



# Challenges for ecolabeling growth: lessons from the EU Ecolabel in Spain

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## Abstract

**Purpose** The European Ecolabel (EU Flower) has the mission to encourage cleaner production and influence consumers to promote Europe's transition to a circular economy. Nonetheless, little is known about EU Ecolabel evolution; it is not clear what the drivers that encourage its implementation are. Thus, this study aims to assess the growing acceptance of the EU Ecolabel in the European Union, and Spain more specifically, by examining product and service categories and geographical regions.

**Methods** The methodological approach taken in this study is a mixed methodology based on the triangulation method by consulting the EU Ecolabel scheme database, EU Ecolabel delegates from some autonomous regions, and the academic literature. Also, a geographic analysis was run in the ArcGIS Software with data about the accumulation of licenses assigned in 2016.

**Results and discussion** The analysis shows that most products in Spain that have been awarded the EU Ecolabel belong to the following categories: Do-It-Yourself Products (paint and varnish), Paper Products, Cleaning Up Products, and Electronic Equipment. At the same time, the study showed that this ecolabel faces significant obstacles in its diffusion, such as the competition with environmental labels launched previously in Europe and other regional labels.

**Conclusions** The results of this study indicate the existence of five drivers that may encourage the implementation of EU Flower in a region: (1) public management, (2) communication strategy, (3) sustainable public procurement criteria, (4) local income per capita, and (5) international trade incentives.

Finally, this study provides essential recommendations for policymakers to trigger ecolabeling practices such as the need to improve the understanding of the EU ecolabel impact in different levels of activity, which means countries, regions, industrial clusters, firms, and consumers. Also, this investigation identifies areas for further research, and it expresses the need to develop business case studies about ecolabeling with the objective to visualize this phenomenon as an eco-innovation process.

**Keywords** Circular economy tool · Eco-innovation · Ecolabeling · Environmental certificates · EU Flower · Spain

## 1 Introduction

Since the definition of Sustainable Development in the Brundtland Report (1987), the global concerns over the

environmental and social challenges have grown. Thus, multiple governments, institutions, producers, and consumers have joined to promote a change of paradigm in our economy in coherence with the current environmental challenges and actions like the Paris Agreement at the 2015 United Nations Climate Change Conference (COP 21), the European Action Plan for Circular Economy (European Commission 2015a), and Ellen MacArthur Programs (Ellen MacArthur Foundation 2017). Even Pope Francis has invited society to establish a cyclical economic model that contributes to preserving the environment as a human responsibility (Francis 2015).

In order to address this global concern, circular economy has emerged as “an economic system that represents a change of paradigm in the way that human society is interrelated with nature and aims to prevent the depletion of resources, close energy, and materials loops, and facilitate sustainable

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development through its implementation at the micro (enterprises and consumers), meso (economic agents integrated in symbiosis) and macro (city, regions and governments) levels. Attaining this circular model requires cyclical and regenerative environmental innovations in the way society legislates, produces and consumes” (Prieto-Sandoval et al. 2018).

In the circular economy, firms should be responsible for their processes and products while consumers should make responsible purchasing decisions. The role of firms and the way they can innovate to create sustainable business models have been widely explored (Linder and Williander 2017; Tukker 2015; Lewandowski 2016). However, little attention has been paid to the role of consumers and tools to facilitate responsible and “green” purchasing decisions towards a circular economy. In this sense, consumers should feel motivated to change their behavior (Preston 2012; Jaca et al. 2018), and they require a minimum of information to know if a good or service has been produced with ecological criteria (Leire and Thidell 2005).

In this sense, ecolabels simplify consumers’ decision-making process, and it signals that they are choosing a “green” good or service (Thøgersen et al. 2012). It helps companies to show that the product they are offering to the market is different. Moreover, ecolabels emerge as an outcome of the implementation of novel and sustainable practices along the business process; in this way, an ecolabel is a visible manifestation of an eco-innovation process (Prieto-Sandoval et al. 2016). Likewise, in this process, consumers’ environmental expectations are met, and firms enhance their sustainability and increase their value (Prieto-Sandoval et al. 2016). Therefore, the increase in consumer involvement and the growth of information about green products stimulate demand and cause companies to change the way they produce, so their goods are in line with current environmental perception. For this reason, the European Commission (2016a) has recognized the importance of ecolabels for supporting the implementation of the circular economy in the region.

Ecolabels are relatively new (Fig. 1). The first milestone took place in 1977 when the Federal Republic of Germany launched the Blue Angel label, the first environmental label scheme (Reisch 2001; Villot et al. 2007). The World Commission on Environment and Development reinforced this green initiative (WCED 1987) with its publication of “Our Common Future,” commonly known as “The Brundtland Report,” which defined for the first time the concepts of sustainable development and the institutional challenges that were going to be involved. The report suggested different ways to use labels to encourage more responsible production and consumption, especially in the energy sector. Given the global importance of products and policies that paid greater attention to the environment, these early ecolabeling initiatives were followed by other countries such as the US, Japan, and France (Salzman 1991; Salzhauer 1991; Hemmelskamp and Brockmann 1997). Another milestone was the Nordic

#### Ecolabelling milestones: A time line

	The Blue Angel (1977)	Germany
	“Our Common future” (1987)	United Nations
	Green Seal (1989)	United States
	The EcoMark (1989)	Japan
	The White Swan (1989)	Nordic Countries
	Rio Conference (1992)	United Nations
	The EU Ecolabel (1998)	European Union
	Agenda 21 Implementation (2002)	United Nations

Fig. 1 Ecolabeling milestones

Ecolabel Scheme, called the White Swan. Adopted in 1989 by the Nordic Council of Ministers, its purpose was to promote sustainable production and consumption (Dietz et al. 2002). This initiative is significant in the ecolabel history because it was the first to be undertaken by a community of countries.

