3%)	85 (7.0%)	510 (42.3%)	1294 (17.9%)
150.000 or above	14 (1.1%)	11 (0.9%)	12 (1.0%)	30 (2.5%)	18 (1.5%)	50 (4.1%)	135 (1.9%)

Labour market status

Employed	798 (65.2%)	813 (67.8%)	841 (69.8%)	862 (71.7%)	890 (73.4%)	738 (61.2%)	4942 (68.2%)
In search of job	176 (14.4%)	156 (13.0%)	81 (6.7%)	86 (7.1%)	100 (8.3%)	120 (10.0%)	719 (9.9%)
Student	99 (8.1%)	90 (7.5%)	61 (5.1%)	60 (5.0%)	70 (5.8%)	122 (10.1%)	502 (6.9%)
Retired	50 (4.1%)	74 (6.2%)	96 (8.0%)	38 (3.2%)	91 (7.5%)	148 (12.3%)	497 (6.9%)
Other	100 (8.2%)	67 (5.6%)	126 (10.5%)	157 (13.1%)	61 (5.0%)	77 (6.4%)	588 (8.1%)
Employed	798 (65.2%)	813 (67.8%)	841 (69.8%)	862 (71.7%)	890 (73.4%)	738 (61.2%)	4942 (68.2%)
In search of job	176 (14.4%)	156 (13.0%)	81 (6.7%)	86 (7.1%)	100 (8.3%)	120 (10.0%)	719 (9.9%)
Student	99 (8.1%)	90 (7.5%)	61 (5.1%)	60 (5.0%)	70 (5.8%)	122 (10.1%)	502 (6.9%)

1.3.3. Questionnaire

The survey questionnaire was divided in four blocks.

1) Block 1: Use and understanding of space heaters

- Questions on space heaters: what participants own, whether they intend to buy new ones (and which type)
- Understanding task: questions on some key concepts included in the labels (e.g. energy efficiency, particulate matter, global warming potential) – after each question participants are told the correct definition, so that they are more informed for the following tasks.

2) Block 2: Preferences and new labels

- In this second part, participants carry out a discrete choice experiment (DCE), where they have to make consecutive binary choices.

- Each participant carry out two DCE. In the first one compares different models of the same product category. In the second one compares different models between different product categories.
- After the DCE there are some follow-up questions, asking explanation of the choices made.

3) Block 3: Preferences for different graphic version

- Additional questions on graphic variations of the new merged label, to understand which ones they prefer.

4) Block 4: Socio-demographics and environmental concern

- Standards socio-demographic questions (age, gender, education, income level, country of origin) explore the role of personal characteristics, such as household size and income, in determining more efficient choices.
- Questions to gather the level of environmental concern to explore whether pro-environmental attitudes are significant determinants of investment in energy efficiency.

The second block is the experimental part of the survey, where consumer preferences are elicited through a choice task. Discrete choice experiment (DCE) is a quantitative method for assessing the various factors that influence people's choices. It provides quantitative information on the relative importance of various characteristics that influence people's choices, as well as the trade-offs between these factors and the likelihood of taking a particular option. The DCE is an attribute-based survey method for measuring benefits (utility). DCEs present respondents with samples of hypothetical scenarios (choice sets) extracted a priori from all possible choice sets according to statistical design principles. Choice sets comprise two or more alternatives, varying along different characteristics or attributes of interest, and individuals are asked to choose an alternative. More commonly, each respondent faces several choice questions within a single survey.

In this block of the survey, participants carry out subsequently two DCE:

1. Choice between products of the **same category** of heaters.
 - **1A** – electric heating.
 - **1B** – gas heating.

For the first two groups (1A and 1B) we measure the effect of the new merged label (compared to the current labels) on the choice for more efficient products.

- **1C** – solid fuel heating.
- **1D** – reversible air conditioning (RAC).

For the second two groups (1C and 1D) we only use the new merged label, because we explore the effect of the PM (1C) and the GWP (1D) on the choice for more efficient products.

2. Choice between products of **different categories** of heaters.

The participants are divided in two groups (current vs merged label), and the results are compared to identify potential differences in the effects of the labels on the energy efficiency of the products.

- **2A** – old label
- **2B** – new merged label

The figure below provides an overview of the rationale of the design.

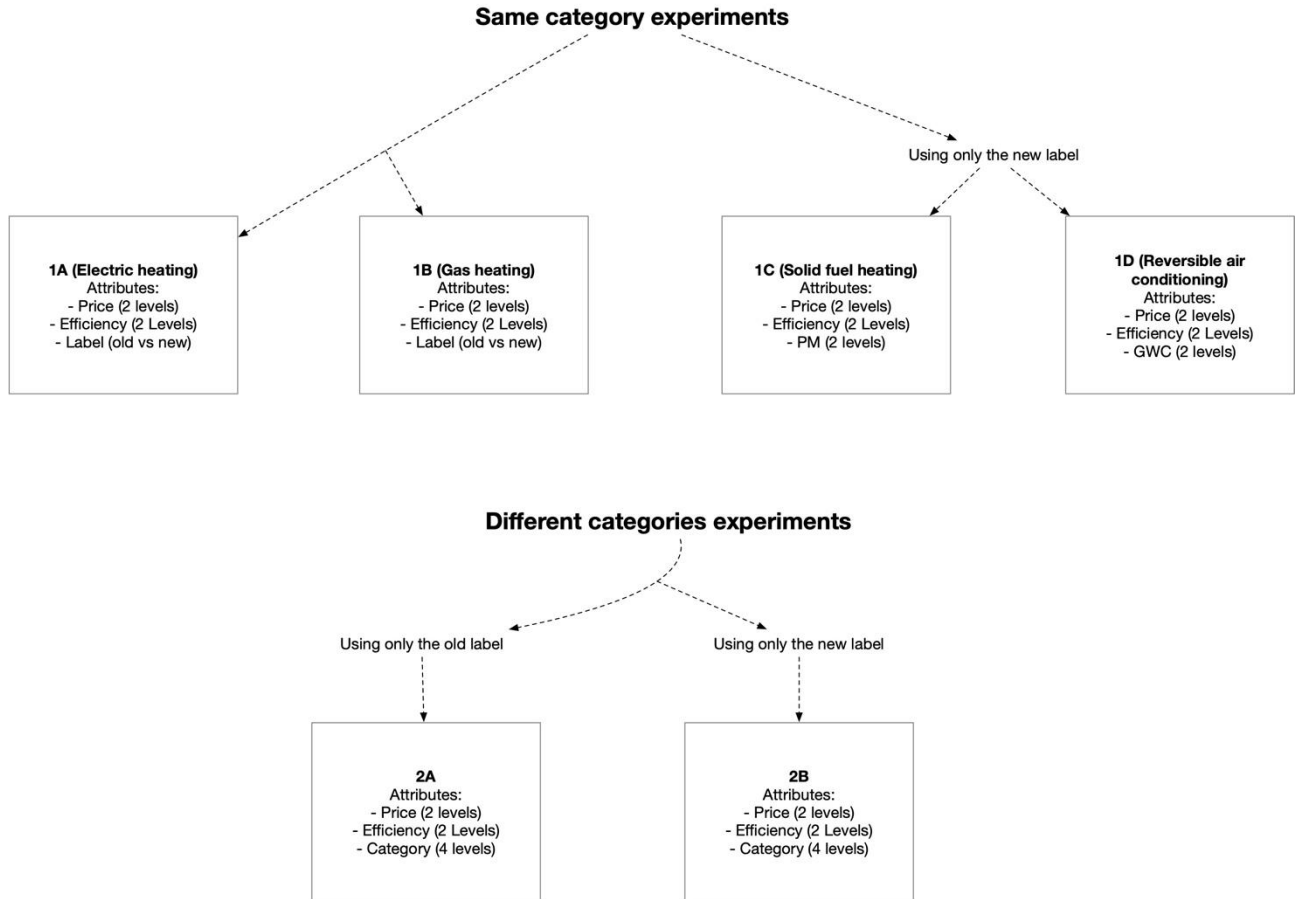


Figure 5 Experiment design (block 2 of the survey)

The “non owners/not intending to buy” do not carry out Experiment 1 but go directly either to Experiment 2A or 2B. While all the other participants are allocated to one of the groups 1 (A, B, C, D) DCE and, after, they are randomly assigned to either group 2A or 2B for the different categories’ choice. Hence, all the other participants perform two DCE, one from group 1 and one from group 2.

- Concerning the **same category choices** (1A, 1B, 1C, 1D), participants’ assignment to each experimental group characterised by a specific DCE is based on the following criteria: For groups 1A to 1D, it is related to each person's heating system. For example, John owns a gas heater and will be enrolled in group 1B. Mary owns a solid fuel heater and will be part of 1C.
- All participants can perform the **different category choices** experiments, 2A and 2B, without any specific distinction. However, participants are randomly assigned to one of the two conditions (“old label” vs “new label”).

The full questionnaire is provided in the Annex.

2. Results

The results are presented following the order of the questionnaire. Section 2.1 presents the results on the type of heaters respondents own or intend to buy, as well as their interest in the information provided on the labels. Section 2.2 presents the results of the discrete choice experiment, showing the impact of the merged label in changing consumer preferences towards more efficient models or products. Section 2.3 presents the results

related to the questions on the different graphical versions of the labels. Finally, Section 2.4 presents the results of the questions on the environmental concern of the participants.

2.1. Type of heating participants own/intend to buy

Regarding the owned heating system, participants are divided into around half. Overall, 55.34% of participants report a local space heater, while 44.66% of participants report that currently do not own a local space heater, only a central heating system (Figure 6). Among those who reported that already own a local space heater, most own a solid fuel heater (30.37%), followed by Electric (28.00%), Air-to-Air (19.45%), Gas heater (19.00%)²⁶, and other (3.19%) (Figure 7).

Regarding purchase intentions, 60.47% of participants are at least considering buying a local space heater in the next 12 months (Figure 8), and 56.49% of them plan to use it as additional heating, while 40.07% as the main heater, and 3.44% do not know yet (Figure 9).

46.85% plan to buy or replace a heater they currently own, while 47.23% do not plan to do it, and the remaining 5.92% do not know (Figure 10). Regarding the intention to buy a fixed or a portable heater, 49.67% intend to buy a fixed heater, while 39.92% a portable heater, and 10.41% do not know (Figure 11). Among those who plan to buy a local space heater in the coming 12 months, 8.45% of participants know already which specific type of heater they will buy, 43.04% have some ideas, 33.38% are still considering different types, and 15.14% do not have an idea yet (Figure 12).

Among those who intend to buy a fixed heater, and know already the model, most participants report stronger intentions to buy for air to air models, followed in decreasing order by solid fuel models, Electric models, gas models, and finally liquid fuel models (see Figure 13 to Figure 17).

²⁶ The figures for gas heaters are higher compared to the estimated stock of such systems in Europe. The questionnaire specifically referred to local space heaters, also providing examples of gas heaters of this category. However, despite the explanation, some respondents may have confused these systems with gas boilers pertaining to hydronic systems.

