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## The Influence of Lifespan Labelling on Consumers

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► **To cite this version:**

Mickaël Dupré, Mathieu Jahnich, Valeria Ramirez, Gaëlle Boulbry, Émilie Ferreira. The Influence of Lifespan Labelling on Consumers. CES/CSS/1/2015, SIRCOMÉ, from research to action agency; Université Bretagne Sud; University of South Bohemia; The European Economic and Social Committee (EESC). 2016, pp.102. hal-04535706

**HAL Id: hal-04535706**

**<https://hal.science/hal-04535706>**

Submitted on 7 Apr 2024

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# The Influence of Lifespan Labelling on Consumers

STUDY



*European Economic and Social Committee*



**Comité économique et social européen  
European Economic and Social Committee**

## **ILLC study**

### **The Influence of Lifespan Labelling on Consumers**

*Executive summary – March 2016*

"This study was carried out by the SIRCOME agency, the University of South Brittany and the University of South Bohemia following a call for tenders launched by the European Economic and Social Committee. The information and views set out in this study are those of the authors and do not necessarily reflect the official opinion of the European Economic and Social Committee. The European Economic and Social Committee does not guarantee the accuracy of the data included in this study. Neither the European Economic and Social Committee nor any person acting on the Committee's behalf may be held responsible for the use which may be made of the information contained therein."



## Objectives and methodology

The ILLC study (The Influence of Lifespan Labelling on Consumers) was carried out jointly by the SIRCOME agency (<http://www.sircome.com/>), the University of South Brittany ([www.univ-ubs.fr](http://www.univ-ubs.fr)) and the University of South Bohemia ([www.prf.jcu.cz](http://www.prf.jcu.cz)) on behalf of the European Economic and Social Committee (Ref: CES/CSS/1/2015).

It used a sample of 2 917 participants across four different European regions (France, Spain, Czech Republic and Benelux).

The main aim of the study was to analyse whether lifespan labelling on products might influence consumers' purchasing decisions. Several different ways of displaying this information were tested. Differentiated analyses were performed on nine categories of product, four label formats, ranges of purchase prices, and participants' country of residence.

An experiment was designed to test the potential influence of lifespan labelling. The experiment was based on simulated online shopping and involved designing a dummy retail website. We tested the effects of this labelling on nine product categories (suitcase, printer, coffee maker, vacuum cleaner, smartphone, trousers, sport shoes, television, washing machine). Participants could choose between 10 different models for each product category (e.g. 10 different coffee makers).

Participants were able to navigate through the site in order to make their selection, like in a real online shop. Once they had confirmed their shopping basket, participants were redirected to a questionnaire, which measured socio-economic indicators as well as psychosocial variables.

**The results of the test show that lifespan labelling has an influence on purchasing decisions in favour of products with longer lifespans. On average, sales of products with a label showing a longer lifespan than competing products increased by 13.8%.**

### Varying effects depending on the product

We noted a **significant influence on purchasing decisions in eight of nine product categories tested**: suitcase (+ 23.7%), printer (+ 20.1%), trousers (+ 15.9%), sport shoes (+ 15%), coffee maker (+ 14.4%), washing machine (+ 12.9%), vacuum cleaner (+ 12.3%), and smartphone (+ 11.4%). Only the simulated purchases of televisions were not significantly affected by environmental labelling.

This last finding seems rather unexpected, and a more thorough examination of the literature on motivations when buying **televisions** might explain this. The very close similarity between the range of available televisions should also not be discounted as a possible explanation for this lack of influence. It is possible that participants did not pay much attention to the attributes of these very similar products. Unlike the other categories of products, the various models of televisions were not particularly distinctive in terms of design, colour or their physical characteristics more generally. This

fact, specific to this product category, may have meant that participants were less attentive, and therefore led to the lack of an observed effect.

Although labelling had an effect on purchasing decisions in the other product categories, the degree of influence varied depending on the type of product. Thus we observed that **suitcases** (+ 23.7%) and **printers** (+ 20.1%) were the products where labelling had the strongest effect. Furthermore, suitcases were the only product where labelling had an effect in the four geographic areas of the experiment.

**Suitcases** are inherently mobile objects. That means that they have two attributes that make consumers likely to attach great importance to their lifespan. On the one hand, travel puts their soundness to the test; how robust they are would therefore seem to be an essential attribute. On the other hand, since they are used only when travelling, they may only be used sporadically. When used rarely, consumers can legitimately expect them to last a long time.

**Printers**, meanwhile, are technological objects, "expert systems" (that operate in a way that users do not fully understand) that are nowadays found in most households. Printers are popularly thought to have short lifespans. This perception may have contributed to the degree of influence exerted by the label. Lifespan labelling had an effect on samples from three of the four regions studied (France: + 27.3%; Czech Republic: + 22.5%; Benelux: + 22.2%).

Of the products where labelling had an effect, the impact was weakest with **smartphones** (+ 11.4%). Virtual sales were seen to increase in the case of the samples from France (+ 18.3%) and Spain (+ 16.2%), but not in the case of those from Benelux and the Czech Republic. This lower degree of influence may be due to the rapid development of smartphone technology. These objects' lifespan depends more on their (in)capacity to process and adapt to constantly evolving types of content than it does on problems relating to their components malfunctioning.

### **Varying effects depending on the region**

An analysis of the results from the participants' four regions shows that lifespan labelling had an effect on all four sample groups. More specifically, we observed that the influence was greatest in relation to the sample from France (+ 24.0%). This sample was influenced more strongly than the samples from the Czech Republic (+ 16.8%), Benelux (+ 16.8%) or Spain (+ 13.8%). The Spanish sample group showed the least evidence of influence. These results were corroborated by the results of analyses carried out on each product in each geographical sample group.

### **The influence of price**

Lifespan labelling influences purchasing decisions, regardless of the price of products (+ 13.8%). Analysis by price range shows different results depending on the region and the product. However, the results would lead us to cautiously posit that there is a price effect. It appears that as the amount that people are willing to pay for a product increases, the importance of lifespan also increases. In other words, it seems that lifespan labelling has more influence on purchasing decisions relating to

high-end products (+ 15.3%) than low-end products (+ 14.1%). Nonetheless, the difference is not large, and additional testing would be required to confirm it.

Moreover, 90% of respondents said that they were prepared to pay more ("willingness to pay") for a similar product (dishwasher) with a lifespan that was 2 years longer. On average, they said they were willing to pay EUR 102 more for this assurance for a dishwasher with a purchase price between EUR 300 and EUR 500.

Participants from Benelux countries were more inclined than others to be willing to pay extra: more than 21% of them were willing to pay EUR 200 over the initial price; 13% were even willing to pay an extra EUR 300. The groups from France and Spain produced similar results: 44% of participants in these two countries were willing to pay EUR 100 extra for a dishwasher with a lifespan that was 2 years longer. In the Czech Republic, the results were less striking: 35% of respondents were willing to pay EUR 50 extra, while 37% were willing to pay EUR 100 extra. The group from the Czech Republic also had the highest proportion of people (15%) who said that they would not pay more for a dishwasher with a lifespan that was 2 years longer. One explanation for these findings is the difference in GDP between countries.

### **Consumer profile**

Although lifespan labelling had an impact on men as well as on women, women were more likely to base their purchasing decisions on this criterion. A similar observation can be made with regard to age. Lifespan labelling influenced purchasing decisions in all age groups. However, the most receptive to lifespan considerations was the 25-35 age group (+ 17.7%). Under 25s were in second place (+ 15.5%). People older than 35 were less influenced by lifespan considerations (+ 12%).

Lifespan labelling had an influence on participants regardless of their household income. However, the results suggest that high income households could be more receptive to lifespan labelling than lower income households (+ 20.1% for households with an income of more than EUR 3 100 per month as opposed to + 6.0% for households with an income below EUR 1 500 per month). However, the impact of this socio-economic aspect would also need to be confirmed by means of further research.

Awareness of or involvement in environmental matters had no discernible effect.

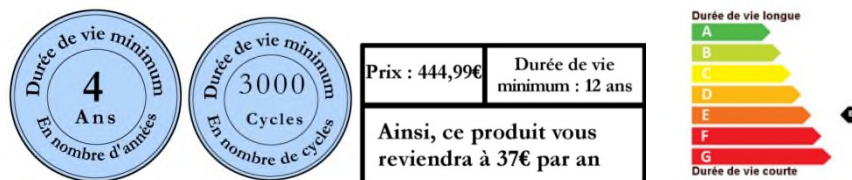
**The typical profile of a consumer receptive to lifespan considerations when making their purchasing decision would therefore be a woman between 25 and 35 years old with an above-average household income.**

### **The best understood and most effective labels**

We designed four different types of label in order to compare the potential influence of the following different ways of displaying the information:

- a label showing lifespan in years or months,

- a label showing useful lifespan in terms of cycles, page yield, etc.,
- a label showing cost per year,
- a label similar to the energy label, with a scale from A to G.



The four labels that we tested proved to be effective. Each label was seen to have an influence on purchasing decisions. However, two labels appeared to be particularly effective. Labels with a **scale from A to G** (+ 20.4%) and displaying **useful lifetime** (+ 14.1%) achieved better results than the other two labels (+ 11.4% for the label displaying the cost per year and + 9% for the label displaying the lifespan in years).

However, the A-G scale may potentially have been confused with the energy label. 68% of all participants fully understood that this label contained information about the lifespan of the product. A learning effect was observed, however, as more than 70% of people who saw this label when making a simulated purchase understood it, compared with 66% in the control group. This labelling format is therefore potentially appropriate, especially if consumers have the time to get used to it.

Meanwhile, the label with a lifespan given as a time period (months, years) was the best understood, with 82% of participants associating it with lifespan. This suggests that useful lifespan should be displayed, in a similar format. In terms of format, however, we have some reservations regarding the use of large numbers. More specifically, individuals find it difficult to mentally picture – and therefore take on board – large quantities (e.g. 10 000 hours, 500 wash cycles). The possibility cannot be ruled out that this cognitive limitation makes the indication of a product's lifespan rather unclear. This point should be closely examined before using this type of label.

It seems best to avoid the label displaying the annual cost. Not only did it perform worse than other labels, but it was also the least understood by consumers.

### Responsible manufacturers and users

In terms of various parties' responsibility for a product's lifespan, 80% of participants generally assigned a **high to very high degree of responsibility to manufacturers**. Users were considered to be next most responsible (68%), while repairers (56%) and retailers (35%) were also assigned significant but lesser responsibility.

Regardless of the region, participants allocated the greatest share of responsibility to manufacturers, then to users. Participants from the Czech Republic and France stood out, however, as 95% and 91%



respectively assigned high to very high responsibility to manufacturers, compared to 81.8% for the sample from Benelux and 75.1% for the sample from Spain.

These observations support the notion of minimum lifespan labelling that is binding on manufacturers. A minimum lifespan guarantee could be considered while defining products' conditions of use. The vast majority of consumers recognise that they share responsibility for how long their products last.

### **Limitations of the study and outlook**

We cannot neglect the fact that the present study, and its conclusions, have some limitations.

First, the samples used in the study are not objectively homogeneous and do not comply with quota criteria. However, it can reasonably be assumed that the large sample size ( $n=2\ 917$ ) would allow most potential biases in the sample to be controlled for. Analyses of representative samples of target population groups would strengthen the observations made in this study.

The experimental procedure is another limitation. In order to avoid any interaction effects, we chose to restrict potential environmental labelling on the products tested to the label showing the product's energy class (European Ecolabel, organic AB label, etc.). A new trial in a more natural setting, with multiple labels and images displaying product attributes could be envisaged.

Finally, it would be appropriate to carry out further tests with isolated objectives: to compare several labels or potential influence by product type, for instance. Indeed, the numerous variables handled in this study make it impossible to rule out interaction effects.



# **ILLC study**

## **The Influence of Lifespan Labelling on Consumers**

*Final report – March 2016*

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## Foreword

This ILLC study falls within the framework of the call for projects 'Study on the potential effects on consumers of the real lifetime of products display' from the European Economic and Social Committee (EESC) (Ref: CES/CSS/1/2015).

The EESC wanted to observe changes in consumer behaviour when buying products, prompted by displaying product lifespans (LS). The EESC's initial hypothesis was that displaying product lifespans could foster a better understanding of the importance of consuming sustainably and responsibly, and that less wealthy households could be encouraged to pay more for better quality products that would last longer.

This study was carried out jointly by the agency SIRCOME (<http://www.sircome.com/>), the University of South Brittany ([www.univ-ubs.fr](http://www.univ-ubs.fr)) and the University of South Bohemia ([www.prf.jcu.cz](http://www.prf.jcu.cz)).

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## **Introduction**

The ILLC study started with a review of scientific literature on environmental labelling and factors affecting 'green' purchasing behaviours. The main findings are set out in Part 1 of this report.

The testing designed for this study was based on a simulated purchase on an e-commerce website. After logging on, participants were assigned three products. They then had to simulate buying these products on the website. The three products were randomly selected from a list of nine products (for example, filter coffee makers, t-shirts and smartphones). Participants could choose between 10 models for each of the products (for example, 10 refrigerators). To do this, participants could browse the site as if it a real e-commerce website. Once they had selected their products and confirmed their shopping baskets, they were asked to complete a questionnaire, which measured different variables.

Given the complexity of the experimental set-up, Part 2 of this report will describe the user experience. The methodological framework and concepts measured will be addressed in Part 3. Finally, the findings will be presented and analysed in Part 4.

## **Part 1. Literature review**

Ecolabels came into being as a result of the increase in consumer awareness of environmental issues. Ecolabels – environmentally-friendly or environmental labels – are labels that guarantee that products or services have a reduced environmental impact in comparison with other products in the same category. They are very often awarded by independent certification bodies. According to recent research, consumer perceptions are changing and issues related to sustainability and the climate change impact of products are increasingly important and relevant in consumer purchasing decisions.

### **I. Perceptions of environmental labels**

In general, consumers favour not only ecolabelled products but also ecolabels. Therefore, in a purchasing decision situation, if consumers see two products as otherwise identical, environmental aspects will be decisive in their choice of product. Also ecolabelled products are seen as opposing 'polluting' products. Thus it is generally agreed that ecolabels can affect purchasing decisions.

Ecolabels are not designed simply to address a demand for goods that stand out in terms of environmental quality, but also to reduce the information gap between producers and consumers, by conferring the status of credence goods on products that are strongly associated with being environmentally friendly. As a matter of fact, ecolabels are the only way for consumers to obtain information on the environmental impact of products. Consumers put their confidence in labels that help them in their purchasing decisions and use labels to make up for their lack of knowledge and understanding of the environmental impact of what and how they consume.

Ecolabels are seen by consumers as a symbol of confirmation that products comply with certain environmental standards. They give them information on product characteristics that they would otherwise need to find out for themselves. For consumers, ecolabels are the most trustworthy indicators of performance in terms of respect for the environment. What is more, if labels are not very credible, this has a negative impact on product perception. Researchers also generally agree that the validity and verifiability of the certification process, the credibility of labels, the meaning of labels and the exact information that they give are points which may be particularly ambiguous and misunderstood by consumers. The large number of ecolabels only serves to increase consumer confusion. Among that profusion of labels, their history and the preconceived ideas that consumers have with regard to certain labels mould the credibility of labels with consumers further down the line.

Current research concludes that the effectiveness of ecolabels depends partly on how the information is presented AND on the capacity of consumers to take that information on board and act on it. For example, quantitative and comprehensible information triggers positive judgments on the reliability of the information supplied. Thus research on ecolabel formats has shown that the majority of consumers prefer simple logos. This is particularly true for products sold in supermarkets. Labels' graphic identities and formats do not, however, affect the importance attached by consumers to environmental information when making purchasing decisions. The quantity and accessibility of environmental

information seems to be the decisive factor. The fact is that consumers want more environmental information to help them choose from different labelled products.

Obviously, the effects of ecolabelling vary according to the products concerned. For example, tests have been carried out to compare the effects of ecolabelling on everyday items and luxury goods. Everyday items are defined as the essential necessities for a particular purpose. Detergent and toilet paper, for example, are in this category. Hedonic goods, however, are defined as a luxury, as they provide pleasure and amusement. Perfume and flowers are examples of hedonic products. Consumers see labels as part of the utilitarian aspect of products and, consequently, labels can have a positive impact on how consumers evaluate everyday products, particularly when the labels highlight environmental benefits. The findings show that environmental labelling may improve evaluations of luxury products that give a socially acceptable justification for using those products. That effect is boosted when the environmental information stresses personal and social benefits, in relation to users' social status. With everyday items, consumers tend to evaluate products with an environmental claim emphasising overall benefits more positively than products with an environmental claim emphasising personal social benefits. On the other hand, with luxury goods, consumers are more positive about products with an environmental claim emphasising personal social benefits.

Other research has specifically addressed labels for energy-efficient appliances. Its findings have helped to identify several characteristics that increase the effectiveness of environmental labelling. Thus, labels must be easily visible and prominent, easily comprehensible (information provided in a simple way) and certified by an organisation deemed reliable. Labels must also be seen by consumers as useful and effective tools to help them in their decision-making.

Despite the number of studies carried out, it is not clear how consumers process that information when making their purchasing decisions. All that current thinking allows us to say is that when consumers are buying, they aggregate the information provided by the ecolabels on a single product.

## **II. Determinants when purchasing green products**

Many studies have focused on determinants that affect purchasing decisions with regard to green products. In addition to socio-demographic characteristics likely to affect green purchasing decisions, psychological factors have also been highlighted. We will now present the main green purchasing factors identified in scientific literature.

### **II.1 Socio-economic factors**

Research on the socio-economic characteristics of consumers of green products has revealed some broadly significant factors.

Several studies focusing on behaviour and attitudes towards the environment have recorded gender differences. Most studies note that young women have higher expectations and show more of a preference for ecolabelled products.

Several studies focusing on behaviour and attitudes towards the environment have also recorded age difference effects. However, there are contradictory findings on the impact of age differences on green purchasing decisions. Age difference effects are said to be indirect. For example, as individuals age, they give more credibility to labels. Demand for 'green' products is generally in inverse proportion to age, on account of generational differences, as young generations are more sensitive to environmental issues.

There is no general agreement on education level effects on green purchasing decisions. Thus, in various studies, positive, neutral or adverse effects on purchasing habits have been recorded. Level of education is said to affect purchases indirectly in that it has a positive relationship with the emphasis given to information on the environment in general and confidence placed in ecolabels. On the other hand, the most highly educated people are also most likely to evaluate ecolabelled products negatively.

Other factors such as marital status, professional situation and place of residence have also been identified in other studies. According to the studies, income impact is zero or moderate.

### **II.2 Psycho-social factors**

Sustainability and climate change issues are increasingly significant and relevant in purchasing decisions and, as a result, psycho-social factors are more decisive than ever in purchasing intentions and decisions.



(a) *Positive and negative factors*

Numerous psycho-sociological factors influencing responsible purchasing behaviours have been identified in scientific research:

- **personal values;**
- **altruism;**
  - o desire for fairness;
  - o civic values;
  - o a strong moral compass;
  - o environmental awareness: although consumers take environmental issues into account when making purchasing decisions on green products, their spending is determined by how environmentally committed they are;
- **political values;**
- **personal standards;**
- **habits:** consumption habits have an impact on green purchases;
- **beliefs regarding social norms:** for example, moral and social standards play an important role in energy choices;
- **attitudes towards the environment;**
- **a wish to preserve the environment;**
- **the level of involvement in environment issues:** awareness of environmental issues in relation to product characteristics affects purchasing;
- **knowledge of environmental considerations;**
- **level of concern for environmental issues;**
- **the consumer's perceived effectiveness of a product.**

Factors have also been identified, specifically on the *willingness to pay* for green products:

- different **knowledge:**
  - o knowledge of the brand, or the product,
  - o knowledge of the label, the certifying body,
  - o knowledge of environmental issues, the environmental impact of the product;
- **personal values;**
- **attitudes;**
- past **behaviours** of eco-citizens;
- **involvement in environmental issues;**
- type of additional **information** available;
- level of **education;**
- **confidence** in the certifying body;
- perceived **benefits;**
- **individual** (energy saving) and **collective incentives** (environmental protection), with regard to refrigerators.

Studies have also helped highlight the main obstacles to buying green products:

- **factors preventing** consumers from **linking** environmental issues to products consumed;

- **factors preventing** consumers from **distinguishing between green products** and other products;
- **factors preventing** consumers from understanding the **environmental benefits** of green products;
- possible **inconvenience**;
- increase in **cost**;
- a perceived increase in **risks** linked to the product;
- **lesser quality** of product;
- previous **attitudes** to the product.

*(b) Public and private reasons*

Evidence increasingly suggests that non-external incentives can play a role when it comes to civically oriented behaviours, such as environmentally friendly consumption. Although there is no general consensus on that idea, a reassessment of the premise that different types of incentive interact with each other has recently gained acceptance in the field of economic psychology.

Thus the reasons for purchasing a green product can vary greatly. Frey and Stutzer have put forward various models of the links between environmental ethics and purchasing motivations:

- the **model of pure altruism**, in which individuals take account of two dimensions in their consumption of green products: personal preference and collective interests;
- **interiorised norms or beliefs shared socially with regard to individual conduct**: with social norms, sanctions come from other members of society, while with interiorised norms, individuals sanction themselves;
- the **intrinsic reason model**, which integrates the idea that we can carry out an activity for our own well-being.

Traditionally, studies distinguish between personal reasons and altruistic reasons. Thus many studies come to the conclusion that both individual AND collective interests come into play in green purchases. Individuals are driven by altruism, social, fairness and reciprocity norms and intrinsic reasons.

These reasons vary, according, in particular, to socio-economic characteristics and product-type. For example, the closer the relationship between pollution and consumption in product representations (agriculture, seafood, and so on), the more health may be an adequate incentive in the purchase of green products.

One study has even concluded that personal interests prevail over public motives. With specific regard to organic products, the findings on personal and public interest are contradictory. Current thinking does not tell us whether taste or health prevail when it comes to the preservation of the environment.

Health is considered one of the main reasons for choosing ecolabelled products. The more a product concerns the body, the more importance is placed on health interests. For example, health benefits are

the main reasons for choosing ecolabelled food and drinks. However, other studies show that health arguments and information only have a marginal effect on buying behaviours in comparison with the environmental argument. Health, along with protection of the environment, appears to be the primary motivation for purchasing organic food.

Ecolabelled products enjoy a positive image in society. They are the socially acceptable choice. Social recognition can thus be an incentive for green consumption.

Reducing energy costs is a significant incentive when it comes to buying energy-efficient products. The environmental characteristics of electrical products affect purchasing behaviours for this product type.

One study brought to light a motive for finding environmentally-friendly alternatives to conventional products.

The criteria for buying food (bread, potatoes, milk, meat) are, in descending order of importance, taste, health benefits, lifespan and organic origin. The most significant perceived differences between organic and conventional food products are price and health benefits.

Researchers have observed that the values that motivate socially responsible consumption are the wish to provide the best possible for others, everyone's well-being and fairness (including for current and future generations).

Importance placed on quality and the environment at the time of purchase has a positive impact on the purchase of green products, unlike importance placed on price.

### *c) Indirect factors*

A large number of indirect factors are involved in purchasing decisions for responsible products. Many indicators influence consumer knowledge, commitment and general awareness-raising when it comes to green consumer products and, therefore, intentions behind purchasing and also actually purchasing green products. Hidden factors can appear when academics explore the interplay between variables. Some of the factors cited previously are indirect factors.