The ecolabels can be classified in a basic typology, as is also described in the ISO 14020:2002, that standardizes three types of environmental labels (Daddi et al. 2015). Besides, the literature describes the “Type I-like ecolabel,” which represents environmental labels focused on just one negative environmental aspect and independent organizations have launched them.

The literature presents another typology which describes two ecolabels; the “binary ecolabel” and the “multi-tier” or graded ecolabels (Bleda and Valente 2009; Konishi 2011). The first case refers to the standard seal which is given or not to products according to an assessment; some examples include the EU Ecolabel and Marine Stewardship Council Ecolabel. The second case establishes a score depending on product performance, and award products according to the environmental achievement in Silver, Gold, and Platinum levels (Fischer and Lyon 2013), such as the Leadership in Energy and Environmental Design (LEED) for buildings and Cradle to Cradle for the circular economy.

After the ecolabel’s emergence, the marketing done to introduce green culture into consumer decision-making has had tangible returns in environmental conservation (The Swedish Society for Nature Conservation 1999). Additionally, the United Nations Conference in Rio and the Agenda 21 program encourage the implementation of environmental labels to inform consumers (United Nations 1993, 2002). Another milestone is the EU ecolabel program launched by the European Union in 1998 to regulate and propose common standards in the region (Loureiro et al. 2001). Nowadays, ecolabeling is a growing eco-innovative practice, with a wide variety of seals representing different criteria.

There are multiple factors that encourage ecolabel implementation in firms: improve the image and the position of the company in the market (Daddi et al. 2015), inform customers of their products' new green features in a visual way (Thøgersen et al. 2010) and use it for green marketing activities (Daddi et al. 2015), increase the revenues 3 to 5% in a year (Daddi et al. 2015), trigger eco-innovation processes (Rubik et al. 2008; Dangelico and Pujari 2010; Prieto-Sandoval et al. 2016), be perceived as high-quality products (Zanoli and Naspetti 2002), open markets where there could be technical trade barriers (Melser and Robertson 2005; Daddi et al. 2015), and conquer new segments of the market such as customers who are willing to pay premium prices (Loureiro et al. 2002; Delmas and Grant 2014; Testa et al. 2015) and governments and institutions that promote green public procurement (Yong 2007; Evans et al. 2015; Witjes and Lozano 2016).

This paper focuses on the EU Ecolabel which belongs to type I, also known as the EU Flower because it is a transnational governmental program with a potentially high impact in the European continent, the most prominent common market supports it, and its continual updating makes it a key tool in attaining a circular economy (European Commission 2016a). Moreover, there is still a gap in the literature about the EU Ecolabel and its drivers in Mediterranean countries like Spain. This problem is evidenced by searching “EU Ecolabel” or “EU Flower” and “Spain” as keywords in the Web of Science and Scopus databases because nothing appears. Likewise, a search using “Ecolabel” and “Spain” showed only six results in the Web of Science and Scopus.

Thus, this study aims to assess the growing acceptance of the EU Label in the European Union and Spain in particular, examining its product categories at the Spanish autonomous regions. Moreover, this study will provide valuable guidance for policymakers and firms, helping to trigger ecolabeling practices and the transition to a circular economy in Spain and other regions with cultural proximity, like Ibero-America.

The paper is structured as follows. Section 2 describes the methods used to develop the analysis. In Sect. 3, we present the results and an empirical analysis that helps to understand the EU Flower diffusion in one European country, namely, in Spain, as well as its different regions and economic sectors, according to the information provided by the European Union, the literature, and the EU delegates. The paper ends by drawing conclusions about the EU Flower implementation, the drivers that may encourage the adoption of more EU Licenses in different regions, and the barriers which influence its implementation.

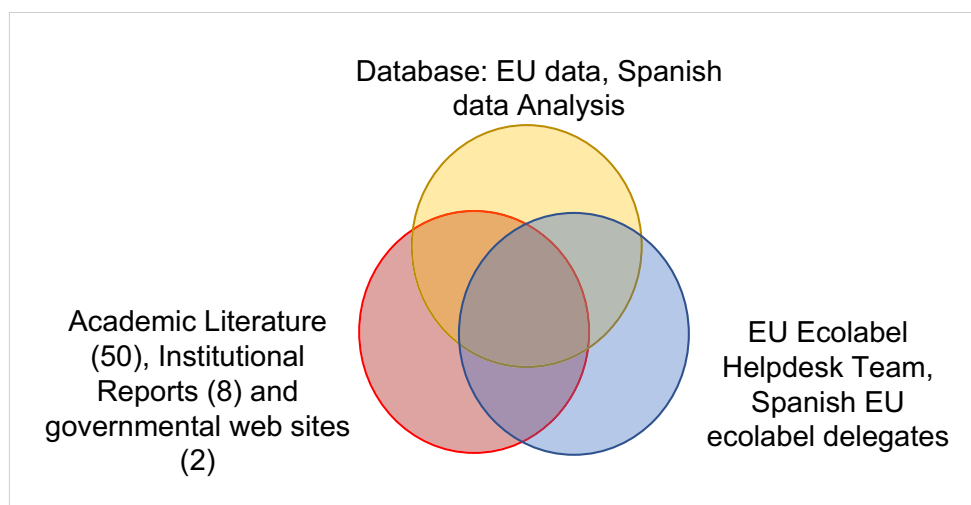
## 2 Methods

Our empirical analysis used the triangulation method, which refers to the use of two or more data sources, and the perspectives, methodological approaches, theoretical perspectives (Denzin 1989; Kimchi et al. 1991), and analytical methods (Kimchi et al. 1991) of different researchers within one study to build an objective analysis (Saunders et al. 2009). Specifically, we consulted the EU Ecolabel scheme database, conducted semi-structured interviews with EU Ecolabel delegates from some autonomous region, and reviewed the academic literature (Fig. 2).

