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Who Cares for Nature in Rural Areas? Exploration of Relationships between People's Socio-Economic Characteristics and the Perception of Nature as a Value in Poland and Lithuania

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Abstract: Care for nature is becoming one of the most popular topics in the scientific discourse, not only from an environmental perspective, but also in terms of strengthening people's environmental awareness and implementing sustainable development goals. The knowledge and understanding of rural inhabitants' attitude towards nature and their pro-environmental behaviors based on socio-economic characteristics have been less studied compared to those of urban inhabitants. The research aim is to determine the rural inhabitants' socio-economic characteristics that influence their care for nature in Poland and Lithuania. The European Social Survey (ESS) Round 4 (2008) and Round 9 (2018) data were used in the present study. The relationships between the rural residents' attitudes towards nature and the socio-economic variables were assessed using the chi-square test and Cramer's V measure. The findings have suggested that the importance of nature as a value in Poland is greater than in Lithuania. Different sets of statistically significant socio-economic variables were identified in the studied countries. The research has confirmed that gender and education play an important role in the attitude towards nature, as women and more educated people tend to care more for the environment.

Keywords: nature; rural areas; rural inhabitants; socio-economic characteristics; Poland; Lithuania

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1. Introduction

Over the past decade, caring for nature and the environment has become a priority topic for scientists, politicians, practitioners, and the general public in many countries. The idea of sustainable development is gaining importance, both in theoretical and practical terms [1,2], as the environmental component is also very important. While each individual living in a society has heard about the importance of nature, the knowledge and understanding of nature are developed differently in different social groups or even societies. This leads to the development of a personal view of what nature means to "me" and why "I" need to care for it throughout my life course. Since the relationship between the inhabitants' socio-economic characteristics and care for the nature cannot be based on separate individual attitudes, it is largely identified on the basis of population surveys.

The formation of pro-environmental attitudes and behaviors is strongly influenced by the risks posed by global climate change. It is not only scientists and policy-makers, but also a major part of the general public who are concerned about how the environmental changes posing an existential threat might affect human population [3].

The scientific literature analyzes various attitudes representing how people act, react, and behave in nature [4–7], their emotional/psychological attachment to nature [8,9], and the value of nature for them and how they care for it [10–12]. However, research on the links between the socio-demographic and socio-economic characteristics in relation to

the care for nature has been much less analyzed. Whether caring for nature is a value for those who are concerned about nature or not is a question that this article seeks to answer. The relevance and novelty of this article is justified by several aspects. Since rural residents' attitude towards nature is analyzed much less often than that of society in general, the results of this study expand and complement the existing knowledge about the research object in both countries analyzed, namely, Poland and Lithuania. Inhabitants' perception of nature as a value changes with generational change, and it is possible to evaluate the situation in the rural area by following the time dimension and socio-economic characteristics. Moreover, at the international level, other countries that also participated in the European Social Survey (ESS), the data of which were used in the study, may also conduct similar studies and perform a comparative analysis.

The scientific literature operates plenty of concepts that reveal the connection between the individual and nature. In light of the increasing interest in nature as a value-based research object, several concepts existing in the literature have been identified: nature relatedness (or nature connectedness), interest of nature, environmental interest, ecological thinking, nature's contributions to people, engagement with the natural environment, nature as a value, etc. Hence, this suggests that various scientific studies and surveys indicate the need for further research in this area. The present article concerns rural areas, which generally have vast natural resources. Moreover, these resources may determine the competitiveness of rural areas [13] and quality of life [14], and can be used in the development of the respective areas or the shaping of new functions in the countryside, e.g., tourism [15]. As the urban and rural residents' income and quality of life are growing, increasingly more attention is paid to high-quality services, adequate leisure time, organic and healthy products, and the natural environment. Rural areas are gradually turning into green and leisure infrastructure for urban residents. City dwellers longing for peace and escaping tension and stress flock to rural areas for permanent or seasonal living. Therefore, rural areas also need to monitor and adapt to the changes taking place. At the same time, it is necessary to study and assess the future expectations and priorities of the population as closely as possible with regard to the environment and green infrastructure. This justifies the implementation of research seeking to understand the rural residents' attitudes towards the natural environment as a good.

In view of the above, the research question to be dealt with in this article is: what are the socio-economic characteristics of the inhabitants of Poland and Lithuania and how do they affect the care for nature in rural areas? The object of the research is the relationship between the inhabitants' socio-economic characteristics and the care for nature. The aim of the research is to determine the rural inhabitants' socio-economic characteristics influencing their care for nature. The spatial scope of the research covers Poland and Lithuania. The following hypothesis is tested in the article: the socio-economic characteristics of inhabitants who perceive nature as a value differ between the countries. To achieve the research aim, the following research objectives were formulated:

1. To conceptualize nature as a value concept and disclose the socio-economic characteristics influencing people's attitude toward nature indicated in the literature;
2. To determine the rural area inhabitants' care for the natural environment and indication of changes over time (including changes at the regional level) and its comparison to cities and towns;
3. To determine rural residents' attitude to nature as positive (including changes over time and the regional level) and compare it to that of urban residents;
4. To determine whether the selected variables have an impact on the care for nature and the environment.

The following research methods were: literature analysis and synthesis, abstract method, comparison method, case study, and statistical analysis of data. The research was implemented using the data of the European Social Survey Round 4 (2008) and Round 9 (2018).

The article is structured as follows: first, the literature review from the perspective of the care for nature and exploration of the reasons behind the perception of nature as a value are presented; second, the research methodology is explained, with a focus on the data and research methods used; third, the research results are disclosed; finally, conclusions and discussion are provided.

2. Literature Review

2.1. Conceptualization of Nature as a Value

People's values are diverse. By exploring their values, people describe and justify the importance of their needs, actions, and life priorities. According to scholars, the latter depend on people's characteristics, life experience and life events, and motivation for actions. As suggested by Schwartz et al. [16,17], values may reflect major social change in societies and across nations. An analysis of the scientific literature has revealed that although caring for nature is a cultivated subject influenced by external factors, it is also determined by various personal characteristics: social, demographic, and economic. Understanding the value of nature from the local residents' perspective enables identifying the socio-economic groups that are the most interested in nature and its preservation or, on the contrary, the target groups that might need to be educated in order to raise their awareness for the purpose of the preservation of nature as a value.

The abundance of scientific literature dealing with environmental issues, environmental protection, and climate change emphasizes that people are not only a part of nature, but they themselves are heavily influenced by the changes taking place in nature. Therefore, as a result of people's presence in nature and various economic and social activities, many countries have already realized that it is necessary to make appropriate contributions for the purpose of the conservation of nature [7,18,19]. On the other hand, many scientists acknowledge that people's activities, behavior, and motives depend on their values in relation to nature, e.g., the extent of our concern, care for, or sense of responsibility for the conservation and preservation of nature [4,20,21]. These questions have naturally become part of an international survey in Europe—the European Social Survey [22]. The survey measures the attitudes, beliefs, and behavior patterns of diverse populations on various topics, including issues related to values of care for nature.

Concerns about biodiversity and protected areas also signal the growing environmental awareness. According to the Nature Awareness Study 2019 [23], the majority of inhabitants in Germany agreed that protected areas were important for the preservation of nature for future generations (93%). The Nature Awareness Study 2017 [24] revealed that the population of Germany placed great importance on the sustainable exploitation of the seas, with major focus on the risks to biodiversity due to waste and pollutants.

In addition, Farjon et al. [20] have noted that people's perception of the value of nature partly depends on their beliefs and motives, as well as changes thereof. In addition, the perception of nature as a value is influenced by how people discuss nature-related issues and treat nature, as prior experiences in relation to nature are fairly important, starting with childhood. Furthermore, many studies justify multiple ways in which people may view and value nature, thereby creating a diverse image of nature. The engagement of people with nature (participation in activities involving the natural environment) contributes to the strengthening of the attachment to nature [25].

In the research by Brito et al. [7], almost all of the respondents stated that they had a positive opinion about the protected areas of the analyzed municipality, and the essential aspect for caring for nature was related to decision making and public policy making.