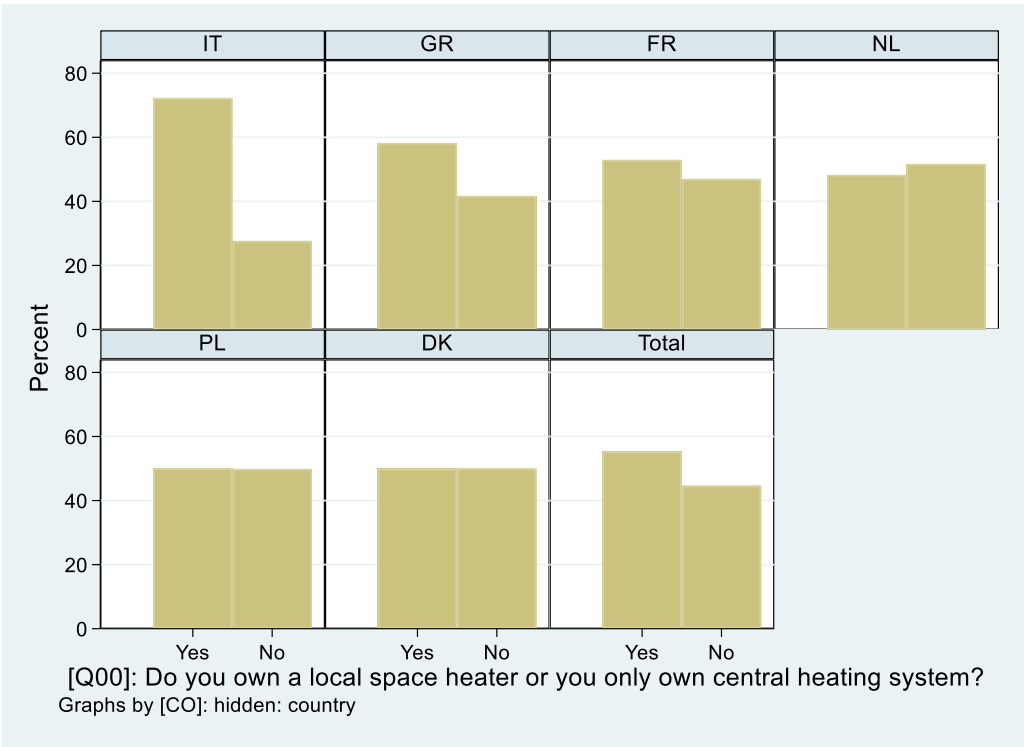


Figure 6 Local vs central heating system

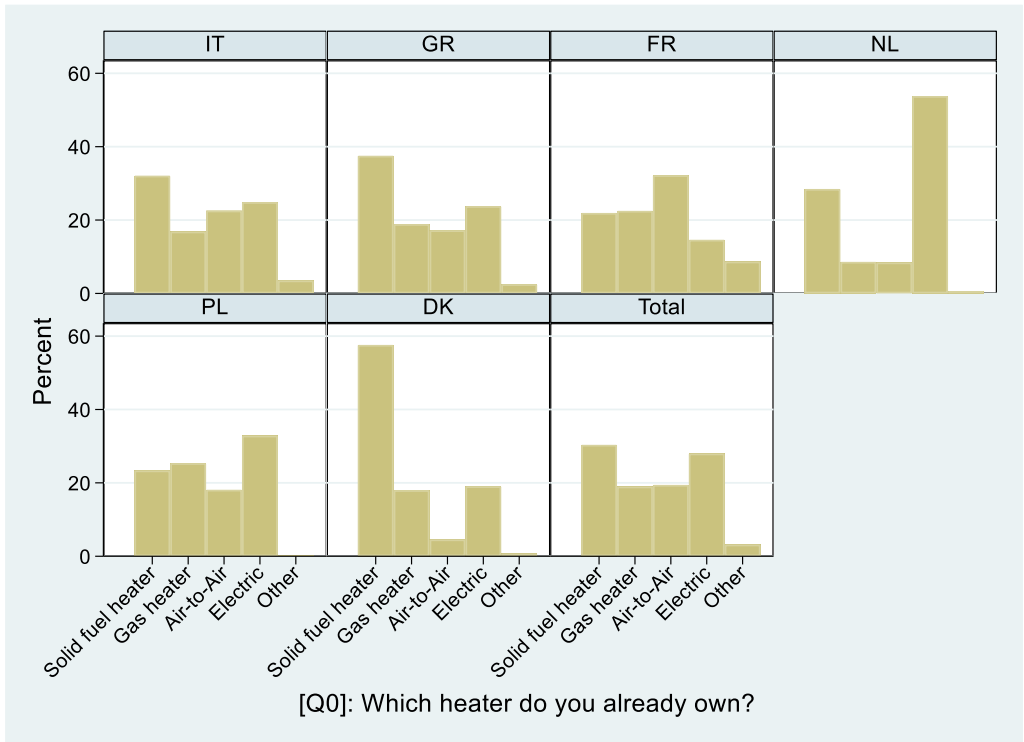


Figure 7 Heater type owned

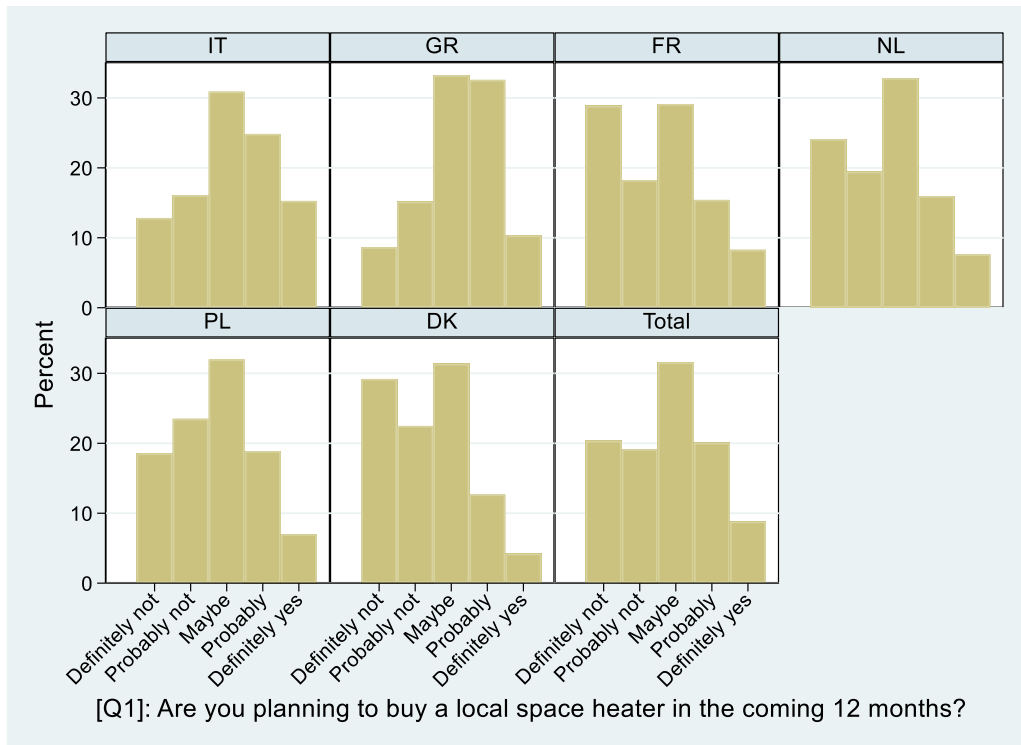


Figure 8 Intention to buy

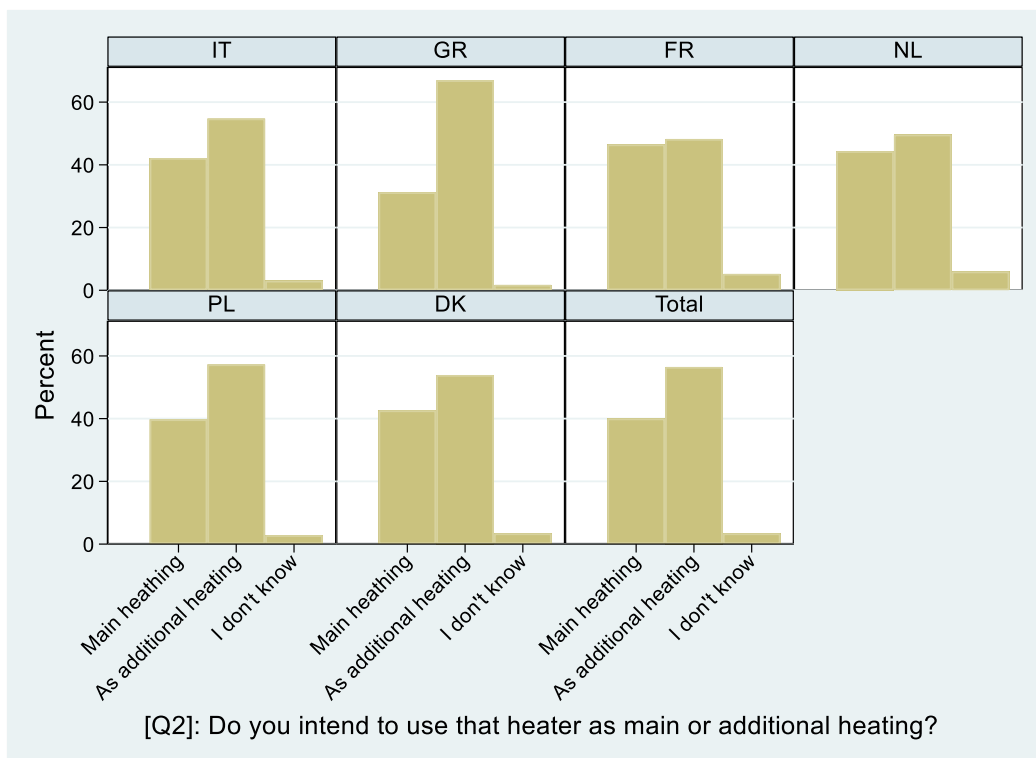


Figure 9 Intention to buy heater as the main or additional heating

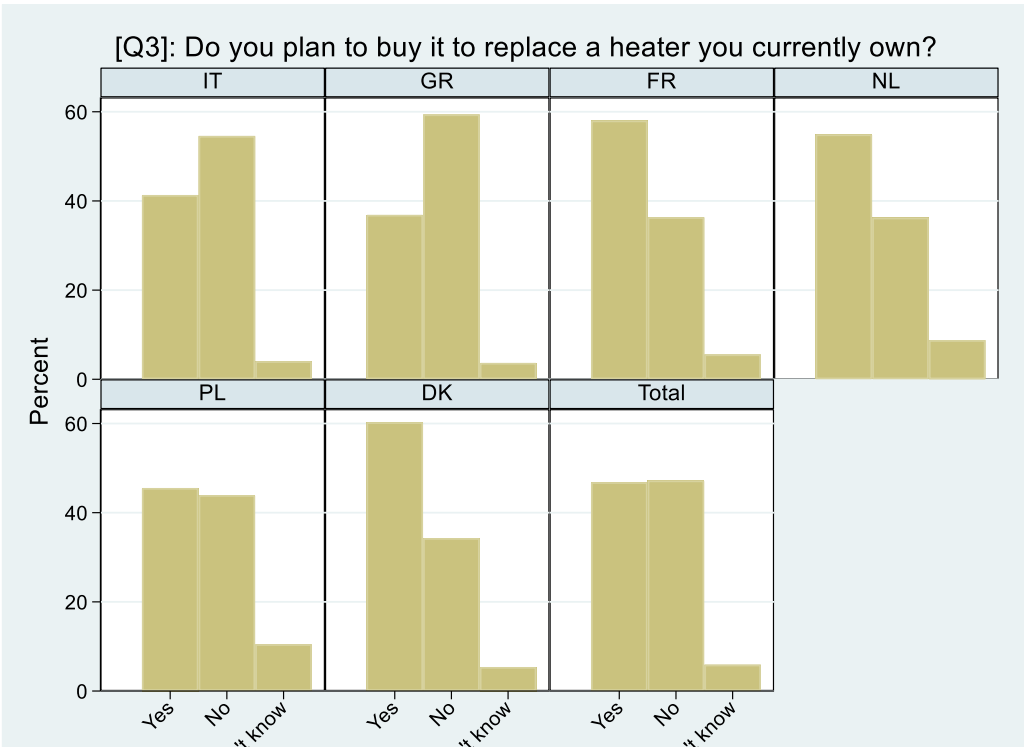


Figure 10 Plan to buy or replace

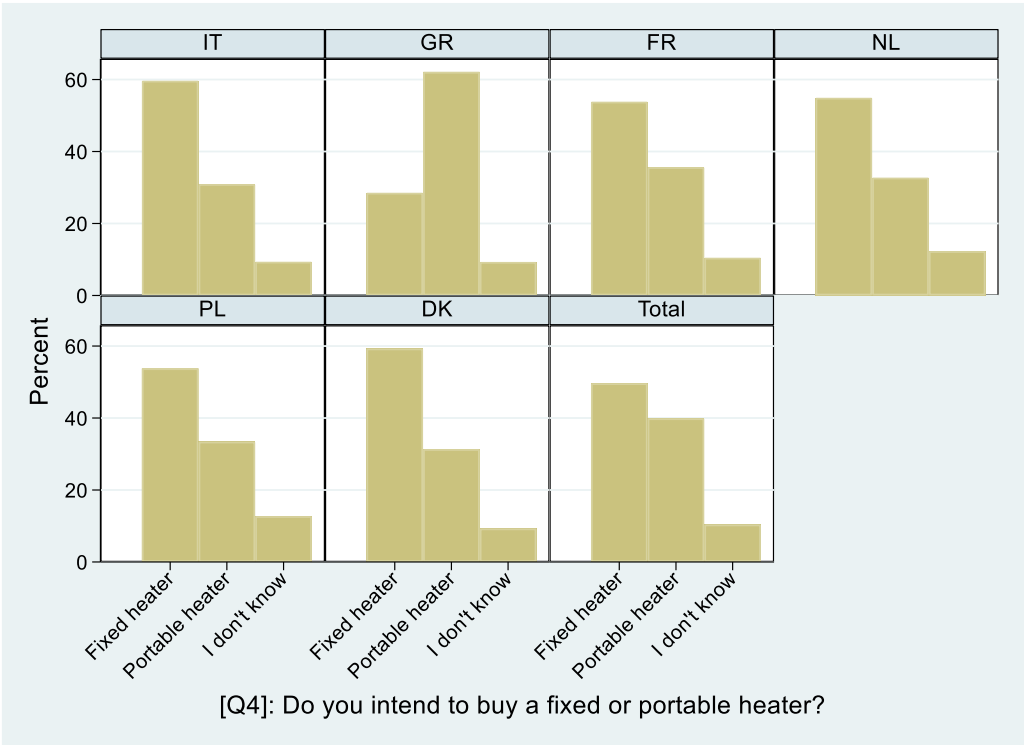


Figure 11 Intention to buy fixed or portable heater

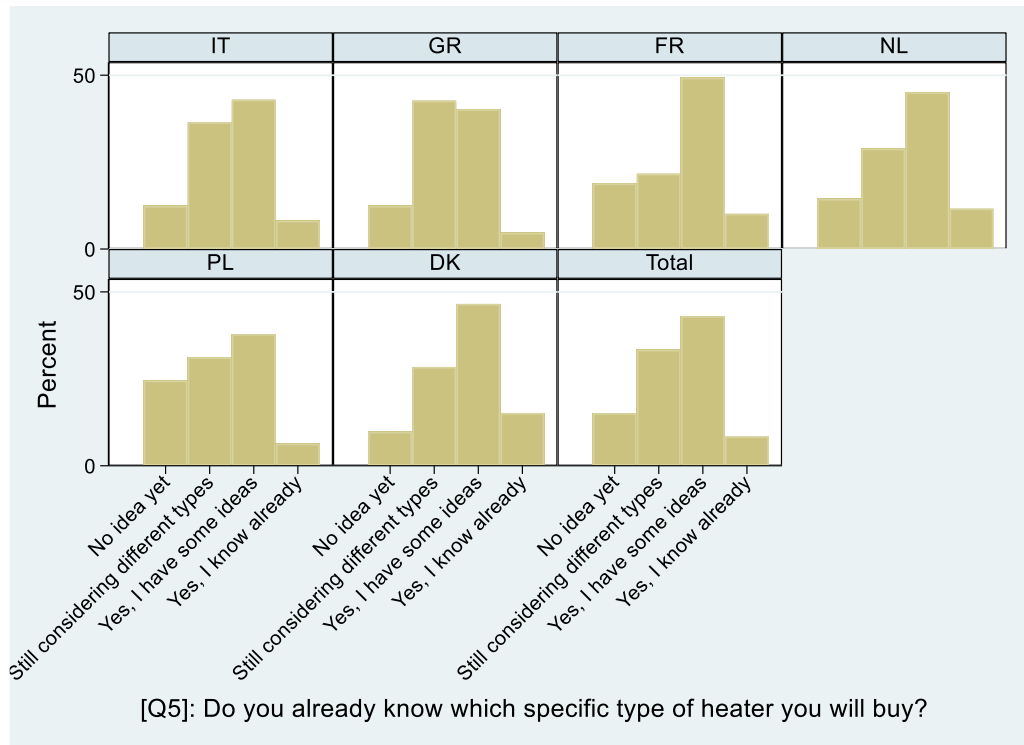


Figure 12 Knowledge of specific heater to buy

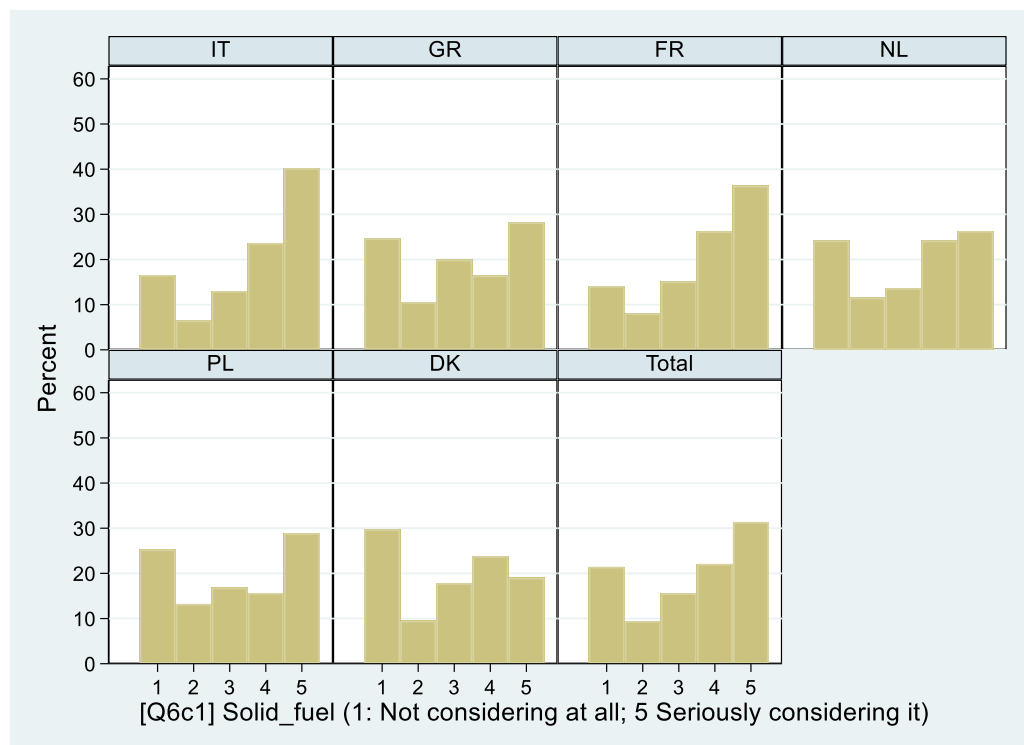


Figure 13 Intention to buy Solid Fuel system

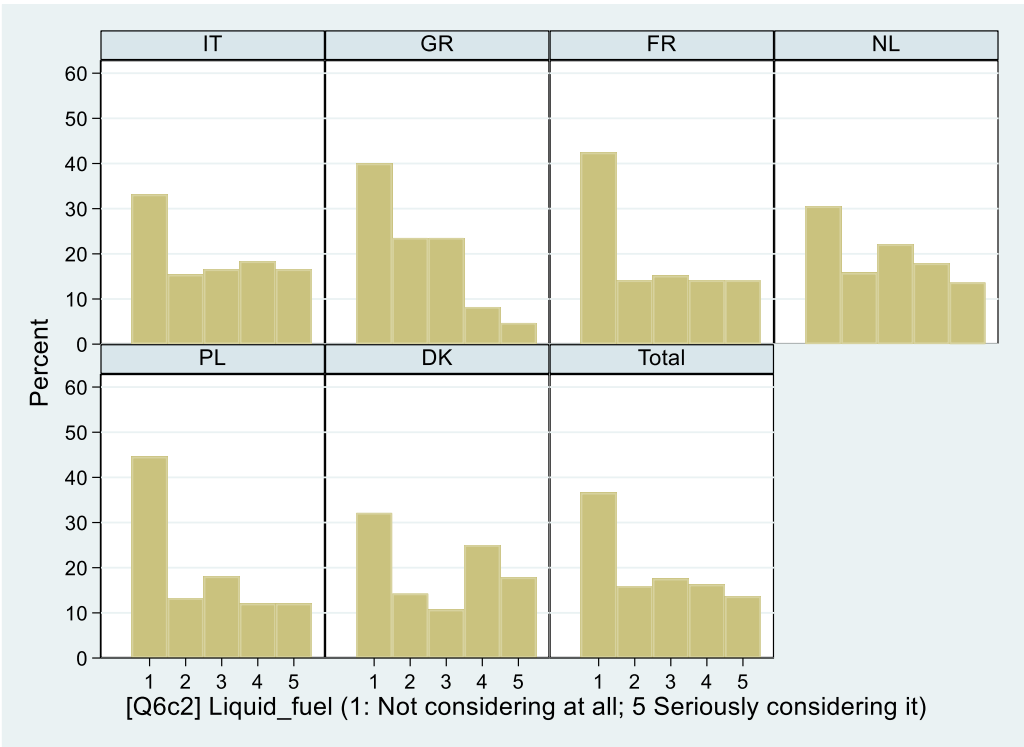


Figure 14 Intention to buy Liquid fuel system

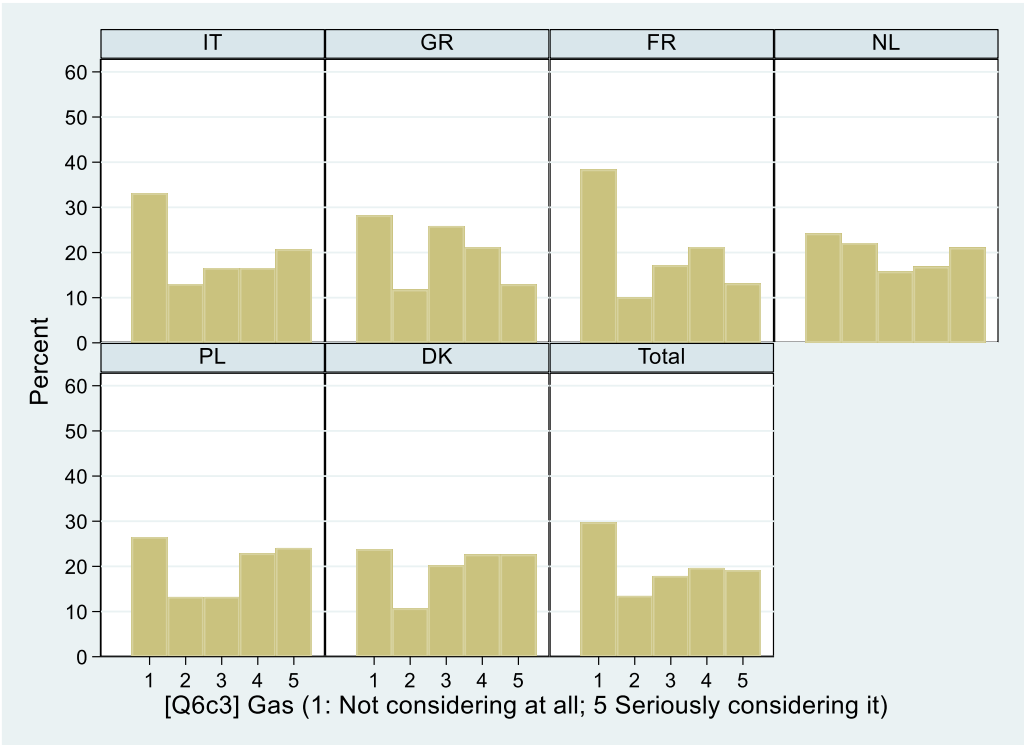


Figure 15 Intentions to buy Gas system

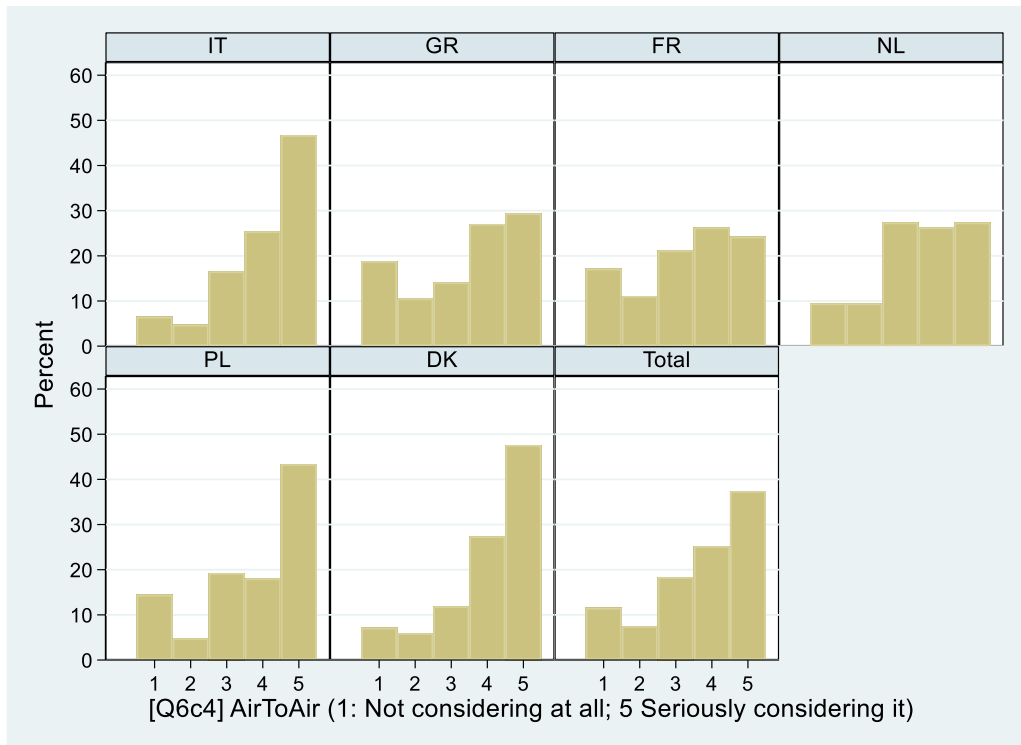


Figure 16 Intentions to buy Air to Air system

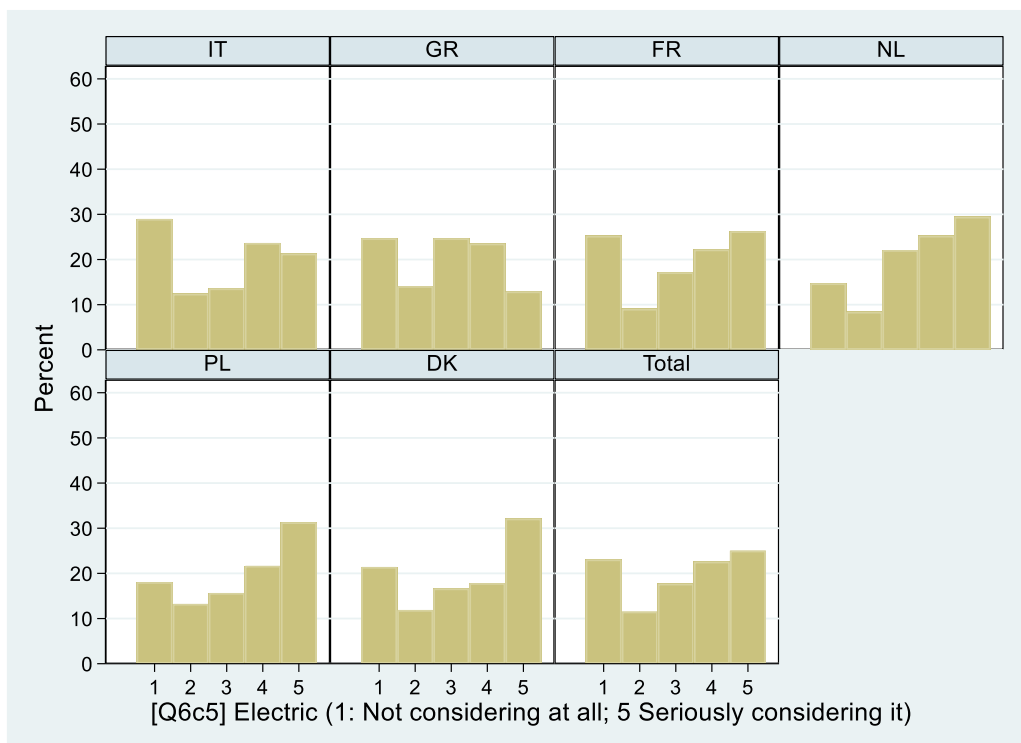


Figure 17 Intentions to buy Electric system

2.2. Clarity of concepts and use of information

Before participating in the DCE experiment, participants were given information regarding Energy Efficiency, Global Warming Potential (GWP), and Particular Matter (PM) and were asked whether each of these concepts was clear to them and whether they would use them when deciding to buy an appliance (Figure 18 Figure 19 Figure 20). Overall, the great majority of participants report that they think the concepts are clear or are definitely sure the concepts are clear (Energy Efficiency, 86.67%; GWP, 86.82%; PM 75.46%). In addition, most of the participants report that they will use this information when considering buying new appliances (Energy Efficiency, 75.52%; GWP, 59.95%; PM 70.60%) (Figure 21 Figure 22 Figure 23). Regarding PM, participants were asked an additional question aimed at measuring whether they are interested in seeing information regarding air pollution on energy labels. Our analysis shows that most participants are interested in seeing the information about air pollution on the energy labels (Definitely interested, 41.35%; partially interested, 35.42%) (Figure 24). Considering that only the first concept is currently used in the labels, both the additional concepts (GWP and PM) are welcomed by participants as a help in their decisions. These results are corroborated in the first discrete choice experiment where we show that participants are influenced by the presence of these information concepts in their decisions.

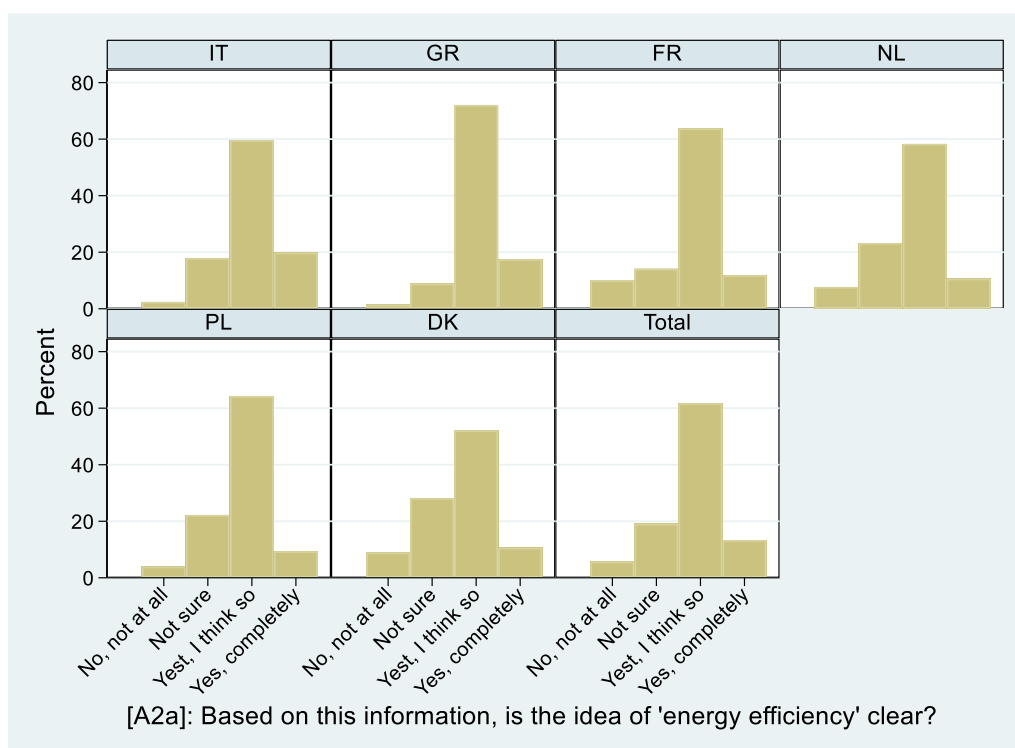


Figure 18 Clarity Energy Efficiency

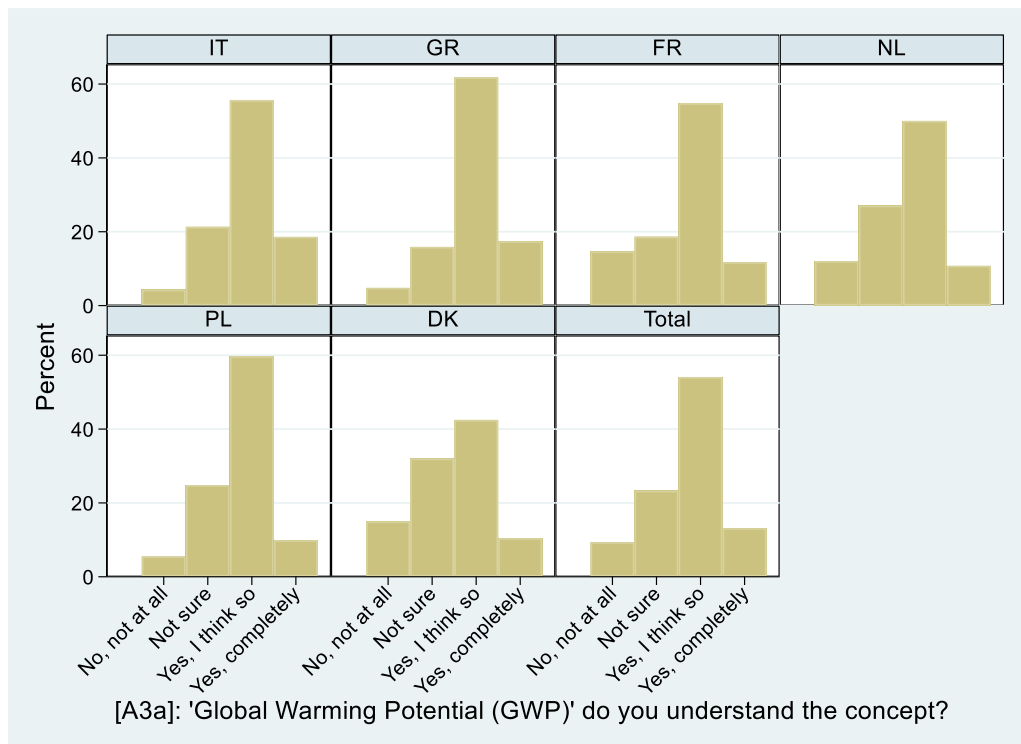


Figure 19 Clarity Global Warming Potential (GWP)

