

THE POPULARITY OF EU ECOLABEL PRODUCT CERTIFICATION IN POLAND

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Purpose: With the progression of climate change and environmental degradation, eco-labels are becoming an effective tool in distinguishing and promoting ecological products. The regulations established within the European Union tend to facilitate ecological initiatives of enterprises, especially of the ones already focusing on minimizing their impact on the environment. A good example of such activity was the introduction of the EU Ecolabel. The aim of the study was to analyze the popularity of the EU Ecolabel certification granted to products and services from Poland.

Design/methodology/approach: To achieve thus adopted goal, the method of desk research was applied. It consists in carrying out an analysis based on secondary data. In this case, the focus was on quantitative data available on the websites and databases of the European Commission, which is the body supervising the EU Ecolabel licensing process. The data in question is characterized by high level of availability and comprehensiveness.

Findings: The conducted analysis has led to the conclusion that when considering the number of certified products per number of inhabitants, the number of enterprises or the number of membership years in the European Union, Poland assumes values below the average for the entire Union. Therefore, it was found that the EU Ecolabel certification in Poland is not as popular as in most EU countries. Furthermore, the assessment of the most common categories of certified products has shown that it differs statistically from the EU average in only two cases. Namely, indoor and outdoor paints and varnishes, and hard surface cleaning products - these two categories accounted for a greater share of the total number of certified products in Poland than in the European Union.

Practical implications: The results of the study suggest the need for the intensification of actions that should be taken in order to increase the popularity of the EU Ecolabel. This could be achieved by, for example, introducing incentives for businesses and promoting the EU Ecolabel among consumers.

Originality/value: The study shows the most up-to-date structure of EU Ecolabel certificates in the European Union countries and Poland. The conducted analysis makes it possible to search for determinants contributing to the increase in the number of certified products.

Keywords: ecological certification, EU Ecolabel, ecolabeling, Poland.

Category of the paper: Research paper.

1. Introduction

In recent years, the intensification of processes of climate change and the increasing pollution of the environment caused by human interference have become a central issue (Cutter, 2018). Also consumer awareness of the impact of their actions and the effects of their decisions on the environment has been gradually growing (Innocenti et al., 2022). Thus, the ecological features of the product have become important factors in consumer purchasing decisions (Marruci et al., 2021). This, in turn, has resulted in an increased interest of companies, governments and investors in the issues of sustainable development (Masuda et al., 2022). Consequently, enterprises are now ever more willing to disclose and promote their pro-ecological activities, thus building a positive environmental image. However, they are now facing the problem of how to adequately communicate their commitment and contribution to a sustainable environment (Cui, 2022). The message must be expressive, and, at the same time, it should clearly stand out from other types of information provided (Kabaja, 2022). One of the most effective forms of such market communication is, of course, environmental labeling.

According to the Regulation (EU) no. 1169/2011 of the European Parliament and of the Council, labeling means “any words, particulars, trademarks, brand name, pictorial matter or symbol relating to a food and placed on any packaging, document, notice, label, ring or collar” which can be accompanying or referring to such products. Therefore, environmental labeling is the information that relates to the pro-ecological qualities of a product.

Environmental labels are an important element of a company’s management system. They enable the communication of the company with the supply chain and the customers (Peiró-Signes et al., 2020). Their main advantages include providing information on various environmental aspects of the product, enabling consumers to make informed comparisons and choices, encouraging pro-environmental purchasing decisions, and stimulating other market participants to adopt attitudes of environmental responsibility. Some of the most popular eco-labels in Europe are: the FSC logo (Forest Stewardship Council), the Seedling logo (belonging to European Bioplastics) or the EU Ecolabel, which has been lately gaining visibly more interest and whose presence throughout the European Union makes it worth a closer analysis.

The EU Ecolabel is a registered mark certifying environmental friendliness of products and services. This label was established in 1992 by the European Commission (Regulation EC no. 880/92). What is more, the requirements stipulated by the decisions of the European Commission form the basis for awarding this certification to given products or services. According to the data disclosed by the EC, over 89,000 products and services are labeled with this mark in 26 different categories (EU Ecolabel key figures..., 2022).