Díaz et al. [6] have pointed out that nature becomes a value for people when it contributes to their lives. This can be viewed from the material approach (defined as substances, objects, and other natural elements), regulating approach (functional and structural aspects that affect people's lives indirectly), and non-material approach (the effects of nature on the subjective and psychological aspects that influence both the individual and collective quality of life).

According to the research by Anderson, Krettenauer [9], emotional connectedness is one of the strongest predictors of pro-environmental behavior, as suggested by the analysis conducted by the authors. Moreover, their research has shown that adults displayed significantly higher levels of emotional connectedness to nature and pro-environmental behavior in comparison to adolescents and that females show higher levels of both emotional connectedness to nature and pro-environmental behavior compared to males, and that urban and rural participants significantly differed in their levels of pro-environmental behavior.

Wang et al. [21] examined the relationships between adult interest in scientific issues and relatedness to nature. The authors described nature relatedness (or nature connectedness) as a psychological construct that can reflect an individual's perception of his or her relation to the natural world. It is also clear that nature relatedness is associated with ecological thinking. Ecological thinking defines how humans and the environment are related. It originates from factors such as values, beliefs, and attitudes that lead the individuals to engage in specific behaviors and actions [5,6,11]. In fact, nature relatedness appears as an individual interest and as a reflection of positions (positive/negative) regarding the natural environment and environmental issues. If citizens' connection to and experiences in nature encourage them to be and act in nature, this gives rise to a positive perception of nature [26]. Otherwise, in the case of negative experiences associated with being in nature, a negative attitude towards nature develops.

The analyzed literature disclosed that, from the perspective of society, the care for and preservation of nature is important for the following: public policy decisions concerning nature and its measures; economic decision making related to investments and economic activity; promotion of an inclusive society and securing better wellbeing for all social groups.

2.2. Determinants of Perception of the Natural Environment as a Value

There are several studies that demonstrate gender and education being among the key determinants of an environmental attitude. Women and more educated individuals have higher level of environmental awareness than men and people with a low level of education [27]. Their research led to a conclusion that people with a higher education and women are more likely to pay more for environmentally friendly products. In their studies, authors Schultz et al. [10] and DeVille et al. [28] found that environmental attitudes are largely understood individually and constructed socially as an individual's beliefs affect behavioral intentions regarding nature and environmentally related activities or issues. Raymond et al. [29] put emphasis on place attachment, where nature as an attribute of a particular area stresses the connection between the individual, community, and nature.

According to a survey in the recently published Eurobarometer report "Future of Europe" [19] evaluating different values, major global challenges, and priorities, the respondents claimed that the environment and climate change (39%) should be prioritized, four in ten respondents (38%) said that the European Union (EU) best embodied respect for nature and the environment, and at least eight in ten mentioned various environmental objectives that were very or "fairly" important to them personally. According to the same report, at least one in five respondents in Poland (23%) and only 5 percent of the respondents in Lithuania pointed out the respect for nature and claimed that the environment was best embodied by other countries rather than in their native country. More diverse attitudes were observed in relation to the respect for nature and the environment compared to other values: men, respondents in the age group 15–39, respondents who completed education at the age of 20 or more, the self-employed, managers, students, and the respondents who experience the least financial difficulties are most likely to consider that respect for nature and the environment is best embodied by the EU. For all other groups, respondents are most likely to say that this value is best embodied by the EU and others. For example, 41% of men claimed that respect for nature and the environment was best embodied by the EU, while 38% believed it was best embodied by the EU and other countries. According to 35% of the women, it was best embodied by the EU and 42%—the EU and other countries.

According to the findings by Gifford and Nilsson [30] and DeVille et al. [28], time spent in nature is associated with better pro-environmental attitudes and behaviors. The authors have emphasized that time spent in nature is reflected in the values ascribed to nature and nature connectedness, and this depends on personal and social factors (e.g., age, gender, socio-economic status, geographic location, urban–rural differences, and socio-economic status). The need for research at the population level that integrates mentioned factors increases when it is aimed at gaining a better understanding of the society, its attitudes, intensities, and envisaging political and educational measures to strengthen environmental awareness [29,31]. The authors' idea is that the associations between childhood, nature exposure, and time spent in nature have an impact on these people's future and attitude to nature and its preservation. Several research studies have demonstrated that aging has a positive effect on the perception of nature [18,28]. Starting with childhood, these demographic contexts predict environmental attitudes and behaviors in adulthood. The authors have also noted that time spent in nature increases the importance of nature as a value. This finding is supported by many researchers, as nature has a mostly positive impact on human consciousness, health, and overall wellbeing, and this value can be nurtured and developed throughout life.

The peculiarities of the living place are also associated with nature, regardless of where one lives. A sense of living place is an important factor in nature-related population studies; in particular, when the rural–urban relationship is discussed [32]. Gress and Hall [32] and Kyle and Chick [33] explored that sense of place as an individual's emotional and interpretative reaction to and interaction with a specific physical environment, including the personal meanings assigned to the place. A sense of place related to nature, as Gress and Hall [32] noted, induces the feelings of integration and inclusion. Moreover, for some individuals, where one lives is a part of their identity.

According to the research implemented in the US, the urban and rural population have significantly different attitudes toward environmental issues [34]. The research has revealed that the rural residents pay more attention to the farmland conservation and less to climate change compared to urban/suburban residents. A strong place identity also has a significant impact in shaping the attitude of the rural population towards environmental conservation. The majority of the rural population usually identify themselves as environmentally conscious persons, but often oppose or have doubts about the existing environmental policies. The rural population is closely linked to the local natural environment and wants to be involved in the management of local resources.

The rural–urban differences and distinction in the evaluation of nature as a value was analyzed by Maller et al. [35]. They revealed that urban people may have little or no contact with nature if they feel separated from nature and it is not part of their experience. Moreover, this creates the challenge of urban people finding it difficult to value and care for the environment. Similar conclusions can be drawn from the studies on the rural and urban children's relationship with nature in Mexico [36]. According to the findings of the study, children living in the countryside (in particular, the girls) have a stronger sense of connection with nature and behave in a more pro-ecological way than the children from the city. In the analysis of activities involving the natural environment, Stewart and Eccleston [25] found out that the rural residents were more likely to participate than those living in urban areas. This idea is supported by Bashan et al. [37]. In their study, they found that, regarding the urbanization process, urban lifestyles increased people's disconnection from nature, referred to by the authors as the "extinction of experience". These findings highlight that the decreasing opportunity to interact with nature reduces cognitive and affective relations with nature. This leads to an assumption that urban living creates a lower level of nature relatedness and values such as care for nature, sense of belonging to the place, and lower connectedness to nature compared to the rural residents.

According to Farjon et al. [20], compared to younger people, older people give higher ratings to the naturalness of nature, and a longer experience with nature promotes a high evaluation of nature as a value. Stewart and Eccleston [25] also found that the respondents

aged 35+ were more likely to garden and/or watch or listen to nature programs than on average. This insight is also supported by a few other authors [28,31] who proved that even reading or listening about nature also promotes nature as a value feeling, because they feel aware of the environmental issues.

According to the findings of the exploratory study by Nestorová Dická et al. [12], the personal economic situation, age, education level, and profession influence the locals' attitude towards nature (mostly national parks based on the focus of the research).

The Europeans have contrasting opinions and experience in dealing with nature. Farjon et al. [20] noted that the responses from people with a low level of education were rather poor and they were less capable of expressing their perception towards nature as a value and answering environmental questions. This implies that environmental education in various forms can be a good option to promote environmental awareness and experiences.

2.3. Socio-Economic Characteristics and Their Relationship to Care of Nature

Recently, the conflict between economic development, increase in material goods, unstoppable use of natural resources, and environmental pollution has become increasingly noticeable. There is an increasing focus on environmental issues in economically developed countries, with an emphasis on nature as a value. Nevertheless, it must be acknowledged that there are very few research studies analyzing in detail the inhabitants' attitudes towards nature; in particular, in the international context.

