ENVIRONMENTAL ISSUES IN THE OPINION OF DIFFERENT RESPONDENT GROUPS

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Abstract:
The study presents an assessment of respondents' awareness of important global, European and Polish environmental problems including the related factors, the relevant objectives and the responsibility for realization. The analysis was based on 1036 survey questionnaires filled in between October and December 2015 by, in the vast majority of cases (995), residents of the Podkarpackie Province. The respondents' opinions were sorted by their age, sex, place of residence, education and the declared level of environmental knowledge. The evaluation of the impact of the respondents' characteristics on their views was verified using chi-square test statistics.
The survey results show that the most important sources of knowledge of environmental protection issues are the Internet and television; the greatest environmental hazards include air pollution, global warming, deforestation and soil erosion; and the industries that most contribute to the environmental pollution are the chemical industry and farming. According to the respondents, the primary environmental protection tasks should include maintenance of the environment's cleanliness and the need for conservation of energy and natural resources, whereby the greatest responsibility for fulfilment of those tasks should be borne by all citizens and relevant institutions. Further, the respondents considered the impunity of the perpetrators of the environmental devastation to be an important problem in the nature conservation. This indicates a great need to develop a mindset and to shape behaviour that encourage respect for the environment and dissemination of knowledge, especially that of the causes of degradation of the environment.

INTRODUCTION

The environment of human existence, in particular the nature that surrounds us humans is an inherent element of our lives. The natural environment has a strong impact on the economic development. Moreover, it makes the structure and development of economic infrastructure conditional on the degree of social activity for environmental protection or on the degree of social acceptance of the principles for sustainable development [1]. Planned and responsible environmental education helps us humans learn the world around us and find our individual places in it.

Wherever groups of people jointly use the natural resources, there is a risk of the resources being overexploited or totally exhausted [2]. Uncontrolled exploitation of natural resources leads to their quick exhaustion, especially when they are the object of sharing. If no measures are taken to offset the production of natural resources and the use of limited goods,

their exhaustion may result in substantial losses - not only the environmental losses (resource exhaustion) but also the socio-economic ones (negative result of resource management, unused production assets).

Poles' ecological awareness still leaves, alas, a great deal to be desired. This is evidenced by, inter alia, growing piles of rubbish in already-filled legal rubbish dumps or ever-springing new illegal rubbish dumps in forests, roadside ditches or in meadows. The elimination of such bad social habits requires that environmental education should be provided to even the youngest children in order to raise the ecological sensitivity and awareness in the society. The knowledge and habits gained in early youth have a profound impact on our adult life.

Ecological awareness, being a part of social awareness, expresses man's attitude to the natural environment and is a set of information and beliefs about the environment as well as is a system of values, by which individuals are guided towards the environment in their practical conduct [3]. However, the term 'ecology' is today very often used as a synonym for environmental protection or environmental science. This is a wrong practice because ecology, as a term with a wider meaning, deals with the structure and functions of nature as well as with the interaction between the organisms and their living and dead environments [4]. Science that deals with the problems of environmental protection is called sozology (and sometimes environmental science or environmental ecology), however, this term often functions to a limited extent.

The discussion of issues related to human ecology, environmental education or ecological awareness in the sustainable development society cannot fail to take account of the term 'eco-development', i.e. 'sustainable development' that has gained huge importance in recent years. This term is often used as a synonym for 'environmentally conscious action', and in business environments, it is equated with success and innovation. Certainly environmental protection, economic growth and human development are interdependent and shape each other.

Environmental education linked to ecology is in turn the formation of knowledge and the development of sensitivity and willingness to work for the preservation of the natural environment. It could be said that proper environmental education is one of the prerequisites for the introduction of the society to the idea of sustainable development and for the promotion of environmentally conscious behaviour. In the face of increasing environmental threats, environmental education is therefore a means of conveying a chance to changing man's ways of thinking and behaving.

To assess the contemporary level of ecological awareness in the Polish society, one can distinguish two forms of it, namely the declared ecological awareness and the practised (real) ecological awareness. A sustainable economy is what should complement ecological knowledge and the raising of ecological awareness.