Interestingly enough, the requirements that companies need to meet have been evolving over the years, adapting to current environmental issues and new economic concepts. Currently, the EU Ecolabel widely promotes the concept of the circular economy model by encouraging

producers to reduce the amount of waste and CO₂ during the production process. Moreover, the European Commission declares that it encourages EU Ecolabel certified companies to design products that are durable, as well as easy to repair and recycle.

Considering the above, the main research goal of this study was to analyze the level of popularity of the EU Ecolabel mark granted to products and services from Poland.

2. The EU Ecolabel mark

Pursuant to the Regulation of the European Parliament and of the Council (EC) No. 66/2010 of November 25, 2009, and its subsequent amendments and updates, the design and the rules for the use of the EU Ecolabel were officially defined. The criteria for using the EU Ecolabel strictly define the environmental requirements that must be met in order for a given product or service to bear this mark. The specific labeling requirements are based on scientific data, taking into account the entire life cycle of the product. When developing the criteria, the following issues are considered (Regulation EC no. 66/2010):

- the most significant environmental impact (climate change, nature and biodiversity, energy and resource consumption, waste generation, emissions, pollution),
- substitution of hazardous substances with other materials or by changes in design,
- reduction of the environmental impact by the product's durability and reusability,
- the balance of benefits and burdens for the environment at various stages of a product's life,
- social and ethical aspects,
- alignment with the requirements of other environmental labels for a given product group,
- reduction of animal testing.

To date, the certification for the EU Ecolabel is possible for 12 product groups, some of them also include subgroups.

Perhaps, in the near future, this list of products will be extended to embrace new categories such as: Financial products, Office Buildings (Product groups and criteria, 2022) – the process of establishing adequate criteria and conditions for evaluation has already started. It is worth mentioning that the EU Ecolabel is not awarded to food products.

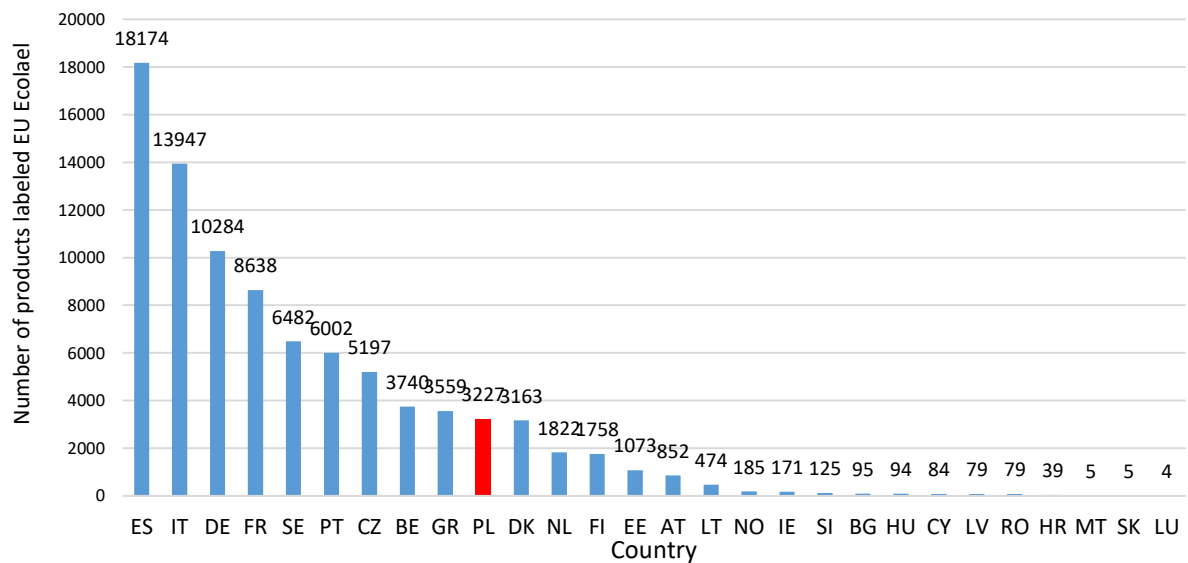
Due to its voluntary nature and the certification process being carried out by an independent body, the EU Ecolabel mark is included in the first type of environmental labeling program according to the International Organization for Standardization classification (ISO 14050:2020).

