CONSumer Energy Efficiency Decision making

REPORT ON THE FOCUS GROUPS AND IN-DEPTH INTERVIEWS ON CONSUMER'S ENERGY EFFICIENCY CHOICES

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Executive Summary

By using energy more efficiently, Europeans can lower their energy bills, reduce their reliance on external suppliers of oil and gas, and help protect the environment. Accurate, relevant and comparable information on the specific energy consumption of energy-related products should influence the end-user's choice in favour of those products which consume or indirectly result in a lower consumption of energy and other essential resources during use. This would in turn prompt the manufacturers to take steps to reduce the consumption of energy and other essential resources of their products.

This report delivers the findings of the Work Package 2 (WP2) of the CONSEED project, which aims **to identify and prioritise the most relevant factors in purchasing decision-making** and identify the relative **importance of EU energy policy in consumer decision-making** across different sectors (appliances, buildings and transport sector) for specific consumer groups (households, services, agriculture and industry) in different countries (Greece, Ireland, Norway, Slovenia, Spain).

To answer the question *"Do the European consumers pay attention to energy labels when they buy an electric appliance, a car or a house?"* 17 focus groups (FGs) and 40 in-depth interviews (IDIs) were executed across different consumer groups, product categories and geographical locations.

To ensure consistency while allowing for cultural differences, FGs and IDIs were conducted by exploring four main themes summarised in the following top-level research questions:

- **What attributes matter most in energy related investment decisions?**
- **How important is energy efficiency (EE) in investment decisions?**
- **Does the current policy on EE information increase the demand for more efficient products?**
- **How could we change information policy to increase the demand for more energy-efficient products? Is monetary cost information about energy consumption valuable?**

In general, the results show that, in purchasing/investment decisions, **price** appears to be **the most important attribute across all sectors**. The **importance of EE is mixed** – in some sectors, it ranks quite low while in others it is very important. Some of the main reasons driving this low ranking are **lack of understanding** and **distrust**. The ***"green image"*** is a regularly cited motive for investment (for firms), and is perhaps as important as the **energy cost savings**, but again the results differ across countries. In general, if we exclude a transport FG executed in Norway, most participants are **aware of the energy labels** and of the **EU EE legislation**. **Monetary information** about energy consumption was valued **differentl**y across various sectors. While some of the participants find it **useful** and relevant, others expressed a **lack of trust** because such information **may be manipulated** to favour sales of certain brands.

In the **household sector**, the results show that price (upfront cost) appears to be the most important attribute across all product categories. In **appliances**, dimension/capacity also features strongly; in **property**, location, size and condition are important; and in **transport**, safety, running costs and size. EE is more important in **buildings,** however, in **transport**, the cost savings of electric vehicles are seen as a key pull factor. While some positive comments on labelling were recorded (colour-coded scale appears to aid

comparisons), several negative comments were also raised, mostly related to clarity and trust. In terms of amending labels, participants made several suggestions in terms of better, simpler explanations and less technical information. While the potential introduction of cost information in monetary terms was generally well-received, a number of concerns were raised e.g., that such cost forecasts are implausible due to user and situational heterogeneity.

Unsurprisingly, price is also ranked highly across all product categories in the **services sector**. In **property**, location is also important, as is property condition, access to public transport, accessibility and EE. In **transport**, firms are more concerned with EE and a range of technical characteristics (including air conditioning and connectivity), and in **appliances**, consumers were looking for attributes such as brand, aesthetics and reliability. The relevance of EE depends on the category used. In **property** and **transport**, EE is important but less so than other attributes, and in **appliances**, it appears to be less of a concern. Where mandatory labelling is available, there are mixed opinions about its usefulness. Some respondents find labels informative while others find them unclear and untrustworthy. Services firms made a number of suggestions in relation to labels. Some suggested adding a relative cost component, relevant examples and information in layman's terms. In terms of adding monetary information, there was mixed support.

In the **agriculture sector**, **transport** and **machinery** investment by farmers was explored. Price appears to be again the main consideration, and for some dairy farmers, back-up service is the most important. Other important characteristics include power, ease of operation, reliability, resale value and energy costs. EE is of low priority when buying tractors, which appears to be part-driven by the perception of insignificant efficiency differences between new tractors. For milking machines, EE ranks low in Ireland but high in Greece. While there are no EE labelling requirements for tractors, farmers do not demand it. However, for milking machines, farmers are more supportive. Potential monetary labels are supported in Greece but less so in Ireland.

In the **industry** sector, a range of attributes were highlighted, including safety, price, running cost, quality, reliability and energy consumption. All participants appear to be very knowledgeable about the energy consumption of **machinery**. Some firms suggested that EE does not necessarily lead to reduced emissions and therefore firms often prioritise property investment/upgrades over machinery investment and suggested that there is little difference between machines. In terms of the motivations for investing in EE, costs are important but compliance with regulations was also highlighted. There is no mandatory EE labelling in machinery, nor is there an appetite for such. Firms do not find such information useful and suggest that current technical data from manufacturers is adequate and therefore the monetary labelling is not needed.

The collected qualitative data on the purchasing / investment decision making process with respect to energy efficiency in households, services, agricultural and industrial sectors will form the key input to the design and the implementation of the consumer surveys, field trials and choice experiments later in the project.

1 Terms of Reference

The main aim of Work Package 2 (WP2) of CONSEED is to design and implement focus groups (FGs) for discussion on consumer decision making with respect to energy efficiency (EE) in household, services, agricultural and industry sectors. The most common use of FGs is to provide an in-depth exploration of a topic about which relatively little is known, to "*get behind the numbers"* and provide insights into the individual, social and cultural experiences influencing participants (Stewart *et al*, 2007). In the CONSEED project, a total of 27 FGs in 5 different countries were planned to explore issues such as the relative importance of financial versus non-financial barriers towards EE, that is:

- The understanding and engagement of consumers with existing EU EE policies,
- The role of consumer characteristics in the decision-making process, and
- The identification and role of cultural differences in the decision-making process.

FGs are group discussions designed to learn about subjects' perceptions on a defined area of interest. They involve six to ten participants, with a skilled moderator using a discussion guide in order to generate data subject to group effects, both positive and negative. Group interaction may facilitate an exchange of ideas and information thereby stimulating individual group members thinking and allowing group members to build on each other's ideas. An overview of the originally proposed FGs in the project is presented in Table 1.

Table 1: The focus group setup in CONSEED

Focus groups	Household			Agriculture		Services			Industry
	Appliances	Property	Transport	Transport	Machinery/ Appliances	Transport	Appliances	Property	Machinery
Ireland		3		1	1		1	1	
Norway			3						2
Spain	3					1	1		
Slovenia		2							2
Greece	2			1	1	1	1		
Total (27)	**5**	**5**	**3**	**2**	**2**	**2**	**3**	**1**	**4**

There are more FGs in the household sector than in the other sectors due to the emphasis of CONSEED on examining the aspects influencing consumer decision-making at the point of sale, in particular on policies targeted in this area. Three out of the four main EU EE policies targeting consumers at the point of sale are focused on the household sector (through the labelling directives on appliances, buildings and transport) with the fourth aimed at the commercial sector through the Energy Star directive. The geographical spread of the FGs is designed to generate the maximum sectoral coverage within the budgetary confines of the project. Sectors in individual countries were chosen based on the country's characteristics and the skill set of the project partners in that country.

During the implementation of the proposed FGs, some partners found it challenging to recruit suitable/appropriate representatives from the services and industry sectors. In this regard, it was agreed to

conduct in-depth interviews (IDIs) in these instances instead of FGs. It was agreed at a project level that since both FGs and IDIs will feed equally well into the consumer surveys, the proposed changes do not impinge on the integrity of data collection. In all sectors, an "*exchange ratio*" of 1 FG = 4 IDIs was applied and the table with implemented changes is presented below. For Norway, it proved extremely difficult to recruit suitable participants to the narrowly defined group "Industry (machinery)", and it was agreed to add another group on transportation instead, consisting of sales personnel rather than consumers.

Table 2: FGs and IDIs matrix

FGs/IDIs	Household						Agriculture				Services						Industry	
	Appliances		*Property*		*Transport*		*Transport*		*Machinery/ Appliances*		*Transport*		*Appliances*		*Property*		*Machinery*	
	FG	IDI	FG	IDI	FG	IDI	FG	IDI	FG	IDI	FG	IDI	FG	IDI	FG	IDI	FG	IDI
Ireland			3					4	1					4	1			
Norway					4												1	
Spain	1											8		8				
Slovenia			2															8
Greece	2						1		1			4		4				
Total (17/40)	**3**	**0**	**5**	**0**	**4**	**0**	**1**	**4**	**2**	**0**	**0**	**12**	**0**	**16**	**1**	**0**	**1**	**8**

After the changes applied in the project, 17 FGs and 40 IDIs were conducted. These provided valuable information on consumer decision making with respect to EE in each of the consumer sectors (presented in detail in the Section 3). Obtained results will form crucial input to the design and implementation of the consumer surveys, field trials and choice experiments, which will be carried out in the project.

FGs and IDIs were led by experienced facilitators (conducted by the partners themselves or through subcontractors) and the design of the FGs was coordinated across project partners. To ensure consistency while also allowing for cultural differences, FGs and IDIs were conducted by exploring four main fields:

1. Exploration of significant parameters of choice;
2. Assessment of energy efficiency awareness/perception;
3. Assessment of existing labelling policies;
4. Exploration of informational policy changes (and in particular, the effect of displaying monetary cost information about energy consumption).

The participants were selected by project partners or with the help of subcontractor or industry/farming/tourist organisations to ensure that they provided representation across gender, ages, income levels, and education levels. A detailed information about each FG/IDI, together with the set of questions for each sector and country is available in the Section 6 - Appendices.

2 Methods/approach

The aim of qualitative research methods such as a FG or IDI is to understand attitudes, opinions, standpoints, expectations and practices rather than quantifying them. They are used to obtain qualitative data, to answer the questions such as *"Why?", "How?"* and *"In what way?",* and to acquire a deeper insight into research problems. The results provide the reader with a qualitative insight into the research topic, but results may not be generalised to the whole population, which is the objective of the quantitative research phase (Bader & Rossi, 1998).

2.1 Focus group

A FG is a small, homogenous group of four to ten people led through an open discussion by a skilled moderator. The FG moderator is interested in how individuals discuss issues as a group, rather than simply as individuals; how they respond to each other's views and build up a view through interaction. The proposed methodology with details for conducting high quality FGs is presented below in Figure 1.

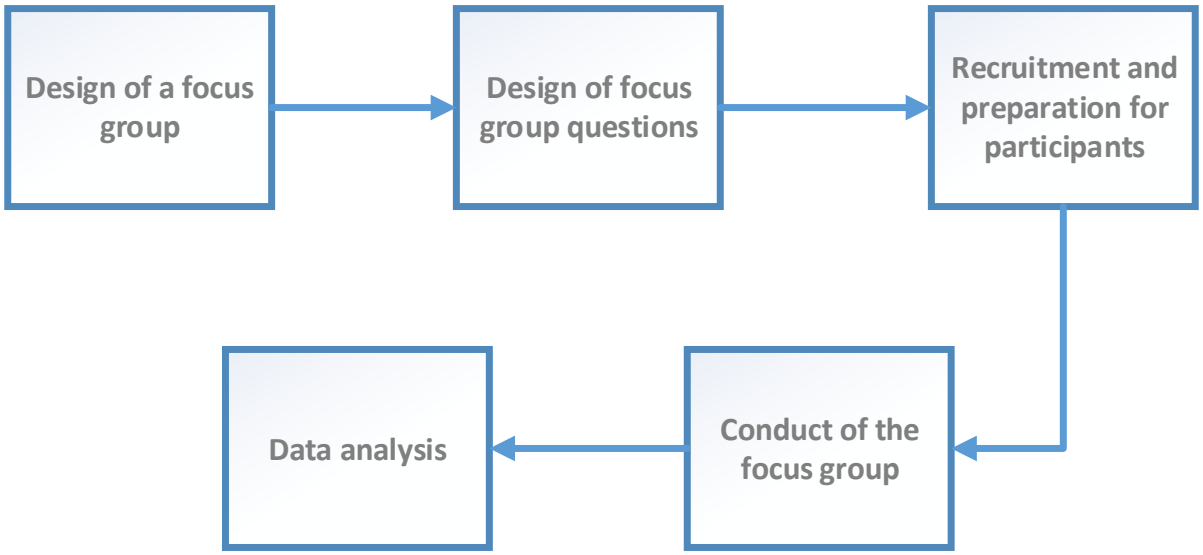

Figure 1: Proposed methodology for conducting focus groups

The FG technique allows the researcher to develop an understanding about why people feel the way they do. The FG is conducted by a team typically consisting of a moderator and assistant moderator who determine the agenda and moderate the FG session. A clear agenda and effective moderating techniques are essential to obtaining good quality data in sufficient volume. The moderator facilitates the discussion and the assistant takes notes and runs voice recording. The group needs to be large enough to generate rich discussion but not so large that some participants are left out. The moderator's goal is to generate a maximum number of different ideas and opinions from as many people as possible in the time allotted.

An ideal FG is the one where all the participants are very comfortable with each other but none of them knows each other. Homogeneity is key to maximizing disclosure among FG participants. The selection

criteria (e.g. gender, age, income, education level) are considered in a way that all participants feel comfortable and are ready to share their opinions, experiences and expectations.

Usually there are between six to eight questions, which are presented to the group participants who do not have a chance to see the questions they are being asked beforehand. To assure full responses, the questions need to be short, to the point, focused on one dimension, unambiguously worded and non-threatening or embarrassing. However, questions should still be open-ended to allow participants to raise issues which they see significant, and in their own terms. After all questions are answered, the moderator asks participants about their final thoughts after which there is a review and wrap-up. Finally, the organizer thanks participants for their contributions and explains very briefly about what will happen to the data they supplied (Krueger, 2014).

All partners received ethical approval from their own institutions for the work undertaken within CONSEED project. In accordance with that procedure, all participants in FGs signed informed consent forms (the sample from the partner TCD is included in the Appendix 6.4).

2.2 In-depth interview

An IDI is a qualitative data collection method, which offers the opportunity to capture rich, descriptive data about people's behaviours, attitudes and perceptions. They can be used as a standalone research method or as part of a multi-method design, depending on the needs of the research. Usually an IDI is carried out face-to-face so that a rapport can be created with respondents. Body language is also used to add a high level of understanding to the answers. Telephones can also be used by a skilled researcher with little loss of data and at a tenth of the cost (Guion, Diehl, & McDonald, 2001).

The style of the interview depends on the interviewer. Successful in-depth interviewers have a clear line of questioning and use body language to build rapport. The interview is more of a guided conversation than a staccato question and answer session. The interview is conducted using a discussion guide, which facilitates the flushing out of the respondent's views through open-ended questioning (Rodica, Grundey, & Stancu, 2008).

2.3 Analysis of data

FGs and IDIs produce transcripts and recorded videos/audios that are analysed. Unlike typical survey data, FG and IDI data are qualitative in nature and provide investigators with detailed information about a particular topic. The data are evaluated on a macro level, looking for participant consensus, patterns, and general themes. This process is called content analysis. After detail analysis and revision, the main findings are delivered in the Section 3.

3 Results

All results of the executed FGs and IDIs from the different countries in CONSEED were collected and processed together. The specific sectors and product categories that each partner has addressed in its case study are shown in the Table 3.

Table 3: Specific case studies

Country	General sector-product	Specific sector-product	Method
Spain	Household-appliances	Household-fridges and washing-machines	1 FG
	Services-appliances	Accommodations-heating & cooling and appliances	8 IDIs
	Services-transport	Firms-car fleet	8 IDIs
Norway	Household-transport	New personal vehicles	4 FGs
	Industry-machinery	Machinery	1 FG
Ireland	Household-property	Property	3 FGs
	Agriculture-transport	Tractors (tillage)	4 IDs
	Agriculture-machinery	Milking machine (dairy)	1 FG
	Services-property	Property	1 FG
	Services-appliances	Refrigeration (Food sector)	4 IDIs
Greece	Household-appliances	Appliances	2 FGs
	Agriculture-transport	Tractor	1 FG
	Agriculture-machinery	Milking machine (dairy)	1 FG
	Services-transport	Car rental firms	4 IDIs
	Services-appliances	Hotels/Resorts	4 IDIs
Slovenia	Household-property	Property	2 FGs
	Industry-machinery	Machinery	8 IDIs

While the questions in each group differed across sectors and countries (see Section 6.2), all FGs and interviews generally explored the following top-level research questions.

- **What attributes matter in the investment decision?**
- **How important is EE?**
- **Does current information policy increase the demand for more efficient products?**
- **How can information policy be changed to increase the demand for more efficient products? Is monetary cost information about energy consumption valuable?**

The summary of the findings is presented by sector in the next Section.

3.1 Summary of findings

While the results are strictly qualitative and based on very small samples (this is an intrinsic characteristic of FGs), they provide valuable information on consumers' decisions at the point of sale, and on EE and its labelling, which will support the methods of the work later in the project. Therefore, while the results are suggestive, we recommend that the reader interprets our findings within these methodological constraints and delays drawing any strong conclusions until more formally analysed in later stages of research. While the breath of results across countries, sectors and categories is large, a number of general observations can be made.

3.1.1 Household sector results

- For households, three product categories were explored – appliances, property and transport. In general, price appears to be the most important attribute across all categories. For appliances, dimension/capacity also features strongly; for property, location, size and condition are important; and for transport, safety, running costs and size are also mentioned (among others).
- The importance of EE is mixed. For appliances, EE ranks quite low. Some of the reasons mentioned are lack of understanding and distrust in indicators. EE is more important for buildings, but in some countries, current market stresses (for example lack of supply) is lowering the relevance of this attribute. Proprietors also appear to be less concerned about EE, mainly because they do not think that renters will pay more. Participants mentioned cost saving, the environment and comfort as determining factors for EE investment. However, for transport, the cost savings of electric vehicles are seen as key pull factor.
- Labels are in existence across all categories. While positive comments on labelling were recorded (colour-coded scale appears to aid comparisons, for example), several negative comments were raised, mostly surrounding clarity and trust. Some participants were unaware of the existence of labelling schemes, for instance for cars in Norway.
- In terms of amending labels, participants made several suggestions in terms of better, simpler explanations and less technical information. While the potential introduction of cost information in monetary terms was generally well-received (not universally so), a number of concerns were raised. Several participants stated that such forecasts were implausible due to user and situational heterogeneity (tailored forecasts through informational technology were suggested). No common preferred format (duration and benchmarks) was suggested (depends on the technology).

