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ORIGINAL PAPER
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DIFFERENCES IN THE ENVIRONMENTAL AWARENESS OF THE POLISH POPULATION

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ABSTRACT

Motives: A fundamental tenet of sustainable development (SD) posits that all human endeavors should prioritize ecological safety. This underscores the significance of the knowledge about the ways in which these activities manifest in social attitudes, as an indicator of environmental awareness (EA) levels. Given the relevance of environmental EA, this issue should be examined across diverse communities and social groups, such as urban and rural residents, to catalyze the adoption of SD principles. It is assumed that the concentration of the population and societal structures in urban centers stimulate the development of concepts and solutions that subsequently disseminate to rural areas through urbanization and modernization patterns. Consequently, the potential disparities in EA and pro-environmental behaviors should be analyzed based on community members' place of residence and economic status.
Aim: The objective of this study was to assess differences in EA levels within the Polish population in the context of SD principles, based on demographic and social characteristics, as well as the respondents' place of residence.
Results: The study revealed several connections between attitudes toward sustainability and pro-environmental activities. The identified attitudes were associated with demographic, economic, and spatial factors. The results indicate that EA levels are relatively high among Polish residents, irrespective of spatial distribution. Furthermore, significantly higher levels of EA-related activities were noted among urban dwellers, particularly the young and well-educated. Interestingly, a similar trend was noted among the residents of suburban zones. In contrast, rural inhabitants exhibited lower levels of EA compared to their urban counterparts.

Keywords: sustainable development, pro-environmental behaviour (PEB), environmental awareness, urban-rural

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INTRODUCTION

Sustainable development (SD) stands as a cornerstone principle, asserting that all human activities must prioritize ecological safety. This imperative underscores the need for a profound exploration into the fabric of social attitudes, acting as a barometer for environmental awareness (EA). EA, as a manifestation of collective mindset and accepted norms, plays a pivotal role in shaping how individuals perceive the value of nature and demonstrate respect for the environment.

While the concept of SD is comprehensive, it has encountered criticism for presupposing collective action in the interest of the environment. Nevertheless, understanding EA across diverse social groups, including urban and rural residents, becomes imperative in catalyzing endeavors to imbibe SD principles universally. The pivotal role of urban centers in conceptualizing and disseminating environmentally conscious solutions further raises intriguing questions about the divergence of EA between urban and rural communities. The concentration of population and evolving social structures in cities is presumed to give rise to ideas and innovations, subsequently diffusing to rural areas through the interconnected patterns of urbanization and modernization.

This brings to the forefront an array of inquiries concerning the extent of variation in EA between urban and rural settings. Additionally, an exploration into the differentiation of inhabitants in formally rural areas becomes pertinent, considering their residence in varied spatial contexts, including suburban zones and traditional rural areas. These questions extend to encompass the diversity in EA concerning demographic, social, and economic characteristics.

Therefore, the primary objective of this study is to scrutinize the spectrum of EA within the Polish population in alignment with the principles of SD. This inquiry takes into account not only the demographic and social attributes but also investigates variations based on the respondents' places of residence. By unraveling the intricacies of EA diversity, this study aims to contribute valuable insights into the dynamics of sustainable development within the socio-environmental landscape of Poland. The following research questions were posed:

1. What is the EA of the Polish population as divided between urban–suburban–rural areas?
2. What is the EA of the Polish population considered through socio-economic indicators: gender, age, level of education and economical status?
3. Is the area of living differenting the knowledge of ecological awareness and moreover proenvironmental behaviour?

The above thought process resulted in introducing the following research hypothesis for consideration. According to the area inhabited, there are significant variations in the level of environmental awareness (EA) of Polish society, which affects the variation of EA and PEB. It is assumed that residents of urban areas, especially the young and well-educated, show higher environmental awareness and more excellent pro-environmental activity than residents of rural areas. In addition, there are links between demographic and economic characteristics and the level of EA, which may affect the effectiveness of sustainable development (SD) application activities in Polish society.

LITERATURE REVIEW

Spatial behaviour as well as an individual's approach depend on concepts related to the new ecological paradigm (NEP) (Derdowski et al., 2020; Donmez-Turan & Kiliclar, 2021; Manoli et al., 2019; Topal et al., 2021). It is a paradigm that calls for the formulation of a new ethics sensitive to ecological problems. The ethical principles associated with the old paradigm are not applicable to the main contemporary ethical problems, as most of them concern a threat that is considered contained (Manolis et al., 2021). Thus, the basic and probably most up-to-date concept relating to contemporary EA of society will be that of SD.

The concept of SD can be considered as resulting from a number of legal considerations recommended by global organisations (Lim, 2022; Shi et al., 2019). Throughout the years of dynamic

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socio-economic development, particularly after the Second World War, global organisations such as the United Nations and later the European Union have successfully attempted to introduce a legal framework by which to draw people's attention to the environment (Lim, 2022; Sachs, 1993; Satterthwaite, 1997, Szczepańska & Pietrzyk, 2018; Shi et al., 2019; Redclift, 1993). However, the concept of SD may prove to be a contradiction, as it implies dynamic development while respecting environmental values (Lim, 2022; Skene, 2021). The very notion of 'development' also evokes mixed feelings in the context of environmental degradation in favour of economic benefits (Ziegler, 2021). In addition, the concept of SD is very often wrongly identified with the countries of the former 'poor south' (Fund, 2015). However, this is an illusory assumption, as development problems extend to underdeveloped, intermediate, and highly developed countries. However, at each level of development, the strategic assumptions of the concept itself must be properly interpreted (Kopnina, 2020).

