ENVIRONMENTAL LABELING OF ELECTRICAL ELECTRONIC EQUIPMENT (EEE) IN FRANCE: INFORMATION FOR CONSUMERS

Bertrand, Axelle Noémie (1,2);
Bauer, Tom (3);
Charbuillet, Carole (3);
Bonte, Martin (2);
Voyer, Marie (2);
Perry, Nicolas (1)

1: Arts et Métiers, CNRS, Université de Bordeaux, I2M Bordeaux, F-33405 Talence Cedex, France;
2: Qweeko, 150 rue Mondenard, 33000 Bordeaux, France;
3: Arts et Métiers, CNRS, Université de Bordeaux, I2M - site de Chambéry, F-73375 Le Bourget-du-Lac, France

ABSTRACT

The current regulatory framework for Electrical and Electronic Equipment (EEE) is changing and now requires manufacturers to disclose the environmental performance of their products. This means that manufacturers must perform a life cycle analysis (LCA) on their entire range of products. An LCA is a recognized and standardized methodology for assessing the environmental impact of activities. However, communicating this information to consumers is challenging because it can be complicated.

Despite this challenge, there is currently no common standard for communicating environmental information to consumers. The objective of this study is to explore the best practices for conveying environmental information. To achive this, a review of current environmental labeling approaches and recommendations available in the literature is conducted. Additionally, consumer requirements are collected and analyzed through a questionnaire that employs both quantitative and qualitative methods. The information collected is then used to develop the best practices for implementing environmental labeling for EEE.

Keywords: Design management, Circular economy, Complexity, environmental display, electrical and electronic equipment (EEE)

Contact:
Bertrand, Axelle Noémie
Arts et Métiers
France
axelle.bertrand@ensam.eu

Cite this article: Bertrand, A. N., Bauer, T., Charbuillet, C., Bonte, M., Voyer, M., Perry, N. (2023) 'Environmental Labeling of Electrical Electronic Equipment (EEE) in France: Information for Consumers', in *Proceedings of the International Conference on Engineering Design (ICED23),* Bordeaux, France, 24-28 July 2023. DOI:10.1017/pds.2023.167

1 INTRODUCTION

Environmental labelling is a voluntary communication tool in France that informs consumers about the environmental impact of products (Ministères Écologie Énergie Territoires, 2020). It was established in 2009 as part of the Grenelle environment forum to increase consumer awareness of the environmental impact of products and services. The purpose of environmental labelling is to provide an indication of a product's environmental impact, which is calculated using a Life Cycle Analysis (LCA) approach. However, the classical approach of LCA is complex, time-consuming and expensive, making it difficult to perform a large number of LCAs in a short period of time. Therefore, there is a need to develop a simplified LCA method to meet the challenges of massification and reduce cost and time. The main research question is : How to adapt the implementation of LCA to consolidate this process and improve its performance, within the context of this thesis. The overall research question was subdivided into four research questions:
RQ1 : What are the current LCA simplification methods relevant to the needs of massification of environmental assessments?
RQ2 : How to simplify the LCA process for companies working in the EEE sector?
RQ3 : How to validate the robustness and efficiency of the LCA automation methodology put in place to meet regulatory requirements and to support the massification process?
RQ4 : How to communicate the environmental performance results of EEE to consumers in such a way that they are understandable by the greatest number without distorting the reading of the real impact of the product?
The second question is addressed in this article. To answer it, the state of the art of environmental labelling is first established, focusing on the sectors where it is already widely deployed, namely textiles and food. Best practices for the deployment of environmental labelling for Electrical and Electronic Equipment (EEE) are then proposed. This research focuses on the French EEE system and aims to provide environmental labelling related to the massification issues that were previously addressed.

2 STATE OF THE ART

This study used relevant keywords like "environmental labelling," "environmental footprint," and "environmental impact" to perform a state-of-the-art analysis of environmental labelling. The resulting set of documents allowed for the analysis of recent advancements, key findings, challenges, and opportunities related to environmental labelling, creating a comprehensive and up-to-date synthesis of knowledge on the topic.