First, the primary data source was provided by The EU Ecolabel Helpdesk Team and the Spanish Ministry of Agriculture, Food, and Environment. The database allowed us to count the total number of licenses issued between 2002 and 2016 in Europe and Spain, although, from 2013 to 2016, the information is more detailed. Besides, we ran a geographic analysis of the licenses assigned in 2016 in the ArcGIS Software. This tool gave us the opportunity to visually understand the status of EU Flower presence and distribution in Spain.

Secondly, qualitative information was gathered through semi-structured interviews with the EU Ecolabel delegates

Fig. 2 Triangulation sources



from seven autonomous regions. This information is an essential source of information because they have direct contact with the entrepreneurs who already have some information from the ecolabel and receive concerns about the process. Thus, the objective behind the questions to the delegates was to deepen in the comprehension of the behaviors of the companies in front of the EU Ecolabel that was evidenced in the data provided by them and the European Union. In that sense, we used these statistics (2000–2016 for country level, and 2013–2015 for autonomous communities) to be more accurate in our affirmations and conclusions. Out of the total of 17 autonomous regions, seven supplied the information necessary for the research.

Nonetheless, some of the regions without answers do not have licensed products. The qualitative interview is the most common and one of the most important data gathering tools in qualitative research (Myers and Newman 2007). It is done to gain information on a particular topic or a particular area to be researched and to gain rich information about experiences of individuals (DiCicco-Bloom and Crabtree 2006). Those responding had brought written answers that were used to identify the drivers that encourage EU Flower certification in the regions. The interviews were semi-structured, meaning that they had open-ended questions, allowing the respondents to provide a more detailed answer to the questions.

In parallel, this study initially reviewed about 50 academic papers focused on ecolabeling experiences, performance in the market, barriers, and opportunities. Then, we iteratively reviewed the academic and governmental reports referenced. This literature review allows the research team to understand in depth the field of study (Meredith 1993). The main objective was to understand how EU Flower has evolved in Spain for all the product categories analyzed.

## 3 Results and discussion

### 3.1 European status of EU Flower

Following the implementation of Council Regulation (EEC) No. 1980/2000 on environmental labels, the first EU Ecolabel licenses were issued in 2002, and the current number of licenses is 15 times greater. The number of certified products is distributed according to the “Product groups” or categories established by the EU Ecolabel manual which includes: Cleaning Up, Tourist Accommodation, Do-It-Yourself, Paper Products, Textiles and Footwear, Personal Care Products, Coverings, Electronic Equipment, Lubricants, Furniture, Gardening, Other Household Items, and Household Appliances. Additionally, these groups include more specific subcategories (European Commission 2018). Nonetheless, the EU ecolabel scheme still excludes food to prevent confusion among consumers, and medical products, which are regulated

by the European Chemicals Agency (ECHA). Additionally, the EU Commission presented a report with a feasibility study of Ecolabel criteria for food and feed products which explained that the EU Ecolabel could find barriers like the competition with other well-established, credible labels in the food, feed, and drink sectors (Oakdene Hollins 2011).

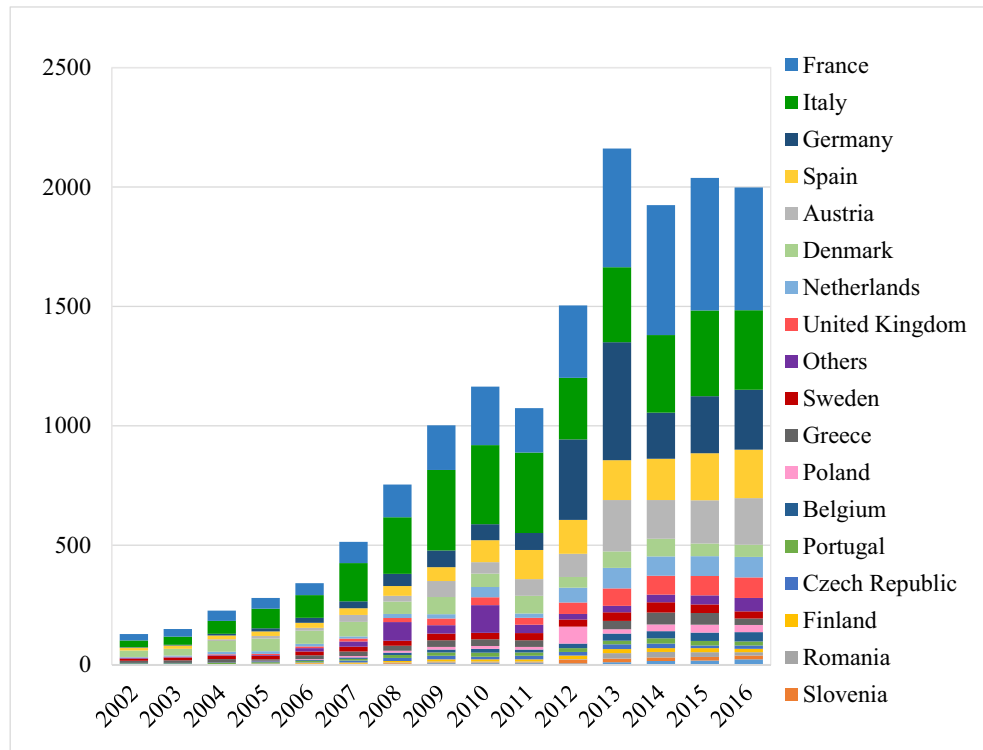
France, Italy, Germany, and Spain have been major participants in this implementation process since they have more than 60% of the licenses. Countries like Hungary and the UK are increasing their participation, while Portugal, Spain’s neighbor, has very low attendance (Fig. 3). Surprisingly, the Nordic countries, which were pioneers in the development of ecolabels, have a low participation rate in the EU Ecolabel scheme. This is probably due to the competition between their well-known White Swan scheme and the EU Flower scheme. However, the official web site of the Nordic Swan Ecolabel explains that it is equivalent to the EU scheme and they are often synchronized (Ecolabelling Sweden). Given the fact that the success of ecolabeling schemes depends on their recognition and trajectory in the market (Johnson and Turner 2006), the development of multiple environmental labels in the region suggests that EU Flower has some significant barriers to its diffusion. Even, the OECD (Prag et al. 2016) recognized that the rapid growth of “Environmental Labelling Information Schemes” causes confusion among firms and consumers about the environmental quality of the certified goods and services and internationally they can be seen as trade barriers.

