A cross-sectoral analysis of the role of label information in consumer preferences for energy efficiency

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CONSEED CONSumer Energy Efficiency Decision Making

European Commission HORIZON 2020

- Socio-economic research on consumers' energy efficiency behaviour
- Five partners (TCD, CICERO, BC3, UL, AUA)
- Start Dec' 16 (3 years)

The CONSumer Energy-Efficiency Decision making project (CONSEED) does research to understand better how European consumers make energy efficiency decisions.

Do households and professional consumers pay attention to energy labels? What information are they looking for? We focus on three products: cars, appliances/machinery and buildings.

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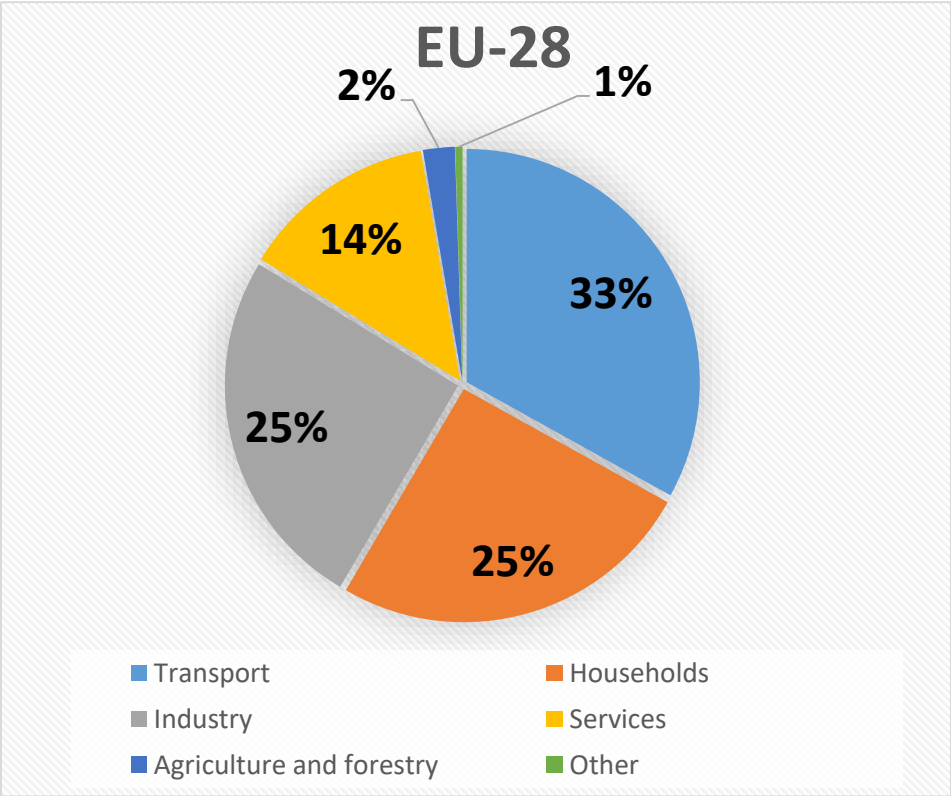
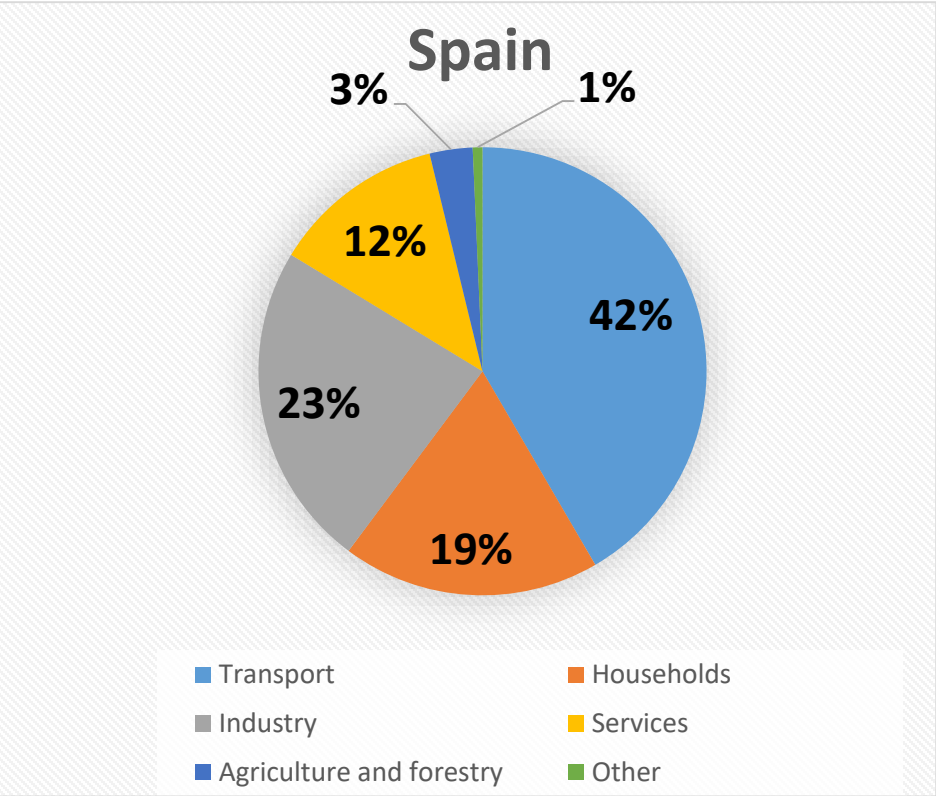
Energy consumption by sector, 2015