2.1 Feedback on the environmental labelling experiment

France implemented environmental labelling with the support of ADEME, conducting a national experiment involving 168 voluntary companies from July 2011 to July (ADEME, 2021). The AGEC and "climate and resilience" laws, enacted in 2020 and 2021 respectively, provide for an experimental environmental labeling on a voluntary basis for two years since 2022 (Ademe, 2023). This study analyzed the results of the first experiment conducted between 2011 and 2012, as the second experiment is ongoing. Results of the first experimentation were published between 2014 and 2016 and presented in Table 1 (Albertini, 2014; Barreau and Vielliard, 2014; Salommez, 2014) which identified different methodologies for measuring and displaying environmental impact and issues related to communicating such information to consumers. Further research on the importance of design and dissemination of environmental information is presented in Table 1.

Table 1. The levers and brakes of environmental labeling identified in the literature

Obstacles	Lever	Authors
Lack of consumer confidence (Greenwashing / Reliability)	Verification / certified by an independent third party	(Albertini, 2014; Barreau and Vielliard, 2014; François-Lecompte and Gentric, 2016)
	Shared foundation / Harmonize labels	(Albertini, 2014; Barreau and Vielliard, 2014; François-Lecompte and Gentric, 2016)

https://doi.org/10.1017/pds.2023.167 Published online by Cambridge University Press

	Practical guide to environmental claims	(Homobono and Hauser, 2014)
Information complexity	Communicate on 3/5 indicators	(Albertini, 2014; François-Lecompte et al., 2014; François-Lecompte and Gentric, 2016; Van Hoof et al., 2013)
	Climate change indicator is essential	(François-Lecompte and Gentric, 2016)
	Popularize technical vocabulary	(François, 2016; François-Lecompte and Gentric, 2016; Gubbels, 2016; Heijungs, 2014; Homobono and Hauser, 2014; Taufique et al., 2014)
	Non-LCA indicators: price	(François-Lecompte et al., 2014; Kühne et al., 2023)
Lack of visibility of information	Return format: on the product packaging or combine the different media.	(François-Lecompte and Gentric, 2016; Muller et al., 2019)
	Label design: color code (red/green), logo, overall rating associated with a graduation with a slider	(Barreau and Vielliard, 2014; François, 2016; François-Lecompte et al., 2014; François-Lecompte and Gentric, 2016; Kühne et al., 2023; Lazard and Atkinson, 2015; Muller et al., 2019)
	Simple display, easy to interpret	(François, 2016; François-Lecompte et al., 2014; Muller et al., 2019)
Lack of consumer knowledge	Popularize technical vocabulary	(François, 2016; Homobono and Hauser, 2014)
	Put forward a visual allowing to make the link between environmental information and the impact of its consumption on the environment.	(François, 2016; Taufique et al., 2014)

2.2 EEE sector

Regarding the EEE sector, two displays have been developed: the energy label and the repairability index.

2.2.1 Energy label

Technical improvements and minimum performance standards have caused overclassification of equipment, resulting in the worst-performing equipment being rated A+. This leads to consumer confusion as they assume all devices rated above A are energy efficient. The energy label no longer provides useful information to consumers and has reached its limits. The label scale was revised in 2021 to vary from A to G. (Ademe, 2021; Comission Européenne, 2022). Despite a revision and an update, the energy label is still faced with the following problems:

- Concerns a limited number of EEEs: Five groups of EEEs are affected, compared to the dozens that are available on the market (Ademe, 2021; "DEEE-définition-Ecoorganisme Ecologic", n.d.).
- The rating only considers the product's use phase and doesn't take into account its entire life cycle.
- Lack of transparency: The method used to calculate the environmental performance of the product is not made available.
- There is no indication of the economic cost associated with the use of the product.

https://doi.org/10.1017/pds.2023.167 Published online by Cambridge University Press

2.2.2 Reparability index and durability in perspective

The AGEC law has implemented a repairability index for nine product categories (Ministères Écologie Énergie Territoires, 2022), aiming to inform consumers of the device's reparability at the time of purchase. The index uses a rating grid defined by the Ministry of Ecological Transition, with a final score representing the equipment's reparability. However, the lack of transparency limits its usefulness for consumers. The repairability index can be a useful tool to fight planned obsolescence and help consumers understand reparability, but it is limited to a small range of products and not yet recognized at the European level.