As researchers point out, the strategic goal of SD is difficult to implement because 'there is no general agreement on how the concept should be translated into practice' (Berke & Conroy, 2000; Lim, 2022; Ruggerio, 2021). Furthermore, 'SD is primarily symbolic rhetoric, with competing interests each redefining it to suit their own political agendas, rather than serving as an influential basis for policy development' (Jabareen, 2008). Beatley and Manning (2013) argue that there is a general sense that sustainability is a good thing, but that it still requires definition and elaboration. As a result, this conditions a hindered public perception of pro-environmental behaviour (PEB). However, legislative solutions are gradually influencing the behaviour of individuals. The new reality has prompted society to develop an approach to environmental issues different than before (Irani & Rahnamayiezekavat, 2021; Manoli et al., 2019; Topal et al., 2021; Ziegler, 2021). This social transition is referred to as NEP, which signifies a profound cultural change (Derdowski et al., 2020; Donmez-Turan & Kiliclar, 2021; Manoli et al., 2019; Topal et al., 2021).

The emerging NEP can be characterised in various ways. On the one hand, it can be seen as a holistic view of the world, focusing on the unification of already proven solutions in a pro-environmental context. On the other hand, it depicts the world as an ecosystem in itself, showing the processes of self-regulation and destruction. The cited distinction is the result of the reflections of Arne Naes, who already in the 1970s initiated the modern division used in environmental philosophy. The NEP highlights the need to develop a new pro-environmental ethic, or social sensitivity (Davis & Stroink, 2016; Johnson et al., 2004; Stern et al., 1995).

The whole change taking the form of the NEP in the social dimension can be compared to product life cycle theory derived from Erikson's (1994, 1998) concept (Fig. 1), which compares human behaviour to the relationship of supply and demand in economic science. In his research, he points out that human society interacts though people supporting or blocking each other, thereby influencing the behaviour of individuals. In relation to the concept of SD, this indicates that by systematising society's behaviour in

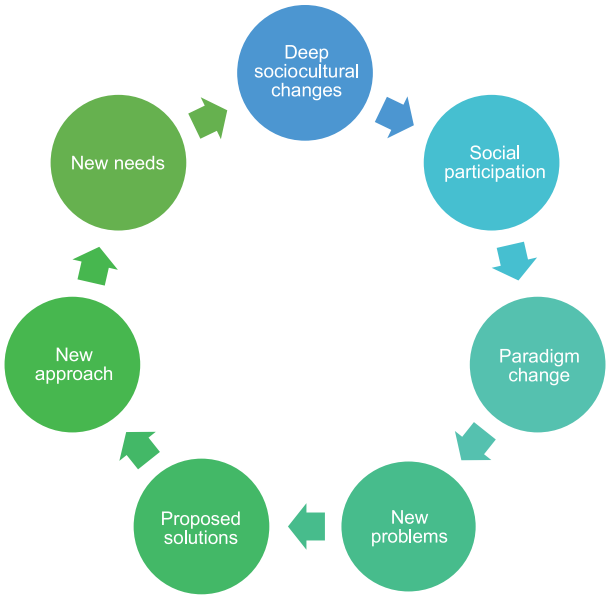

Fig. 1. New ecological paradigm
Source: own adaptation based on Life cycle theory, E.H. Erikson (1994, 1998).

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line with this theory, we can notice an increase in the public's knowledge of the principles of SD.

However, in order for the concepts of SD and the NEP to be successfully integrated into development processes, it is necessary to strengthen EA in each community. EA is the subject of research in many disciplines. While it can be intuitively understood, it is difficult to identify a specific definition of the notion in the literature (Yang et al., 2021); sometimes it is even equated with PEB (Ham et al., 2016). These conceptual deficiencies lead to the fact that terms such as environmental consciousness (Lin & Niu, 2018; Sanchez & Lafuente, 2010;) or ecological awareness (Chodkowska-Miszczuk et al. 2023; Corraliza & Collado, 2019) are also used interchangeably in the literature to describe the mindset and general acceptance of the value of nature and respect for the environment.

As Ham et al. (2016) following Culiberg and Rojšek (2008) point out, 'EA is a predisposition to react to environmental issues in a certain manner'. A slightly different definition is given by Partanen-Hertell et al. (1999) who state that EA 'is defined as a combination of motivation, knowledge and skills'. However, regardless of the definition adopted, research dedicated to EA is important because 'EA has a positive relationship with people's motivation and behavioural intention to engage in PEB' (Arı & Yılmaz, 2017; Yang, 2021). Environmental concern has a positive impact on PEB uptake (Blankenberg & Alhusen, 2019; Schmitt et al., 2018). However, this does not always translate into actual undertaking of PEB (Gifford & Nilsson, 2014). Nevertheless, EA education itself, as demonstrated by Meyer (2015), among others, 'causes individuals to be more concerned with social welfare and to accordingly behave in a more environmentally friendly manner'.

The methodology for measuring EA is also proving problematic. The basic problem of this type of research is to establish how the respondent and the researcher understand the notion in question. The possibility of a different understanding and the very long list of variables may explain the contradictory results obtained (Carlston, 2010; Ham et al., 2016). One of the leading research concepts is to assess respondents' opinions on the environmental issues presented. This, however, requires a combination of many different variables to analyse the results well (Ham et al., 2016).

One of the variables that can determine the level of EA and, indirectly, PEB is the place of residence considered in the context of the urban-rural continuum. According to the concept, place of residence is understood as the type of settlement unit (typical rural areas, suburban zones, cities), which is in line with the examples of unified behaviour of spatially clustered communities (Friedrich et al., 2009; Mokhtarian & Cao, 2008; Szczepańska & Pietrzyk, 2018; Van Raaij & Verhallen, 1983). Huddart-Kennedy et al. (2009) indicate that the dynamic socio-economic changes taking place are having an impact on bridging the gap between the behaviour of rural and urban populations. One such example is the impact of the suburbanisation process. Research by Fortmann and Kusel (1990) or Jones et al. (2003) showed that urban residents who move to rural areas are much more strongly involved in environmental issues than rural residents. These similarities, however, as Huddart-Kennedy et al. (2009) point out, are probably 'an artifact of incomplete measurement tools that may falsely represent empirical differences'. The question of the degree of similarity between urban and rural EA is, therefore, still open. Despite the results of many studies from around the world regarding EA, there is no consensus on the phenomenon in question. This is because EA considered in an urban-rural configuration is characterised by an enormous degree of complexity.