Source: Eurostat (2016)



Source: IDAE (2017)

- Increasing the energy efficiency (EE) of energy-related products is one of the main goals of EU energy policy (European Commission, 2014, 2008)
- Although EE may offer economic benefits and environmental advantages, there is an apparent underinvestment → ***EE gap or paradox***

Failures that explain the EE gap

Failure categories	Main failures
Informational failures	*Asymmetry and imperfect information* *Hidden costs* *Transaction costs*
Other market failures	*Capital market failures* *Principal-agent problem* *Split incentives problem*
Behavioural failures	*Decision-making heuristics and biases*

Adapted from: Linares and Labandeira (2010) and Ramos et al. (2015)

See complete table

Policies

Fiscal incentives (subsidies, rebates, taxes)

Informational campaigns

Feedback (smart meters, energy bills…)

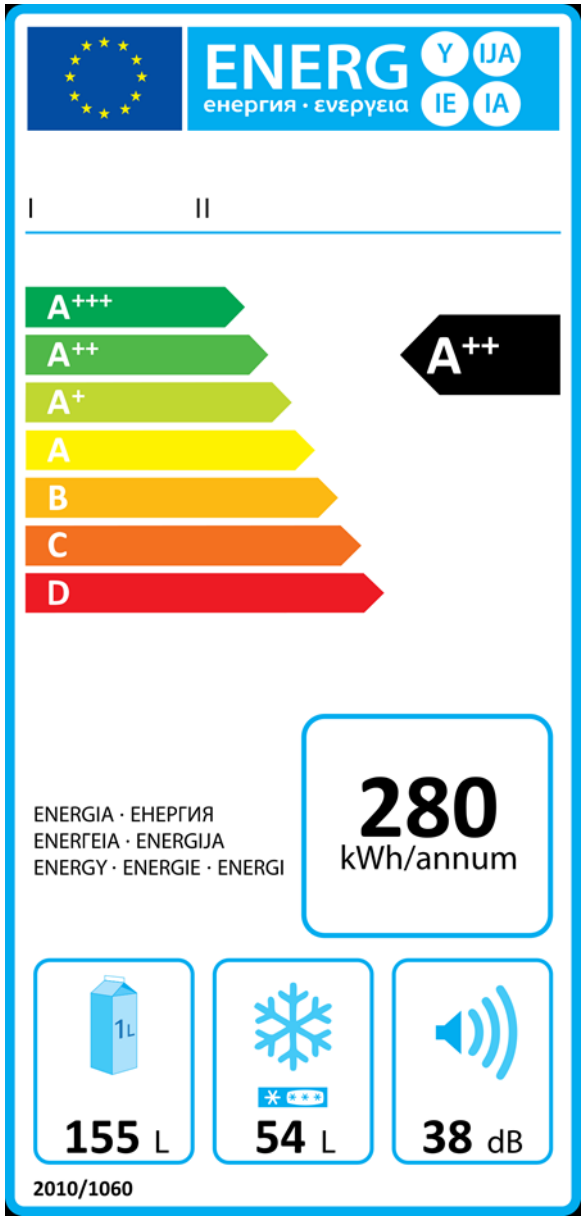
Audits

Energy labels

Motivation

- **Effective energy labels**… individuals must be **aware** of its existence, must **understand** the information provided, must **trust** the label and must find the information **useful** (Tigchelaar et al., 2011).

- There is a **growing** body of **research** on **how** to **improve labels**…
  - Running-cost information
  - Health and or environment-related information
  - What scale is best for plotting information
  - …



Objective(s)

MAIN: To study the role of labelling schemes in **purchasing decisions** and proposes a **cross-sectoral perspective** to enhance understanding of the **factors that influence** such decisions.