3. Methods

The desk research method (Makowska, 2013) was adopted in the study. It consists in carrying out an analysis based on secondary data, and thus making comparisons, examining trends and relationships between variables. The primary focus was on the quantitative data available on the websites and databases of the European Commission, which is the body supervising the EU Ecolabel licensing process. The said data are characterized by their availability and comprehensiveness (Makowska, 2013). The conducted analysis, compilation and processing of the database allowed to calculate the total number of licenses issued in the years 1992-2022 in the European Union countries and in Poland. What is more, the Eurostat data was also used for analysis and comparisons. As part of this study, the documents and legal acts of the European Union related to the EU Ecolabel were also reviewed. Descriptive statistics measures, structure indices (Domański, 2001), as well as correlation and linear regression testing methods were used to present and interpret the results. The dependence of the variables was verified with the two-sided difference test between the structure indices (Stanisz, 2006).

4. Results

According to the data provided by the European Commission, as of March 2022, as many as 2,239 licenses were issued for 89,357 products. It should be clarified that one license is an agreement covering at least one product belonging to the same product group. Compared to data from September 2021, there was a 9% increase in the number of licenses granted and a 7% increase in the number of products eligible for the EU Ecolabel (EU Ecolabel key figures..., 2022). Among the leading countries in the use of this label are Spain, Italy, Germany, and France. In turn, the fewest products with the EU Ecolabel mark can be found in Luxembourg, Slovakia, and Malta (EU Ecolabel facts and figures, 2022). Figure 1 presents the number of the EU Ecolabel certificates awarded to products in European countries. Apart from the EU countries, the list also includes Norway. Poland can be found on the 10th place with 3227 certified products. This value is close to the arithmetic mean for all countries participating in the EU Ecolabel system. However, it is very far from countries like Spain or Italy, which have about 4-5 times more certified products on their markets.



Note: The country abbreviations used in the chart are in accordance with ISO 3166-1.

Figure 1. The number of products labeled with the EU Ecolabel in different countries of Europe.

Source: own elaboration based on (EU Ecolabel facts and figures, 2022).

The number of certified products is considerably greater in more populous countries than Poland e.g., Germany or France; however, even in some smaller and less populated countries such as Portugal or the Czech Republic this trend can be observed. The EU member states are of course very diverse, for example in terms of their demographics or the level of economic development. That is why, to provide a more reliable and relatable assessment, the number of EU Ecolabel licensed products was calculated against the number of inhabitants of a given country (see: Table 1).

Taking into account the following criterion: the average number of products labeled with the EU Ecolabel per 100,000 inhabitants, Estonia was found to be the country of the highest number of certificates per citizen with Sweden, Portugal and Denmark just behind. Poland ranked 17th with a value of 8.5 certified products per 100,000 inhabitants – a figure much lower than the average for the 27 countries of the European Union. It seems that such calculation describes better, and more objectively, the actual reality of the popularity of the EU Ecolabel certificates in different countries. It is particularly noticeable on the example of Estonia, which is a small country that ranked 14th overall (Fig. 1), while in terms of the EU Ecolabel certificates per capita it becomes the European leader. The smallest number of products per capita is observed in Romania and Slovakia.

Table 1.