This complexity includes, among other things, the breakdown of society by socio-demographic characteristics. One important variable in measuring EA level is gender. As Zelezny et al. (2000) point out, in the studies they analysed it was women who showed higher levels of EA. The justification is that 'gender differences in environmentalism imply links between socialisation and value' (Zelezny et al., 2000 after Stern et al., 1995). Age, also widely discussed in the literature, may be another variable. However, as Morrison and Beer (2017) prove, it is difficult to indicate exactly whether and to what extent age determines the level of EA. They indicated that of the

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50 cases they analysed, 11 showed older people to be more environmentally concerned, a further 14 pointed to younger people, three studies favoured middle-aged people, and 16 showed no difference in EA in terms of age structure. In contrast, with regard to the education level variable, it should be assumed that an increase in education level commonly correlates with an increase in EA (Vicente-Molina et al., 2013). As Ziadat (2010) argued, people with tertiary education were characterised by higher levels of EA regardless of where they lived. A similar result was obtained by Hoffmann and Muttarak (2020), who highlighted that even 'an additional year of schooling significantly increases the probability of pro-environmental actions, e.g. planting trees, recycling, and proper waste management, by 3.3%'. However, the relationship between EA and the level of education is a complex one and can vary depending on numerous factors. Such a factor is, of course, the economic situation. Many studies directly indicate that high-income earners are characterised by higher levels of EA (Duroy, 2005; Philippssen et al., 2017). In general, however, the variables that may shape the level of EA in different communities still need to be assessed.

The concept of the urban-rural continuum was necessary because the study focused on searching for possible differences between the so-called rural periphery and suburban zones against cities. This concept points out that due to the actual degree of urbanization of individual settlement units, they can be placed on a continuum between the ideal types of the most traditional village and the most modern large city (Wirth, 1938). This urbanization is diagnosed based on a number of social, demographic, cultural, economic, etc. variables (Szczepańska & Gerus-Gościewska, 2017). Thus, it also includes attitudes and behaviours that change among individuals living in particular types of settlement units under the influence of the processes of urbanization, modernization, industrialization or globalization (Halfacree, 2009). Therefore, in the context of PEB, it is reasonable to assume that rural, suburban and urban residents will identify and behave differently. The concept of an Urban-Rural Continuum in the context of PEB is precious, as it provides a basis for spatial considerations embedded in social geography (Dymitrow, 2017, 2019; Halfacree, 2009).

MATERIALS AND METHODS

The research topic determined the data collection method used in the study. A survey was applied to investigate EA; it was conducted using the CAWI technique on a probability sample of 1,082 adult Poles. It was carried out in April 2023. The CAWI (Computer Assisted Web Interview) technique used involves the researcher generating an electronic version of the questionnaire, which the respondent can complete at any time and in any place, provided they have access to a device with an Internet connection. A survey conducted using the CAWI technique also offers additional possibilities, including the use of an extended range of functionalities, the inclusion of detailed instructions for respondents, greater clarity of questions and flexibility of the survey itself, and an increased degree of anonymity (D'Ancona, 2017; Kagerbauer et al., 2013). The benefits associated with the use of this method and the increasingly widespread access to the Internet in Poland mean that over the past decade, almost a third of all research has been carried out using this technique.

An important aspect considered in the study was the sampling based on a probabilistic scheme, i.e. referring to the probability calculus and giving a chance to estimate the possible error. Thus, the sample selected for the study reflected the characteristics of the population and the conclusions obtained from the study can be fully generalised to the population (Chater et al., 2006; Matoušek & Vondrák, 2008). However, it should be added that a probabilistic sampling model can be based on different variables, the most common being gender, age, and place of residence (Babbie, 2015). For this study, quota random sampling was used to increase the representativeness of the sample. Firstly, the percentage of population living in each of the 16 voivodeships (voivodeship – NUTS 2, the administrative region of the 1st order in Poland) was determined (Table 1). Only then, referring

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Table. 1. Data Sample

Amount	Share according to Census 2021	Sample size
Female	0.517	517
Male	0.483	483
18–39	0.349	349
40–65	0.42	420
65+	0.232	232
Countryside	0.404	404
City to 50k	0.237	237
City 50–200k	0.171	171
City 200k +	0.188	303
Dolnośląskie	0.076	76
Kujawsko-pomorskie	0.054	54
Lubelskie	0.055	55
Lubuskie	0.026	26
Łódzkie	0.064	64
Małopolskie	0.089	89
Mazowieckie	0.142	142
Opolskie	0.026	26
Podkarpackie	0.055	55
Podlaskie	0.031	31
Pomorskie	0.061	61
Śląskie	0.117	117
Świętokrzyskie	0.032	32
Warmińsko-mazurskie	0.037	37
Wielkopolskie	0.091	91
Zachodniopomorskie	0.044	44

Source: own elaboration.

to the results of the National Census 2021, was the sample surveyed with the respective shares of each gender, age category, and by place of residence. Thus, the sample included 51.7% of women and 48.3% of men. Furthermore, 34.9% of respondents were aged 18–39, 42.0% aged 40–65 and 23.2% aged over 65. In terms of formal status and size of settlement units, 40.4% of respondents came from rural areas and 59.6% from urban areas, including 23.7% from cities with up to 50,000 inhabitants, 17.1% from cities with between 50,000 and 200,000 inhabitants and 18.8% from cities with more than 200,000 inhabitants.