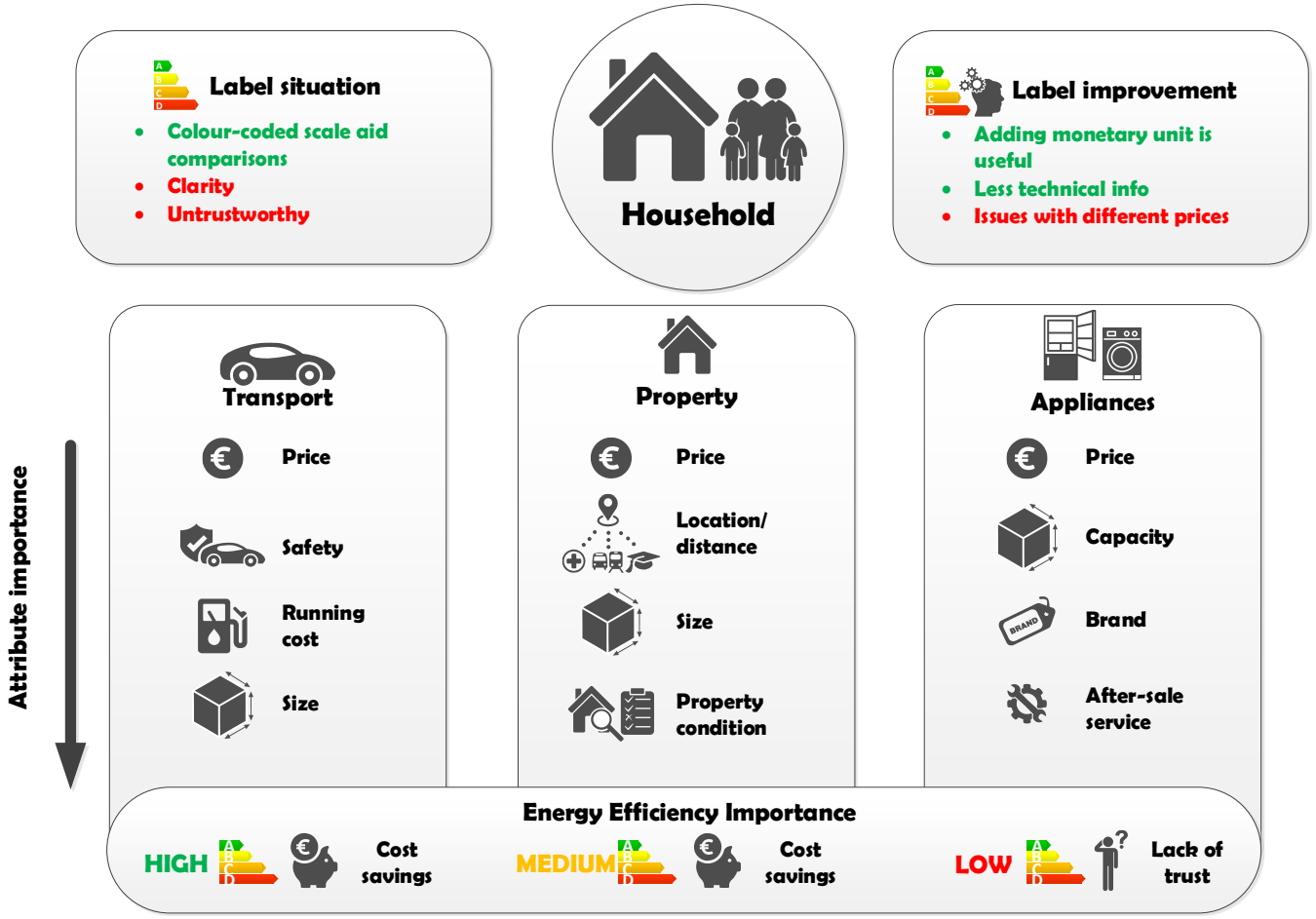

Figure 2: Infographics for the household sector

3.1.2 Services sector results

- The services sector explored investment decisions in property, transport and appliances. Unsurprisingly, price is ranked highly across all sectors. For property, again, location is important, as is condition, public transport, accessibility and EE (in declining importance). For transport, firms are more concerned with EE and a range of technical characteristics (including air conditioning and connectivity). For appliances, attributes such as brand, aesthetics and reliability (serviceability and maintenance) are important.
- The relevance of EE depends on the category. In property, EE is important but less so than other attributes. For firms' transport decisions, energy appears to be more important, but some participants state that there is considerable uncertainty quantifying the effects of EE improvements. One case study on car rental firms shows an example of a principal-agent problem, in that the importance of EE declines for the buyer because fuel is paid by the customer. Furthermore, for appliances, EE appears to be less of a concern. The "green image" is a regularly cited motive for investment, and is perhaps as important as energy cost savings (but not in every country). Firms also stress the importance of behavioural changes in saving energy.
- Statutory labelling is available in some countries/categories. Where available, there is again mixed opinions – some find labels informative while others find them unclear and untrustworthy. Where labels are not available, there are mixed opinions with regard to their potential usefulness. Some firms are interested in a labelling system but mainly so that they can boost their environmental image.
- Services firms made a number of suggestions in relation to labels. Some suggested adding a relative cost component, relevant examples and information in layman's terms. In terms of adding monetary information about energy consumption, there was mixed support (but stronger for some technologies). However, some firms suggest that other factors are more important and some suggest that such information would be untrustworthy, misleading and open to manipulation. Accuracy was also raised, in that there is uncertainty in use and energy prices. There was no consensus in relation to the form of energy cost labelling and recommendations are category-specific.

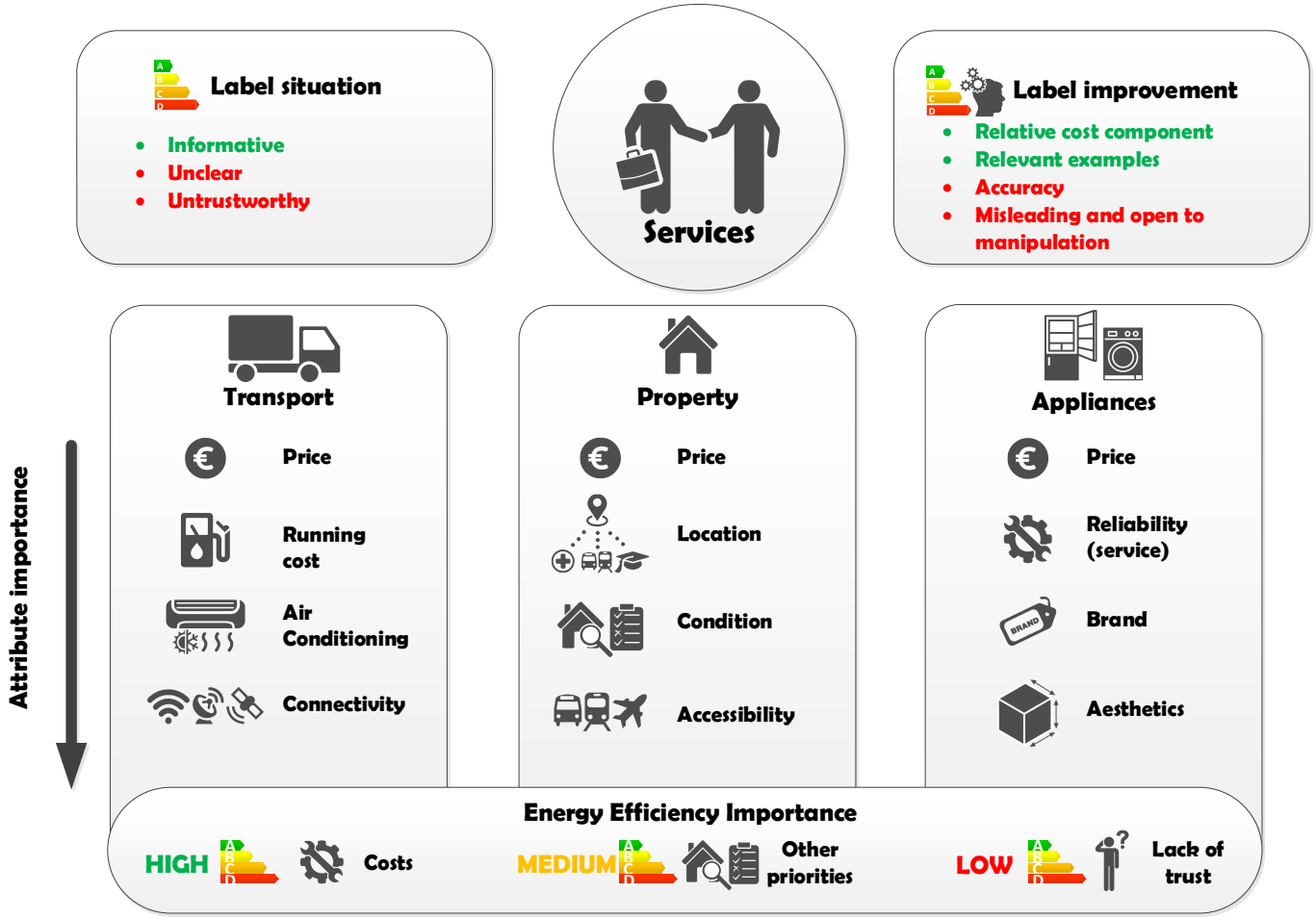

Figure 3: Infographics for the services sector

3.1.3 Agriculture sector results

- Transport and machinery investment by farmers was explored. Price appear to be the main consideration. However, for some dairy farmers, back-up service is most important (for the milking machine). Other important characteristics include engine power, ease of operation, reliability, resale value and energy costs.
- EE is a low priority when buying tractors (despite high fuel costs). This appears to be driven by the perception of insignificant efficiency differences between new tractors. For milking machines, EE ranks low in some countries but high in others (this difference may be driven by different energy consumption levels across countries).
- While there are no EE labelling requirements for tractors, farmers do not demand this information – they think that consumption is too situation-dependent for a label. However, for milking machines, farmers are more supportive. Potential monetary labels are supported in some countries (Greece) but less so in others (Ireland) (although monetary labelling for milking machines is supported in both countries). Where supported, a relative benchmark is considered useful.

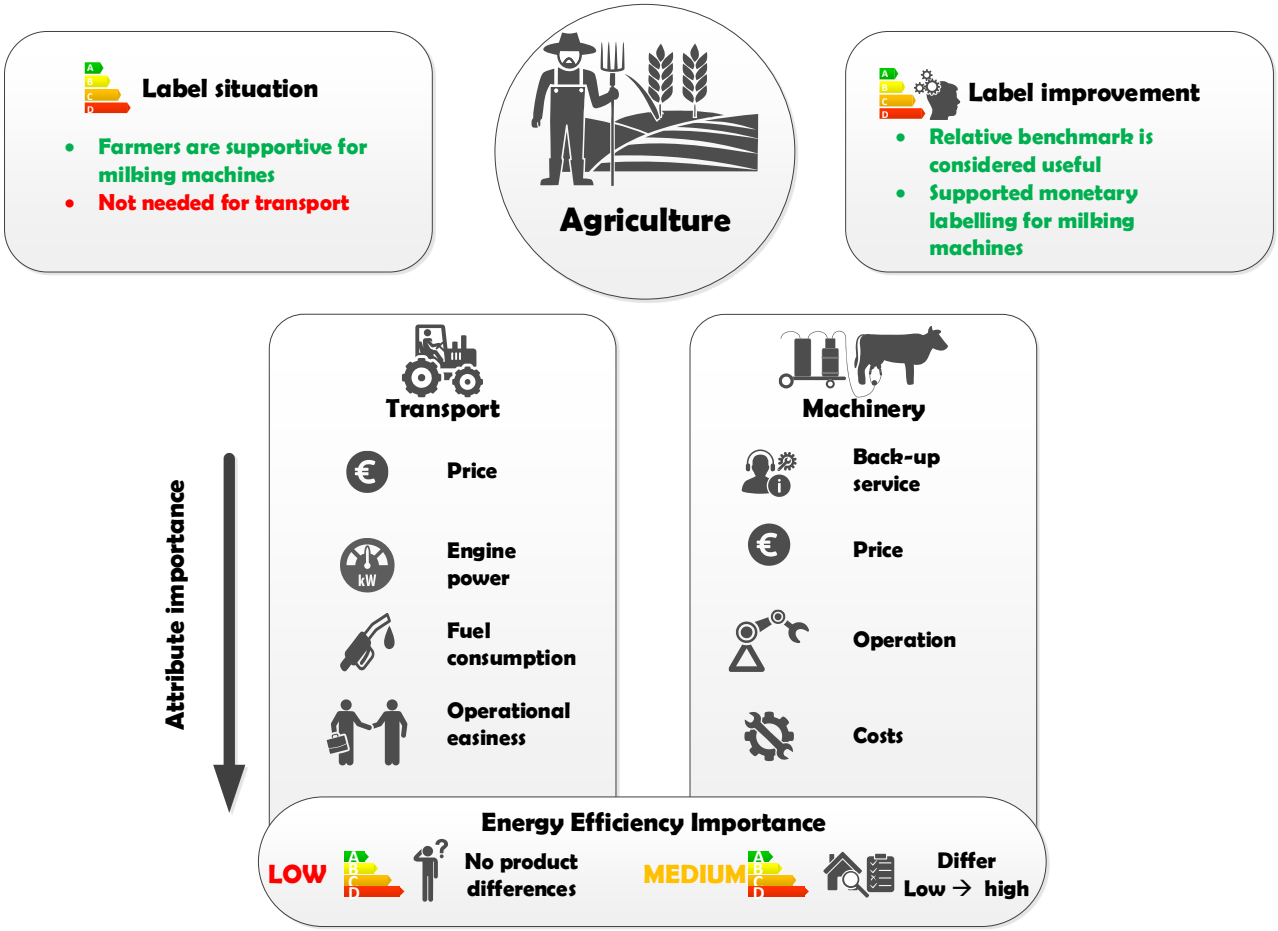

Figure 4: Infographics for the agriculture sector

3.1.4 Industry sector results

- For the industry sector, machinery investment was explored. A range of attributes was highlighted, including safety, price, running cost, quality, reliability and energy consumption.
- All participants appear to be very knowledgeable about the energy consumption of machinery. The importance of energy, unsurprisingly, appears to be dependent on the share of energy costs in production. However, some firms suggested that EE does not necessarily lead to reduced emissions. Furthermore, firms often prioritise property investment/upgrades over machinery investment and also suggest that there is little difference between machines. In terms of the motivations for investing in EE, costs are important but compliance with regulations was also highlighted.
- There is no mandatory EE labelling for machinery, nor is there an appetite for such. When asked, firms do not find such information useful and suggest that current technical data from manufacturers is adequate. There is also no demand for monetary labelling. It is suggested that such forecasts would not be possible as consumption is too situationally-dependent and there are no common energy prices.

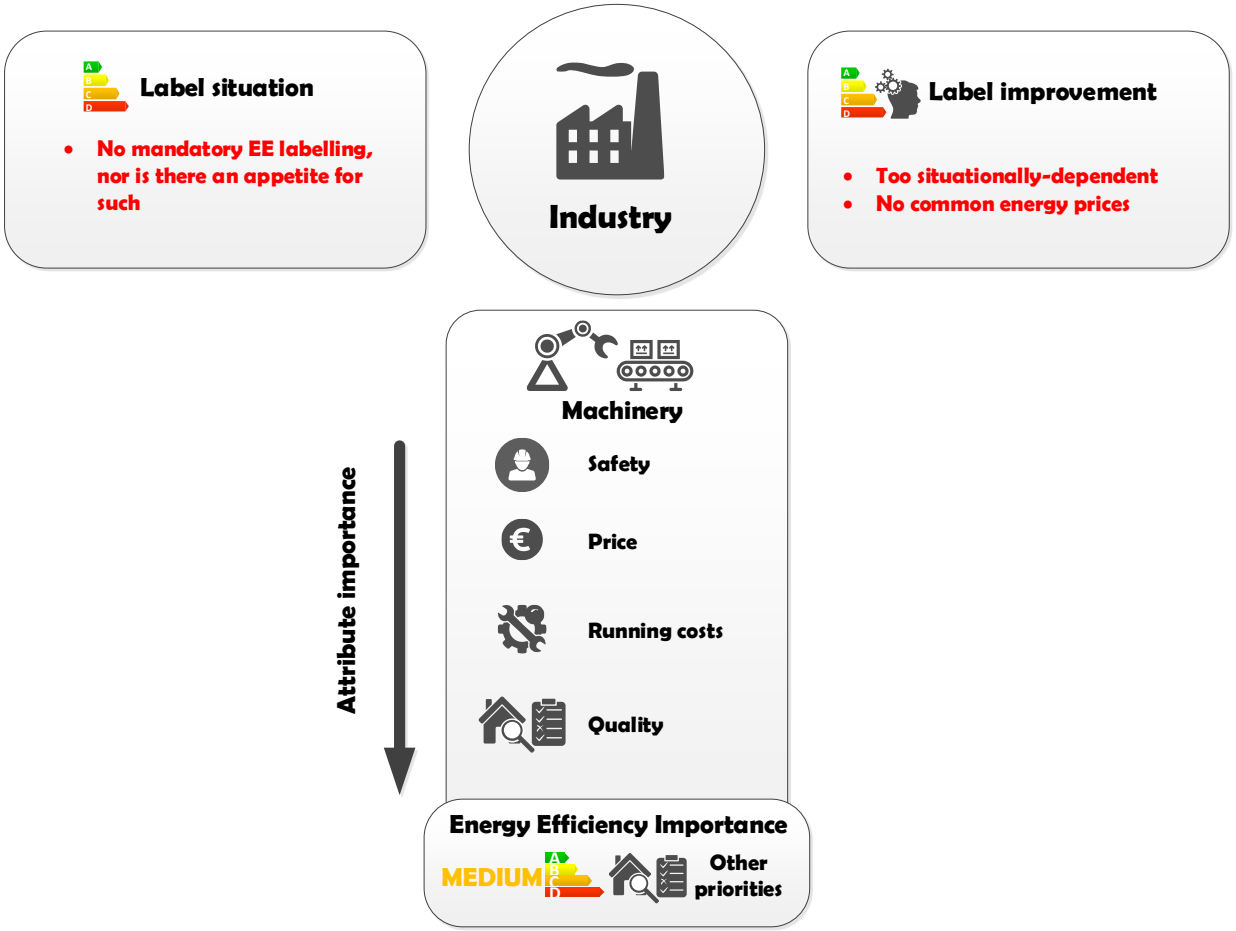

Figure 5: Infographics for the industry sector

3.2 Household sector

The project ran 12 FGs with tenants, proprietors letting their property (referred in the text as proprietors) and homeowners. There were 3 sets of FGs conducted in the household sector:

- ***Appliances*** (3 FGs; 1 FG in Spain and 2 FGs in Greece);
- ***Property*** (5 FGs; 3 FGs in Ireland and 2 FGs in Slovenia);
- ***Transport*** (4 FGs; 4 FGs in Norway).

3.2.1 Household: Appliances

Background

CONSEED partners in Greece and Spain explored household sector appliance purchasing decisions. In Greece, two FGs were conducted, each consisting of six participants. These groups contained individuals from a broad range of incomes, professions, employment status and ages (all information available in Section 6.1). In Spain, one FG with eight participants was carried out. Participants were also chosen strategically and the FG contained individuals from various educations, ages, household compositions, number of dwellings and socio-economic status (see Section 6.1). A list of questions for each group in listed in Section 6.2.

Attributes which affect the purchasing decision

In Greece, participants were asked to discuss what characteristics matter most when buying a refrigerator. The most cited parameters were cost, dimensions (or capacity) and after-sale services. Eight out of twelve participants agreed that a good offer, product guarantee and after-sales service would strongly influence their decision. When asked to rank attributes, there was a consensus that purchase price is the most important attribute followed by dimension and retailers' policy on paying instalments and after-sale service. The remaining attributes are of lesser importance and can be summarized under energy cost, trust in the brand and aesthetic characteristics.