SPECIFIC:

(i) to address how well different sectors **understand EE and EE labels**.

(ii) to discuss what kind of **additional information** could complement the label in order promote the purchase of energy efficient products.

(iii) to identify the **main barriers regarding EE** across different sectors.

Case studies (Spain)

SECTOR	Product	EU legislation
Household	**Appliances** (refrigerators and washing-machines)	Compulsory energy label: Energy consumption (A+++ to D) Example 1
Services **lodgings**	**Appliances** **(including heating and cooling)**	Heating & cooling: • Energy Label • Ecodesign requirements
Services **private service companies**	**Vehicles**	• Compulsory: CO2 emissions + fuel consumption • Voluntary: fuel consumption compared to the average of vehicles of the same size (A-G) Example 2

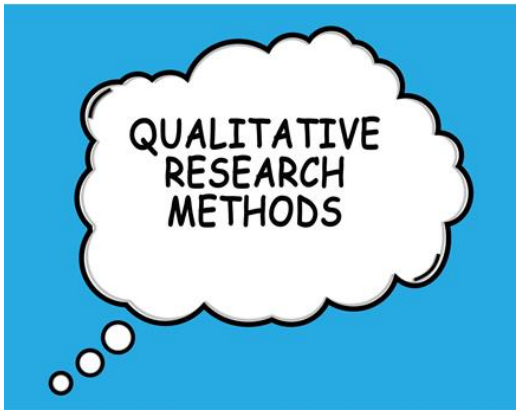




Source EU legislations: https://ec.europa.eu/energy/en/topics/energy-efficiency/energy-efficient-products

Qualitative methods (FG, IDI) I

- Understand attitudes, opinions, standpoints, expectations and practices rather than to quantify them (Styśko-Kunkowska, 2014; Newing et al., 2010; Krueger and Casey, 2008).
- Help to answer specific questions such as *"Why?", "How?"* and *"In what way?".*
- Interpretative and explanatory depth.



Why for our study?

- Well suited to our objectives.
- Provide a cross-sectoral analysis following a common framework.
- Complement the more quantitative works of the literature.