One of the most powerful indirect factors is environmental awareness or green thinking. Those forms of awareness depend on:

- knowledge of environmental problems,
- knowledge of environmental solutions,
- individual environmental commitment,
- knowledge of the benefits of green products.

Environmental information is better used and gives more satisfaction when combined with environmental awareness.

Moreover, interest in environmental policy has a positive effect on attitudes towards environmental protection. A strong connection has also been found between social identity and pro-environmental behaviours. Thus, for example, several studies have shown that energy production and heating choices are largely determined by moral and social norms.

Beliefs about the reliability and quality (performance) of green electricity products are dependent on beliefs about non-polluting components, use of recyclable packaging and opportunities to reduce the inherent costs of using products. In other words, consumers largely rate electric-powered products on these three issues.

## Part 2. Description of user experience

### Foreword

The website we developed was pretested by two researchers with some 10 people. The pretest was carried out under the administration conditions chosen in the framework of this study (self-administered, respondents not informed that they were taking part in a pretest). An investigator was on hand to note each respondent's reactions: hesitation, discontent, reflections and so on. The respondents were only told later that they had been taking part in a pretest. They were then asked to give their feedback on their user experience of the website (annoyances, questions, areas of uncertainty, and so on.).

The investigators checked:

- the structure of the questionnaire (logical, coherent structure, and so on);
- the wording of instructions (clarity, precision, and so on);
- the wording of questions (clear, unambiguous, inoffensive questions, and so on);
- the wording of responses (clear, unambiguous, inoffensive responses, all possible responses considered (other response(s), interim responses, and so on);
- the number of responses (are there too many possible responses? not enough? should there be a neutral response, or should it be removed?) ;
- the number of questions (for example, are there enough questions to get to grips with the subject matter? is the number of questions overly taxing for respondents?).

The questionnaire and the website were amended in response to the pretest findings.

### I. Step 1: Instructions stage

Participants start on the homepage, which sets out the instructions to be followed:

<http://sircome.com/ilic-study>

Thank you for agreeing to participate in this experiment by the Universities of South Brittany and South Bohemia and SIRCOME on behalf of the European Economic and Social Committee. The study will help to provide answers to several questions raised by international bodies with a view to adapting European policy to our current consumption habits.

Now, please follow our online simulation:

Suppose that you have to buy three products on the Internet that you need for yourself or your home. **You need one X one Y and one Z.**

We have set up a simulation of an online store. You will make your fictional purchases on this site. You will not be asked for your bank details. For the purposes of the test we have removed brand names from products.

As with an online store, once you have chosen a product, you have to add it to your basket. Do not forget to confirm your order at the end of the simulation by clicking on

'Confirm my order'. All that remains then is for you to answer several short questions on your experience of the simulation, and then the study will be finished.

During the simulation, try to be as true to life as possible by choosing the products that you would actually have bought in real life. Feel free to make a note of the three products that you need to buy so that you don't forget them!

Thank you in advance. We hope that you enjoy the experience.

**'Your X is broken and cannot be repaired so you need to buy a new one. You also have to buy a new Y and a Z.'**

Your shopping list is therefore:

- 1: X
- 2: Y
- 3: Z

**Start test.**

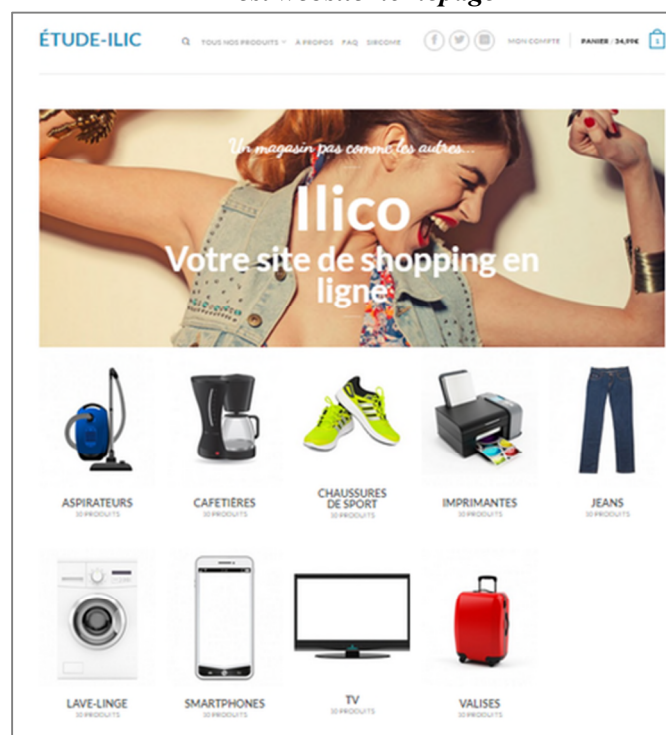
The list of products to be bought is selected at random. However, every respondent is asked to buy one household appliance, one high-tech product and one item of clothing. When participants click the 'Start test' button, they are directed to the e-commerce website.

## II. Step 2: Purchase simulation stage

### II.1. Main menu

Participants access the e-commerce website's main menu. This page displays the categories of products available.

#### *Test website homepage*



The homepage gives participants access to several menus, including:

- an 'About' menu,
- an 'FAQ' menu,
- an 'All our products' menu.

An image with the name of the category is displayed for each product category. Participants can go to the models list by clicking on the images or by going to the 'All our products' drop-down menu.

As with e-commerce websites, participants can click on the basket at any time and see how many products are in the basket. The total basket amount is shown. Participants can get a quick preview of the contents of the basket by running the cursor over the 'Basket' tab.

## II.2. About

The 'About' tab gives details on the context of the study and allows respondents to sign up to receive the results of the study by providing their email address.

### 'About' page

**À propos**

f t e y 8+

**À PROPOS**

**SIRCOME**  
DE LA RECHERCHE À L'ACTION

**UBS**  
Université de Bretagne-Sud

Ce site internet a été conçu dans le cadre de l'étude ILIC du Comité Economique et Social Européen (CESE). Sircome, agence conseil en stratégie communication et marketing, et l'Université de Bretagne Sud (UBS) réalisent cette étude en partenariat.

Le Conseil Economique Social et Environnemental est une assemblée constitutionnelle consultative, investie dans 5 missions : conseiller le Gouvernement et le Parlement, contribuer à l'élaboration et l'évaluation de la politique économique, sociale et environnementale, favoriser le dialogue entre les catégories socio-professionnelles à travers l'élaboration de propositions d'intérêt général, promouvoir un dialogue constructif et une coopération avec les assemblées consultatives, et contribuer à l'information des citoyens. Les rapports, avis et études produits par le CESE résultent soit d'une demande du gouvernement, soit d'une demande du Parlement, soit de sa propre initiative. Il peut également être saisi par voie de pétition pour toute question à caractère économique, social et environnemental.

Sircome est une agence, qui se positionne « de la recherche à l'action », accompagne les organisations et entreprises dans la définition de stratégies globales ou spécifiques, leur mise en œuvre et leur évaluation, toujours dans une démarche environnementale et sociale. Sircome donne son expertise dans 5 grands domaines : communication et RSE, marketing et développement durable, science, innovation et société, ville durable et connectée, nudge, comportements et influence. L'UBS a pour mission la participation au service public de l'enseignement supérieur et de la recherche. Rassemblant 13 équipes de recherche pluridisciplinaire labellisées, dont cinq Unités Mixtes de Recherche CNRS, l'université regroupe plus de 250 enseignants chercheurs et 210 doctorants.

Si vous souhaitez recevoir les résultats de cette étude, laissez-nous vos coordonnées et nous vous les enverrons dès qu'ils seront publiés par le CESE.

E-mail (obligatoire)

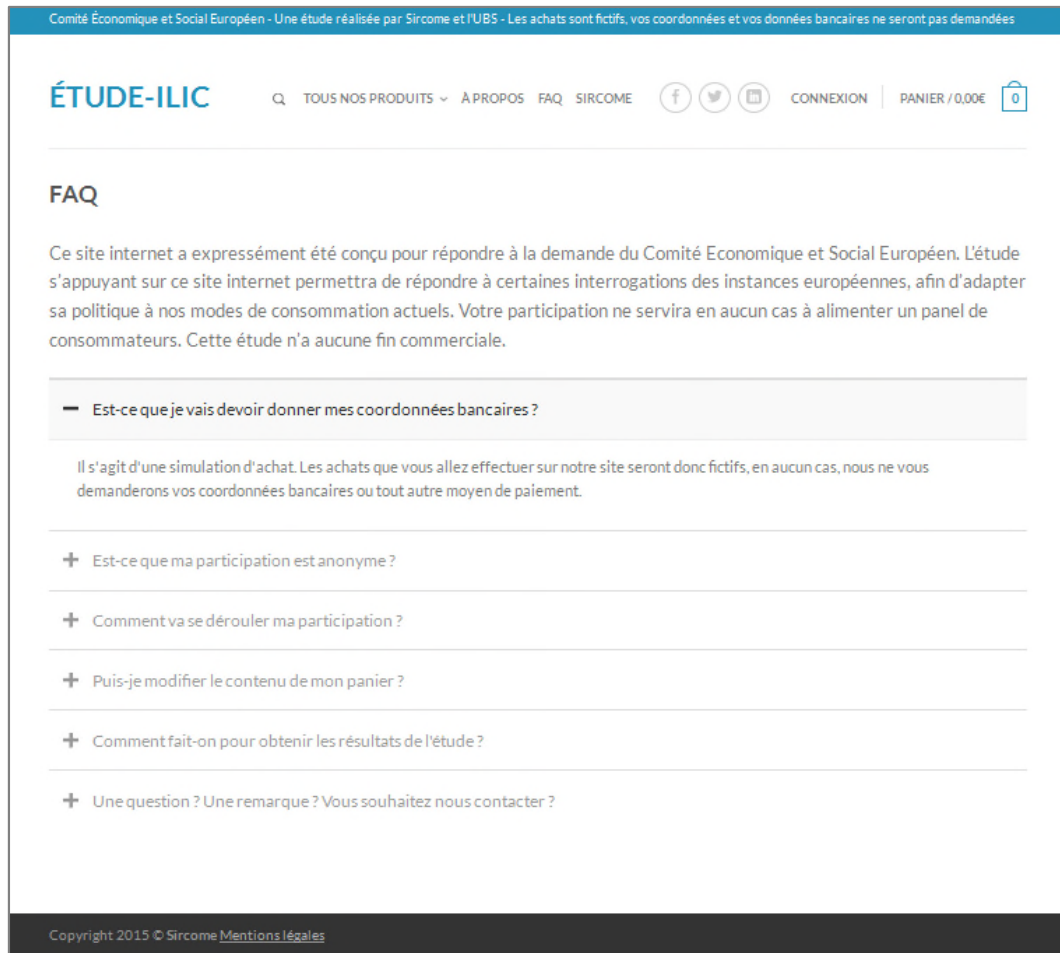
**ENVOYER**



### II.3. FAQs

The 'FAQ' tab is designed to give answers to the main questions Internet users might have, to reassure them and to maximise the number of respondents.

#### 'FAQ' page



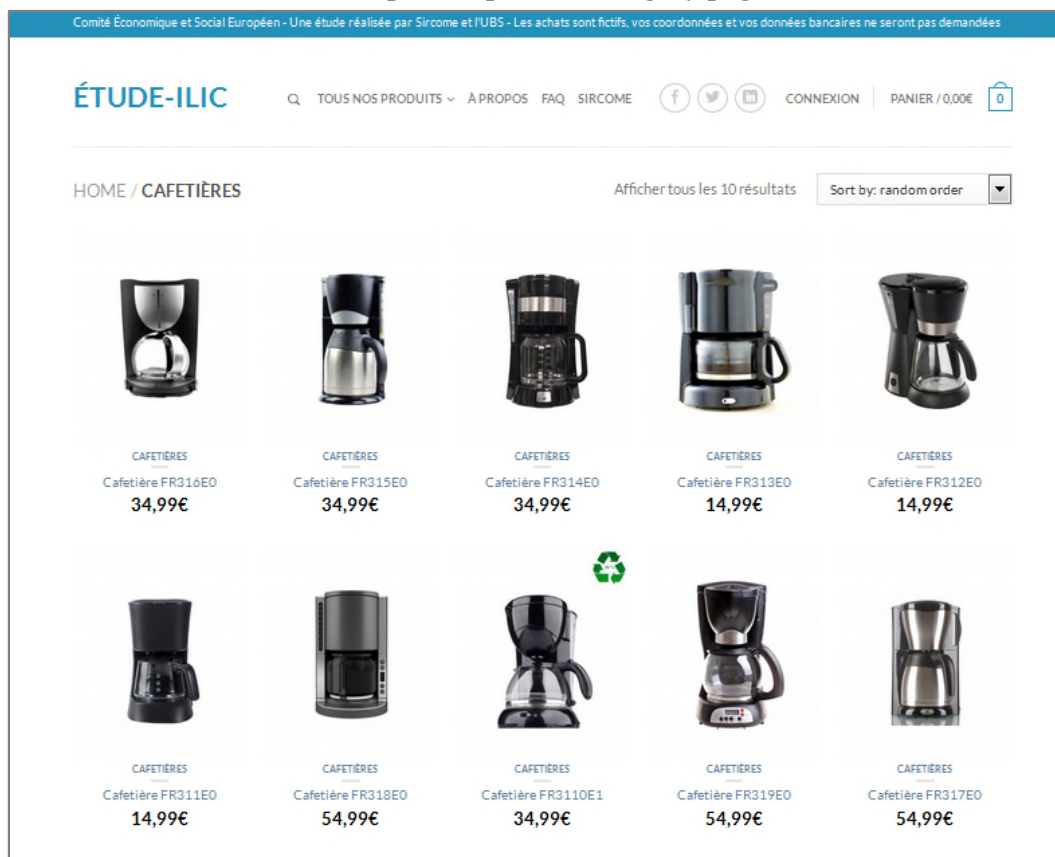
### II.4. Product categories

When participants select a category, a page displays 10 product references in the form of thumbnails. The order of the thumbnails is chosen at random in an effort to prevent any bias owing to order of appearance. The products are presented as uniformly as possible. For example, for filter coffee makers, all articles are cropped, shown front on, without shadowing, in black and with the handle turned to the right. All prices end with '4.99'.

For each product, participants can choose from among 10 models shown: three are low-priced, three are mid-priced and three high-priced. The difference between the low-price and the mid-price is the same as the difference between the mid-price and the high-price (e.g.: low-price = EUR 60 / mid-price = EUR 100 / high-price = EUR 140). The 10th model is assigned to different price categories for

different products. The 10th product always has an ecolabel (for example, fair trade or organic farming) and enables the potential effects of a combination of various labels to be measured.

### Example of a product category page



The thumbnails are made up of several elements:

- a photo of the product,
- a price,
- any labels (including LS labels),
- the product reference (useful for evaluating results).

Participants can click on the product thumbnail to see its full description.

### II.5. Full model description

The description is made up of several elements:

- a photo of the product (1500x1909 pixels) that the user can enlarge,
- a price,
- potential labels (including LS),
- the product's technical features (description).

As on many merchant sites, technical information is presented in line format and article-specific features are in bold to make the description easier to read. The technical features of models in the

same price range are similar. As the range moves more upmarket, one or two additional features have been added, depending on the product type.

### Example of product description



The screenshot shows a product page for a TV. The header includes the logo 'ÉTUDE-ILIC', a search icon, and navigation links: 'TOUS NOS PRODUITS', 'A PROPOS', 'FAQ', 'SIRCOME', 'MON COMPTE', and 'PANIER / 14,99€'. The main content area features a large image of a TV on the left and a detailed description on the right. A circular badge above the TV image states 'Durée de vie minimum 3780 Heures en nombre d'heures'. The product name is 'TV FR252D1' and the price is '394,99€'. The description lists various features: 'Résolution : 40 pouces (101 cm)', 'Ecran : Full HD', 'Smart TV\* : non', '\*TV connectée', 'Fonction enregistrement : oui', 'Fonction Time shift\* : non', '\*possibilité de faire « pause »', '3D : non', 'Ports USB : 0', 'Ports HDMI : 0', 'Emploi limité de substances nocives pour l'environnement : non', and 'Garantie : 2 ans'. At the bottom of the description, it says 'Durée de vie minimum : 3780 heures'. Below the description is an orange 'AJOUTER AU PANIER' button and a quantity selector showing '1'. The category 'TV' is listed at the bottom.

On product description pages an 'Add to basket' button enables participants to select the product and add it to their basket.

### II.6. Confirming the order




When participants have put the three products assigned to them into the basket, they can confirm their choices by clicking on a 'Confirm my order' button.

## Basket example

Comité Économique et Social Européen - Une étude réalisée par Sircome et l'UBS - Les achats sont fictifs, vos coordonnées et vos données bancaires ne seront pas demandées

ÉTUDE-ILIC Q TOUS NOS PRODUITS À PROPOS FAQ SIRCOME f t 📄 CONNEXION PANIER / 514,97€ 3

### CART

PRODUIT	PRIX	QUANTITE	TOTAL
 Chaussures de sport FR373E0	34,99€	1	34,99€
 Cafetière FR3110E1	34,99€	1	34,99€
 Lave-linge FR325E0	444,99€	1	444,99€

**TOTAL PANIER**

Sous-total	514,97€
Livraison	Livraison Gratuite
<b>Total</b>	<b>514,97€</b>

[METTRE À JOUR LE PANIER](#)

[VALIDER MA SÉLECTION](#)

**CODE PROMO**

Enter Coupon

[APPLIQUER LE CODE PROMO](#)

### III. Step 3: Questionnaire stage

Once the order has been confirmed, the online purchasing simulation is over. A new page opens automatically and displays a questionnaire.

The participant then has to respond to 23 questions which are presented in various forms (multiple choice, binary, Likert-type scale). Those questions will be presented in Part 3, which addresses our methodological framework. Participants use a confirmation button at the bottom of the page to confirm their replies. After they confirm their replies, participants are taken to a thank you page which wraps up the test.

You have now completed the simulation, thank you. Your answers will be very useful to the European Economic and Social Committee for its recommendations to the European Parliament.  
If you would like a copy of the findings, please enter your email address below:  
Please note, this is a very large study and you may not receive a response for several months.

## **Part 3. Methodological framework**

### **I. Hypotheses**

This section presents all the hypotheses made as part of the ILLC project.

#### **H1. Does displaying the LS affect purchasing decisions?**

H1A: Displaying the LS affects purchasing decisions.

H1B: The relationship between changes in price and the LS has a mediating effect on the impact of displaying of lifespans on purchasing decisions.

#### **H2. Can contextual variables affect the impact of displaying the LS?**

H2A: The product category has a mediating effect on the impact of the LS on purchasing decisions.

H2B: Product-type has a mediating effect on the impact of the LS on purchasing decisions.

H2C: Price has a mediating effect on the impact of the LS on purchasing decisions.

H2D: Including an ecolabel has a mediating effect on the impact of the LS on purchasing decisions.

#### **H3. Do socio-demographic variables affect the impact of the display of the LS?**

H3A: Gender has a mediating effect on the impact of the LS on purchasing decisions.

H3B: Country of residence has a mediating effect on the impact of the LS on purchasing decisions.

H3C: Household size has a mediating effect on the impact of the LS on purchasing decisions.

H3D: Having a child/children in the household has a mediating effect on the impact of the LS on purchasing decisions.

H3E: Family situation has a mediating effect on the impact of the LS on purchasing decisions.

H3F: Level of education has a mediating effect on the impact of the LS on purchasing decisions.

H3G: Socio-professional category has a mediating effect on the impact of the LS on purchasing decisions.

H3H: Household income has a mediating effect on the impact of the LS on purchasing decisions.

H3I: Does place of residence have a mediating effect on the impact of the LS on purchasing decisions?

#### **H4. Do behavioural variables affect the impact of displaying the LS?**

H4A: Membership of an environmental group has a mediating effect on the impact of the LS on purchasing decisions.

#### **H5. Do psychological variables affect the impact of displaying the LS?**

H5A: The importance placed on the environmental impact of products when making purchases has a mediating effect on the impact of the LS on purchasing decisions.

H5B: Confidence placed in environmental labelling of products when making purchases has a mediating effect on the impact of the LS on purchasing decisions.

#### **H6. Does the way in which lifespans are displayed affect the purchasing process?**

H6A: Displaying lifespans in years (LSY) affects consumer purchasing decisions.

H6B: Displaying useful lifetime (UL) affects consumer purchasing decisions.

H6C: Displaying lifespans on a scale from A to G (AG) affects consumer purchasing decisions.

H6D: Displaying the yearly price (CD) affects consumer purchasing decisions.

## **II. Dependent variables**

The dependent variables are as follows:

- choice of products on the basis of whether LS is displayed or not,
- choice of products on the basis of how the LS is displayed,
- choice of products on the basis of the combination of an LS label with another label,
- choice of products on the basis of the price/LS relationship,
- environmental commitment,
- personal beliefs.

## **III. Active independent variables**

### **III.1. Product type**

In an effort to cover the widest possible range of consumer products, products have been selected according to various criteria. Firstly, the objects chosen are very common items in most European countries. Secondly, we wanted to test products with varying exposure to changing trends, updates, average lifespan and price differences.

Thus tests are carried out on three product categories (household appliances, high-tech devices, clothing and luggage), each represented by three different product types:

- household appliances: filter coffee makers, washing machines, vacuum cleaners.
- High-tech: smartphone, television, printer.
- Clothing and luggage: sports footwear, jeans, suitcase.

### **III.2. How lifespans (LS) are displayed**

We designed four different labels with a view to comparing the potential effects of these different ways of displaying the information:

- a label showing Lifespan (LSY) in years or months;
- a label showing Useful Lifetime (UL) in numbers of cycles, page yield, and so on.;
- a label showing the Annual Cost of Depreciation (CD);
- a label similar to the "energy class type label", going from A to G (AG).

Examples from the four LS labelling variants

Total lifespan in years  
(LSY)



Lifetime in number of uses  
(UL)



Price per year over a given lifespan or 'Cost of Depreciation' (CD).

Prix : 444,99€	Durée de vie minimum : 12 ans
Ainsi, ce produit vous reviendra à 37€ par an	

A to G classification  
(AG)



**NB:**

Not all nine products were tested with each of the four types of display. This would have led to too many different test conditions and the size of the samples for each of them would have been too small to ensure sound statistical significance. We tested two different displays for each product. Each type of display was tested on at least one product for each of the three product categories (household appliances, clothing and luggage, high-tech products).

With a view to testing all these combinations, we designed two websites that were the same in all respects with the exception of how lifespans (LS) were displayed for products (plus a control site without any LS display). For example, on site 1 the LS of filter coffee makers is given in A-G and on site 2, the LS of filter coffee makers is given in years (LSY). When participants log in they are allocated randomly to one of the 3 sites.

*(a) AG display*

The AG label is a sequence of 7 units from A to G, in which A being the longest lifespan, G being the shortest and D in the middle.

We assigned letter A to the high-end product (P+) with the longest lifespan, G to the low-end products (P-) with the shortest lifespan and D to the mid-range products (PM) with a short life lifespan. For the remaining products, we assigned - 2 (C) to the high end and mid-range (D) and + 2 (E) to the low end.

We designed the equation for assigning values to lifespan for the LSY, UL and CD labels along the lines of the A to G energy classification label:

<b>G</b>	<b>F</b>	<b>E</b>	<b>D</b>	<b>C</b>	<b>B</b>	<b>A</b>
N	N x 2	N x 4	N x 4.6	N x 6.6	N x 9	>N x 9

However, we had to adapt these differentials for certain products with lifespans that could not reasonably vary from 1 to 9.