Considering the critical role of ecolabels to achieve the circular economy and influence consumer behavior, the categories with a higher number of licenses may facilitate consumers to contribute to this change of paradigm. Thus, the statistics for 2016 showed that most licenses for France and Italy fall in the Tourist Accommodation category, with 287 and 186, respectively. The success of this category in those countries could be attributed to their importance in the top ten world tourist destinations (UNWTO 2016) and the multiple economic benefits based on the eco-efficiency improvements and cost savings achieved by the EU Flower certification process (Dziuba 2016). Also in 2016, in Germany, the licenses are more distributed over different kinds of products, although a significant amount belongs to specific subcategories like All-purpose & Sanitary Cleaners (47), Lubricants (48), and Tissue Paper (40). In Spain, the majority of licenses are in the category of All-purpose & Sanitary Cleaners (55), followed by Tourist Accommodation Services (45) and Hand Dishwashing Detergents (32). This is in line with the total EU Ecolabel licenses, which have mainly been awarded for the Tourist Accommodation and Tissue Paper categories (European Commission 2016b).

### 3.2 EU flower implementation in Spain

The 100% of delegates of the EU ecolabels that participated in this study express that there is no governmental impediment to

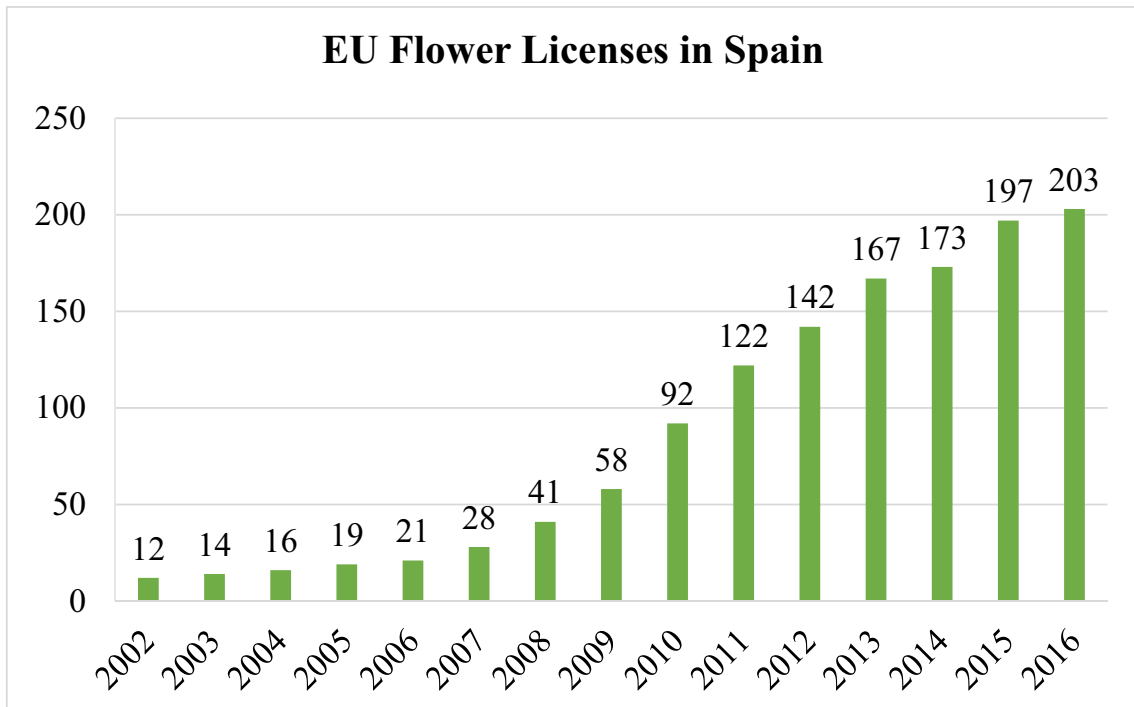
**Fig. 3** Evolution in EU Ecolabel licenses since 2002. The figure was created by the authors based on data provided by the EU Ecolabel Helpdesk Team (2017), and the Spanish Ministry of Agriculture, Food, and Environment



access the ecolabel; neither is there a marketing plan to boost its implementation and all of them state that there are no funds to support ecolabeling implementation. Figure 4 represents the evolution of the EU Ecolabel in Spain from 2002 to 2016, with an annual increase of 23% on average. This trend is very similar to the trajectory of the Blue Angel label in the early

stage of implementation, covering the period between 1979 and 1993 (Hemmelskamp and Brockmann 1997).