A similar list of important attributes was raised in Spain. For refrigerators, the group also consider dimension and price as the two most important considerations. These are followed by energy consumption, capacity and the brand (in declining order of importance). Other attributes, such as the performance (no frost system, reversible doors, number of trays, etc.), the energy label, the type of refrigerator (independent, concealable, one door, side by side, etc.), the store (shopping mall, neighbourhood store) and security (open door alarm) rank lower. Participants in Spain were also asked to discuss washing machine purchases. In this regard, capacity is the most important attribute, followed by price, dimension, brand and features. Following these, water consumption, type (independent, concealable, front loading, etc.), spin speed and energy consumption are considered important (each ranked very similarly).

Opinions towards energy efficiency

Participants in Greece were asked to discuss why EE is less important. The groups believe that EE is the result of both buying decisions and post-sale behaviour. Several determining factors were raised, including an inability to understand the energy bill, distrust in the actual EE indicators and lack of information on

financial consequences of EE decisions. Three participants made the case that monthly energy bills are not so important in their investment decision because:

- Energy costs represent an insignificant percentage of monthly expenses.
- It is not possible to isolate the electricity consumption associated with each separate appliance.
- Energy bills contain items which are unrelated to the amount of electricity consumed (e.g. payments for third parties, local taxes, fees for renewables etc.).

As already highlighted, participants in Spain are more concerned with EE (although less so for washing machines) and reducing energy consumption appears to be an issue in the day-to-day lives of participants. While participants recognise that reductions in energy consumption can be achieved through higher EE, changes in behaviour are considered more important (similar to the findings in Greece). However, participants believe that behavioural changes are constrained, and reduced consumption can be achieved through good practices (loading machines correctly, for example). The motivations for buying more energy efficient appliances are mixed, but participants consider both the individual cost-saving dimensions and the collective dimension (such as the contribution to the "green economy" and the mitigation of climatic and health impacts). On the individual dimension, participants acknowledged that they are unable to formally derive the associated costs and benefits due to lack of knowledge and information.

The effects of current information policy

In Greece, EU EE labels appear to be the main informational vehicle supporting consumer choice. While all participants had prior knowledge of the labels, only half said that the information is clear and easy to understand. Some also highlighted mistrust in the labels, which appears to be based on the belief that energy consumption is more a matter of usage rather than of design.

A similar sentiment is observed in Spain. While most are aware of energy labels, they do not fully understand the language nor do they fully rely on them. Issues regarding mistrust were also highlighted. Participants appear to rely also on the opinion of sales' staff, relatives and friends, internet or consumer magazines. Participants, however, reacted positively to the colour/letter stimuli but are indifferent to the data on energy consumption expressed in KWh/year, as it is difficult to comprehend to non-experts (it was also highlighted that a lack of comparative scale is problematic).

Changes to information policy

Participants in the Greek FG suggested a number of possible amendments to EU labels:

i. Clear explanations of the average usage assumed when estimating energy consumption;
ii. Assurance of the trustworthiness of the calculations;
iii. Simplified technical terms on the labels.

Participants were shown two prototypes of energy labels: one depicting an appliance's relative energy consumption in relation to the average consumption by equivalent brands and models; one displaying a monetary estimate of energy savings per annum. All participants were fully satisfied with the second (monetary) label, although three out of twelve found the first label just as promising. Monetary information

is considered "understandable" by all and "easy to compare with other expenses". However, it was suggested that the lack of attention to energy bills might inhibit utilisation.

Results from the Spanish group suggest that the labels are not self-contained, that they are unclear and miss valuable information. The group clearly expressed its lack of confidence with regard to institutions, manufacturers and labels. To restore confidence, they suggested a more transparent and self-contained label coupled with improved training for sales staff, and educational/informational campaigns to improve understanding of the language of energy labels. While participants find the colour/letter categorical system useful, it was suggested that it should be complemented with a simple text explanation. Providing energy consumption data in monetary units was also suggested (to either complement or replace the physical unit of KWh/year) which, it was suggested, would help buyers to decide on their willingness to pay for a more energy efficient appliances. However, they outlined several challenges in providing an economic value to the label because of both the uncertainty of the annual consumption and of the electricity cost: the cost depends on the frequency of uses that fluctuates with households' characteristics and the price of energy.

3.2.2 Household: Property

Background

The property investment decisions of different individuals in the residential sector were explored in Slovenia and Ireland. In Slovenia, first-time buyers (henceforth buyers) and proprietors were recruited from the Ljubljana metropolitan area (see Section 6.1). Each FG was comprised of seven individuals and the group was moderated by an external research company. These groups had representatives from various ages, educations, incomes, genders and house types (there appears to be a slight overrepresentation of females and apartment owners).

Three groups were conducted in Ireland, comprising renters, buyers (first- and second-time) and proprietors (five, eight and seven participants, respectively). Recruitment was primarily carried out through the social media outlets of their industry partner – daft.ie – and all participants are from the Dublin area. Although an attempt was made to recruit a representative spread of demographic segments, the final group characteristics were highly dependent on self-selection (i.e. acceptance, which was less than ten percent). The renter and buyer FGs show a reasonable spread of genders, ages, occupations and educations. However, the renter group appears to have an underrepresentation of married individuals and both groups only have one individual with children. No noticeable representation issues are apparent for the proprietor FG.

Attributes which affect the purchasing decision

Results from Slovenia show that the starting point in choosing a property is the decision on size (results are common to both buyers and proprietors, unless specifically stated otherwise). Once this decision is made, price and location (specifically, being within the Ljubljana metropolitan area) appear to be the most important characteristics. Important locational factors include accessibility to stores, health centre, school, kindergarten and public transport. A large list of building attributes was also discussed – participants pay close attention to condition and materials of the roof and windows, thickness and quality of isolation and facade, type of heating and past redevelopments and renovations – and would expect a lower price if such

attributes did not reach the buyer's expectations. While EE was not specifically mentioned, the specific building attributes highlighted clearly contribute to the property's energy consumption.

Results from Ireland show a similar list of characteristics. Rent/price/return-on-investment (for renters/buyers/proprietors) and location appear to be the most important attributes for all groups. Locational factors include access to good public transport and amenities, plus area safety. All groups also mentioned property size and factors associated with condition as important considerations. The buyer and proprietor group are specifically concerned with build quality. While EE did not feature prominently in any group, the Building Energy Rating (BER) was highlighted by one participant in the renter group and by two participants in the buyer group. The proprietor group also mentioned a number of factors that are specific to their sector, including ease of letting and local economic conditions.

Opinions towards energy efficiency

Participants in Slovenia appear to show a good understanding of the factors which contribute to a property's energy consumption, and mentioned factors such as position in the building, facade, insolation, roof, windows, furnace and type of heating. Most have made investments in their buildings in the past and all agree that EE eventually pays off and that correct behaviours (such as turning off the lights, closing the windows when air conditioning is on etc.) result in notable savings. Furthermore, participants are confident in their ability to estimate the level of EE of a property and its potential energy costs. They stressed that this is done by assessing building factors and documentation (building permissions, invoices for renovation etc.). Overall, owners appear to be more engaged in EE than proprietors are.

Participants in Ireland also show a good understanding of the factors, which influence a property's energy consumption (all groups). However, the importance of EE appears to differ. While most renters consider EE important, most agree that it is not an important factor at present due to the severity of supply shortages in Dublin – renters currently have few options and have to take what they can get. Buyers in Ireland also consider EE to be important, but once the main property attributes are satisfied (location and affordability, primarily), EE will not affect the decision – inefficient property can be improved after purchase. When asked about the motivation for increasing EE, a number of participants highlighted cost savings, reduced environmental impact and increased comfort.

Most Irish proprietors appear to think that tenants do not value EE and will not pay more for this attribute. Three mentioned that they have never been asked for a BER before. However, these opinions are not universally shared – there was some agreement that tenants pay close attention to the quality of windows and many dislike storage heaters. One proprietor also mentioned that it takes more time to rent a property with lower EE. Another mentioned that the BER needs to be above a certain level and that renters will look for rent reductions for lower efficiency. When asked about investing in the EE of their current stock (improving windows were discussed), there appeared to be some agreement that the investment cost would outweigh the rent increases. In relation to other energy-consuming categories, one mentioned that he has improved insulation but only to protect his property (some agreement on this). Another said that she has upgraded boilers but only because the older boilers had reached the end of their life. It is apparent that no participant has improved EE in the past in an effort to increase his or her rents.

The effects of current information policy

In Slovenia, each group has different opinions in relation to the Energy Performance Certificate (EPC). Proprietors consider the EPC system to be an unnecessary expense and they expressed distrust towards the data (examples of inaccurate calculations were given). Owners, however, are less negative, display higher levels of trust and find the EPC to be comparatively informative. Unlike owners, many proprietors do not have an EPC, possibly because their properties are older.[1] In addition, most Slovenian participants do not find the EPC easy to understand and could not agree if a property was energy efficient or not. In addition, some participants questioned whether the factors that influence differences in individual usage (e.g. temperature in the apartment, usage of appliances) are taken into account when making these calculations.

Renters in Ireland show low levels of knowledge and utilisation in relation to the BER. One participant mentioned that the BER is generally not shown and over half the group had not seen a BER before. None were aware of the BER rating of their current property. Furthermore, renters do not consider the BER certificate to be clear, which appears to be driven by the technicality of the information. However, two participants did state that the colour-coded categorical scale made sense. In terms of property choice, few highlighted that a poor BER would put them off and most agree that, given the current market conditions, renters do not have the luxury of choosing between properties with different BERs. Irish buyers are more favourable than renters, but not universally so – half the group considered the BER to be a useful comparative tool and only half said that they would be discouraged by a poor BER – they would gauge the property against other attributes and improve the BER at a later stage. Similar to renters, current supply shortages were highlighted as a potential reason. Clarity concerns were also raised in the proprietor FG, again over the technicality of the information provided. The thoroughness of the BER system was also questioned and, similar to proprietors in Slovenia, a number of comments suggest a level of distrust. Proprietors also mentioned that the BER does not provide an accurate estimate of the bill, which they believe depends more on behaviour. Consistent with the renter findings, proprietors are generally not asked about the BER. In terms of proprietor investment decisions, a poor BER is unlikely to discourage them. One participant stated that a thorough inspection (dampness, dry-rot, etc.) is more important than the BER. Another participant agreed, but highlighted that an inefficient property would likely be in bad condition and in need of major renovation.

Changes to information policy

Slovenian participants suggested that information about average and minimum consumption should be added (as a reference frame) to the standard EPC. Some suggested a legend with a simple short description of the main categories (what they mean and include) and classes in which consumption can be classified (lower and upper limits of classes A, B, C, etc.). Participants were then shown two prototype extensions to the EPC system that included monetary costs (see Section 6.3). Both suggestions were received positively, the main advantage being that both are easier to interpret and are more practical. Participants are also in favour of the annual timeframe of the information. However, proprietors and renters have different

[1] Participants also had some difficulty in comparing the information with the minimal regulatory requirements for new buildings in 2017. Some thought this information related to desired goals for 2017.

preferences regarding the proposed unit of reference, with owners preferring annual costs per square meter and proprietors preferring total annual costs.

In Ireland, renters suggested that the BER could be improved by including relevant examples, particularly examples with a cost dimension. Two participants also thought that energy information should be disaggregated into separate sources (heat, water, lights, etc.). Buyers also wanted to know how much the BER affects their bills. The groups were then shown a prototype of an energy cost label (annual). For renters, there was an initial agreement that this information would be valued, however, again, only in a "functioning" housing market with an adequate supply of housing. For buyers, there were mixed opinions, with only one participant saying that she would prefer monetary information over the BER and two suggesting that it would be a useful addition only, but not a replacement. One participant commented on the potential misleading nature of this monetary information – that it depends on property size and that it would be better to show energy cost per square metre. For proprietors, there was surprisingly little input with regard to whether energy cost information would affect their investment decision, with only one participant explaining that other property attributes are more important. However, with regard to expected tenant reaction, proprietors showed strong opposition and there is an expectation that this information would damage profitability. Another commented that inefficient properties would require a major upgrade, be left empty, or have very low rents.[2]

In terms of changes to the prototype, a number of suggestions were offered. Renters stated that it would be useful to show this information on a bi-monthly (every two month) basis, similar to the typical energy bill. Furthermore, there was little support to show comparative cost information (costs relative to an "A"-rated property, for example) and that a standalone figure is fine. One participant suggested that an average cost figure could be potentially misleading and that energy use depends on whether you are a student, family etc. Buyers also suggested that this information should be tailored to the individual's situation as costs are dependent on the number of occupants, ages of occupants, how often they are home etc. In terms of how this information is displayed, no buyers had an issue with the annual figure. An online tool for showing how EPC improvements affect energy costs was also suggested. Proprietors had a number of suggestions for improvement. One participant thought that the annual figure was "scary" and at least two participants suggested that it should be broken down into a monthly figure and to divide the costs into electricity and fuel. The accuracy of the information was questioned by at least three participants, with some suggesting that the information cannot be accurate as energy costs are specific to the tenant's demographics and behaviours. It was also suggested that comparable cost information could be useful (costs relative to an "A" EPC, for example).

3.2.3 Household: Transport

Background

[2] The same participant suggested that proprietors are limited in the current regulatory environment – they need to invest in energy efficiency but can't raise their rents to pay for it (others agreed).

Residential transport was explored in Norway only. The analysis focused on both car sellers and buyers. Sellers were recruited through Norway's largest car retailer (MøllerGruppen, with a market share consistently higher than 25%). The sellers are all based at car dealerships in Oslo or nearby districts. All participants are male, which is reflective of the underlying demographic circumstances of this profession. Buyer participants have either bought or leased a new car from a dealership during the previous three years, or plan to do so within the next six months. Buyer participants were selected for balance on gender (54% female), age (23-65 years), and residency (all main regions of the country represented). A list of questions is provided in Section 6.2, and group characteristics are described in Section 6.1.

Attributes which affect the purchasing decision

For sellers, the discussion primarily focused on the factors which affect whether or not to buy a conventional vehicle (CV), an electric vehicle (EV) or a plug-in hybrid electric vehicle (PHEV). Sellers highlighted that buyers, to some extent, already know what model and fuel type (electric or not) they want before entering a dealership. There is, however, still some scope to influence whether they buyer chooses EV or PHEV. The sellers also highlighted that buyers emphasize the reduced total cost of ownership (including running costs) as a key motive for switching to electric. Such benefits include exemptions from VAT, purchase taxes, most road tolls, and ferry charges, a reduced annual vehicle tax, and free public parking. Sellers also highlighted the high share of leasing in their districts – 40-50% for gasoline and diesel cars, and 85% for EVs – which appears to be driven by considerable uncertainty surrounding resale values (due to technological and political uncertainty in the sector).

In the buyer's FGs, the most important attribute is price followed by safety, running costs, size/capacity, the environment, comfort and reliability. Hence, attributes relating to EE (running costs and the environment) are relatively important. Consistent with the seller's opinions, buyers said that they decide on the type of car before visiting the dealership, at which point a small number of alternatives are considered. Participants varied greatly in how much they trust sales people, and in the influence they assigned to them. The choice of energy technology/engine appears to be made early in the process, often before visiting a dealership, implying that this choice is not very sensitive to information at the point of sale. For buyers, the most cited advantages of EVs are cost savings, and many mentioned the exemption from road tolls and environmental benefits (some also mentioned access to bus lanes). The most important perceived drawbacks, by far, is limited driving range and charging inconveniencies (lack of access at home, few public charging stations, and charging cycle duration). Other disadvantages mentioned were depreciation, fire hazard, batteries' environmental impact, small size, and the possibility that pro-EV policies may be terminated.

Opinions towards energy efficiency

Sellers highlighted that energy costs may not be the main reason buyers buy more energy efficient (EV and hybrid) models. It was also highlighted that many buyers think it is too risky to buy diesel cars because of potential future regulation changes (ban on diesel cars in Oslo during days with heavy pollution, for example). One participant stated, "Policy means ten times as much as the cost." Buyers focused on emissions (NO_x and other air pollutants) more than on energy use as an explanation for declining sales of diesel cars in particular.

The buyer FGs were asked about the relative importance of purchasing versus running costs. Most assigned higher weight to the purchasing cost, and only about a third had calculated the running costs for different models under consideration. However, despite this finding, energy costs were consistently mentioned as one of the most important operating costs. When asked why fuel consumption matters, only one participant said environmental concerns are most important, while most (about 80%) said that economic concerns dominated.

The effects of current information policy

The sellers did not spend much time discussing the current EU label, which was dismissed with comments such as "It is boring. [...] It looks like your fridge. Money is all that matters." Another participant highlighted that buyers are not concerned with how much they emit.

The buyers' group were asked whether they had seen the mandatory EU-label for cars. Only one participant answered positively, while most (around 90%) had no recollection. However, after being shown the label, the clear majority found its contents useful (only five participants did not find the contents useful). The primary reasons given were that it facilitated comparison of different models' emissions and fuel consumption. When asked if the information would affect their car choice, around 60% said it would have some influence for differentiating between models and the remaining said it would not.

Changes to information policy

The sellers were presented with a number of cost-based labels. Participants found these to be more useful than the EU label, but wanted something even simpler. While the group was divided on whether the cost should be displayed per year or per month, there appears to be more support for monthly.[3] One participant (supported by several others) suggested a dynamic (online or app-based) cost calculator that could visualize the total cost and make it personalized. Some expressed that displaying the total cost would be useful; whereas others did not believe displaying cost differences between models would have much impact.

Based on the results from the car sales people FG, the partner in Norway designed alternative energy labels. These alternative labels were presented in the three car buyers FGs. Prior to being shown the cost-based labels, about one fifth of buyers said that running costs should be included, specifically relating to maintenance and service costs.[4] The groups were then shown four different proposals for new labels with running costs for two different VW Golf models, one CV and one EV (see Section 6.3). The labels varied across two dimensions: whether including only energy costs or a wider set of running costs and whether expressed per month or per 10 km (which is the most commonly used unit for distance in Norway).

The first label showed estimated energy costs per month. Almost everyone responded very positively to the proposal. They found it clear and user-friendly, and said it would help estimate the costs of ownership and hence make the purchasing decision easier. Many found the cost difference between the two models striking. However, three participants expressed distrust in the figures, noting that the difference was implausibly

[3] They are also divided on whether or not the cost of leasing/ownership should be included.
[4] Other types of information requested were safety test scores, horsepower, and passenger/load capacity.

large or that the figures did not correspond to their own use. A clear majority (65%) said this label would affect their car choice. Participants commented that costs always affect purchases, and that this label eases the comparison of costs across models.

The next label added maintenance, service, tyre wear, and annual vehicle tax into the monthly cost estimates. Everyone except one participant found this label more useful than the previous one. The general view is that more information is better, and that the second label gives a more complete indication of monthly expenses.[5] A number of participants said that the label made the cost of car ownership visible, and hence provided an argument for using public transport instead. The second label was also deemed to have much higher potential for influencing car choice. Over 80% of participants said it would affect them more than the first label.