There is a direct link between the formation of a pro-ecological approach, strengthening of environmental awareness, and the income level of the population [27]. This is due to the increasing demand for organic products and environmental services (such as landscape amenities favorable for recreation). With the rise in living standards in the developed countries and the formation of the middle class, there has been a greater demand for leisure and comfort goods and services, including ecosystem services and, in particular, landscape amenities. People demand companies to reduce pollution and waste, and expect other people to have a more sustainable and pro-environmental approach toward consuming and being in nature [38]. It should also be noted that pro-environmental attitudes and behaviors are shaped by the application of corporate environmental responsibility principles in the workplaces. Adherence to environmental standards at companies is becoming a marketing tool and a competitive advantage [39].

The increasing recognition of recreational and health functions of the natural environment reveals the formation of a pro-environmental approach. According to the Scotland People and Nature Survey 2019–2020 [25], three-quarters of adults agreed that their last outdoor visit helped them "to relax and unwind" (75%) and almost as many strongly agreed that the "experience improved their physical health" (71%) or that the "visit had made them feel energized and revitalized (69%)".

According to Mears et al. [31], the accessibility of local greenspace favors people living in more deprived areas. They identified that, for those belonging to minorities (with lower socio-economic status), attractable nature was within walking distance of working-class neighborhoods. However, groups with a higher socio-economic status placed a higher value in relation to the opportunities for individual recreation in nature [40,41]. Hence, this signals the importance of location or nature quality and the reasons behind the formation of natural/green places (parks, walking paths, etc.). This can be viewed as a factor of the acceptability of nature for a particular social group or can provide maximal public satisfaction when being in and using nature, employing it as a facilitator for socialization. Moreover, the availability of green space (especially if within walking distance and not requiring any travel expenses) was also mentioned by some scholars as a factor for being in and caring for nature by the deprived area residents [5,42].

The findings by Nestorová Dická et al. [12] support that people working in tourism have more positive views towards nature and the natural parks analyzed by the researchers.

This suggests an assumption that, regarding nature-based values, connectedness to nature depend on the person's economic activity or occupation.

Mears et al. [31] and DeVille et al. [28] found that, in the case of higher-income and relatively homogeneous populations, there are limited opportunities to compare them to the urban versus rural perspective in relation to nature. The socio-economic status can become a significant barrier in the formation of childhood nature experiences, which is reflected in the connection with nature in adulthood.

Research conducted by Monus [43] revealed that the activities by the educational institutions and educational programs have a significant influence on the formation of pro-environmental attitudes and behavior. It was concluded that the factors influencing students' pro-environmental attitudes and behaviors were related to the students' socio-economic status, place of residence (type of settlement and region of the country), and parental education.

An analysis of the works by different authors emphasizing the importance of socio-demographic and socio-economic characteristics in caring for nature (Table 1) has suggested that some of the characteristics were more often repeated in the works of different authors, whereas others were mentioned more in individual cases.

Table 1. The importance of socio-economic and demographic characteristics in caring for nature.

Authors (Year)	Characteristics						
	Age	Gender	Living Context/Environment	Place of Living (Type of Territorial Units)	Income	Socio-Economic Status	Education
Mónus (2022) [43]	+	+	+	+		+	+
Anderson and Krettenauer (2021) [9]	+	+	+	+			
Bashan, Colléony, Shwartz (2021) [37]			+	+		+	
DeVille et al. (2021) [28]	+		+	+	+	+	
Stewart, Eccleston (2020) [25]	+		+	+		+	
Duron-Ramos et al. (2020) [36]	+	+		+		+	
Nestorová Dická et al. (2020) [12]	+		+	+	+	+	+
Mears et al. (2019) [31]	+			+	+	+	+
Gress and Hall (2017) [32]			+	+		+	
Farjon H. et al. (2016) [20]			+		+	+	+
Gifford and Nilsson (2014) [30]	+	+		+		+	+
Raymond et al. (2010) [29]			+	+		+	

Source: own elaboration.

Summarizing the theoretical approaches, different social groups should be mentioned, as nature users have varying preferences and other subjective reasons behind their views towards nature as a value. Moreover, it should be pointed out that population-subjective (individual) characteristics are the factors that highlight their priorities in terms of the care for nature.

Individual's subjective opinion and attitudes about nature are detailed in many scientific sources. However, the report by Farjon et al. [20] highlights that, over the past decades, only few international, including several country-based, representative surveys have been carried out to explore changes in the values of nature. Furthermore, according to the findings by DeVille et al. [28], data gaps and limitations in the exploration of the change in individual perceptions towards nature over time exist even in international literature and cross-sectional studies. Several authors [5,28,31] conducted their own research and agreed that there was a need for subsequent multinational studies in the field of the subjective perception of nature as a value and the reasons behind people using or not using the nature because it depends on various factors.

3. Research Methodology

Data sources and processing thereof. The European Social Survey (ESS) is one of the major cross-national surveys and measures the subjective attitudes, beliefs, and behavior patterns of diverse populations. This survey includes a question related to the care for nature or nature as a value [22]. Accordingly, the authors of the present article put emphasis on the comparison of two countries—Poland (PL) and Lithuania (LT). These are neighboring countries, and this suggests an expectation to identify similarities and differences between countries based on the analyzed research object. Moreover, the selected countries are as close to each other as possible in terms of socio-economic development and share similar historical and cultural context. On the other hand, the rural population in both countries constitutes a large part of society, the opinion of which is equally important (the data are provided in Table 2). Whereas, until the beginning of the 21st century, intensive agriculture dominated the rural areas of Lithuania and Poland, after joining the EU in 2004, much more attention has been paid to sustainable rural development: organic agriculture, the development of alternative activities to agriculture, recreational potential, preservation of the cultural landscape, biodiversity, cultural heritage, and vital rural communities. Environmental instruments are more often integrated into agricultural policies, leading to the sustainable development of rural areas. Hence, it was decided to conduct a study of the rural residents' attitudes towards the natural environment in these countries in cooperation between the Polish and Lithuanian universities. The data for the analysis and comparison were available for both countries in the ESS. The positive aspect related to the ESS data is that they enable a comparison of the selected variables (indicators) by using the time dimension besides other dimensions. Consequently, the ESS Round 4 (2008) data could be compared as the first available for Lithuania (Lithuania joined the ESS that year) and Round 9 (2018) as the most recent data available for the both countries.

Table 2. Selected data on Poland and Lithuania.

Indicator	Poland	Lithuania
Population 2021 [44]	37,781,024	2,795,321
Area km^2 2021 [45,46]	311,895	65,286
Population density 2021—Persons per square kilometer [47]	123	45
Agricultural land (% of land area) 2018 [48]	47.4	47.1
Forest and other wooded land (% share of land area) 2020 [49]	30.97	36.12
HDI 2019 [50]	0.880—position 35	0.882—position 34
Rural population (% of total population) 2021 [51]	40	32

Source: own elaboration based on [44–51].

The study geographical outreach. The research concerned two neighboring countries of Central and Eastern Europe, i.e., Poland (PL) and Lithuania (LT) (Figure 1).

Both countries are characterized by a similar path of economic transformation from a centrally planned economy to a market economy. The analyzed countries joined the EU in 2004.

Poland is a country with a much larger territory than Lithuania. Poland has a population of 37.8 million, whereas Lithuania—2.8 million (Table 2). Both countries are characterized by a similar level of development. The percentage of land used for agricultural activity is similar in the analyzed countries; however, in Lithuania, forest cover is greater. The rural population constitutes 40% of the population in Poland and 32% of the total population in Lithuania.

Figure 1. Poland (PL) and Lithuania (LT) as a research area.

The following territorial units used by the ESS were applied to the exploration of people's attitudes toward nature in this research: big city, suburbs or outskirts of a large city, town or small city, country village, farm or home in the countryside. On this basis, following the aim of the present article, rural areas were considered to include a countryside village and a farm or home in countryside in the present article. For the purpose of a more objective view towards the cities, large cities were combined with suburbs or outskirts of a big city. Hence, several categories representing the respondents' living place were used. This enabled a comparison of both countries by different territorial units. The sample size for both countries was formed under the ESS sampling methodology [52] and is presented in Table 3.

Table 3. The sample size of Poland and Lithuania.