The number of products labeled with the EU Ecolabel per 100,000 residents

No.	Country	The number of products labeled with the EU Ecolabel	No. of inhabitants (2021)	The average number of products labeled with the EU Ecolabel per 100,000 inhabitants
1	Estonia	1073	1330068	80.7
2	Sweden	6482	10379295	62.5
3	Portugal	6002	10298252	58.3
4	Denmark	3163	5840045	54.2
5	Czech Republic	5197	10494836	49.5
6	Spain	18174	47398695	38.3
7	Greece	3559	10678632	33.3
8	Belgium	3740	11554767	32.4
9	Finland	1758	5533793	31.8
10	Italy	13947	59236213	23.5
11	Lithuania	474	2795680	17.0
12	France	8638	67656682	12.8
13	German	10284	83155031	12.4
14	Netherlands	1822	17475415	10.4
15	Austria	852	8932664	9.5
16	Cyprus	84	896007	9.4
17	Poland	3227	37840001	8.5
18	Slovenia	125	2108977	5.9
19	Latvia	79	1893223	4.2
20	Ireland	171	5006324	3.4
21	Bulgaria	95	6916548	1.4
22	Malta	5	516100	1.0
23	Croatia	39	4036355	1.0
24	Hungary	94	9730772	1.0
25	Luxembourg	4	634730	0.6
26	Romania	79	19201662	0.4
27	Slovak Republic	5	5459781	0.1
The arithmetic mean of the indicator:				20.9

Source: own elaboration based on (EU Ecolabel facts and figures, 2022; Key Figures on Europe, 2022).

Another important issue that may objectively reflect the number of EU Ecolabel certified products in Europe is the number of companies and enterprises that have decided to implement this label.

Participation in the EU Ecolabel certification process is voluntary, and the willingness to take part in this program is primarily dictated by the very activity and the initiative of the company that decides to obtain the license. Bearing that in mind, and in order to broaden the research perspective, it was examined how the number of enterprises in different countries translates into the number of products licensed with the EU Ecolabel. To achieve this end, another indicator was elaborated, reflecting the number of EU Ecolabel certified products per 100,000 enterprises operating in a given country (see: Table 2). Unfortunately, the most recent data on the number of operating companies in the Eurostat database came from 2019, so these data were implemented for further analysis. The results point to Denmark and Estonia as the countries with the greatest number of EU Ecolabel licenses per 100,000 enterprises. It follows that, statistically, the enterprises in these two countries most often obtain the EU Ecolabel for their products. In this ranking, Poland also fares unfavorably with the score of 159.6, which is

more than two times lower than the EU average. This means that the enterprises in Poland less frequently than in most of the other European Union countries apply, and are successful, for the EU Ecolabel certificate.

Table 2.

The number of products labeled with the EU Ecolabel per 100,000 enterprises

No.	Country	The number of products labeled with the EU Ecolabel	No. of enterprises (2019)	The average number of products labeled with the EU Ecolabel per 100,000 enterprises
1	Denmark	3163	228443	1384.6
2	Estonia	1073	82263	1304.4
3	Sweden	6482	647793	1000.6
4	Finland	1758	232791	755.2
5	Spain	18174	2692956	674.9
6	Portugal	6002	930303	645.2
7	Ireland	171	26596	643.0
8	Belgium	3740	673629	555.2
9	Greece	3559	717680	495.9
10	Czech Republic	5197	1058776	490.8
11	Germany	10284	2592680	396.7
12	Italy	13947	3616916	385.6
13	France	8638	2968182	291.0
14	Austria	852	331145	257.3
15	Lithuania	474	219906	215.5
16	Poland	3227	2022248	159.6
17	Cyprus	84	57848	145.2
18	Netherlands	1822	1294642	140.7
19	Slovenia	125	149024	83.9
20	Latvia	79	111646	70.8
21	Bulgaria	95	348667	27.2
22	Croatia	39	182394	21.4
23	Malta	5	31863	15.7
24	Romania	79	516703	15.3
25	Hungary	94	647091	14.5
26	Luxembourg	4	35295	11.3
27	Slovak Republic	5	512082	1.0
The arithmetic mean of the indicator:				377.9

Source: own elaboration based on (EU Ecolabel facts and figures, 2022; Key Figures on Europe, 2022).

Upon analyzing the factors that distinguish the countries of the European Union in terms of the examined issue, it seems particularly striking that the length of membership in the community is one of the most important ones. Consequently, an indicator was created that compares the number of membership years of a given country in the EU with the number of EU Ecolabel certified products (see: Table 3). The calculations take into account that the EU Ecolabel was introduced in 1992. Therefore, this year was assumed as the starting point for all the calculations (29 years). Such consideration was important in the case of the longest-standing EU members. Looking at the data from this perspective, it turns out that Spain is the country with the greatest number of EU Ecolabel certified products against the number of EU membership years. It was, on average, 627 products per membership year. Here, Poland, as a relatively young country in the European Union, has a much better position compared to

the previously used indicators. Poland ranks 8th and the value of almost 190 products for each of the 17 years of presence in the EU is close to the average for all European countries analyzed.