The collected data were coded in IBM SPSS software (ver. 29), where further analyses and compilations were carried out. The magnitude of the possible statistical error of the results was estimated at three percentage points.

For the purposes of this study, which aimed to determine the differences of EA in rural areas in Poland compared to urban areas, an important distinction was made with regard to formally rural areas. They were divided into typical rural areas and suburban zones. In line with this breakdown, 30.0% of respondents came from typically rural areas, 10.2% from suburban zones, and 59.8% from urban areas (Fig. 2).

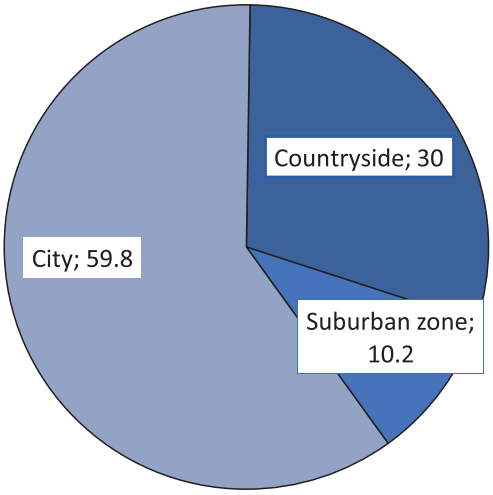

Fig. 2. Structure of respondents by place of residence (%)
Source: own elaboration.

In line with the stated objective, which was to determine the level of EA diversity of the Polish population in the context of the SD principles, the survey was based on a basic question: 'Are you aware of the climate change taking place in recent years?'. Respondents were able to select one of four responses suggested by the authors: 'Yes', 'No', 'I do not see climate change', 'I do not believe in climate change'. The answer to this basic question is a very important aspect for the further analysis of attitudes and the determination of respondents' self-awareness. According to the literature, sheer awareness of the surrounding world and its dynamic changes has a very strong influence on decision-making and actions taken (Ajzen et al., 2011; Lieberman et al.,

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2016; Vazire & Mehl, 2008). The question allowed the authors to measure the degree of scepticism towards climate change without having to ask about actual actions. This is extremely important because, as Poortinga et al. (2011) points out, 'The finding that climate scepticism is rooted in people's core values and worldviews may imply a coherent and encompassing sceptical outlook on climate change'. The question was analysed first in relation to the whole country, and subsequently at lower territorial levels. This allowed us to gather responses from urban residents, the adjacent suburban zones, and typical rural areas.

Once the level of EA was established, the procedure was to measure the real impact on respondents' PEB. The subsequent question: 'How do you evaluate environmental protection efforts?', where the responses included: 'I support environmental protection efforts and reduce my impact on pollution through small changes in my daily life'; 'I think a systemic approach is needed'; 'I think this is one of the reasons why everything is getting more expensive (climate fees, environmental fees)'; 'I am happy to join in all environmental actions'; 'It's not for me, although I don't deny the sense of the activities of other people or organisations'; 'I don't see the point in these activities', helped the authors gain an overview of the approaches to environmental actions in addition to the typical PEB overview. Apart from providing a basic view of respondents' attitudes towards PEB, the answers to the question provided information on the degree of scepticism (Poortinga et al., 2011).

In the sampling itself, as already mentioned, municipalities were selected for the study, both those that fit into typical rural areas and suburban zones. The division into these two categories was made using statistics from the Central Statistical Office. A synthetic index was used here, which considered such variables as the dynamics of population change, the balance of internal migration and the number of housing units completed per 1,000 residents in 1995–2000 (the beginning of suburbanization processes), 2006–2011 (the advancement of suburbanization processes), 2017–2022 (an inevitable extinction and stabilization of the suburbanization process). It was assumed that these characteristics are a distinguishing feature of areas under the influence of suburbanization processes. Using a synthetic indicator made it possible to separate peripheral rural areas from suburban zones and select the sample accordingly. In addition, during the survey, respondents were asked about spatial affiliation (type of settlement unit). In addition, to verify these affiliations, questions were also asked about, among other things, the landscape characteristic of where the respondents live. The survey data, which also included an inquiry about the locality, its size and postal code, made it possible to identify the different types of settlement units based on statistical data from the Central Statistical Office. The use of a synthetic index made it possible, on the one hand, to separate peripheral rural areas from suburban zones and on the other hand, to compare the spatial auto affiliation of the respondents with the actual state of these areas. As it turned out in this investigation, the actual situation, as measured by the synthetic indicator, was in line with the respondents' declarations. It should be noted, however, that the selection of the sample, based on the population structure, considered the division into peripheral rural areas, suburban zones and cities.

RESULTS

The examination of EA in the context of place of residence: urban, suburban, or typical rural areas, as well as additional socio-demographic variables such as gender, age, education, and assessment of material situation, was based on two core questions, which were treated as a differentiator of EA. Respondents were asked whether they were aware of the climate change observed in recent years and how they rated environmental protection measures.

The first issue considered was awareness of the climate change experienced in recent years. As many as 89.6% of the Polish population reported that they are aware of the changes taking place. Only 2.3% of respondents declared that they are not aware

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of these changes, a further 5.5% do not see climate change, and 2.7% do not believe in climate change.

The results obtained were contrasted with socio-demographic data such as the type of settlement unit, gender, age, education, and assessment of the respondents' material situation. As this study focuses specifically on tracing possible differences between urban, suburban, and rural residents, this issue was the starting point for further consideration. As it turned out, in this context, the place of residence, understood as the type of settlement unit, did not significantly influence the results obtained. Among those surveyed, climate awareness was displayed by 89.2% of rural residents, 89.1% of suburban residents, and 89.8% of city dwellers (Table 2). The study's results suggest that awareness of climate change is independent of whether individuals live in urban, suburban or rural areas. This is consistent with the theoretical perspective that SD and NEP must be integrated into all types of communities.