Country / Living Place	Poland		Lithuania	
	2008	**2018**	**2008**	**2018**
Cities with suburbs	481	338	744	482
Town or small city	533	498	623	549
Rural areas (country village + farm or home)	600	664	614	801
Total (*n*) *	1619	1500	2002	1835
Percentage of rural respondents from all respondents	37.1	44.3	30.67	42.65

* Note: the sample size includes the number of respondents who did not indicate a place (refusal, don't know). Source: own elaboration based on ESS Round 4 and Round 9.

As mentioned in the theoretical part, caring for nature is determined by various characteristics: social, demographic, and economic. When selecting the variables for further research, substantive criteria (see Table 1) and statistical criteria, i.e., data availability in the ESS, were taken into account. The final set of variables (indicators) selected for evaluation in relation to nature as a value are provided in Table 4.

Table 4. Variables (indicators) selected/chosen for evaluation in relation to nature as a value based on ESS Round 9 (2018).

Number	Variables (Indicators)	Abbreviation
x1	Worked in another organization or association last 12 months	Work in organization or association
x2	Gender	Gender
x3	Age of respondent, calculated	Age
x4	Relationship with husband/wife/partner currently living with	Type of relationship
x5	Ever had children living in household	Children
x6	Years of full-time education completed	Education completed
x7	Main activity last 7 days	Main activity
x8	What type of organization work/worked for	The type of organization (workplace)
x9	Paid work in another country, period more than 6 months last 10 years	Paid work in another country
x10	Main source of household income	Income
x11	Feeling about household's income nowadays	Feeling about household's income

Source: own elaboration.

Certain data on specific questions related to the presented topic, including the nature aspect, are described on the official website of the ESS. The ESS questionnaire includes a well-established 21-item measure of human values developed by an Israeli psychologist, Shalom Schwartz. The Human Values Scale was created to classify/rank the respondents according to their basic value orientations. The Human Values Scale has been included in every ESS round to date [53]. According to Schwartz et al. [17], in the human value evaluation, the respondents are asked to indicate how similar the person described in the item is to themselves. This reveals that people not always say what they think, but, in many cases, they compare themselves to others. For example, concern for nature is kept as a universalism item and the statement in the ESS questionnaire is defined as follows: "Now I will briefly describe some people. Please listen to each description and tell me how much each person is or is not like you. Use this card for your answer. She/he strongly believes that people should care for nature. Looking after the environment is important to her/him". The values and categories for evaluation range from 1—"Very much like me" to 9—"No answer", where both positive and negative values are present. In addition, the concept of universalism includes understanding, appreciation, tolerance, and protection, both for human beings and for the natural environment [16,17].

The statistical analysis assessed the relationship between the rural residents' attitude toward nature and selected socio-economic variables in Poland and Lithuania. The chi-squared test was used for each variable selected as a whole for the ESS Round 9 data. In addition, Cramer's V measure was used to assess the strength of relationships between the variables. The Stata statistical package was used.

The research results were analyzed using the IBM SPSS Statistics 27 and presented graphically in the form of graphs, tables, and maps using the QGIS software (QGIS 3.10.13-A Coruña, Open Source Geospatial (OSGeo), Beaverton, WA, USA).

Research limitations. The limitations in the implementation of the study and the formulation of conclusions were related to the fact that, in separate rounds of the ESS, the researchers of the research presented herein did not have panel data, and, in both countries, interviews with various respondents in subsequent years were used. Moreover, certain characteristics/data about the respondents, combined with attitudes towards the natural environment in accordance with the scientific literature, were not available in the ESS and could not be considered for the analysis. The limitation for such research in future is mostly related to the fact that the ESS data on nature is not necessarily repeated in all ESS rounds. This limits the possibilities of monitoring rural inhabitants' attitude changes over time.

4. Research Results

4.1. Care for the Natural Environment in Rural Areas

When describing people's attitudes towards nature as positive, the following question from the ESS was used: Caring for the environment is important to her/him. Hence, the following obtained answers were analyzed: 'very much like me' (1), 'like me' (2), 'somewhat like me' (3), 'a little like me' (4), 'not like me' (5), 'not like me at all' (6). This showed whether and to what extent the respondent shared this statement (an answer of 'very much like me' means the highest concern for nature as a good, and the answer 'not like me at all'—the lowest). It was assumed that the individual answers meant: 'very like me and like me' (very high and high importance of nature as a good), 'somewhat and a little like me' (medium importance), and 'not like me and not like at all' (low importance). In some cases, the answers 'not like me' and 'not like me at all' were combined due to the low percentage of these responses and for optimal clarity of the presentation of the results.

The perception of nature differed markedly in the studied countries and changed over time (Figure 2).

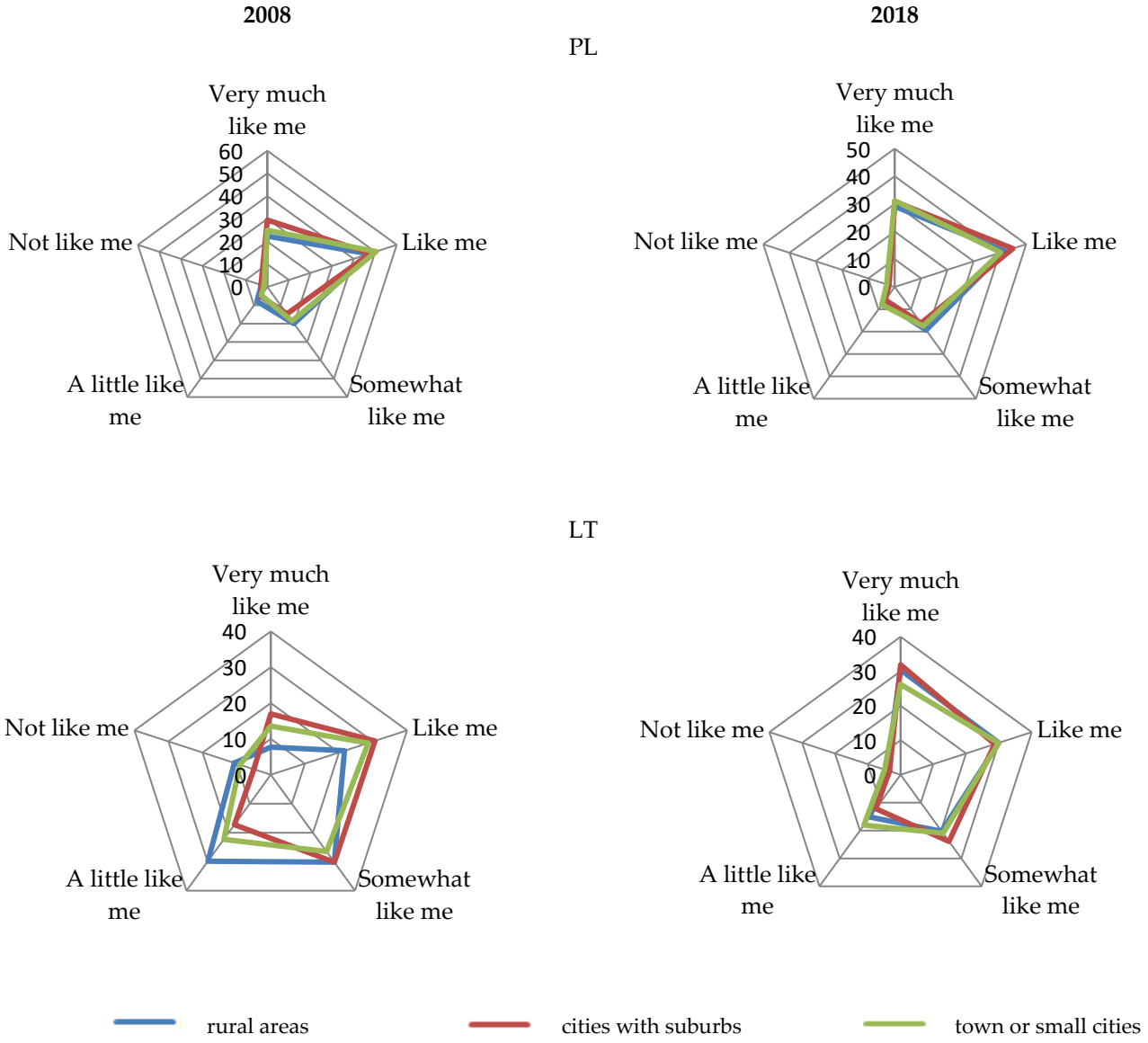

Figure 2. Assessment of residents' care for nature in Poland (PL) and Lithuania (LT) by place of residence in 2008–2018 (%). Source: own elaboration based on ESS Round 4 and 9.