**Distribution of AG labels**

Product 1	Product 2	Product 3	Product 4	Product 5	Product 6	Product 7	Product 8	Product 9	Product 10
Low-end & Long lifespan	Low-end & Short lifespan	Low-end & Short lifespan	Mid-range & Long lifespan	Mid-range & Short lifespan	Mid-range & Short lifespan	High-end & Long lifespan	High-end & Short lifespan	High-end & Short lifespan	Variable depending on products
LOW PRICE			MIDDLING PRICE			HIGH PRICE			
E	G	G	B	D	D	A	C	C	

*(b) Displaying Lifespans (LSY)*

Minimum lifespans in years have been selected on the basis of product tests where available. The principle was to assign the minimum lifespan currently noted for products positioned at the top of the range (P+) but with short lifespans (Products 8 and 9).

Product 1	Product 2	Product 3	Product 4	Product 5	Product 6	Product 7	Product 8	Product 9	Product 10
Low-end & Long lifespan	Low-end & Short lifespan	Low-end & Short lifespan	Mid-range & Long lifespan	Mid-range & Short lifespan	Mid-range & Short lifespan	High-end & Long lifespan	High-end & Short lifespan	High-end & Short lifespan	Classification according to test framework (product classed as bottom, middle or top of the range)
N X 4	N	N	N X 6.6	N X 4.6	N X 4.6	> N X 9	N X 9	N X 9	



Filter coffee makers									
4 years	1 year	1 year	9 years	5 years	5 years	10 years	7 years	7 years	5 years
Vacuum cleaners									
4 years	2 years	2 years	8 years	6 years	6 years	10 years	8 years	8 years	8 years
Footwear (in number of months)									
24 months	6 months	6 months	39 months	27 months	27 months	70 months	54 months	54 months	54 months
Smartphones (in number of months)									
N+4 16 months	N 12 months	N 12 months	N+12 24 months	N+8 20 months	N+8 20 months	N+>16 32 months	N+16 28 months	N+16 28 months	N+16 28 months
Televisions									
N+2 5 years	N 3 years	N 3 years	N+6 9 years	N+4 7 years	N+4 7 years	N+8 11 years	N+6 9 years	N+6 9 years	N+6 9 years

(c) Display of Useful Lifetime (UL)

Useful lifetime has been selected on the basis of product tests, when available. The principle was to assign the minimum useful lifespan currently noted for products positioned at the top of the range (P+) but with short lifespans (Products 8 and 9). Units of measurement differ according to the product: washes (jeans), cycles (washing machines), hours (TVs), pages (printers).

Product 1	Product 2	Product 3	Product 4	Product 5	Product 6	Product 7	Product 8	Product 9	Product 10
Low-end & Long lifespan	Low-end & Short lifespan	Low-end & Short lifespan	Mid-range & Long lifespan	Mid-range & Short lifespan	Mid-range & Short lifespan	High-end & Long lifespan	High-end & Short lifespan	High-end & Short lifespan	Classification according to test framework (product classed as bottom, middle or top of the range)
N X 4	N	N	N X 6.6	N X 4.6	N X 4.6	> N X 9	N X 9	N X 9	
Jeans (in number of washes)									
60	15	15	99	69	69	165	135	135	15
Printers (in number of pages)									
4000	1000	1000	7000	5000	5000	11000	9000	9000	5000
NX2	N	N	NX3	Nx2,5	NX2,5	NX4	NX3,5	NX3,5	N
Televisions (in number of hours)									
2400	1200	1200	3600	3000	3000	4800	4200	4200	1200
Washing machines (in number of cycles)									
2400	1200	1200	3600	3000	3000	4800	4200	4200	1200

d) Label showing the Annual Cost of Depreciation (CD)

For CD labels: the price of the product is divided by the minimum product lifespan. Totals were rounded up when necessary in an effort to improve clarity.









Product 1	Product 2	Product 3	Product 4	Product 5	Product 6	Product 7	Product 8	Product 9	Product 10
Low-end & Long lifespan	Low-end & Short lifespan	Low-end & Short lifespan	Mid-range & Long lifespan	Mid-range & Short lifespan	Mid-range & Short lifespan	High-end & Long lifespan	High-end & Short lifespan	High-end & Short lifespan	Classification according to test framework (product classed as bottom, middle or top of the range)
<b>Washing machines</b>									
EUR 24 4.99 / 8 years = EUR 31	EUR 24 4.99 / 4 years = EUR 61	EUR 24 4.99 / 4 years = EUR 61	EUR 44 4.99 / 12 years = EUR 37	EUR 44 4.99 / 10 years = EUR 44	EUR 44 4.99 / 10 years = EUR 44	EUR 64 4.99 / 16 years = EUR 40	EUR 64 4.99 / 14 years = EUR 46	EUR 644 .99 / 14 years = EUR 46. 10	EUR 244.99 / 4 years = EUR 61
<b>Vacuum cleaners</b>									
EUR 44 .99 / 4 years = EUR 11 .25	EUR 44 .99 / 2 years = EUR 22 .50	EUR 44 .99 / 2 years = EUR 22 .50	EUR 94 .99 / 8 years = EUR 11 .90	EUR 94 .99 / 6 years = EUR 15 .80	EUR 94 .99 / 6 years = EUR 15 .80	EUR 14 4.99 / 10 years = EUR 14 .50	EUR 14 4.99 / 8 years = EUR 18 .10	EUR 144 .99 / 8 years = EUR 18. 10	EUR 144.99 / 8 years = EUR 18.10
<b>Smartphones</b>									
EUR 54 .99 / 16 months = EUR 41 .20	EUR 54 .99 / 12 months = EUR 54 .99	EUR 54 .99 / 12 months = EUR 54 .99	EUR 94 .99 / 24 months = EUR 47 .50	EUR 94 .99 / 20 months = EUR 57	EUR 94 .99 / 20 months = EUR 57	EUR 13 4.99 / 32 months = EUR 50 .62	EUR 13 4.99 / 28 months = EUR 57 .85	EUR 134 .99 / 28 months = EUR 57. 85	EUR 134.99 / 28 months = EUR 57.85
<b>Jeans</b>									
EUR 34 .99 / 4 years = EUR 8. 75	EUR 34 .99 / 1 year = EUR 34 .99	EUR 34 .99 / 1 year = EUR 34 .99	EUR 54 .99 / 6 years = EUR 9. 20	EUR 54 .99 / 4.5 years = EUR 12 .20	EUR 54 .99 / 4.5 years = EUR 12 .20	EUR 74 .99 / 11 years = EUR 6. 81	EUR 74 .99 / 9 years = EUR 8. 30	EUR 74. 99 / 9 years = EUR 8.3 0	EUR 34.99 / 1 year = EUR 34.99


### III.3. Combination of labels

To test potential effects of combinations of ecolabels, the 10th model of each product type had an ecolabel (the EU Ecolabel, the EU organic label or the Möbius loop).

- **Möbius loop:** symbol that specifies that the packaging or the product is manufactured with recycled materials. It also shows what percentage is made from recycled material.
- **EU Ecolabel:** guarantees consumers that products comply with environmental criteria.
- **EU organic label:** an EU label that shows that products are 100 % organic or, for processed products, that at least 95 % of the contents are from organic agricultural products, if the remaining part is not available as an organic labelling option and is explicitly authorised. GMOS are forbidden.

The ecolabels used are well known and recognised in Europe and do not address product lifespans at all. On the two test sites, two environmental labels have therefore been used on all Product 10 models: one LS label and one ecolabel. The distribution of ecolabels between the products has been carried out according to their compatibility with the nature of the products.

Product	Ecolabel	Display
<b>Household appliances category</b>		
Filter coffee maker no 10	Möbius loop	
Washing machine no 10	EU Ecolabel	
Vacuum cleaner no 10	Möbius loop	
<b>High-tech category</b>		
Smartphone no 10	Möbius loop	
TV no 10	EU Ecolabel	
Printer no 10	Möbius loop	
<b>'Clothing' category</b>		
Shoes no 10	EU Ecolabel	
Jeans no 10	EU organic label	

Suitcase no 10	EU organic label	
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### III.4. Price

Prices are displayed on the 'EUR 4.99' principle. Three prices are proposed for each product category: a low price, an intermediate price and a high price. In each category a minimum of three models have the same price. The difference between the low price and the intermediate prices is the same as between the intermediate price and the high price. We based the prices set on those widely advertised on e-commerce websites.

**Price summary table**

Product 1	Product 2	Product 3	Product 4	Product 5	Product 6	Product 7	Product 8	Product 9	Product 10
<b>Filter coffee makers</b>									
	14.99			34.99			54.99		34.99*
<b>Washing machines</b>									
	244.99			444.99			644.99		244.99*
<b>Vacuum cleaners</b>									
	44.99			94.99			144.99		144.99*
<b>Smartphones</b>									
	54.99			94.99			134.99		54.99*
<b>TVs</b>									
	394.99			794.99			1 194.99		1 194.99*
<b>Printers</b>									
	74.99			124.99			224.99		124.99*
<b>Footwear</b>									
	34.99			64.99			94.99		94.99*
<b>Jeans</b>									
	34.99			54.99			74.99		74.99*
<b>Suitcase</b>									
	34.99			64.99			94.99		64.99*

\* Prices dependent on the experimental framework (product classified as P -, PM or P +)

### III.5. Technical features

The same number of features are displayed for all the products in a given category. On the other hand, each model has different features (product selling points) to the other articles in its category in an effort to make the simulation as similar to a real purchasing situation as possible. Technical features can be regarded as an explanatory factor for price variations.

#### IV. Attribute independent variables

Attribute independent variables are measured using a self-administered questionnaire following purchase simulation. They are socio-economic, behavioural and psychological variables.

##### IV.1. Socio-economic variables

We will measure participants' main socio-economic characteristics:

- year of birth,
- gender,
- main country of residence,
- size of town/city of residence,
- number of dependent children,
- marital status,
- highest qualification obtained,
- income,
- professional activity of the respondent or his/her spouse.

##### Socio-demographic variables

Variable	Item	Types of response	Form of response
Gender	Q16. You are:	Multiple choice two options one response allowed	1. A woman / 2. A man
Habitat type	Q17. You live:	Multiple choice three options one response allowed	1. In a city (more than 100 000 inhabitants) 2. In a medium-sized town (20 000 to 100 000 inhabitants) 3. In a small town (less than 20 000 inhabitants)
Country of residence	Q18. Your main country of residence:	Drop-down menu 29 options one response allowed	Austria, Belgium, Bulgaria, (...), Other.
Number of dependent children	Q19. Number of children for whom you are responsible:	Drop-down menu five options one response allowed	0/ 1 / 2 / 3 / 4 and +
Level of education	Q20. Your highest qualification:	Drop-down menu nine options one response allowed	(French system) no qualifications / CAP vocational qualification / BEP vocational qualification /Bac/ Bac+1/ Bac+2 / Bac+3/ Bac+4/ Bac+5 or more

Socio-professional category of respondent	Q21. Your occupation:	Drop-down menu eight options one response allowed	1: farmer 2: artisan, shopkeeper and business owner 3: intellectual profession and management, 4: middle management, 5: employee, 6: labourer, 7: retired, 8: no occupation
Socio-professional category of spouse and family situation	Q22. When applicable, the occupation of your spouse:	Drop-down menu nine options one response allowed	1: farmer, 2: artisan, shopkeeper and business owner, 3: intellectual profession and management, 4: middle management, 5: employee, 6: labourer, 7: retired, 8: no occupation
Average household income	Q22. The average income of your household:	Drop-down menu six options one response allowed	Less than 900, 900 to 1 500, 1 500 to 2 300, 2 300 to 3 100, more than 3 100
Year of birth	Q23. Date of birth:	Drop-down menu	Day/ month/ year

#### IV.2. Behavioural variables

We will measure involvement in environmental issues (membership of a group) in an effort to distinguish individuals who are highly committed to environmental issues. We will carry out specific measures on this group in an effort to see whether it stands out from the other groups.

We will also measure willingness to pay more for products with a long lifespan. This variable corresponds to the Willingness To Pay (WTP) variable that is traditionally measured in market research studies on ecolabels. Here we are measuring the effects of variations in price and lifespans on purchasing decisions.

### Behavioural variables

Variable	Item	Types of response	Form of response
Willingness to pay when purchasing a product with a long lifespan	Q4. Imagine you need to buy a new washing machine. What price would you pay for it?	Drop-down menu seven options	From EUR 200 to EUR 299 / EUR 300 to EUR 399 / EUR 400 to EUR 499 / EUR 500 to EUR 599 / EUR 600 to EUR 699 / EUR 700 or more / I would never buy a washing machine
	Q5. How much more would you be willing to pay for the same dishwasher that would last X years longer? <i>two years on site 1, four years on site 2; six years on the control site</i>	Drop-down menu five options	an additional EUR 300 / EUR 200 / EUR 100 / EUR 50 / I wouldn't buy one
Involvement in / commitment to environmental issues	Q15. Are you or have you been a member of an environmental group?	Multiple choice two options one response allowed	Yes/No

### IV.3. Psychological variables

We will measure several psychological variables. They have been identified in the literature on factors in purchasing decisions for ecolabelled products.

We will therefore measure environmental awareness, perceived responsibility, confidence placed in environmental labels and how important LS is in purchasing decisions.

#### Psychological variables

Variable	Item	Types of response	Form of response
Involvement in environmental issues	Q11. What importance do you place on the environmental impact of the products that you buy?	Drop-down menu four options one response allowed	1 No importance / 2. Not much importance / 3. Some importance / 4. Great importance
	Q12. To what extent would you say that you are concerned about environmental issues?	Drop-down menu four options one response allowed	1. Not at all concerned / 2. Not very concerned / 3. Quite concerned / 4. Very concerned
Confidence placed in environmental labels	Q13. What confidence do you place in environmental labels on products you buy?	Drop-down menu four options one response	1. No confidence / 2. Not much confidence / 3. Some confidence / 4. Full

Belief in responsibility with regard to product lifespans	Q10. Several agents may influence product lifespans. In your opinion, what influence do the following agent exert? Producers, Dealers Consumers, repairers	allowed Multiple choice six options one response allowed	confidence Have no impact / 4/3/2/1/I don't know
Importance placed on lifespans when purchasing a product	Q1. What importance do you place on the following criteria when buying clothing? Q2. What importance do you place on the following criteria when buying household appliances? Q3. What importance do you place on the following criteria when buying high-tech devices?	Multiple choice, five options  Design Technical features Price Lifespan Design	Priority 1 / Priority 2 / Priority 3 / Priority 4 / Irrelevant

## V. Controlled variables

In an effort to ensure that respondents are in a plausible purchasing situation, we controlled several variables likely to skew the test.

### V.1. Refusal to purchase / consume the products

We have made sure that the products that participants will pretend to buy are actually products that they own or that they intend to buy at some point in their lives.

### V.2. Comprehension of the environmental labels on the site

We have also made sure that participants fully understand the lifespan labelling.

Variable	Item	Types of response	Form of response
Non-consumption, and refusal of consumption	Q14. Which product(s) do you currently not own and do not intend to buy?	Multiple choice with nine responses (Several possible answers)	A washing machine, a filter coffee maker, a smartphone, a television, a printer, a suitcase, a pair of sports shoes, a vacuum cleaner, a pair of trousers



Perception of labels	Q7. Out of these labels, which did you see when browsing our site? (Several possible answers)	Multiple choice with eight images (Several possible answers)	Labels: Fair trade, Energy class, Organic product, EU ecolabel, CD, LSY, UL, AG
Comprehension of labels	Q8. Out of these labels, which give information on product lifespans?		

## **Part 4. Study sample**

The study was carried out in four areas of Europe – France, Spain, the Czech Republic and Benelux (Belgium and the Netherlands) – and in four languages (French, Spanish, English and Czech).

### **I. Details on data collection in the geographical areas**

For France and the Czech Republic, the participants were contacted by email using the method known as snowball sampling (Galli, 2006). The email was sent out by the University of South Brittany and Sircome in the French-speaking countries and by the University of South Bohemia in the Czech Republic. It requested prospective study participants to follow a link to the website that had been set up for the study. The call for participants was also sent out through the professional (mailing lists, for example) and personal networks of the researchers and consultants involved in the study, and on social networks (including Twitter, Facebook and LinkedIn, platforms on which Sircome is particularly active), inviting people to participate in the study and to forward the invitation on. This method helped us to access diverse profiles.

For Spain and the Benelux countries, we contacted polling companies. They mobilised a panel of consumers in each geographical area who were receptive to making online purchases. The two panels are not strictly representative of the populations concerned, but include a wide variety of profiles.

### **II. Sample description**

In the end, we tested a sample of 2 917 participants (1 255 women and 1572 men). The average age was about 41, with a standard deviation of 17 years. The youngest participant was 19 and the oldest was 87.

The study enabled us to examine respondents with a wide variety of profiles in terms of age, level of education (no qualification up to postgraduate and beyond), occupation, income and place of residence.

<b>Characteristics</b>	<b>2 917 participants</b>	<b>Sample size</b>	<b>%</b>
<b>Gender (n=2 827)</b>	men	1255	44.4 %
	women	1572	55.6 %
<b>Age (n=2 551)</b> <i>(av. =41.38 years; E.T. =16.76)</i>	18-25 years	666	26.1 %
	26-35 years	462	18.1 %
	36-50 years	625	24.5 %
	> 50 years	798	31.3 %
<b>Language (n=2917)</b>	Spanish	1200	41.1 %
	French	728	25.0 %
	English	510	17.5 %
	Czech	479	16.4 %
<b>Country of residence (n=2851)</b>	Spain	1144	40.1 %
	France	691	24.2 %
	Czech Republic	474	16.6 %
	The Netherlands	319	11.2 %
	Belgium	181	6.3 %
	Others	42	1.5 %
<b>Level of education (n=2817)</b>	No qualification / CAP (vocational qualification) / BEP (vocational qualification)	362	12.9 %
	bac to bac + 2	1151	40.9 %
	bac + 3/+ 4	738	26.2 %
	bac + 5 or more	566	20.1 %
	<b>Occupation (n=2797)</b>	Farmer	8
Artisan		126	4.5 %
Intellectual profession or management		473	16.9 %
Middle management		219	7.8 %
Employee		732	26.2 %
Labourer		84	3.0 %
Retired		418	14.9 %
No occupation		736	26.3 %
<b>Incomes (n=2593)</b>	< EUR 900	267	10.3 %
	EUR 900-EUR 1 500	420	16.2 %
	EUR 1 500-EUR 2 300	535	20.6 %
	EUR 2 300-EUR 3 100	399	15.4 %
	< EUR 3 100	459	17.7 %
<b>Place of residence (n = 2842)</b>	In a small town (less than 20 000 inhabitants)	888	31.2 %
	In a medium-sized town (20 000 to 100 000 inhabitants)	854	30.0 %
	In a city (over 100 000 inhabitants)	1100	38.7 %

### III. Distribution of the respondents across the three sites

The ILLC test was carried out using three websites:

- the control site (neutral – no lifespan label);
- test sites 1 and 2 (to recap: each of the two test sites tests two different labels).

The participants (n=2917) were randomly distributed to one of the three sites. In total, 1 001 individuals took part at the control site (34.3 % of our total sample), 1 006 at test site 1 (34.5 %) and 910 at test site 2 (31.2 %).

	<b>Control site</b>	<b>Test site 1</b>	<b>Test site 2</b>	<b>Total</b>
<b>France</b>	250 (34.3 %)	246 (33.8 %)	232 (31.9 %)	728 (25 %)
<b>Spain</b>	427 (35.6 %)	394 (32.8 %)	379 (31.6 %)	1200 (41.1 %)
<b>Benelux</b>	173 (35.6 %)	182 (32.8 %)	155 (31.6 %)	510 (17.5 %)
<b>Czech Republic</b>	151 (31.5 %)	184 (38.4 %)	144 (30.1 %)	479 (16.4 %)
<b>Total</b>	1 001 (34.3 %)	1 006 (34.5 %)	910 (31.2 %)	2 917 (100 %)

## Part 5. Impact of displaying lifespan on purchasing decisions

We will call products that have a longer lifespan than other products of equivalent price on the test sites ' $\alpha$  (alpha) products'. There are three in each product category. We call ' $\beta$  (beta) products' those products which do not fulfil this condition. There are seven of them in each product category. According to the law of random distribution,  $\alpha$  products should be chosen in 30% and  $\beta$  products in 70% of purchases.

### I. General findings

We compared the number of alpha products chosen by participants under control and test conditions. They could choose between zero and three alpha products that presented longer lifespans than other products in the same price range under test conditions. Initial analysis shows that there was a difference in the number of participants who chose zero, one, two or three alpha products between the two situations,  $\chi^2(1) = 153.269, p < .001$ . Therefore we can already say that displaying lifespans helped to encourage sales of products with longer lifespans at the expense of similar products with shorter lifespans.

**Number of participants who chose zero, one, two or three alpha products under test conditions**

Conditions	Sample size	0 $\alpha$ products	1 $\alpha$ product	2 $\alpha$ products	3 $\alpha$ products	Total
<b>Control</b>	N	486	396	106	13	1001
	%	48.6 %	39.6 %	10.6 %	1.3 %	100 %
<b>Test</b>	N	581	765	445	125	1916
	%	30.3 %	39.9 %	23.2 %	6.5 %	100 %

$\chi^2(1) = 153.269, p < .001$

We carried out a correlation analysis (Spearman's correlation) between the number of alpha products selected by participants under test conditions and all variables measured. This analysis enabled us to identify the individual characteristics connected to purchasing behaviours of long life-cycle products. The findings on socio-economic characteristics and significantly correlated cognitive variables are shown in the following table.

### Correlation between the main characteristics measured and alpha product purchasing decisions

Variables	N	r	Value of p	Sign.
Age	1 667	-.076	.002	< 0.01
Gender	1 875	.060	.010	< 0.01
Number of children	614	.037	.365	NS
Level of education	1 863	.079	.001	< 0.01

Household income	1 664	.047	.057	NS
Comprehension of the LS label	1 916	.098	.000	< 0.01
Comprehension of the AG label	1 916	.144	.000	< 0.01
Comprehension of the CD label	1 916	.145	.000	< 0.01
Confidence in environmental labelling	1 862	.012	.614	NS
Manufacturer's Responsibility	1 833	.086	.000	< 0.01
Membership of an environmental group	1 875	.027	.235	NS

The results show that age has an inverse impact. In other words, the younger people are, the more they show a preference for products with longer lifespans. Gender impact is also evident, as a higher proportion of women showed a preference for those products. What is more, the higher their level of education, the more people choose alpha products. Not only is this the only socio-economic variable that is correlated with purchasing behaviour but also the correlation is not all that significant. Socio-economic characteristics do not therefore seem to be strong predictors of purchasing decisions.

There is no correlation between confidence in environmental labels and membership of an environmental group.

Other variables are correlated with the selection of products with long lifespans. As a matter of fact, the comprehension of lifespan labels is positively linked to the selection of products with long lifespans and that is particularly significant for displays in terms of cost per year and number of years. However we cannot conclude that the better people's understanding of labelling, the more they select more products with long lifespans. Indeed, participants responded to this question after choosing their products and it is therefore possible that people who selected alpha products developed a better understanding of labelling after paying attention to that labelling.