Scientific literature highlights the lack of consistency in environmental labelling formats for EEEs, with no common standards for presentation. A specific environmental labelling method is needed for EEEs, despite the development of a methodological framework by ADEME. Harmonization of labelling formats and development of specific labelling for EEEs can improve consumer understanding of the environmental impact of EEEs. Similarly, some key issues remain without scientifically robust answers and solutions, such as the level of specificity of indicators, the inclusion of complementary indicators, and the aggregation of indicators. However, this study does not address these points. It focuses rather on how to facilitate and make understandable the results of environmental labelling of EEEs for consumers

In this article we try to answer the following question: What are best practices for communicating EEE environmental information to consumers?

A list of criteria was established for our study by conducting a thorough analysis of the existing literature in the field. Criteria frequently cited in previous works and considered reliable indicators for evaluating the performance of environmental labelling were sought. After all available information was collected and analyzed, our list of criteria was subjected to a coherence analysis process. The advantages and disadvantages of each criterion were discussed to reach a consensus on which criteria to include in the list. The criteria were then classified into different categories based on their relevance to the overall evaluation of the performance of our object of study. This categorization allowed us to better understand the different aspects of performance and avoid redundancies between criteria. Table 2 presents the results, where the criteria are classified into three categories: Reliability of Information to Consumers, Display Information, and Design/Visual: Implicit Comprehension. These criteria inform the discussions in the article and influenced the choices of response.

Table 2. List of environmental labelling criteria

Category	Criteria
Reliability of consumer information	Certificate by à third person
	Transparency
Information complexity	Number of LCA indicators
	Which environmental indicators
	Which non-LCA indicators (Product life, place of manufacturing …)
	Popularization of information: translation of the impact, do not put unity
Visibility of information : implicit understanding	Color code
	Icons / logos
	Single score, alphabetical score (A- E) / numerical score (0-100)
	Information supports

https://doi.org/10.1017/pds.2023.167 Published online by Cambridge University Press

3 METHODS

We propose to answer the research question in two steps. First of all, we analyze the literature in two stages: (1) Analysis of good practice guides, (2) Analysis of existing environmental displays. Then we analyze consumer requirements. These steps help to guide the reflections and meet the objectives of the study.

3.1 Analysis of the bibliography

Collecting valuable information on consumer practices and expectations is a crucial step in our study. This is achieved through the analysis of good practice guides, which are based on surveys conducted directly with consumers. This approach complements the bibliographic analysis, which provides a limited overview of current practices. By integrating survey feedback, this method offers more relevant and better-adapted recommendations for industry professionals. It allows for a better understanding of consumer expectations and the development of more effective strategies to meet them.

The textile and food sectors were chosen due to their advanced experimentation by ADEME (Ademe, 2023). Specifically, the study examined two labels, Camaïeu and Décathlon, which have different designs but use the same impact calculation methodology, PEF (Décathlon, n.d.; Glimpact, 2021a, 2021b). This choice is justified by ADEME's demanding criteria and Glimpact's selection to participate in the XTEX call for projects (Glimpact, 2021a). Additionally, Glimpact's collaboration with many major global brands demonstrated the relevance and quality of its innovative solutions(Glimpact, 2021a). Regarding food, the study focused on Eco-score and Planet score, the two most well-known environmental labels. While studies on consumer preferences are ongoing, these labels are among the most well-known and used in the food sector (Ermenier, 2022; LaFranceAgricole, 2023). It should be emphasized that these environmental labels are not homogeneous, necessitating a standardized criteria grid (Table 2) to provide a comprehensive and credible evaluation.

3.2 Questionnaire: what are the consumer's requirements

Building a questionnaire is a complex task that requires a rigorous methodology to obtain reliable results. The questionnaire was constructed in seven steps:

1. Define the study objectives and hypotheses: The study aims to gather consumer opinions on display design, information credibility, and integration preferences in France via a questionnaire.
2. Define the target audience: The scope of our research concerns all consumers in France over the age of 18.
3. Develop the questionnaire: Based on the previously established list of criteria, a series of open and closed-ended questions are developed according to the following two steps: 1) The main important points that help to address the study objectives and hypotheses are identified, determined, and listed (based on the criteria), 2) These points are translated into questions.
4. Define the means of questionnaire dissemination: An online questionnaire was distributed using Google tools from 10/10/2022 to 10/11/2022. Despite potential limitations and biases, 150 responses were collected from various sources including social media (Facebook, LinkedIn, Instagram), students at the Institute of Arts & Métiers, and the Qweeko website. These responses allowed for the identification of general trends in consumer requirements.
5. Test the questionnaire internally with 2/3 people: feedback on the quality of the questionnaire;
6. Transcription of data: The data is automatically translated by the analysis tool integrated into the questionnaire (Google Form).
7. Analysis and interpretation : The data is analyzed using a combined quantitative and qualitative approach. Quantitative analysis provides numerical information, while qualitative analysis helps to understand consumers' attitudes, behaviors, and needs. This combined approach has allowed us to obtain a comprehensive and accurate overview of the subject studied.

https://doi.org/10.1017/pds.2023.167 Published online by Cambridge University Press

Table 3. Questionnaire distributed to consumers

Questions	Objectives	Comments
Q1: Do you know about environmental labeling?	Understand the position of consumers vis-à-vis environmental labeling	The results attest to the inadequacy of consumer knowledge of environmental data and underline the need to develop an environmental labelling system for products.
Q2: Would you be interested in knowing the environmental impact of your product and being able to compare it to other products?		
Q3: Would you be suspicious of this information? (for example: greenwashing, lobbying...)	Credibility of information	Consumers always express their distrust regarding the credibility of environmental information displayed on products, considering it as a form of greenwashing. The study's findings show that the majority of participants desire supplementary documents to reinforce the reliability of the information, and that third-party certification increases the credibility of this information, which aligns with good scientific practices.
Q4: Is the provision of additional documents such as the methodology adopted, the definition of indicators, etc. makes the information credible?		
Q5: Does the information seem more reliable to you if it were certified by a third party?		
Q6: Do you prefer... An alphabetical (A to E) or numerical (0 to 100) grade? For what ?	Make complex environmental information accessible and understandable for all consumers Make information visible through design	The results of this study lead to strategic choices for the presentation of complex environmental data, simplifying their accessibility and understanding for consumers. This research primarily focuses on the data that consumers wish to have available. Additionally, these results corroborate previous findings in scientific literature regarding consumers' lack of knowledge of environmental information, highlighting the need to use simple language adapted to their understanding. Indeed, it should be considered that consumers may not necessarily possess the technical skills required to comprehend this information. The majority of consumers consider design elements such as icons, colors, and layout to play a crucial role in the
Q7: Would you like to have the details of this note? For example by life cycle phase (manufacture, transport, use, end of life)		
Q8: In your opinion, what additional information is relevant in the context of environmental labelling of household electrical products? (price, repairability index, place of manufacture, etc.)		
Q9: Does translating the environmental impact into an equivalent example provide a better understanding?		
Q10: Conversely, do these examples make you feel guilty?		

https://doi.org/10.1017/pds.2023.167 Published online by Cambridge University Press

Q11: What do you think of the indicators and their units (CO2 Eq, g Sb, etc.)?		visibility and understanding of information. The results of the questionnaire confirm the information collected in specialized literature, indicating that the visibility of environmental information is an essential element in helping to make purchasing decisions. The study's results provide guidance for decisions regarding the presentation of environmental information, particularly with regards to the aesthetics of the display.
Q12: Where would you like to find the environmental impact of your product? (i.e. which medium do you think is most appropriate for communicating the information)		
Q13: Does the use of icons for indicators facilitate reading and understanding?	Make information visible through design	The majority of consumers consider design elements such as icons, colors, and layout to play a crucial role in the visibility and understanding of information. The results of the questionnaire confirm the information collected in specialized literature, indicating that the visibility of environmental information is an essential element in helping to make purchasing decisions. The study's results provide guidance for decisions regarding the presentation of environmental information, particularly with regards to the aesthetics of the display.
Q14: Does a standard color code: red for a bad rating and green for a good rating help you analyze information more quickly and easily?		

4 LESSONS LEARNED

Based on available scientific literature and project reflections, the proposal is to create an effective framework for environmental labeling of EEE products with clear and comparable information for consumers. This requires the use of standardized LCA methodology to provide an overview of environmental impacts throughout the product's life cycle. A single synthetic score can be generated for each product, enabling assessment and comparison of environmental performance within the same category.