To date, there are relatively few studies that have investigated ecological awareness and pro-environmental initiatives in the Polish economy. For the most part, these are reports on the traditional practices of nature conservation in connection with the environmentally unfriendly activities. However, no studies have been found that presented systemic solutions suitable for specific industries. Available studies show that the respondents, i.e. the hosts of given regions, the region dwellers and the visitors declare that they respect the environment, whereby their declarations are not always supported by their attitudes and real activities. This means a necessity of raising ecological awareness and its substantive level. It is therefore important to systematically assess the society's knowledge and ecological awareness with regard to those environmental activities that are declared and those that are undertaken.

In Poland, research into the social problems related to environmental protection, the society's attitudes towards the environment and the population's ecological awareness was

first undertaken in the eighties of the last century. The Tarnobrzeg study of 1983 [5] is considered to be the first research study that assessed the Polish population's ecological awareness in depth. Further research in this field was conducted by B. Poskrobko in 1987 [6] and 1991 [7]. The research included, among other things, the sources of environmental threats among specific groups of workers in environmentally unfriendly industrial companies. Back then, Poskrobko observed a specific category of people within the society: those with "ostensible ecological awareness". This kind of awareness manifests itself in that most of us would like the natural environment around man to be friendly and clean but at the same time, we contribute, often consciously, to the environmental pollution by participating in various manufacturing processes.

The study by Kłos [8] is a review of available studies of Poles' ecological awareness, conducted by the Institute for Sustainable Development, the Ministry of the Environment and by environmental organizations as well. According to that study, the institution that monitors the degree of ecological awareness among Poles to the greatest extent is the Institute for Sustainable Development (InE), established in 1990. The Institute carried out studies into Poles' ecological awareness through CBOS (Centre for Public Opinion Research) in 1992 [9], 1993, 1997, 2000, 2002, 2008, 2009, and in 2011 [10], as well as in 2012 [11].

From the analysis of the available studies of Poles' ecological awareness it is clear that in the end of the eighties and the nineties of the last century, the Polish people were at the stage of developing their ecological awareness. On the one hand, the Polish people were aware of how significant the environmental protection is for their lives and health, and on the other, they could not draw any practical conclusions from their knowledge of that matter. The then established pro-environmental organizations and associations also played a very important role in shaping Poles' ecological awareness. The number of such organizations in 1989 was ca. 14,025 [8].

Environmental challenges require new good practice to be implemented by the contemporary society, industrial facility administrators, environmental institutions as well as by the governmental authorities and non-governmental organizations. The good practice should be underlain by educational activities offered to all environment users, by the promotion of appropriate attitudes with regard to the production of goods and the provision of services as well as by efficient use thereof. Working out practically useful procedures and acting in compliance with them could be the measures that would largely contribute to the notable results in respect of environmental protection. Local governments and municipal units more and more often perceive environmental management as an opportunity to ease pressures on the natural environment, reduce the operating costs, enhance effectiveness and improve their image [1].

The aim of the present study was to assess the respondents' opinions about their knowledge of important environmental problems faced by the world, Europe and Poland, including the related factors, the relevant objectives and the responsibility for their realization. The analysis was based on over 1,000 survey questionnaires filled in by, in the vast majority of cases (995), residents of the Podkarpackie Province. The respondents' opinions were sorted by their age, sex, place of residence, education and the declared level of environmental knowledge.

EXPERIMENTAL PROCEDURES

The research material underlying the analysis consisted of survey questionnaires filled in by 1036 people between October and December 2015. The majority of the respondents were residents of the Podkarpackie Province (995). The others resided in the provinces Lubelskie (21), Małopolskie (15) and Śląskie (5). However, not all questionnaires were filled

in completely. That is the reason why the discussion of the particular issues also provides the actual numbers of the respondents' answers.

The assessment of the phenomena under study consisted largely in assessing which opinions on a three-tier scale were chosen by the respondents, whereby acceptance of an opinion decreased with the increasing number chosen. That is, choosing number 1 meant that a given choice had been assigned the greatest importance. In other cases, the given answers were to be accepted or rejected. That is, the data obtained represented zero or one character. In order to determine the factors conditioning the answers chosen, which were the determinants governing the phenomena studied, the respondents were divided, one by one, into two groups -- by age (below and over 25), sex, place of residence (country / towns & cities), education (vocational and comprehensive secondary / university) and the knowledge of environmental issues (poor / extensive) as per their declarations. Under these conditions, the data obtained in the study could be presented in 2x2 or 2x3 two-way contingency tables. The analysis used statistics from a nonparametric test - the chi-square test [12].

That permitted us to find a link between the respondents' characteristics and their survey responses in the case where the zero hypothesis of independence of the phenomena under study, as constructed in the Introduction, was rejected.