In 2018, however, no significant differences were found between the perception of nature as positive by inhabitants of rural areas and large cities or towns. The highest percentage of responses in Poland, regardless of the place of residence, was the answer 'like me' (important nature), and it was the highest in large cities. In Lithuania, the answer 'very much like me' (nature very important) was most often indicated, both in the rural areas and in cities. There were visible changes in the inhabitants' attitudes over time, when concern for nature was increasing. In particular, in Lithuania, a similar perception of natural values as positive by the inhabitants could be noticed. Changes in attitudes over time were very clearly visible in rural areas, where, in 2008, 7.7% of the inhabitants chose the 'very much like me' answer, whereas, in 2018, it was already 30.4%.

The perception of nature as a value also varies regionally and by rural areas (Figure 3). In Poland, a relatively high level of care for the natural environment was found among the rural residents in all regions, both in 2008 and 2018. In 2018, the greatest concern for the environment was expressed by the residents of Łódzkie, Pomorskie, Świętokrzyskie, Warmińsko-Mazurskie, Zachodniopomorskie, and Lubelskie voivodships (over 80% of the total responses). The relatively smallest percentage of people described nature as an important value for them in the regions of western Poland, i.e., in Lubuskie, Dolnośląskie, and Śląskie voivodships (less than 60% of the total responses). This may be due to the industrial nature of these areas. Lithuania had a lower level of concern for the natural environment than in Poland. However, in all regions of Lithuania, there were clear changes over time, with increasingly more people recognizing the concern for nature as very important or important for them (answers of "very much like me" and "like me"). In 2018, the highest percentage of these indications was found in the following regions: Taurage and Kaunas (approximately 73% of all responses), and the lowest in the regions: Alytus and Vilnius (less than 40%).

Based on the statistical analysis (Table 5), it can be concluded that, in both countries, there was a significant relationship between the care for nature as positive and the region as the inhabitants' place of residence.

Table 5. The relationship between the appraisal of nature as a value and region of residence.

Variable	Poland		Lithuania	
	χ^2 Statistics *	Cramer's V	χ^2 Statistics *	Cramer's V
Region	**248.51**	0.22	**186.99**	0.18

* Note: the bold values denote statistical significance at a level of 0.05. Source: own compilation based on ESS Round 9.

4.2. Socio-Economic Profile and Respondent's Residence

In order to establish the relationship between the level of care for nature as a value and the variables selected on the basis of substantive criteria, the chi-squared test was used (Table 6). It was found that, in Poland, a statistically significant impact on the protection of the natural environment as a value was made by variables such as: age of a person (x3), relationship with the person you live with (x4), length of study period (x6), and feelings about household income (x11). On the other hand, in Lithuania, other variables determined the level of care for the environment: gender (x2), the fact that there have ever been children in the household (x5), the type of organization in which this person works (x8), staying abroad for work purposes (x9), and the type of main household income (x10). Cramer's measure revealed that, among the examined variables, the type of relationship, living with children, and feelings about the current income showed the strongest link with rural inhabitants' attitudes towards nature in both countries.

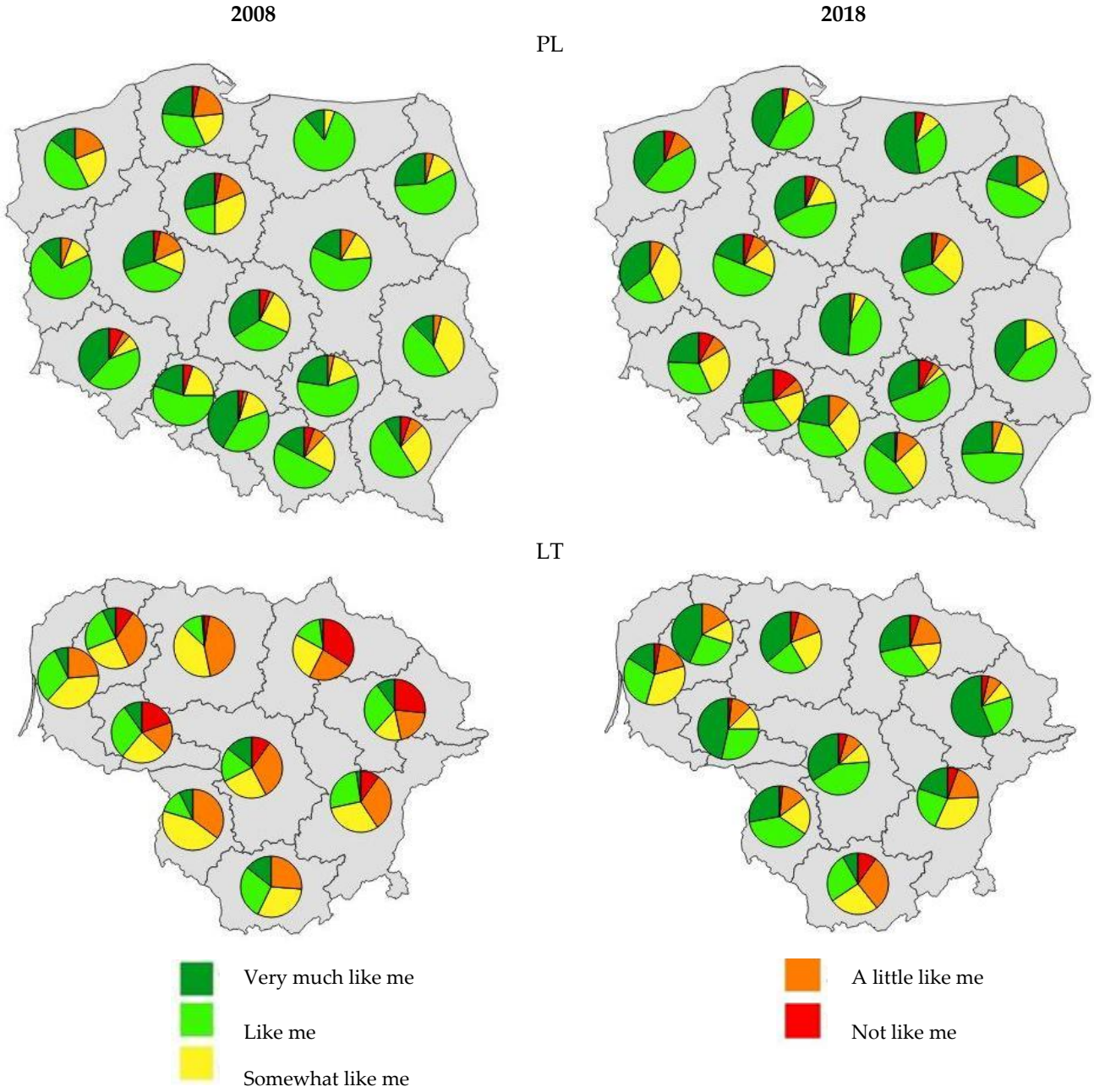

Figure 3. Attitudes of rural residents towards the natural environment in the regions in Poland (PL) and Lithuania (LT) in 2008 and 2018 (%) (ESS question: Looking after the environment is important to him/her). Source: own elaboration based on Round 4 and 9 ESS.

Table 7 presents the rural residents' concern for the environment in Poland and Lithuania in 2008 and 2018 for selected variables (the variable *marital status* is differently defined in individual ESS rounds, making it impossible to perform a comparison over time, and was therefore omitted). Generally, it could be claimed that, in Poland, better care for the environment was observed compared to that in Lithuania. According to the 2018 data, women tended to view nature more as a valuable positive, regardless of the country. Among the women, the perception of the environment as important increased over time and was more evident in Lithuania. Elderly people (over 70 years of age) cared about the environment the least in all age groups. This may be related to the fact that, in the past, not much attention was paid to the natural environment and there was no education in this area. In both Poland and Lithuania, people who worked in an organization or association

in the last year cared more about the natural environment, regardless of the year of the study. It was similar in the case of education—the longer the learning process lasted, the greater the concern for the environment. In both countries, those with an income that allowed them to live comfortably cared about the environment the most. As for the main source of household income, in Poland, people living on paid work cared more about the environment, whereas, in Lithuania, those working in education cared the most about the environment.