The geographic analysis of the database of licenses assigned in 2015 facilitated our understanding of EU Ecolabel diffusion in Spain, and it also showed that 12 out of 17 Autonomous Communities in Spain have at least one



**Fig. 4** EU Flower licenses evolution in Spain from 2002 to 2016. Own elaboration

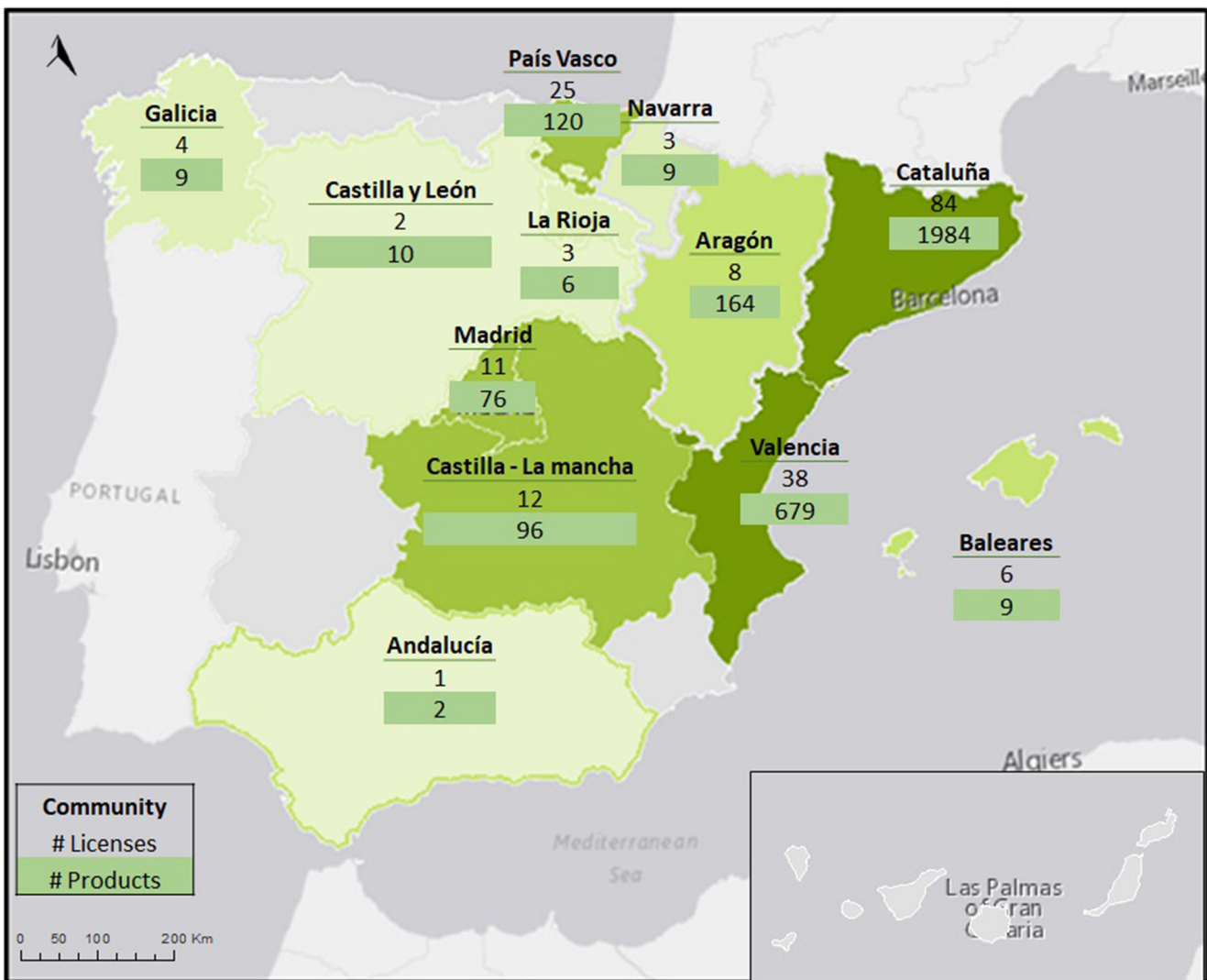


Fig. 5 EU Ecolabel licenses and ecolabeled products in Spain in 2015 by Autonomous communities

EU Flower license. In Fig. 5, the Autonomous Communities in the darkest green have the largest number of EU Flower–ecolabeled products. The labels for each Autonomous Community show the number of licenses and the number of products covered by those licenses. The eastern region of the country and Basque Country is the most integrated with the “green” culture promoted by the EU Ecolabel scheme.

Catalonia is the leader, with 1984 products covered by 84 licenses, while regions like Madrid (Table 1) have 76 products, covered by 11 licenses, but they are geographically smaller regions. Even though in Fig. 5 Catalonia is the EU Flower leader, the EU Flower Ecolabel also has to compete with the regional environmental labels like the “Distintiu de Garantia de Qualitat Ambiental” (the Guarantee Distinctive of Environmental Quality) (i Canals et al. 2002), just as it has to do it with the other European ecolabels reviewed above. In contrast, the study EVER (IEFE Bocconi et al. 2005) states that the Catalan ecolabel and other national schemes get support from the EU Ecolabel scheme; even the delegate from

Catalonia considers that both EU Ecolabel and the Distintiu de Garantia de Qualitat Ambiental are complementary. It also influences the proliferation of other ecolabeling programs such as the type II labels and environmental self-declarations.

Nevertheless, big communities such as Andalucía, Castilla y León, and Extremadura have less than two licenses or none. Andalucía’s results are surprising, based on the fact that this community has participated in projects to encourage the Green Public Procurement (e.g., Ecoedición project or GPP4growth project). The 86% of EU Ecolabel delegates explained that firms find some additional barriers for implementing the EU Ecolabel scheme such as the lack of product categories, the lack of information about it, the complexity of some criteria, and the cost of investments and tests to demonstrate the ecolabel scheme compliance. Those barriers hurt the number of certifications, especially in the case of SMEs. Besides, there are no consultants to help them in these processes, as occur with the ISO 14001 and EMAS certification processes. On the other hand, there is a lack of promotion

**Table 1** Environmental label taxonomy (based on ISO and ICONTEC 2002; Global Ecolabelling Network 2004; Leire and Thidell 2005; Panainte et al. 2014; Daddi et al. 2015)