Of the variables selected, quite a large variation was observed in the context of the gender of the respondents (Table 2). While as many as 94.4% of women said they were aware of climate change, the figure for men was 10.0 pp. lower at 84.3%. As many as 3.7% of male respondents were not aware of climate change at the declarative level (in the female group only 1.1%), as many as 8.0% did not see climate change (against only 3.2% of women), and 4.1% did not believe in climate change (women – 1.4%). Differences between men and women were recorded irrespective of where respondents lived (Table 2). The data shows a gender difference in EA, with women showing a higher awareness of climate change. This reflects the literature, which suggests that women may be more concerned about the environment due to different socialization and values.

Some differences regarding the declared awareness of climate change (which was a sign of EA), were registered between respondents of different ages (Table 2). The highest percentage of respondents who confirmed awareness of climate change was among the youngest respondents, i.e. between 18 and 25 years of age, at 92.4%. For those aged 26 to 44, the outcome was 90.0%, with 87.5% for those aged 45 to 59. At the same time, the relationship between awareness of climate change and age was not clear-cut, as in the 60+ age group, the percentage of people who said they were aware of climate change was 89.9%. It should be noted, however, that in the youngest group surveyed there was not a single person who did not believe in climate change (in the other groups it was between 2.5% and 3.3%), while in the group of 45- to 59-year-olds the belief in not seeing climate change was the highest (6.6%, with between 4.5% and 5.7% in the other groups). While the results show that climate change awareness is highest among the youngest respondents, this is not closely related to age, as older respondents also showed high levels of awareness. This suggests that the relationship between age and EA is complex and not linear, reflecting the inconclusive findings in the literature regarding age as a determinant of EA.

Similarly, the respondents' education had some influence on their declared awareness of climate change (Table 3). Certainly, a separate group in this respect were the young people, still in education, all of whom declared that they were aware of climate change. Young people also partly made up the group of people reporting primary education. Here, too, the proportion of those aware of climate change was high at 95.0% (only 5.0% reported that they did not see climate change). In the group of people ranging from vocational education through to secondary and tertiary education, the percentage of people stating that they were aware of climate change was increasingly higher, at 84.5%, 89.1% and 90.7%, respectively. Here, in turn, the proportion of those who consider themselves unaware of climate change would drop with the rising level of education (4.3%, 3.0%, and 1.4%, respectively), as would the proportion of those who do not see climate change (7.8%, 6.1%, 4.5%, respectively). Respondents with higher levels of education showed greater awareness of climate change, which confirms literature studies on which education positively correlates with EA. In addition, the study confirms the position in the literature that while there is a positive relationship between EA and pro-environmental behaviour, this does not always translate into action.

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Table. 2. Answers for question "Do you recently observed the climate change?" (%)

	Gender		Age				Education				Material situation				Residence		
	Female	Male	18 to 25	26 to 44	45 to 59	60 and more	Still learning	Basic	Voca-tional	Sec-ondary	Higher	Bad	Average	Good	Country-side	Suburban zone	City
Yes	94.4	84.3	92.4	90.0	87.5	89.9	100,0	95.0	84.5	89.1	90.7	87.5	88.6	92.1	89.2	89.1	89.8
No	1.1	3.7	2.2	2.5	2.6	1.9	-	-	4.3	3.0	1.4	2.7	3.0	0.9	3.1	1.8	2.0
I don't see climate change	3.2	8.0	5.4	4.5	6.6	5.7	-	5.0	7.8	6.1	4.5	7.1	5.6	4.5	5.8	7.3	4.9
I don't believe in climate change	1.4	4.1	-	3.0	3.3	2.5	-	-	3.4	1.	3.5	2.7	2.8	2.4	1.8	1.8	3.2

Source: Own elaboration based on research data.

Table 3. Answers for question "Are you aware of the climate changes taking place in recent years?" (%)

		Gender			Age				Education						Material situation			
		Female	Male	Total	18 to 25	26 to 44	45 to 59	60 and more	Total	Still learning	Basic	Voca-tional	Secon-dary	Higher	Total	Bad	Average	Good	Total
Countryside	Yes	94.0	84.1	89.2	91.9	89.9	87.3	88.8	89.2	100.0	92.9	81.0	91.4	89.5	89.2	80,0	88.1	96.4	89.2
	No	1.2	5.1	3.1	-	4.7	3.8	1.3	3.1	-	-	5.2	3.6	1.9	3.1	5,0	4.0	-	3.1
	I don't see climate change	3.6	8.3	5.8	8.1	3.9	6.3	7.5	5.8	-	7.1	8.6	5.0	5.7	5.8	12.5	6.0	2.4	5.8
	I don't believe in climate change	1.2	2.5	1.8	-	1.6	2.5	2.5	1.8	-	-	5.2	-	2.9	1.8	2.5	2.0	1.2	1.8
Suburban zone	Yes	94.3	84.2	89.1	88.9	90.7	87.1	88.9	89.1	100.0	100,0	81.8	88.9	89.7	89.1	87.5	90.6	87.8	89.1
	No		3.5	1.8	11.1	-	3.2		1.8	-	-	-	-	3.4	1.8	-	-	4.1	1.8
	I don't see climate change	5.7	8.8	7.3	-	7.0	9.7	7.4	7.3	-	-	18.2	8.3	5.2	7.3	12.5	7.5	6.1	7.3
	I don't believe in climate change		3.5	1.8	-	2.3	-	3.7	1.8	-	-	-	2.8	1.7	1.8	-	1.9	2.0	1.8
City	Yes	94.5	84.4	89.8	93.5	90.0	87.6	90.5	89.8	100.0	100.0	89.4	87.9	91.2	89.8	92.2	88.6	91.4	89.8
	No	1.2	3.0	2.0	2.2	1.7	1.9	2.4	2.0	-	-	4.3	3.0	0.9	2.0	1.6	2.9	0.5	2.0
	I don't see climate change	2.6	7.6	4.9	4.3	4.3	6.2	4.8	4.9	-	-	4.3	6.4	4.0	4.9	3.1	5.2	5.1	4.9
	I don't believe in climate change	1.7	5.0	3.2	-	3.9	4.3	2.4	3.2	-	-	2.1	2.7	4.0	3.2	3.1	3.4	3.0	3.2

Source: Own elaboration based on research data.