Table 6. The relationship between the appraisal of nature as a value and rural inhabitants characteristics.

Variables	Poland		Lithuania	
	χ^2 Statistics *	Cramer's V	χ^2 Statistics *	Cramer's V
Work in organization or association	3.24	0.07	6.37	0.09
Gender	5.45	0.09	**29.47**	0.20
Age	**28.33**	0.12	15.32	0.08
Type of relationship	**12.08**	0.17	7.74	0.14
Children	5.79	0.13	**13.39**	0.16
Education completed	**23.35**	0.14	14.54	0.10
Type of organization (workplace)	10.61	0.08	**33.43**	0.13
Paid work in another country	1.5	0.05	**11.38**	0.13
Income	9.88	0.07	**21.34**	0.10
Feeling about household's income	**26.21**	0.12	16.18	0.10

For variable x7 (relationship type), the relationship was not tested due to the small number of responses. * Note: bold values denote statistical significance at the level of 0.05. Source: own compilation based on ESS Round 9.

Table 7. Care for the environment in rural areas in Poland and Lithuania in 2008–2018 by selected variables (mean).

Variables	Poland		Lithuania	
	2008	2018	2008	2018
Gender				
Male	**2.29**	2.41	3.24	3.18
Female	2.34	**2.28**	**3.14**	**2.63**
Age				
Up to 30 years	2.37	2.32	3.22	**2.70**
30–50 years	2.26	**2.26**	3.23	2.78
50–70 years	**2.09**	2.29	**3.09**	2.71
Over 70 years	2.77	2.77	3.26	3.06
Work in organization				
Work in organization or association (yes)	**1.96**	**2.09**	**2.6**	**2.16**
Work in organization or association (no)	2.33	2.35	3.21	2.82

Table 7. *Cont.*

Variables	Poland		Lithuania	
	2008	**2018**	**2008**	**2018**
Paid work abroad				
Paid work abroad (yes)	**2.16**	2.33	3.25	2.92
Paid work abroad (no)	2.26	**2.31**	**3.18**	**2.67**
Income feeling				
Living comfortably on present income	2.62	**2.04**	3.75	**2.64**
Coping on present income	2.31	2.33	**3.15**	2.80
Difficult on present income	2.27	2.36	3.16	2.84
Very difficult on present income	**1.82**	3.40	3.37	2.82
Education (completed)				
0–8	2.64	2.52	3.31	3.25
9–14	2.22	2.34	3.22	2.72
15 and more	**2.01**	**2.05**	**3.02**	**2.26**
Main activity				
Paid work	**2.23**	**2**	3.09	2.38
Education	2.44	**2**	**3.03**	**1**
Unemployed, looking for job	2.31	2.5	3.33	2.67
Unemployed, not looking for job	2.4	-	3.33	2
Permanently sick or disabled	2.75	3	3.18	2.6
Retired	2.4	2.25	3.25	2.75
Housework, looking after children, others	**2.23**	2.33	3.49	2
Children in household				
Yes	**2.26**	2.49	3.25	**2.75**
No	2.38	**2.38**	**3.15**	3.01

Answers scale: very much like me (1), like me (2), somewhat like me (3), a little like me (4), not like me (5), not like me at all (6). Note: the highest level of environmental protection in a given category/variable is presented in bold. Source: own compilation based on ESS Round 4 and Round 9.

In both Poland and Lithuania, those who receive income mainly from investments or savings (Figure 4) care for nature the least, whereas the rural area inhabitants in Lithuania care a bit more. The largest difference between countries in terms of environmental concerns was found among the unemployed, followed by those with agricultural income and the self-employed. At the same time, self-employed people in Poland cared for the environment the most among the remaining groups. In Lithuania, people who received wages and salaries cared the most.

Figure 5 shows the rural residents' opinions towards the care for the environment depending on the type of organization that they worked in. In Poland, those working in a central or local government or a state-owned enterprise cared about the environment the most. In Lithuania, the differences in the residents' attitudes towards nature were greater and depended on the place of work. A much greater share of responses also showed that nature was not considered to be as important as in Poland. Those working in the public sector (education or health care) and, similarly to Poland, in a state-owned enterprise, cared about the environment the most.

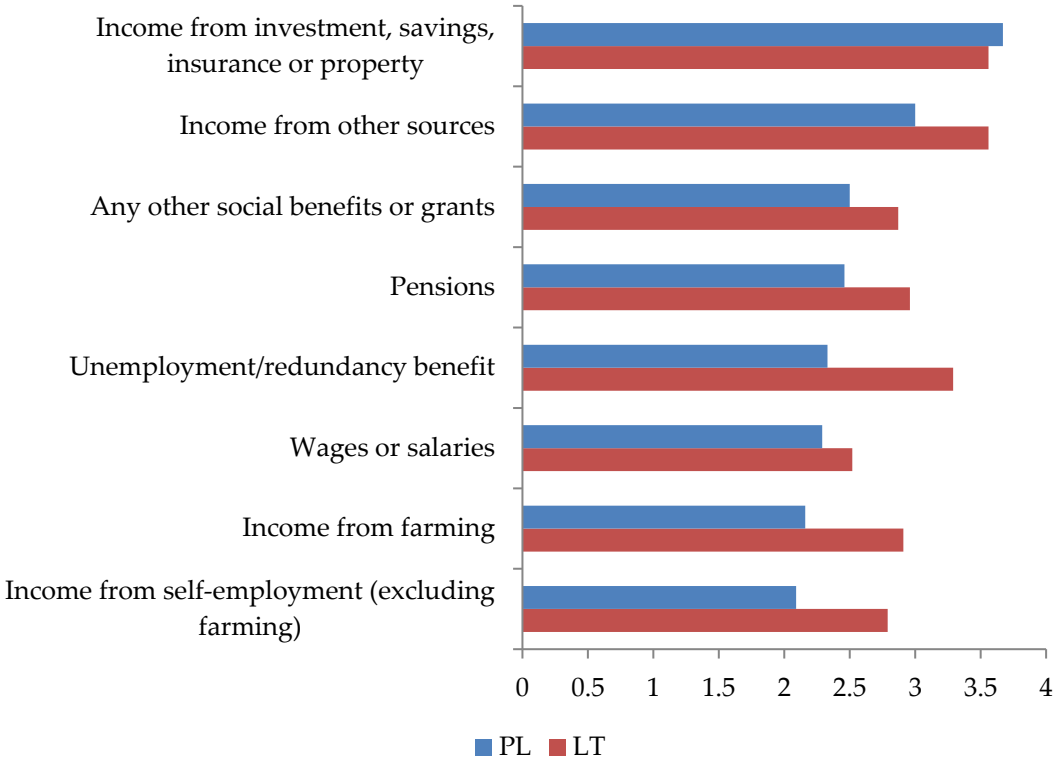

Figure 4. Rural residents' responses in Poland (PL) and Lithuania (LT) by income in 2018 (medium score). Answers scale: very much like me (1), like me (2), somewhat like me (3), a little like me (4), not like me (5), not like me at all (6). Source: own compilation based on ESS Round 9.