Table 3.

The number of products labeled with the EU Ecolabel per the number of EU membership years

Rank	Country	The number of products labeled with the EU Ecolabel	The number of membership years*	The average number of products labeled with the EU Ecolabel per the number of EU membership years
1	Spain	18174	29	626.7
2	Italy	13947	29	480.9
3	German	10284	29	354.6
4	Czech Republic	5197	17	305.7
5	France	8638	29	297.9
6	Sweden	6482	26	249.3
7	Portugal	6002	29	207.0
8	Poland	3227	17	189.8
9	Belgium	3740	29	129.0
10	Greece	3559	29	122.7
11	Denmark	3163	29	109.1
12	Finland	1758	26	67.6
13	Estonia	1073	17	63.1
14	Netherlands	1822	29	62.8
15	Austria	852	26	32.8
16	Lithuania	474	17	27.9
17	Slovenia	125	17	7.4
18	Bulgaria	95	14	6.8
19	Ireland	171	29	5.9
20	Romania	79	14	5.6
21	Hungary	94	17	5.5
22	Cyprus	84	17	4.9
23	Croatia	39	8	4.9
24	Latvia	79	17	4.6
25	Malta	5	17	0.3
26	Slovak Republic	5	17	0.3
27	Luxembourg	4	29	0.1
The arithmetic mean of the indicator:				191.6

Note: * the maximum of 29 years (since the introduction of the EU Ecolabel).

Source: own elaboration based on (EU Ecolabel facts and figures, 2022).

In summary, the number of products that obtained the EU Ecolabel certificate in Poland was assessed using several indicators. The number of eco-friendly products available on the market was calculated against: the number of inhabitants, the number of enterprises in the country and the number of EU membership years. Each of these indicators made it possible to look at the issue from a different perspective. Although it must be admitted that these were only selected and very basic variables.

In order to assess the statistical dependencies and the impact of variables on the number of issued certificates, the collected data was subjected to the Pearson linear correlation analysis (Benesty et al., 2009). The results are presented in Table 4. It turns out that the variable that best describes the examined issue is the indicator of the EU Ecolabel certificates per the number

of enterprises in a given country. The value of Pearson's correlation coefficient was 0.86 – so, it was quite strong (Schober, Schwarte, 2018).

Table 4.

The results of the correlation of the number of certified EU Ecolabel products with the selected variables

Variable	No. of inhabitants	No. of enterprises	No. of EU membership years (max. since 1992)
The value of Pearson's correlation coefficient	$r = 0.78$	$r = 0.86$	$r = 0.54$

Source: own elaboration.

In turn, Fig. 2 presents the results of the application of the linear regression method, describing the relationship between the number of enterprises and the number of EU Ecolabel certified products. Thus, the formula of a linear function was defined, which describes this relationship in the best way and enables the prediction of this phenomenon. A very good degree of matching the proposed function to the described problem is confirmed by the high value of the determination coefficient $R^2 = 0.746$.