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The survey also included a subjective assessment of the respondents' material situation with regard to EA (Table 3). This, too, was associated with respondents' answers, as was gender and partly age and education. This is because the higher the assessment of one's material situation, the higher the percentage of people who said they were aware of climate change over the past years (from 87.5% among those who saw their material situation as poor to 92.1% among those who deemed it good). The assessment of the material situation was also significantly linked to the declaration of not seeing climate change. Among those with a self-proclaimed poor material situation, the proportion of such people was 7.1%, with 5.6% among those with an average material situation, and 4.5% among those with a good material situation.

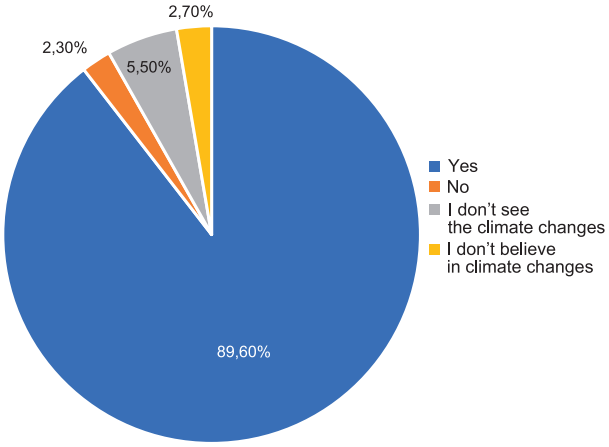

Fig. 3. Structure of answers to the question: 'Are you aware of the climate change observed in the recent years?'
Source: Authors on the basis of a survey (N=1082).

The second issue which underpinned EA concerned the assessment of environmental measures. Respondents were asked about this matter and could choose any number of options from the six available ones. As shown by the survey, most people felt that they supported environmental protection measures and reduced their impact on pollution through small changes in their daily lives (60.8%). At the same time, more than one in two respondents (53.8%) thought that a systemic approach was needed and one in three respondents (36.4%) that this was one of the reasons why everything was getting more expensive (climate fees, environmental fees). One in five respondents (21.9%), were keen to get involved in all environmental actions. Only one in eight respondents (12.8%) said it was not for them and one in twelve (8.1%) saw no point in these activities (Table 4).

According to the assumptions made, these issues were considered by the authors in relation to the place of residence, i.e., urban, suburban, and rural areas. As they were able to show, respondents chose the proposed options quite similarly depending on where they lived. However, for the most commonly selected option, i.e., 'I support environmental protection efforts and reduce my impact on pollution through small changes in my daily life', the difference between rural (54.0%) and urban (63.1%) residents was almost ten percentage points. However, this indication was predominant primarily among residents of the suburban zone (67.3%). A systemic approach was mainly expected by residents of urban areas (58.1%), less frequently in suburban areas (55.5%), and least frequently in rural areas (44.8%). Price increases (climate fees, environmental fees) related to environmental protection measures were first of all highlighted by urban and rural residents (37.1% and 37.0%, respectively), while suburban residents (30.9%) were slightly less concerned. The latter group was the most likely to be involved in all environmental actions (26.4%), closely followed by residents of rural areas (24.1%) and only then urban areas (20.1%). Residents of suburban areas were also the least sceptical about measures to protect the environment (3.6% chose the option 'It's not for me, although I don't deny the sense of the activities of other people or organisations', compared to 12.7% among urban residents and as many as 16.0% in rural areas). In contrast, a simple relationship was observed in the expression of support for the statement: 'I don't see the point in these actions'. The more urbanised the settlement unit was, the less interest there was in this option (ranging from 10.5% in the countryside, through 9.1% in the suburban zone, to 6.8% in the city) (Table 4).

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Table. 4. Multiple-choice question answer for "How do you evaluate environmental protection efforts?" (%)