Next, participants were shown two labels simultaneously: monthly costs and costs per 10 km. While more participants preferred costs per 10 km to monthly (46% versus 15%), the remainder had no preference. Reasons stated for preferring costs per 10 km were that driving distances vary, and that fuel consumption has traditionally been expressed per 10 km in Norway. The primary argument supporting the monthly metric was that it makes budgeting easier, as this is typically done on a monthly basis. Notably, when asked which format would influence their car choice the most, a slight majority (nine versus seven respondents) choose monthly. A point relevant for all the cost estimates, stressed by some participants, is that they should be issued by a governmental body, not by the car companies.

The final idea proposed to the groups was a web-based calculator into which personal variables can be entered, to give a more precise and complete cost estimate. The idea received only positive reactions, and many said they would use such a calculator. Three participants had actually raised this idea before it was presented.

3.3 Services sector

There was 1 FG and 28 IDIs organized in services. There is a lot of diversity in energy consumption within this sector, which represents a heterogeneous group of businesses. This is captured by a broader range of sub-sectors:

- ***Transport*** (12 IDIs in automobile/tourism sector; 8 IDIs in Spain, 4 IDIs in Greece).
- ***Appliances*** (16 IDIs in tourism or food sector; 4 IDIs in Ireland, 8 IDIs in Spain and 4 IDIs in Greece);
- ***Property*** (1 FG in Ireland).

3.3.1 Services: Property

Background

[5] The one dissenting voice noted that more included parameters in this calculation mean more of them could be wrong, and that maintenance costs vary.

Services sector property was explored in Ireland only. The FG consisted of six individuals from very different backgrounds (see Section 6.1).[6] The majority of participants are at management level or above, with the exception of one who is a sales representative. Business sectors include financial services (two participants), travel, third sector (charitable) and training. Company ages range from 11 years to over 200 years (bank) and employee numbers range from one to 15,000 (bank). Most companies do not export and half rent all their business property.

Attributes which affect the purchasing decision

A broad range of property attributes was discussed. Location appears to be a driving factor, but locational needs are dependent upon the sector.[7] In terms of building characteristics, the need for an office space that can be partitioned was mentioned by two. Building quality and age were also mentioned, but it was highlighted by one that this is only important for businesses who are customer-facing. Parking (for client and staff) and accessibility (including disability access) were also discussed. In terms of EE, the BER was only mentioned by one (who emphasised the high cost of heating energy inefficient buildings). Participants were then asked to list their top six attributes. Location is the most important attribute followed by cost. The remaining attributes are of lesser importance and can be summarised under condition/appearance, access to public transport, parking, accessibility and EE.

Opinions towards energy efficiency

Participants were asked to discuss EE in more detail. One participant highlighted that old equipment is the main driver of high-energy consumption (he mentioned the significant cost savings of improving the EE of lighting and refrigeration). Two participants mentioned heating as the main driver. While most consider EE important, half the group mentioned that it is less important than other property attributes.[8] The importance of keeping employees comfortable, warm and healthy was also discussed by one participant (and seemed to receive some support from the group).

Cost reductions appear to be the main motive for EE improvements. The group mentioned that companies "aren't particularly altruistic" and that while environmental issues are becoming more important, they are currently "further down the list". The company image motive also received little support.

For those that own their properties (two participants), the importance of improving EE was explored. One mentioned that his company is trying to lower energy consumption through behaviour rather than through technology upgrades, and that it is too expensive to improve the EE of older building. Another highlighted

[6] Participants were sourced by advertising at a monthly networking meeting of the *Dublin Chamber of Commerce*. Out of approximately 80 attendees of the networking session, six agreed to participate.

[7] Some sectors have no need for a central location and need to be, for example, beside major infrastructure, while others need to have a presence in "fashionable" or sectoral-specific areas (financial services, for example). One participant highlighted footfall as a consideration and the need to locate in an area where competition for their services is currently low. Another mentioned area safety as an important locational attribute.

[8] One mentioned that energy efficiency is "more of a luxury" and another mentioned that it is "far down the list".

the importance of lowering the energy consumption of their existing technologies through timers and sensors, rather than investing in new technologies.

The effects of current information policy

Participants were shown a copy of a BER cert. Two had not seen this information before and only one said that the information is clear and easy to understand. One participant said that the BER system is now "dated". Another highlighted that she does not understand the BER explanation provided in the certificate and was unsure to what her current rating is being compared. However, despite these clarity concerns, most agreed that they would rely on the BER when choosing a property (only one suggested that it wasn't an important factor when choosing) and three implied that a poor rating would put them off.

Changes to information policy

In terms of improving the BER, one participant suggested that there should be a relative cost component (over one year), which, she suggested, would be easier for the consumer to understand (another agreed with this suggestion). A number of participants suggested that the information should be in non-technical language and that concrete examples and explanations should be provided (explain *why* a property is a "D" or "G").

The group was then shown a prototype of an energy cost forecast label. The entire group thought that this would be a very useful indicator.[9] In terms of improving this information, one suggested that a relative benchmark could be provided (an average, for example) and suggested an app that shows how costs change across different ratings (and also how different investments affect costs). There were no objections to an annual figure, although one mentioned that buyers are unlikely to know what their annual energy bill is.

3.3.2 Services: Transport

Background

Services sector transport investment decisions were explored in Spain and Greece. In Spain, eight IDIs were conducted in the city of Bilbao and its surroundings, and the analysis focused on car fleet purchasing decision. The sample is composed of small (four participants, each with three vehicles), medium (two participants with 11 and 18 vehicles) and large firms (two participants with 120 and 515 vehicles) from a diverse range of sub-sectors. With the exception of two electric vehicles, all vehicles are fuelled by diesel. Only one firm owns all their vehicles, with the remainder combining leasing and owning (further details are available in Section 6.1).

[9] One mentioned, "You know what you're talking about with money, it's a common language" and "That's what's most important to people at the end of the day".

Four in-depth face-to-face interviews that focused on vehicle investments by car rental firms were conducted in Greece.[10] Two interviews were conducted on the island of Rhodos and two in Athens greater area. The group shows a wide spread of firm type: firm ownership (by participant) ranges from 0% to 100%, age ranges from 30 to 60 years and sectoral management experience ranges from six to 31 years (see Section 6.1). There is also considerable heterogeneity in fleet sizes, ranging from very big (estimated at 20,000 vehicles in Greece) to medium (40 vehicles in Rhodos) to small (20 vehicles in Rhodos). While the participants from the smaller firms are completely responsible for investment, the participants from the larger firms participate by submitting regular reports on the needs for new vehicles (in the acquisition department).

Attributes which affect the purchasing decision

For Spanish services firms, the purchasing process (from vehicle choice through to delivery) lasts between one and three months. Firms expect the car to be reliable during the first four/five years and then replace it. The most important attributes in the purchasing decision are price and EE. Also highlighted, but considerably less importance, are physical/technical characteristics (volume, number of seats and horsepower), air conditioning and connectivity (GPS and Bluetooth). Brand loyalty appears to play no role, and firms generally explore numerous brands in their search.

Car rental firms in Greece renew their fleets regularly – every one or two years in big firms and every two to four years in smaller firms. In terms of vehicle attributes, all firms have a large range of vehicles and relevant attributes depend on vehicle type: for family cars, technical characteristics such as luggage storing capacity are very important; for vans, transport capacity; for small city cars, fuel efficiency; for jeeps, brand and aesthetics; for limousines, brand. Overall, however, price is the most important attribute, followed by technical characteristics and resale price. Participants noted the highly competitive nature of their market that heightens the importance of price. Fuel consumption, brand, maintenance cost and aesthetics are also important, but less so.

Opinions towards energy efficiency

Spanish companies have observed declining fuel consumption over the last decade due to declining size and improved EE. The motivation for improved EE primarily relates to fuel cost reductions and few refer to environmental reasons (although they are somewhat interested in them). Evaluating EE investment is challenging for firms for a number of reasons: first, they cannot control employee fuel consumption (but are normally flagged by excessive behaviour); two, there is uncertainty in relation to prices, driving conditions and manufacturer's stated EE levels (firms find that actual consumption differs significantly). This uncertainty makes it difficult to balance ex-ante the extra cost of purchase with the future flow of energy savings. The Spanish firms were also asked about their opinions towards electric vehicles. Firms do not buy electric or plug-in hybrid vehicles, as they do not think that this technology meets their business

[10] These in-depth interviews replace the focus group that was initially planned due to difficulties to arrange a group meeting among competing firms. Rhodos was selected because it is a representative coastal Mediterranean tourist region and rent-a-car firms in Rhodos operate exclusively with tourists. Athens was selected, as it is a large urban area where rent-a-car firms operate 50% with tourists and 50% with locals.

needs (inflexible/limited charging infrastructure was highlighted). They also highlighted the limited availability of electric vehicle options and the higher price of this technology. While they recognise the potential fuel savings, they also find that current unfavourable leasing agreements for electric vehicles undermines this benefit.

Car rental firms in Greece achieve fuel efficiency by switching to diesel engines. Therefore, the attribute of fuel efficiency is subsumed under the attribute 'type of engine'. Hybrid vehicles are considered too expensive and electric cars are not feasible due to charging limitations (in Greece there is no charging infrastructure). Participants were then asked how they perceive fuel efficiency. Since fuel expenses are borne by the client and diesel engines are overwhelmingly preferred, the attribute of fuel efficiency loses its importance. When asked which is more important – reducing fuel costs of the consumer or reducing environmental impacts – participants were split: those operating in urban areas (Athens) stressed the former while those operating in tourist regions stressed the "green image".

The effects of current information policy

There are two labels in Spain, the compulsory reporting fuel consumption and CO_2 emissions, and the voluntary, which in addition provide a grade of EE (see Section 6.3). While fuel consumption is clearly important to Spanish firms, they do not associate the fuel consumption of the vehicle with a measure of EE. In this regard, the compulsory label is likely having no effect.

When Greek rental car firms were asked about the source of information on fuel efficiency, all participants stressed the importance of establishing long-term relationships with car importers who provide them with the technical and economic information they need when investing. Three are familiar with the EU car-labelling scheme. However, they stated that it is of little use to them since choosing diesel engines covers the aspect of fuel efficiency. They also commented on the positive effects of favourable registration fees for more fuel-efficient diesel vehicles.

Changes to information policy

Spanish firms were asked whether they prefer the compulsory or voluntary label. Firms prefer the voluntary label – since it is visual, they consider it helpful in guiding the consumers towards better choices. When asking them whether an additional monetary information about consumption would drive better their decision process, they generally agree that in the voluntary label, knowing on average how much would be the savings of the more efficient compared to the less efficient ones would be a valuable information. However, they highlight that this information should be reported based on the kilometres driven during the year, since the duration of the amortisation of the investment in EE vehicle depends also on its use.

Greek car rental firms are interested in compulsory and state-controlled fuel efficiency labels but mainly so that they can reap the benefits of a growing sustainable tourism market. Two participants also stressed the need to promote electric vehicles in Greece. Participants were shown a prototype of an energy label which displayed monetary information (fuel cost per 100 km relatively to the average fuel consumption). They all agreed that this information is valuable but stressed again that decisions on fleet renewal are more complicated than fuel efficiency alone.

3.3.3 Services: Appliances/Machinery

Background

Three CONSEED partners conducted IDIs for services' sector appliance purchases – in Spain, Ireland and Greece. In Spain, eight face-to-face interviews were carried out for various types of accommodation services (cottages, hotels, hostels and guesthouses) which explored centralised heating and cooling systems and appliances. These participants were recruited strategically to ensure different climates (warm and cool), geographical locations (north and Mediterranean) and areas (urban, mountain and coast) – see Section 6.1 for further information. All firms have centralised space and water heating systems and half have centralised cooling systems. Furthermore, a large range of appliances is potentially considered – most firms have shared appliances (such as refrigerators, microwaves, dishwashers, etc.) and half have appliances in the rooms (such as TVs, refrigerators and coffee makers).

In Ireland, four telephone interviews were conducted on one specific sub-sector and technology decision – refrigeration investment in the food service sector. Participants are involved in a range of food activities, including cafés, delicatessens, caterers and cookery schools. Three participants are owners and one is a restaurant manager, and half are male. The average business age is five years, with a range from two to eight years. There is also considerable diversity in employee numbers, from zero employees to 70 (average is 25).

Four face-to-face IDIs were conducted in Greece on professional appliances and machinery in the tourist sector (hotel resorts).[11] The main appliances discussed include cooling systems (mostly air-conditioning), water heating, professional fringes, washing machines, lighting, swimming pool pumps and spa machinery. All firms have centralised water-heating systems, two have centralised cooling systems and two have air-condition units in the rooms. Participants were systematically chosen to account for location, size and client orientation (see Section 6.1). Participants own the hotels in different proportions, ranging from 0% to 100%. Age ranges from 32 years to 62 years and a wide range of management experience in the sector is represented (from seven to 34 years). Hotel size ranges from 80 to 5,000 beds.

Attributes which affect the purchasing decision

The purchasing decisions of accommodation firms in Spain are mainly taken by the owner.[12] A range of factors affect the purchasing decision, including budget, the opinion of maintenance personnel and compatibility with existing building infrastructure (for centralised systems). In general, price is the most important attribute, followed by brand. However, for centralised systems, brand is the most important factor (which relates to durability and back-up support). For appliances, price is most important followed by brand (which relates to value for money, durability and the customers' perception). Other less important factors

[11] Recruitment of participants was undertaken by the research team in cooperation with the *Rhodos Association of Hoteliers*, Rhodos, Greece. This is the biggest regional hoteliers' association in Greece operating on the island of Rhodos. Rhodos was selected because it is a representative coastal Mediterranean tourist region. Almost all (80%) of the tourist resorts on the island have seasonal activities (May through October).

[12] Although the maintenance manager is involved in one firm and the management team are involved in two.

for appliances are capacity, noise levels, shape, aesthetic and performance. EE is also less important but was mentioned by three in relation to kitchen appliances (hostel), mini-bars and hair-dryers (independent hotel) and centralised systems (urban hotel chain).

Similar results are observed in Ireland – price (ranked highly by all four participants) and reliability (ranked highly by three) appear to be the two most important factors affecting refrigerator purchases.[13] Further issues surrounding post-sale repairs/servicing (ease of servicing, replacing parts and re-gassing) or warrantees were highlighted by most. Two participants also mentioned size, in that a replacement refrigerator would have to meet the very specific space constraints in their premises.

Appliance decisions in Greek resorts are often based on trends and trust in retailers. Only one participant stated that they seek external technical advice when investing. The overall process of decision-making is a sequential process of deciding first the specific requirements of resorts, translating these into technical characteristics and then searching for the best price. In terms of the importance of different appliance attributes, the answer very much depends on the appliance in question.[14] Overall, however, technical characteristics generally rank highest, followed by price, energy consumption, maintenance costs and aesthetics.

Opinions towards energy efficiency

Spanish accommodation firms relate EE to the reduction of energy consumption, to the good use of energy, and to environmental benefits. Improving EE appears to be motivated firstly by energy/cost savings, followed by environmental care and public image. In terms of energy-saving behaviours, most highlight the importance of their customers' actions. In this regard, reminders are provided to aid conservation and the correct use of appliances. Participants also state that they reduce energy by switching off appliances when possible. Furthermore, participants have also reduced energy by using automatic card systems in rooms (switches off appliances when vacant), by controlling temperature automatically from reception and by providing remote controls for heating systems. However, despite these observations, EE, as highlighted above, is not ranked highly when purchasing new appliances.

In Ireland, most participants show a good understanding of their energy consumption and were able to identify the individual energy contribution of separate appliances. In terms of the importance of energy costs in total business operating costs, mixed responses were recorded – two (of four) participants consider energy costs to be a large component of operating costs. Despite what appears to be a good understanding of the determinants of energy costs, EE is not considered important when buying a new refrigerator (half specifically commented that EE is not a top priority). However, this may be due to the perceived lack of

[13] Two also mentioned that they would not buy a second-hand fridge (for reliability and service concerns).
[14] For refrigerators, purchase cost is very important followed by aesthetics (EE is not taken into account except for the 5-star resorts); for air conditioning, technical characteristics (capacity) along with purchase price and EE are most important; for lighting, EE is the most important; for water heating, solar heaters are the main technology of choice; for water pumps, price and 'after-sales maintenance service' were also important.

difference in efficiency between new machines (mentioned by half). Another participant thinks that higher EE likely leads to declined performance (ability to cool product quickly).

Greek hotel managers stated that they generally take advantage of cheaper night tariffs where possible (washing machines, for example). They, however, stated that cheaper night rates reduce the incentive to invest in EE (an exception here relates to lighting and refrigeration). In terms of the motives for investing in EE, all participants said that a "green image" is very important to them. Importantly, participants also noted how "star" categories and "*Travel life"* certification are linked to environmental credentials (which depends on EE, among other factors) and how big tour operators are demanding eco-standards from local hotels.[15]

The effects of current information policy

For Spanish accommodation firms, information about EE is mainly acquired through the supplier or trusted person, followed by the regulatory energy label. Only two participants are not aware of energy labels, but mainly because they rely completely on supplier information. While some issues of understanding were raised, the majority of participants (that are aware of the label) trust the information as they consider it to be controlled and regulated (two participants do not consider energy labels trustworthy and used the example of the Volkswagen controversy to demonstrate this).

While there is no regulatory EE information for commercial appliances in Ireland, participants were asked how they assess the efficiency of prospective appliances (we note that this question was not exhaustively explored as EE was not highlighted as important). One participant thought that an EU rating system was in place (he, however, corrected himself following an inspection of a manufacturer's brochure during the interview). Another suggested that she could ask the manufacturer (but added that she never has). One participant mentioned that manufacturers provide information on how to use appliances more energy-efficiently (correct stocking levels, for example) rather than on the general EE of the unit at the point of sale.

For Greek hoteliers, the retailer is the main source of EE information and all are unaware of any official labelling schemes for appliances/machinery (besides the standards of ISO 14001 and *Travel Life*). However, the provided information does not necessarily promote the demand for more energy efficient technology unless it is embedded within broader schemes of "star" allotment or certification by tour operators. The notable exception here is led technology and air conditioning.

Changes to information policy

Almost all Spanish participants of the accommodation sector think that the energy label can be improved to facilitate understanding. Suggestions include information that is more accurate and better explanations

[15] There is currently a growing pressure to undertake energy efficient schemes due to a change in the process of allotting Greek hotels 'star' categories. The link of 'star' categories with energy efficiency is established through the high scores obtained when resorts have implemented eco-innovations in areas of water, waste and electricity use. The *Travel life* scheme uses criteria for energy, water and waste use along with socioeconomic impact indices to community, workers' welfare and environment.

of symbols and the categorical scale. While no participant suggested the inclusion of energy cost information, participants were asked to comment on its relevance. Five (of eight) participants consider monetary information useful and relevant ("Money is what people really value while there is a lack of climate change awareness in our generation"). The other participants expressed a lack of trust in monetary information and stated that such information would be manipulated to favour certain brands and sales. Concern was also raised in relation to the accuracy of monetary information as energy prices vary and consumption is highly dependent on customer behaviour.