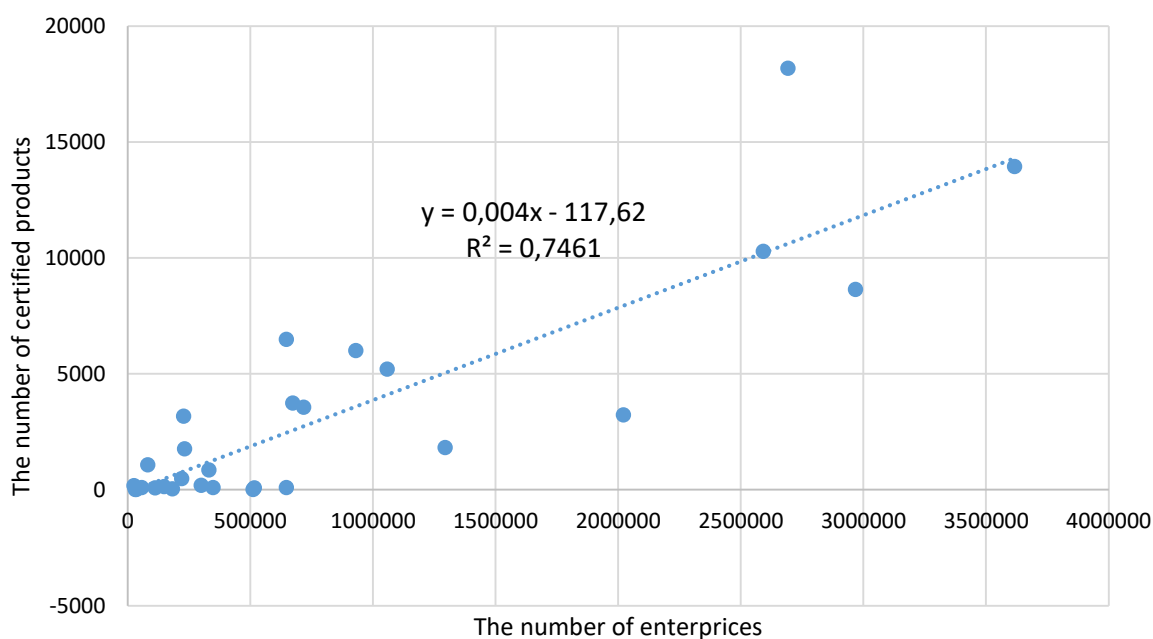


Figure 2. Linear dependence of the number of enterprises in a given country and the number of EU Ecolabel certified products.

Source: own elaboration.

In the last stage of the research, the structure of products labeled with the EU Ecolabel in Poland and in the entire EU was compared. For this purpose, the data provided by the European Commission was used again (EU Ecolabel Products, 2022) – (see: Table 5). The two most popular product categories in both Poland individually and the whole EU are: indoor and outdoor paints and varnishes, and tissue paper and tissue products. These two categories account for over 63% of all certified products in Poland, and for over 55% in the EU. What is

more, in Poland, the third largest category is: hard surface cleaning products (11.8%), whereas in the EU it is textiles (8.8%). The detailed data are presented in Table 5.

Table 5.

The percentage value of the EU Ecolabel certified products in individual groups

Category	The percentage share of each product group	
	Poland	The EU
Indoor and Outdoor paints and varnishes	46.4%	38.7%
Tissue paper and tissue products	17.1%	16.8%
Textiles	7.6%	8.8%
Hard coverings	0.0%	8.7%
Hard surface cleaning products	11.8%	6.6%
Graphic Paper	7.2%	3.8%
Rinse-off cosmetics products	3.2%	3.1%
Wood-,cork- and Bamboo-based Floor Coverings	0.0%	2.5%
Furniture	0.0%	1.8%
Hand dishwashing detergents	3.1%	1.3%
Industrial and institutional dishwasher detergents	0.2%	1.2%
Laundry detergents	2.2%	1.0%
Industrial and Institutional laundry detergents	0.0%	0.6%
Tourist accommodation services	0.0%	0.5%
Lubricants	0.0%	0.5%
Absorbent hygiene products	0.0%	0.5%
Detergents for dishwashers	1.0%	0.4%
Printed paper, stationery paper and paper carrier bag products	0.1%	2.8%
Growing media, soil improvers and mulch	0.0%	0.2%
Indoor cleaning services	0.1%	0.1%
Footwear	0.0%	0.1%
Bed mattresses	0.0%	0.0%
Animal care products	0.0%	0.0%
Electronic displays	0.0%	0.0%
Hard covering products	0.0%	0.0%
Cosmetic products	0.0%	0.0%

Source: own elaboration based on (The EU Ecolabel Product Catalogue, 2022).

To assess a statistically significant difference between the percentages, a two-sided test of the difference between the two structure indices was carried out (Stanisz, 2006). The level of significance was assumed at $\alpha = 0.05$. As the test does not count in the cases where at least one value is lower than 2, product categories not meeting this condition were omitted from the calculations. The obtained values of the test probability p are presented in Table 6.