		Gender		Age				Education					Material situation		
		Female	Male	18 to 25	26 to 44	45 to 59	60 and more	Still learning	Basic	Vocational	Secondary	Higher	Bad	Average	Good
Countryside	1	54.8	52.9	59.5	48.8	48.1	65.0	87.5	64.3	41.4	54.3	56.2	52.5	52.2	58.3
	2	40.5	49.0	43.2	41.9	41.8	52.5	62.5	21.4	34.5	37.9	61.0	45.0	43.8	46.4
	3	36.6	37.6	35.1	31.8	45.6	37.5	37.5	35.7	39.7	35.7	37.1	32.5	38.3	35.7
	4	23.2	24.8	24.3	22.5	21.5	28.7	25.0	21.4	19.0	23.6	27.6	22.5	20.4	33.3
	5	14.9	17.2	5.4	19.4	20.3	11.3	-	21.4	31.0	12.9	12.4	15.0	18.9	9.5
	6	7.1	14.0	8.1	11.6	8.9	11.3	-	7.1	17.2	9.3	9.5	20.0	9.5	8.3
Suburban zone	1	73.6	61.4	66.7	60.5	77.4	66.7	66.7	50,0	45.5	77.8	65.5	50.0	66.0	71.4
	2	52.8	57.9	44.4	55.8	71.0	40.7	33.3	-	63.6	50.0	60.3	50.0	56.6	55.1
	3	24.5	36.8	11.1	32.6	32.3	33.3	-	50,0	27.3	27.8	34.5	50.0	28.3	30.6
	4	30.2	22.8	44.4	27.9	22.6	22.2	66.7	50,0	54.5	13.9	25.9	-	30.2	26.5
	5	5.7	1.8	-	4.7	-	7.4	-	-	9.1	-	5.2	12.5	1.9	4.1
	6	7.5	10.5	11.1	4.7	12.9	11.1	-	50,0	18.2	11.1	5.2	12.5	9.4	8.2
City	1	65.9	59.8	63.0	57.8	59.0	71.9	100.0	50,0	57.4	62.1	64.4	62.5	64.7	60.1
	2	58.7	57.5	56.5	53.0	59.0	63.3	66.7	50,0	55.3	56.4	59.9	59.4	59.7	54.5
	3	35.8	38.5	34.8	41.3	31.7	37.1	33.3	100,0	48.9	34.1	37.1	45.3	35.6	37.4
	4	21.4	18.6	19.6	17.8	16.8	25.2	66.7	-	17.0	23.1	17.9	25.0	19.7	19.2
	5	9.8	15.9	21.7	12.6	14.9	9.0	-	50,0	12.8	14.0	11.2	9.4	13.5	12.1
	6	4.6	9.3	4.3	10.0	7.5	3.3	-	-	6.4	8.3	5.8	9.4	6.5	6.6

1 I support environmental protection efforts and reduce my impact on pollution through small changes in my daily life

2 I think a systemic approach is needed

3 I think this is one of the reasons why everything is getting more expensive (climate fees, environmental fees)

4 I am happy to join in all environmental actions

5 It's not for me, although I don't deny the sense of the activities of other people or organizations

6 I don't see the point in these activities

Source: Own elaboration based on research data.

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With regard to the support for the six proposed options in the context of gender, age, education, and material status assessment, it should be noted that in each of these cases their hierarchy was set similarly. However, some differences became apparent. Referring to the gender of the respondents, it was shown that women were more likely than men to support PEB and reduce their impact on pollution through small changes in their daily lives (63.4% to 57.9%) and more likely to be involved in all environmental actions (22.8% to 21.0%). Men, on the other hand, were more likely to express the opinion that a systemic approach was needed (55.0% to 52.8%), that PEB were the reason why everything was getting more expensive (38.1% to 35.0%), that it was not for them, although they did not question the sense of what other people and institutions were doing (14.8% to 11.0%), and that they did not see the point in these activities (10.9% to 5.7%) (Table 4).

When we look at the age structure of the respondents, it was shown that the highest support for pro-environmental measures was recorded among seniors, i.e., those aged 60 and over. This group was most likely to agree with the statement that they support PEB and reduce their impact on pollution through small changes in their daily lives (69.7%) and are keen to get involved in all environmental actions (25.9%). At the same time, the same age group mainly indicated that they expect a systemic approach (58.7%) and that this is one of the reasons why everything is getting more expensive (climate fees, environmental fees) (36.9%, a similar opinion was held by those aged 26–44 – 37.4%). In contrast, those aged 26–44 and 45–59, i.e. largely of working age, were the most likely of all respondents to say that it was not for them, although they did not deny the point of other people or organisations doing something (14.0% and 14.8%, respectively) and that they did not see the point in these activities (10.0% and 8.5%, respectively) (Table 4).

The proposed statements, reflecting respondents' attitudes towards environmental protection, were also analysed in the context of education. As we have been able to show, support for pro-environmental measures was mainly characteristic of learners, i.e., young people. In this group, as many as 85.7% indicated that they support PEB and reduce their impact on environmental pollution through minor changes in their daily lives (compared to 48.3% of those with vocational education), while as many as 42.9% are keen to get involved in all environmental protection campaigns (this response was least frequently chosen by those with primary education – 20.0%). Systemic measures were mainly expected by those with tertiary education (60.3%) and those in education (57.1%, least often by those with primary education 25.0%). On the other hand, people with primary and vocational education pointed out that PEB is one of the reasons why everything is getting more expensive (climate fees, environmental fees) (50.0% and 42.2%, respectively), that it is not for them, but they do not deny the point of other people or organisations taking actions (25.0% and 21.6%, respectively), and that they do not see the point in these activities (10.0% and 12.9%, respectively). Relatively high support for PEB was also recorded among those with secondary and tertiary education, but in no case was this support as high as among young people still in education (Table 4).

A subjective assessment of the material situation was also identified as a factor possibly related to pro-environmental measures. In the light of the survey, it was shown that the better the assessed material situation, the higher the support for measures to protect the environment and reduce one's impact on pollution through small changes in daily life (good material situation – 61.3%, bad situation – 58.6%). Those with a good financial situation were also more likely to be involved in environmental actions (23.9%). Worse self-assessment favoured responses concerning the need for systemic solutions (54.1% – bad material situation, 52.6% – good material situation), the reason why everything is getting more expensive (41.4% – bad material situation, 36.0% – good material situation), and the lack of sense in pro-environmental measures (13.5% – bad material situation, 7.3% – good material situation) (Table 4).

The study results suggest that better-off individuals are more aware of and take action on environmental issues, which is in line with the literature, which

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assumes a link between higher income levels and more excellent EA.

In conclusion, the study's findings reinforce the theoretical discussions, showing that EA is a multifaceted concept influenced by various socio--demographic factors. However, these factors do not operate in isolation, and their impact on EA and PEB is nuanced and complex, reflecting the complex nature of environmental issues and the need for comprehensive strategies that consider these diversities in EA.