Environmental label	ISO	Description	Examples
Type I	14,024	It is an environmental label qualified and certified by an independent third party, based on various criteria and life cycle assessment. It is identified in the product by a seal approval.	EU Flower, Blue Angel, White Swan, The Swedish “KRAV,” Sello Ambiental Colombiano.
Type I-like		A group of environmental labels which evaluate a single issue and focus on one negative environmental impact, but they are not considered ecolabels. Besides they are authorized by independent organizations with specific rules (Panainte et al. 2014).	Marine Stewardship Council Ecolabel, Forest Stewardship Certification (FSC), Rainforest Alliance certification for coffee,
Type II	14,021	It is an informative environmental declaration made for goods and services by the producer. It takes into account just one criterion like “recyclable” or “compostable” (Daddi et al. 2015). The certification by a third party is possible but not mandatory. It is represented by symbols or graphics (Leire and Thidell 2005)	Energy Star, SCS Recycled Content
Type III	14,025	It refers to voluntary programs that provide quantified environmental data of a product, under pre-set categories of parameters set by a qualified third party and based on life cycle assessment, and verified by that or another qualified third party (Global Ecolabelling Network 2004). But it does not require to be certified by a third party.	EPD Norway, IBU Environmental Product Declaration

of the EU ecolabel in each autonomous community, and there is not any national promotion plan launched by the Ministry for the Ecological Transition or local initiatives given the lack of knowledge about EU Ecolabel at present.

In 2015, Spain registered 3164 EU Flower awarded products, and 96% of them belong to four categories: (1) Do-It-Yourself, (2) Paper Products, (3) Cleaning Up Products, and (4) Electronic Equipment. The remaining percentage of products with ecolabels is distributed over seven additional categories (Fig. 6). It is evident that the biggest effort has been made in the improvement of products related to paints and varnishes, which are in the Do-It-Yourself category, where Catalonia has 1088 products (“paints and varnishes”) out of the 3164 from Spain. In the Paper Products category, Catalonia and Valencia have 304 and 299 certified products, respectively, from a total of 778. The Cleaning Up Products category (689 products) is dominated by Catalonia and Valencia too, with 283 and 213 products, respectively, even though this is a growing category in Aragón (45). The Electronic Equipment products (266) are wholly located in Catalonia, in just one multinational company.

Regarding the most ecolabeled products in Spain, and Europe, the EU Ecolabel has successfully contributed to the last Circular Economy Action Plan in Europe because categories like “Do-It-Yourself,” “Paper Products,” “Cleaning Up,” and “Electronic Equipment” are closely related to the reduction of raw material exploitation (e.g., paper, metals), use of plastics, chemical products, water use, and energy efficiency (European Commission 2015c).

These results are congruent with the total licenses awarded in the entire European Community, where Do-It-Yourself Products represent nearly 11% of products, Paper Products represent 31.1%, and Cleaning Up Products make up 12.94%. The

most notable absence is the low number of EU Flower in the Tourist Accommodation category which consists 63 campsites and tourist accommodation services focused on rural tourism, concentrated in Basque Country (51%) and Catalonia (38%). This contrasts with the fact that Spain was in 2016 the second country in international tourist arrivals (75.6 million), and the third one in international tourism receipts (60.3 million of people and US\$ 60.3 billion of revenues (UNWTO 2017). This result shows the low level of reception of the EU label certification in this sector in contrast with other environmental management tools like the Blue Flag, which has awarded the environmental quality of the majority of the beaches in Spain (Foundation for Environmental Education (FEE) 2018).

The 71% of EU ecolabel delegates from the autonomous communities expressed that the low number of certifications is due to several reasons. First, the Spanish tourism model is not based on environmental quality certification, but in other much more extensive certifications (example, Blue Flag). Second, entrepreneurs prefer ISO 14001 because it has a simpler certification process, which has consultants and experts who can help companies with it, and besides it has the facility to become integrated with other management systems such as ISO 9001. Finally, in other cases, companies prefer EMAS because they consider that it is like the EU ecolabel and it is more based on environmental management. Even, Fraguell et al. (2016) state that organizations may prefer an environmental management system like ISO 14001 and EMAS because they are an integrated management tool for environmental aspects that also guarantee quality.

Several factors could explain the difference in quantity and distribution of licenses among the regions, as Iraldo and Barbeiro states (2017) or Dekhili and Achabou have previously studied