- Information complexity

Notation : Currently, consumers are accustomed to reading energy labels, which use a system of letters ranging from A to G, where A represents the best rating and G, a mediocre rating. However, the survey conducted revealed that consumers would be more willing to adopt a graduated score ranging from 0 to 100. According to the qualitative analysis, consumers perceive a better granularity as being an essential element to facilitate comparisons between products. of the same category. Conversely, the alphabetical system does not make it possible to value the efforts of manufacturers in order to minimize their environmental impact. Thus, within the framework of a deployment of the environmental labelling of the EEE, it is the numerical scale which is recommended.

Indicators : The poster is a highly impactful means of communication, although its overuse may result in an excessive amount of information for the consumer. To ensure effective comprehension and

https://doi.org/10.1017/pds.2023.167 Published online by Cambridge University Press

harmonization of environmental labels, it is recommended that up to three environmental indicators be included. For EEE products, climate change and energy consumption are two pertinent indicators. It is important to recognize that price has a considerable impact on consumer behavior. Consequently, displays should incorporate non-environmental impact indicators that offer individual benefits, such as cost savings or higher quality. Nevertheless, there are certain biases in translating energy consumption into monetary value due to fluctuating prices. Despite this limitation, the model can aid consumers in comprehending the cost of using a product.

- Information visibility

Vocabulary, Popularization of information : Environmental communication can be complex and difficult for consumers to understand as it often uses unfamiliar terms. Providing reliable and understandable information is crucial to encourage sustainable consumption. Simplified language should be used to reach the greatest number of consumers, and the use of digital data can aid interpretation. However, the use of technical terms like "KWh," "Kg CO2 eq," and "P eq" can be detrimental to the message as they are difficult to understand. A solution is to use consequences (provided they are not guilty) based on the analysis of existing environmental displays and questionnaires.

Design : The display format must be easy to understand and graphical to encourage changes in buying behavior. The different sources examined agree on adopting a colored coding system to improve comprehension and speed up the perception of data, with red indicating that the device does not respect the environment, while green indicating that the product is ecological. According to the study findings, incorporating visual elements like logos or icons can assist consumers in comprehending particular data, which highlights the significance of their use.

Information medium : Environmental labelling support is crucial for providing consumers with reliable information and guiding them towards environmentally friendly product choices. The survey results indicate that environmental labelling is consulted more frequently when it is prominently displayed on product packaging or labels. However, due to space constraints, it may not be possible to include all relevant information. To overcome this limitation, a multimedia approach was adopted in the analyzed environmental displays, incorporating a QR code that directs users to more detailed online information. This approach provides consumers with comprehensive and trustworthy information in an easily accessible format, thereby promoting more sustainable consumption choices.

- Credibility of information

Faced with false advertising and greenwashing, industrial companies are forced to be innovative in order to capture attention and convey a complex message while avoiding dishonest or misleading business practices. The credibility of information depends primarily on the reliability of its source. Best practice guides and experience feedback recommend the use of independent third parties to strengthen consumer confidence and avoid deceptive business practices. The results of a questionnaire support this recommendation. Furthermore, the provision of additional documents, such as calculation methods or the duration of display validity, contributes to the reliability and robustness of the display based on the questionnaire results.

5 DISCUSSION

Regarding the study's objectives, the results confirmed the importance and effectiveness of the selected criteria. It is also important to note that the reliability of the information can be improved through certification and the integration of complementary information. In order to strengthen the robustness of the information related to environmental labeling, standardization should be implemented among decision-makers, including the government and at the European level. However, the study also highlights the limitations of the LCA method. Although widely used in industry, LCA still has shortcomings and challenges. It is a complex process that requires significant time and resources to be carried out. Additionally, the normalization and weighting method used to calculate the unique score has been criticized for its lack of scientific rigor by the scientific community (Pizzol et al., 2017). Therefore, a more in-depth study of the method for calculating environmental indicators is necessary to deploy environmental labelling in the EEE sector.