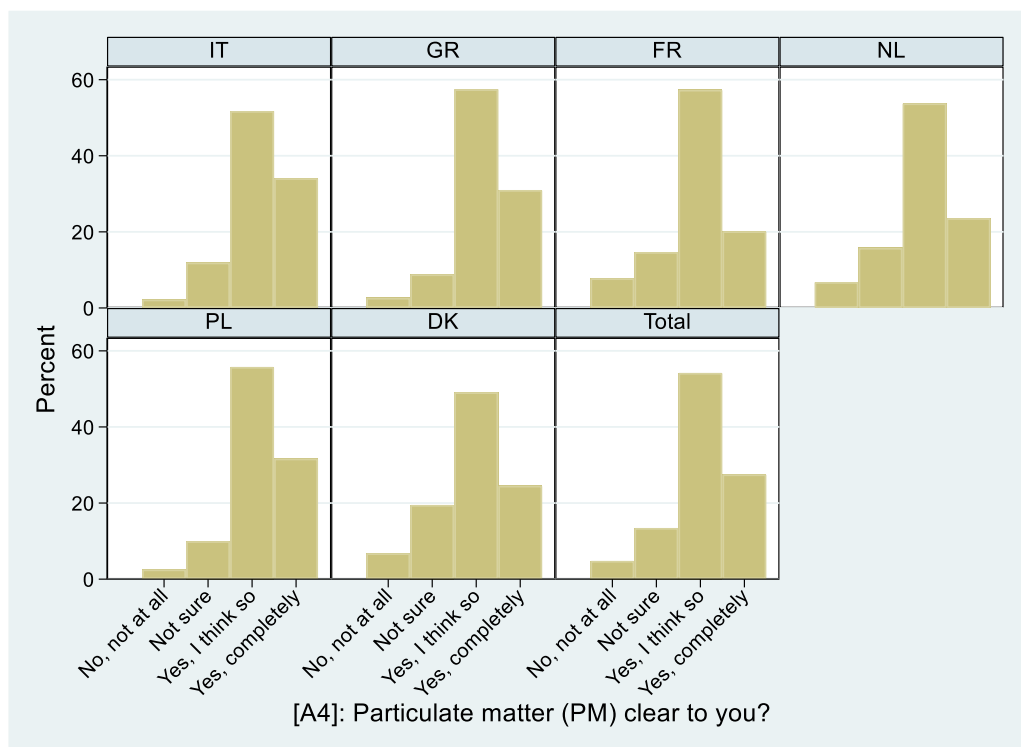


Figure 20 Particulate matter (PM) clarity

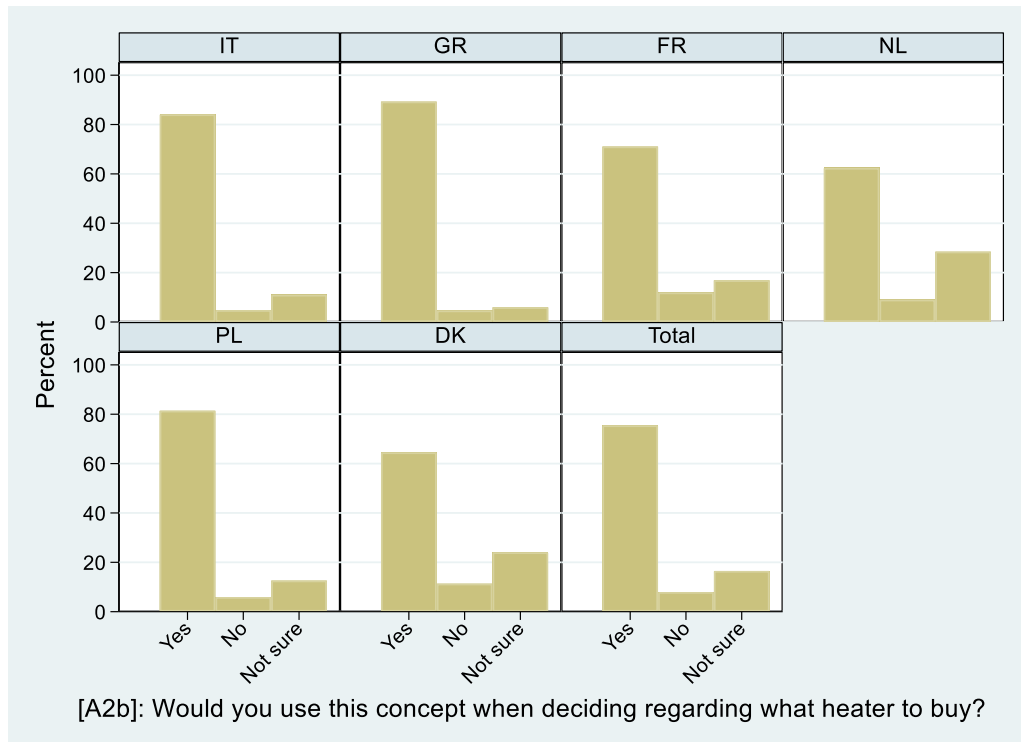


Figure 21 Use of information - Energy Efficiency

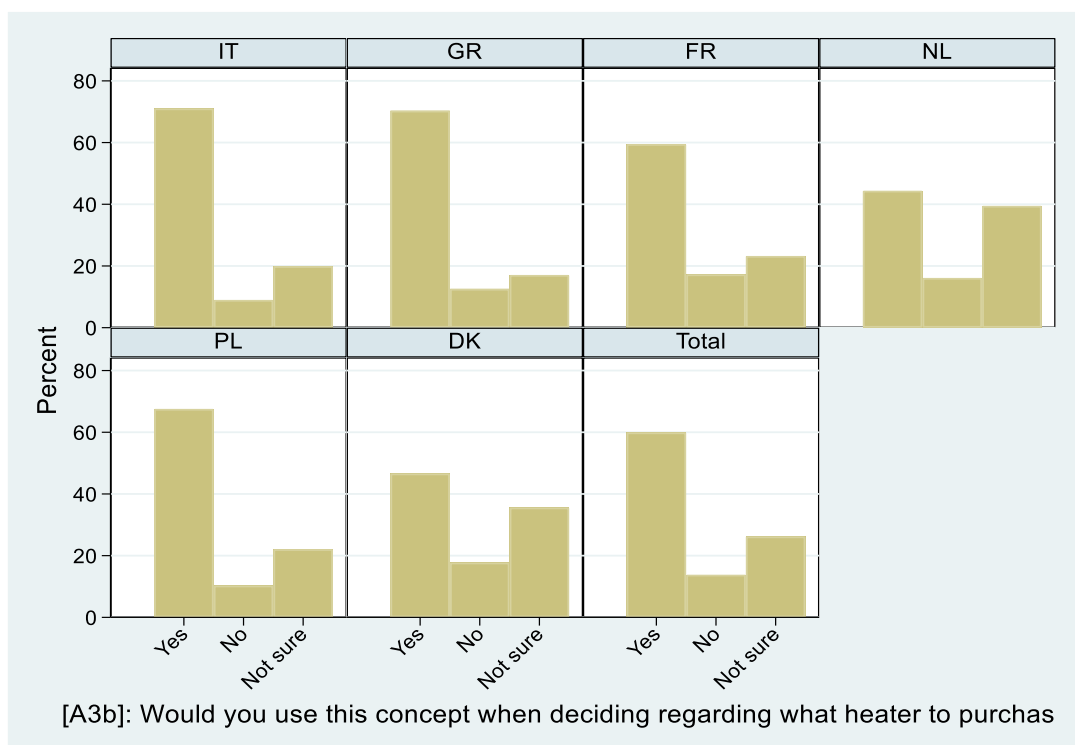


Figure 22 Use of information - GWP

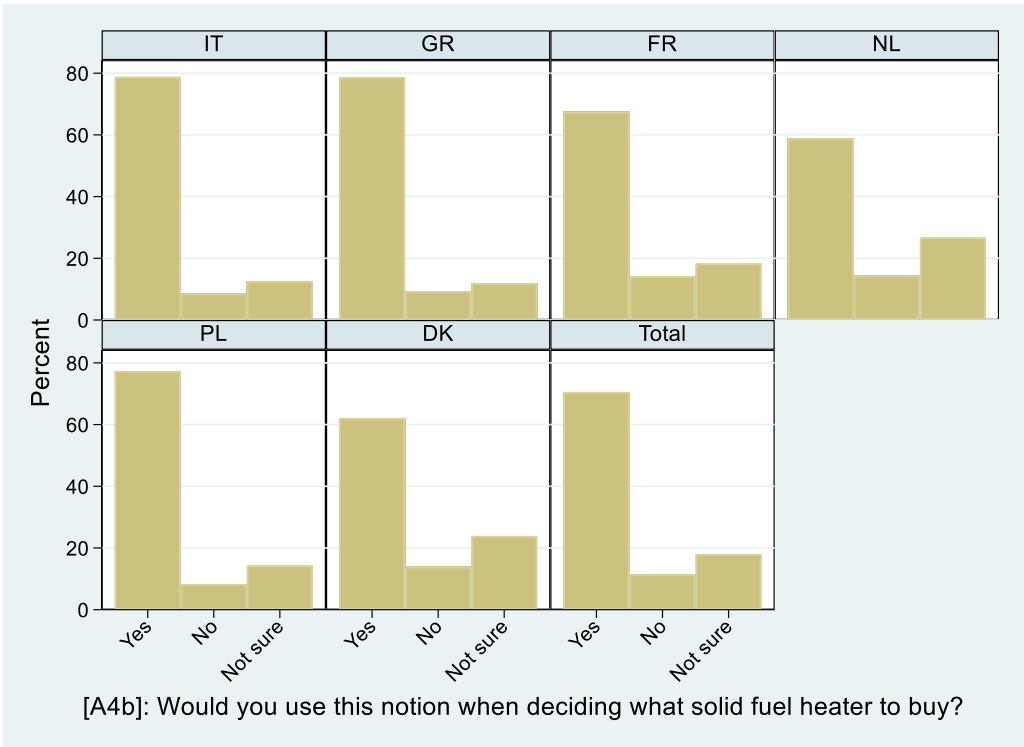


Figure 23 Use of information - PM

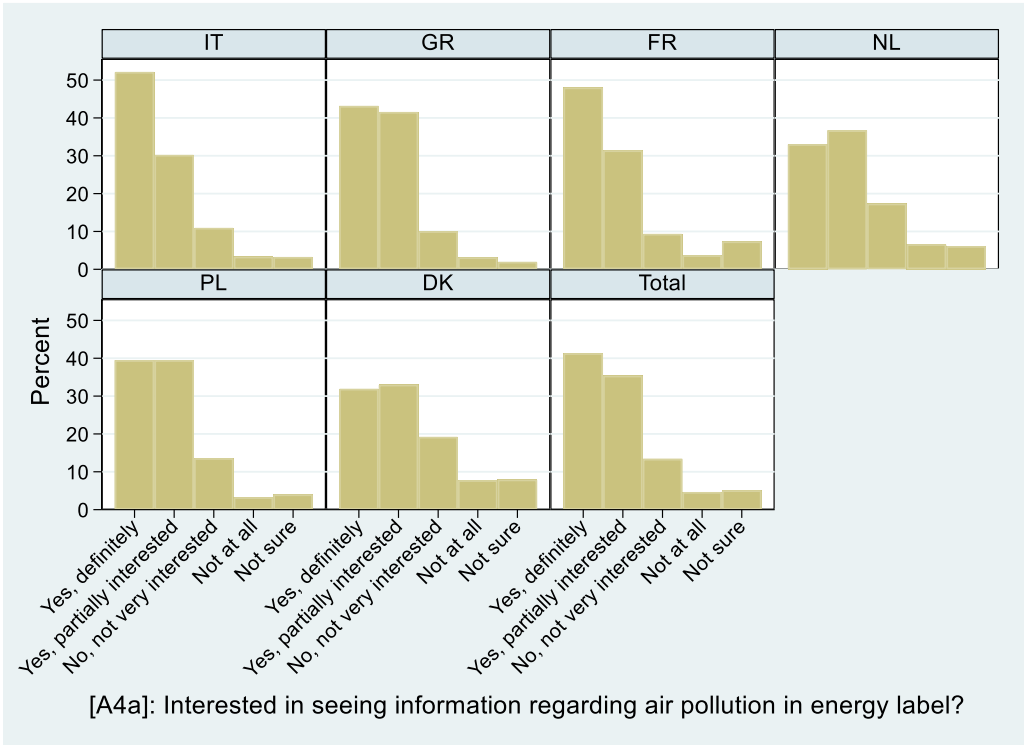


Figure 24 Interest in seeing information - PM

2.3. Consumer preferences and impact of merged label

2.3.1. First DCE – Choice within same product category

Table 4 below shows the distribution across the four groups for the first DCE. In each DCE, each participant made 10 consecutive choices between two appliances. For each choice, they saw two labels of alternative local space heaters and selected which one they would buy based on the available information.

Table 4 First DCE– Group allocation

Experimental group	Total (N=7248)
Group 1A – Electric	1147 (28.77%)
Group 1B – Gas	784 (19.66%)
Group 1C - Solid fuel	1246 (31.25%)
Group 1D – Reversible Air Conditioning (RAC)	810 (20.32%)

Below we provide the main results from the first DCE experiment. When presenting the results, we mainly focus on:

- Marginal probability: the probability of an event irrespective of the outcome of another variable.
- Marginal utility: how much pleasure/satisfaction is gained by a consumer because of the increase in consumption by one unit.

Participants are asked to make choices between different models of the same product category (electric, gas, solid fuel, and RAC). Data show that the likelihood of choosing a model is influenced by some factors depending on the type of category (price, energy efficiency, type of label, PM level and GWP level).

1. We observe that participants are more likely to choose **cheaper** and **more efficient systems** compared to more expensive and less efficient ones, respectively. These results confirm the hypotheses that consumers prefer cheaper and more energy-efficient models. It is worth noting that there is a strong preference for more efficient models, despite these being generally more expensive.
2. Looking at the effect of the merged label on consumer preferences about products of the same category, we observe that, for **gas systems**, participants are more likely to choose products with the current label, relatively to the merged version. This result might be driven by the fact that participants wrongly compared the efficiency levels of the two labels. Since the gas systems are generally less efficient relative to other product categories, the energy efficiency displayed is lower with merged labels (i.e., E and F) compared to when presented with current labels (i.e., A and C). Moreover, the **likelihood of choosing more efficient products is larger when presented with the current label (+20pp) than with the merged label (+4pp)**. Again, it should be noted that in the current label the energy classes varied from C to A, while in the merged label from F to E.
3. Instead, for **electric systems**, participants are more likely to choose **products with the merged label**, compared to those with the current

version. However, the merged label is less effective in increasing the likelihood of choosing more efficient electric heaters relatively to the current label (i.e., no label). Electric heaters are the only system that currently does not have an energy label. Thus, participants did not have two efficiency scales to compare, and they may have preferred the options with the new merged label as they displayed an efficiency scale rather than those without any scale.

4. For solid fuel systems, the new PM icon was assessed to measure its effect on consumer preferences. The results show that **participants are more likely to choose those products with a lower level of PM** compared to those with a higher level of PM.
5. Finally, for RAC systems the new GWP icon was assessed to measure its effect on consumer preferences. Also in this case, the **participants are more likely to choose those with a “Low GWP” icon compared to those without the icon.** This holds also for any given efficiency level.

1A - Electric heating

The regression model, with dependent variable the likelihood of choosing solid electric heating system, includes a dummy variable for *Price* (€472 vs €622), *Efficiency* (*Basic* vs *Advanced*), and *Label* used (Current vs Merged).

Data show that participants are influenced by the different attributes in their choice. Regarding the main effects (**Error! Reference source not found.**Figure 25 and Figure 56 in Technical Annex), results show that **participants are more likely to choose (1) cheaper electric heating systems compared to more expensive ones** ($p < 0.001$), **(2) more efficient electric systems compared to less efficient ones** ($p < 0.001$), and **(3) those with a merged label compared to those with the current version** ($p < 0.001$).

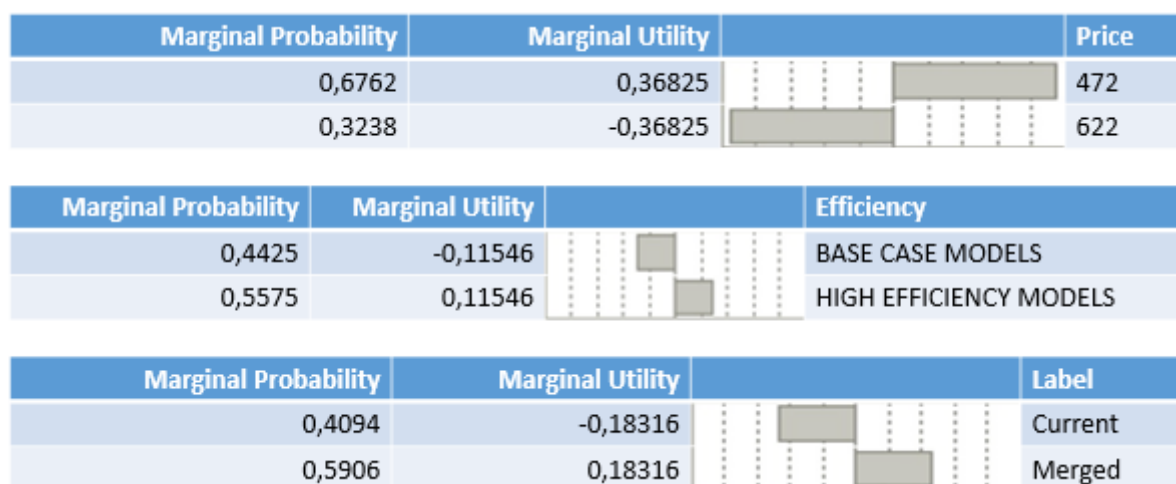


Figure 25 Electric systems - Attributes effects

The coefficient of the interaction term *Efficiency*Label* is significant ($p < 0.001$) (Figure 57 in Technical Annex**Error! Reference source not found.**). An analysis of the marginal effect indicates that **participants are more likely to choose basic case models of efficiency with the merged label**, compared to the current version. In addition, **participants are more likely to choose high-efficiency models with the merged label**, compared to the current version (Figure 26).







Marginal Probability	Marginal Utility		Efficiency*Label
0,1648	-0,39101		BASE CASE MODELS,Current
0,2860	0,16009		BASE CASE MODELS,Merged
0,2498	0,02470		HIGH EFFICIENCY MODELS,Current
0,2995	0,20623		HIGH EFFICIENCY MODELS,Merged



Figure 26 Electric systems - Marginal effects

1B – Gas fuel heating

The regression model, with dependent variable the likelihood of choosing gas fuel heating system, includes a dummy variable for *Price* (€1700 vs €2525), *Efficiency* (Low vs High), and *Label* used (Current vs Merged).

Data show that participants are influenced by the different attributes in their choice. Regarding the main effects (**Error! Reference source not found.**Figure 27 Figure 58 in Technical Annex), results show that **participants are more likely to choose (1) cheaper gas fuel heating systems compared to more expensive ones** ($p < 0.001$), **(2) more efficient gas fuel systems compared to less efficient ones** ($p < 0.001$), and **(3) those with a merged label compared to those with the current version** ($p < 0.001$).

Marginal Probability	Marginal Utility		Price
0,6188	0,24214		1700
0,3812	-0,24214		2525

Marginal Probability	Marginal Utility		Efficiency
0,3915	-0,22059		BASE CASE MODELS
0,6085	0,22059		HIGH EFFICIENCY MODELS

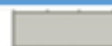

Marginal Probability	Marginal Utility		Label
0,7620	0,58184		Current
0,2380	-0,58184		Merged

Figure 27 Gas systems - Attributes effects

The coefficient of the interaction term *Efficiency*Label* is significant ($p = 0.001$) (Figure 59 in Technical Annex**Error! Reference source not found.**). An analysis of the marginal effect indicates that **participants are more likely to choose products basic case models of efficiency with the current label**, compared to the merged version. In addition, **participants are more likely to choose high-efficiency models with the current label**, compared to the merged version (Figure 28).





Marginal Probability	Marginal Utility		Efficiency*Label
0,2806	0,30760		BASE CASE MODELS,Current
0,0976	-0,74878		BASE CASE MODELS,Merged
0,4856	0,85607		HIGH EFFICIENCY MODELS,Current
0,1362	-0,41490		HIGH EFFICIENCY MODELS,Merged

Figure 28 Gas systems - Marginal effects

1C – Solid fuel heating systems

The regression model for solid fuel heating system includes a dummy variable for *Price* (€1500 vs €2325), *Efficiency* (E(92) vs F(80)), level of PM (20mg vs 50mg).

Data show that participants are influenced by the different attributes in their choice. Regarding the main effects (**Error! Reference source not found.**Figure 29 and Figure 60 in Technical Annex), results show that **participants are more likely to choose (1) cheaper solid fuel heating systems compared to more expensive ones** ($p < 0.001$), **(2) more efficient solid fuel heating systems compared to less efficient ones** ($p < 0.001$), and **(3) those with a lower level of PM compared to those with a higher level of PM** ($p < 0.001$).