Most Irish firms think that an EU-style EE scheme would likely affect their investment decision (one said it would not). These three participants also said that the EU-style categorical rating system was clear and easy to understand. There were few suggestions on how the EU label could be improved but one participant mentioned that a "performance" indicator (ability to cool) would be useful. Participants were then shown a prototype of an energy cost label (ten year). All participants were supportive of this information and all agreed that it would affect their investment decision. Two participants thought that this information is better than the EU-style and one thought that both labels should be used in conjunction. One mentioned that this information would help him put forward a business case for a certain appliance. Another mentioned that cost information would likely be a "selling point". There were some suggestions on how the monetary label could be improved. In terms of the duration, most thought that ten years is probably too much – one suggested five years and two suggested one year. When asked if costs should be on a colour-coded categorical scale (similar to the EU), half the participants thought that a stand-alone figure was fine.

Greek hoteliers highlighted the need for a trustful and effective information policy. When asked about the form of such information, three (of four) mentioned commercial exhibitions and, to a lesser extent, compulsory EE labels. One participant insisted that EE labelling for the resorts, as a whole (an energy efficiency star") would be useful rather than for specific machinery/appliances. This would give the proper incentive to hotel owners to invest in EE and to reap the benefits of sustainable tourism. Participants were then shown a prototype of a monetary energy label for professional refrigerators, which displayed annual savings. They all agreed that this information is important, but could be misleading as conditions influence electricity consumption and bills considerably.

3.4 Agriculture sector

In the agriculture sector, 3 FGs and 4 IDIs were executed where the focus was on the main energy use in that sector. Diversity in energy consumption in the agriculture sector is represented by different types of businesses, which is captured by different FGs for this sector – transport and machinery/appliances.

- ***Transport*** (4 IDIs for tillage farmers in Ireland and 1 FG in Greece);
- ***Machinery/Appliances*** (2 FGs; 1 FG for dairy farmers in Ireland and 1 FG in Greece).

3.4.1 Agriculture: Transport

Background

Tractor investment decisions were explored in Greece and Ireland. In Greece, recruitment was undertaken in cooperation with the farmers' association of Larisa ("Enosi Larisaion Agroton"), central Greece. A systematic effort to account for gender, age, experience with and size was carried out (see Section 6.1).[16]

In Ireland, four IDIs with tillage farmers were conducted. Recruitment was achieved by contacting the coordinators of the *Teagasc* (Irish state advisory body) "Discussion Group" advisory scheme.[17] It should be highlighted that Discussion Group participants are possibly not representative of the farming population (likely larger). Section 6.1 describes the group characteristics. There is a good mix of farm sizes (350, 600, 500 and 3,000 acres), all participants are male, full-time farmers who rely exclusively on farm income, and most (one exception) are exclusively tillage-based.

Attributes which affect the purchasing decision

In Greece, three participants said that they first decide on a specific horsepower (for the specific job) and then look for the best price (the level of state subsidization also affects the investment decision). Fuel expenses, which were mentioned by all, are considered to be directly associated with horsepower. In terms of ranking, purchase price and horsepower appear to be the most important attributes, followed by "other technical characteristics" and fuel consumption. The remaining attributes are of lesser importance and can be summarised under "operational easiness" (comfort and safety of the driver's cabin) and back-up service.

A different mix of attributes were highlighted in Ireland. Similar to Greek farmers, all suggest that they require very specific machines (horsepower, for example) for specific tasks. Most participants (three of four) appear to be extremely loyal to certain brands/dealers. This loyalty is driven by past experience in relation to back-up service, reliability and resale value (one participant recently switched dealer/model due to poor back-up service). Another participant also mentioned that he would not switch brands as he has a sizable stock of replacement parts for his current brand.[18] Price is a factor for all participants, but one stated that there isn't much variation between dealers and brands in this regard.

Opinions towards energy efficiency

The Greek group agreed that although environmental and climate change issues are becoming more important, the incentive to prioritize fuel efficiency is still very weak. Furthermore, paying more now for reduced future energy costs is "not an option". Greek participants, as already mentioned, state that fuel consumption is directly related to horsepower. However, once a level of horsepower is decided, farmers think that there is negligible difference in efficiency. There is, however, the opinion that older tractors are

[16] This is the biggest farmer cooperative in Greece with 15,000 members. The focus group was initially planned for February 2017 but due to difficulties was postponed to May 5th, 2017. This period coincides with many agriculture activities, so from 14 farmers accepting the invitation, six were in attendance.
[17] Discussion Groups bring farmers of similar systems together to discuss best farming practices a number of times per year.
[18] He also stated that he would have to retrain his employees if he switched brands (controls differ).

less efficient, and most would not buy second-hand for this reason.[19] The quest for fuel efficiency appears to be a by-product of the financial crisis and rising fuel prices in general. In this context, the importance of reducing fuel expenses has declined in the face of rising taxes and prices of other inputs. Participants also discussed the important role of tractor-sharing cooperatives which facilitated the investment in larger, more fuel-efficient tractors.

In Ireland, all participants show a high level of knowledge in relation to the fuel consumption of their current machinery – most knew the exact fuel required for specific tasks and all consider fuel as one of their largest costs of production.[20] However, despite this, EE is not important because new tractors are considered to have very similar consumption levels (mentioned by three of four).[21] One also mentioned that advertised consumption differences are not reliable as they are entirely dependent on situational factors (weather and soil, for example). Only one farmer voiced a different opinion and stated that efficiency plays a role in his investment decisions and that there are significant differences between machines (this farmer also said that he is motivated both by environmental and cost considerations). Two suggested that the trend towards bigger machines has led to significant efficiency gains over the past twenty years.

The effects of current information policy

Although there is no regulatory EE information for farmers in the EU, participants were asked how they gauge fuel efficiency. Greek farmers mentioned that this information is usually included in brochures but, they added, is rarely discussed by the salesman in detail, if at all. Similar to Ireland, three participants questioned the reliability of fuel efficiency information given that it highly dependent on the specific circumstances of tractor use (crop type, for example). Most participants (five of six) said they depend heavily on other farmers' experience. This insight is backed-up by salesmen, who stated that most farmers follow the choices of other farmers, especially if the latter are opinion-makers (i.e. farmers who run big, successful farms).

Very similar results are observed in Ireland – EE information is primarily acquired through discussions with other farmers (this finding may be a symptom of the fact that these particular farmers meet regularly) and one farmer said that there is a general consensus of what brands are more efficient. Two other sources were mentioned – manufacturers (dealers) and online resources (for example, *DLG* has extensive information on a range of machines). However, one stated that he does not trust this information and that test conditions are not relevant to Irish soil conditions. Two reiterated their opinion that efficiency differences between new machines are too small to matter.

[19] The two female participants also added that they wouldn't contemplate buying a used tractor because they want to streamline their farming activity with modern farming technology, a factor they regard as a prerequisite for a profitable management of their farms. Only the young farmer said that due to economic reasons he currently uses a second-hand tractor.
[20] Two farmers mentioned that fuel is their second largest expense and one said that high fuel expenses are out of his hands – you just "get on with it".
[21] However, one participant clarified that there are efficiency differences when it comes to haulage.

Changes to information policy

Greek farmers consider fuel efficiency labels for tractors implausible since fuel consumption depends heavily on usage and maintenance. Furthermore, the most trustful source of information on fuel efficiency of tractors is acquired through peers. However, one participant remarked that an EU-style labelling system, with clear indications of underlying assumptions, would gain trust over time. Participants were then asked if a monetary estimate of savings achieved with fuel efficiency would be useful in their purchasing decisions (they were shown a prototype fuel forecast label for tractors). The entire group thought that this would be a useful indicator and mentioned the ease with which a monetary estimation of fuel savings promotes better management. When asked if an indication of fuel efficiency in relation to a benchmark (i.e. the average annual fuel consumption of similar tractors on the market) would facilitate things further, all participants agreed.

While no Irish farmers showed strong support for an EU-style labelling scheme, two seemed slightly supportive, provided that it is independent, credible and standardised (one, however, stated that this information, even if relevant, would not lead him to change brand). Two, again, stressed that energy consumption is too behaviourally- and environmentally-specific for a standardised label. In terms of monetary labelling, the group was again divided, with two somewhat supportive and two against. For those in favour, there was no consensus on the format (per year, per hectare, relative to other machines, for example). However, both said that such information would likely impact their investment decision, provided that there are sizable differences across machines.

3.4.2 Agriculture: Appliances/Machinery

Background

CONSEED partners in Greece and Ireland explored agriculture machinery. For this analysis, both partners specifically discussed dairy farm milking parlour machinery. In Greece, participants were chosen according to age, level of education and size of dairy farm. The final group (seven participants) has a diverse range of farmers (see Section 6.1) – all are owners/managers and ages range from 30 years to 58 years.[22]

In Ireland, recruitment was achieved through the coordinators of the *Teagasc* (Irish state advisory body) 'Discussion Group' advisory programme. Discussion Groups bring farmers of similar systems together to discuss best farming practices a number of times per year. The FG was carried out immediately after the Discussion Group proceedings (twelve farmers).[23] While farmer demographics were not collected, it should be highlighted that Discussion Group participants are generally larger and more profitable than the farming population. Furthermore, a visual observation of the group indicates that all participants are male and that ages range from mid-20s to late-50s.

Attributes which affect the purchasing decision

Farmers in Greece were asked to imagine that they were investing in a new milking machine. A broad range of attributes were discussed, including purchase price, energy and fuel cost, technical characteristics, operational easiness, aesthetics and after-sale services. Purchase price appears to be a driving factor, with payment option (monthly instalments, for example) playing a very important role. Following this, technical characteristics, which include factors such as automation and computerisation, are ranked second. Energy costs, including all on-farm expenses for fuel and electricity, are third (ranked first by one and second by two).

A slightly different questioning strategy was employed in Ireland – farmers were asked to imagine they were replacing a component of their milking machine (an example of a vacuum pump or plate cooler was provided) and to discuss what factors are most important in this investment decision. Only two characteristics were provided by the group – price and back-up service. Unlike Greek farmers, the quality of back-up service, which is mostly based on past experiences with suppliers, is the most important consideration. Reliability and production continuality appears to be paramount. One commented that he is confined to his current milking parlour manufacturer when investing – if something fails, he calls his sales representative for a replacement and that "you're inclined to stick with that machine".

[22] Recruitment of participants was undertaken by the research team in cooperation with farmers' cooperative union "*ThessGala*" based in the city of Larisa, central Greece. *ThessGala* cooperative has 95 members with 55 dairy farms producing 130 tonnes milk daily covering 10% of the Greek demand for fresh milk.

[23] Furthermore, participation was generally quite poor and the discussion was dominated by three/four individuals, despite the moderator's best efforts at getting input from the full group. This lack of participation may have been due to timing – the focus group took place following almost two hours of regular discussion and it is likely that farmers were fatigued. The group also took place during the start of lunch – it is possible that farmers were eager to leave.

Opinions towards energy efficiency

Given that electricity bills make up 10% of milk production cost in Greece, energy efficient management of dairy farming activities appears to be very important to farmers. Participants unanimously cited heating and cooling as the main drivers of energy cost. When asked how they lower their energy consumption, most admitted that subsidized electricity tariffs reduce to motive to conserve, but that EE will likely be a priority in the future. The motivations for reducing future energy use appear to relate to cost savings (four of seven participants) and the positive marketing effects of running a lower climate footprint agri-food business.

While EE is less of a concern in Ireland, there was some consensus that installing a variable speed vacuum pump saves energy and has a short payback period. However, the lower importance of EE in general may be due to the lower share of energy in total production costs (2-4% appeared to receive consensus). When asked about what components of the milking parlour consume the most energy, most of the group initially did not know. However, following some discussion, it was suggested that cooling (of milk) and heating (of water) are likely the main consumers (consistent with Greek findings). The participants were then asked why EE is not a priority. One participant stated that a new, lower energy-consumption milking parlour may be underpowered and therefore not suitable for production. Another suggested that he assumed that all manufacturers supply equally efficient milking parlour machinery.[24] The motivations for reducing energy are dominated by cost considerations, with environmental concerns playing no role. However, similar to some Greek farmers, one participant suggested that "sustainability" is now being demanded by their customers, particularly in relation to water conservation, but that energy-saving (electricity) is not a sustainability concern.

The effects of current information policy

There is no EE labelling for agriculture machinery in Ireland and Greece. However, farmers in Greece highlighted that while this information can be provided by the supplier, it is often excluded, and less than half have asked for this information when investing in the past.[25] Given though that there is no state controlled, mandatory labelling policy on agriculture machines, any information by the market on energy/fuel efficiency is considered by most participants to be unreliable. Irish dairy farmers were also asked how they assess the efficiency of prospective investments. All appear to agree that there is currently no independent information available for them. However, this question is somewhat redundant given that EE was not highlighted as a key concern.

Changes to information policy

In Greece, all participants think that current policies do not promote EE investment and most (six out of seven) support a mandatory EE labelling scheme (with clear explanations of the underlying assumptions). Participants were then shown a prototype energy cost forecast label for a milking machine. All thought that

[24] However, two farmers did mention that they would install a variable speed vacuum pump to save energy and most appeared to think that this investment has a short payback period.
[25] Two participants highlighted that automation systems (robotics) in milking machines have adequate information on energy efficiency.

this would be a useful indicator and mentioned the ease with which a money metric of EE promotes better management. When asked if energy consumption should be displayed relation to a benchmark (i.e. the average annual energy consumption of similar machinery on the market), all participants agreed.

A similar sentiment is observed in Ireland. The group was shown an EU-style EE label. Despite the fact that EE is less important in Ireland, there was a consensus that this information would be useful. All consider the energy label to be clear and easy to understand and there was no suggestions for improvement.[26] When shown a prototype of an energy cost label, most found that a monetary figure would be more useful than the EU label (as long as it was "independent" and "standardised"). Some, however, thought that the colour-coded categorical scale of the EU label was informative for showing the relative efficiency of a machine. There appears to be some support for a longer forecast – some suggested five years, while others suggested seven (the depreciation period). However, overall, there was no consensus for how this monetary information should be displayed - some thought a colour-coded scale would be useful while others favoured a combined (monetary cost plus categorical scale).

3.5 Industry sector

There were 1 FG and 8 IDIs executed for industry consumers with the focus on the main energy use in machinery sector. Respondents – people who make investment decisions in their company (general managers, owners, Heads of purchasing) – were recruited through experienced subcontractor partner who contacted and chose suitable industry organizations.

- ***Machinery*** (1 FG in Norway and 8 IDIs in Slovenia).

3.5.1 Industry: Machinery

Background

Machinery investment decisions by industrial firms was explored in Norway and Slovenia. In Norway, one online FG (moderated by a subcontractor) was conducted which included six individuals involved in investment decisions.[27] The group was gender balanced (three males and three females), with two from management, two from finance, and two in other roles, and with a good age mix (range 31 to 74) (see Section 6.1). In Slovenia, an external subcontractor conducted eight IDIs with individuals involved in the investment decision-making process. The group showed a heterogeneous spread of sectors, company sizes and demographics (age, gender and education).

[26] There was some concern from one participant that the EU-style labelling scheme (he was referring to cars) was misleading, and stated that two A-rated cars can have very different consumption levels.

[27] Significant recruitment difficulties were experienced by CICERO (Norway). The initial plan was to recruit participants for two groups, but two newsletters reaching over 8000 people, more than 40 direct phone calls and 40 personal emails did not result in more than seven participants signing up (of which six eventually participated). The Federation of Norwegian Industries, the Enterprise Federation of Norway, and Industry Energy (the trade union for those who work in the industry and energy sectors) all contributed to the recruitment effort by contacting their members.

Attributes which affect the purchasing decision

In Norway, it should be noted that there is considerable variation in investment types, ranging from more than 16 billion NOK (a specific oil field) to probably some hundred thousand NOK. Furthermore, investment horizons also differed considerably. In terms of important attributes, five (of six) rated safety first, while one considered energy as most important.[28] Two participants stated that the total cost (i.e. purchase plus operating cost) is second to safety. Furthermore, two participants mentioned quality (one described this in more detail as "purity of the product"). All participants highlighted that there are set procedures in place for investment decisions, the complexity of which appears to depend on the investment amount (some establish project committees and involve external expertise in the decision process).

Participants in Slovenia highlighted that they are usually buying very specific-use machines with few supplier options. They also normally buy from firms with which they have past experience. In terms of the most important investment considerations, all participants stated that price in combination with quality/reliability is ranked first. They stressed that both of these considerations must be considered simultaneously – a low price is irrelevant if quality is low. Delivery date was also mentioned by some as delays affect profitability (however, delivery date is normally not an issue due to the advanced investment planning process). Similar to Norway, investment decisions involve structured procedures and input from employees in various departments, with the final decision normally being made by the CEO or investors. For multinational firms, the Slovenian branch prepares the investment proposal/appraisal, but the final decision is made abroad.

Opinions towards energy efficiency

Opinions towards EE differed substantially in the Norwegian FG, which is likely representative of the heterogeneous sample employed. As expected, the importance of EE appears to be correlated with the share of energy in production costs – one participant considers energy to be the most important investment factor, while another highlighted the energy is but one element of total costs (implying a lower importance). Risks associated with increased energy prices were also raised.[29] The participants were also asked whether EE matters because of costs, the environment or other considerations. The participants also mentioned several examples where improved EE does not reduce emissions, or where measures to reduce greenhouse gas emissions would increase energy use. For example, two participants mentioned that installing equipment to clean emissions (including carbon capture and storage) would increase energy use, and one participant highlighted that because electricity in Norway comes from hydropower, reducing energy use will not reduce emissions. Two participants also mentioned that because industry is part of the EU ETS, reducing emissions in industry in Norway will not result in lower emissions globally, because the system as a whole will meet the emissions cap regardless.

[28] Participants further explained that safety relates to both process safety and personnel safety.
[29] One answered that their strategy is to enter into long-term electricity price agreements, which are indexed against the price of the final product, another that they have to ensure the investments are "robust" also for low (product) prices.

EE plays a lesser role in machinery investment in Slovenia (although it was mentioned by two in the context of energy consumption). It was stressed that return on investment and cost savings are important preconditions for EE investment.[30] In this respect, investments into infrastructure (for example, renovations, heating systems and lighting) are normally prioritised over machinery because of the substantial energy/cost savings of the former.[31] Furthermore, participants do not think that there is a significant difference in the efficiency of machines (and they state that they are capable of calculating EE with ease). Other factors associated with energy consumption were also highlighted. For example, some participants mentioned investing in electricity generation but commented on the large initial investments and long payback periods. Slovenian firms also appear to encourage behavioural changes (turning off lights was highlighted) and some adjust their production according to energy tariffs (peak/off-peak) where possible.

The effects of current information policy

There is no regulatory EE information for industrial machinery in either country. The discussion in Norway focused on awareness of support schemes for EE. It seems the support schemes of Enova (the Norwegian government enterprise for promoting environmentally friendly production and use of energy) are relatively well known, Gassnova (support for carbon capture and storage) was mentioned by one participant, but other schemes – such as R&D support from Innovation Norway or the Research Council of Norway – are not as well known.

In Slovenia, the majority of respondents are not familiar with subsidies to support EE (only one mentioned receiving a subsidy in the past) and most are not keen towards this policy – there is too much bureaucracy and subsidies are unfairly assigned and rarely approved. Most would be in favour of income tax relief to stimulate EE investment. In terms of information on energy consumption, Slovenian participants highlighted that some components (electric motors, for example) are classified into classes, which help in the decision-making process.