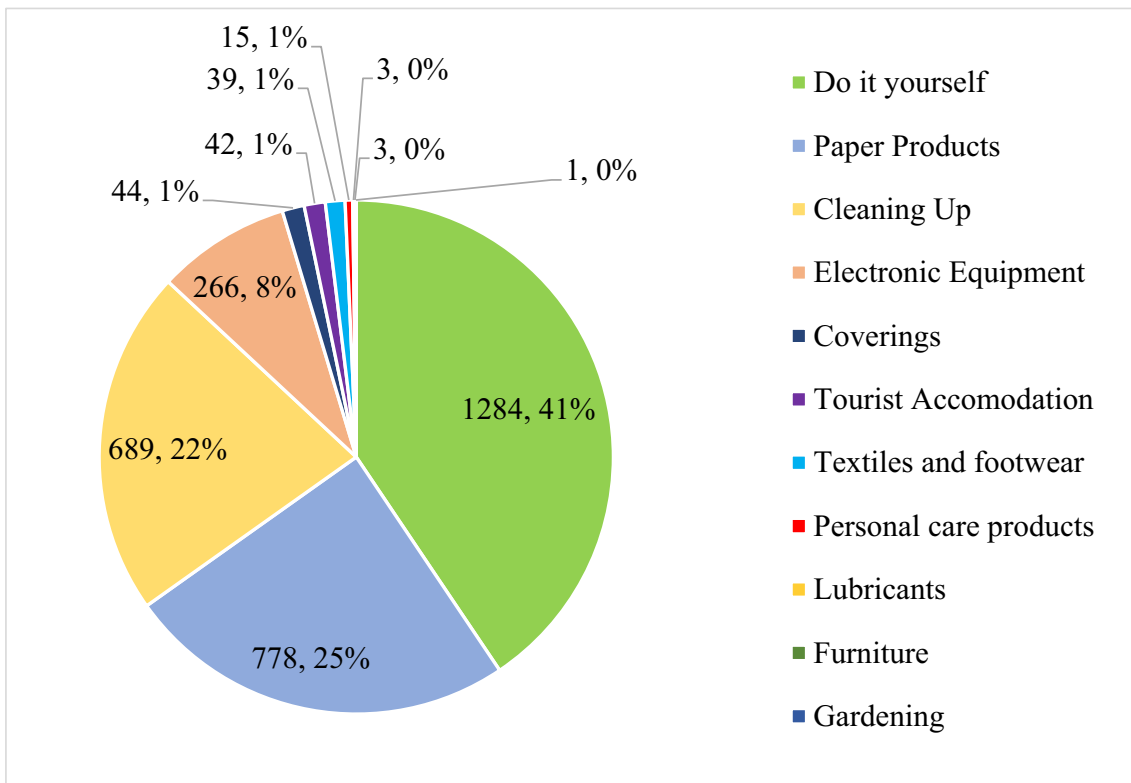


Fig. 6 EU Ecolabel products in Spain per product category, in 2015

(2015). For all the above reasons, first, two drivers of EU Ecolabel implementation can therefore be inferred: (1) the public management and (2) the EU Ecolabel diffusion strategy. Additionally, this study also explored three drivers for the adoption of ecolabels in a region, according to different authors, which are the following: (1) sustainable public procurement criteria (Parikka-Alhola 2008; Monteiro 2010), (2) local income per capita (Armah 2002; Gordy 2002; Brécard et al. 2009), and (3) international trade incentives (Greaker 2006; Bonsi et al. 2008).

Firstly, according to Witjes and Lozano (2016), sustainable public procurement may motivate suppliers to develop new or more sustainable products and business models that lead to reductions in raw material utilization and waste generation. The ecolabels offer the opportunity to guide producers with many criteria that they should follow to be considered sustainable. Moreover, the EU action plan for the circular economy emphasized the importance of sustainable public procurement as a way to improve the policy framework in EU and due to its impact in the European consumption (nearly 20% of EU GDP) (European Commission 2015b).

Regarding the importance of this factor, this research intends to understand how the policy framework has influenced the adoption of the EU Flower. In the case of Spain, there are a dissimilar number of licenses among its regions (Fig. 5), which led us to ask some EU Ecolabel delegates if their regions receive financial or political incentives for EU Flower implementation. The answer was negative; they do not offer any incentive. For

example, Catalonia being the leader in the number of licenses does not have tax incentives, but in the previous years, there were subsidies available for companies that were awarded ecolabeled product licenses. Another useful mechanism that encourages ecolabeling is the inclusion of environmental criteria in public procurement documents, especially for cleaning services, which is the most striking category for licenses in Catalonia (see Appendix in the [Electronic Supplementary Material](#)). Moreover, other regional leaders in autonomous communities such as Valencia, the Basque Country, Madrid, and Castilla-La Mancha have included sustainable procurement guides and criteria in their budding process since 2008, when the council of ministers approved the Green Public Procurement Plan of the General State Administration and its public bodies, and competent organizations of Social Security (Ministerio de la Presidencia 2008). This result shows that ecolabel market penetration varies as a function of product category and competition strategies among companies (Horne 2009) because companies can get differentiation in the market and public biddings by certifying the ecological quality of their products.

Secondly, there are important clues that suggest that local income influences the boost in ecolabeling. According to Table 1, 90% of licenses assigned in Spain are located in the region with the highest income per capita, meaning Catalonia, Madrid, the Basque Country, Aragón, and Valencia. Moreover, there is a significant correlation ( $p < 0.01$ ) between the number of licenses and the GDP per capita in each autonomous



**Table 2** Distribution of licenses, regional GDP per capita, and exports (millions) in Spain in 2015. Created by the authors based on the EU Ecolabel Helpdesk Team (EU Ecolabel Helpdesk Team 2017), Spanish Ministry of Economy, Industry, and Competitiveness (2015), and National Statistics Institute of Spain (2015)

Autonomous community	Licenses	% Licenses	Regional GDP per capita	Exports (Millions)	% Exports
Catalonia	84	43%	26,585 €	140,063 €	26.9%
Comunitat Valenciana	38	19%	19,656 €	51,902 €	10.0%
Basque Country	25	13%	29,514 €	38,684 €	7.4%
Castilla-La Mancha	12	6%	17,266 €	27,360 €	5.3%
Madrid	11	6%	30,637 €	85,496 €	16.4%
Aragón	8	4%	24,646 €	20,842 €	4.0%
Baleares	6	3%	23,439 €	2,726 €	0.5%
Galicia	4	2%	19,663 €	34,033 €	6.5%
Navarra	3	2%	28,039 €	13,118 €	2.5%
La Rioja	3	2%	24,311 €	2,913 €	0.6%
Castilla y León	2	1%	20,877 €	12,647 €	2.4%
Andalucía	1	1%	16,522 €	51,465 €	9.9%
Murcia	0	0%	18,156 €	18,344 €	3.5%
Asturias	0	0%	19,506 €	7,017 €	1.3%
Canarias	0	0%	18,758 €	5,444 €	1.0%
Cantabria	0	0%	20,361 €	4,322 €	0.8%
Extremadura	0	0%	15,224 €	2,776 €	0.5%
Ceuta	0	0%	18,277 €	327 €	0.1%
Melilla	0	0%	16,674 €	324 €	0.1%
<b>Total</b>	<b>197</b>	<b>100%</b>	<b>408,111 €</b>	<b>519,804 €</b>	<b>100%</b>

community. This result leads us to infer that companies in the most prosperous regions are more willing to implement environmental measures and produce goods, which are less harmful to the environment. Even though cultural engagement with the environment may be a factor (Rametsteiner 1999), a high income also makes it more likely that consumers will be willing to pay premium prices for sustainable products (Loureiro and Lotade 2005), and individuals with higher levels of income would be less sensitive to price changes (Aguilar and Cai 2010).