Qualitative methods (FG, IDI) II

SECTOR / product	Method	Target	When & Where
Household Appliances (refrigerators and washing-machines)	**Focus Group (FG)** (8 participants)	Typical households	May 31, 2017 Bilbao (Spain)
Services- lodgings Appliances (including heating and cooling)	**In depth Interview (IDI)** (8 face-to-face IDIs)	Lodging owners	June 21-July 5, 2017, Spain
Services - private service companies Vehicles	**In depth Interview (IDI)** (8 face-to-face IDIs)	Companies with car fleet	June 24-July 12, 2017, Bilbao (Spain)

Common discussion guideline

1. What attributes matter in the purchasing decision?

2. How important is energy efficiency in this decision?

3. Does current EE label increase the demand for more efficient technologies?

4. How can EE label be changed to increase the demand for more efficient technologies?

Information collected evaluated on a macro level

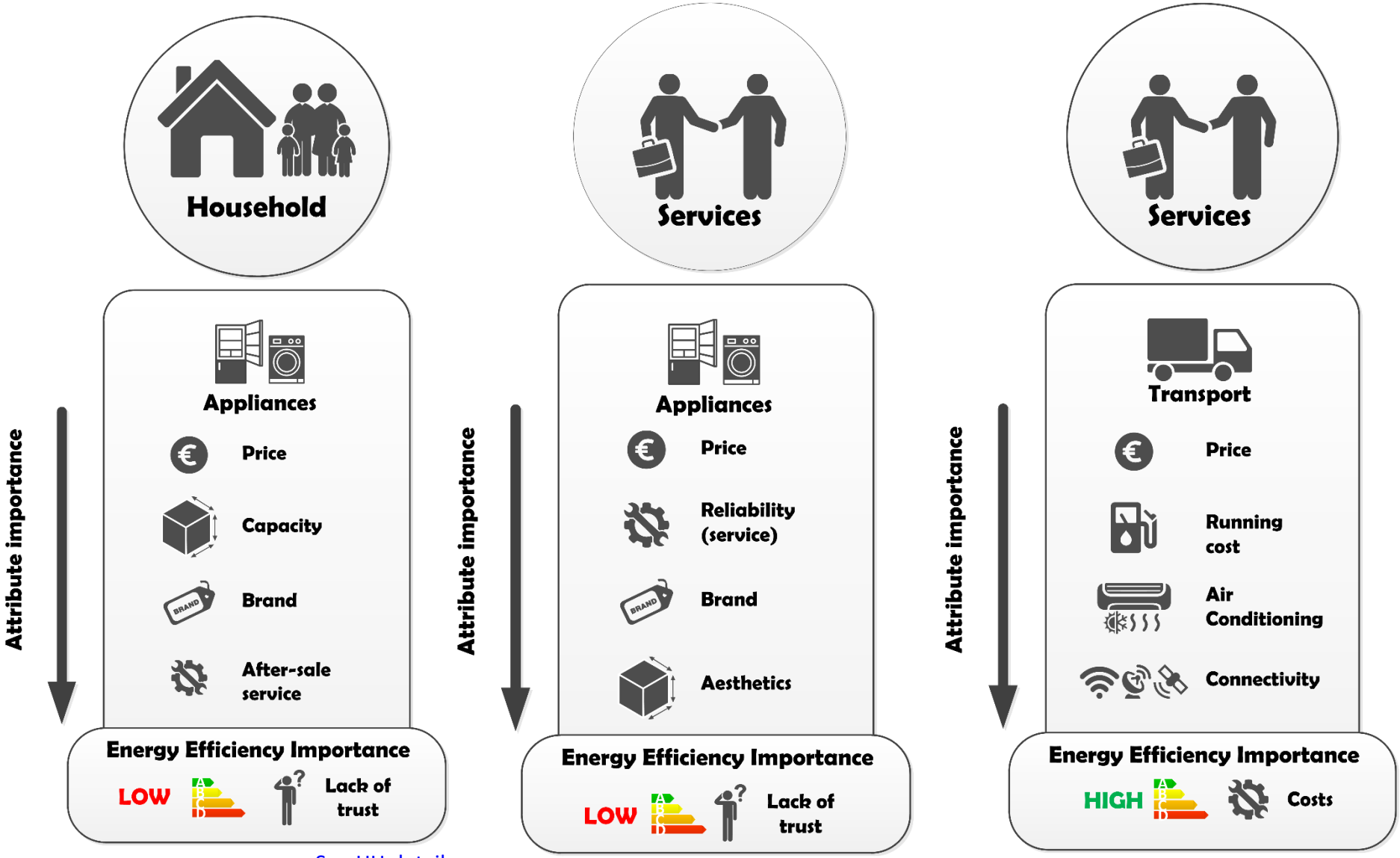
↓

Content-analysis:

participant consensus, patterns, general themes

See complete discussion guideline

Key attributes: Summary



See HH details

See services details

Knowledge, understanding and role of EE

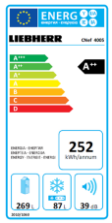
Buying or not buying an energy-efficient good?

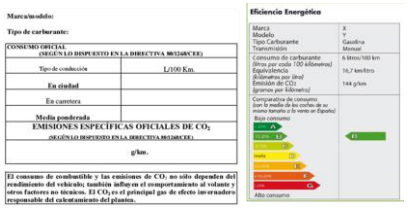
	Households	Lodging owners		Private services companies
	Appliances	*Appliances*	*Heating & Cooling*	*Vehicles*[a]
PROS				
Reduced energy cost	V	V	V	V
Co-benefits (environment, health, job)	V	V	V	
Public image		V		V
CONS				
High purchasing cost	X	X		X
Uncertainty:				
Energy price	X	X	X	X
Useful life	X			
End user's behaviour	X		X	X
Lack of trust	X	X		
Technical aspects			X	
Maintenance cost			X	
Autonomy				X
Reduced supply				X
Lack of experience				X

[a] Include electric or hybrid vehicles and fossil-fuel or energy efficient vehicles

Knowledge, understanding and role of EE labels

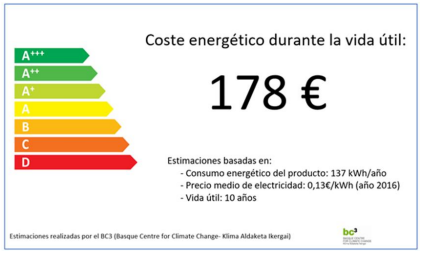
	Households-Appliances (FG)	Lodging owners-Appliances (IDIs)	Private service companies – Vehicles (IDIs)
POSITIVE	• **Most aware** of the existence • **Colour/letter** graduation **good** stimulus (“popular” reference)		• **Prefer** the colour-differentiated **voluntary label** (more visual and explicit)
NEGATIVE	• **Not** fully **understood** or trusted • **Energy consumption** in kWh/year **not** fully **clear** to non-experts • **A scale is missing** to value the units of energy consumption and noise (decibels)	• Some did **not** consider them **trustworthy** → *“Volkswagen diesel-gate”*	• Fluctuations in **fuel prices** • **Driving conditions** • **Lack of trust** in fuel consumption data





Potential improvements of EE labels

	Households-Appliances (FG)	Lodging owners-Appliances (IDIs)	Private service companies – Vehicles (IDIs)
Suggestion	Texts to explain the symbols and letters in the colour scale of the label		
Including monetary information (energy consumption in monetary units – energy cost)? See Example 3	• **Useful** • **Concerns:** - Energy price - User's behaviour - Lifetime considered		



See specific table

This study…

- Offers a qualitative overview of the influence of EE and labelling schemes in different purchasing decisions
- Identifies the main failures regarding EE across different sectors (household, lodgings and private services companies)

EE and energy labels: household sector

Current Label

- Colour-coded scale aid comparisons
- Clarity
- Untrustworthy

Household

Monetary Label

- Adding monetary unit is useful
- Less technical info
- Issues with different prices