In order to calculate the test statistics, one should, to begin with, determine the hypothetical numbers that correspond to the empirical ones and fulfil the independence condition. Given that p_{ij} is the probability of membership of a randomly chosen element in classes i and j because of the two variables included in the table, and $p_{i.}$ and $p_{.j}$ are the boundary probabilities in the lines and columns, the null hypothesis can be written as follows(1):

$$H_0: p_{ij} = p_{i.}p_{.j} \text{ for pairs of indices } i, j,$$

while the alternative hypothesis is expressed by:

$$H_1: p_{ij} \neq p_{i.}p_{.j} \text{ for some pairs of indices } i, j,$$

We will express the boundary probabilities as:

$$\hat{p}_{ij} = n_{i.} / n \text{ and}$$

$$\hat{p}_{.j} = n_{.j} / n.$$

We will determine the values expected for the table under analysis, assuming independence of the variables:

$$\hat{n}_{ij} = n\hat{p}_{i.}\hat{p}_{.j} = n(n_{i.} / n)(n_{.j} / n) = (n_{i.}n_{.j}) / n.$$

We will calculate the statistics of test χ^2 using the formula:

$$\chi^2 = \sum_{i=1}^{k}\sum_{j=1}^{l}\frac{(|n_{ij} - \hat{n}_{ij}| - 0{,}5)^2}{n_{ij}},$$

whereby the Yates' correction value (-0.5) added to the numerator refers to the 2x2 tables so that the discrete distribution of the test statistics is approximated through a continuous distribution χ^2.

The number of degrees of freedom was calculated from the product of $(k\text{-}1)(l\text{-}1)$, while the null hypothesis was rejected with validity level $\alpha = 0.05$, when $\chi^2 \geq \chi^2_{\alpha,(k-1),(l-1)}$.

RESULTS

Before starting the analysis of the relationships obtained in the survey study, we will present the characteristics of the respondents and their statements about the surveyed phenomena in the whole sample, with their determinants, and thus the division of the respondents by their characteristics, not taken into account. The relationships will be presented further on in this study, and their more detailed description will only apply to those relationships that demonstrate statistical significance.

The characteristics of the respondents in respect of their age, sex, place of residence, education and knowledge of environmental protection issues are given in Table 1. The majority of the respondents were older people, women (60%) as well as country dwellers (55%), people with vocational or comprehensive secondary education (62.5%) and those who declared to have poor knowledge of environmental protection issues (77.4%). Considering the categories defined for the characteristics, such a respondent structure should enable us to further assess the links under analysis.

Table 1. Characteristics of respondents

Particulars	Distinctive characteristics of respondents									
	Age (years)		Sex		Residence		Education		Knowledge	
	≤ 25	> 25	F	M	country	town/city	voc./comprehen	univ.	poor	ext.
Number of respondents	416	620	617	419	570	466	648	388	802	234
Proportion of respondents [%]	40.2	59.8	59.6	40.4	55.0	45.0	62.5	37.5	77.4	22.6

Source: Own elaboration

The formation of opinion on various phenomena takes place in a number of ways. The respondents' opinions, which are the subject of the study, are mostly a result of independent learning and individual interests. Table 2 gives the information sources used by the respondents to familiarize themselves with the environmental protection issues. It has been found that the Internet was the most essential source in this respect. The next most essential source was TV. Today's wide accessibility of the Internet and the possibility to search the Web for contents interesting to the user certainly make this medium a convenient source of information. The other media used to gain environmental knowledge were half less common that the Internet and TV.

Table 2. Sources of information on environmental protection and their significance according to the proportions of 993 responses [%]

Information source	Significance of information sources		
	1	2	3
papers	27.2	21.7	51.1
radio	25.4	31.7	42.9
television	57.0	24.1	18.9
Internet	66.5	10.6	22.9
friends	24.0	11.9	64.1

Source: Own elaboration

In other studies [13] relating to the assessment of ecological awareness and behaviour of Poland's population (1,000 people), which were conducted in 2014 on behalf of the Ministry of the Environment, it was found that the main information source for 76% of the respondents was TV and for 31% - the Internet. The next important sources were papers (19%), radio (16%) and family and friends (10%). Reading books (3%) and individual observation (1%) were definitely the least common forms of gaining environment-related information.