Finally, if consumers from other countries value cleaner production, this may serve as an international trade incentive to open new markets, and as a consequence foreign exporters can try to adopt an EU Ecolabel to increase their firm and the country credibility in committing to a lower emission production process (Greaker 2006; Dekhili and Achabou 2015). For example, residents in Germany, France, Italy, and the UK prefer sustainable forest products (Rametsteiner 1999), and that cultural element influences the penetration of any ecolabel. This is consistent with the fact that the top five autonomous communities, in terms of the number of licenses, hold 86% of the total, and they produce 66% of exports in Spain (Table 2). Moreover,

a significant correlation ( $p < 0.01$ ) was found between the number of licenses and the exports by autonomous communities. This result proves a relationship between the variables, even though it does not describe an explicative model.

This combination of drivers provides some support for the conceptual premise that ecolabels may increase the competitiveness in the market and revenues; this statement was confirmed by five out of seven Spanish EU Ecolabel delegates. Nonetheless, Chamorro and Bañegil (2006) found that “ecolabels are not merely used as marketing tools, but rather they are the reflection of a green marketing philosophy.” In this sense, these three drivers may motivate the EU Ecolabel implementation, especially, in firms with established environmental values.

## 4 Conclusions

This study provides an exciting opportunity to advance our knowledge of challenges and drivers that face the EU Ecolabel implementation at country and regional levels.

Thus, at the beginning of the analysis, we could establish the fact that the number of EU Flower licenses is increasing. At the same time, we saw that this ecolabel has major obstacles in its diffusion, such as the competition with environmental labels launched previously in Europe and other labels. This competition dilutes the efforts made by the European Union to encourage the implementation of its ecolabel and to promote the ecolabel's recognition by consumers and producers. Despite this situation, the EU Flower has achieved significant penetration in the Tourist Accommodation category, All-purpose & Sanitary Cleaners, Lubricants, and Tissue Paper in Europe. From the countries perspective, Spain is positioned as the fourth country in the EU in terms of the number of licenses, most of which have been awarded in Catalonia, Valencia, the Basque Country, Castilla-La Mancha, and Madrid. In the country, the majority of EU Flower-awarded products belong to four categories: Do-It-Yourself, Paper Products, Cleaning Up Products, and Electronic Equipment. Additionally, there is a tremendous opportunity for continued growth of the Tourism Accommodation sector in Spain, which has not been still conquered by the EU Flower because its benefits are not yet recognized at economic, environmental, and social layers. This finding is quite important based on the fact that Spain is one of the most visited countries in the world; in consequence, the local authorities should implement a national advertising and promotional campaign for that economic sector.

During this research, we identified five drivers that may encourage the implementation of EU Flower in a region: (1) public management, (2) communication strategy, (3) sustainable public procurement criteria, (4) local income per capita, and (5) international trade incentives.

In this sense, we propose that another country or region that has a similar background and that wants to trigger the implementation of ecolabels should start by developing policies for “green” or sustainable public procurement to encourage the supply side and to develop sustainable products under sustainable business models. Moreover, the policymakers should realize that they are invited to give more information and support about ecolabeling processes and its benefits, especially to SMEs who want to improve their environmental performance. The consultancy firms, industrial associations, clusters, and chambers of commerce may be key partners to increase that informative campaign and support firms in this kind of process.

Likewise, we have been able to establish that there are clear hints that areas with higher incomes per capita in a country tend to register more products with ecolabels. This finding is coherent with the presence and performance of ecolabels around the world, where the most influential countries, such as Germany, Japan, the US, and Nordic countries, are at the same time the pioneers in developing environmental tools. Therefore, we recommend introducing ecolabel schemes in other countries starting with the most developed and prosperous regions since

consumers (demand side) could pay a premium price for green products which offer a greater added value.

In the same vein, the firms from a region or country with a low local income per capita could find better benefits by producing ecolabeled goods and services for those more prosperous regions with consumers more sensitive to this kind of added value. Consequently, we suggest that companies identify foreign target markets that have an environmental culture that appreciates sustainable products because an ecolabel can work as an influential green marketing tool to open those markets.

From an academic perspective, the research in this field needs to deepen the understanding of the EU ecolabel impact in different levels of activity; it means countries, regions, industrial clusters, firms, and consumers. For example, the EU scheme strategy could be improved by understanding the firms' motivations to implement the EU Ecolabel scheme and their level of satisfaction about the benefits perceived from the ecolabeling process. Likewise, academia needs to develop studies of business cases about ecolabeling to visualize this phenomenon as an eco-innovation process consequence of an intentional strategy to be a sustainable company that focuses on the circular economy. Another front of research could be the consequences that emerge from the excess of labels that compete with the EU label.

We found important opportunities to improve the information provided by the EU Commission to improve the EU label analysis. First, we recommend that EU Ecolabel authorities gather additional information about the volume of EU Ecolabeled products exported and their influence on the European economy to assess and boost its implementation in the market. Likewise, the EU Commission should offer enough information about which the countries with higher consumption of ecolabeled products by category are to guide sustainable firms and to help them to access those markets.

Finally, some limitations of this study could be related to the geographical area, Spain. The results could vary in the case of other regions, due to cultural, business, or regulatory factors that could differ between countries. Another limitation of this research is related to the difficulty in the access to qualitative data from not available delegates; some industry associations have no information related to the EU Flower and from companies to explore the drivers of Ecolabel adoption. Future research could be address from this perspective.

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