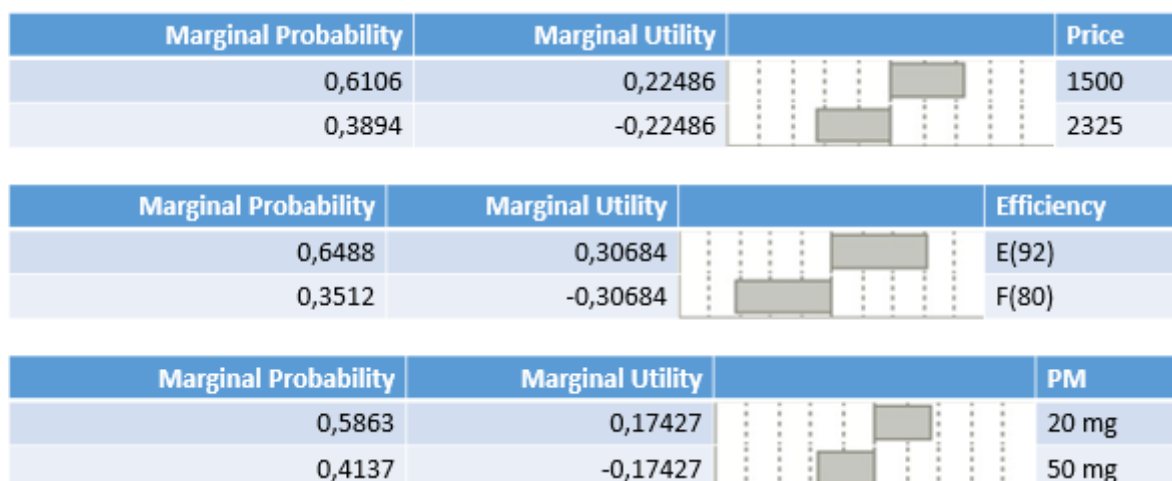


Figure 29 Solid fuel systems - Attributes effects

The coefficient of the term *Efficiency*PM* is not significant ($p=0.227$) (Figure 61 and Figure 62 in Technical AnnexFigure 64**Error! Reference source not found.**).

1D – Reversible air conditioning (RAC)

The regression model for the reversible air conditioning (RAC) includes a dummy variable for *Price* (€1528 vs €2347), *Efficiency* (B(286) vs C(190)), the presence of the *GWP* label or not (present vs absent). Data show that participants are influenced by the different attributes in their choice. Regarding the main effects (**Error! Reference source not found.**Figure 30 and Figure 63 in Technical Annex), results show that **participants are more likely to choose (1) cheaper RAC systems compared to more expensive ones** ($p < 0.001$), **(2) more efficient RAC systems compared to less efficient ones** ($p < 0.001$), and **(3) those with the GWP label compared to those without it** ($p < 0.001$).

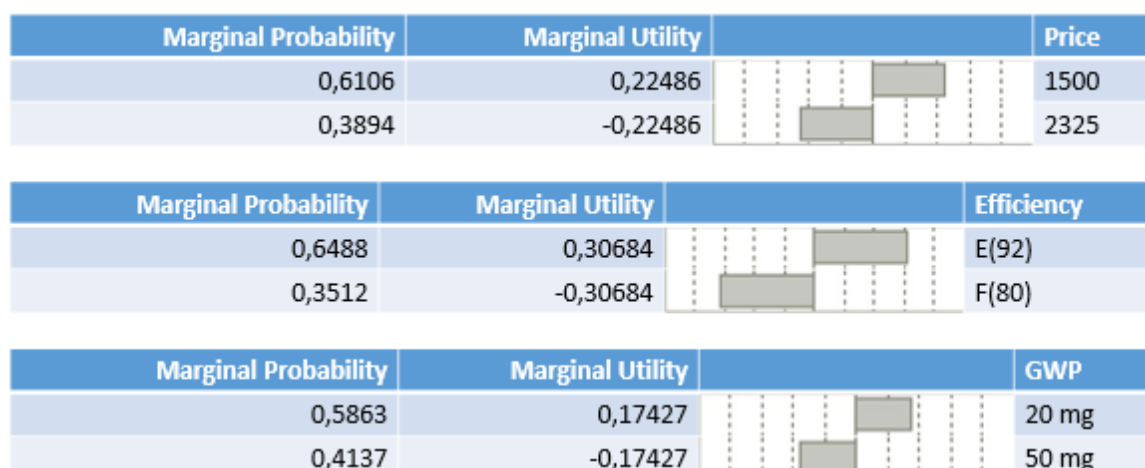


Figure 30 RAC systems - Attributes effects

The coefficient of the interaction term *Efficiency*GWP* is also significant ($p < 0.001$) (Figure 64 in Technical Annex **Error! Reference source not found.**). An analysis of the marginal effects indicates that **participants are more likely to choose products with energy efficiency category B(286) when the GWP label is shown**, compared to when the label is absent. In addition, **participants are less likely to choose a product with energy efficiency category C(190) when the GWP label is shown** compared to when it is absent (Figure 31).

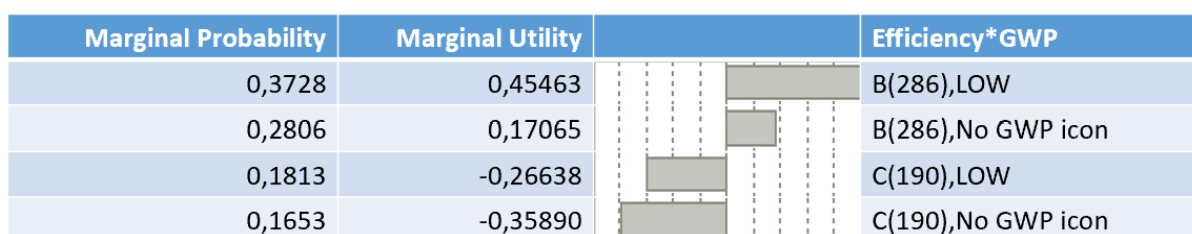


Figure 31 RAC systems - Marginal effects

2.3.2. Second DCE – Choice between product categories

Table below shows the distribution across the two conditions (2A “old label” vs 2B “new label”) for the second DCE.

Table 5 Second DCE– Group allocation

Experimental group	Total (N=7248)
Group 2A	3623 (49.99%)
Group 2B	3625 (51.01%)

Below we provide the main results from the second experiment, where participants are divided into two groups and make choices between different models of different product categories (electric, gas, solid fuel, and RAC) either with the “current separate label” or with the “new merged label”. When presenting the results, we mainly focus on:

- Marginal probability: the probability of an event irrespective of the outcome of another variable.
- Marginal utility: how much pleasure/satisfaction is gained by a consumer because of the increase in consumption by one unit.

Comparing the results of the two groups allows for testing the effect of the new merged label on influencing consumer preferences for more efficient products.

1. Overall, we replicate the findings of the first experiment as we observe that participants are more likely to choose **cheaper** and **more efficient systems** compared to more expensive and less efficient ones, respectively.
2. For **current label group**, participants are overall more likely to choose RAC and solid heating systems (31% and 36%), compared to Gas and Electric (16% and 18%).
3. For **merged label group**, participants are overall more likely to choose RAC (41%) compared to Electric, Gas, and Solid ones (22%, 20%, and 17%).
4. When comparing qualitatively marginal probabilities between the two groups (Figure 32), **the main findings are:**
 - **RAC:** the new merged labels increase the likelihood that participants choose this product category (+10pp), which is the most efficient one. This result may be driven by the fact that with the same label is easier for consumers to identify the most energy-efficient product, since the labels and the scales are comparable.
 - **Solid fuel:** the new labels decrease the likelihood that participants choose this product category (-20pp). The change is particularly large as this category has the greatest variation between the two efficiency scales (A+ and A++ in the current label; F and E in the merged label).
 - **Gas heaters:** the new merged labels increase the likelihood that participants choose this product category (+4pp). The sharp decline in choosing solid fuel products results in a shift towards the other more energy efficient categories. When comparing across categories with the merged labels as in the current experiment, gas heaters might be chosen more often because there are worse energy-efficient alternatives (i.e., solid fuel systems). This result seems in contrast to the finding of experiment 1 showing that participants are more likely to choose a gas heater with the current label, compared to a gas heater with the merged label. However, when the comparison is done within the same product category, the merged label decreases the energy efficiency of the product compared to when presented with the current label.
 - **Electric heaters:** the results corroborate the finding of the first part of the experiment, as the new labels slightly increased the likelihood to choose this product category (+4pp). This result can be explained by the fact that the consumers could not compare the two energy efficiency scales as there is no current label. Another explanation may be linked to the price, as these products are the cheapest compared to the others and this attribute likely has an effect (this product was the second best chosen, after RAC, in the experiment with the merged label).

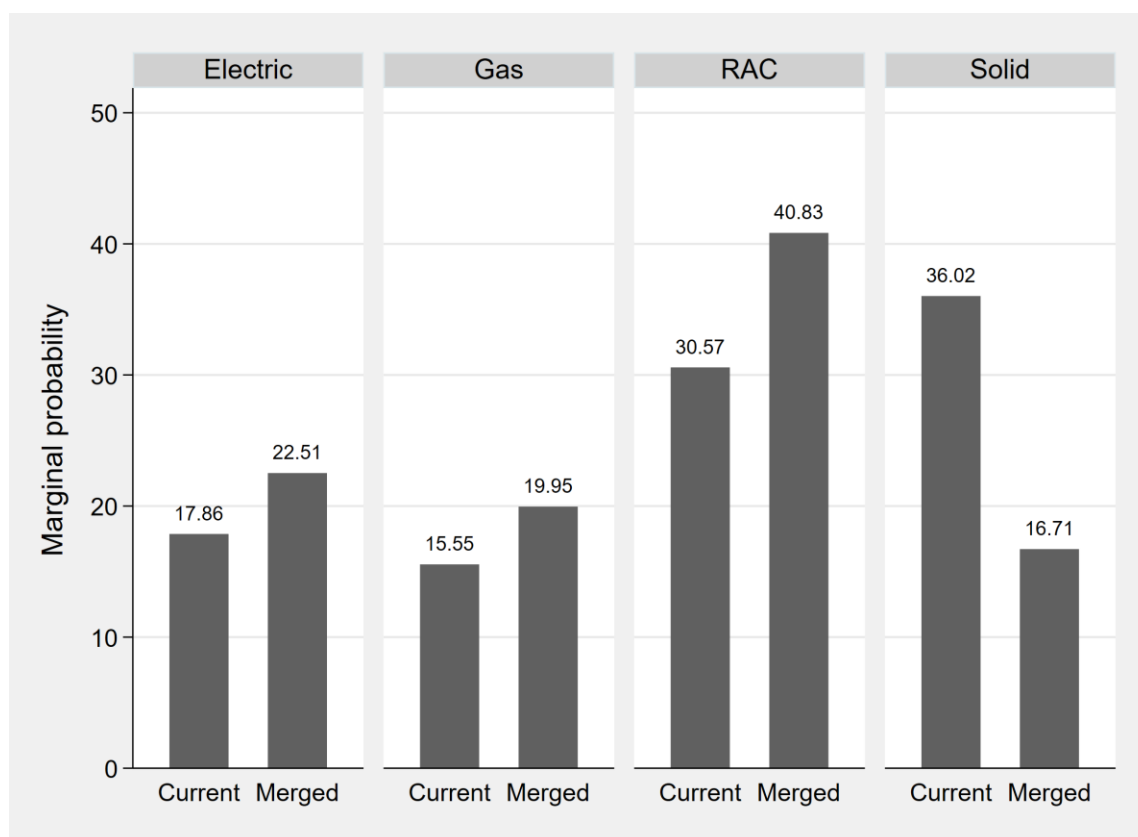


Figure 32 Marginal probability of choosing an option, by category and labels

Note: The graph displays the estimated marginal probability for the different product categories and labels used. The parameter estimates are standard logit, the outcome of a conditional logistic regression with the regression coefficients representing the change in the logit for each unit change in the predictor. The discrete choice methodology is based on random utility maximisation theory, whereby an individual is assumed to choose the utility-maximising option when presented with a choice set containing alternative scenarios.

2A – Current labels

The regression models for the current label treatment includes a dummy variable for *Price* (Expensive vs Cheap), *Efficiency* (Base case vs Advanced), and *Category of product* (Electric; Gas; RAC REV; Solid).

Data show that participants were influenced by the different attributes in their choice. Regarding the main effects (**Error! Reference source not found.**Figure 33 and Figure 65 in Technical Annex), results show that **participants are more likely to choose (1) cheaper systems compared to more expensive ones** ($p < 0.001$), **(2) more efficient systems compared to less efficient ones** ($p < 0.001$), and **(3) solid fuel heating and RAC REV compared to Gas and Electric ones**.

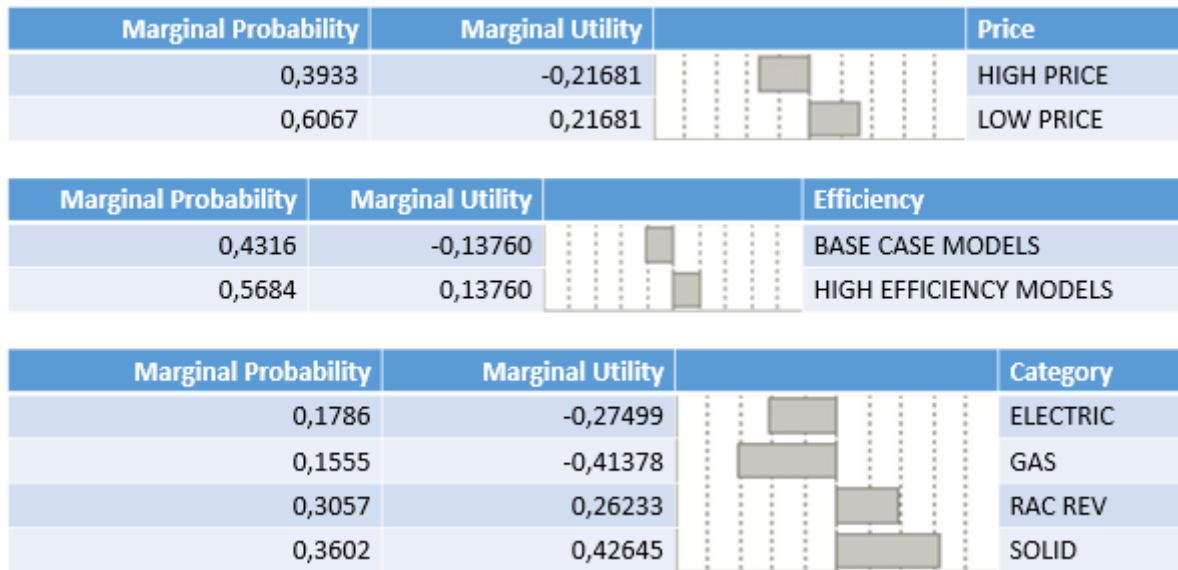


Figure 33 Current labels - Attributes effects

The coefficient of the interaction term *Efficiency*Category* is significant ($p < 0.001$) (Figure 66 in Technical Annex **Error! Reference source not found.**). An analysis of the marginal effect indicates that **participants are more likely to choose high efficient models of RAC REV and solid heating systems**, compared to base case RAC REV and solid heating models (Figure 34 **Error! Reference source not found.**).

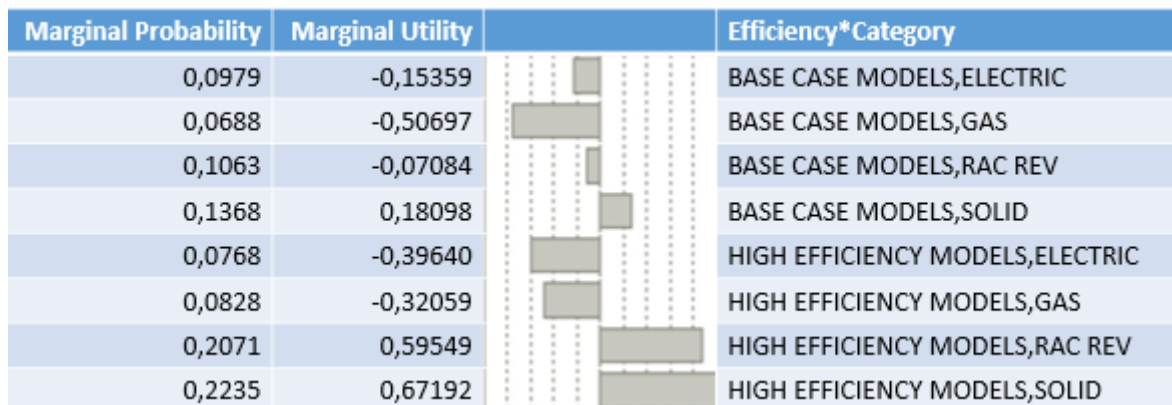


Figure 34 Current labels - Marginal effects

2B – Merged labels

The regression model for the merged label treatment includes a dummy variable for *Price* (Expensive vs Cheap), *Efficiency* (Base case vs Advanced), and *Category of product* (Electric; Gas; RAC REV; Solid).

Data show that participants were influenced by the different attributes in their choice. Regarding the main effects (**Error! Reference source not found.** Figure 35 and Figure 67 in Technical Annex), results show that **participants are more likely to choose (1) cheaper systems compared to more expensive ones** ($p < 0.001$), **(2) more efficient systems compared to less efficient ones** ($p < 0.001$), and **(3) RAC REV compared to Gas and Electric and solid ones**.

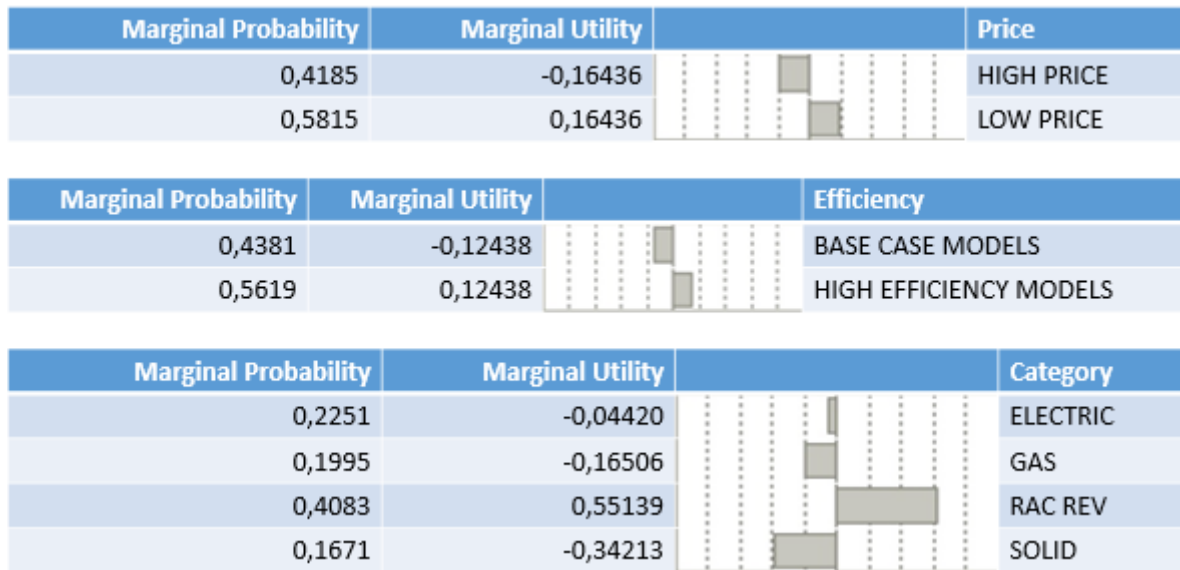


Figure 35 Merged labels - Attributes effects

The coefficient of the interaction term *Efficiency*Category* is significant ($p < 0.001$) (Figure 68 in Technical Annex **Error! Reference source not found.**). An analysis of the marginal effect indicates that **participants are more likely to choose high efficiency models compared to base case models, especially for solid fuel systems**. For the other products, high efficiency does not seem to increase the likelihood of choosing, compared to base case models (Figure 36).

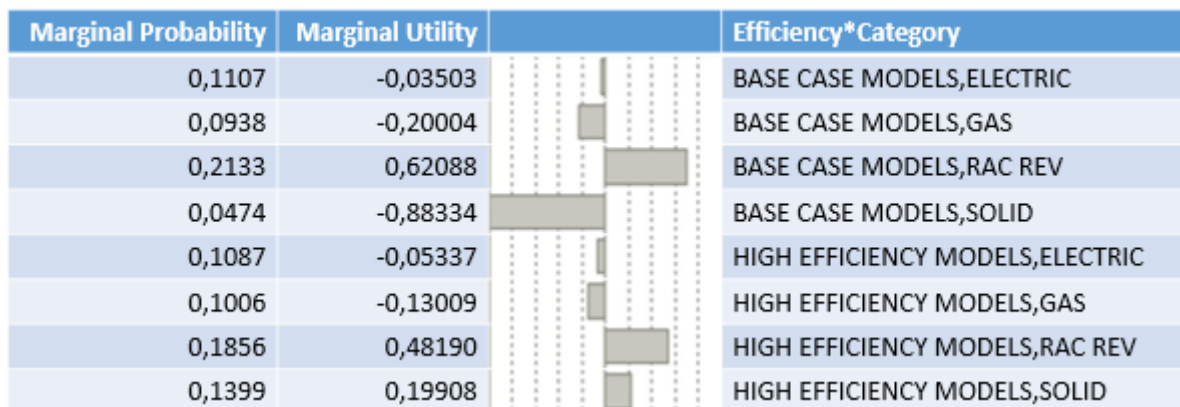


Figure 36 Merged labels - Marginal effects

2.4. Choice explanation

In addition, participants were asked to report their reasons for preferring/choosing reversible air conditioning, solid fuel heating, and an electric heater. Data show that most of the participants prefer/chose a **reversible air condition system mainly because it works for both heating and cooling** (Figure 37). A **solid fuel heater is preferred mostly because it is expected to be cheaper to run** (Figure 38). Finally, the reasons for preferring the electric heater are more distributed, as **participants indicate they preferred an electric heater because it is more efficient and less polluting than other heaters and because they expect it to be cheaper to run** (Figure 39).