DISCUSSION AND CONCLUSION

Our study provides partial confirmation of Huddart-Kennedy et al.'s (2009) thesis regarding bridging the gap in Environmental Awareness (EA) between urban and rural populations in the context of observed climate change. However, when evaluating personal behavior, our results align with earlier studies indicating that urban residents, particularly the young and well-educated, exhibit higher EA (Arcury & Christianson, 1993; Buttel, 1987; Williamms & Moore, 1991). These findings also resonate with Özden's (2008) research, which highlighted that residents in urban areas tend to have more positive attitudes toward environmental issues than those in villages or smaller towns. Notably, higher EA is observed among both urban and suburban residents. This contradicts the results of Su et al. (2021), who found that rural residents have a stronger role in environmental protection behavior compared to urban residents. However, results from other studies, such as Berenguer et al. (2005), indicated that prominent city residents show higher EA. Rural residents undertake more PEB. According to a study by Berenguer et al. (2005), urban residents show stronger beliefs and concerns about the changing environment. However, rural residents take more action to protect and improve the environment realistically. This confirms the fact of differing attitudes toward environmental issues about where people live.

Age as a variable can be crucial in shaping attitudes, values and habits related to ecology and sustainability. Generational differences in the perception of environmental risks, access to knowledge and specific life experiences can significantly influence environmental behaviour. Therefore, a natural aspect of PEB consideration is precisely to base differentiation on age groups. This poses a challenge since, as the authors of other studies point out, it is not entirely possible to link age to PEB activities undertaken. For example for studies conducted in Canada, age was not reported as a variable in the context of EA (Huddart-Kennedy et al., 2015). As the study's authors point out, this is perhaps because "Young people, who were most concerned about the environment a few decades ago, are now middle-aged, and discussions about the environment have become much more common, to the point that seniors are also paying attention" (Huddart-Kennedy et al., 2015). Such an approach highlights the phenomenon's universalisation process, thus making it challenging to approach analysis conditioned by age groups. Given that the topic of EA has been widely discussed in Poland for a relatively short period, age will likely not significantly affect the level of EA in the future. Currently, environmental topics in Poland affect all age groups to the same degree, making it challenging to divide attitudes into generational approaches specific to particular social groups (Huddart-Kennedy et al., 2015).

In general, our results indicate that higher EA is displayed by young women with higher education and a very good financial situation, aligning with observations from other researchers. Numerous studies globally link gender to the level of EA and awareness of environmental issues, and our study in Poland confirms a similar trend. While the difference is not substantial, it underscores that women are more aware of climate changes and less skeptical about climate change compared to men. This aligns with findings by Sundstrom and McGright (2013), Wehrmeyer and McNeil (2000) and Zelezny et al. (2000), highlighting a prevailing trend of higher EA among women across professional and social groups.

Wehrmeyer and McNeil's (2000) study and the work of Zelezny et al. (2000) suggest that women show higher environmental awareness (EA) than men, reflected in greater awareness of environmental issues

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and less scepticism about climate change. On the other hand, a study by Sundstrom and McGright (2013) highlights that this trend is observed among women across occupational and social groups, indicating a widespread pattern of higher EA in women regardless of their socio-professional position. This research suggests that women, especially those who are young, educated, and financially well-off, tend to have a better understanding of and more excellent responsiveness to climate change and environmental problems. This phenomenon translates into attitudes that are less sceptical of climate change and more committed to environmental action. The aforementioned scientific works – by Sundstrom and McGright (2013), Wehrmeyer and McNeil (2000) and Zelezny et al. (2000) – indicate that the pattern of greater environmental awareness among women is consistent across cultures and societies, emphasizing the importance of gender in the context of pro-environmental attitudes and behaviour.

There are also clear associations between material circumstances and attitudes toward climate issues. The research indicates that the respondent's material situation significantly influences their perception of the climate situation. The slight difference suggests higher EA among those describing their material situation as good or very good. These results align with other studies confirming higher levels of EA and a more determined approach to pro-environmental issues among higher income earners (Kennedy & Corfee-Morlot, 2013; Moser & Kleinhückelkotten, 2018; Satterthwaite, 2007; Tilikidou, 2006). As Tilikidou, 2006 points out, the level of education, social responsibility, and subjective beliefs about one's influence in the political sphere can motivate pro-environmental behaviour, which may be indirectly related to income. People with higher education often have higher incomes, which may translate into their ability to engage in and maintain pro-environmental behaviour.

According to Kennedy et al. (2013), there is a profound injustice in the world between the main contributors to climate change and those most vulnerable to its effects. In terms of income, it is pointed out that it is the high-consumption lifestyles of the rich (and the production systems that meet their demand) that drive climate change, while the primarily low-income groups in low- and middle-income countries, who contribute little to climate change, are the most vulnerable.

A study by Moser & Kleinhückelkotten (2018) noted that while people with higher environmental self-awareness (i.e., who identify with pro-environmental attitudes) appear to be more likely to have pro-environmental behavioural intentions, they paradoxically consume slightly more energy and have a slightly larger carbon footprint than those with lower environmental awareness. It is interesting to note that both environmental impact and environmental self-awareness increase with increasing income. This indicates wealthier individuals may have stronger pro-environmental beliefs and identify with environmental values. However, their lifestyle and related consumption choices may contribute to more significant adverse environmental impacts, described as the "income effect". Higher socioeconomic status is often associated with more excellent consumption opportunities, leading to an increased carbon footprint, even if the individual has environmentally friendly attitudes. This study underscores the need to consider the relationship structure between income and environmental awareness and impact, suggesting that increased consumption associated with higher income may offset pro-environmental motivations.

Pro-environmental behavior is more commonly adopted by individuals who perceive their situation as at least good, while those in average or poor financial situations point to material issues as significant barriers, consistent with findings in other studies (Moser & Kleinhückelkotten, 2018).

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