There is also a correlation between assigning responsibility to manufacturers and selecting products with longer lifespans. Two separate processes offer possible interpretations of this observation: on the one hand, it is possible that the more participants assign a high level of responsibility to manufacturers, the more they purchase products with long lifespans. On the other hand, the responsibility assigned to manufacturers may be the result of rationalisation by individuals who have selected alpha products.

Lastly, there is no relationship between purchasing decisions and confidence placed in environmental labelling or involvement in environmental issues. This is inconsistent with the findings obtained in several studies on the effects of displaying ecolabels.

## II. Effects of labelling by region

In total, participants under test conditions selected 5 643 products, 2 010 of which were alpha products and 3 633 beta products. We compared the number of alpha products selected during the test situation in each of the main countries tested. Our analysis shows that labelling does not have the same impact on the samples from all the countries  $\chi^2(1) = 80.848, p = .003$ .

### Total number of alpha products selected by participants from each of the main countries

Country	Total number of $\alpha$ products		Total number of $\beta$ products		Total
	N	%	N	%	
France (n=691)	597	<b>44.22</b>	753	55.78	1 350
Spain (n=1144)	698	31.15	1 543	<b>68.85</b>	2 241
Belgium (n=181)	143	<b>40.4</b>	211	59.6	354
Czech Republic (n=474)	317	32.71	652	<b>67.29</b>	969
The Netherlands (n=319)	212	33.49	421	<b>66.51</b>	633
total (n=2809)	2 010		3 633		5 643

We carried out comparisons of countries on a two by two basis. The results are set out in the table below (Chi2). These comparisons confirm that the samples taken from France and Belgium were more likely to favour alpha products. More precisely, the French sample differed significantly from the Czech, Spanish and Dutch samples. The Belgian sample meanwhile differed from the Spanish sample. These results tend to suggest that it was the French sample that was most influenced by lifespan labelling. The Belgian sample came second and the Spanish sample last.

### Difference between countries (Chi2)

	FR	ES	BE	CZ	NL
FR	/	28.732, p<.001	0.67, p=.41	13.806, p<.001	8.889, p=.003
ES	28.732, p<.001	/	5.802, p=.002	.397, p=.628	644, p=.422
BE	0.67, p=.41	5.802, p=.002	/	3.182, p=.007	2.183, p=.139
CZ	13.806, p<.001	397, p=.628	3.182, p=.007	/	053, p=.818
NL	8.889, p=.003	644, p=.422	2.183, p=.139	053, p=.818	/

We will now analyse the findings in more detail for the various regions on the basis of product type.

### II.1. France

The findings show a significant increase in alpha product purchasing decisions for all product types. These 'sales' increases consist of a rise between an 18 % and 28 % in the available virtual market share. We nevertheless consider that these findings should be treated with some care. The French sample was put together using the snowball technique and sampling bias is possible.

Product	Subjects	Control site				Test sites				$\alpha$ difference	Significance
		$\alpha$ products		$\beta$ products		$\alpha$ products		$\beta$ products			
		N	%	N	%	N	%	N	%		
Vacuum cleaners	248	26	10.48	60	24.19	82	33.06	80	32.26	+ 22.58%	$\chi^2(1) = 9.496$ $p < .001$
Filter coffee maker	248	13	5.24	74	29.84	72	29.03	89	35.89	+ 23.79%	$\chi^2(1) = 22.232$ $p < .001$
Washing machines	223	6	2.69	67	30.04	66	29.6	84	37.67	+ 26.91%	$\chi^2(1) = 28.755$ $p < .001$
TVs	228	20	8.77	60	26.32	62	27.19	86	37.72	+ 18.42%	$\chi^2(1) = 6.434$ $p < .008$
Smartphones	240	27	11.25	56	23.33	71	29.58	86	35.83	+ 18.33%	$\chi^2(1) = 3.621$ $p < .038$
Printers	219	18	8.22	53	24.2	78	35.62	70	31.96	+ 27.4%	$\chi^2(1) = 14.579$ $p < .001$
Footwear	195	1	0.51	39	20	46	23.59	109	55.9	+ 23.08%	$\chi^2(1) = 12.838$ $p < .001$
Trousers	219	17	7.76	53	24.2	76	34.7	73	33.33	+ 26.94%	$\chi^2(1) = 13.918$ $p < .001$
Suitcase	228	8	3.51	72	31.58	72	31.58	76	33.33	+ 28.07%	$\chi^2(1) = 34.057$ $p < .001$

## II.2. Spain

Displaying lifespans helped guide subjects towards buying vacuum cleaners, smartphones, printers, trousers and suitcases with longer lifespans.

Product	Subjects	Control site				Test sites				$\alpha$ difference	Significance
		$\alpha$ products		$\beta$ products		$\alpha$ products		$\beta$ products			
		N	%	N	%	N	%	N	%		
Vacuum cleaners	349	28	8.0	93	26.6	82	23.5	146	41.8	+ 15.48	$\chi^2(1) = 6.023$ $p = .009$
Filter coffee maker	408	46	11.2	82	20.1	95	23.2	185	45.3	+ 12.01	$\chi^2(1) = .157$ $p = .387$
Washing machines	335	19	5.6	103	30.7	49	14.6	164	48.9	+ 8.96	$\chi^2(1) = 2.648$ $p = .067$
TVs	315	46	14.6	100	31.7	32	10.1	137	43.4	- 4.44	$\chi^2(1) = 3.988$ $p = .05$
Smartphones	393	32	8.1	97	24.6	96	24.4	168	42.7	+ 16.29	$\chi^2(1) = 5.271$ $p = .014$
Printer	360	38	10.5	90	25	109	30.2	123	34.1	+ 19.72	$\chi^2(1) = 10.21$ $p < .001$
Footwear	319	12	3.7	44	13.7	83	26.0	180	56.4	+ 22.26	$\chi^2(1) = 2.266$



											p = .087
Trousers	341	37	10.8	89	26.1	97	28.4	118	34.6	+ 17.6	$\chi^2(1) = 8.263$ p = .003
Suitcase	337	27	8.0	90	26.7	87	25.8	133	39.4	+ 17.81	$\chi^2(1) = 9.254$ p = .002

### II.3. Czech Republic

Overall, the displaying lifespans encouraged Czech participants towards alpha products. More precisely, virtual sales rose significantly for **filter coffee makers, printers and suitcases**.

Product	Subj ects	Control site				Test sites				$\alpha$ differen ce	Significance
		$\alpha$ products		$\beta$ products		$\alpha$ products		$\beta$ products			
		N	%	N	%	N	%	N	%		
Vacuum cleaners	146	18	12.33	35	23.97	27	18.49	66	45.21	+ 6.16	$\chi^2(1) = .385$ p = .330
Filter coffee maker	134	8	5.97	34	25.37	46	34.33	46	34.33	+ 28.36	$\chi^2(1) = 11.483$ p = .001
Washing machines	163	9	5.52	42	25.77	27	16.56	85	52.15	+ 11.04	$\chi^2(1) = .850$ , p = .239
TVs	142	7	4.93	35	24.65	26	18.31	74	52.11	+ 13.38	$\chi^2(1) = 1.444$ , p = .163
Smartphones	156	13	8.33	42	26.92	38	24.36	63	40.38	+ 16.03	$\chi^2(1) = 3.166$ , p = .053
Printer	152	9	5.92	40	26.32	43	28.29	60	39.47	+ 22.37	$\chi^2(1) = 8.604$ , p = .003
Footwear	112	2	1.79	6	5.36	21	18.75	83	74.11	+ 16.96	$\chi^2(1) = .105$ p = .518
Trousers	163	17	10.43	32	19.63	50	30.67	64	39.26	+ 20.24	$\chi^2(1) = 1.189$ p = .180
Suitcase	154	12	7.79	43	27.92	39	25.32	60	38.96	+ 17.53	$\chi^2(1) = 4.931$ , p = .019

## II.4. Benelux

We carried out this analysis on the Benelux sample without distinguishing between the various countries (Belgium, Luxembourg and the Netherlands) as the samples would have been too small. Therefore, virtual sales rose significantly for **filter coffee makers, printers and suitcases** for this sample.

Product	Subjects	Control site				Test sites				$\alpha$ difference	Significance
		$\alpha$ products		$\beta$ products		$\alpha$ products		$\beta$ products			
		N	%	N	%	N	%	N	%		
Vacuum cleaners	160	20	12.5	43	26.88	46	28.75	51	31.88	+ 16.25	$\chi^2(1) = 3.873$ p = .035
Filter coffee maker	158	14	8.86	36	22.78	49	31.01	59	37.34	+ 22.15	$\chi^2(1) = 4.301$ p = .028
Washing machines	158	20	12.66	38	24.05	35	22.15	65	41.14	+ 9.49	$\chi^2(1) = .004$ , p = .545
TVs	110	9	8.18	41	37.27	21	19.09	39	35.45	+ 10.91	$\chi^2(1) = 3.974$ p = .037
Smartphones	159	18	11.32	43	27.04	35	22.01	63	39.62	+ 10.69	$\chi^2(1) = .652$ , p = .264
Printer	172	22	12.79	35	20.35	60	34.88	55	31.98	+ 22.09	$\chi^2(1) = 2.816$ p = .064
Footwear	126	3	2.38	14	11.11	38	30.16	71	56.35	+ 27.78	$\chi^2(1) = 1.986$ p = .127
Trousers	177	15	8.47	45	25.42	38	21.47	79	44.63	+ 13	$\chi^2(1) = 1.057$ p = .197
Suitcase	143	10	6.99	46	32.17	36	25.17	51	35.66	+ 18.18	$\chi^2(1) = 8.639$ p = .002

## III. Effects of labelling by product

To recap, in the ILLC study, lifespans were displayed on three product categories: household appliances (vacuum cleaners, coffee makers, washing machines), high-tech products (TVs, smartphones, printers) and clothing (footwear, trousers, suitcases).

The analyses show that lifespan labelling led participants towards products whose lifespan was longer than other similar products (with an identical price) for all products with the exception of televisions. No significant difference emerged for this category of product. This might seem surprising. The lifespan of a television would seem to be not only objective and reliable as a characteristic, but also important. Furthermore, with the exception of the lifespan, which we varied, there was no other major difference between the various models within each range.

PRODUCTS	Difference	Sign.	V de Kramer
<b>Suitcase</b>	+23.7	$\chi^2(1) = 49.854, p < .001$	.240
<b>Printer</b>	+20.0	$\chi^2(1) = 33.123, p < .001$	.192
<b>Trousers</b>	+15.7	$\chi^2(1) = 20.897, p < .001$	.152
<b>Filter coffee maker</b>	+14.5	$\chi^2(1) = 18.873, p < .001$	.141
<b>Washing machines</b>	+13.0	$\chi^2(1) = 17.339, p < .001$	.141
<b>Sports footwear</b>	+14.9	$\chi^2(1) = 11.360, p < .001$	.123
<b>Vacuum cleaners</b>	+12.4	$\chi^2(1) = 13.727, p < .001$	.123
<b>Smartphones</b>	+11.3	$\chi^2(1) = 12.008, p < .001$	.113
<b>TVs</b>		$\chi^2(1) = 1.346, p = .260$	

The decisions most affected by lifespan labelling related to the purchase of suitcases. Printers were in second place.

This section goes on to look into the impact of displaying lifespans on the purchasing process for the nine products. For each of them, we will look at the general impact (all price ranges) and then range by range (bottom, middle and top of the range). To assess the relationship between labelling and the simulated purchase of alpha and beta products, we have used chi-square tests.

### III.1. Vacuum cleaners

In general, the tests carried out show that displaying lifespans has a significant impact on the simulated purchase of vacuum cleaners. Use of labels resulted in a 12.4 % increase in simulated sales of 'α products' (products that have a longer lifespan than other products sold at an equivalent price on the test sites).

The positive impact on sales of vacuum cleaners with a longer lifespan can be seen at all points in the range (+ 12.4 points for the bottom, + 15.1 for the middle and + 12.3 for the top of the range).

a) *The impact of displaying lifespans on simulated purchases of vacuum cleaners*

PRODUCTS	Control site (n=323)		Test sites (n=580)		Difference
	α product	β product	α product	β product	
Sample size	92	231	237	343	+ 12.4
% of sales	28.5 %	71.5 %	40.9 %	59.1 %	

$\chi^2(1) = 13.727, p < .001$

b) *The impact of displaying lifespans on simulated purchases of vacuum cleaners - bottom of the range*

PRODUCTS	Control site (n=85)		Test sites (n=152)		Difference
	α product	β product	α product	β product	
Sample size	12	71	48	104	+ 15.1
% of sales	16.5 %	83.5 %	31.6 %	68.4 %	

$\chi^2(1) = 6.442, p = .008$

c) *The impact of displaying lifespans on simulated purchases of vacuum cleaners - mid-range*

PRODUCTS	Control site (n=85)		Test sites (n=152)		Difference
	α product	β product	α product	β product	
Sample size	53	78	131	117	+ 12.3
% of sales	40.5 %	59.5 %	52.8 %	47.2 %	

$\chi^2(1) = 5.246, p = .014$

d) *The impact of displaying lifespans on simulated purchases of vacuum cleaners - High-end*

PRODUCTS	Control site (n=85)		Test sites (n=152)		Difference
	α product	β product	α product	β product	
Sample size	25	46	58	58	+ 14.8
% of sales	35.2 %	64.8 %	50.0 %	50.0 %	

$\chi^2(1) = 3.902, p = .034$

### III.2. Filter coffee maker

As with vacuum cleaners, in general, sales for filter coffee makers with long lifespans improve when that lifespan is displayed (+ 14.5 points). That positive impact is observed to a significant degree for articles at the bottom and top of the range, but not for mid-range filter coffee makers.

a) *The impact of displaying lifespans on simulated purchases of filter coffee makers*

PRODUCTS	Control site (n=307)		Test sites (n=641)		Difference
	α product	β product	α product	β product	
Sample size	81	226	262	379	+ 14.5
% of sales	26.4 %	73.6 %	40.9 %	59.1 %	

$$\chi^2(1) = 18.873, p < .001$$

b) *Impact of displaying lifespans on simulated purchases of bottom of the range filter coffee makers*

PRODUCTS	Control site (n=307)		Test sites (n=641)		Difference
	α product	β product	α product	β product	
Sample size	17	47	44	70	+ 12
% of sales	26.6 %	73.4 %	38.6 %	61.4 %	

$$\chi^2(1) = 2.635, p = .071$$

c) *Impact of displaying lifespans on simulated purchases of mid-range filter coffee makers*

PRODUCTS	Control site (n=307)		Test sites (n=641)	
	α product	β product	α product	β product
Sample size	31	38	86	80
% of sales	44.9 %	55.1 %	51.8 %	48.2 %

$$\chi^2(1) = .923, p = .207$$

d) *Impact of displaying lifespans on simulated purchases of top of the range filter coffee makers*

PRODUCTS	Control site (n=307)		Test sites (n=641)		Difference
	α product	β product	α product	β product	
Sample size	33	73	132	116	+29
% of sales	17.8 %	82.2 %	53.2 %	46.8 %	

$$\chi^2(1) = 14.566, p < .001$$

### III.3. Washing machines

Displaying lifespan has a significant impact on the purchase of washing machines. In general, consumers tend to give priority to washing machines with longer lifespans (+ 13 points). This is apparent in mid-range washing machines. Impact was limited for the bottom and top of the range, however.

a) *The impact of displaying lifespans on simulated purchases of washing machines*

PRODUCTS	Control site (n=304)		Test sites (n=575)		Difference
	$\alpha$ product	$\beta$ product	$\alpha$ product	$\beta$ product	
Sample size	54	250	177	398	+ 13
% of sales	17.8 %	82.2 %	30.8 %	69.2 %	

$$\chi^2(1) = 17.339, p < .001$$

b) *The impact of displaying lifespans on simulated purchases of bottom of the range washing machines*

PRODUCTS	Control site (n=58)		Test sites (n=107)	
	$\alpha$ product	$\beta$ product	$\alpha$ product	$\beta$ product
Sample size	15	43	41	66
% of sales	25.9 %	74.1 %	38.3 %	61.7 %

$$\chi^2(1) = 2.603, p = .074$$

c) *The impact of displaying lifespans on simulated purchases of mid-range washing machines*

PRODUCTS	Control site (n=113)		Test sites (n=339)		Difference
	$\alpha$ product	$\beta$ product	$\alpha$ product	$\beta$ product	
Sample size	19	94	86	140	+ 21.3
% of sales	16.8 %	83.2 %	38.1 %	61.9 %	

$$\chi^2(1) = 15.895, p < .001$$

d) *The impact of displaying lifespans on simulated purchases of top of the range washing machines*

PRODUCTS	Control site (n=70)		Test sites (n=192)	
	$\alpha$ product	$\beta$ product	$\alpha$ product	$\beta$ product
Sample size	20		50	131
% of sales	24.7 %	75.3 %	27.6 %	72.4 %

$$\chi^2(1) = .246, p = .368$$

### III.4. TVs

We did not record much of an impact from displaying lifespans on the choice of televisions with longer lifespans, irrespective of points in the range.

a) *The impact of displaying lifespans on simulated purchases of TVs*

PRODUCTS	Control site (n=318)		Test sites (n=477)	
	$\alpha$ product	$\beta$ product	$\alpha$ product	$\beta$ product
Sample size	82	236	141	336
% of sales	25.8 %	74.2 %	29.6 %	70.4 %

$$\chi^2(1) = 1.346, p=.260$$

b) *The impact of displaying lifespans on simulated purchases of bottom of the range TVs*

PRODUCTS	Control site (n=87)		Test sites (n=119)	
	$\alpha$ product	$\beta$ product	$\alpha$ product	$\beta$ product
Sample size	28	59	50	69
% of sales	32.2 %	67.8 %	42.0 %	58.0 %

$$\chi^2(1) = 2.065, p=.098$$

c) *The impact of displaying lifespans on simulated purchases of mid-range TVs*

PRODUCTS	Control site (n=93)		Test sites (n=136)	
	$\alpha$ product	$\beta$ product	$\alpha$ product	$\beta$ product
Sample size	27	66	45	91
% of sales	29.0 %	71.0 %	33.1 %	66.9 %

$$\chi^2(1) = .422, p=.308$$

d) *The impact of displaying lifespans on simulated purchases of top of the range TVs*

PRODUCTS	Control site (n=78)		Test sites (n=125)	
	$\alpha$ product	$\beta$ product	$\alpha$ product	$\beta$ product
Sample size	27	51	46	79
% of sales	34.6 %	65.4 %	36.8 %	63.2 %

$$\chi^2(1) = .100, p=.436$$

### III.5. Smartphones

In general, displaying lifespans has a positive impact on the purchase of smartphones with longer lifespans (+ 11.3 points). On the other hand, that impact was significant only for mid-range smartphones.

a) *The impact of displaying lifespans on simulated purchases of smartphones*

PRODUCTS	Control site (n=328)		Test sites (n=620)		Difference
	$\alpha$ product	$\beta$ product	$\alpha$ product	$\beta$ product	
Sample size	90	238	240	380	+ 11.3
% of sales	27.4 %	72.6 %	38.7 %	61.3 %	

$$\chi^2(1) = 12.008, p < .001$$

b) *The impact of displaying lifespans on simulated purchases of bottom of the range smartphones*

PRODUCTS	Control site (n=39)		Test sites (n=99)	
	$\alpha$ product	$\beta$ product	$\alpha$ product	$\beta$ product
Sample size	14	25	43	56
% of sales	35.9 %	64.1 %	43.4 %	56.6 %

$$\chi^2(1) = .656, p = .270$$

c) *The impact of displaying lifespans on simulated purchases of mid-range smartphones*

PRODUCTS	Control site (n=140)		Test sites (n=215)		Difference
	$\alpha$ product	$\beta$ product	$\alpha$ product	$\beta$ product	
Sample size	33	107	75	140	+ 11.3
% of sales	23.6 %	76.4 %	34.9 %	65.1 %	

$$\chi^2(1) = 5.126, p = .015$$

d) *The impact of displaying lifespans on simulated purchases of top of the range smartphones*

PRODUCTS	Control site (n=109)		Test sites (n=251)	
	$\alpha$ product	$\beta$ product	$\alpha$ product	$\beta$ product
Sample size	43	66	122	129
% of sales	39.4 %	60.6 %	48.6 %	51.4 %

$$\chi^2(1) = 2.566, p = .068$$



### III.6. Printer

Displaying lifespan has a significant impact on consumers' printer choices. Consumers show a preference for printers with longer lifespans when this is displayed by a label (+ 20 points). This effect was felt regardless of the point in the range considered (+ 16.7 points for the bottom up to + 32.9 points for the mid-range).

a) *The impact of displaying lifespans on simulated purchases of printers*

PRODUCTS	Control site (n=305)		Test sites (n=598)		Difference
	α product	β product	α product	β product	
Sample size	87	218	290	308	+ 20
% of sales	28.5 %	71.5 %	48.5 %	51.5 %	

$$\chi^2(1) = 33.123, p < .001$$

b) *The impact of displaying lifespans on simulated purchases of bottom of the range printers*

PRODUCTS	Control site (n=98)		Test sites (n=159)		Difference
	α product	β product	α product	β product	
Sample size	41	57	93	66	+ 16.7
% of sales	41.8 %	58.2 %	58.5 %	41.5 %	

$$\chi^2(1) = 6.739, p = .007$$

c) *The impact of displaying lifespans on simulated purchases of mid-range printers*

PRODUCTS	Control site (n=80)		Test sites (n=202)		Difference
	α product	β product	α product	β product	
Sample size	24	56	127	75	+ 32.9
% of sales	30.0 %	70.0 %	62.9 %	37.1 %	

$$\chi^2(1) = 24.893, p < .001$$

d) *The impact of displaying lifespans on simulated purchases of top of the range printers*

PRODUCTS	Control site (n=61)		Test sites (n=132)		Difference
	α product	β product	α product	β product	
Sample size	22	39	70	62	+ 16.9
% of sales	36.1 %	63.9 %	53.0 %	47.0 %	

$$\chi^2(1) = 4.813, p = .020$$

### III.7. Sports footwear

Displaying lifespan labels also has an impact on sports footwear purchases (+ 14.9 points). However it is only significant for sales of top-of-the-range footwear.

a) *The impact of displaying lifespans on simulated purchases of sports footwear*

PRODUCTS	Control site (n=121)		Test sites (n=631)		Difference
	α product	β product	α product	β product	
Sample size	18	103	188	443	+ 14.9
% of sales	14.9 %	85.1 %	29.8 %	70.2 %	

$$\chi^2(1) = 11.360, p < .001$$

b) *The impact of displaying lifespans on simulated purchases of bottom of the range footwear*

PRODUCTS	Control site (n=24)		Test sites (n=145)	
	α product	β product	α product	β product
Sample size	5	19	58	87
% of sales	20.8 %	79.2 %	40.0 %	60.0 %

$$\chi^2(1) = 3.235, p = .055$$

c) *The impact of displaying lifespans on simulated purchases of mid-range shoes*

PRODUCTS	Control site (n=44)		Test sites (n=223)	
	α product	β product	α product	β product
Sample size	6	38	56	167
% of sales	13.6 %	86.4 %	25.1 %	74.9 %

$$\chi^2(1) = 2.714, p = .069$$

d) *The impact of displaying lifespans on simulated purchases of top of the range shoes*