Changes to information policy

The potential for energy labels was discussed in Slovenia (only), where participants discussed existing domestic appliance and building schemes. In general, the vast majority of respondents are not supportive – they do not consider labels useful or informative and they think that labels have little effect of decision-making (appliance schemes slightly more supported than building schemes). The potential for monetary cost labels was also explored and again no support was shown. This is mainly due to two reasons: first, average energy consumption cannot be estimated as it is influenced by several situational factors; second, they already know how to evaluate EE. Furthermore, participants commented that in order to estimate an energy cost forecast, a common energy price is needed. This is not feasible as large companies often buy their electricity for one year in advance. Some participants also mentioned that EE is connected to other factors (e.g. heat generated, cooling required and machine placement) which would be ignored in an average

[30] Investment horizons vary somewhat, but two to three years (maximum five) were mentioned.
[31] Return of investment is an especially important decision-making factor for foreign owned companies, especially if they do not have long-term plans for the Slovenian branch.

consumption figure. Finally, participants believe that current technical data (e.g. energy consumption at maximal operating power per hour) is a good, objective indicator of energy consumption, which can be used for further calculations.

4 Conclusion

Energy labelling has triggered more energy efficient products being placed on the market, resulting in energy and cost savings. However, while these labels are now used across Europe, relatively little is known about how consumers interact with these labels and how they affect the relative importance of energy consumption in the decision-making process. To investigate whether displaying monetary cost information on appliances, property and transport would further encourage investment in EE, 17 FGs and 40 IDIs were conducted across 5 countries.

Price is the most important attribute in investment decisions across all sectors. For some sectors, EE is important and for some it ranks quite low due to lack of understanding and distrust in indicators. The potential of monetary energy labels shows mixed support. Some participants find it useful and relevant while others expressed a lack of trust and concerns about possible manipulation.

In the **household** sector, price is the most important attribute across all characteristics. Besides price, dimension and capacity feature strongly for **appliances**; location, size and condition are important for **properties**; and in case of **transport**, safety, running costs and size are essential. The potential introduction of cost information was generally well received but several concerns were raised, e.g. cost estimates are implausible due to user and situational heterogeneity.

Price is also highlighted as the main factor across all categories also in the **services** sector. For **property**, location, public transport, accessibility and EE are also important. In the case of **transport**, firms are more concerned with EE and a range of technical characteristics while for **appliances**, attributes such as brand, aesthetics and reliability are vital. In the services sector in general, EE is less important than other attributes. Again, there are mixed opinions about energy labelling and its use. Some find labels informative while others find them unclear and untrustworthy. Services firm representatives made a number of suggestions in relation to labels. In terms of adding monetary information, there was also mixed support.

Besides price, other important characteristics in the **agriculture** sector include power, ease of operation, reliability, resale value and energy costs. EE is a low priority when buying tractors. In relation to milking machines, EE ranks low in Ireland but high in Greece. There are no EE labelling requirements for tractors and farmers express no demand for it. However, farmers are supportive to EE labelling for milking machines. Potential labels with added monetary unit are supported in Greece but less so in Ireland (monetary labelling for milking machines is supported in both countries).

For the **industry** sector, a range of attributes was highlighted, including safety, price, running cost, quality, reliability and energy. Some of the industry representatives disagreed that EE leads to reduced emissions and therefore firms often prioritise property investment and upgrades over machinery investment, and suggest that there is little EE difference between new machines. In terms of the motivations for investing in EE, costs are important but compliance with regulations was also stressed. Currently there is no EE labelling for machinery and firms would not find such information useful. Some suggest that current technical data from manufacturers is sufficient and therefore the monetary labelling is not needed.

The collected qualitative data will form an important input to the design and implementation of the consumer surveys, field trials and choice experiments later in the CONSEED project. These results together with those of the quantitative analyses of further work packages can be used to identify areas where consumer decisions can be most effectively influenced by EE policy. In collaboration with relevant stakeholders, the general public and policymakers, sound policy recommendations will be provided.

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6 Appendices

In the following appendices additional information about group characteristic, questions, props are available plus an example of informed consent for FG participants.

6.1 Appendix A: Group Characteristics

Table A. 1: Focus Group Participant Characteristics for Household Sector (appliances) in Spain

Participant	Gender	Education	Age	Number of dwellings	Household size	Socio-economic status	Duration since the last appliance bought (in month)
1	Female	High	49	2	3 (1 child)	High	15
2	Male	Medium	47	2	2	Medium	1
3	Male	Medium	48	2	4 (2 children)	Medium	1
4	Male	Medium	37	2	2	Medium	< 12
5	Female	Medium	57	1	1	Low	< 12
6	Female	Medium	52	1	3 (1 child)	Low	< 12
7	Male	High	49	1	4 (2 children)	High	< 12
8	Female	Medium	35	1	4 (2 children)	Medium	< 12

Table A. 2: First Focus Group Participant Characteristics for Households Sector (Appliances) in Greece

Participant	Gender	Age	Education	Profession	Income class1	Marital status
1	Female	24	17	Student	Very low	Single
2	Male	34	16	Private employee	High	Married
3	Female	44	16	Public employee	High	Married
4	Male	55	20	Public employee	High	Single
5	Male	62	12	Private employee	Middle	Married
6	Male	35	12	Self employed	Middle	Married

Note: Income class: Very High (>35,000); High (20,000 – 35,000); Middle (12,000 – 20,000); Low (6,000 – 12,000); Very low (<6,000)

Table A. 3: Second Focus Group Participant Characteristics for Households Sector (Appliances) in Greece

Participant	Gender	Age	Education	Profession	Income class[1]	Marital status
1	Female	22	12	Private employee	Very low	Single
2	Female	26	12	Private employee	Very low	Single
3	Male	38	17	Self employed	Middle	Married
4	Female	55	16	House keeping	Very High	Married
5	Male	32	19	Unemployed	Low	Single
6	Female	46	16	Self employed	High	Married

Note: Income class: Very High (>35,000); High (20,000 – 35,000); Middle (12,000 – 20,000); Low (6,000 – 12,000); Very low (<6,000)

Table A. 4: Focus Group Participant Characteristics for Household Sector (Property) in Ireland (renters)

Participant	Gender	Age	Occupation	Highest Education	Marital Status	Number of Children
1	Female	25	Student (postgraduate)	Degree	Single	0
2	Female	19	Student (undergraduate)	High School Diploma (US)	Single	0
3	Male	29	Software Engineer	Masters	Single	0
4	Female	34	Teacher	Masters	Married	1
5	Male	30	Tech Support Analyst	Secondary School	Single	0

Table A. 5: Focus Group Participant Characteristics for Household Sector (Property) in Ireland (buyers)

Participant	Gender	Age	Occupation	Highest Education	Marital Status	Number of Children
1	Male	33	Lawyer	Professional Qualification	Single	0
2	Male	37	Analytics Manager	PhD	Single	0
3	Female	25	Accounts Assistant	Diploma	Married	0
4	Female	31	Medical Scientist	Masters	Single	0
5	Male	27	IT Business Analyst	Masters	Single	0
6	Male	29	Business Analyst	MBA	Married	0
7	Female	65	Retired	Degree	Widowed	3
8	Male	35	IT Consultant	Masters	Married	0

Table A. 6: Focus Group Participant Characteristics for Household Sector (Property) in Ireland (proprietors)

Participant	Gender	Age	Occupation	Highest Education	Marital Status	Number of Children
1	Male	27	Software Developer	Secondary	Single	0
2	Female	53	Company Director	Masters	Divorced	3
3	Male	70	Residential Proprietor	Diploma	Married	2
4	Male	64	Proprietor	Degree	Married	0
5	Male	34	HR Consultant	Masters	Single	0
6	Female	46	Marketing	Postgraduate	Single	2
7	Male	61	Engineer	Degree	Married	3

Table A. 7: Focus Group Participant Characteristics for Household Sector (Property) in Slovenia (owners)

#	Gender	Age	Education	Income	House / apartment	Old / new
1	female	51	Higher education / first Bologna cycle	801 - 1200 €	apartment	old
2	female	35	University degree / second Bologna cycle	n.a.	apartment	old
3	male	30	College degree	1201 - 1600 €	apartment	old
4	male	32	Specialization / Master / PhD	1201 - 1600 €	house	old
5	female	45	2 or 3-year secondary vocational school	401 - 800 €	apartment	old
6	female	37	University degree / second Bologna cycle	1201 – 1600 €	apartment	old
7	female	55	4 or 5-year secondary school	801 - 1200 €	apartment	old

Table A. 8: Focus Group Participant Characteristics for Household Sector (Property) in Slovenia (renters)

#	Gender	Age	Education	Income	House / apartment	Old / new
1	female	50	4 or 5-year secondary school	801 - 1200 €	house with more apartments	old
2	male	44	University degree / second Bologna cycle	1201 - 1600 €	apartment	old
3	female	52	University degree / second Bologna cycle	2001 - 2400 €	apartment	new
4	female	38	University degree / second Bologna cycle	801 - 1200 €	apartment	old
5	female	32	4 or 5-year secondary school	1201 - 1600 €	apartment	old
6	female	57	Specialization / Master / PhD	1601 - 2000 €	apartment	old
7	male	45	4 or 5-year secondary school	1201 - 1600 €	apartment	old

Table A. 9: Focus Group Participant Characteristics for Household Sector (Transport) in Norway

Participant	Gender	Age	Do you own a car?	What type of car do you own?	Approx. 1000 km/year	Lives in…
1	Female	23	Yes	Gasoline	30	City > 50,000 pop
2	Male	25	Yes	Electric	20	Oslo
3	Male	31	No, plan to buy			Oslo
4	Female	34	Yes	Diesel	20	Rural < 2,000 pop
5	Female	37	Yes	Diesel + Gasoline	20	Town 5,000-50,000 pop
6	Male	45	Yes	Diesel + Gasoline	10	Oslo
7	Male	65	Yes	Hybrid	10-12	Town 5,000-50,000 pop
8	Female	46	Yes	Diesel	20	City > 50,000 pop
9	Male	23	Yes	Gasoline	20	Oslo
10	Male	36	No, plan to buy			City > 50,000 pop
11	Female	31	No, plan to buy			Oslo
12	Female	33	Yes	Gasoline + Electric	20	Town 5,000-50,000 pop
13	Male	37	No, plan to buy			Town 5,000-50,000 pop
14	Female	41	Yes	Diesel	20	City > 50,000 pop
15	Male	33	Yes	Gasoline	10	Oslo

16	Female	62	Yes	Diesel	15	City > 50,000 pop
17	Female	47	No, leasing	Diesel (leasing)	12	City > 50,000 pop
18	Female	29	Yes	Gasoline	10	City > 50,000 pop
19	Male	25	No, plan to buy			Town 5,000-50,000 pop
20	Female	28	No, plan to buy			Oslo
21	Female	32	Yes	Diesel	15	Rural < 2,000 pop
22	Male	26	Yes	Gasoline	7	City > 50,000 pop
23	Female	44	Yes	Diesel	12	Oslo
24	Female	54	Yes	Gasoline	12	Rural < 2,000 pop
25	Male	56	Yes	Gasoline	10	Small town 2,000-5,000 pop
26	Male	27	No, leasing	Electric	20	Oslo

Table A. 10: Focus Group Participant Characteristics for Services sector (Property) in Ireland

Participant	Position in Company	Company Sector	Company Age	Number of Employees	% Sales Exported	% Business Property Owned
1	Principal	Consultancy	4	1	0%	100%
2	Business Development Manager	Travel	35	65	20%	0%
3	Sales rep	Financial services	33	15,000	0%	70%
4	Business Development Manager	Professional Services – Training	12	12	DK	0%
5	Communications Officer	Charity	11	90	0%	0%
6	Branch Manager	Financial Services	234	10,000	NA	NA

Table A. 11: Focus Group Participant Characteristics for Services Sector (Transport) in Spain

Participant	Dedication	Number of employees	Car fleet size	Tourism vehicle	Van vehicle
1	Driving school	4	3	3	0
2	Refurbishment	3	3	0	3
3	Solar system construction	11	3	0	3
4	Driving school	38	18	18	0
5	Air conditioning, boiler, solar system installation	800	515	135	380
6	Electricity	350	120	40	80
7	Industrial and decorative painting	5	3	0	3
8	Construction	35	11	9	2

Table A. 12: Interview Participant Characteristics for Services Sector (Transport) in Greece

Participant	Gender	Position in the firm	Age	Experience (years)	Size of the firm (qualitative)	Location	Ownership (in %)
1	Male	Manager	35	10	Very big (about 20,000 vehicles)	Athens	0
2	Female	Manager	30	7	Very big (about 20,000 vehicles)	Athens	0
3	Male	Manager	45	25	Small (20 vehicles)	Rhodos	50
4	Male	Manager	60	30	Medium (40 vehicles)	Rhodos	100

Table A. 13: Interview Participant Characteristics for Services Sector (Appliances) in Ireland

Participant	Position in Company	Company Sector	Company Age	Number of Employees	Gender
1	Owner/Operator	Catering and Cookery School	2	0	Female
2	Owner	Delicatessen and café	8	7	Female
3	Manager	Café/Restaurant	4	70	Male
4	Owner	Café/Restaurant	6	23	Male

Table A. 14: Focus Group Participant Characteristics for Services Sector (Appliances) in Spain (Accommodations)

Interviewee	Accommodation type	Geo climatic area	Years in operation	Stars rating	Number of rooms	Occupancy rate		Type of appliances	Purchasing decision
						High season	Low season		
1	Cottage	Mediterranean mountain	One month	-	11	High		Heating (oil boiler) Hot water system (oil boiler) Common appliances: gas stove and TV	Maintenance person
2	Cottage	North-mountain	9 years	-	6	High	Medium	Heating (gas boiler) Hot water system (gas boiler) Common appliances: washing-machine, dishwasher, 2 fridges, juicer and toaster	Owner
3	Guesthouse	North-Mountain	30 years	-	11	-	Closed	Heating (gas boiler) Hot water system (gas boiler and hot water tank) Appliances in rooms: TV	Owner
4	Hotel chain	Urban	16 years	4	77 - 148	High	High	Heating (gas boiler) Hot water system (gas boiler) Cooling (intelligent system) Appliances in rooms: TV and minibar / oven in kitchen	Owner
5	Hostel	North-urban	8 years	-	6	High	Low	Heating (gas boiler system) Hot water system (gas boiler) Cooling (in 3 rooms)	Management team

								Common appliances: fridge, microwave, washing-machine, hair-dryer, fan	
6	Hotel	North urban	7 years	4	202	Medium	Medium	Heating (water boiler) Hot water system (water boiler) Cooling (water boiler) Appliances in rooms: minibar	Owner
7	Guesthouse	North-urban	50 years	-	18	High	Low	Heating (oil boiler) Hot water system (oil boiler) Common appliances: industrial washing-machine Appliances in rooms: TV	Owner
8	Hotel	Mediterranean coast	57 years	5	37	High	Medium	Heating and cooling (heat pump) Appliances in rooms: mini-bar, TV, coffee-maker, hair-dryer	Management team

Table A. 15: Interview Participant Characteristics for Services (Machinery/Appliances) in Greece

Participant	Gender	Position in the firm	Age	Experience (years)	Size of the resort (in beds)	Ownership (in %)
1	Male	Manager	62	34	400	100
2	Male	Manager	55	25	120	0
3	Male	Manager	39	10	80	50
4	Male	Manager	32	7	5,000	30

Table A. 16: Interview Participant Characteristics for Agriculture Sector (Transport) in Ireland

Participant	Position	Full-time farmer?	Acres	% Tillage	Farming % of total Income	# Employees
1	Owner	Y	3000	100%	100%	6 (full-time)
2	Owner	Y	500	99%	100%	2 (seasonal)
3	Owner	Y	600	100%	100%	3 (seasonal)
4	Owner	Y	350	60%	100%	1 (seasonal)

Table A. 17: Focus Group Participant Characteristics for Agriculture Sector (Transport) in Greece

Participant	Gender	Position in Farm	Age	Experience in farming (years)	Cultivated land (in hectares)	% Cultivated Land Owned
1	Male	Owner and manager	53	30	100	20%
2	Male	Owner and manager	58	25	30	50%
3	Female	Owner and manager	54	10	15	100%
4	Male	Owner and manager	65	45	15	50%
5	Female	Owner and manager	30	6	80	100%

6	Male	Manager	19	1	5	0%

Table A. 18: Focus Group Participant Characteristics for Agriculture Sector (machinery) in Greece

Participant	Gender	Position in farm	Age	Farm Age (years)	Of which member in the cooperative (years)	Farm size	% Business Property Owned
1	Male	Owner and manager	48	25	7	Medium	100%
2	Male	Owner and manager	30	7	7	Large	100%
3	Male	Owner and manager	40	23	6	Medium	100%
4	Male	Owner and manager	54	40	6	Small	100%
5	Male	Owner and manager	45	30	7	Large	100%
6	Male	Owner and manager	46	12	6	Large	100%
7	Male	Veterinarian – BoD ThessGala Cooperative	58	10	10	Very large	Employee and BoD member

Table A. 19: Focus Group Participant Characteristics for Industry Sector (Machinery) in Norway

Participant	Gender	Age	Sector	Role in company
1	Female	34	Industry	Management/purchasing
2	Female	36	Industry	Finance
3	Male	64	Industry	Management (other)
4	Male	57	Industry	Communications
5	Female	31	Industry	Finance
6	Male	74	Industry	R&D engineer (recently retired)

Table A. 20: Interview Participant Characteristics for Industry Sector (Machinery) in Slovenia

Participant	Company sector	Industry	Number of employees	Position in company
1	Industry / Mining	other products of processing industry	68	technical director
2	Industry / Mining	machinery and services	25	head of department for renewable sources
3	Industry / Mining	metal and metal products	15	technical director
4	Industry / Mining	other non-metallic mineral products	160	energetics expert
5	Industry / Mining	vehicles and boats	900	energy and infrastructure expert
6	Industry / Mining	metal and metal products	120	head of finances and investments
7	Industry / Mining	rubber and plastic products	11	director
8	Construction	wood industry	15	majority owner

6.2 Appendix B: Questions

Table B. 1: Focus Group Questions for Household Sector (Appliances) in Spain

1	Which appliances have you brought recently?
2	Which are the appliances you use most at home and why?
3	How is their purchasing process? • Who (husband, wife, shop-assistant…) and what (Internet…) is involved in the decision? • What steps are taken, how much time is invested? • Where do you usually buy the appliances (shopping mall, neighbourhood store…)? • What do you take into account when you go to buy an appliance?
4	How is the purchasing process of a refrigerator? (same questions as in 3 specific for the refrigerator)
5	What are the key factors in the purchasing decision of a refrigerator?
6	How is the purchasing process of a washing-machine? (same questions as in 3 specific for the washing-machine)
7	What are the key factors in the purchasing decision of a washing-machine?
8	What is energy efficiency?
9	Do you understand it? Do you trust it?
10	Is it well explained? Have you to ask about it to the shop-assistant?
11	Do you have it into account when buying a new appliance?
12	Do you care about the consumption of appliances? Are you concerned about your energy bill?
13	Why should we buy an energy efficient appliance? What are the main obstacles for doing that?
14	How you get information about the energy efficiency of an appliance?
15	Does the shop-assistant give information about the energy efficiency? How?
16	Are you aware of the energy efficiency label and the information is presented in it?
17	What do you think about the label? Do you think it is useful?
18	How could we improve the labelling? • What should be removed? • What should be added? • What should be changed?