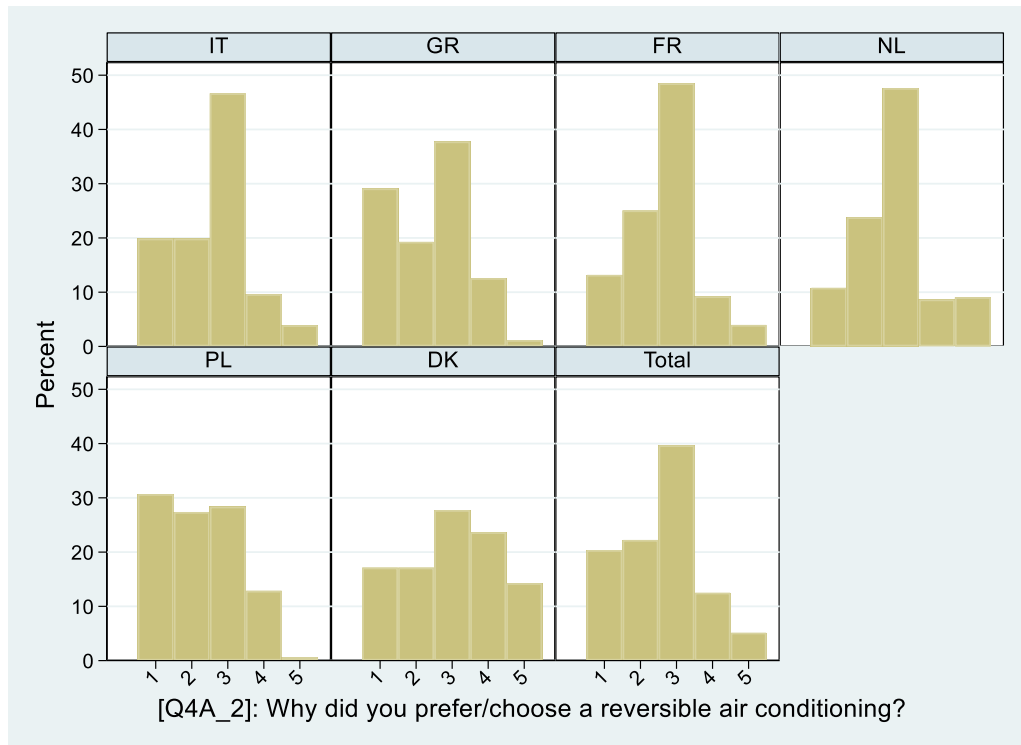


Figure 37 Reasons for choosing RAC.

(1= because the RAC is more efficient in heating than the electric heater; 2= because the RAC can cool as well; 3= because it works for heating and cooling; 4= because I expect the RAC to be cheaper to run; 5= other)

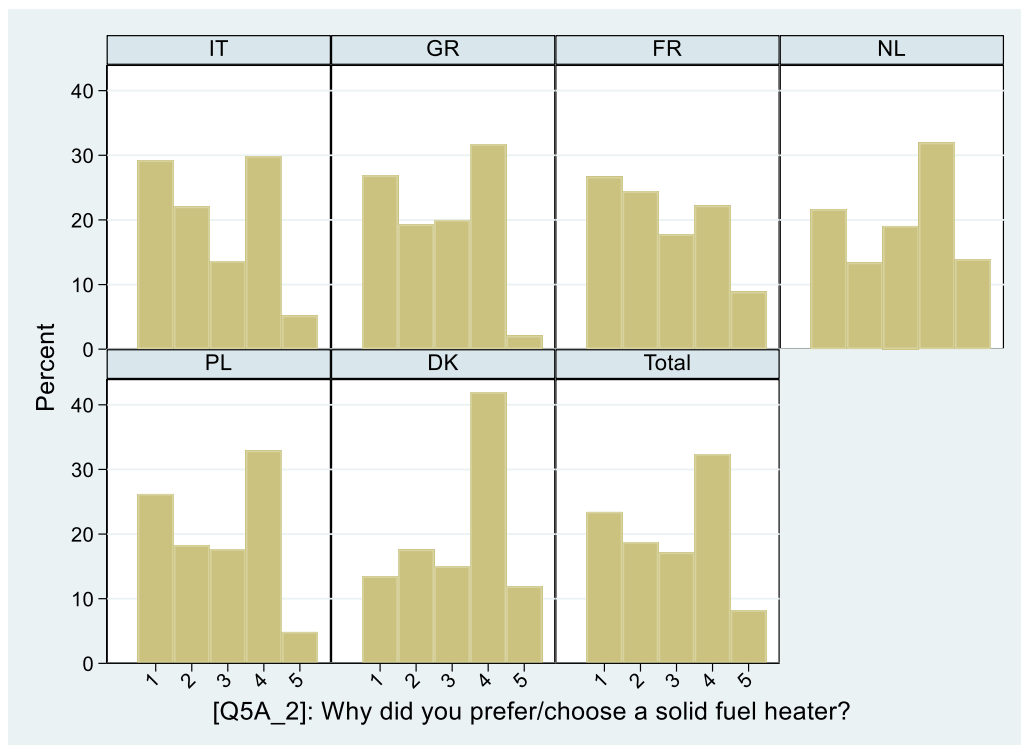


Figure 38 Reasons for choosing Solid fuel heater

(1= because it is more efficient in heating than the other heaters; 2= because it is less pollutant than the other heaters; 3= both 1+2; 4= because I expect it will be cheaper to run; 5= other)

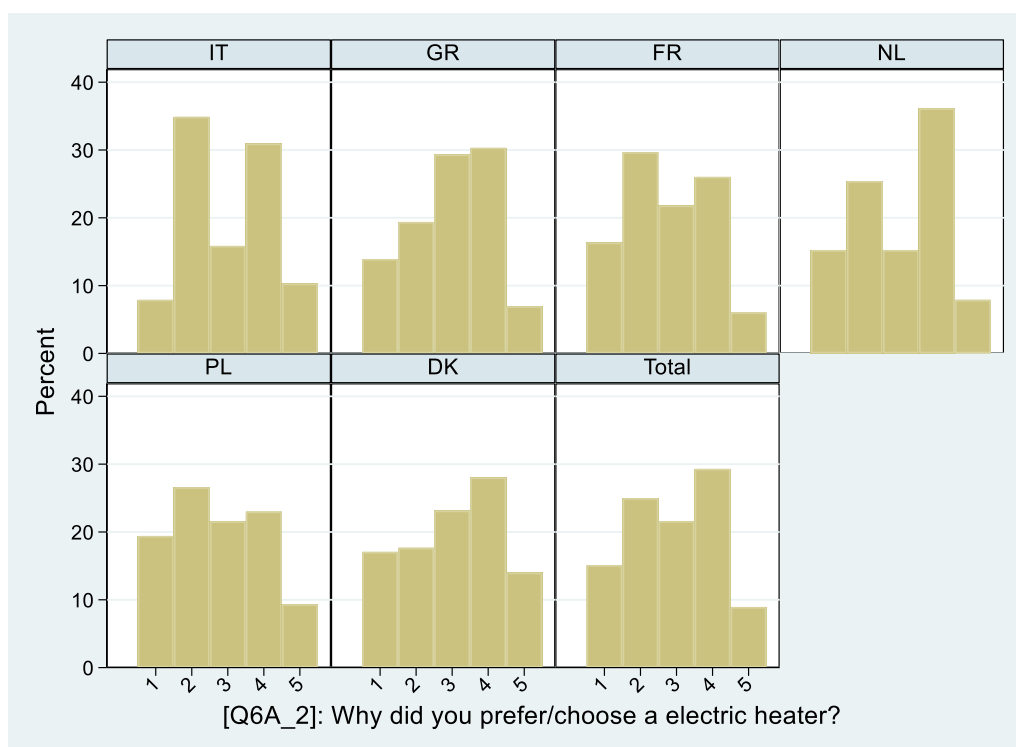


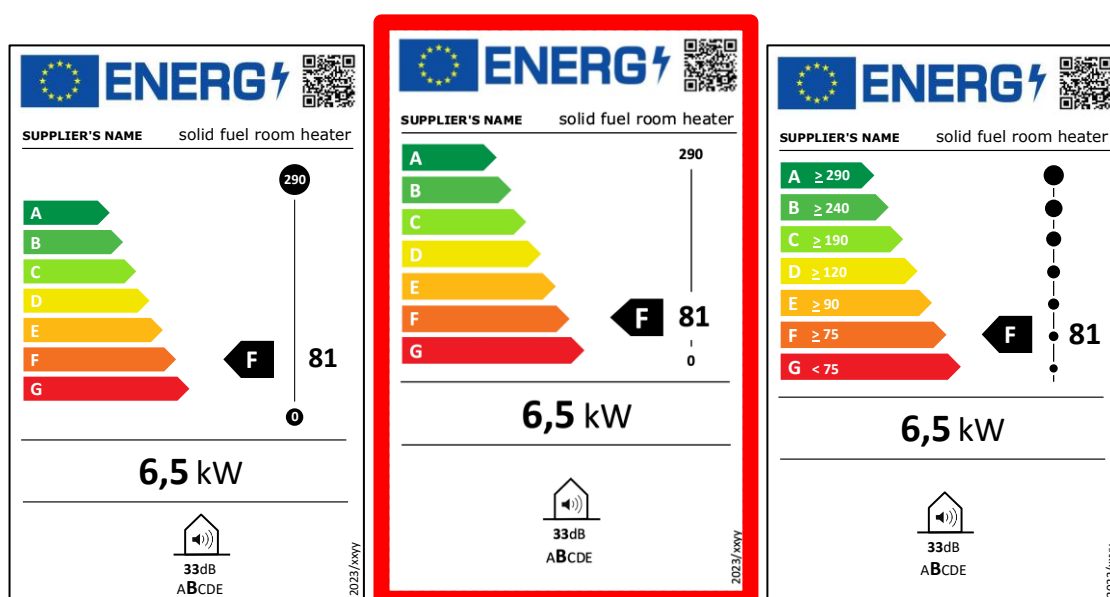
Figure 39 Reasons for choosing Electric heater

(1= because it is more efficient in heating than the other heaters; 2= because it is less pollutant than the other heaters; 3= both 1+2; 4= because I expect it will be cheaper to run; 5= other)

2.5. Preferences for different graphic versions (Block 3)

2.5.1. Granularity of energy efficiency

Participants indicated they find the second label as the most appealing, easy to understand, covers what you need to know about a new space heater, and would help them make a confident decision.



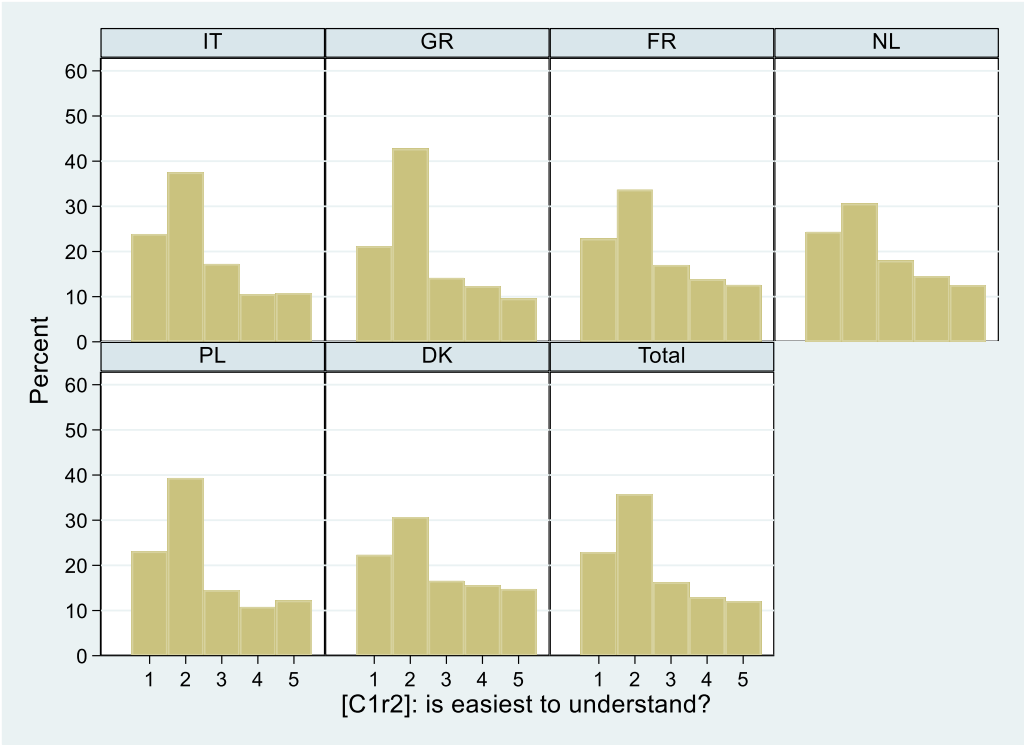
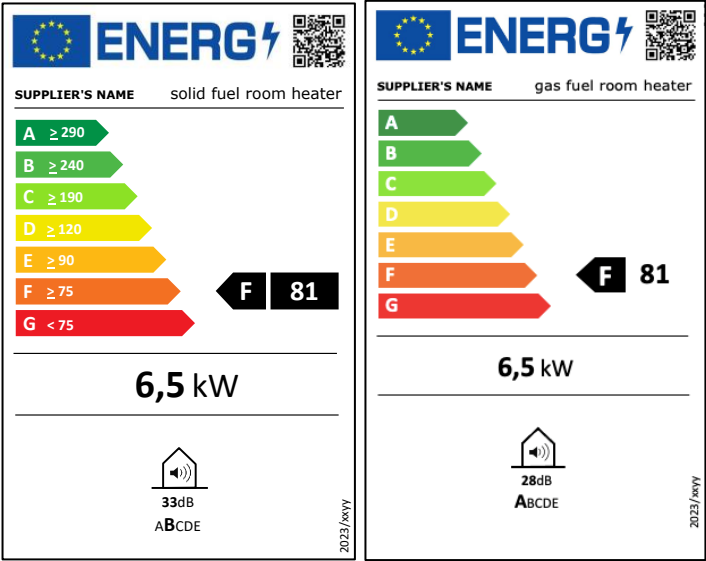


Figure 40 Energy Efficiency - Ease of understanding

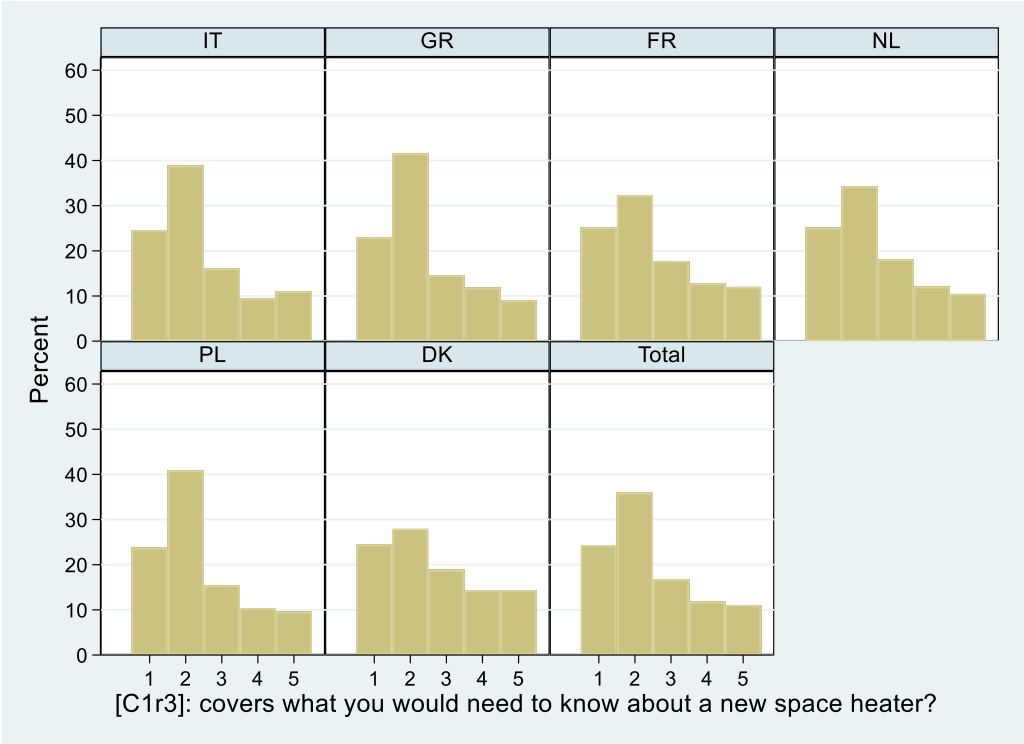


Figure 41 Energy Efficiency - Cover information

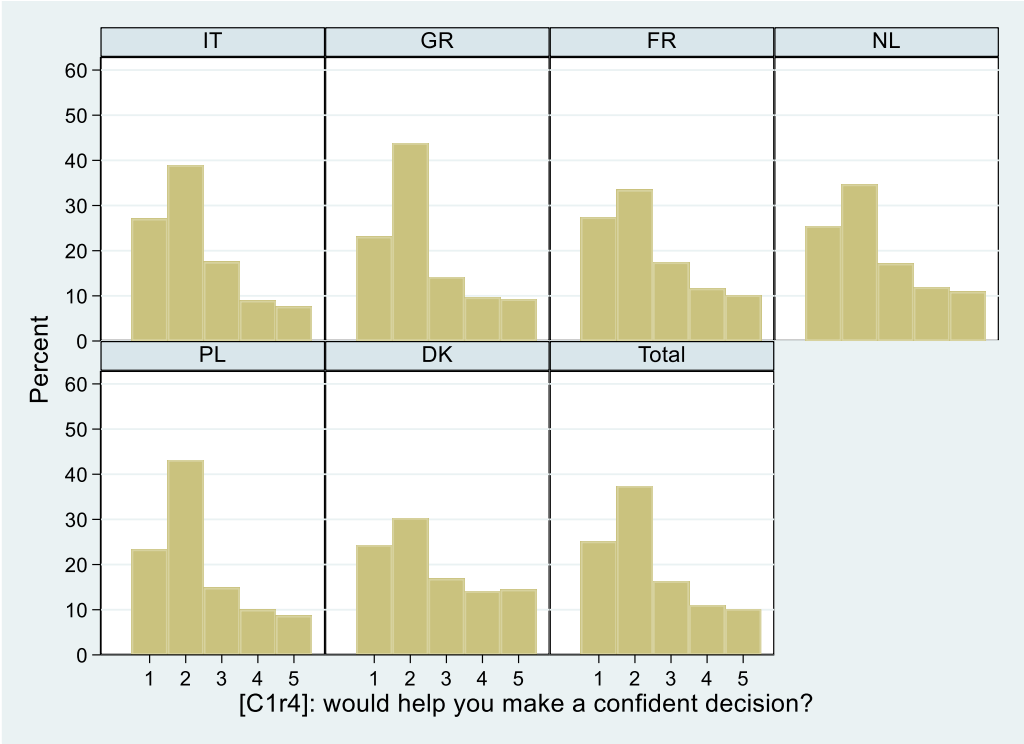


Figure 42 Energy Efficiency - Help in making decision

2.5.2. Particulate matters

Participants indicated they find the second label as the most appealing, easy to understand, covers what you need to know about a new space heater, and would help them make a confident decision.

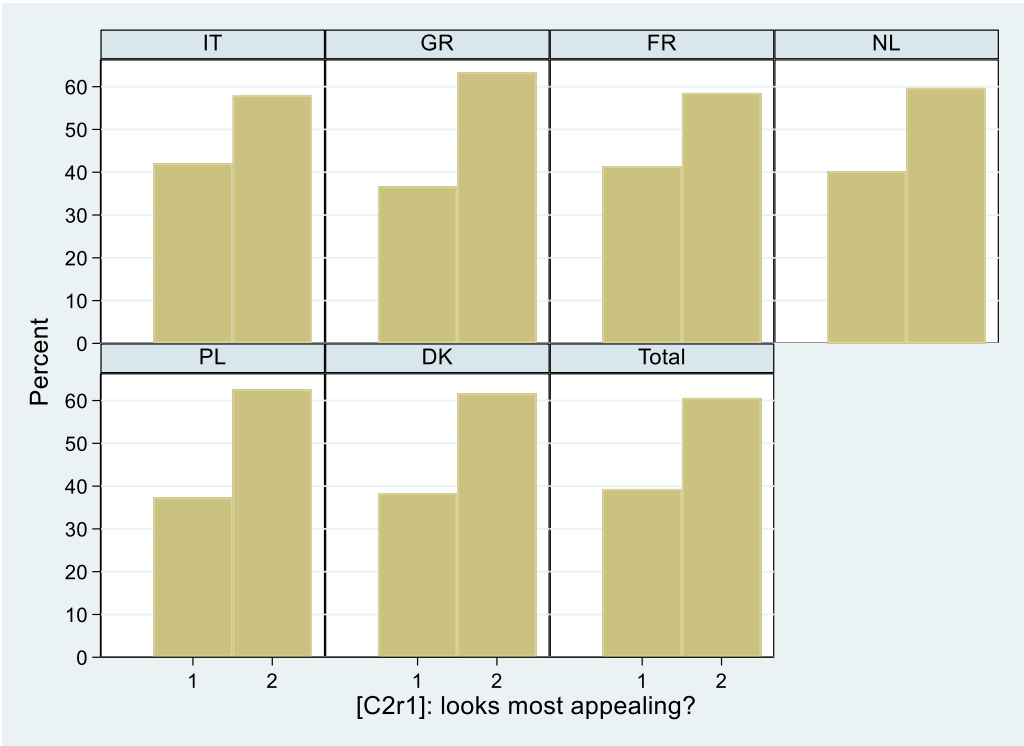
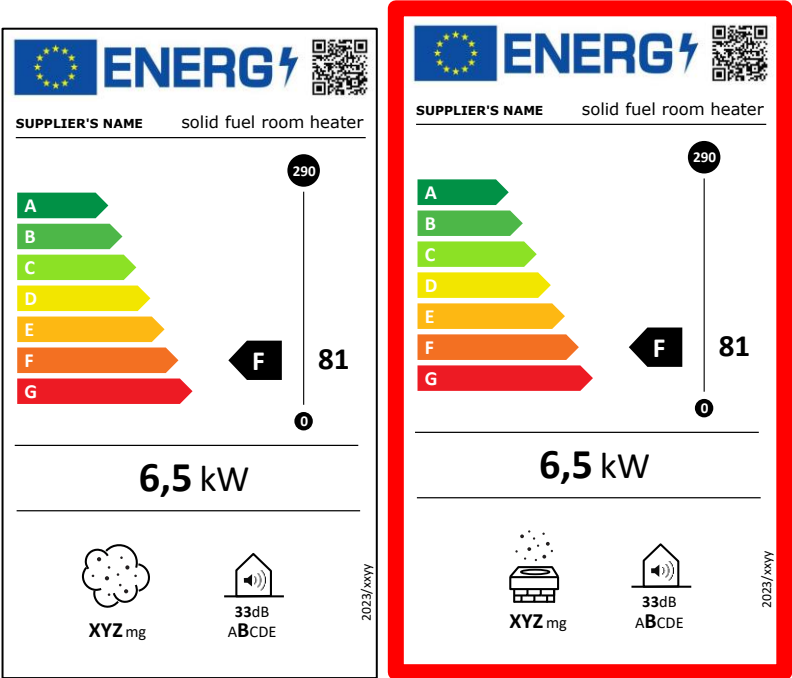