PRODUCTS	Control site (n=39)		Test sites (n=183)		Difference
	α product	β product	α product	β product	
Sample size	7	32	74	109	+ 22.5
% of sales	17.9 %	82.1 %	40.4 %	59.6 %	

$$\chi^2(1) = 7.016, p < .005$$

### III.8. Trousers

Displaying lifespan labels has a significant impact on sales of trousers (+ 15.7). That effect can be seen in the segments at both the bottom (+ 16.2) and top (+ 26.7) of the range. Considerably more consumers therefore show a preference for longer lifespan products when the information is displayed on a label.

a) *The impact of displaying lifespans on simulated purchases of trousers*

PRODUCTS	Control site (n=305)		Test sites (n=595)		Difference
	α product	β product	α product	β product	
Sample size	86	219	261	334	+ 15.7
% of sales	28.2 %	71.8 %	43.9 %	56.1 %	

$$\chi^2(1) = 20.897, p < .001$$

b) *The impact of displaying lifespans on simulated purchases of bottom of the range trousers*

PRODUCTS	Control site (n=115)		Test sites (n=208)		Difference
	α product	β product	α product	β product	
Sample size	56	59	135	73	+ 16.2
% of sales	48.7 %	51.3 %	64.9 %	35.1 %	

$$\chi^2(1) = 8.051, p = .003$$

c) *The impact of displaying lifespans on simulated purchases of mid-range trousers*

PRODUCTS	Control site (n=75)		Test sites (n=151)	
	α product	β product	α product	β product
Sample size	19	56	44	107
% of sales	25.3 %	74.7 %	29.1 %	70.9 %

$$\chi^2(1) = .361, p = .331$$

d) *The impact of displaying lifespans on simulated purchases of top of the range trousers*

PRODUCTS	Control site (n=46)		Test sites (n=162)		Difference
	α product	β product	α product	β product	
Sample size	11	35	82	80	+ 26.7
% of sales	23.9 %	76.1 %	50.6 %	49.4 %	

$$\chi^2(1) = 10.335, p < .001$$

### III.9. Suitcase

Displaying the lifespan has a significant impact within all the points of the range (+ 19.1 points for the bottom segment, + 23.6 for the middle and + 27.9 for the top of the range).

a) *The impact of displaying lifespans on simulated purchases of suitcases*

PRODUCTS	Control site (n=308)		Test sites (n=554)		Difference
	α product	β product	α product	β product	
Sample size	57	251	234	320	+ 23.7
% of sales	18.5 %	81.5 %	42.2 %	57.8 %	

$$\chi^2(1) = 49.854, p < .001$$

b) *The impact of displaying lifespans on simulated purchases of bottom of the range suitcases*

PRODUCTS	Control site (n=62)		Test sites (n=91)		Difference
	α product	β product	α product	β product	
Sample size	10	52	32	59	+ 19.1
% of sales	16.1 %	83.9 %	35.2 %	64.8 %	

$$\chi^2(1) = 6.710, p = .007$$

c) *The impact of displaying lifespans on simulated purchases of mid-range suitcases*

PRODUCTS	Control site (n=112)		Test sites (n=190)		Difference
	α product	β product	α product	β product	
Sample size	26	86	89	101	+ 23.6
% of sales	23.2 %	76.8 %	46.8 %	53.2 %	

$$\chi^2(1) = 16.683, p < .001$$

d) *The impact of displaying lifespans on simulated purchases of top of the range suitcases*

PRODUCTS	Control site (n=75)		Test sites (n=202)		Difference
	α product	β product	α product	β product	
Sample size	21	54	113	89	+ 27.9
% of sales	28.0 %	72.0 %	55.9 %	44.1 %	

$$\chi^2(1) = 17.097, p < .001$$

#### IV. Impact of labelling by price range

Labelling had an influence on simulated purchase decisions irrespective of price range. Increases of between 14 and 15.3% were observed in the selection of alpha products. These increases were also very similar in degree. The sale price did not seem to affect the impact of the labelling, at least not in the product price ranges selected. The sale prices of all the products ranged from EUR 14.99 to EUR 794.99.

	PRODUCTS	Control site		Test sites		Difference	V de Kramer
		$\alpha$ products	$\beta$ products	$\alpha$ products	$\beta$ products		
Low-end	Sample size	200	432	544	650	+ 14%	.135
	% of sales	31.6%	68.4%	45.6%	54.4%		
Mid-range	Sample size	238	619	739	1 018	+14.3%	.139
	% of sales	27.8%	72.2%	42.1%	57.9%		
High-end	Sample size	209	457	747	853	+15.3%	.141
	% of sales	31.4%	68.6%	46.7%	53.3%		

Bottom of the range:  $\chi^2(1) = 33.145, p < .001$

Mid-range:  $\chi^2(1) = 50.248, p < .001$

Top of the range:  $\chi^2(1) = 45.171, p < .001$

#### V. Effects according to how labelling is displayed

##### IV.1. LSY label

To recap, the LSY label displays lifespan in years (or months). The products displaying this label are TVs, vacuum cleaners, sports footwear, suitcases and filter coffee makers.



PRODUCTS	Control site (n = 1377)		Test sites (n = 1514)		Difference
	$\alpha$ products	$\beta$ products	$\alpha$ products	$\beta$ products	
Sample size	330	1 047	498	1 016	+ 9%
% of sales	23.9 %	76.0 %	32.9 %	67.1 %	

$\chi^2(1) = 28.124, p < .001$

The chi-square test tells us that  $\alpha$  products displaying LS labels were selected significantly more often on the test sites than on the control site. Indeed, displaying LSY labelling on  $\alpha$  products increases sales by 9 %. Therefore this labelling has considerable impact on consumer purchasing decisions.

## IV.2. UL label

The UL label displays useful lifetime. This is measured in number of cycles for washing machines, number of washes for jeans, number of prints for printers and number of hours for TVs.



PRODUCTS	Control site (n=1232)		Test sites (n=1018)		Difference
	$\alpha$ products	$\beta$ products	$\alpha$ products	$\beta$ products	
Sample size	309	923	398	620	+ 14 %
% of sales	25.1 %	74.9 %	39.1 %	60.9 %	

$$\chi^2(1) = 50.810, p < .001$$

The chi-square test tells us that  $\alpha$  products displaying UL labels were selected significantly more often on the test sites than on the control site. Displaying UL labels increased  $\alpha$  products' market share by 14 % on the test sites. As a result, it is the label with the second largest positive impact on  $\alpha$  product sales.

## IV.3. AG label

The AG label displays lifespan using a classification from A to G, following the energy classifications systems. The products for which this label is used are sports footwear, suitcases, filter coffee makers, printers and smartphones.



PRODUCTS	Control site (n=1369)		Test sites (n=1560)		Difference
	$\alpha$ products	$\beta$ products	$\alpha$ products	$\beta$ products	
Sample size	333	1 036	698	862	+ 20.4 %
% of sales	24.3 %	75.7 %	44.7 %	55.3 %	

$$\chi^2(1) = 133.282, p < .001$$

The chi-square test tells us that  $\alpha$  products displaying AG labels were selected significantly more often on the test sites than on the control site. Displaying AG labelling on  $\alpha$  products increases sales by a little more than 20 %. For the consumers questioned, that label seems to be a criterion when making purchasing decisions. What is more, it is the label that increases sales most.

#### IV.4. CD label

The CD label displays lifespan in terms of cost per year. The products for which this label is used are jeans, smartphones, washing machines and vacuum cleaners.

Prix : 444,99€	Durée de vie minimum : 12 ans
Ainsi, ce produit vous reviendra à 37€ par an	

PRODUCTS	Control site (n=1260)		Test sites (n= 2178)		Difference
	$\alpha$ products	$\beta$ products	$\alpha$ products	$\beta$ products	
Sample size	322	938	436	742	+ 11.4 %
% of sales	25.6 %	74.4 %	37.0 %	63.0 %	

$$\chi^2(1) = 37.296, p < .001$$

The chi-square test tells us that  $\alpha$  products displaying CD labels were selected significantly more often on the test sites than on the control site. Displaying the CD label is an important criterion for consumers in their purchasing decisions, with sales of  $\alpha$  products up by slightly more than 11 % on the test sites.

#### IV.5. Comparison between labels

Whereas the four labels increased the number of simulated purchases of alpha products significantly, they were not equally effective. Alpha products with AG labels were chosen over beta products in 44.7% of cases. The display of useful lifespans meanwhile convinced 39.1% of participants to opt for alpha products. Lastly, lifespan in years/months and cost per year persuaded 32.9% and 20% of participants respectively to opt for alpha products.

When comparing these results, it was observed that AG and UL labels were considerably more effective than the other two labels.

Labels	Lifespan	Useful life	AG classification	Cost per year
Lifespan		$\chi^2(1) = 4.84, p = .03$	$\chi^2(1) = 20.27, p < .001$	$\chi^2(1) = 45.97, p < .001$
Useful life	$\chi^2(1) = 4.84, p = .03$		$\chi^2(1) = 3.27, p = .07$	$\chi^2(1) = 73.08, p < .001$
AG classification	$\chi^2(1) = 20.27, p < .001$	$\chi^2(1) = 3.27, p = .07$		$\chi^2(1) = 137.00, p < .001$
Cost per year	$\chi^2(1) = 45.97, p < .001$	$\chi^2(1) = 73.08, p < .001$	$\chi^2(1) = 137.00, p < .001$	

## VI. Impact of labelling by participant age

All the age brackets were affected significantly by lifespan labelling. However, the youngest participants were those most influenced. The effect was greatest for the 25-35 bracket and the under 25 bracket.

### VI.1. Under 25 age bracket

PRODUCTS	Control site (n=592)		Test sites (n=1 067)		Difference	V de Kramer
	$\alpha$ products	$\beta$ products	$\alpha$ products	$\beta$ products		
Sample size	157	435	426	641	+13.4%	.135
% of sales	26.5%	73.5%	39.9%	60.1%		

$$\chi^2(1) = 30.017, p < .001$$

### VI.2. 25-35 age bracket

PRODUCTS	Control site (n=513)		Test sites (n =996)		Difference	V de Kramer
	$\alpha$ products	$\beta$ products	$\alpha$ products	$\beta$ products		
Sample size	121	392	411	585	+17.7%	.175
% of sales	23.6%	76.4%	41.3%	58.7%		

$$\chi^2(1) = 46.360, p < .001$$

### VI.3. 36-50 age bracket

PRODUCTS	Control site (n=524)		Test sites (n =1 143)		Difference	V de Kramer
	$\alpha$ products	$\beta$ products	$\alpha$ products	$\beta$ products		
Sample size	131	393	425	718	+12.2%	.120
% of sales	25%	75%	37.2%	62.8%		

$$\chi^2(1) = 23.99, p < .001$$

### VI.4. Over 50 age bracket

PRODUCTS	Control site (n=691)		Test sites (n= 1 391)		Difference	V de Kramer
	$\alpha$ products	$\beta$ products	$\alpha$ products	$\beta$ products		
Sample size	172	519	515	876	+12.1%	.122
% of sales	24.9%	75.1%	37%	63%		

$$\chi^2(1) = 30.735, p < .001$$



## VII. Effects of labelling by household income

We analysed the effects of labelling in relation to household income. The findings showed that labelling had a positive influence on purchasing decisions irrespective of income. The extent of the effect seemed to indicate that the influence might be greater in households with high incomes.

### VII.1. Under EUR900

PRODUCTS	Control site (n=251)		Test sites (n=523)		Difference	V de Kramer
	$\alpha$ products	$\beta$ products	$\alpha$ products	$\beta$ products		
Sample size	64	187	196	327	+12.2%	.119
% of sales	25.5%	78.5%	37.5%	62.5%		

$$\chi^2(1) = 10.908, p < .001$$

### VII.2. Between EUR 900 and EUR 1 500

PRODUCTS	Control site (n=404)		Test sites (n=1 189)		Difference	V de Kramer
	$\alpha$ products	$\beta$ products	$\alpha$ products	$\beta$ products		
Sample size	118	286	279	506	+6.3%	.064
% of sales	29.2%	70.8%	35.5%	64.5%		

$$\chi^2(1) = 4.816, p = .016$$

### VII.3. Between EUR 1 500 and EUR 2 300

PRODUCTS	Control site (n=500)		Test sites (n=980)		Difference	V de Kramer
	$\alpha$ products	$\beta$ products	$\alpha$ products	$\beta$ products		
Sample size	110	390	400	580	+18.8%	.187
% of sales	22%	78%	40.8%	59.2%		

$$\chi^2(1) = 51.902, p < .001$$

### VII.4. Between EUR 2 300 and EUR 3 100

PRODUCTS	Control site (n=381)		Test sites (n=767)		Difference	V de Kramer
	$\alpha$ products	$\beta$ products	$\alpha$ products	$\beta$ products		
Sample size	100	281	291	476	+11.7%	.116
% of sales	26.2%	73.8%	37.9%	62.1%		

$$\chi^2(1) = 15.498, p < .001$$

### VII.5. Over EUR3 500

PRODUCTS	Control site (n=408)		Test sites (n=950)		Difference	V de Kramer
	$\alpha$ products	$\beta$ products	$\alpha$ products	$\beta$ products		
Sample size	87	321	558	392	+20%	.191
% of sales	21.3%	78.7%	41.3%	58.7%		

$$\chi^2(1) = 49.704, p < .001$$

### VIII. Impact of labelling by gender

Labelling showed an effect irrespective of gender. The effect was greatest among women and corroborated the positive correlation already observed between decisions to purchase alpha products and gender.

	PRODUCTS	Control site		Test sites		Difference	V de Kramer
		$\alpha$ products	$\beta$ products	$\alpha$ products	$\beta$ products		
Men	Sample size	259	833	838	1 400	+13.7%	.137
	% of sales	23.7%	76.3%	37.4%	62.6%		
Women	Sample size	357	1 056	1 163	1 773	+14.3%	.181
	% of sales	25.3%	74.7%	39.6%	60.4%		

$$\chi^2(1) = 49.704, p < .001$$

$$\chi^2(1) = 86.356, p < .001$$

## Part 6. Secondary findings

### I. Importance placed on environmental considerations when making purchasing decisions

Point I is designed to detect the importance of environmental considerations (Section I.1.) and in particular of lifespan, in consumers' thought processes (Section I.2. to I.4).

The criterion, or attribute, of lifespan will be analysed by product category. A general analysis will be carried out (total sample), along with an analysis by country (along with the environmental considerations).

We will also set out the socio-demographic factors (gender, age, level of education, country of residence and income) that influence the importance placed on product lifespan during the purchasing process.

It should be noted that these measurements of environmental considerations were made verbally and our findings may be somewhat over-weighted as a whole owing to a social desirability bias, even though the questionnaire was anonymous.

#### I.1. Taking account of environmental impact when making a purchasing decision

Our results show that, in all the European regions where we carried out our study, most respondents consider environmental impact to be quite important in their purchasing decisions.

#### Importance placed on the environmental impact of products bought, by country in the study

Region	little		limited		quite some		much		Total
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	
French	99	13.8 %	211	29.3 %	299	<b>41.5 %</b>	111	15.4 %	720
Spanish	84	7.3 %	236	20.4 %	475	<b>41.1 %</b>	362	31.3 %	1 157
Czech	97	20.6 %	154	32.8 %	165	<b>35.1 %</b>	54	11.5 %	470
Benelux	44	8.9 %	157	31.6 %	229	<b>46.1 %</b>	67	13.5 %	497
<b>Total</b>	324				1 168		594		2 844

Although, generally speaking, environmental considerations seem to be quite an important factor in purchasing decisions, it is interesting to look at consumer sensitivity to product lifespan. This criterion

is examined below for each product category used on our three test sites (household appliances, high-tech devices and clothing).

## I.2. Importance of product lifespan when purchasing household appliances

For consumers, lifespan is extremely important when purchasing household appliances, as are technical features and price. The importance was rated at four out of four for all countries studied, with the exception of the Benelux countries, where lifespan was still rated at three out of four. We should add that this attribute is seen as more important than technical features in all the countries studied (except in the Benelux countries once again) when purchasing household appliances!

### a) General findings

<u>IMPORTANCE</u> <u>CRITERIA</u>	0*	1**	2	3		Total
<b>Design (n = 2818)</b>	5.6 %	15.2 %	30.2 %	<b>34.0 %</b>	15.1 %	100 %
<b>Technical(n=2821)</b>	.2 %	8.2 %	20.6 %	35.3 %	<b>35.7 %</b>	100 %
<b>Price (n=2815)</b>	.6 %	2.7 %	14.1 %	38.0 %	<b>44.5 %</b>	100 %
<b>Lifespan (n=2807)</b>	.8 %	2.5 %	10.1 %	32.3 %	<b>54.3 %</b>	100 %

\* No response\*\* 1 = least important criterion, 4 = most important criterion

### b) France

<u>IMPORTANCE</u> <u>CRITERIA</u>	0	1	2	3	4	Total
<b>Design (n=713)</b>	9.8 %	23.4 %	31.8 %	<b>34.0 %</b>	25.8 %	100 %
<b>Technical (n=714)</b>	.1 %	2.4 %	6.6 %	<b>35.3 %</b>	30.3 %	100 %
<b>Price (n=714)</b>	.7 %	3.2 %	16.7 %	38.0 %	<b>39.8 %</b>	100 %
<b>Lifespan (n=714)</b>	1.1 %	5.2 %	13.9 %	32.3 %	<b>34.3 %</b>	100 %

### b) Spain

<u>IMPORTANCE</u> <u>CRITERIA</u>	0	1	2	3	4	Total
<b>Design (n=1145)</b>	4.1 %	13.2 %	32.2 %	<b>34.2 %</b>	16.2 %	100 %
<b>Technical (n=1147)</b>	.3 %	13.3 %	33.1 %	<b>35.0 %</b>	18.4 %	100 %
<b>Price (n=1143)</b>	.5 %	2.4 %	11.7 %	36.0 %	<b>49.3 %</b>	100 %
<b>Lifespan (n=1139)</b>	.8 %	1.5 %	8.4 %	27.7 %	<b>61.6 %</b>	100 %

d) Czech Republic

<u>IMPORTANCE</u>	0	1	2	3	4	Total
<u>CRITERIA</u>						
<b>Design (n=467)</b>	4.5 %	11.1 %	23.3 %	<b>40.9 %</b>	20.1 %	100 %
<b>Technical (n=469)</b>	.4 %	11.3 %	23.7 %	<b>42.0 %</b>	22.6 %	100 %
<b>Price (n=468)</b>	1.1 %	2.6 %	16.2 %	38.7 %	<b>41.5 %</b>	100 %
<b>Lifespan (n=467)</b>	.9 %	1.3 %	5.1 %	29.6 %	<b>63.2 %</b>	100 %

(e) Benelux

<u>IMPORTANCE</u>	0	1	2	3	4	Total
<u>CRITERIA</u>						
<b>Design (n=493)</b>	3.9 %	11.6 %	29.6 %	<b>38.7 %</b>	16.2 %	100 %
<b>Technical (n=491)</b>	0 %	2.0 %	8.6 %	37.1 %	<b>52.3 %</b>	100 %
<b>Price (n=490)</b>	.4 %	3.1 %	13.9 %	39.2 %	<b>43.5 %</b>	100 %
<b>Lifespan (n=487)</b>	.2 %	2.3 %	13.3 %	<b>42.9 %</b>	41.3 %	100 %

### I.3. Importance of product lifespan when purchasing high-tech products

Once again, lifespan is a key attribute when making purchasing decisions on high-tech products (rated at four out of four). In Spain, this criterion even supplants technical considerations when choosing high-tech devices!

a) General findings

<u>IMPORTANCE</u>	0*	1**	2	3	4	Total
<u>CRITERIA</u>						
<b>Design (n=2822)</b>	4.6 %	10.3 %	24.6 %	<b>36.3 %</b>	24.1 %	100 %
<b>Technical (n=2826)</b>	.4 %	5.6 %	15.3 %	33.3 %	<b>45.5 %</b>	100 %
<b>Price (n=2819)</b>	.8 %	3.3 %	12.9 %	36.3 %	<b>46.8 %</b>	100 %
<b>Lifespan (n=2788)</b>	.7 %	3.7 %	14.8 %	33.1 %	<b>47.7 %</b>	100 %

\* No response\*\* 1 = least important criterion, 4 = most important criterion

*b) France*

<u>IMPORTANCE</u>	0	1	2	3	4	Total
<u>CRITERIA</u>						
<b>Design (n=715)</b>	7.1 %	12.7 %	25.6 %	<b>30.9 %</b>	23.6 %	100 %
<b>Technical (n=717)</b>	0 %	2.1 %	6.7 %	29.4 %	<b>61.8 %</b>	100 %
<b>Price (n=717)</b>	.7 %	4.3 %	15.9 %	37.7 %	<b>41.4 %</b>	100 %
<b>Lifespan (n=717)</b>	1.0 %	9.1 %	21.5 %	33.5 %	<b>35.0 %</b>	100 %

*b) Spain*

<u>IMPORTANCE</u>	0	1	2	3	4	Total
<u>CRITERIA</u>						
<b>Design (n=1146)</b>	3.4 %	11.3 %	25 %	<b>37.3 %</b>	22.9 %	100 %
<b>Technical (n=1153)</b>	.1 %	11.3 %	25.6 %	<b>38.2 %</b>	24.9 %	100 %
<b>Price (n=1143)</b>	.3 %	2.3 %	9.5 %	35.2 %	<b>52.7 %</b>	100 %
<b>Lifespan (n=1130)</b>	.5 %	2 %	11.6 %	30.1 %	<b>55.8 %</b>	100 %

*d) Czech Republic*

<u>IMPORTANCE</u>	0	1	2	3	4	Total
<u>CRITERIA</u>						
<b>Design (n=472)</b>	5.3 %	7 %	24.2 %	<b>34.7 %</b>	28.8 %	100 %
<b>Technical (n=470)</b>	1.1 %	1.3 %	8.3 %	25.1 %	<b>64.3 %</b>	100 %
<b>Price (n=472)</b>	1.5 %	4.7 %	15.5 %	35.8 %	<b>42.6 %</b>	100 %
<b>Lifespan (n=468)</b>	1.1 %	1.5 %	10.3 %	32.5 %	<b>54.7 %</b>	100 %

*(e) Benelux*

<u>IMPORTANCE</u>	0	1	2	3	4	Total
<u>CRITERIA</u>						
<b>Design (n=489)</b>	3.3 %	7.8 %	22.7 %	<b>43.4 %</b>	22.9 %	100 %
<b>Technical (n=486)</b>	.8 %	1.4 %	10.1 %	35.6 %	<b>52.1 %</b>	100 %
<b>Price (n=487)</b>	1.2 %	3.1 %	13.8 %	37.2 %	<b>44.8 %</b>	100 %
<b>Lifespan (n=473)</b>	.4 %	1.7 %	17.1 %	40.2 %	<b>40.6 %</b>	100 %

#### **I.4. Importance of product lifespan when purchasing clothing**

Unlike purchases of high-tech and household products, lifespan is given less weight for purchases of clothing (although it was still rated at three out of four). It is no great surprise that the key attribute here is article design (with the exception of the Benelux countries, which rate design at three out of four and lifespan at four out of four).

a) General findings

<u>IMPORTANCE</u> <u>CRITERIA</u>	0*	1**	2	3	4	Total
<b>Design (n=2831)</b>	2.0 %	4.0 %	13.6 %	35.1 %	<b>45.2 %</b>	100 %
<b>Technical (n=2828)</b>	3.7 %	8.8 %	22.4 %	<b>35.3 %</b>	29.8 %	100 %
<b>Price (n=2829)</b>	1.2 %	4.3 %	17.0 %	37.1 %	<b>40.4 %</b>	100 %
<b>Lifespan (n=2814)</b>	3.4 %	8.3 %	23.5 %	<b>35.6 %</b>	29.1 %	100 %