Table B. 2: Focus Group Questions for Households (Appliances) in Greece

1	Imagine that you are currently looking to purchase a new appliance (i.e. refrigerator) for your household. What characteristics of the appliance matter in your purchasing decision?
2	How do you rate the relative importance of these characteristics? [**Complete attribute form**]
3	What does the term “energy efficiency” mean to you?

4	Which appliance characteristics (i.e. size, age, design) drive a household's energy consumption?
5	Is energy efficiency important when buying a home appliance? Why? What percentage of your cost of living is the electricity bill? What is your source of information for the energy efficiency of an appliance you are about to buy?
6	Are you all familiar with the European energy labels for home appliances? • Have you seen an energy label before? [**Show example**]. • Do you find this information clear and easy to understand? • Do you trust this information?
7	This project is exploring new ways of presenting energy efficiency information. For example, we want to know if displaying an appliance's expected annual energy cost would make you more responsive to energy efficiency [**show example**]. • Would this information be useful to you? • Have you any suggestions on how this information could be displayed better?

Table B. 3: Focus Group Questions for Households (Property) in Ireland (renters)

1	*Warm-up question*: What do you think is the biggest problem facing Dublin renters at the moment?
2	I now want you to imagine that you are looking for a new rental property in Dublin. What characteristics of the property or area matter the most to you? There are some properties in front of you which you may find useful. [**Complete attribute questionnaire]**
3	I would like to turn to energy efficiency – in your opinion, what property characteristics affect its energy efficiency?
4	In your opinion, how important is energy efficiency to renters?
5	Are you all familiar with the Building Energy Rating (the BER cert)? [**Show example**] Have you seen this information before? Do you find this information clear and easy to understand?
6	Do you think the BER rating would affect your choice of property? Would a poor rating put you off?
7	Part of this project is exploring new ways of presenting energy efficiency information. For example, we want to know if displaying a property's expected annual energy cost would make renters more responsive to energy efficiency [**Show example**]. Do you think that this cost information would be valued by renters?

Table B. 4: Focus Group Questions for Households (Property) in Ireland (buyers)

1	*Warm-up question*: what do you think is the biggest problem facing house buyers at the moment in Dublin?
2	I now want you to imagine that you are looking for a new property on daft.ie. What characteristics of the property or area matter the most to you? [**Complete attribute form**]**.**
3	I would like to turn to energy efficiency – in your opinion, what property characteristics affect its energy efficiency level?
4	How important is energy efficiency to you when choosing a property? • Why is energy efficiency important? Cost savings or environmental reasons?
5	Are you all familiar with the Building Energy Rating (the BER cert)? • Have you seen a BER cert before? [**Show example**]. • Do you find this information clear and easy to understand? • Do you have any suggestions on how this information could be displayed better? • Do you think the BER rating would affect your choice of property? Would a poor rating put you off?
6	Part of this project is exploring new ways of presenting energy efficiency information. For example, we want to know if displaying a property's expected annual energy cost would make renters more responsive to energy efficiency [**Show example**]. Do you think that this cost information would be valued by buyers? • Have you any suggestions on how this information could be displayed better? • Is the annual cost forecast intuitive or would you suggest an alternative timeframe?

	• Should costs be placed on a relative scale like the BER?

Table B. 5: Focus Group Questions for Households (Property) in Ireland (proprietors)

1	*Warm-up question*: To get things going – what are the biggest problems facing proprietor/landladies in Dublin at the moment?
2	I now want you to imagine that you are looking for a new property on daft.ie. What characteristics of the property or area matter the most to you? [**Complete attribute form**].
3	I would like to turn to energy efficiency – in your opinion, what property characteristics most affects its energy consumption? • How important is energy efficiency to you when buying a new buy-to-let property? • Do renters value energy efficiency? Are renters willing to pay more for more efficient properties?
4	What about increasing the energy efficiency of your current investment? • Is it a good or bad investment? • How many years would it take to payback, say new windows in a property?
5	Are you all familiar with the Building Energy Rating (the BER cert)? • Have you seen a BER cert before? **Show example**. • Do you find this information clear and easy to understand? • Do you have any suggestions on how this information could be displayed better?
6	Do you think the BER rating would affect your choice of a new buy-to-let property? • Would a poor rating put you off? • Are renters put off by poor BER ratings?
7	Part of this project is exploring new ways of presenting energy efficiency information. For example, we want to know if displaying a property's expected annual energy cost would make renters more responsive to energy efficiency – **show example**. • Do you think that this cost information would be valued by you as investors? • Do you think that this cost information would change renter choice of properties? • Have you any suggestions on how this information could be displayed better? • Is the annual cost forecast intuitive or would you suggest an alternative timeframe? • Should costs be placed on a relative scale like the BER?

Table B. 6: Focus Group Questions for Household Sector (Property) Results for Slovenia

1	What characteristics of the property or area matter to you most while you are/were buying the property? [**warmup question**]? • What is the impact about cost information for renovation of the property (e.g. facade / roof repair) in your buying decision? How important for you is heating of the property? Explain. Why is/was this important? Why it does/did not matter?
2	We now want you to imagine you are looking for a new business property to buy or rent. What characteristics of the property or area matter to you most? (the size of the property, location (micro and macro), price, new vs old building, renovation of the building).
3	I would like you to think about energy consumption – what are the main factors that impact your energy bills?
4	How important is energy efficiency when buying/leasing a property? • What do you understand under this definition? Why is energy efficiency important? Cost savings? Environmental impact? Help with company image? • Are you willing to pay more for higher energy efficiency levels? • Do you intend to do anything to improve the energy efficiency of your property? When? Why? • How important is information about energy efficiency when buying a property? Would you place it among more important or less important factors? With what factors could you compare it?
5	And what about improving the energy efficiency of your current property? Is energy efficiency a good or bad investment?

6	Are you all familiar with the Energy Performance Certificate (the EPC cert)? • Have you seen a EPC cert before? [**show example**]. • Do you find this information clear and easy to understand? Is it useful for you? • Do you think the E rating would affect your choice of property? Would a poor rating put you off? • Do you have any suggestions on how this information could be displayed better?
7	Part of this project is exploring new ways of presenting energy efficiency information. For example, we want to know if displaying a property's expected annual energy cost would make you more responsive to energy efficiency [**show example**]. • How would you interpret these results? Do you understand them? Would this information be useful to you? • Have you any suggestions on how this information could be displayed better? • Is the annual cost forecast intuitive or would you suggest an alternative timeframe (for example monetary cost per square m)? • Would a monetary estimate of energy consumption – for example, and estimate of a property's annual energy cost [show an example] – be useful in your purchasing decision?

Table B. 7: Focus Group Questions for Household Sector (Transport) in Norway (Sales Personnel)

1	Have the customers decided before they arrive at the dealership which model they want? If so, based on which information? • Is the analysis of customer needs based on a standardized procedure?
2	Which costs matter the most when it comes to choosing a car model?
3	What roles does energy use play in the decision?
4	How well does the existing EU car label work? • Would it be possible to change the design to have a greater impact on sales?
5	Are these alternative labels [presented on screen] more promising? • Should an alternative label include all operating costs or only energy costs?

Table B. 8: Focus Group Questions for Household Sector (Transport) in Norway

1	You have purchased/leased or you are planning to purchase/lease a new car. Which factors are decisive for your choice of car make and model? a) When during the process do you decide whether to by an electric, hybrid, gasoline or diesel vehicle? b) To what extent have you made your decision before you visit a car dealership? c) How much trust to you place in what the sales person tells you? How useful is this information?
2	What role does policy instruments (and the uncertainty surrounding these) targeting passenger transport, such as road tolls, parking restrictions, driving bans for diesel cars, and EV benefits (and the potential removal of these), play?
3	Which costs matter the most when choosing a car? a) How important is the cost of buying/leasing a car compared to operating costs such as maintenance, fuel/electricity, parking, road tolls, insurance and the annual vehicle registration tax? b) How important is the second hand value of the car? c) Have you tried to estimate these costs? If so, did you use an in tools? Which?
4	How important is fuel consumption and electricity use? a) Why is it important? Because of the economic or the environment, or for other reasons? b) How concerned are you about potential changes to fuel/electricity prices?
5	What do you consider to be the main advantages and disadvantages of EVs/plug-in hybrids? a) Does the possibility of leasing the car make it more attractive to consider an EV or plug-in hybrid?
6	[Displaying the current EU label] Have you seen this label before? How useful is this information? Has it influences your choice of car? If so, in which way? Which other information might be useful?

7	[Displaying alternative label energy cost/month] How useful is this information? Could it influence your choice of car model? How? Why/why not? [Displaying alternative label operating cost/month] This alternative includes more costs. Is this information more or less useful than the first alternative? Is it more or less likely that it would influence your choice? Would you like to suggest other costs that should be included? [Displaying alternative labels for energy and operating costs per 10 km] These alternatives contain the same information as the first two, but are calculated per 10 km. Which format do you find most informative? Which format do you think would influence your choice the most? Would other formats be better (e.g. per year, per 5 years, for the lifetime of the car, per km, per 15,000 km or per 100,000 km)? Do you have any other suggestions or comments regarding the labels?
8	Some costs vary from person to person. This is not reflected in the labels, but could be included using a calculator where you enter personal variables such as km per month, number of passes through the toll road, etc. This could be available online or via a pad the car dealerships. Is this a tool you would use, or would it be too cumbersome?
9	Do you have other ideas or comments regarding how this type of information can be presented in a relevant and useful way?

Table B. 9: Focus Group Questions for Services Sector (Property) in Ireland

1	What is the biggest problem in the Dublin commercial property market at present [**warmup question**]?
2	I now want you to imagine you are looking for a new business property to buy or rent. What characteristics of the property or area matter to you most? [**Complete attribute form**]
3	I would like you to think about energy consumption – what are the main factors that impact your energy bills?
4	And how important is energy efficiency when buying/leasing a property? Are you willing to pay more for higher energy efficiency levels? • Why is energy efficiency important? Cost savings? Environmental impact? Help with company image?
5	Are you all familiar with the Building Energy Rating (the BER cert)? • Have you seen a BER cert before? [**Show example**]. • Do you find this information clear and easy to understand? • Do you have any suggestions on how this information could be displayed better? • Do you think the BER rating would affect your choice of property? Would a poor rating put you off?
6	And what about improving the energy efficiency of your current property? Is energy efficiency a good or bad investment?
7	Part of this project is exploring new ways of presenting energy efficiency information. For example, we want to know if displaying a property's expected annual energy cost would make you more responsive to energy efficiency [**show example**]. • Would this information be useful to you? • Have you any suggestions on how this information could be displayed better? • Is the annual cost forecast intuitive or would you suggest an alternative timeframe? • Should costs be placed on a relative scale like the BER?

Table B. 10: Interview Group Questions for Services Sector (Transport) in Spain

1	Do you consider Energy Efficiency (EE) in your purchase decision? • If Yes, why is it important to you and how does it materialize in the purchase decision? • If No, why?
2	Do you consider electric vehicles, hybrids or other alternative energy source for your fleet? • Could you explain why you would not buy an electric vehicle? • Could you explain why you would buy an electric vehicle? • Would you change your opinion depending on the existence of a subsidy program or any other advantage (monetary, fiscal, etc.)? • Do you think that the difficulties in controlling the fuel costs or the way of your personnel drive limit the will of your company towards a purchase of vehicles more energy efficient? How do you handle this problem / limitation? Are there other barriers to purchase?

	• Would you change your internal fuel expense policy by purchasing more energy-efficient vehicles? What rules / program would you implement?
3	Faced with uncertainty about economic factors such as the price of fuel, or electricity or human factors such as how employees drive vehicles, do you think that with the purchase of a vehicle of high energy efficiency (electric, hybrid) your company might: • Gain more than it could lose. - Why? • Lose more than it could gain. - Why? • It may not be able to distinguish between expected gains (energy savings) or expected losses - why?
4	Labels: • How do you get information about the efficiency level of a car? • Do you know the car labelling system? Do you understand it?
5	Are you all familiar with the Energy Performance Certificate (the EPC cert)? • Have you seen a EPC cert before? [**Show example**]. • Do you find this information clear and easy to understand? • Do you have any suggestions on how this information could be displayed better? • Do you think the EPC rating would affect your choice of property? Would a poor rating put you off?
6	There are currently 2 labels in Spain: (i) a mandatory which consists of giving information on the energy consumption and CO2 emissions of the car, and (ii) a volunteer who compares the consumption of the vehicle with the average consumption of automobiles of the same size. [Show examples with both labels] • Which of these two labels have you seen on more occasions? • Which guide you better when making the decision? • Do you think voluntary labelling should also be mandatory? • Do you trust the EE (consumption) certified by the labels? But because? Does this influence your decision? • Do you think labelling systems are useful to guide you in your purchase decision? Do you think they could be improved? How?

Table B. 11: Interview Questions for Services Sector (Transport) in Greece

1	**Exploring significant parameters of choice** • Imagine that you must renew your car fleet. Who is responsible for such a decision? • What (technical, aesthetic or economic) characteristics matter in your investment decision? • How do you rate the relative importance of these characteristics? [**Complete attribute form**]
2	**Fuel Efficiency Awareness/Perception** • How important is fuel efficiency of vehicles for your investment decision? Why? • Which is most important: reducing fuel cost or reducing environmental impacts?
3	**Assessment of existing policies** • Are you aware of car labelling policies in the EU? • Does current labelling policy promote fuel efficient vehicles? • Can you suggest any amendments in these policies?
4	**Exploring Policy Changes** • Would better information provision on fuel efficiency be helpful in guiding your investment decisions? • Who would you trust to provide fuel efficiency documentation of vehicles? • Would a labelling scheme displaying monetary estimate of fuel consumption per km be useful in your investment decision?

Table B. 12: Interview Questions for Services Sector (Appliances) in Ireland

1	What is the biggest problem facing Dublin food business at present? [**warm-up question**]
2	I now want you to imagine you are looking for a new appliance. Say, for example, one of your fridges has stopped working and cannot be repaired. How do you go about finding a replacement? In particular, what fridge characteristics matter to you most? [**Complete attribute form**]**.**
3	I would like you to think about your business' energy consumption • What appliances have the largest impact on your energy bills? • Is energy a large part of your overall costs?
4	And how important is energy efficiency when buying/leasing an appliance? Are you willing to pay more for higher energy efficiency levels? • Why is energy efficiency important? Cost savings? Environmental impact? • Why is energy efficiency not important?
5	How can you tell how energy efficient an appliance is? • Are you aware of the energy efficiency labels for household appliances? **[show example]** • Would a similar labelling scheme be useful to businesses? • Do you find this information clear and easy to understand? • Do you have any suggestions on how this information could be displayed better?
6	Part of this project is exploring new ways of presenting energy efficiency information – we want to know if displaying an appliance's energy cost would make you more responsive to energy efficiency [**show example**] • Would this information be useful? • Have you any suggestions on how this information could be displayed better? Is it clear? • Is the ten year forecast intuitive or would you suggest an alternative timeframe? • Do you think costs should be on a relative scale like the EU label? • Would this information affect your decision

Table B. 13: Interview Questions for Services Sector (Appliances) in Spain (Accommodations)

1	Context of the purchasing decision • Who is the responsible of making the purchasing decision of appliances? • Who is the responsible of making the purchasing decision of appliances? • How is the purchasing process? • What steps are taken, how much time is invested? • Do you go to the stores? Do the sales representatives of the brand of appliances visit you? • Do you think you have enough supply to choose according to your own purchasing criteria and needs?
2	Attributes • What are the key factors in the purchasing decision of the heating and/or cooling system? And of the hot water system? And of the other type of appliances? • What influences your final decision to buy one appliance over another?
3	Energy efficiency • What is energy efficiency? And energy saving? • Do you understand it? Do you trust it? • Do you have it into account when buying a new appliance? Why? • Do you control the energy consumption of your accommodation? How?

4	Current energy label • How you get information about the energy efficiency of an appliance? • Are you aware of the energy efficiency label and the information is presented in it? • What do you think about the label? Do you trust it? Do you think it is clear? And useful? Why?
5	Future energy label • Do you think the labelling could be improved? How? • Would you value additional information on the energy label? Which one?

Table B. 14: Interviews Questions for Service Sector (Appliances) in Greece

1	**Exploring significant parameters of choice** • Imagine that you must renew and purchase a new appliance (cooling, lighting, spa and swimming pool machinery etc.) for your resort. Who is responsible for such a decision? • What (technical, aesthetic or economic) characteristics matter in your investment decision? • How do you rate the relative importance of these characteristics? [**Complete attribute form**]
2	**Energy Efficiency Awareness/Perception** • How important are energy efficiency and energy savings for your investment decision? Why? • Which is most important: energy efficiency or energy savings? • Which is most important: reducing energy bills or reducing environmental impacts?
3	**Assessment of existing policies** • Given that there is no official labelling policy on professional appliances for your business to date how do you assess the energy efficiency of a new appliance? • Do current selling policies promote energy efficient appliances? Can you suggest any amendments in these policies? • Do you participate in any labelling program for your resort?
4	**Exploring Policy Changes** • Would better information provision on energy efficiency be helpful in guiding your investment decisions? • Who would you trust to provide energy efficiency documentation of appliances? • Would a labelling scheme displaying monetary estimate of energy consumption – for example, an estimate of a refrigerator's annual energy cost [show the prototype] – be useful in your investment decision?

Table B. 15: Interview Questions for Agriculture Sector (Transport) in Ireland

1	To get things going – what is the biggest challenge facing Irish tillage farmers at present? [**warm-up question**]
2	I now want you to imagine that you are investing in a tractor. Say, for example, your old tractor has reached the end of its life and you need a replacement. • How do you make this choice? • Think about an ideal model and perhaps explain why you choose certain manufacturers or suppliers over others?
3	And how important is energy efficiency in this decision? • Why is energy efficiency important? Cost savings? Environmental impact? Both? • OR, why is energy efficiency not important?
4	I would like you to think about your farm's energy costs • Is tractor diesel a large proportion of your total variable costs? • Have you changed practices in the past to reduce diesel costs?
5	Coming back to buying a new tractor, how do you find out how energy efficient a new tractor is? • Would a rating system – similar to an EU labelling for appliances – be useful to you? Would it affect your decision?

	• Do you have any suggestions on how this information could be displayed better?
6	Part of this project is exploring new ways of presenting energy efficiency information – we want to know if displaying a components energy cost [**show example**] • Would this information be useful? • Have you any suggestions on how this information could be displayed better? Is it clear? • Is a one year forecast intuitive or would you suggest an alternative timeframe? • Do you think costs should be on a relative scale like the EU label? • Would this information affect your decision?