Appliances

Attribute importance

- Price
- Capacity
- Brand
- After-sale service

Energy Efficiency Importance

LOW

Lack of trust

EE and energy labels: services sector

Label situation

- Informative
- Unclear
- Untrustworthy

Services

Label improvement

- Relative cost component
- Relevant examples
- Accuracy
- Misleading and open to manipulation

Appliances

Attribute importance

- Price
- Reliability (service)
- Brand
- Aesthetics

Energy Efficiency Importance

LOW — Lack of trust

Transport

Attribute importance

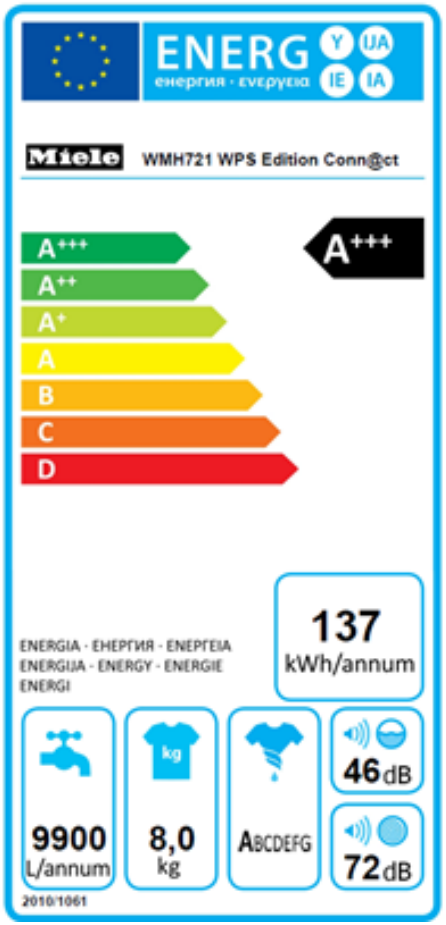
- Price
- Running cost
- Air Conditioning
- Connectivity

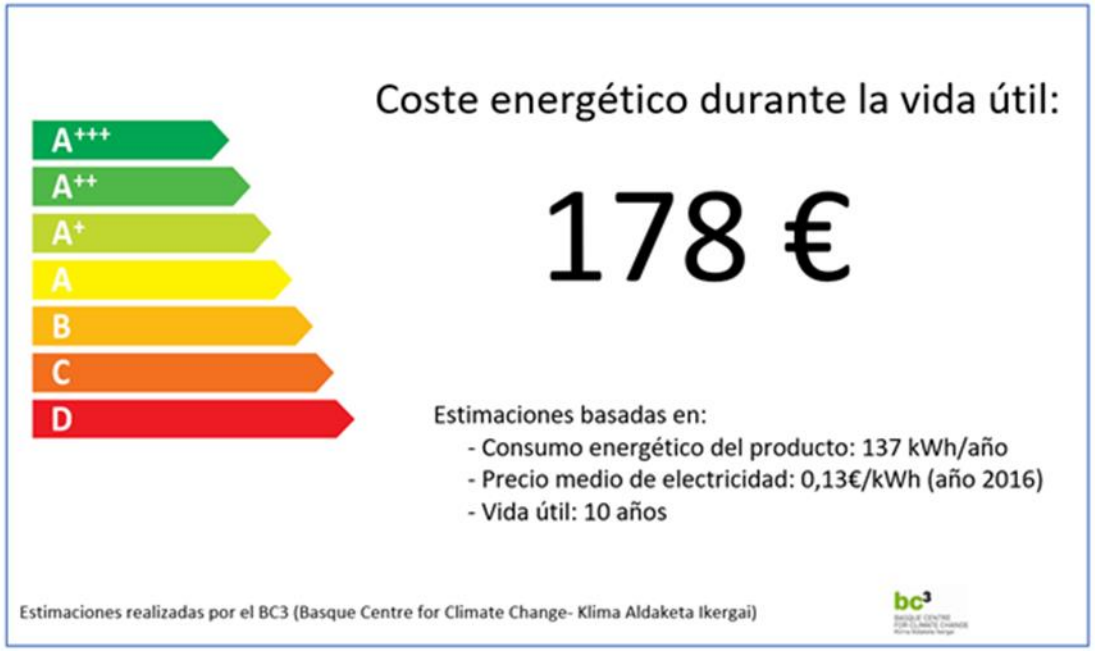
Energy Efficiency Importance

HIGH — Costs

Recommendations for energy labels

- A **label that fully inform on the intertemporal arbitrage between purchasing and running costs with understandable units**