\* No response \*\* 1 = least important criterion, 4 = most important criterion

b) France

<u>IMPORTANCE</u> <u>CRITERIA</u>	0	1	2	3	4	Total
<b>Design (n=720)</b>	1.9 %	3.6 %	9.4 %	30.6 %	<b>54.4 %</b>	100 %
<b>Technical (n=719)</b>	5.1 %	16.6 %	29.6 %	<b>32.0 %</b>	16.7 %	100 %
<b>Price (n=719)</b>	1.5 %	5.1 %	17.9 %	<b>40.1 %</b>	35.3 %	100 %
<b>Lifespan (n=718)</b>	4.7 %	15.2 %	32.5 %	<b>29.4 %</b>	18.2 %	100 %

b) Spain

<u>IMPORTANCE</u> <u>CRITERIA</u>	0	1	2	3	4	Total
<b>Design (n=1149)</b>	1.8 %	4.0 %	15.3 %	37.4 %	<b>41.4 %</b>	100 %
<b>Technical (n=1150)</b>	1.8 %	4.3 %	15.5 %	37.2 %	<b>41.2 %</b>	100 %
<b>Price (n=1145)</b>	.8 %	3.6 %	14.7 %	35.0 %	<b>45.9 %</b>	100 %
<b>Lifespan (n=1133)</b>	3.4 %	7.1 %	21.5 %	<b>37.4 %</b>	30.6 %	100 %

d) Czech Republic

<u>IMPORTANCE</u> <u>CRITERIA</u>	0	1	2	3	4	Total
<b>Design (n=465)</b>	2.2 %	3.2 %	12.5 %	31.4 %	<b>50.8 %</b>	100 %
<b>Technical (n=465)</b>	1.5 %	3.9 %	19.6 %	<b>40.0 %</b>	35.1 %	100 %
<b>Price (n=468)</b>	2.1 %	6.0 %	22.2 %	<b>35.0 %</b>	34.6 %	100 %
<b>Lifespan (n=466)</b>	2.6 %	6.2 %	23.0 %	<b>37.6 %</b>	30.7 %	100 %

(e) Benelux

<b>IMPORTANCE</b>	0	1	2	3	4	Total
<b>CRITERIA</b>						
<b>Design (n=497)</b>	2.4 %	5.4 %	16.9 %	<b>39.8 %</b>	35.4 %	100 %
<b>Technical (n=494)</b>	8.1 %	12.8 %	30.8 %	<b>31.0 %</b>	17.4 %	100 %
<b>Price (n=497)</b>	.6 %	3.4 %	15.9 %	39.4 %	<b>40.6 %</b>	100 %
<b>Lifespan (n=497)</b>	2.4 %	3.2 %	15.5 %	38.8 %	<b>40.0 %</b>	100 %

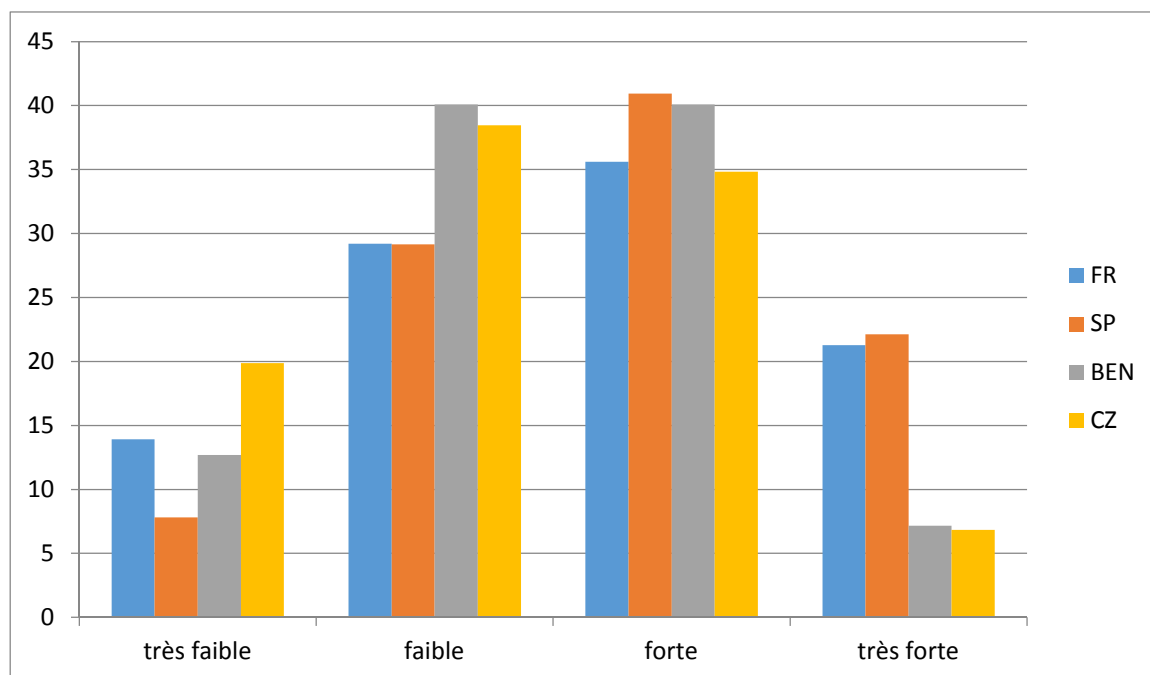
**I.5. Confidence placed in ecolabels when making a purchase**

We asked participants about their trust in eco labels in general: "How much confidence do you place in environmental labels when buying a product?" The results showed that the Spanish sample were most trusting of environmental labelling. The French sample too placed great confidence in environmental labelling. The Benelux sample was neutral. The Czech sample meanwhile demonstrated a lack of trust in environmental labelling.

**Confidence placed in ecolabels in the selection process by region**

	<b>1 (weak)</b>		<b>2</b>		<b>3</b>		<b>4 (strong)</b>		<b>Total</b>
<b>France</b>	100	13.9%	210	29.2%	256	3.65%	153	21.3%	719
<b>Spain</b>	90	7.8%	336	29.1%	472	40.9%	255	22.1%	1 153
<b>Benelux</b>	62	12.7%	196	40.1%	196	40.1%	35	7.2%	489
<b>Czech Rep.</b>	93	19%	180	38.5%	163	34.8%	32	6.8%	468
<b>Total</b>	345		922		1 087		475		2 829





## II. Understanding of lifespan labelling

To recap, we chose to test three lifespan label formats:

- minimum lifespan (ML) in minimum number of years of use or minimum number of uses,
- a lifespan classification from A to G,
- a 'cost of depreciation' (CD), which corresponds to a price per year over a given life.

### II.1. General findings




Regardless of respondents' exposure conditions (no exposure to the labels prior to the questionnaire – control – or exposure to labels when browsing the site, thereby increasing the possibility of familiarising themselves with these labels), the purpose of the different labels tested is understood by a large number of consumers.

There is no significant difference in rates of comprehension between the two populations (control vs test group) for the LS ( $\chi^2(1) = .033$ ,  $p = .855$ ) and CD ( $\chi^2(1) = .043$ ,  $p = .997$ ) labels. On the other hand, the AG label seems to create confusion with energy classification labels on products. Exposure to the AG label significantly increases correct comprehension ( $\chi^2(1) = 2.788$ ,  $p = .094$ ).




The lifespan label (in number of years) is the label that is best understood, as more than 82 % of respondents understood it correctly. The AG labels (66%) and CD labels (60%) were much less understood.

### Informativeness of lifespan labels - All conditions




**Does the LS label give you information on lifespan?**

<u>COMPREHENSION</u>		No		Yes		Total	
<u>LABELS</u>	Freq.	%	Freq.	%	Freq.	%	
	521	17.9 %	2 396	<b>82.1 %</b>	2 917	100 %	
	924	31.7 %	1 993	<b>68.3 %</b>	2 917	100 %	
	1 137	39 %	1 780	<b>61 %</b>	2 917	100 %	

### Informativeness of lifespan labels - Test conditions

<u>COMPREHENSION</u>		No		Yes		Total	
<u>LABELS</u>	Freq.	%	Freq.	%	Freq.	%	
LS 	344	18.0 %	1 572	<b>82.0 %</b>	1 916	100 %	
AG 	587	30.6 %	1 329	<b>69.4 %</b>	1 916	100 %	
CD 	745	38.9 %	1 171	<b>61.1 %</b>	1 916	100 %	

### Informativeness of lifespan labels - Control conditions

<u>COMPREHENSION</u>		No		Yes		Total	
<u>LABELS</u>	Freq.	%	Freq.	%	Freq.	%	
LS 	177	17.7 %	824	<b>82.3 %</b>	1001	100 %	
AG 	337	33.7 %	664	<b>66.3 %</b>	1 001	100 %	
CD 	392	39.2 %	609	<b>60.8 %</b>	1 001	100 %	

## II.2. Findings by geographical area

The lifespan label in number of years (LS) was the most easily comprehended by the samples in all the regions where testing was conducted, with a minimum comprehension rate of almost 80%.

Comprehension of the classification label (AG) is more varied: it was well understood by a majority in France and in Czech Republic (eight people in ten) but much less well understood in Spain and the Benelux (approximately six out of ten). The cost of depreciation (CD) label is, as a general rule, the least well understood of the three. We can also point out that the labels were generally less well understood by the Benelux and Spanish samples.

<b>COUNT RY</b>	<b>France</b>			<b>Spain</b>			<b>Czech Republic</b>			<b>Benelux</b>		
<b>LABEL</b>	No	Yes	Total	No	Yes	Total	No	Yes	Total	No	Yes	Total
<b>LS (n=2917)</b>	54 7.4 %	674 <b>92.6 %</b>	728 100 %	264 22 %	936 <b>78 %</b>	1 200 100 %	83 17.3 %	396 <b>82.7 %</b>	479 100 %	120 23.5 %	390 <b>76.5 %</b>	510 100 %
<b>AG (n=1916)</b>	115 15.8 %	613 <b>84.2 %</b>	728 100 %	527 43.9 %	673 <b>56.1 %</b>	1 200 100 %	77 16.1 %	402 <b>83.9 %</b>	479 100 %	205 40.2 %	305 <b>59.8 %</b>	510 100 %
<b>CD (n = 1916)</b>	111 15.2 %	617 <b>84.8 %</b>	728 100 %	645 53.8 %	555 <b>46.2 %</b>	1 200 100 %	150 31.3 %	329 <b>68.7 %</b>	479 100 %	231 45.3 %	279 <b>54.7 %</b>	510 100 %

## III. Lifespan and *Willingness to pay* (WTP)

We looked at willingness to pay (WTP) more for a product with a longer lifespan when purchasing a dishwasher.

### III.1. General findings

According to the *Que Choisir* study (2014), the average purchase price of a dishwasher is EUR 450. We asked participants to state the price that they would pay for a dishwasher.

### Price sought for a dishwasher

PRICE	ILLC study		UFC <i>Que Choisir</i> study
	Sample size	%	
EUR 200-299	694	24.6 %	8%
EUR300-499	1 555	<b>55.2 %</b>	<b>45 %</b>
EUR500-699	395	14.1 %	34%
EUR 700 or more	49	1.8 %	13 %
Total	2 693	100 %	100 %

These figures are in line with the findings published by *Que Choisir*: more than 55 % of respondents would buy a new dishwasher costing between EUR 300 and EUR 499. However, more consumers would like to buy a cheaper dishwasher (between EUR 200 and EUR 299) than in the CFU *Que Choisir* study<sup>1</sup>.

<sup>1</sup><http://www.quechoisir.org/equipement-de-la-maison/electromenager/gros-electromenager/actualite-lave-vaisselle-infographie-vous-et-votre-lave-vaisselle>

We went on to ask consumers how much extra they would be willing to pay to buy the same dishwasher but with a lifespan that was two years longer.

PRICE	Sample size	%
I wouldn't buy one	294	10.4
EUR 50	756	26.8
<b>EUR 100</b>	<b>1 213</b>	<b>42.9</b>
EUR 200	405	14.3
EUR 300	158	5.6
Total	2 826	100 %

Respondents were overwhelmingly prepared to spend more to keep the product purchased for longer (nine out of ten). They would be willing to pay an average of EUR 102 more for a dishwasher that would last two years longer.

### III.2. By geographical area

#### Purchase price of a dishwasher by country

Country	Purchase price of a dishwasher							Total
	I wouldn't buy one	EUR 20 0-299	EUR 30 0-399	EUR 40 0-499	EUR 50 0-599	EUR 6 00-700	+ EUR 7 00	
France	43 (5.9 %)	<b>233</b> <b>(32 %)</b>	195 (26.8 %)	159 (21.8 %)	52 (7.1 %)	21 (2.9 %)	10 (1.4 %)	713 (97.9 %)
Spain	41 (3.4 %)	298 (24.8 %)	457 (38.1 %)	222 (18.5 %)	84 (7 %)	29 (2.4 %)	14 (1.2 %)	1 145 (95.4 %)
Benelux	40 (7.8 %)	68 (13.3 %)	141 (27.8 %)	125 (24.5 %)	73 (14.3 %)	25 (4.9 %)	18 (3.5 %)	491 (96.3 %)
Czech Republic	1 (0.2 %)	95 (19.8 %)	131 (27.3 %)	125 (26.1 %)	66 (13.8 %)	45 (9.4 %)	7 (1.5 %)	470 (98.1 %)
Total	125 (4.4 %)	694 (24.6 %)	<b>924</b> <b>(32.8 %)</b>	631 (22.4 %)	275 (9.8 %)	120 (4.3 %)	49 (1.8 %)	2 819 (100 %)

One third of respondents questioned would pay between EUR 300 and EUR 399 for a dishwasher. France is an exception. One third of its participants would only pay between EUR 200 and EUR 299 for a dishwasher. Around 25 % of all participants would be willing to pay only between EUR 200 and EUR 299 and 22 % of them would pay between EUR 400 and EUR 499 for a new machine. Consumers in the Czech Republic and the Benelux countries appear to be more inclined to paid up to EUR 499 than those in the other countries.

**Sum participating consumers are willing to add to the price for a dishwasher that would last two years longer, by country**

WTP for a lifespan that is two years longer

Country	I wouldn't buy one	EUR 50	EUR 100	EUR 200	EUR 300	Total
France	101 (13.9 %)	179 (24.6 %)	322 (44.2 %)	98 (13.5 %)	14 (1.9 %)	714 (98.1 %)
Spain	78 (6.5 %)	316 (26.3 %)	531 (44.3 %)	158 (13.2 %)	68 (5.7 %)	1 151 (95.9 %)
Benelux	43 (8.4 %)	92 (18 %)	182 (35.7 %)	110 (21.6 %)	66 (12.9 %)	493 (96.7 %)
Czech Republic	72 (15 %)	169 (35.3 %)	178 (37.2 %)	39 (8.1 %)	10 (2.1 %)	468 (97.7 %)
Total	294 (10.4 %)	756 (26.75 %)	1 213 (42.92 %)	405 (14.33 %)	158 (5.59 %)	2 826

The figures are very similar for France and Spain. 44 % of the participants in those countries are willing to pay EUR 100 more for a dishwasher that would last two years longer. In the Czech Republic, the findings are more mixed: 35 % of respondents are only willing to pay EUR 50 more and 37 % are willing to pay EUR 100 more. They are also the most likely (15 %) to say that they would not pay any more to extend the lifespan of a washing machine by two years. A possible explanation for that is the low incomes of the country's inhabitants. Participants in the Benelux countries are more likely than the others to be willing to pay more: more than 21 % of them are willing pay EUR 200 more and even 13 % to pay EUR 300 more.

#### IV. Perceived responsibility with regard to a product's lifespan

##### IV.1. General findings

In general, consumers assign great responsibility to all parties in the chain, especially to the manufacturer and to users.

Agents	Perceived responsibility of the agents				
	None	Very low	Low	High	Very high
Manufacturer	66 (2.3 %)	77 (2.6 %)	216 (7.4 %)	747 (25.6 %)	1660 (56.9 %)
Dealer	614 (21 %)	570 (19.5 %)	719 (24.6 %)	561 (26.6 %)	241 (8.3 %)
Consumer	140 (4.8 %)	133 (4.6 %)	475 (16.3 %)	1076 (36.9 %)	920 (31.5 %)
Repairer	148 (5.1 %)	214 (7.3 %)	665 (22.8 %)	1028 (35.2 %)	615 (21.1 %)

##### IV.2. Perceived responsibility by country

In all regions of the study, consumers are generally more generous towards dealers than towards other parties (with the exception of the Benelux countries).

###### a) France

Agents	Perceived responsibility of the agents				
	None	Very low	Low	High	Very high
Manufacturer	5 (0.7 %)	13 (1.8 %)	35 (4.8 %)	128 (17.6 %)	534 (73.4 %)
Dealer	210 (28.8 %)	170 (23.4 %)	162 (22.3 %)	114 (15.7 %)	43 (5.9 %)
Consumer	23 (3.2 %)	37 (5.1 %)	150 (20.6 %)	267 (36.7 %)	237 (32.5 %)
Repairer	38 (5.2 %)	67 (9.2 %)	176 (24.2 %)	269 (37 %)	139 (9.1 %)

*b) Spain*

Agents	Perceived responsibility of the agents				
	None	Very low	Low	High	Very high
Manufacturer	48 (4 %)	45 (3.8 %)	119 (9.9 %)	357 (29.8 %)	544 (45.3 %)
Dealer	220 (18.3 %)	210 (17.5 %)	330 (27.5 %)	215 (17.9 %)	101 (8.4 %)
Consumer	86 (7.2 %)	60 (5 %)	186 (15.5 %)	422 (35.2 %)	349 (29.1 %)
Repairer	69 (6.4 %)	56 (5.2 %)	252 (23.3 %)	415 (38.3 %)	291 (26.9 %)

*c) Czech Republic*

Agents	Perceived responsibility of the agents				
	None	Very low	Low	High	Very high
Manufacturer	1 (0.2 %)	10 (1.7 %)	19 (3.2 %)	113 (18.8 %)	458 (76.2 %)
Dealer	132 (27.6 %)	116 (24.2 %)	109 (22.8 %)	67 (14 %)	32 (6.7 %)
Consumer	6 (1.3 %)	10 (2.1 %)	57 (11.9 %)	174 (36.3 %)	206 (43 %)
Repairer	25 (5.2 %)	61 (12.7 %)	136 (28.4 %)	136 (28.4 %)	76 (15.9 %)

*d) Benelux*

Agents	Perceived responsibility of the agents				
	None	Very low	Low	High	Very high
Manufacturer	12 (2.4 %)	9 (1.8 %)	43 (8.4 %)	149 (29.2 %)	267 (52.4 %)
Dealer	52 (10.2 %)	74 (14.5 %)	118 (23.1 %)	165 (32.4 %)	65 (12.7 %)
Consumer	25 (4.9 %)	26 (5.1 %)	82 (16.1 %)	213 (41.8 %)	128 (25.1 %)
Repairer	16 (31 %)	30 (5.9 %)	101 (19.8 %)	208 (40.8 %)	109 (21.4 %)



## **General conclusions**

The findings show that labelling has a positive influence on decisions to purchase products whose lifespan is longer. On average, an alpha product was chosen 4.6% more frequently when lifespan was displayed.

On the e-retail sites, in each category of product, 3 out of 10 were alpha products, i.e. 30% of the products. Alpha products were chosen a total of 647 times from the 2 619 products selected on the control site and 2 030 times from the 5271 where labelling was present. That represents 24.7% and 38.5% respectively of the products selected. On average, therefore, sales of alpha products increased by 13.8% when lifespan was displayed.

### **Varying effects depending on the product**

We observed significant effects on purchasing decisions for eight of the nine types of product tested: suitcases (+23.7%), printers (+20.1%), trousers (15.9%), sports footwear (+15%), filter coffee makers (+14.4%), washing machines (12.9%), vacuum cleaners (+12.3%), smartphones (+11.4%). Only simulated purchases of televisions were not significantly affected by environmental labelling. Further analysis of the literature on motives when purchasing a television can shed light on this unexpected result however. The high level of similarity between the products on offer within the range of televisions may also be a factor worth considering to explain this lack of influence. It may be that participants paid little attention to the features of these products, which were all very alike. In contrast to other product categories, the various television models were not easily distinguishable in terms of design, colour or other physical characteristics. This characteristic, unique to this category of product, may have resulted in participants paying less attention and therefore in the absence of any observed effect.

Although purchasing decisions regarding other categories of product were affected by labelling, the degree of influence varied depending on the type of product. It was therefore observed that suitcases (+23.7%) and printers (+20.1%) were the products for which labelling had the greatest impact. Suitcases were the only product for which labelling had an influence in all four test regions. Suitcases are inherently mobile objects. That means that they have two attributes that could make consumers attach great importance to their lifespan. On the one hand, travel puts the soundness of suitcases to the test; how robust they are would therefore appear to be an essential attribute. On the other hand, since they are used only when travelling, their use can be more or less sporadic. If they are used rarely, consumers can legitimately expect them to last a long time.

Printers, meanwhile, are technological objects, expert systems (that function in a way that users do not fully understand) that are nowadays found in most households. They are generally perceived to have short lifespans. This perception may have contributed to the degree of influence exerted by the label. Labelling had an effect on samples from three of the four regions studied (France: +27.3%; Czech Republic: +22.5%; and Benelux: +22.2%).

Of the products where labelling had an effect, the impact was weakest with smartphones (+11.4%). Virtual sales were seen to increase in the case of the French (+18.3%) and Spanish (+16.2%) samples, but not for the Benelux or Czech Republic samples. This lower degree of influence may be owing to the rapid development of smartphone technology. The lifespan of these objects depends more on their

(in)capacity to process and adapt to constantly evolving types of content than on problems relating to components malfunctioning.

### **Varying effects depending on the region**

Analysis of the results relating to the participants from the four sample regions suggests that labelling had an impact on all four samples. More specifically, we observed that the influence was greatest in relation to the French sample (+24%). This sample was influenced more strongly than the Czech (+16.8%), Benelux (+16.8%) and Spanish (+13.8%) samples. The Spanish sample showed the least evidence of influence. These results were corroborated by the results of analyses carried out on each product in each geographical sample group.

### **The influence of price**

Displaying lifespan influences purchasing decisions irrespective of product price (+13.8%). Analyses by price bracket show varying results depending on the region and the product. Nevertheless, the results lead us to tentatively suggest that there is a price effect. It would appear that the importance attached to lifespan increases in line with the sum that individuals are prepared to pay for their product. In other words, it would seem that lifespan labelling has more influence on purchasing decisions relating to high-end products (+15.3%) than on those relating to low-end products (+14.1%). This difference is however not large and additional tests would be required to confirm it.

Furthermore, 90% of participants stated that they would be prepared to pay more (willingness to pay) for a similar product (dishwasher) with a lifespan that was 2 years longer. On average, they stated that they were prepared to pay EUR 102 extra for that assurance for a dishwasher priced between EUR 300 and EUR 500. Participants in Benelux countries were more inclined than others to be willing to pay extra: more than 21 % of them were willing pay EUR 200 more and close to 13 % were prepared to pay as much as EUR 300 more. The samples from Spain and France produced similar results: 44 % of the participants in these two countries were willing to pay EUR 100 more for a dishwasher that would last 2 years longer. In the Czech Republic, the findings were less striking: 35 % of respondents would be willing to pay EUR 50 more and 37 % would be willing to pay EUR 100 more. They were also the most likely (15 %) to say that they would not pay any more for a dishwasher with a lifespan that was 2 years longer. One explanation for these findings is the difference in GDP between the various countries.