Table B. 16: Focus Group Questions for Agriculture Sector (Transport) in Greece

1	**Exploring significant parameters of choice** • Imagine that you are currently looking to purchase a new tractor for your farming activities. What (technical, aesthetics or cost) characteristics matter in your purchasing decision? • How do you rate the relative importance of these characteristics? [**Complete attribute form**] • Which costs are important when deciding which tractor to buy (purchase/leasing, maintenance cost, fuel costs, insurance, etc.)? • How important is the resale value of the tractor for your decision?
2	**Energy/fuel Efficiency Awareness/Perception** • How important is the fuel consumption of the tractor? • Why does it matter? For financial, environmental or other reasons? • To what extent are you concerned about potential fuel price changes?
3	**Assessment of existing policies** • Given that there is no government labelling policy on tractors, how do you assess how energy efficient a new tractor will be? • Do you participate in any subsidy program for the purchase of your tractor?
4	**Exploring Policy Changes** • Do current selling policies promote fuel efficient tractors? • Can you suggest any amendments to these policies? • Would a labelling scheme displaying monetary estimate of fuel consumption – for example, an estimate of a tractor's annual fuel cost [show the prototype] – be useful in your purchasing decision?

Table B. 17: Focus Group Questions for Agriculture Sector (Appliances) in Ireland

1	To get things going – what is the biggest challenge facing Irish dairy farmers at present? [**warm-up question**]
2	I now want you to imagine that you are investing in your milking parlour. Say, for example, you need to upgrade your vacuum pump or plate cooler. • How do you make this choice? • Why do you choose certain manufacturers or suppliers over others?
3	And how important is energy efficiency in this decision? • Why is energy efficiency important? Cost savings? Environmental impact? Both? • OR, why is energy efficiency not important?
4	I would like you to think about your farm's energy costs • Are your milking parlour energy costs a large proportion of your total variable costs? • What components of your parlour consume the most energy?
5	How do you find out how energy efficient a new component is? Consider a vacuum pump or plate cooler again.

	• Would a rating system – similar to an EU labelling for appliances – be useful to you? Would it affect your decision? • Do you have any suggestions on how this information could be displayed better?
6	Part of this project is exploring new ways of presenting energy efficiency information – we want to know if displaying a components energy cost [**show example**] • Would this information be useful? • Have you any suggestions on how this information could be displayed better? Is it clear? • Is a one year forecast intuitive or would you suggest an alternative timeframe? • Do you think costs should be on a relative scale like the EU label? • Would this information affect your decision?

Table B. 18: Focus group Questions for Agriculture Sector (Machinery) in Greece

1	How is the economic situation in the Greek dairy sector at present [**warmup question**]?
2	I now want you to imagine you are looking to buy a machine for your dairy activities. What (technical, financial, aesthetic etc.) characteristics of the machine matter in your purchasing decision? How do you rate the relative importance of these characteristics? [**Complete attribute form**]
3	**Energy Efficiency Awareness/Perception** • What does the term "energy/fuel efficiency" mean to you? • Which machinery characteristics (i.e. size, age, design) drive your energy consumption? • Is energy efficiency important? Why?
4	**Assessment of existing labelling policies** • What information do you use when deciding how energy/fuel efficient a machine is? • Given that there is no government labelling policy on agriculture machines, how do you assess how energy/fuel efficient a new machine will be? • Are you familiar with the energy classes?
5	**Exploring Policy Changes** • Do current selling policies promote energy efficient machines in agriculture? • Can you suggest any amendments to these policies? (show alternatives) • Would a monetary estimate of energy consumption – for example, and estimate of a machine's annual energy/fuel cost [show an example] – would it be useful in your purchasing decision?

Table B. 19: Focus Group Questions for Industry Sector (Machinery) in Norway

1	Which investment decisions in your company has the biggest impact on energy use?
2	How do you factor in different concerns such as price, quality, operational security, safety, cost reductions etc in the investment decision? • Do you have standardized procedures which have to be followed when making investments and purchases, or does the decision procedure vary on a case-to-case basis? • Do the procedures only apply to decision over a certain amount or only for certain types of investments?
3	What is a typical time horizon for larger investments?
4	(What is the role of discounting and depreciation in investments?)
5	What is the role of energy consumption in these decisions? • Why is energy use included? Because of costs, environment or other concerns? • Does energy use play the same role in all decisions, or is there for instance a difference between investment with a direct consequence for energy use (new heat pumps) and investments with indirect consequences for energy use (new builds and renovation of buildings)?
6	How important is the risk of future changes in energy prices? How do you handle this risk?

7	How familiar at you with EU regulations on energy efficiency?
8	Are you aware of the opportunities for support for improved energy efficiency? If so, which?
9	Is energy efficiency important for reducing emissions of greenhouse gases?
10	Are there situations where improved energy efficiency could increase emissions, or where measures to reduce emissions could increase energy use?

Table B. 20: Interview Questions for Industry Sector (Machinery) for Slovenia

1	Please introduce yourself and your company. What is your role in the company? [**warmup question**] Which departments in your company (alternatively what sorts of competence) are involved in making investment decisions in your business?
2	Now we want you to imagine you are looking to buy a new machine in your company. • What characteristics matter in your purchasing decision? • How do you weigh different factors such as price, quality, reliability, operating safety etc. when making investment decisions? • Please rate of these attributes (price, quality, delivery speed, energy efficiency, security) from one (not important) to ten (extremely important).
3	What do you understand under the term "energy efficiency"? Why is energy efficiency important? Cost savings? Environmental impact? Help with company image? • How important is information about energy efficiency when buying a new machine? Would you place it among more important or less important factors? With what factors could you compare it? • Are you willing to pay more for higher energy efficiency levels? • Are you familiar with EU energy efficiency legislation? ○ Are you familiar with the possibilities for obtaining grants for energy efficiency investments? • Do you intend to do anything to improve the energy efficiency of your company? Why yes/no? How?
4	Are you all familiar with the Energy labels? • Given that there are rare government labelling policy for different types of industry, how do you assess how energy efficient a new machine will be? Do you find this information clear and easy to understand? Is it useful for you? Why yes/no? • Would you change anything on this label to make it clearer? What could be improved? Would you like to add something? What, how?
5	Part of this project is exploring new ways of presenting energy efficiency information. For example, we want to know if displaying a machine's expected annual energy cost in monetary unit would make you more responsive to energy efficiency and more keen to buy such a machine? • Would a monetary estimate of energy consumption – for example, and estimate of a machine's annual energy cost be useful in your purchasing decision? • Have you any suggestions on how this information could be displayed better?

6.3 Appendix C: Props

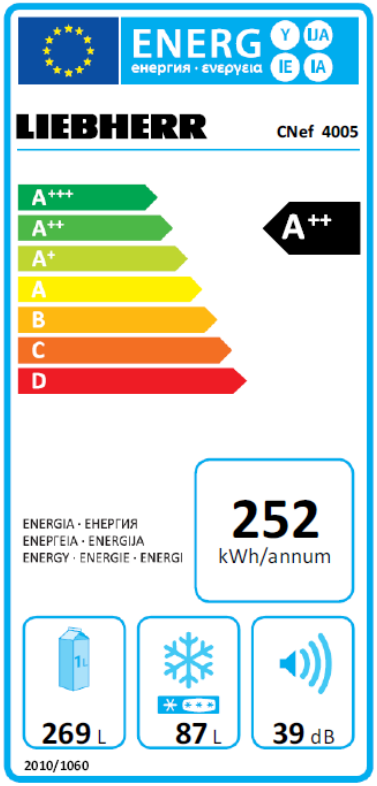


Figure C. 1: Prop for Household Sector (Appliances) in Spain (refrigerator)

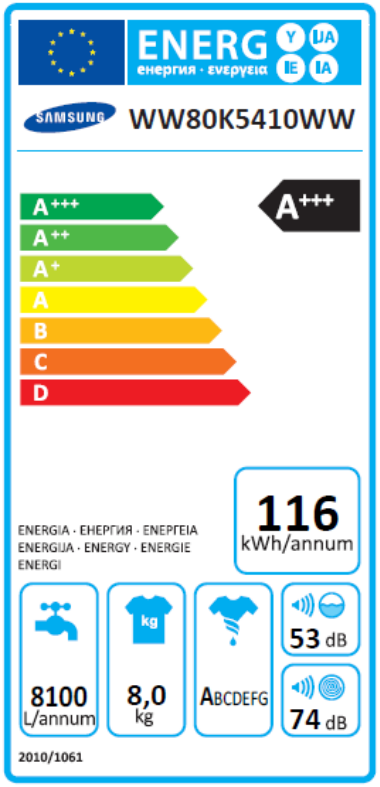
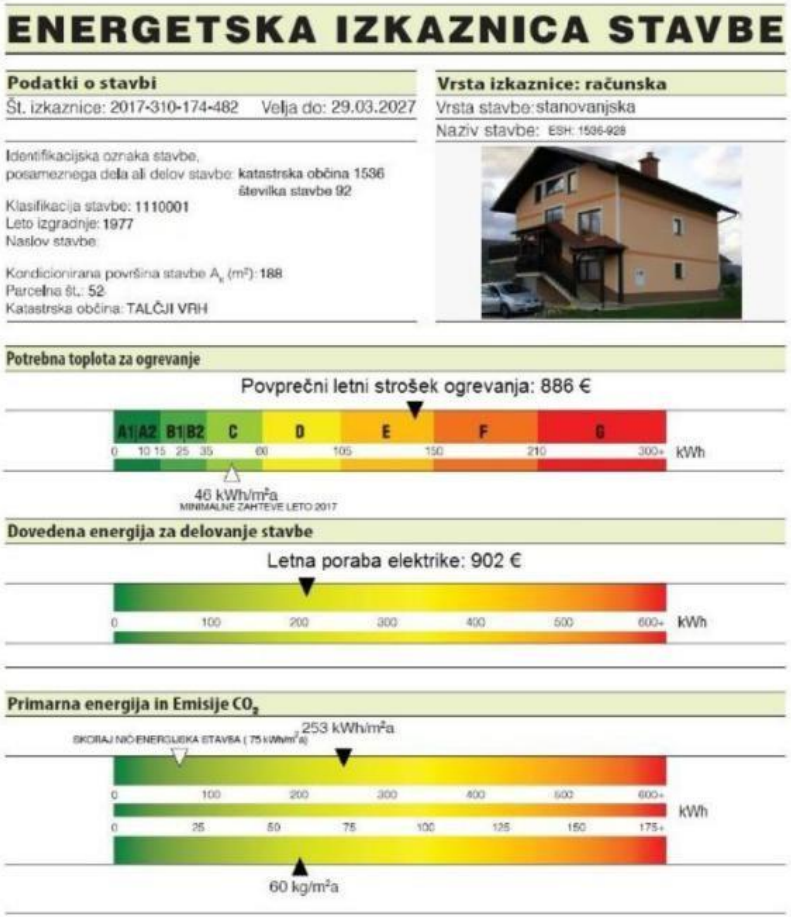


Figure C. 2: Prop for Household Sector (Appliances) in Spain (washing machine)



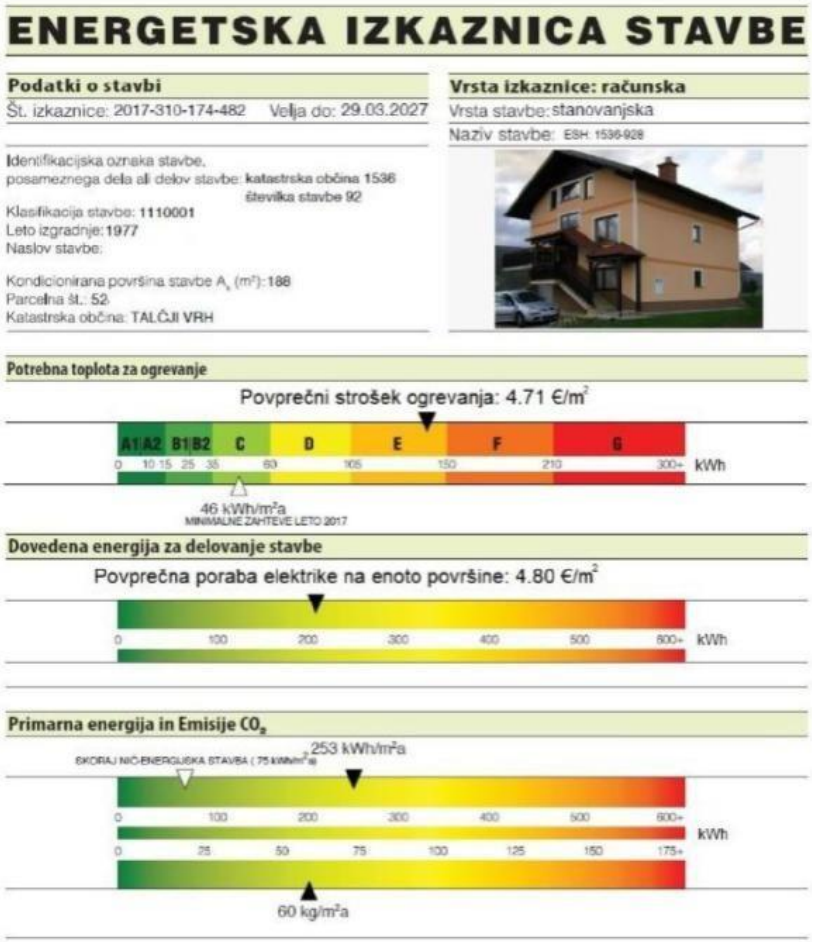


Figure C. 3: Prop for Household Sector (Property) in Slovenia

Marca/modelo:

Tipo de carburante:

CONSUMO OFICIAL (SEGÚN LO DISPUESTO EN LA DIRECTIVA 80/1268/CEE)	
Tipo de conducción	L/100 Km.
En ciudad	
En carretera	
Media ponderada	
EMISIONES ESPECÍFICAS OFICIALES DE CO_2 (SEGÚN LO DISPUESTO EN LA DIRECTIVA 80/1268/CEE)	
g/km.	

El consumo de combustible y las emisiones de CO_2 no sólo dependen del rendimiento del vehículo; también influyen el comportamiento al volante y otros factores no técnicos. El CO_2 es el principal gas de efecto invernadero responsable del calentamiento del plantea.

Figure C. 4: Prop for Services Sector (Transport) in Spain (compulsory label)

Eficiencia Energética

Marca	X
Modelo	Y
Tipo Carburante	Gasolina
Transmisión	Manual
Consumo de carburante *(litros por cada 100 kilómetros)*	6 litros/100 km
Equivalencia *(kilómetros por litro)*	16,7 km/litro
Emisión de CO_2 *(gramos por kilómetro)*	144 g/km
Comparativa de consumo *(con la media de los coches de su mismo tamaño a la venta en España)*	

Bajo consumo

<-25% A

15-25% B

-5-15% C

media D

+5+15% E

+15+25% F

>25% G

Alto consumo

B

Figure C. 5: Prop for Services Sector (Transport) in Spain (voluntary label)

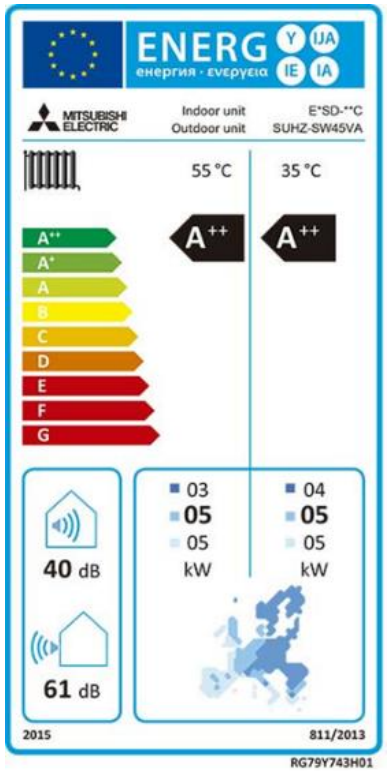


Figure C. 6: Prop for Services Sector (Appliances) in Spain (Air Conditioner)

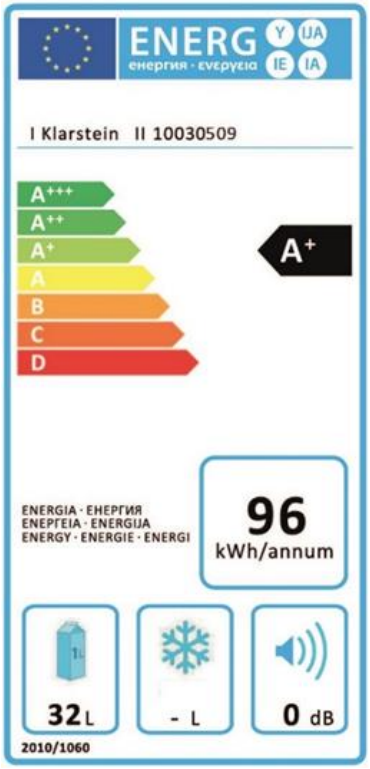


Figure C. 7: Prop for Services Sector (Transport) in Spain (mini-bar)

Figure C. 8: Prop for Household Sector (Transport) in Norway

Figure C. 9: Prop for Household Sector (Transport) in Norway

Figure C. 10: Prop for Household Sector (Transport) in Norway

Figure C. 11: Prop for Household Sector (Transport) in Norway

6.4 Appendix D: Example of an informed consent form for focus group participants

CONSEED FOCUS GROUP CONSENT FORM

Good morning/afternoon, my name is Eleanor Denny.

We are conducting research for TRINITY COLLEGE DUBLIN aimed at understanding the factors consumers consider when making investment decisions. You are invited to take part in this study. All information collected in this study will remain confidential and anonymous, and will not be passed on to any third parties for purposes other than academic research. This study has received ethical approval by the Research Ethics Committee of the FACULTY OF ARTS, HUMANITIES AND SOCIAL SCIENCES.

The researchers responsible for this study are:

Prof. Eleanor Denny

Prof. Ronan Lyons

Dr. James Carroll

Email: dennye@tcd.ie; jacarrol@tcd.ie; ronan.lyons@tcd.ie

They are available to answer any questions regarding the project or any data collected during this project that you may have. You can also contact them at any point in time if you would like to withdraw from this study, even after you have already answered our questionnaire.

DECLARATION:

- I am 18 years or older and am competent to provide consent.
- I have read, or had read to me, a document providing information about this research and this consent form. I have had the opportunity to ask questions and all my questions have been answered to my satisfaction and understand the description of the research that is being provided to me.
- I agree that my data is used for scientific purposes and I have no objection that my data is published in scientific publications in a way that does not reveal my identity.
- I understand that if I make illicit activities known, these will be reported to appropriate authorities.

- I understand that I may stop electronic recordings at any time, and that I may at any time, even subsequent to my participation have such recordings destroyed (except in situations such as above).
- I understand that, subject to the constraints above, no recordings will be replayed in any public forum or made available to any audience other than the current researchers/research team.
- I freely and voluntarily agree to be part of this research study, though without prejudice to my legal and ethical rights.
- I understand that I may refuse to answer any question and that I may withdraw at any time without penalty.
- I understand that my participation is fully anonymous and that no personal details about me will be recorded.
- I have received a copy of this agreement.

If you agree, we will today be asking some questions today for about 90 minutes.

PARTICIPANT'S NAME: _____

CONTACT DETAILS: _____

PARTICIPANT'S SIGNATURE: _____

DATE _____

Statement of investigator's responsibility: I have explained the nature and purpose of this research study, the procedures to be undertaken and any risks that may be involved. I have offered to answer any questions and fully answered such questions. I believe that the participant understands my explanation and has freely given informed consent.

INVESTIGATOR'S SIGNATURE: _____

DATE _____