Figure 43 PM indicator - Most appealing label

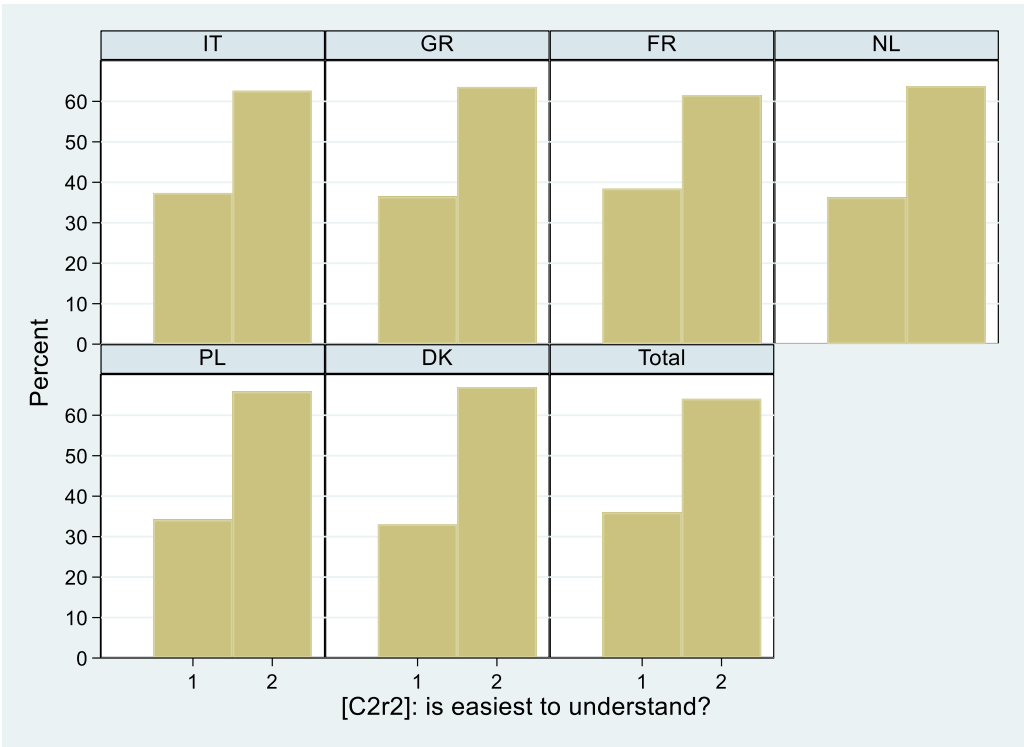


Figure 44 PM indicator - Ease of understanding

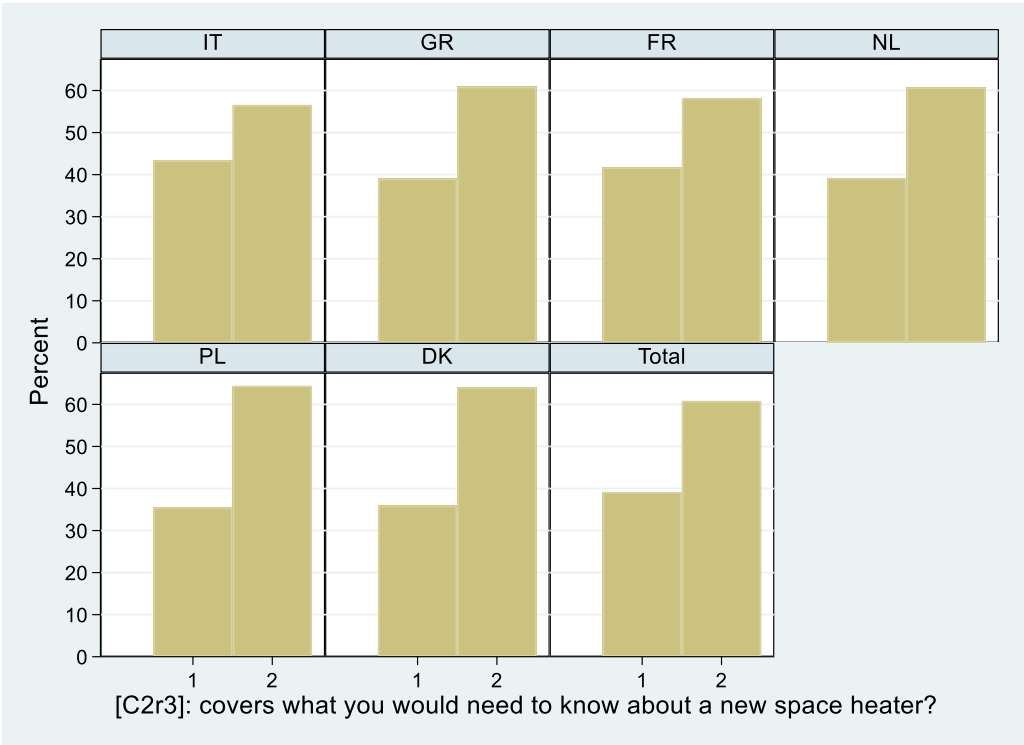


Figure 45 PM indicator - Cover information

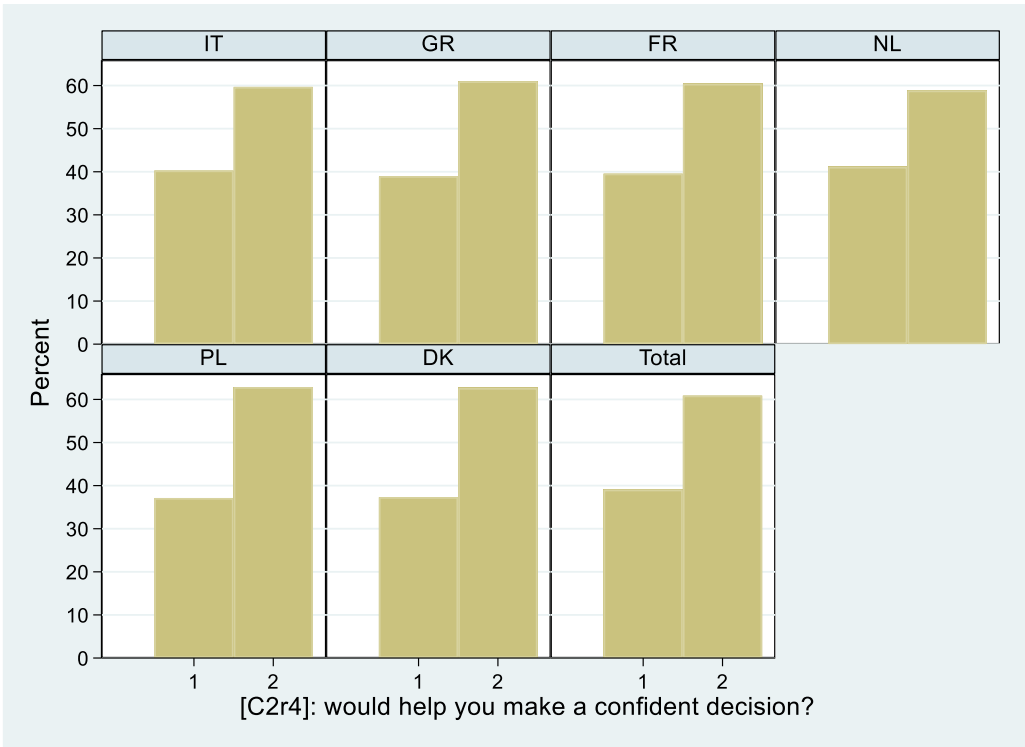
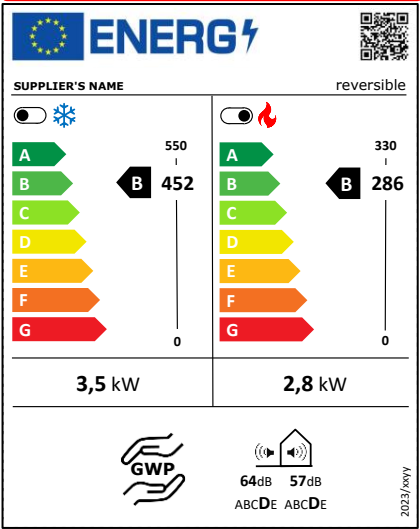
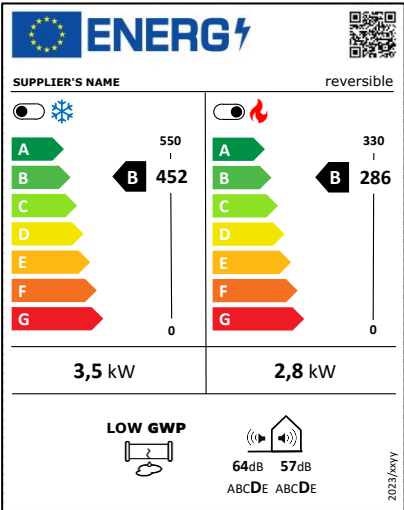
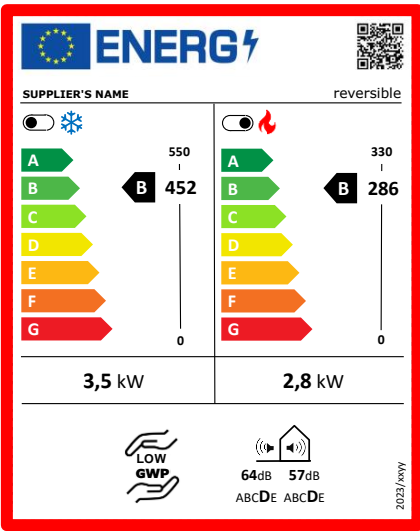


Figure 46 PM indicator - Help in making decision

2.5.3. Global warming potential (GWP)

Participants indicated they find the first label as the most appealing, easy to understand, covers what you need to know about a new space heater, and would help them make a confident decision.



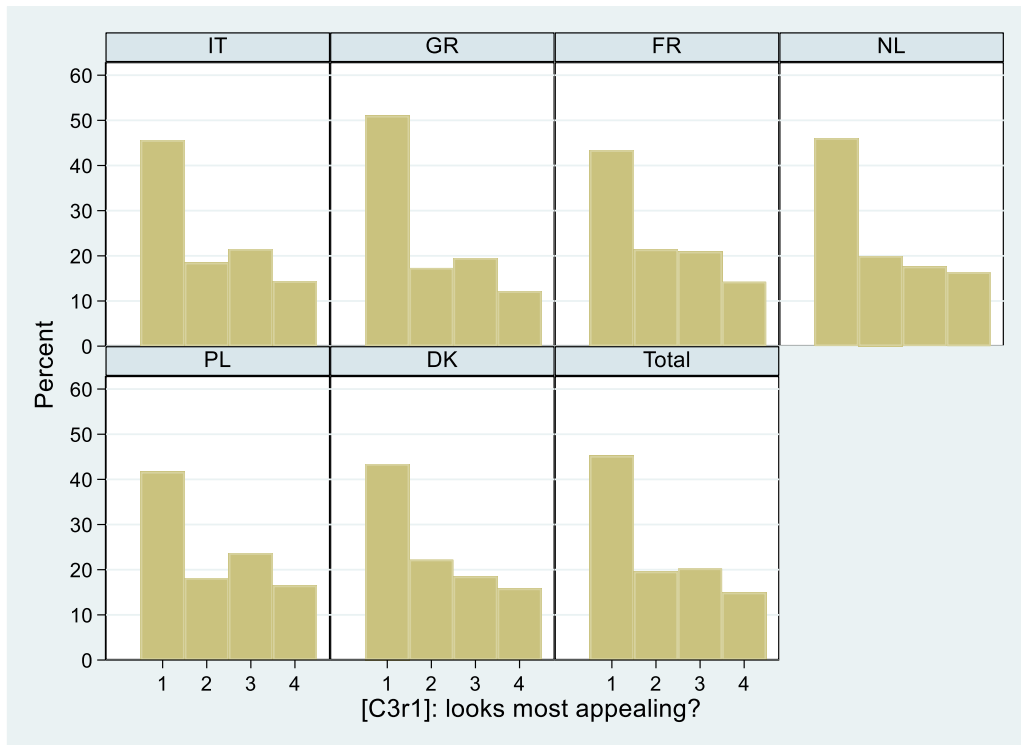


Figure 47 GWP indicator - Most appealing label

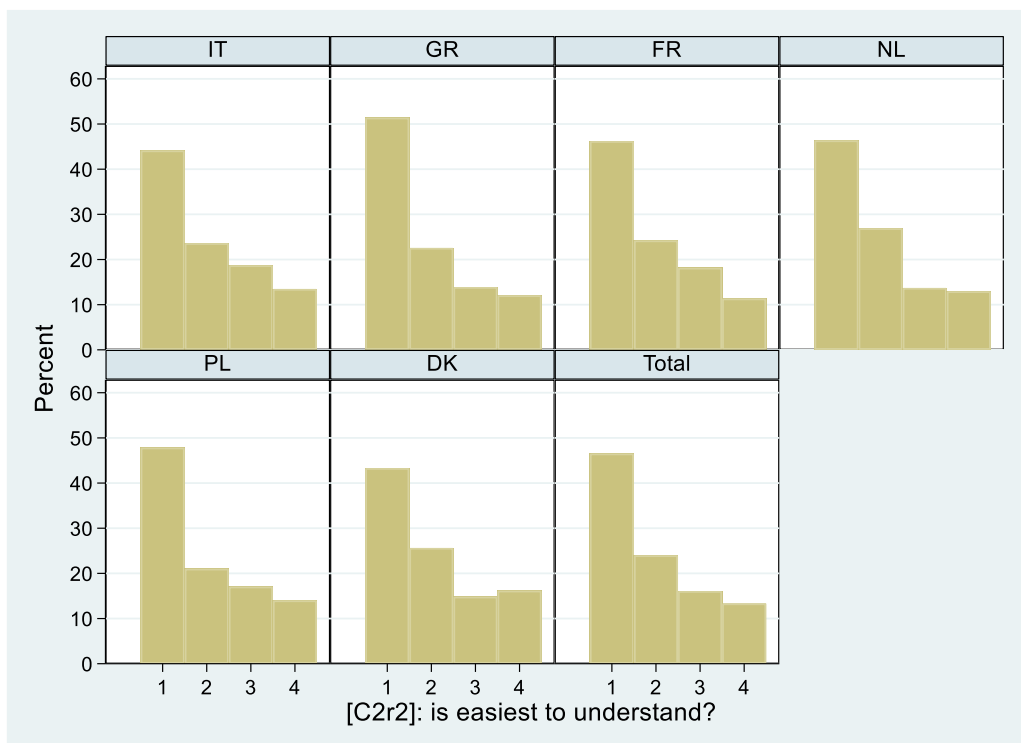


Figure 48 GWP indicator - Ease of understanding

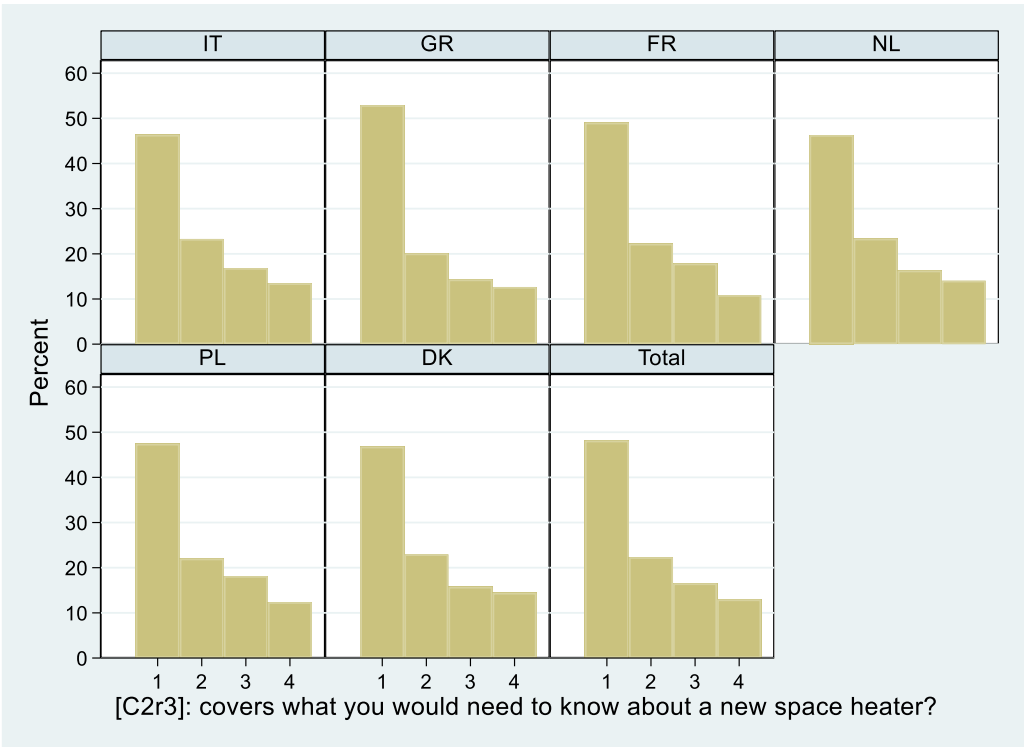


Figure 49 GWP indicator - Cover information

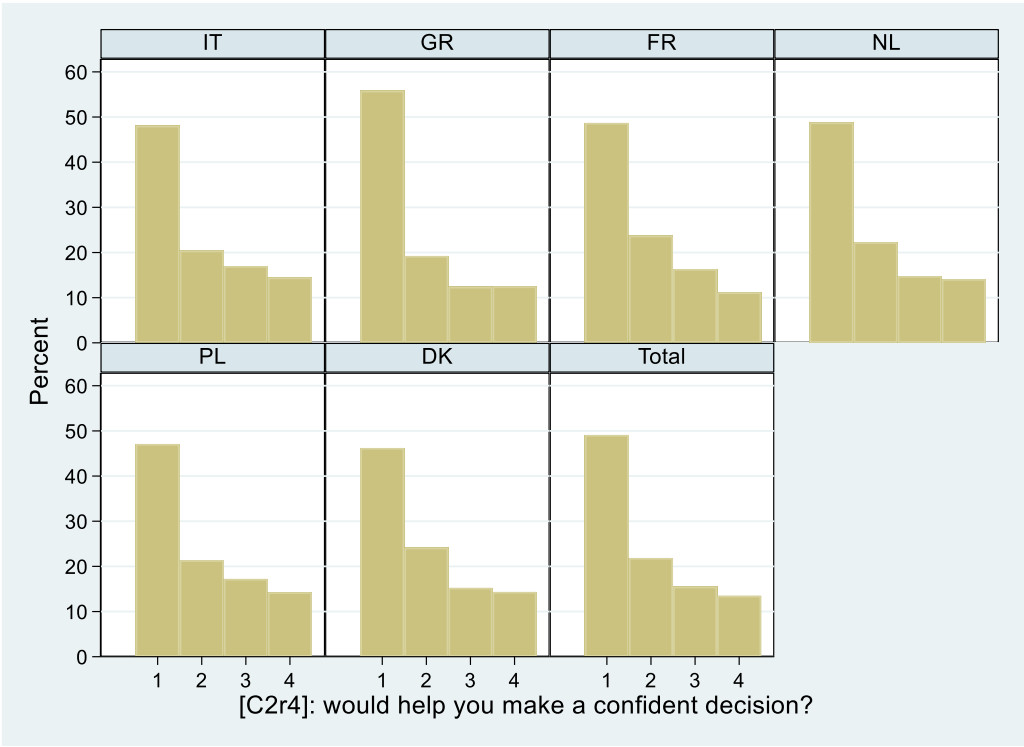


Figure 50 GWP indicator - Help in making decision

2.6. Environmental attitudes

This section describes the self-reported environmental attitude of the participants. The findings show that **most participants are generally worried about the environment**, with 80.37% at least somewhat agreeing with this statement. In addition, **the majority of participants think that people should buy environmentally-friendly products**, with 57.72% agreeing or strongly agreeing with this statement. Data also show that **participants are concerned that people do not care enough for the environment**, with 57.15% at least somewhat agreeing with the statement. A large share of **participants reported they have switched to another brand because it was better for the environment**, with 64.94% at least somewhat agreeing with the statement. Finally, most **participants report that they often buy an environmentally-friendly product to protect the environment**, with 66.34% at least somewhat agreeing with the statement.