### **A consumer profile**

Although lifespan labelling influenced both men and women, women were more likely to base their purchasing decisions on this criterion. A similar observation can be made with regard to age. Labelling influenced purchasing decisions in all the age groups. The 25-35 age group were most receptive to the labelling (+17.7%). The under 25 age group was second most receptive (+15.5%). Those aged over 35 were influenced least by lifespan arguments (+12%).

Displaying lifespan had an impact on purchasing decisions irrespective of household income. However, the results suggest that high income households could be more receptive to lifespan labelling than lower income households (+20.1% for households with incomes over EUR 3 100/month as opposed to +6.0% for households with incomes under EUR 1 500€/month). However,

the impact of this socio-economic aspect would also need to be confirmed by means of further research.

Awareness of or involvement in environmental matters had no discernible effect. The typical profile for a consumer who is receptive to lifespan considerations when making purchasing decisions would therefore be a woman aged between 25 and 35 with an above-average household income.

### **Labels that are better understood and more effective**

The four labels we tested proved to be effective. Each of the labels was shown to have an impact on purchasing decisions. Two of the labels, however, appeared to be particularly effective. Labels showing an A to G scale (+20.4%) and those showing useful lifetime (+14.1%) achieved better results than the other two labels (+11.4% for labels showing cost per year and +9% for labels showing lifetime in years).

The A to G scale may potentially however have been confused with the energy label. 68% of all participants fully understood that this label contained information about the lifespan of the product. A learning effect was observed, however, as more than 70% of people understood this label when they came across it in the simulated shopping situation compared with 66% in the control group. This labelling format is therefore potentially appropriate, particularly if consumers have time to get used to it.

Meanwhile, the label showing lifespan in years or months was the best understood, with 82% of participants associating it with lifespan. This suggests that Useful Lifetime should be displayed, using a similar format. In terms of format, however, we have some reservations regarding the use of large figures. People find it hard to mentally picture, and thus take on board, large quantities (such as 10 000 hours or 500 wash cycles). It may be that this cognitive shortcoming makes indications regarding product lifespan rather unclear. This point should be given special consideration before using this type of label.

It would seem best, meanwhile, to avoid labels that show cost per year. Not only did these labels perform less well than the other types, they were also the least understood by consumers.

### **Responsible manufacturers and users**

When it comes to various parties' responsibility for a product's lifespan, 80% of participants generally assigned a high to very high degree of responsibility to manufacturers. Next in line in terms of responsibility were users (68%), whereas repairers (56%) and retailers (35%) were considered to hold less responsibility.

Participants attributed the greatest responsibility to manufacturers and then to users, irrespective of region. Participants in the Czech Republic and France stood out, however, as 95% and 91% respectively assigned a high to very high level of responsibility to manufacturers, as opposed to 82% for the Benelux sample and 75% for the Spanish sample.

These observations support the notion of minimum lifespan labelling, that is binding for manufacturers. A minimum lifespan guarantee could be envisaged while setting out a product's conditions of use. The vast majority of consumers recognise that they share responsibility for the longevity of their possessions.

### **The limitations of the study and outlook**

We cannot neglect the fact that the study and its conclusions are subject to some limitations.

First, the study samples are not objectively homogeneous and do not comply with quota criteria. One might nevertheless reasonably suppose that the large sample size ( $n=2\,917$ ) would allow most of the potential for sampling bias to be controlled for. Analyses of representative samples of target population groups would underpin the observations made in this study.

Another limitation relates to the experimental procedure. In order to avoid any interaction effects, we chose to restrict potential environmental labelling (European Ecolabel, the AB organic label, etc.) on the products tested to a label showing the product's energy class. A new trial in a more natural setting, with multiple labels and images displaying product attributes, could be envisaged.

Finally, it would be appropriate to carry out further tests with isolated objectives: comparing several labels, or potential impact by product type for instance. Indeed, the numerous variables handled in this study make it impossible to rule out interactive effects.

## Bibliography

- Abeliotis, K., Koniari, C., & Sardianou, E. (2010). The profile of the green consumer in Greece. *International Journal of Consumer Studies*, 34, 153-160.
- Adams, D. C., & Adams, A. E. (2011). De-placing local at the farmers' market: Consumer conceptions of local foods. *Journal of Rural Social Sciences*, 26(2), 74-100.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179–211.
- Armila M., & Kähkönen, N. (1997). The purchase decision making process of an environmentally conscious consumer – information search and alternative evaluation. Finland: Helsinki School of Economics and Business Administration.
- Arora, S., Cason, T.N., 1999. Do community characteristics influence environmental outcomes? Evidence from the toxics release inventory. *Southern Economic Journal* 65 (4), 691–716.
- Arrow, J.K. (1972). Problems in resource allocation in United States Medical Care. In: Kunz, Fehr (Eds.), *Challenge of Life*. Brekke et al., 2003.
- Asebø, K., Jervell, A. M., Lieblein, G., Svennerud, M., & Francis, C. (2007). Farmer and consumer attitudes at farmers markets in Norway. *Journal of Sustainable Agriculture*, 30(4), 67-93.
- Bamberg, S. (2003). How does environmental concern influence specific environmentally related behaviors? A new answer to an old question. *Journal of Environmental Psychology*, 23, 21–32.
- Banyte, J., Brazioniene, L., & Gadeikiene, A., (2010). Investigation of green consumer profile: a case of Lithuanian market of eco-friendly food products. *Econ. Manag.* 15, 374-383.
- Barber, N., Bishop, & M., Gruen, T. (2014). Who pays more (or less) for pro-environmental consumer goods? Using the auction method to assess actual willingness-to-pay. *Journal of environmental psychology* 40 (2014) 218 – 227.
- Barr, S., Shaw, G., & Coles, T. (2011). Times for (Un)sustainability? Challenges and opportunities for developing behaviour change policy. A case-study of consumers at home and away. *Global Environmental Change*, 21, 1234–1244 .
- Basker, D. (1992). Comparison of taste quality between organically and Agriculture conventionally grown fruits and vegetables. *American Journal of Alternative*, 7, 129–136.
- Batte, M.T., Hooker, N.H., Haab, T.C. & Beaverson, J. (2007). Putting their money where their mouths are: Consumer willingness to pay for multi-ingredient, processed organic food products. *Food Policy* 32(2).
- Bean, M., & Shar, J. S. (2011). Profiling alternative food system supporters: the personal and social basis of local and organic food support. *Renawable Agriculture and Food Systems*, 26(3), 243-254.
- Bellows, A. C., Alcaraz, V. G., & Hallman, W. K. (2010). Gender and food, a study of attitudes in the USA towards organic, local, U.S. grown, and GM-free foods. *Appetite*, 55(3), 540-550.
- Berghoef, N., & Dodds, R. (2013). Determinants of interest in eco-labelling in the Ontario wine industry. *Journal of Cleaner Production*.(Available online 16.03.13.).
- Berglung, C., & Matti, S. (2006). Citizen and consumer: the dual role of individuals in environmental policy. *Environmental Politics* 15 (4), 550–571.
- Berlin, L., Lockeretz, W. & Bell, R. (2009). Purchasing foods produced on organic, small and local farms: a mixed method analysis of New England consumers. *Renewable Agriculture and*

- Bingen, J., Sage, J., & Sirieix, L. (2011). Consumer coping strategies: A study of consumers committed to eating local. *International Journal of Consumer Studies, 35*(4), 410-419.
- Blend, J.R., van Ravenswaay, E.O., 1999. Measuring consumer demand for ecolabeled apples. *American Journal of Agricultural Economics 81* (5), 1072–1077.
- Bockstael N.E. & Strand I.E. (2000.) Economic Sanctions and Environmental Preferences: Protecting Dolphins and Tuna Markets, Department of Agricultural and Resource Economics, University of Maryland, *Working Paper n°5*, April.
- Bond, C. A., Thilmany, D., & Bond, J. K. (2008). Understanding consumer interest in product and process-based attributes for fresh produce. *Agribusiness, 24*(2), 231-252.
- Bonroy O. & Constantatos C. (2004). Biens de confiance et concurrence en prix, *Revue économique 55*(3), 527-532.
- Bonti-Ankomah, S., & Yiridoe, E. K. (2006). Organic and Conventional Food: A Literature Review of the Economics of Consumer Perceptions and Preferences. Final Report.
- Borin, N., Cerf, D.C., & Krishnan, R. (2011). Consumer effects of environmental impact in product labeling. *J. Consumer Mark. 28* (1), 76-86.
- Bougherara D. & Piguat V. (2008). Marchés avec coûts d'information sur la qualité des biens: une application aux produits écolabellisés, *Economie et Prévision 182*, 77-96.
- Boztepe, A. (2012). Green marketing and its impact on consumer buying behavior. *European Journal of Econical and Political Study. 5* (1), 5-21.
- Brécard, D., Hlaimi, B., Lucas, S., Perraudeau, Y. & Salladarré, F. (2009) Determinants of demand for green products: An application to eco-label demand for fish in Europe, *Ecological Economics 69*(1), 115-125.
- Breard, D., 01/2013. Consumer confusion over the profusion of eco-labels: lessons from a double differentiation model. *Resour. Energy Econ. 37*. <http://dx.doi.org/10.1016/j.reseneeco.2013.10.002> (accessed 04.05.14).
- Brekke, K.A., Kverndokk, S., Nyborg, K., 2003. An economic model of moral motivation. *Journal of Public Economics, 87*, 1967–1983.
- Brouhle, K., & Khanna, M. (2012). "Determinants of participation versus consumption in the Nordic Swan eco-labeled market". *Ecological Economics, Elsevier, vol. 73*(C), pages 142-151.
- Brown, C. (2003). Consumers' preferences for locally produced food ; A study in southeast Missouri. *American Journal of Alternative Agriculture, 18*(4), 213-224.
- Brown, E., Dury, S., & Holdsworth, M. (2009). Motivations of consumers that use local, organic fruit and vegetable box schemes in Central England and Southern France. *Appetite, 53*(2), 183-188.
- Burchardi, H., Schröder, C., & Thiele, H. D.(2005). Willingness-to-pay for food of the own region: Empirical estimates from hypothetical and incentive compatible settings. In American Agricultural Economics Association annual meeting. Rhode Island, USA, July 24-27, 2005, online available at: <http://ageconsearch.umn.edu/bitstream/19365/1/sp05bu02.pdf>.
- Campbell, B., Mhlanga, S., & Lesschaeve, I. (2013). Perception versus reality: Canadian consumer views of local and organic. *Canadian Journal of Agricultural Economics, 61*(4), 531-558.

- Carpio, C. E., & Isengildina-Massa, O. (2009). Consumer willingness-to-pay for locally grown products: *The case of South Carolina. Agribusiness, 25*(3), 412-426.
- Chambers, S., Lobb, A., Buttler, L., Harvey, K., & Traill, W. B. (2007). Local, national and imported foods: A qualitative study. *Appetite, 49*(1), 208-213.
- Cholette, S., Ozluk, O., Ozsen, L., & Ungson, G. R. (2013). Exploring purchasing preferences: Local and ecologically labeled foods. *Journal of Consumer Marketing, 30*(7), 563-572.
- Clark, C.F., Kotchen, M.J., Moore, M.R. (2003). Internal and external influences on proenvironmental behavior: participation in a green electricity program. *Journal of Environmental Psychology 23*, 237-246.
- Cleveland, M., Kalamas, M., & Laroche, M. (2005), Shades of Green: Linking Environmental Locus of Control and Pro-Environmental Behaviors. *Journal of Consumer Marketing, 22* (4), 198-212.
- Conner, D., Colasanti, K., Ross, R. B., & Smalley, S. B. (2010). Locally grown foods and farmers markets: Consumer attitudes and behaviors. *Sustainability, 3*(2), 742-756.
- Costanigro, M., Kroll, S., Thilmany, D., & Bunning, M. (2014). An in-store valuation of local and organic apples: The role of social desirability. *Agribusiness, 27*(4), 465-477.
- Cranfield, J., Henson, S., & Blandon, J. (2012). The effect of attitudinal and sociodemographic factors on the likelihood of buying locally produced food. *Agribusiness, 28*(2), 205-221.
- D'Souza, C., Taghian, M., Lamb, P., & Peretiatko, R. (2007). Green decisions: demographics and consumer understanding of environmental labels. *International Journal of Consumer Studies 31*, 371-376.
- Darby, M., & Karni, E. (1973). Free competition and the optimal amount of fraud, *Journal of Law and Economics 16*(1), 67-88.
- Darby, K., Batte, M. T., Ernst, S., & Roe, B. (2008). Decomposing local: A conjoint analysis of locally produced foods. *American Journal of Agricultural Economics, 90*(2), 476-486.
- Davies, A., Titterton, A. J., & Cochrane, C. (1995). Who buys organic food? A profile of purchasers of organic food in Northern Ireland. *British Food Journal, 97*, 17-23.
- De Araujo, I. E., Rolls, E. T., Velazco, M. I., Margot, C., & Cayeux, I. (2005). Cognitive modulation of olfactory processing. *Neuron, 46*, 671-679.
- Deliza, R., & MacFie, H. J. H. (1996). The generation of sensory expectations by external cues and its effect on sensory perception and hedonic ratings: A review. *Journal of Sensory Studies, 11*, 103-128.
- Dentoni, D., Tonsor, G. T., Calantone, R. J., & Peterson, C. (2009). The direct and indirect effects of locally grown on consumers' attitudes towards agri-food products. *Agricultural and Resource Economics Review 38* (3), 384-396.
- Dhar, R., & Wertenbroch, K. (2000). Consumer choice between hedonic and utilitarian goods. *Journal of Marketing Research 37*, 60-71.
- Dono, J., Webb, J., & Richardson, B. (2010). The relationship between environmental activism, pro-environmental behaviour and social identity. *Journal of Environmental Psychology 30*, 178-186.
- Dunne, J.B., Chambers, K. J., Giombolini, K. J., & Schlegel, S. A. (2011). What does 'local' mean in the grocery store? Multiplicity in food retailers' perspectives on sourcing and marketing local foods. *Renewable Agriculture and Food Systems, 36*(1), 46-59.

- Durham C.A. (2007) The impact of environmental and health motivations on the organic share of produce purchases. *Agricultural and Resource Economics Review*. 36(2): 304-317.
- Ek, K., & Söderholm, P. (2008). Norms and economic motivation in the Swedish green electricity market. *Ecological Economics* 68 (1–2), 169–182.
- Evans, D. (2011). Thrifty, green or frugal: Reflections on sustainable consumption in a changing economic climate. *Geoforum* 42, 550–557.
- Feldmann, C., & Hamm, U. (2015). Consumers' perceptions and preferences for local food: A review. *Food quality and Preference* 40 (2015) 152-164.
- Félonneau, M. L., & Becker, M. (2008). Pro-environment attitudes and behavior: Revealing perceived social desirability. *Revue Internationale de Psychologie Sociale*, 4, 25-53.
- Ferrell, G., & Hartline, M. (2011). *Marketing Strategy*, fifth ed. Cengage Learning, NY.
- Fillion, L., & Arazi, S. (2002). Does organic food taste better? A claim substantiation approach. *Nutrition and Food Science*, 32, 153–157.
- Frank, H.R. (2003). Commitment problems in the theory of rational choice. *Texas Law Review* 81, 1789-1804.
- Frey, B.S., & Stutzer, A. (2006). Environmental morale and motivation. In: Lewis, Alan (Ed.), *The Cambridge Handbook of Psychology and Economic Behavior*. Cambridge University Press, Cambridge, UK.
- Gadenne, D., Sharma, B., Kerr, D., & Smith, T. (2011). The influence of consumers' environmental beliefs and attitudes on energy saving behaviours. *Energy Policy* 39, 7684–7694.
- Gellynck, X., Jacobsen, R., & Verhelst, P. (2011). Identifying the key factors in increasing recycling and reducing residual household waste: A case study of the Flemish region of Belgium. *Journal of Environmental Management*, Vol. 92, No. 10, pp 2683 – 2690.
- Grankvist, G., & Biel, A. (2001). The importance of beliefs and purchase criteria in the choice of eco-labeled food products. *Journal of Environmental Psychology*, 21, 405–410.
- Grebitus, C., Lusk, J. L., & Nayga, R. M. (2013). Effect of distance transportation on willingness to pay for food. *Ecological Economics*, 88, 67-75.
- Grebitus, C., Menapace, L., & Bruhn, M. (2011). Consumers' use of seals of approval and origin information: evidence from the German pork market. *Agribusiness*, 27(4), 478-492.
- Guagnano, G. A., Stern, P. C., & Dietz, T. (1995). Influences on attitude-behavior relationships: A natural experiment with curbside recycling. *Environment and Behavior*, 27, 699-718.
- Guillotreau, P. & Sékúlic, I. (2000) Mondialisation, effet de génération et demande de poissons frais en France, *Economies et Sociétés* 34(10-11), 97-110.
- Hansen, P. J., Knudsen, P. E., & Holm, A. (2001). A Pan-Nordic study of consumer behavior and attitudes towards food labelling. Tema-Nord, 573. Nordic Council of Ministers.
- Hansla, A., Gamble, A., Juliusson, E. A., & Gärling, T. (2008). Psychological determinants of attitude towards and willingness to pay for green electricity. *Energy Policy*, 36, 768-774.
- Haws, K.L., Winterich, K.P., & Naylor, R.W., 2013. Seeing the world through GREENtinted glasses: Green consumption values and responses to environmentally friendly products. *J. Consumer Psychol.* 1-19. <http://dx.doi.org/10.1016/j.jcps.2013.11.002> (Retrieved on 11 January 2014).
- Holloway, L., Kneafsey, M., Venn, L., Cox, R., Dowler, E., & Tuomainen, H. (2007). Possible



food economies: A methodological framework for exploring food production-consumption relationships. *Sociologica Ruralis*, 47(1), 1-19.

Hu, W., M.T. Batte, T. Woods, & S. Ernst. (2010). "What is Local and for What Foods Does it Matter?" Paper presented at the Southern Agricultural Economics Association annual meeting, Orlando FL, 6-10 February.

[Illichman, R., & Abdulai, A. \(2013\). Analysis of consumer preferences and willingness to pay for organic food products in Germany. In Contributed paper prepared for presentation at Gewisola conference, Berlin, Germany, September 25-27, 2013, online available at: http://ageconsearch.umn.edu/bitstream/156100/2/B3-Illichman-Analysis\\_c.pdf](http://ageconsearch.umn.edu/bitstream/156100/2/B3-Illichman-Analysis_c.pdf)

Jaffry S., Pickering H., Ghulam Y., Whitmarsh D. & Wattage P. (2004) Consumer choices for quality and sustainability labelled seafood products in the UK, *Food Policy* 29(3), 215-228.

Johnston R.J., Wessells C.R., Donath H. & Asche F. (2001) Measuring consumer preferences for ecolabeled seafood: An international comparison, *Journal of Agricultural and Resource Economics* 26(1), 20-39.

Kai, S.B., Chen, O.B., Chuan, C.S., Seong, L.C., & Kevin, L.L.T. (2013). Determinants of willingness to pay for organic products. *Middle-East J. Sci. Res.* 14 (9), 1171-1179.

Kaufman, N. (2013). Overcoming the barriers to the market performance of greenconsumergoods. *Resour. Energy Econ.* 1e21. <http://dx.doi.org/10.1016/j.reseneeco.2013.05.007> [Accessed: 02 January 2014].

Kemp, K., Inch, A., Holdsworth, D. K., & Knight, J. G. (2010). Food miles: Do UK consumers actually care? *Food Policy*, 35(6), 504-513.

Khan, F., & Prior, C. (2010). Evaluating the urban consumer with regard to sourcing local food: A heart of England study. *International Journal of Consumer Studies*, 34(2), 161-168.

Khan, U., & Dhar, R. (2006). Licensing effect in consumer choice. *Journal of Marketing Research* 10, 259-266.

Kokkinaki, F. (1997). Involvement as a determinant of the process through which attitudes guide behavior. In *Proceedings from the IAREP XXII Conference, Valencia, Spain* (pp. 52–67).

Konsumentverket. Allmänhetens kunskap, attityder och agerande i miljöfrågor. Rapport 1998: 7. Stockholm, Sweden; 1998.

Kotchen, M.J., & Moore, M.R. (2007). Private provision of environmental public goods: household participation in green-electricity programs. *Journal of Environmental Economics and Management* 53, 1–16.

Krurup, S., & Russell, C.S. (2005). Edward Elgar Publishing, Massachusetts.

La Trobe, H. (2001). Farmers' markets: Consuming local rural produce. *International Journal of Consumer Studies* 25(3), 181-192.

Lambert, A., Lambert, J.L., & Saives, A.L. (1996). La filière des produits de la mer: innovante ou à la traîne? *Revue Pour l'Économie Industrielle* 149–150, 183–189.

Laroche, M., Bergeron, J., & Barbaro-Forleo, G. (2001). Targeting consumers who are willing to pay more for environmentally friendly products. *Journal of Consumer Marketing*, 18(6), 503-520.

Leadbitter D., Gomez G. & McGilvray F. (2006). Sustainable fisheries and the East Asian seas: can the private sector play a role?, *Ocean & Coastal Management* 49(9-10), 662-675.

Lee, W-C., Shimizu, M., Kniffin, K., & Wansink, B. (2013). You taste what you see: Do organic labels bias taste perceptions? *Food Quality and Preference*, 29 (1): 33.

Leire, C. & Thidell, A. (2005). Product-related environmental information to guide consumer purchases - a review and analysis of research on perceptions, understanding and use among Nordic consumers. *Journal of Cleaner Production* 13 (2005) 1061-1070.

[Lim, K.H., & Hu, W. \(2012\). How local is local? Consumer preference for steaks with different food mile implications. In Selected paper for presentation at the American Agricultural Economics Association annual meeting, Orlando, USA, February 3-5, 2012, online available at: http://ageconsearch.umn.edu/bitstream/142828/2/SAEA%20PAPER%202013%20Local%20FFoo.pdf.](http://ageconsearch.umn.edu/bitstream/142828/2/SAEA%20PAPER%202013%20Local%20FFoo.pdf)

Lin, P., & Huang, Y. (2012). The influence factors on choice behavior regarding green products based on the theory of consumption values. *Journal of Cleaner Production* 22, 11-18.

Lotz, S., Chrisandl, F., & Fetchenhauer, D. (2013). What is fair is good: Evidence of consumers' taste for fairness. *Food Quality and Preference*, 30, 139–144.

Loureiro, M., & Hine, S. (2002). Discovering Niche Markets: A Comparison of Consumer Willingness to Pay for Local (Colorado Grown), Organic, and GMO-Free Products. *Journal of Agricultural Applied Economics*. 34(3), 477-487.

Loureiro, M., & Umberger, W. J. (2003). Estimating consumer willingness to pay for country-of-origin labeling. *Journal of Agricultural and Resource Economics*, 28(2), 287-301

Lundquist Noblet, C., Teisl, M.F., & Rubin, J. (2006). Factors affecting consumer assessment of eco-labeled vehicles. *Transportation Research Part D*. 11, 422-431.