Main failures

1. Split incentives:

- ↓ the WTP for a more energy-efficient good in lodgings and private services sector (energy use is limited by the end user's behaviour)
- Informational posters in the lodgings sector to raise awareness

2. Uncertainty in purchasing decisions involving new technologies (electric vehicles)

- Concerning: future energy prices, consequences of switching from diesel to electric or to hybrid, appropriateness of these vehicles to their activity
- In our sample: insignificant share of electric vehicles + no reference point → **loss aversion** for electric or hybrid vehicles.

Implications and future research

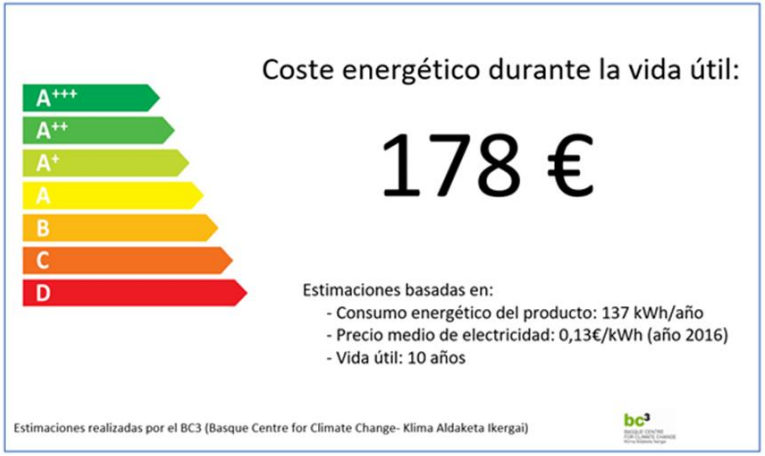
- The results help to identify concepts that may tested using quantitative methods in larger samples

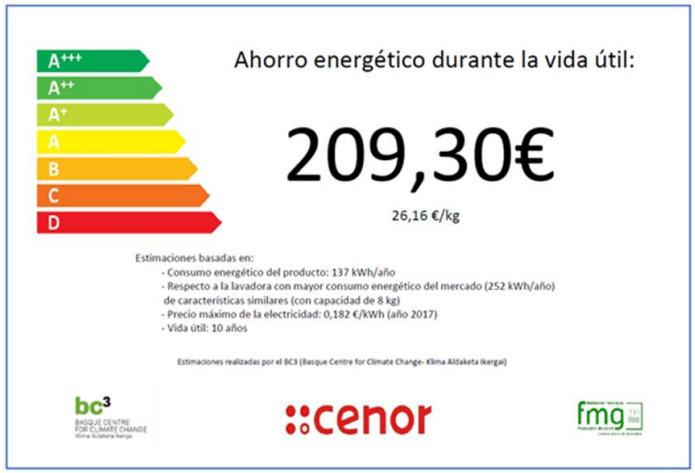
- Further research:
  - Effectiveness of alternative energy efficiency labelling scheme
  - Instruments for addressing the split incentives problem and the loss aversion to goods whose technology has large uncertainty

Ongoing work – CONSEED

CONSumer Energy Efficiency Decision Making

- Consumer survey for household appliances in Spain (quantitative analysis)
- Lodgings' owners survey for heating & cooling (quantitative analysis)
- Field experiment for household appliances in Spain → estimate the effect of monetary information on actual purchases: through sales staff's explanations and adding a monetary label





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Thank you

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