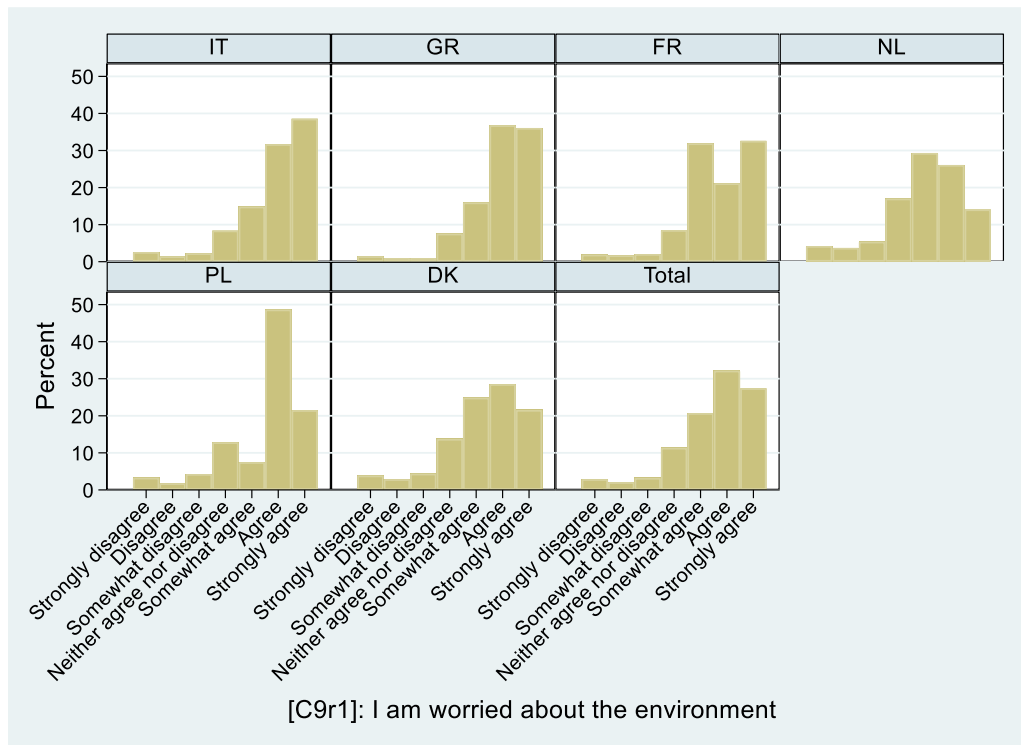


Figure 51 I am worried about the environment

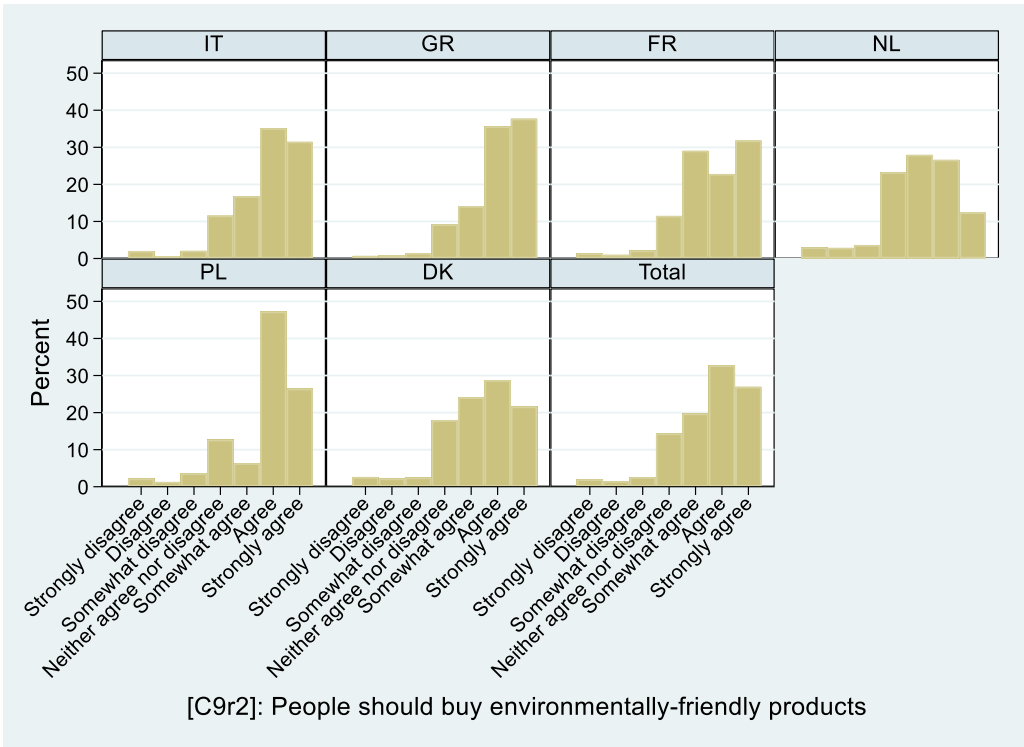


Figure 52 People should buy environmentally-friendly products

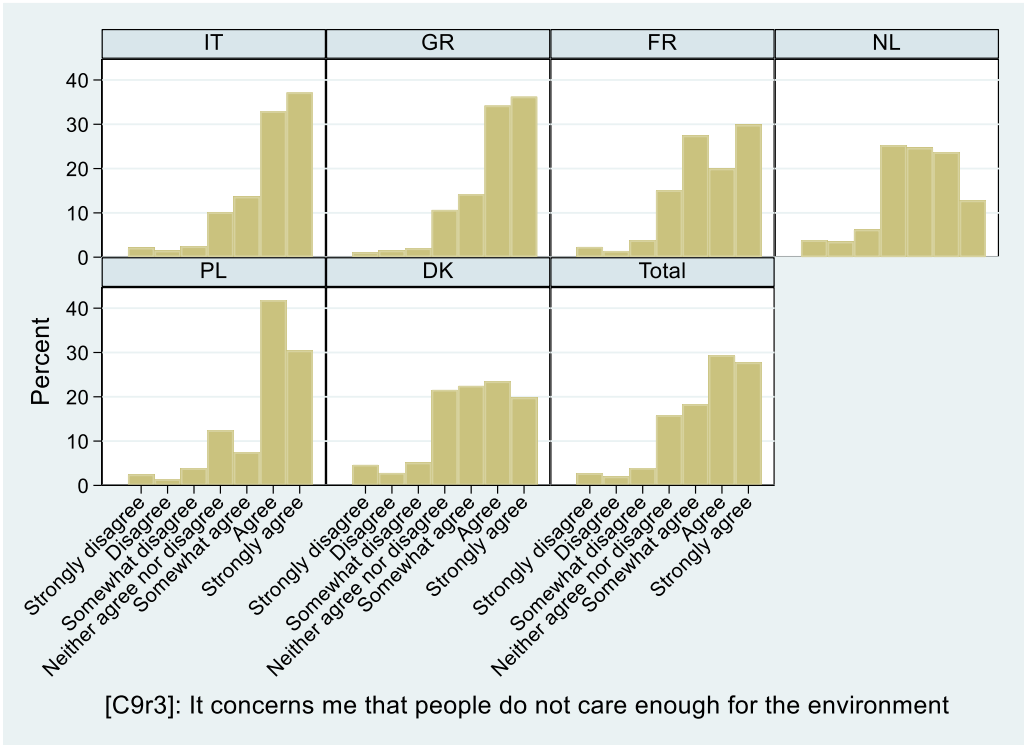


Figure 53 It concerns me that people do not care enough about th environment

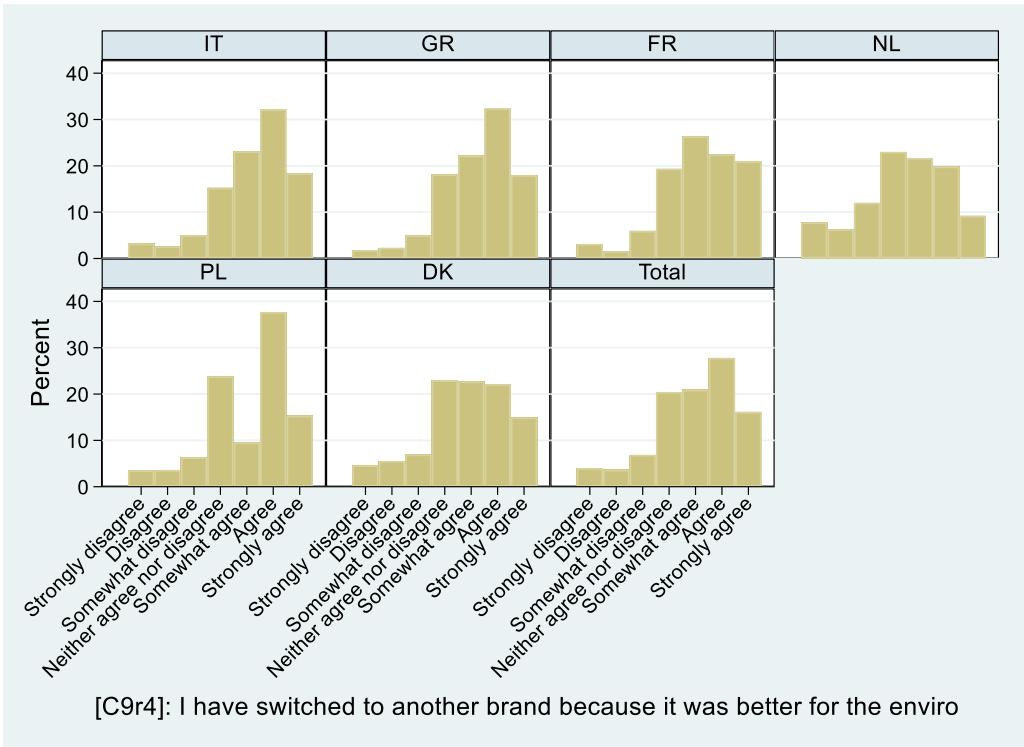


Figure 54 I have switched to another brand because it was better for the environment

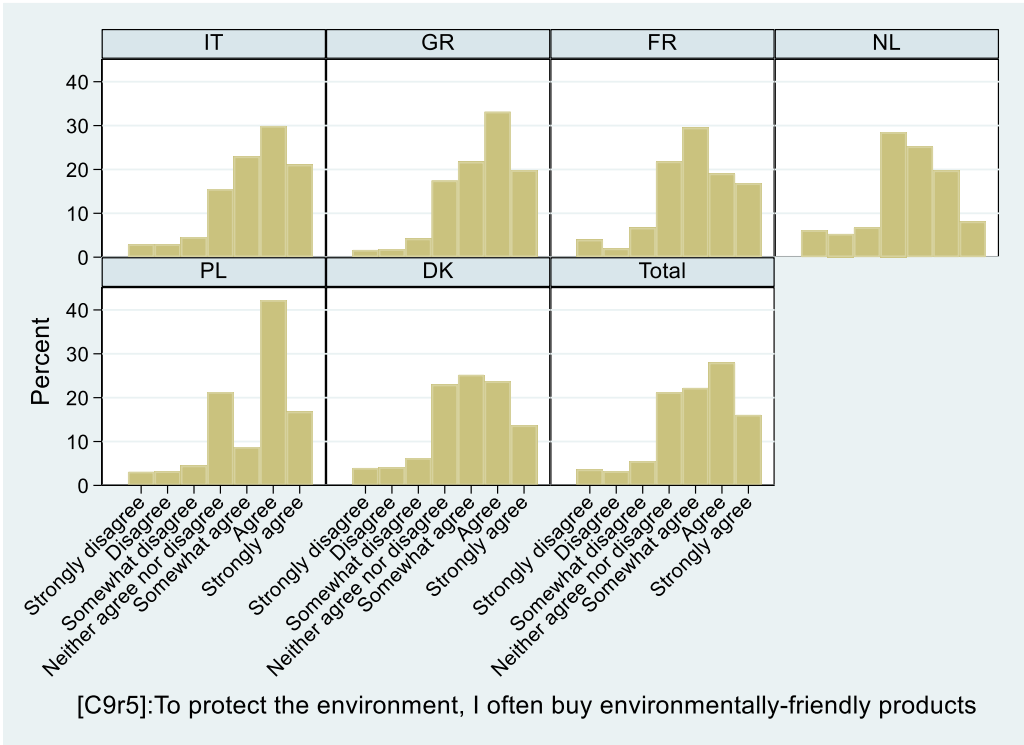


Figure 55 To protect the environment, I often buy environmentally-friendly products

3. Annex

3.1. Questionnaire

3.1.1. BLOCK 1 - Use and understanding of space heaters

Block 1a. Types of heaters and intention to buy

This is a consumer survey about local space heaters, which are appliances that provide heat to indoor spaces by generating heat at the same location as it is needed. Local space heaters come in many different types. The most common ones are solid fuel heaters (e.g., wood stove, pellet stove), gas heaters, electric heaters and air-to-air heat pumps (i.e., reversible air conditioning). Below we provide a short description with a picture for each category.

1. SOLID FUEL HEATERS

Solid fuel heaters generate heat by burning fuels such as wood or pellet. Wood stoves use wood logs, while pellet stoves use small-sized wood chips (pellets) to generate heat.



Wood stove



Pellet stove

2. GAS HEATERS

Gas heaters generate heat by burning gas. They may burn natural gas, which is delivered to homes through gas pipes, or liquefied petroleum gas (LPG).



3. ELECTRIC HEATERS

Electric heaters are electrical devices that convert an electric current into heat. The heating element inside every electric heater is an electrical resistor, and works on the principle of Joule heating.



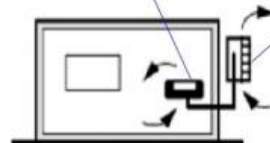
4. AIR-TO-AIR PUMPS

Air-to-air heat pumps extract heat from the outdoor air and release it indoors. As such, they make smart use of the heat that is already present in the outside air.

Indoor unit



Outdoor unit



ASK ALL [single response]

Q00. Do you own a local space heater or you only own central heating system (e.g. boiler)?

- ☐ Yes, I own a local space heater
- ☐ No, I currently do not own a local space heater, only a central heating system

ASK IF ANSWERED YES TO Q00 [single response]

Q0. Which heater do you already own?

- ☐ A solid fuel heater (e.g., wood stove, pellet stove)
- ☐ A gas heater
- ☐ An air-to-air heat pump (i.e., reversible air conditioning)
- ☐ An electric heater
- ☐ Other – which one? [open question]

ASK ALL [single response]

Q1. Are you planning to buy a local space heater in the coming 12 months?

- ☐ No, definitely not
- ☐ Probably not
- ☐ Maybe
- ☐ Probably
- ☐ Yes, definitely

ASK IF ANSWERED PROBABLY OR YES, DEFINITELY TO Q1 [single response]

Q2. Do you intend to use that heater as main or additional heating?

- ☐ As main heating
- ☐ As additional heating
- ☐ I don't know

ASK IF ANSWERED PROBABLY OR YES, DEFINITELY TO Q1 [single response]

Q3. Do you intend to buy it to replace a heater you currently own (e.g., because it is broken)?

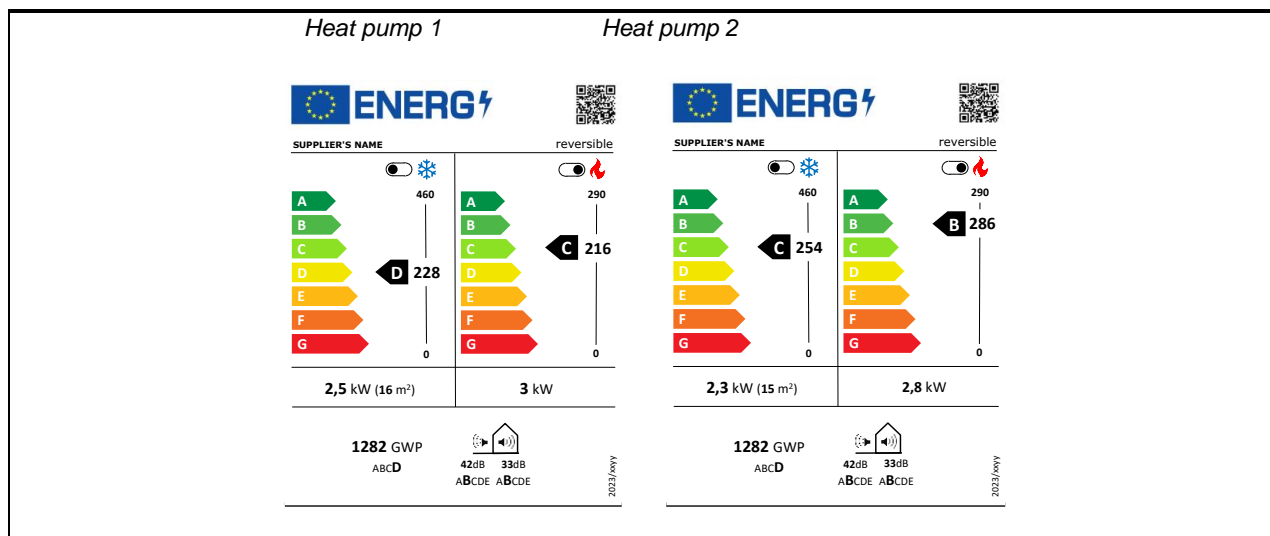
- ☐ Yes
- ☐ No
- ☐ I don't know

ASK IF ANSWERED PROBABLY OR YES, DEFINITELY TO Q1 [single response]

Q4. Do you intend to buy a fixed or portable heater?

Fixed heaters are installed by a professional installer at a pre-determined location and cannot be moved. Portable heaters can be moved and do not require installation by a professional installer.

<input type="checkbox"/> A fixed heater <input type="checkbox"/> A portable heater <input type="checkbox"/> I don't know (yet)
ASK IF ANSWERED PROBABLY OR YES, DEFINITELY TO Q1 [single response]
Q5. Do you already know which specific type of heater you will buy? <input type="checkbox"/> No, I have no idea yet <input type="checkbox"/> No, I'm still considering different types of heaters <input type="checkbox"/> Yes, I have some ideas <input type="checkbox"/> Yes, I know already
ASK IF ANSWERED YES TO Q5 AND FIXED HEATER TO Q4 [single response]
Q6. Which one? <i>pop-up window with the table shown</i> COLUMN <input type="checkbox"/> A solid fuel heater (e.g., wood stove, pellet stove) <input type="checkbox"/> A liquid fuel heater (e.g., ethanol heater, kerosene heater) <input type="checkbox"/> A gas heater <input type="checkbox"/> An air-to-air heat pump (i.e., reversible air conditioning) <input type="checkbox"/> An electric heater ROW 1. 1 – Not considering it at all 2. 2 3. 3 4. 4 5. 5 – Seriously considering it
<div>Block 1b. Understanding task</div>
ASK ALL [single response]
Q1. Each space heater is accompanied by an EU energy label. The next part of the questionnaire is about this energy label and its main concepts. Please take a close look at them and reply to the questions below. Take as an example the two labels below.



ASK ALL [single response]

Q1a. Which of these two heat pumps do you think uses the least amount of energy?

- ☐ Heat pump 1
- ☐ Heat pump 2
- ☐ Both use the same amount of energy
- ☐ Cannot tell based on this information

ASK ALL [single response]

Q1b. Which of these two heat pumps do you think is the most energy efficient?

- ☐ Heat pump 1
- ☐ Heat pump 2
- ☐ Both are equally energy efficient
- ☐ Cannot tell based on this information

ALL

What is energy efficiency?

A higher energy efficiency means that if a heater uses more energy to provide the same amount of heating. In other words, if two heaters have the same heating capacity (i.e., produce the same amount of heat), the one that uses less energy is more efficient.

Most commonly, energy efficiency is measured as the amount of energy output for a given energy input and shown as a number. The higher the number, the more energy efficient the appliance is. Energy efficiency is also shown on scales from A to G.

ASK ALL [single response]

Q2a. Based on this information, is the idea of 'energy efficiency' clear to you?

- ☐ No, not at all
- ☐ Not sure
- ☐ Yes, I think so
- ☐ Yes, completely

ASK ALL [single response]

Q2b. Would you use this concept when deciding regarding what heater to purchase?

- ☐ Yes
- ☐ No
- ☐ Not sure

ASK ALL [single response]

Q3a. 'Global Warming Potential (GWP)' means the measure of how much 1 kg of the refrigerant applied in the vapour compression cycle is estimated to contribute to global warming, expressed in kg CO2 equivalents over a 100 year time horizon. The higher the value, the higher the impact on global warming. Do you understand this concept?

- ☐ No, not at all
- ☐ Not sure
- ☐ Yes, I think so
- ☐ Yes, completely

ASK ALL [single response]

Q3b. Would you use this concept when deciding regarding what heater to purchase?

- ☐ Yes
- ☐ No
- ☐ Not sure

ASK ALL [single response]

Q4. Solid fuels release some toxic pollutants. The most relevant is the particle pollution, also called particulate matter or PM. It is a mixture of solids and liquid droplets floating in the air. Is this notion clear?

- ☐ No, not at all
- ☐ Not sure

☐ Yes, I think so

☐ Yes, completely

ASK ALL [single response]

Q4a. Would you be interested in seeing information regarding the air pollution of solid fuel heater in the energy label?

☐ Yes, definitely

☐ Yes, partially interested

☐ No, not very interested

☐ Not at all

☐ Not sure

ASK ALL [single response]

Q4b. Would you use this notion when deciding regarding what solid fuel heater to purchase?

☐ Yes

☐ No

☐ Not sure

3.1.2. BLOCK 2 - Preferences and new labels

Below we provide the choice sets, which are the binary choices that participants face during the task.

“Now you will have to do a choice task. Imagine you are about to buy a local space heater and you have the essential information shown on a label. We ask you to make a number of consecutive choices. For each choice, you will see two labels of alternative local space heaters and you will have to select which one you would buy based on the available information.”

GROUPS 1A-1B (ELECTRIC AND GAS HEATING)

Attributes: Price (2 levels), Efficiency (2 Levels), Label (2 labels)

Number of choices: 10

Analysis: Main effect + Interaction effect (Efficiency * Label)

Research questions: DCE 1A-1B allow to answer the following research questions:

- What are the most important attributes in determining a choice between two products?
- What is the interaction between efficiency and label format?

1A / 1B			
Choice Set	Price	Efficiency	Label
1	L1	L2	L2
1	L2	L1	L1
2	L2	L2	L1
2	L1	L1	L2
3	L1	L1	L2
3	L2	L2	L2
4	L2	L1	L2
4	L1	L1	L1
5	L2	L2	L2
5	L1	L2	L1
6	L1	L1	L2
6	L2	L2	L1
7	L1	L2	L2
7	L2	L1	L2
8	L1	L1	L1
8	L2	L2	L2
9	L1	L1	L1
9	L2	L2	L1
10	L2	L1	L1
10	L1	L2	L1

1B - GAS			
Choice Set	Price	Efficiency	Label
1	1700€	E (94)	MERGED
1	2525€	C	CURRENT
2	2525€	A	CURRENT
2	1700€	F (81)	MERGED
3	1700€	F (81)	MERGED
3	2525€	E (94)	MERGED
4	2525€	F (81)	MERGED
4	1700€	C	CURRENT
5	2525€	E (94)	MERGED
5	1700€	A	CURRENT
6	1700€	F (81)	MERGED
6	2525€	A	CURRENT
7	1700€	E (94)	MERGED
7	2525€	F (81)	MERGED
8	1700€	C	CURRENT
8	2525€	E (94)	MERGED
9	1700€	C	CURRENT
9	2525€	A	CURRENT
10	2525€	C	CURRENT
10	1700€	A	CURRENT

Intro for electric:

“Electric heaters may have different control systems: (i) basic control, with only ON/OFF switch, or (ii) advanced control, with functions as ‘temperature control’ or ‘presence detector’.”