Lusk, J.L., Jamal, M., Kurlander, L., Roucan, M. & Taulman, L. (2005). A meta analysis of Genetically Modified Food valuation Studies. *Journal of Agricultural and Resource Economics*. 30:28-44.

Magnusson, M. K., Arvola, A., Koivisto Hursti, U-K., Aberg, L., & Sjöde'n, P.-O.(2001). Attitudes towards organic foods among Swedish consumers. *British Food Journal*, 103, 209–227.

Maniatis, P. (2015). Investigating factors influencing consumer decision-making while choosing green products. *Journal of Cleaner Production*, in press.

Marette, S., Messéan, A., & Millet, G. (2012). Consumers' willingness to pay for eco-friendly apples under different labels: Evidences from a lab experiment. *Food Policy* 37, 151–161

Martinez, S. C., & Patterson, P. M. (2004). State and origin branding in Hispanic food markets. *Journal of Food Distribution Research*, 35(3).

Mason, O., Linney, Y., & Claridge, G. (2005). Short scales for measuring schizotypy. *Schizophrenia Research*, 78, 293–296.

Megicks, P., Memery, J., & Angell, R. J. (2012). Understanding local food shopping: Unpacking the ethical dimension. *Journal of Marketing Management*, 28(3-4), 264-289.

Menichelli, E., Hersleth, M., Almoy, T., & Naes, T. (2014). Alternative methods for combining information about products, consumers and consumers' acceptance based on path modelling. *Food Qual. Prefer.* 31, 142-155.

Miles, S., & Frewer, L. J. (2001). Investigating specific concerns about different food hazards. *Food Quality and Preference*, 12, 47–61.

Mills, B., & Scleich, J. (2009). What's driving energy efficient appliance label awareness and purchase propensity? Fraunhofer Institute for Systems and Innovation Research (Fraunhofer ISI), Karlsruhe.

Miroso, M., & Lawson, R. (2012). Revealing the lifestyles of local food consumers. *British Food Journal*, 114(6).

- Moisander, J., 2007. Motivational complexity of green consumerism. *International Journal of Consumer Studies* 31, 404-409.
- Naspetti, S., & Bodini, A. (2008). Consumer perception of local and organic products: Substitution or complementary goods? *The International Journal of Interdisciplinary Social Sciences*, 3.
- Nganje, W. E., Hughner, R. S., & Lee, N. E. (2011). State-branded programs and consumer preference for locally grown produce. *Agricultural and Resource Economics Review*, 40(1). 20-31.
- Niva M, Heiskanen E, & Timonen P. (1996). Environmental information in consumer decision making. Finland: National Consumer Research Centre, Publication 11.
- Niva M, & Timonen P. (2001). The role of consumers in product-oriented environmental policy: can the consumer be the driving forces for environmental improvements? Article in the *International Journal of Consumer Studies*, December, 25(4):331-8.
- Nöstl, A., Marsh, J. E., & Sörqvist, P. (2012). Expectations modulate the magnitude of attentional capture by auditory events. *PLoS One*, 7, 48-69.
- Nyanjage, M. O., Wainwright, H., Bishop, C. F. H., & Cullum, F. J. (2001). A comparative study on the ripening and mineral content of organically and conventionally grown Cavendish bananas. *Biological Agriculture and Horticulture*, 18, 221-234.
- OCDE, 2005. Effects of eco-labelling schemes: compilation of recent studies. Joint Working Party on Trade and Environment, COM/ENV/TD(2004)34/FINAL.
- Oerke, B., & Bogner, F. X. (2013). Social desirability, environmental attitudes, and general ecological behaviour in children. *International Journal of Science Education*, 22, 26-32.
- Onozaka, Y., & Mc Fadden, T. D. (2011). Does local labeling complement or complete with other sustainable labels? A conjoint analysis of direct and joint values for fresh produce claims. *American Journal of Agricultural Economics*, 93(3), 693-706.
- Orth, U. R., Wolf, M. M., & Dodd, T. H. (2005). Dimensions of wine region equity and their impact on consumer preferences. *The Journal of Product and Brand Management*, 14(2e3), 88e97.
- Palevich, R., 2012. *The Lean Sustainable Supply Chain: How to Create a Green Infrastructure with Lean Technologies*. Pearson Education, London.
- Pearson, D., Henryks, J., Trott, A., Jones, P., Parker, G., & Dumaresq, D. (2011). Local food: Understanding consumer motivations in innovative retail formats. *British Food Journal*, 113(7), 886-899.
- Peattie, K., & Charter, M., 2003. Green marketing. In: Baker, M.J. (Ed.), *Book Chapter: the Marketing Book*. Elsevier, Worldwide.
- Peattie, K., Crane, A., 2005. Green marketing: legend, myth, farce or prophesy? *Qual. Mark. Res. Int. J.* 8 (4), 357-370.
- Pedersen, E. R. & Neergaard, P. (2006). 'Caveat Emptor – Let the Buyer Beware! Environmental Labelling and the Limitations of "Green" Consumerism'. *Business Strategy and the Environment*, Vol. 15, No. 1, pp. 15-29.
- Pelletier, J. E., Laska, M. N., Neumark-Sztainer, D., & Story, M. (2013). Positive attitudes toward organic, local, and sustainable foods are associated with higher dietary quality among young adults. *Journal of the Academy of Nutrition and Dietetics*, 113(1), 127-132.
- Pepper, M., Jackson, T., & Uzzell, D., 2009. An examination of the values that motivate socially conscious and frugal consumer behaviours. *International Journal of Consumer Study*, 33, 126-136.

- Racine, E. F., Mumford, E. A. & Laditka, S. B. (2013). Understanding characteristics of families who buy local produce. *Journal of Nutrition Education and Behavior*, 45(1), 30-38.
- Roberts, J. A. (1996). Will the real socially responsible consumer please step forward? *Business Horizons*, 39: 79-83.
- Roheim C.A., Asche F. & Santos J.I. (2011) The elusive price premium for ecolabelled products: evidence from seafood in the UK market, *Journal of Agricultural Economics*, 62(3), 655-668.
- Rondan, F. J., & Ruiz, D. M. (2011). Moderating effects in consumers' perceptions of price unfairness. *Journal of Consumer Behaviour*. 10 (5), 245–254.
- Roosen, I. T. M., & De Pelsmacker, P. (1998). Attributes of environmentally friendly consumer behavior. *Journal of International Consumer Marketing*, 10(3), 21-41.
- Ruffieux B. & Valceschini E. (1996) Biens d'origine et compétence des consommateurs: les enjeux de la normalisation dans l'agro-alimentaire, *Revue d'Economie Industrielle* 75(1), 133-146.
- Rui, G., & Antunes, D. (2011). Energy efficiency and appliance purchases in Europe: Consumer profiles and choice determinants. *Energy Policy* 39 (2011) 7335-7 <http://ekoverde.fr/346>
- Salladarré F., Guillotreau P., Perraudeau Y. & Monfort M.-C. (2010) The demand for seafood eco-labels in France, *Journal of Agricultural and Food Industrial Organization* 8(1).
- Salladarre, F., Guillotreau, P., Lesage, C. M., & Ollivier, P. (2013). Les preferences des consommateurs pour un ecolabel. Le cas des produits de la mer en France. *Revue d'Etudes en Agriculture et Environnement*, 94 (3), 339-362.
- Salmela, S., & Varho, V., 2006. Consumers in the green electricity market in Finland. *Energy Policy* 34, 3669–3683.
- Sammer, K., & Wustenhagen, R., 2006. The influence of eco-labelling on consumer Behaviour results of a discrete choice analysis for washing machines. Special Issue: *Sustainable. Marketing*, 15 (3), 185-199.
- Schaefer, A., & Crane, A., 2005. Addressing sustainability and consumption. *J. Macromarketing* 25 (1), 76-92.
- Schlegelmilch, B.B., Bohlen, & G.M., Diamantopoulos, A., 1996. The link between green purchasing decisions and measures of environmental consciousness. *European Journal of Marketing*, 30 (5), 35-55.
- Schuldt, J. P., Muller, D., & Schwartz, N. (2012). The "fair trade" effect: Health halos from social ethics claims. *Social Psychological & Personality Science*, 3, 581–589.
- Schumacher, I., 2010. Ecolabeling, consumers' preferences and taxation. *Ecological. Economy*, 2202–2212.
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25). Orlando, FL: Academic Press.
- Schwartz, S. H. (1994). Are there universal aspects in the structure and contents of human values? *Journal of Social Issues*, 50(4), 19-45.
- Selfa, T., & Qazi, J. (2005). Place, taste, or face-to-face? Understanding producer-consumer networks in « Local » food systems in Washington State. *Agriculture and Human Values*, 22(4), 451-464.
- Sirieix, L., Kledal, P. R., & Sulitang, T. (2011). Organic food consumers' trade-offs between local or imported, conventional or organic products: A qualitative study in Shanghai. *International*

*Journal of Consumer Studies*, 35(6), 670-678.

Sirieix, L., Delanchy, M., Remaud, H., Zepeda, L., & Gurviez, P. (2013). Consumers' perceptions of individual and combined sustainable food labels: A UK pilot investigation. *International Journal of Consumer Studies*, 37, 143-151.

Sörqvist, P., Haga, A., Langeborg, L., Holmgren, M., Wallinder, M., Nörtl, A., Seager, P.B., & Marsh, J.E. (2015). The green halo: Mechanisms and limits of the eco-label effect. *Food quality and preference*, 43, 1-9.

Sörqvist, P., Hedblom, D., Holmgren, M., Haga, A., Langeborg, & L., Nörtl, A. (2013). Who needs cream and sugar when there is eco-labeling? Taste and willingness to pay for "eco-friendly" coffee. *PLoS One*, 8.

Spaargaren, G., 2003. Sustainable Consumption: A theoretical and environmental policy perspective. *Social Natural Resources*, 16, 687-701.

Stanton, J. L., Wiley, J. B., & Wirth, F. F. (2012). Who are the locavores? *Journal of Consumer Marketing*, 29(4), 248-261.

Steg, L., Bolderdijk, J.W., Keizer, K., & Perlaviciute, G. (2014). An Integrated Framework for Encouraging Pro-environmental Behaviour: The role of values, situational factors and goals. *Journal of Environmental Psychology* 38, 104-115.

Steinhart, Y., Ayalon, O., & Puterman, H. (2013). The effect of an environmental claim on consumers' perceptions about luxury and utilitarian products. *Journal of Cleaner Production*. 53, 277-286.

Stern, P. C. (1999). Information, incentives and proenvironmental consumer behaviour. *Journal of Consumer Policy*, 22, 461-478.

Stern, P. C. (2000). Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, 56, 407-424.

Stern, P., Dietz, T., Kalof, L., 1993. Values orientations, gender, and environmental concern. *Environment and Behavior* 25 (3), 322-348.

Stolzenbach, S., Bredie, W. L. P., Christensen, R. H. B., & Byrne, D. V. (2013). Impact of product information and repeated exposure on consumer liking, sensory perception and concept associations of local apple juice. *Food Research International*, 52(1), 144-152.

[Tandberg Group, 2007. Corporate Environmental Behavior and the Impact on Brand Values. Available at: http://www.ivci.com/pdf/corporate-environmental-behaviour-and-the-impact-on-brand-values.pdf](http://www.ivci.com/pdf/corporate-environmental-behaviour-and-the-impact-on-brand-values.pdf)

Teisl M.F., Roe, B., & Hicks R.L. (2002) Can eco-labels tune a market? Evidence from dolphin-safe labelling, *Journal of Environmental Economics and Management* 43, 339-359.

Teisl, M.F., Rubin, J., & Noblet, C.L., 2008. Non-dirty-dancing? Interactions between ecolabels and consumers. *Journal of Economic Psychology* 29, 140-159.

Theuer, R. C. (2006). Do organic fruits and vegetables taste better than conventional fruits and vegetables? The Organic Center. Downloaded on the 13th of February.

Thøgersen, J. (1999). The ethical consumer Moral norms and packaging choice. *Journal of Consumer Policy*, 22,439-460.

Thøgersen, J. (2000). Psychological determinants of paying attention to eco-labels in purchase decisions: Model development and multinational validation. *Journal of Consumer Policy*, 23, 285-313.

- Thøgersen, J. (2011). Green shopping: for selfish reasons or the common good? *American Behavioral Sciences*, 55 (8), 1052-1076.
- Thøgersen, J., Jørgensen, A., & Sandager, S., 2012. Consumer decision-making regarding a "green" everyday product. *Psychology Marketing*, 29 (4), 187-197.
- Thøgersen, J., & Crompton, T. (2009). Simple and painless? The limitation of spillover in environmental campaigning. *Journal of Consumer Policy* 32, 141-163.
- Torgler, B., & Garcia-Valinàs, M.A. (2007). The determinants of individuals' attitudes towards preventing environmental damage. *Ecological Economics* 63, 536–552.
- Tregear, A., Dent, J. B., & McGregor, M. J. (1994). The demand for organically grown produce. *British Food Journal*, 96, 21–25.
- Tseng, S., & Hung, S. (2013). A framework identifying the gaps between customers' expectations and their perceptions in green products. *Journal of Clean Product*, 59, 174-184.
- Van Birgelen, M., Semeijn, J., & Keicher, M. (2009). Packaging and pro environmental consumption behavior. *Environment and Behavior*, 41, 125-146.
- Wägeli, S., & Hamm, U. (2013). Consumers' perception of feed origin in organic food products declared as local. In Proceedings of the 6th international European forum on system dynamics and innovation in food networks, Igls, Austria, 13-17 Feb., 2012, online available at: <http://ageconsearch.umn.edu/bitstream/144965/2/24-W%c3%a4geli.pdf>.
- Wandel, M. (1994). Understanding consumer concern about food-related health risks. *British Food Journal*, 96, 35–40.
- Wandel, M., & Bugge, A. (1997). Environmental concern in consumer evaluation of food quality. *Food Quality and Preference*, 8, 19–26.
- Wansink, B., Sonka, S.T., Hasler, C.M., 2004. Front-label health claims: when less is more. *Food Policy*, 29 (6), 659–667.
- Ward, D. O., Clark, C. D., Jensen, K., Yen, S., & Russell, C. (2011). Factors influencing willingness-to-pay for the ENERGY STARS labels. *Energy Policy*, 39, 1450–1458.
- Washington S. (2008). *Ecolabelling and marine capture fisheries: current practice and emerging issues*. Globefish Research Programme Food and Agriculture Organization of the United Nations, Fishery Industries Division, April, vol n°91.
- Watts, D. C., Ilbery, D., & Maye, D. (2005). Making reconnections in agro-food geography: Alternative systems of food provision. *Progress in human geography*, 29(1), 22-40.
- Wawrzyniak, J., Jader, K., Schade, G., & Leitow, D. (2005). Consumers' attitudes and behavior in relation to regional products – results of empirical research in Germany and Poland. *Ekonomika*, 4, 145-161.
- Weatherell, C., Tregear, A., & Allinson, J. (2003). In search of the concerned consumer: UK public perceptions of food. *Journal of Rural Studies*, 19(2), 233-244.
- Wessells C.R. (2002). The Economics of Information: Markets for Seafood Attributes. *Marine Resource Economics*, 17, 153-162.
- Wessells C.R. & Wallström P. (1994). New Dimensions in World Fisheries: Implications for US and EC Trade in Seafood, in: *Agricultural Trade Conflicts and GATT: New dimensions in North American-European Agricultural Trade Relations*, Anania G., Carter C. & McCalla A. (eds), Westview Press, Boulder, 21, 515–535.
- Wessells C.R., & Anderson J.G. (1995). Consumer Willingness to Pay for Seafood Safety

Assurances, *Journal of Consumer Affairs*, 29(1), 85-107.

Wessells, C.R., Johnston, R.J., & Donath, H. (1999). Assessing consumer preferences for ecolabeled seafood: the influence of species, certifier, and household attributes. *American Journal of Agricultural Economics*, 81 (5), 1084–1089.

West, K. (1995). Ecolabel: the industrialization of environment standards. *The Ecologist*, 25, 16-21.

White, K., MacDonnell, R., & Ellard, J.H. (2012). Belief in a JustWorld: consumer intentions and behaviors toward ethical products. *Journal of Marketing*. 76, 103-118.

Wiedmann, K. P., Hennigs, N., Behrens, S. H., & Klarmann, C. (2014). Tasting green: An experimental design for investigating consumer perception of organic wine. *British Food Journal*, 116, 197–211.

Wilkins, J. L., Bowdish, E., & Sobal, J. (2000). University student perceptions of seasonal and local foods. *Journal of Nutrition Education*, 32(5), 261-268.

Wiser, R.H. (2007). Using contingent valuation to explore willingness to pay for renewable energy: A comparison of collective and voluntary payment vehicles. *Ecological Economics* 62, 419–432.

Young, D. (2008). When do energy-efficient appliances generate energy savings? Some evidence from Canada. *Energy Policy* 36, 34–46.

Young, W., Hwang, K., McDonald, S., & Oates, C.J. (2010). Sustainable consumption: Green consumer behaviour when purchasing products. *Sustainable Development*, 18, 20-31.

Yue, C., & Tong C. (2009). Organic or Local? Investigating Consumer Preference for Fresh Produce Using a Choice Experiment with Real Economic Incentives. *Hortscience*, 44(2), 366–371.

Zander, K., & Hamm, U. (2010). Consumer preferences for additional ethical attributes of organic food. *Food Quality and Preference*, 21(5), 495-503.

Zelezny, L.C., Chua, P.-P., Aldrich, C., 2000. Elaborating on gender differences in environmentalism. *Journal of Social Issues* 56, 443–457.

Zepeda, L., & Nie, C. (2012). What are the odds of being an organic or local food shopper? Multivariate analysis of US food shopper lifestyle segments. *Agriculture and Human Values*, 29(4), 467-480.

Zepeda, L., & Deal, D. (2009). Organic and local food consumer behavior: Alphabet Theory. *International Journal of Consumer Studies*, 33(6), 697-705.

Zepeda, L., & Li, J. (2006). Who buys local food? *Journal of Food Distribution Research*, 37(3), 5-15.

Zepeda, L., & Leviten-Reid, C. (2004). Consumers' views on local food. *Journal of Food Distribution Research*, 35(3), 1-6.

Zhao, R., & Zhong, S. (2015). Carbon labelling influences on consumers' behavior: A system dynamics approach. *Ecological Indicators*, 51, 98-106.

## Annex 1. Project members



**SIRCOME**

DE LA RECHERCHE À L'ACTION

### **Mickaël Dupré, Researcher and R& D Manager**

*Doctor of Social Psychology*

*Associate member of CRPCC-LESTIC (Ergonomics Systems, Information Processing and Behaviour Laboratory)*

Mickaël wrote a thesis in social psychology in partnership with ADEME (the French national Agency for the Environment and Energy Management) on communication techniques applied to preventing and sorting waste. He has led and collaborated on various research projects on eco-citizenship practices: designing an interactive tool for supporting change in eco-citizenship practices, completing a study for *Eco-Emballages* on the state of scientific knowledge on the sorting and profiling of users, studies on the effects of feedback on waste sorting and prevention, and so on.

### **Mathieu Jahnich, CEO and Founder of Sircome**

*Doctor of Communication Sciences*

'From research to action': the agency's signature is also a good description of its founder's career path. After obtaining a doctoral degree and participating in various communications research projects (in particular on the analysis of media discourse on air pollution, the environment, risks, and so on), Mathieu moved over to the client side (Ministry of Sustainable Development, Ifremer (French Research Institute for Exploitation of the Sea), CEA (French Atomic Energy Commission)). He then moved into consultancy and set up the agency Sircome. He still has a foot in academia: he lectures part-time at Université Paris-Est Marne-la-Vallée, where he is joint head of the Master's in Corporate Communication and Social Media (Master 2 professionnel Enterprises and Social Media Communication). He held a post as Researcher in communication for science and the environment from 2000 to 2005 and as a Communications Officer and Communications Manager (Ministry of Sustainable Development, Ifremer, Department of Life Sciences at the Atomic Energy Commission) between 2005 and 2012. In 2005, he set up a website to promote reflection on environmental communication ([www.sircome.fr](http://www.sircome.fr)): editorial, interviews, analysis, social networks.

### **Valeria Ramirez, Consultant & Communications Manager**

*Master's in Corporate Communication and Social Media (Université Paris-Est)*

*Master's in Economic Information (Universidad Complutense de Madrid)*

*Master's in Journalism (European University of Madrid)*

*Master's in Marketing and Communication (Universidad del Valle de Mexico).*

Valeria is Mexican and Spanish and has been living in France since 2012. She is first and foremost a journalist, passionate about societal challenges and digital tools. Originally a journalist for several media organisations in Mexico and Spain, she joined the communications team at Telefonica, the largest Spanish telecoms company, in 2006. Since 2008, she has specialised in economic and legal communication. She has advised financial institutions and was advising the corporate law firm CMS<sup>[1]</sup>



when the economic crisis was inflicting its worst damage in Europe. Her experience of communications during a crisis includes the design and drafting of a crisis management communication handbook, together with crisis simulations and training, for the pharmaceutical company MerckSerono. Valeria is fascinated by the digital world and has her finger on the pulse when it comes to the digital environment and SEO and SEA. She has been able to apply these approaches to communication, training programmes and running communities for various organisations: Reed Exhibitions, Inversis Bank, City of Madrid, Spanish Generic Medicines Association. She has also worked with non-profits such as Survival International, Résonances Humanitaires or Salon de Solidarités. She was manager of the Spanish and Latin American Pavillion for Salon de Solidarités in 2014.



**Gaëlle Boulbry, Lecturer in Management Science**

*Teacher and researcher at the Université de Bretagne Sud - CRPCC-LESTIC (Ergonomics Systems, Information Processing and Behaviour Laboratory).*

Her work mainly focuses on consumer behaviour and in particular, purchasing decisions and persuasive communication processes. Her research interests include factors influencing consumer decisions: individual factors, such as age, or situational factors, such as stressful contexts. Gaëlle Boulbry has participated in, set up and led a number of research projects in this area.

**Émilie Ferreira - Research Engineer**

*Master's in Psychology of Professional and Social Life, following the option Social Psychology: Applied Research and Consulting (Université Bordeaux 2)*

*Master's in Territorial Management of Sustainable Development (Université Bordeaux 3)*

As part of her Master's in Social Psychology, Applied Research and Consulting, Emilie worked for Lyonnaise des Eaux on social and practical representations of water taps with a view to adapting the company's responsible communication. She drew up a diagnosis of water-related social representations and recommended specific communication and awareness-raising measures. As she was committed to sustainable development and was interested in working in that area, she then obtained a Master's in Territorial Management of Sustainable Development. She has worked for a municipality in this area as part of France's adoption of the UN's Agenda 21 action plan. Her duties have involved preventing, managing and recovering waste. More specifically, she has set up waste sorting facilities at municipal premises and during demonstrations, drawing on a study of the communities involved to do so.



**European Economic and Social Committee**

Rue Belliard/Belliardstraat 99  
1040 Bruxelles/Brussel  
BELGIQUE/BELGIË

Published by: "Visits and Publications" Unit  
EESC-2016-13-EN  
[www.eesc.europa.eu](http://www.eesc.europa.eu)



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*PRINT*  
QE-04-16-076-EN-C  
ISBN 978-92-830-3067-6  
doi:10.2864/103864

*ONLINE*  
QE-04-16-076-EN-N  
ISBN 978-92-830-3065-2  
doi:10.2864/29757

EN