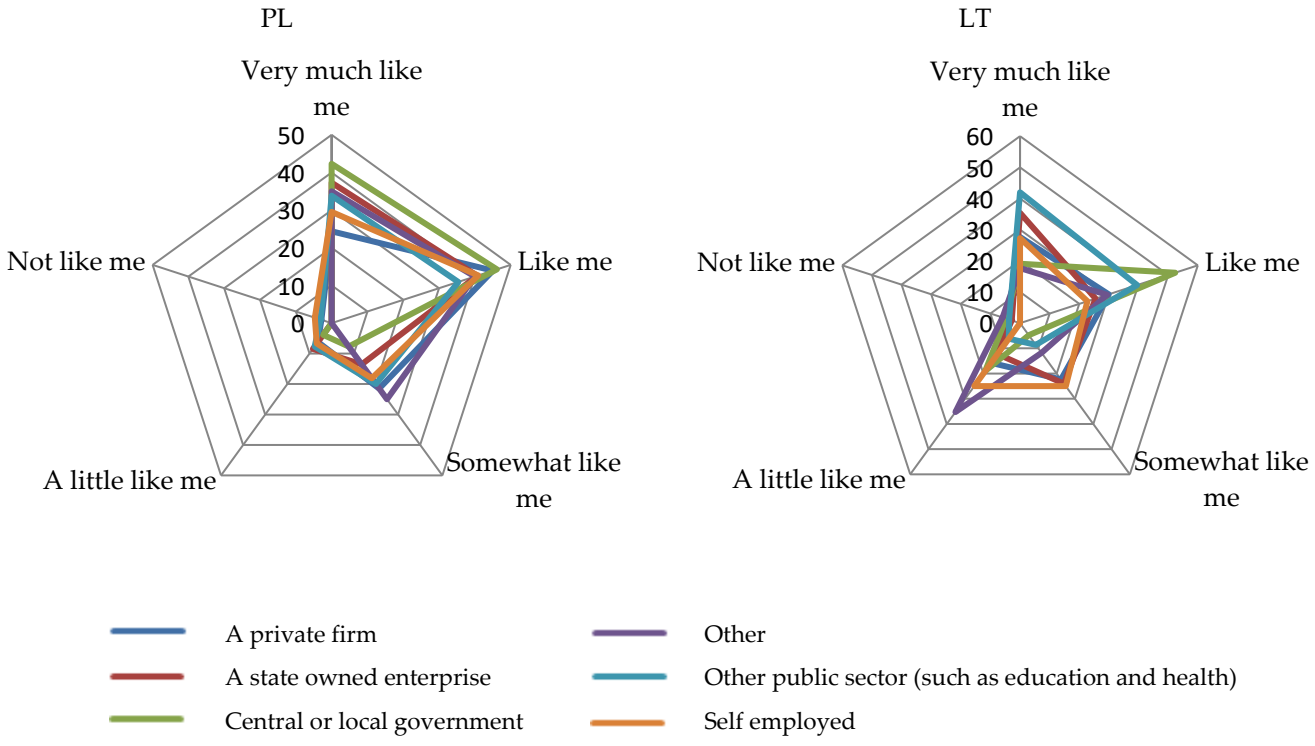

Figure 5. Rural residents' responses in Poland (PL) and Lithuania (LT) by the type of organization (workplace) in 2018 (%) (ESS question: Looking after the environment is important to him). Source: own compilation based on ESS Round 9.

An analysis of the average evaluation of the importance of the natural environment by the type of rural residents' workplace (Figure 6) suggests that, in Poland, unlike in Lithuania, they did not differ significantly.

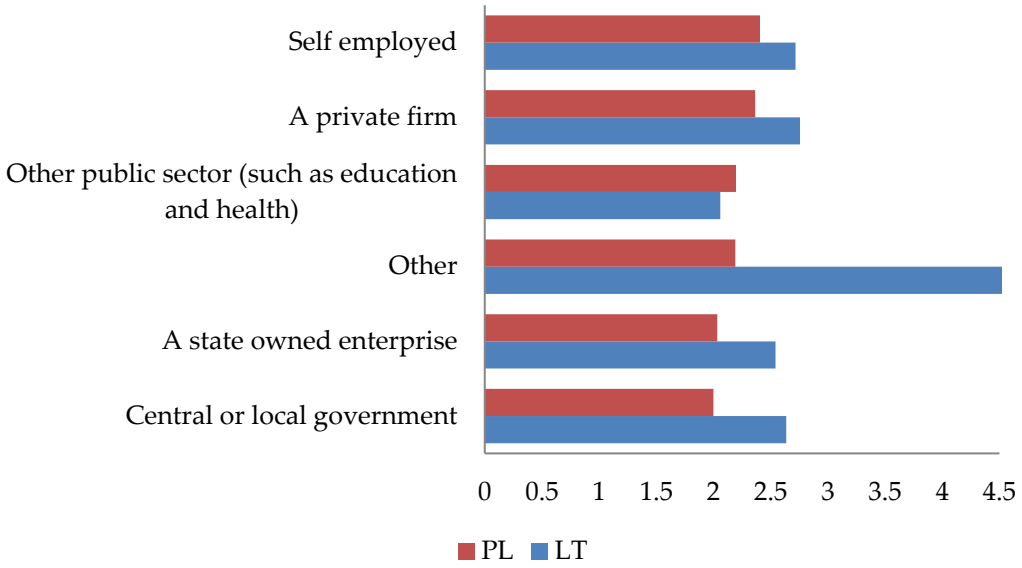

Figure 6. Rural residents' responses in Poland (PL) and Lithuania (LT) by the type of organization (workplace) in 2018 (medium score). Answers scale: very much like me (1), like me (2), somewhat like me (3), a little like me (4), not like me (5), not like me at all (6). Source: own compilation based on ESS Round 9.

In order to show the relationship between the treatment of nature as positive by the rural inhabitants and their satisfaction with life, a statistical analysis was carried out using the chi-squared test. It was found that, in both countries, there was a significant relationship between these variables (Table 8).

Table 8. The relationship between the appraisal of nature as a value and satisfaction with life.

Variable	Poland		Lithuania	
	χ^2 Statistics *	Cramer's V	χ^2 Statistics *	Cramer's V
Satisfaction with life	**133.80**	0.16	**153.89**	0.17

* Note: the bold values denote statistical significance at a level of 0.05. Source: own compilation based on ESS Round 9.

In both countries, the highest number of responses indicating the high importance of the environment as positive (Figure 6) was recorded along, with a high assessment in terms of satisfaction with life (score 7 and 8).

Life satisfaction (as seen in Figure 7) with the highest scores (9 and 10 scores) was observed more in Poland, as, in Lithuania, there were less respondents who were extremely satisfied. The positive side of this evaluation is that there were less respondents in both countries who indicated less than 5 scores, meaning that they were not so satisfied with their life.