1A - ELECTRIC			
Choice Set	Price	Efficiency / heating capacity / control	Label
1	472€	G (48) / advanced	MERGED
1	622€	-- / basic	CURRENT
2	622€	-- / advanced	CURRENT
2	472€	G (42) / basic	MERGED
3	472€	G (42) / basic	MERGED
3	622€	G (48) / advanced	MERGED
4	622€	G (42) / basic	MERGED
4	472€	-- / basic	CURRENT
5	622€	G (48) / advanced	MERGED
5	472€	-- / advanced	CURRENT
6	472€	G (42) / basic	MERGED
6	622€	-- / advanced	CURRENT
7	472€	G (48) / advanced	MERGED
7	622€	G (42) / basic	MERGED
8	472€	-- / basic	CURRENT
8	622€	G (48) / advanced	MERGED
9	472€	-- / basic	CURRENT
9	622€	-- / advanced	CURRENT
10	622€	-- / basic	CURRENT
10	472€	-- / advanced	CURRENT

GROUP 1C – SOLID FUEL HEATING

Attributes: Price (2 levels), Efficiency (2 Levels), PM (2 labels)

Number of choices: 10 Analysis: Main effect + Interaction effect (Efficiency * PM)

Research questions: DCE 1C allows to answer the following research questions:

- **What are the most important attributes in determining a choice between two products?**
- **What is the interaction between efficiency and PM value?**

Choice Set	Price	Efficiency	PM
1	1500€	E (92)	20 mg (B)
1	2325€	F (80)	50 mg (C)
2	2325€	E (92)	50 mg (C)
2	1500€	F (80)	20 mg (B)
3	1500€	F (80)	20 mg (B)
3	2325€	E (92)	20 mg (B)
4	2325€	F (80)	20 mg (B)
4	1500€	F (80)	50 mg (C)
5	2325€	E (92)	20 mg (B)
5	1500€	E (92)	50 mg (C)

Choice Set	Price	Efficiency	PM
6	1500€	F (80)	20 mg (B)
6	2325€	E (92)	50 mg (C)
7	1500€	E (92)	20 mg (B)
7	2325€	F (80)	20 mg (B)
8	1500€	F (80)	50 mg (C)
8	2325€	E (92)	20 mg (B)
9	1500€	F (80)	50 mg (C)
9	2325€	E (92)	50 mg (C)
10	2325€	F (80)	50 mg (C)
10	1500€	E (92)	50 mg (C)

[FOLLOW UP QUESTION]

How did the PM value influenced your choices?

1_ *I chose products with less 'mg' because it is better*

2_ *I chose products with more 'mg' because it is better*

3_ *The value on PM didn't matter in my choice*

4_ *The concept of PM is not very clear to me*

GROUP 1D – REVERSIBLE AIR CONDITIONING (RAC)

Attributes: Price (2 levels), Efficiency (2 Levels), PM (2 labels)

Number of choices: 10

Analysis: Main effect + Interaction effect (Efficiency * GWP)

Research questions: DCE 1D allows to answer the following research questions:

- What are the most important attributes in determining a choice between two products?
- What is the interaction between efficiency and GWP value?

Choice Set	Price	Efficiency	GWP
1	L2	L1	L2
1	L1	L1	L1
2	L1	L2	L2
2	L2	L1	L1
3	L1	L1	L1
3	L2	L1	L2
4	L1	L2	L2
4	L2	L2	L1
5	L2	L2	L2
5	L1	L1	L2
6	L1	L2	L1
6	L2	L1	L1
7	L2	L2	L1
7	L1	L1	L1
8	L1	L2	L2
8	L2	L1	L2
9	L1	L1	L2
9	L2	L2	L1
10	L2	L2	L2
10	L1	L2	L1

Choice Set	Price	Efficiency	GWP
1	2347€	C (190)	LOW
1	1528€	C (190)	/
2	1528€	B (286)	LOW
2	2347€	C (190)	/
3	1528€	C (190)	/
3	2347€	C (190)	LOW
4	1528€	B (286)	LOW
4	2347€	B (286)	/
5	2347€	B (286)	LOW
5	1528€	C (190)	LOW
6	1528€	B (286)	/
6	2347€	C (190)	/
7	2347€	B (286)	/
7	1528€	C (190)	/
8	1528€	B (286)	LOW
8	2347€	C (190)	LOW
9	1528€	C (190)	LOW
9	2347€	B (286)	/
10	2347€	B (286)	LOW
10	1528€	B (286)	/

[FOLLOW UP QUESTION]

How did the GWP value influenced your choices?

- 1_ I chose products with less 'GWP' because it is better
- 2_ I chose products with more 'GWP' because it is better
- 3_ The value on GWP didn't matter in my choice
- 4_ The concept of GWP is not very clear to me

GROUPS 2A-2B

Attributes: Price (2 levels), Efficiency (2 Levels), Category (4 labels)

Number of choices: 12

Analysis: Main effect.

Research questions: DCE 2A-2B allow to answer the following research questions:

- What are the most important attributes in determining a choice between two products of different categories?
- What is the effect of having the old and new labels on the importance of attributes (contrasting 2A vs 2B)?

Intro:

“Electric heaters may have different control systems: (i) basic control, with only ON/OFF button, or (ii) advanced control, with functions as ‘temperature control’ or ‘presence detector’.”

2A - CURRENT LABEL			
Choice Set	Price	Efficiency	Category
1	2325€	A+	SOLID
1	1700€	A	GAS
2	2525€	C	GAS
2	1500€	A++	SOLID
3	1500€	A++	SOLID
3	622€	-/basic	ELECTRIC
4	2325€	A+	SOLID
4	1528€	A+++	RAC REV
5	2347€	A+++	RAC REV
5	1500€	A+	SOLID
6	622€	-/Advanced	ELECTRIC
6	1700€	C	GAS
7	2525€	C	GAS
7	472€	-/Advanced	ELECTRIC
8	2347€	A+	RAC REV
8	1700€	A	GAS
9	2325€	A++	SOLID
9	472€	-/basic	ELECTRIC
10	472€	-/basic	ELECTRIC
10	2347€	A+++	RAC REV
11	1528€	A+	RAC REV
11	622€	-/Advanced	ELECTRIC
12	2525€	A	GAS
12	1528€	A+	RAC REV

2B - MERGED LABEL			
Choice Set	Price	Efficiency	Category
1	2325€	F (80)	SOLID
1	1700€	E (94)	GAS
2	2525€	F (81)	GAS
2	1500€	E (92)	SOLID
3	1500€	E (92)	SOLID
3	622€	G (42)	ELECTRIC
4	2325€	F (80)	SOLID
4	1528€	B (286)	RAC REV
5	2347€	B (286)	RAC REV
5	1500€	F (80)	SOLID
6	622€	G (48)	ELECTRIC
6	1700€	F (81)	GAS
7	2525€	F (81)	GAS
7	472€	G (48)	ELECTRIC
8	2347€	C (190)	RAC REV
8	1700€	E (94)	GAS
9	2325€	E (92)	SOLID
9	472€	G (42)	ELECTRIC
10	472€	G (42)	ELECTRIC
10	2347€	B (286)	RAC REV
11	1528€	C (190)	RAC REV
11	622€	G (48)	ELECTRIC
12	2525€	E (94)	GAS
12	1528€	C (190)	RAC REV

[FOLLOW UP QUESTIONS]

In this task, have you chosen at least once...

- *Reversible air conditioning*
- *Solid fuel heater*
- *Electric heater*

[If RAC is chosen] Why did you prefer/choose a reversible air conditioning?

- 1_ *because the RAC is more efficient in heating than the electric heater*
- 2_ *because the RAC can cool as well*
- 3_ *because it works for heating and cooling*
- 4_ *because I expect the RAC will be cheaper to run*
- 5_ *other*

[If solid fuel is chosen] Why did you prefer/choose a solid fuel heater?

- 1_ *because it is more efficient in heating than the other heater*
- 2_ *because it is less pollutant than the other heater*
- 3_ *both 1+2 apply*
- 4_ *because I expect it will be cheaper to run*
- 5_ *other*

[If electric heater is chosen] Why did you prefer/choose a electric heater?

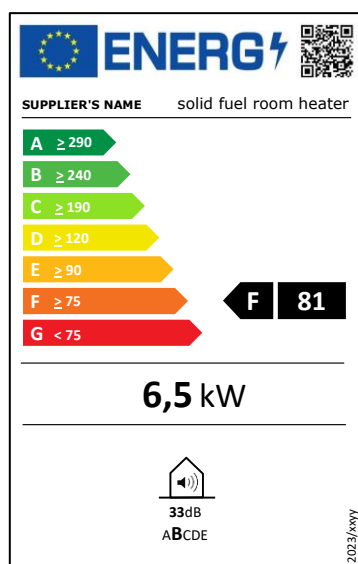
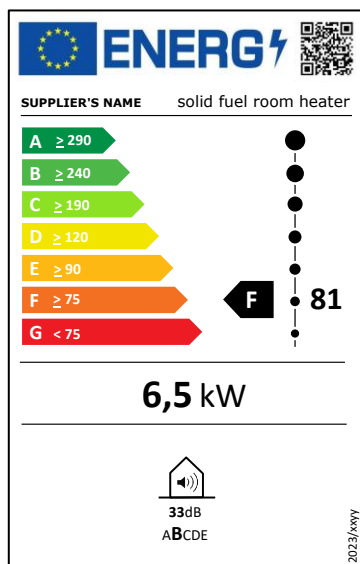
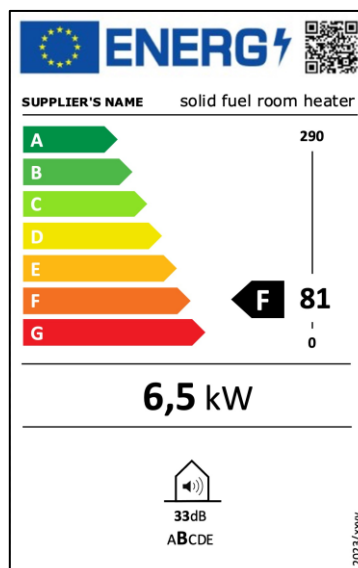
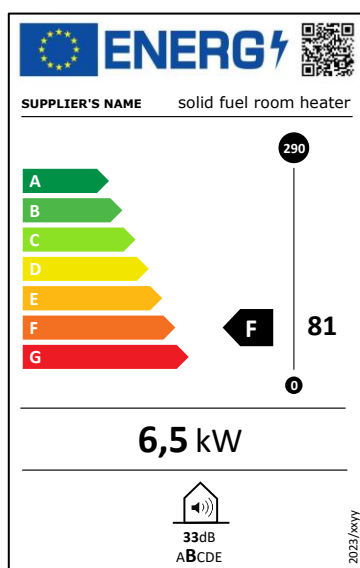
- 1_ *because it is more efficient in heating than the other heater*
- 2_ *because it is less pollutant than the other heater*
- 3_ *both 1+2 apply*
- 4_ *because I expect it will be cheaper to run*
- 5_ *other*

3.1.3. BLOCK 3 - Preferences for different graphic version

“As a final task the European Commission would like to ask for your advice on the choice of labels for space heaters. The aim is to have a label that is easily understood and would be most useful for people like you”.

A – COMPARING GRANULARITY

Take a look at these 5 label designs, which have different ways to graphically represent the energy efficiency values.



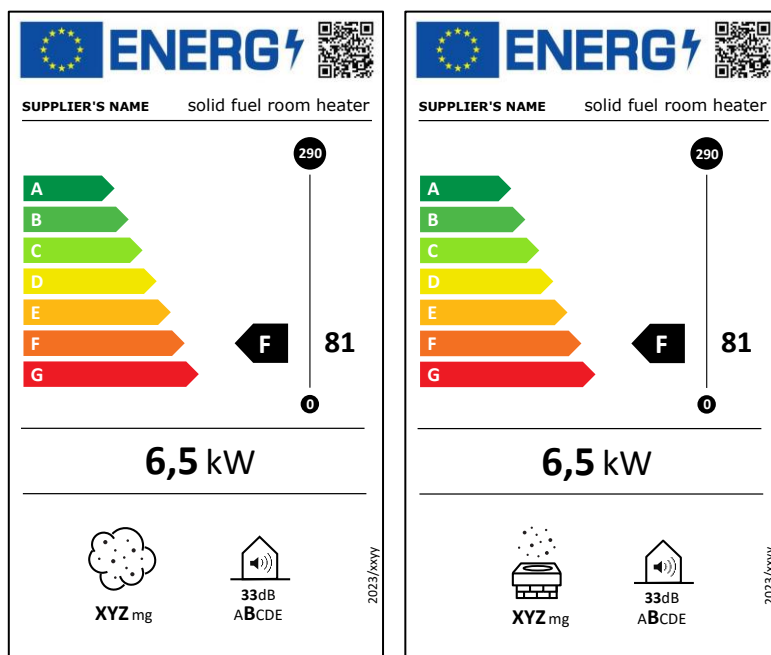
Which one do you think...

	A	B	C	D	E
...looks most appealing?					

...is easiest to understand?					
...covers what you would need to know about a new space heater?					
...would help you make a confident decision?					

B – PARTICULAR MATTERS

Take a look at these two labels, which include two different graphical versions of the “PM indicator” (bottom left).



Which one do you think...

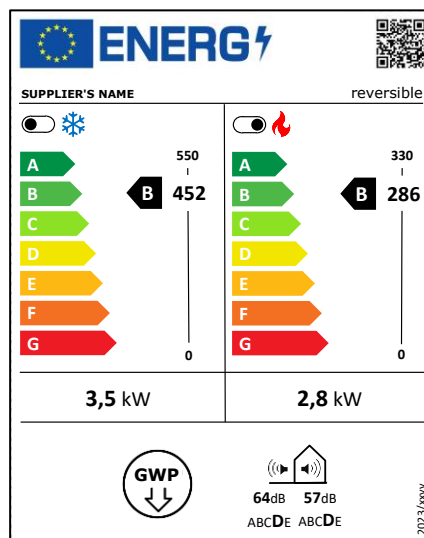
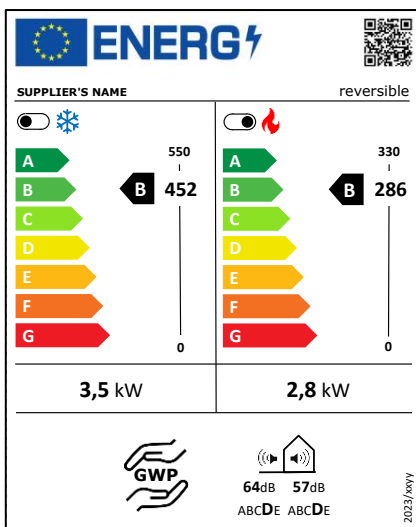
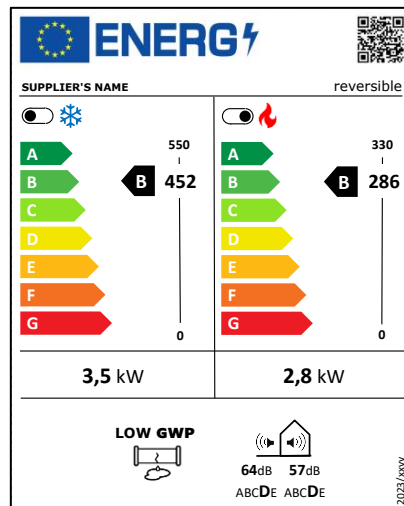
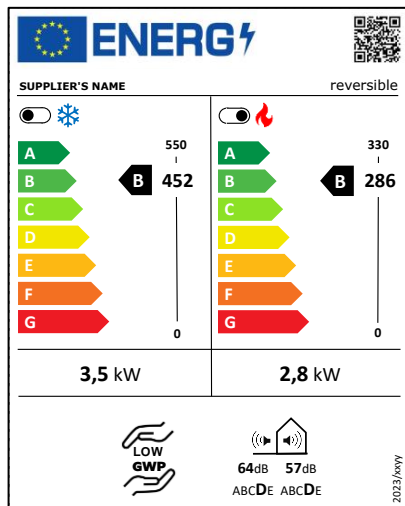
	A	B
...looks most appealing?		
...is easiest to understand?		

...covers what you would need to know about a new space heater?

...would help you make a confident decision?

C – GLOBAL WARMING POTENTIAL

Take a look at these four labels, which include four different graphical versions of the “GWP indicator” (bottom left).



Which one do you think...

A	B	C	D
---	---	---	---

...looks most appealing?				
...is easiest to understand?				
...covers what you would need to know about a new space heater?				
...would help you make a confident decision?				

3.1.4. BLOCK 4 – Socio-demographics and environment concern

Block 4. Socio-demographics and environmental concern
ASK ALL [single response] Q1. How old are you? Include list of numbers
ASK ALL [single response] Q2. Are you...? <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Other <input type="checkbox"/> Prefer not to respond
ASK ALL [single response] Q3. What is the highest level of education you have successfully completed (usually by obtaining a certificate or diploma)? Include country-specific list.
ASK ALL [single response] Q4. What is your legal marital status? <input type="checkbox"/> Married or in Civil Partnership <input type="checkbox"/> Single (Never married)

<input type="checkbox"/> Separated/Divorced		
<input type="checkbox"/> Widowed		
ASK ALL [single response]		
Q5. What is your household's yearly income?		
<input type="checkbox"/> 9.999 Euro or below		
<input type="checkbox"/> 10.000 Euro – 29.999 Euro		
<input type="checkbox"/> 30.000 Euro – 49.999 Euro		
<input type="checkbox"/> 50.000 Euro – 149.999 Euro		
<input type="checkbox"/> 150.000 Euro or above		
ASK ALL [single response]		
Q6. Which of the following situations best describes your current labour market status?		
<input type="checkbox"/> Employed		
<input type="checkbox"/> In search of a job		
<input type="checkbox"/> Student		
<input type="checkbox"/> Retired		
<input type="checkbox"/> Other		
ASK ALL [single response]		
Q7. Thinking about your household's financial situation, how easy or difficult would you say it is to make ends meet?		
<input type="checkbox"/> Very easy		
<input type="checkbox"/> Fairly easy		
<input type="checkbox"/> Neither easy nor difficult		
<input type="checkbox"/> Fairly difficult		
<input type="checkbox"/> Very difficult		
<input type="checkbox"/> I don't know		
ASK ALL [single response]		
Q8. Which of the following best describes where you live?		
<input type="checkbox"/>	A	city
<input type="checkbox"/>	A	town
<input type="checkbox"/>	A	village
<input type="checkbox"/> The countryside		

ASK ALL [single response]

Q9. Please indicate how much you agree or disagree with the following statements.

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
I am worried about the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
People should buy environmentally-friendly products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It concerns me that people do not care enough for the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have switched to another brand sometimes, because it was better for the environment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
To protect the environment, I often buy environmentally-friendly products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.2. Technical annex

In this technical annex we present additional information regarding the statistical analysis for the different experimental conditions. In particular, we show the estimates for the main effects and the interactions effects for the different experimental conditions. Here, we provide a short description of the variables presented in the tables below:

- Prob > chiSQ indicates the probability of obtaining the chi-square statistic given that the null hypothesis is true. Values below 0.05 are usually considered indicating statistical significance.
- DV refers to degrees of freedom: the maximum number of logically independent values, which are values that have the freedom to vary, for a given variable. For instance, if the number of categories is 2, the DV is one (i.e., $n-1$).
- The L-R ChiSquare assesses the goodness of fit of two competing statistical models based on the ratio of their likelihoods.

1A - Electric heating

Source	L-R ChiSquare	DF	Prob>ChiSq	
Price	1331,177	1	<,0001*	
Efficiency	148,087	2	<,0001*	
Label	257,693	2	<,0001*	

Figure 56 Electric systems - Main effects

Source	L-R ChiSquare	DF	Prob>ChiSq	
Price	1331,177	1	<,0001*	
Efficiency	96,350	1	<,0001*	
Label	203,379	1	<,0001*	
Efficiency*Label	52,787	1	<,0001*	

Figure 57 Electric systems - Interactions effects

1B – Gas fuel heating

Source	L-R ChiSquare	DF	Prob>ChiSq	
Price	354,668	1	<,0001*	
Efficiency	262,438	2	<,0001*	
Label	1311,646	2	<,0001*	

Figure 58 Gas systems - main effects

Source	L-R ChiSquare	DF	Prob>ChiSq	
Price	354,668	1	<,0001*	
Efficiency	252,429	1	<,0001*	
Label	1302,689	1	<,0001*	
Efficiency*Label	10,622	1	0,0011*	

Figure 59 Gas systems - Interactions effects

1C – Solid fuel heating systems

Source	L-R ChiSquare	DF	Prob>ChiSq	
Price	527,001	1	<,0001*	
Efficiency	783,077	2	<,0001*	
PM	212,482	2	<,0001*	

Figure 60 Solid fuel systems - Main effects





Source	L-R ChiSquare	DF	Prob>ChiSq	
Price	527,001	1	<,0001*	
Efficiency	781,720	1	<,0001*	
PM	211,010	1	<,0001*	
Efficiency*PM	1,457	1	0,2274	

Figure 61 Solid fuel systems - Interactions effects





Marginal Probability	Marginal Utility		Efficiency*PM
0,3856	0,49568		E(92),20 mg
0,2643	0,11799		E(92),50 mg
0,2028	-0,14713		F(80),20 mg
0,1473	-0,46654		F(80),50 mg

Figure 62 Solid fuel systems - Marginal effects

1D – Reversible air conditioning (RAC)




Source	L-R ChiSquare	DF	Prob>ChiSq	
Price	773,633	1	<,0001*	
Efficiency	414,146	2	<,0001*	
GWP	49,616	2	<,0001*	

Figure 63 RAC systems - Main effects





Source	L-R ChiSquare	DF	Prob>ChiSq	
Price	773,633	1	<,0001*	
Efficiency	399,723	1	<,0001*	
GWP	37,070	1	<,0001*	
Efficiency*GWP	12,308	1	0,0005*	

Figure 64 RAC systems - Interactions effects

2A – Current labels

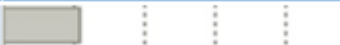


Source	L-R ChiSquare	DF	Prob>ChiSq	
Price	1262,309	1	<,0001*	
Efficiency	866,982	4	<,0001*	
Category	2560,470	6	<,0001*	

Figure 65 Main effects Current labels

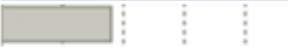



Source	L-R ChiSquare	DF	Prob>ChiSq	
Price	1262,309	1	<,0001*	
Efficiency	727,240	1	<,0001*	
Category	1533,325	3	<,0001*	
Efficiency*Category	179,033	3	<,0001*	

Figure 66 Current labels - Interactions effects

2B – Merged labels

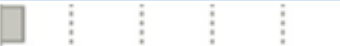


Source	L-R ChiSquare	DF	Prob>ChiSq	
Price	677,674	1	<,0001*	
Efficiency	1005,796	4	<,0001*	
Category	4334,507	6	<,0001*	

Figure 67 Merged labels - Main effects





Source	L-R ChiSquare	DF	Prob>ChiSq	
Price	1262,309	1	<,0001*	
Efficiency	727,240	1	<,0001*	
Category	1533,325	3	<,0001*	
Efficiency*Category	179,033	3	<,0001*	

Figure 68 Merged labels - Interactions effects

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