The study results also revealed that consumers prefer to have access to information directly on products. However, due to space constraints, not all information can be displayed on products. With technological advancements and different habits based on age, it would be opportune to renew the

https://doi.org/10.1017/pds.2023.167 Published online by Cambridge University Press

study by targeting younger generations to evaluate the potential of an application. Such online support has a broader reach than paper display. For example, Yuka is an application designed to assess the environmental impact of consumer food products. It allows users to scan their products or search for them in the database to compare them to market products. This decision support tool also provides brand rankings to help consumers make the best choice. We are aware that environmental display is based on subjective criteria and that it is difficult to satisfy all consumers. However, this study aims to provide insights to develop an environmental display that meets consumers' expectations as much as possible. Additionally, the context and evolution of display encourage manufacturers to eco-design to stand out from their competitors.

6 CONCLUSION

This article addresses the research question: "How can the environmental performance results of EEE be communicated to consumers in a way that is easily understandable, without distorting the real impact of the product?" To answer this question a literature review was carried out to clarify the framework of environmental labeling in the predominant sectors. Due to the absence of a common foundation and initiative in the field of EEE, paths of good practices were proposed to deploy environmental labeling on these equipment. These paths were identified based on existing good practices combined with new ideas and improvements. In addition, the boom in second-hand and reconditioning has led us to reposition this study in relation to this equipment. It is difficult to apply a display for these articles, because of a very important market between individuals. To date, there are no solutions under development. It would nevertheless be interesting to pursue the following avenue further: develop a monitoring sheet, which can be consulted by placing a QR code on the product.

REFERENCES

Ademe. (2021), “Une nouvelle étiquette énergie”, Agir pour la transition écologique | ADEME, 1 September, available at: https://agirpourlatransition.ademe.fr/particuliers/conso/droit-conso/nouvelle-etiquette-energie

Ademe. (2023), “Affichage environnemental dans le secteur alimentaire : expérimentation 2020/2021 – Ademe”, Agence de la transition écologique, available at: https://expertises.ademe.fr/economie-circulaire/consommer-autrement/passer-a-laction/reconnaitre-produit-plus-respectueux-lenvironnement/dossier/laffichage-environnemental/affichage-environnemental-secteur-alimentaire-experimentation-20202021

Albertini, J.-P. (2014), “L’expérimentation de l’affichage environnemental en France : contexte et résultats”, Annales des Mines - Responsabilité et environnement, Vol. N° 73 No. 1, p. 28, https://dx.doi.org/10.3917/re.073.0028.

Barreau, B. and Vielliard, F. (2014), “L’affichage environnemental des produits de consommation courante : les conditions de la réussite”, Annales des Mines - Responsabilité et environnement, ESKA, Paris, Vol. 73 No. 1, pp. 19–22, https://dx.doi.org/10.3917/re.073.0019.

Comission Européenne. (2022), “In focus: A new generation of EU energy labels”, 13 August, available at: https://commission.europa.eu/news/focus-new-generation-eu-energy-labels-2020-08-13_en

Décathlon. (n.d.). “Décathlon LA NOTE ENVIRONNEMENTALE”, available at: https://engagements.decathlon.fr/la-note-environnementale

“DEEE-définition-Ecoorganisme Ecologic”. (n.d.). , available at: https://www.e-dechet.com/deee/qu-est-ce-qu-un-deee

Ermenier, K. (2022), “L’Eco-score et le Planet-score livrent leurs premiers bilans d’étape”, 7 February, available at: https://www.processalimentaire.com/vie-des-iaa/l-eco-score-et-le-planet-score-livrent-leurs-premiers-bilans-d-etape

François, J.C.B. (2016), “La réaction des consommateurs à l’information environnementale : une étude expérimentale”, p. 109.

François-Lecompte, A. and Gentric, M. (2016), “L’étiquetage environnemental des produits et services : enjeux et défis”, Decisions Marketing, Vol. 81 No. 1, pp. 99–113.

François-Lecompte, A., Gentric, M. and Vendeville, H. (2014), “Efficacité d’un affichage environnemental : le cas du service hôtelier”, Recherches en Sciences de Gestion, ISEOR, Ecully, Vol. 103 No. 4, pp. 43–65, https://dx.doi.org/10.3917/resg.103.0043.