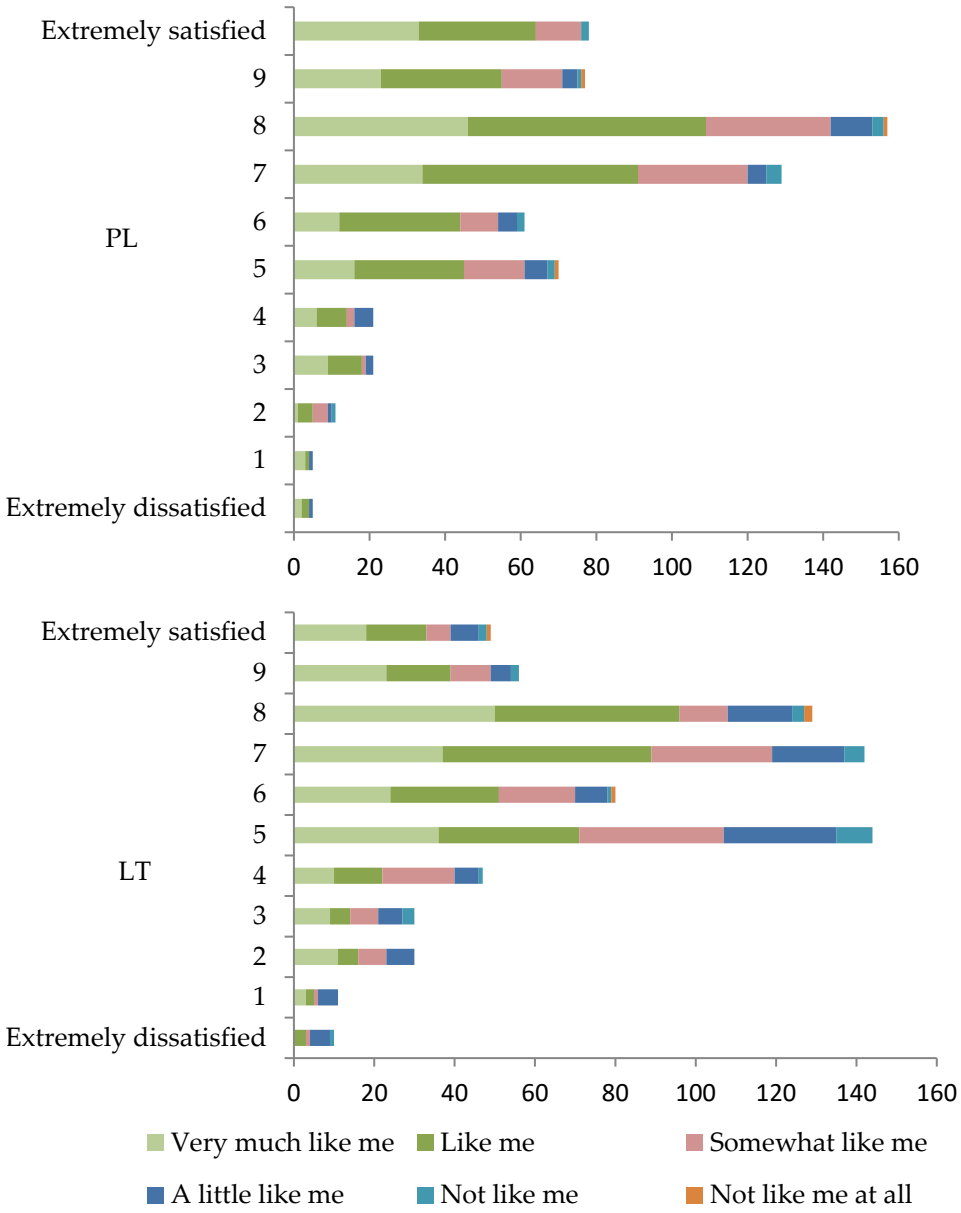

Figure 7. Caring for the environment and the satisfaction with life of rural residents in Poland (PL) and Lithuania (LT) in 2018 (number of responses). The Likert scale was used to assess satisfaction with life, where 0 means extremely dissatisfied, 10—extremely satisfied). Source: own compilation based on ESS Round 9.

5. Discussion

The conducted analysis showed that, in the analyzed countries, there are various factors that determine the perception of nature as positive in rural areas. This confirms the hypothesis. The present research, in the case of both Poland and Lithuania, has confirmed that gender and education are important in the attitudes towards the environment. Women and people who study longer (it can be concluded that they have a higher level of education) care more about the environment. Such a relationship is also indicated by other researchers [20,27]. In addition, different sets of statistically significant socio-economic variables have been revealed in the studied countries, which is also confirmed in the studies by other authors [12].

Previous studies [28,30] have indicated that time spent communing with nature and human aging [18,28] go hand in hand with the change in attitudes towards the natural environment. The time of communing with nature can be combined with living in rural

areas, where the time staying close to nature seems to be longer. The present research has revealed, however, that the rural residents' attitudes in both countries do not differ significantly from those of residents of cities or towns. It should be taken into account that the ESS data used in the study did not allow the researchers to determine how long the respondents were living in the rural areas or in the city/town and where they spent their childhood. This information could be important in explaining the differences in treatment towards nature as a value depending on where the person lives. Moreover, these issues are simultaneously linked to the sense of the place of residence indicated by other researchers [32,33] as important for the inhabitants' attitudes towards nature.

The urban residents' high level of concern for the environment may also be influenced by their education (higher than in rural areas) and frequent trips beyond their place of residence in search of a break from the hustle and bustle of the city. However, in order to explain the dependence on the time for communing with nature and the attitudes towards its protection, it is necessary to conduct further in-depth research. Based on the present research, the aging of people was not found to be linked to a high concern for nature. In both Poland and Lithuania, the comparison of the rural inhabitants' attitudes in 2018 with 2008 suggests that increasingly younger people show greater care for the environment, which may be the result of the intensifying pro-ecological education conducted in recent years in schools. According to Monus [43], this kind of education is important in shaping pro-environmental attitudes and behavior.

Despite the lack of significant differences between the urban and rural inhabitants in terms of care for the environment in Poland and in Lithuania as observed by Bonnie et al. [34], there was a considerable change in the attitudes over time in both countries depending on the place of residence (urban–rural dimension). In 2008, in particular, in Lithuania, the differences between the rural areas and the city/town were very visible. Nonetheless, they were opposite those in other countries, such as the US. It was found that the inhabitants of cities or towns believed in the values of nature more often than the rural inhabitants. This suggests the assumption that other factors, such as those related to the level of development of the country (a significant difference between the US as a highly developed country and the surveyed countries), may play a certain role in shaping pro-environmental attitudes. In both countries, people who have a comfortable life based on their income are more concerned about the environment, which is confirmed by previous research [27].

When analyzing the results of the present research, it should be kept in mind that the knowledge of the residents' attitudes towards nature is the basis for the implementation of the idea of sustainable development in practice. Actions for sustainable development are conditioned by the correct understanding of this concept. People's attitude towards nature may determine their respect for nature and show whether they are able to actually undertake specific economic and social activities [54] consistent with the principles of sustainable development, as well as to ensure constant access to services and resources [55,56]. Treating nature as positive seems to be particularly important in rural areas. On the one hand, rural areas have many natural resources in relation to other areas (e.g., cities). On the other hand, they are important elements determining the development (including agricultural development) and competitiveness of these areas, which translates into the quality of life for the inhabitants. Taking into account the relationships between socio-economic features and the residents' attitudes towards nature as a value identified in Poland and Lithuania, it can be assumed that the implementation of sustainable development goals in the studied countries will require other actions.

6. Conclusions

Based on the literature analysis, it can be concluded that different social groups, which are also the users of natural resources, have different preferences towards the use thereof. In addition, the subjective (individual) characteristics of the population are the factors that emphasize their priorities in caring for nature and the perception of nature as positive.

The study has revealed that socio-economic characteristics are important in assessing the perception and appreciation of nature by the rural population. Research on the pro-environmental attitudes of the inhabitants of rural areas in Poland and Lithuania revealed both differences and similarities in the perception of natural values as positive. In Poland, the importance of nature as positive was greater than in Lithuania. In both countries, considerable changes in attitudes were found over time and were particularly noticeable in Lithuania. In both countries, there were regional differences in the residents' attitudes towards the natural environment.

The identified differences in the rural residents' attitudes in Poland and in Lithuania show that the place of residence is an important factor determining the perception of nature as positive. Moreover, the fact that the place of a person's residence has been considered in almost all studies of people's attitudes towards nature shows that it is reasonable to analyze rural areas separately. On this basis, it can be postulated that it is necessary to conduct research on the treatment of nature as a value in individual countries/regions/cities/villages in order to determine the socio-economic variables that affect the attitudes of the population. A desirable direction for future research would be to identify different types of individuals by countries based on the demographic, social, and economic characteristics. This, in turn, would make it possible to assume effective practical actions in order to shape appropriate attitudes towards nature. These findings enable a comparison of the results of this study with those already performed, and this shows the relevance of this topic.

The inhabitants' attitudes towards nature as a value are relevant for the sustainable development of rural areas, as they determine whether and how different users of natural resources are able to respect them and use them with a view towards the socio-economic development of a given area. Knowledge about the perception of nature by various social groups is also necessary in order to improve political activities, taking into account the current changes taking place in the socio-economic environment. In light of the analysis carried out, it is worth noting that both the scientific research and practical actions are valuable in the enhancement of the perception of nature as a value, and that it is not only scientific research that is important in order to strengthen the rural population's attitude towards nature and environmental issues. In order to involve the rural population in the implementation of environmental objectives, the environmental policy priorities should be linked to rural economy development measures and other income support opportunities. The preservation of arable land, reduction in the use of fertilizers and pesticides, and implementation of other environmental measures increase the farmers' costs, and financial incentives must be provided for the implementation of these measures. It is reasonable to enhance the connection with nature in various forms of ecological awareness (including active nature-related interactions), with an emphasis on the multitude of the nature preservation measures regardless of the place of living (rural or urban), but taking into account other socio-economic and demographic characteristics. Nature-related interactions, including promoting a participatory approach for all age groups, could contribute to the cultivation of the perception of nature as a value.

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