Table 6.

The two-sided test of EU Ecolabel product category structure indicators

Category	The percentage share		The value of the test probability p
	Poland	The EU	
Indoor and Outdoor paints and varnishes	46.4%	38.7%	0.001*
Tissue paper and tissue products	17.1%	16.8%	0.910
Textiles	7.6%	8.8%	0.691
Hard surface cleaning products	11.8%	6.6%	0.015*
Graphic Paper	7.2%	3.8%	0.111
Rinse-off cosmetics products	3.2%	3.1%	0.972

Cont. table 6.

Hand dishwashing detergents	3.1%	1.3%	0.357
Industrial and institutional dishwasher detergents	0.2%	1.2%	0.897
Laundry detergents	2.2%	1.0%	0.551
Detergents for dishwashers	1.0%	0.4%	0.598

Source: own elaboration based on (The EU Ecolabel Product Catalogue, 2022).

If the value of the test probability $p \leq 0.05$, then the difference in the number of products in a given category is statistically significant. This situation occurs in the case of two categories: indoor and outdoor paints and varnishes and hard surface cleaning products. Thus, the share of these products in the overall structure is statistically more frequent in Poland than in the EU countries. The conducted analyzes confirm the differences in the number of certified products. There are categories where the percentage share of products is higher in Poland than in the whole EU. These are mostly: indoor and outdoor paints and varnishes or hard surface cleaning products. On the other hand, products that are much more likely to obtain the EU Ecolabel certificates in the whole EU than in Poland individually fall into the following categories: hard coverings and wood-, cork- and bamboo-based floor coverings.

5. Conclusions

In the times of growing concern for the natural environment, eco-labels are becoming an increasingly important element of the company's communication system with consumers. Environmental labels seem to be very good tools that inform about the level of eco-friendliness of a product and influence the purchasing decisions of potential buyers. The common and long-standing achievements of the regulatory bodies of the European Union are invaluable in this respect. Thanks to the involvement of specialists from around the world, the voluntary EU Ecolabel certification system is being built, and through Poland's membership in the EU, Polish companies and Polish consumers can benefit a lot.

The conducted analysis has shown that the EU Ecolabel is commonly used in Europe. The various perspectives of data analysis applied in this paper and the elaborated indicators allowed for a more objective assessment of the number of certificates in different EU countries. Poland, as the main subject of this analysis, turned out to be a country in which the popularity of the EU Ecolabel product certification is rather low. For each of the indicators used, the values were below the arithmetic mean calculated for all members of the European Union. Unfortunately, this prompts reflection on the actions that should be taken to improve such situation and encourage companies to voluntarily enter the certification process. Incentives may come from different fields. For example, through the promotion of the EU Ecolabel among consumers. For many of them, information about a reduced environmental impact can be

a decisive purchase determinant. Another solution may be the incentives and reliefs for entrepreneurs offered by the government and local authorities.

A detailed analysis of the categories of EU Ecolabel certified products shows that there are groups in which there is not a single licensed product in Poland, such as e.g., hard coverings and wood-, cork- and bamboo-based floor coverings. It is also worth mentioning that there is not a single EU Ecolabel certified hotel or campsite in Poland. The situation in Estonia may turn out to be a good example while promoting EU Ecolabel products. Despite a relatively short presence in the European community, this country has the greatest number of certified products per capita while from the point of view of economic development and public awareness, this country is very similar to Poland.

Further research on the voluntary EU Ecolabel certification should place emphasis on the development of this instrument and its popularization. This may be done through, for example, consumer awareness research or the benchmarking research with the countries that are leaders of the EU Ecolabel certification. Despite the large number of certified products, there are many opinions referring to the need for further development of requirements in the process of awarding the label. This includes, among other things, taking into account social issues and the longevity of the products placed on the market (Spengler et al., 2020). Also Cordella et al. (2020) draws attention to the necessity of further search for ways to introduce additional material efficiency requirements (e.g., minimum product life). In turn, Barbulescu et al. (2019) have identified some shortcomings of the EU Ecolabel, such as the difficulty to meet the criteria, the lack of awareness, and the lack of consumer interest in this label.

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