Glimpact. (2021a), “La start-up Glimpact retenue par l’ADEME dans le cadre de l’appel à projet sur l’affichage environnemental des produits alimentaires”, 15 June, available at: https://tool.glimpact.com/content/cpademe15062021.pdf

Glimpact. (2021b), “Camaïeu choisit Glimpact et la méthode européenne pour afficher publiquement l’empreinte environnementale globale de ses collections intemporelles”, 15 December, available at: https://tool.glimpact.com/content/151221_CP_Camaieu_Glimpact.pdf

Gubbels, A. (2016), L’affichage Environnemental: Etude Des Facteurs Permettant de Crédibiliser Les Écolabels.

https://doi.org/10.1017/pds.2023.167 Published online by Cambridge University Press

Heijungs, R. (2014), “Ten easy lessons for good communication of LCA”, The International Journal of Life Cycle Assessment, Vol. 19 No. 3, pp. 473–476, https://dx.doi.org/10.1007/s11367-013-0662-5.
Homobono, N. and Hauser, A. (2014), “L’information environnementale des consommateurs”, Annales des Mines - Responsabilité et environnement, ESKA, Paris, Vol. 73 No. 1, pp. 7–10, https://dx.doi.org/10.3917/re.073.0007.
Kühne, S., Reijnen, E., Laasner Vogt, L. and Baumgartner, M. (2023), “Can carbon labels encourage green food choices?”, Frontiers in Psychology, Vol. 13, https://dx.doi.org/10.3389/fpsyg.2022.902869.
LaFranceAgricole. (2023), “Le consensus tarde entre Eco-score et Planet-score”, LaFranceAgricole, 20 February, available at: https://www.lafranceagricole.fr/gestion-et-droit/article/837487/le-consensus-tarde-entre-eco-score-et-planet-score
Lazard, A. and Atkinson, L. (2015), “Putting Environmental Infographics Center Stage: The Role of Visuals at the Elaboration Likelihood Model’s Critical Point of Persuasion”, Science Communication, SAGE Publications Inc, Vol. 37 No. 1, pp. 6–33, https://dx.doi.org/10.1177/1075547014555997.
Ministères Écologie Énergie Territoires. (2020), “L’affichage environnemental des produits et des services (hors alimentaire)”, Ministères Écologie Énergie Territoires, available at: https://www.ecologie.gouv.fr/laffichage-environnemental-des-produits-et-des-services-hors-alimentaire
Ministères Écologie Énergie Territoires. (2022), “Indice de réparabilité”, Ministères Écologie Énergie Territoires, January, available at: https://www.ecologie.gouv.fr/indice-reparabilite
Muller, L., Lacroix, A. and Ruffieux, B. (2019), “Environmental labelling and consumption changes: A food choice experiment”, Environmental and Resource Economics, Vol. 73 No. online 8 March, p. 871, https://dx.doi.org/10.1007/s10640-019-00328-9.
Pizzol, M., Laurent, A., Sala, S., Weidema, B., Verones, F. and Koffler, C. (2017), “Normalisation and weighting in life cycle assessment: quo vadis?”, The International Journal of Life Cycle Assessment, Vol. 22 No. 6, pp. 853–866, https://dx.doi.org/10.1007/s11367-016-1199-1.
Salommez, G. (2014), “L’affichage environnemental des produits électriques et électroniques”, Annales des Mines - Responsabilité et environnement, Vol. N° 73 No. 1, p. 40, https://dx.doi.org/10.3917/re.073.0040.
Taufique, K.M.R., Siwar, C., Talib, B., Sarah, F.H. and Chamhuri, N. (2014), “Synthesis of Constructs for Modeling Consumers’ Understanding and Perception of Eco-Labels”, Sustainability, Multidisciplinary Digital Publishing Institute, Vol. 6 No. 4, pp. 2176–2200, https://dx.doi.org/10.3390/su6042176.
Van Hoof, G., Vieira, M., Gausman, M. and Weisbrod, A. (2013), “Indicator selection in life cycle assessment to enable decision making: issues and solutions”, The International Journal of Life Cycle Assessment, Vol. 18 No. 8, pp. 1568–1580, https://dx.doi.org/10.1007/s11367-013-0595-z.

https://doi.org/10.1017/pds.2023.167 Published online by Cambridge University Press