Another subject of the study was the indication of world's biggest environmental problems. The relevant results are presented in Table 3. In this case, the respondents saw the biggest hazard in air pollution. This may primarily be due to the fact that, compared to other phenomena, air pollution is relatively easy to see for oneself. The next environmental hazard indicated by the respondents was global warming. In this case, too, the ease of noticing that phenomenon, in particular on the basis of the recent observations of climate change, i.e.

relatively hot summers and mild winters, fierce storms and gusts of wind, could draw the respondents' attention to the significance of the global warming problem. Deforestation and soil erosion, the "ozone hole" and acid rain were indicated as the next significant environmental problems.

Table 3. The world's biggest environmental problems and their rank according to the proportions of 997 responses [%]

Environmental problems	Problem rank		
	1	2	3
global warming	44.7	20.4	34.9
acid rain	23.9	21.6	54.5
air pollution	51.7	19.7	28.6
"ozone hole"	38.1	21.8	40.1
deforestation and soil erosion	41.6	16.6	41.8

Source: Own elaboration

Overall, the above opinions are in line with the relevant popular beliefs among inhabitants of Poland as concluded in other studies [13]. Those respondents perceived air pollution as one the most important environmental problems in Poland. To the decided majority of the Poles surveyed (86%), climate change is a significant environmental problem, and the belief about the significance of climate change is shared by nearly nine in ten Poles, irrespective of their sex, age or education. According to the respondents, the most important reasons for bad quality of air in Poland are emissions from large energy combustion facilities and factories, and transport emissions. The respondents see a need to reduce greenhouse gas emissions and to stop global warming. This should be done as soon as possible or in the near future in order to ensure, among other things, suitable living conditions for the next generations. Only very few respondents thought there was no need at all to counter the adverse effects of climate change [13].

The next subject of the study was the assessment of the difficulties encountered in wildlife conservation in both Poland and the EU. The difficulties are presented in Table 4. It appears that, in this case, the most frequently chosen response was impunity of perpetrators of environmental damage. On the one hand, the study clearly shows that it is only the compulsion on still many people, and not their own beliefs or responsibility, that induces them to act accordingly. On the other hand, this indicates a great need to educate people and raise their awareness of the causes and effects of their being too casual in their approach to the environment, at least to the extent within our control.

Table 4. The biggest environmental problems in Poland and the EU, and their ranks according to the proportions of 997 responses [%]

Environmental problems	Problem significance		
	1	2	3
poor legal situation	44.7	20.4	34.9
limited and ineffective monitoring	23.9	21.6	54.5
impunity of perpetrators	51.7	19.7	28.6
too intensive socio-economic development	38.1	21.8	40.1
corruption	41.6	16.6	41.8

Source: Own elaboration

Poor legal situation in respect of environmental protection was another related problem. This means that there are still shortcomings in the legal norms, which favour unpunished destruction of the environment. The third cause of the deficiencies in environmental

protection as indicated by the respondents was corruption. This also involves difficulties of uncovering it and, as a result, impunity of perpetrators. In the above opinions, lesser significance was attributed to the rapid pace of economic development and the ineffective monitoring of environmental hazards.

The judgments of harmfulness for the environment of particular economic sectors are presented in Table 5. The chemical industry was indicated as the most harmful in this respect. Agriculture as the next most harmful industry was pointed out much less frequently. Other harmful industries, namely, mining and transport were pointed out similarly often. Public utilities were considered the least harmful to the environment.

Table 5. Significance of economic sectors by their harmfulness for the environment according to the proportions of 995 responses [%]

Industry	Industry significance		
	1	2	3
chemical industry	60.1	15.3	24.6
agriculture	40.1	17.3	42.6
mining industry	35.8	23.4	40.8
transport	35.5	23.1	41.4
public utilities	28.5	20.9	50.6

Source: Own elaboration

Given the scale and degree of the adverse effect on the environment, one should, however, consider e.g. transport or the mining industry linked to the power industry the most significant industries, against the above opinions, as shown by the previously cited results of the studies commissioned by the Ministry of the Environment [13].

Table 6 collates opinions about different issues related to environmental protection and to assessment of the environment in Podkarpackie. From among all the issues taken into account in this regard, the harmfulness of pollutants for human health was chosen most frequently. The next most common choice was the significance of nature conservation for the human habitat.

Table 6. Selected environmental issues in the respondents' opinions according to the proportions of 1,036 responses [%]

Environmental issues	Scale of the problem		
	1	2	3
degree of harmfulness of pollutants to health	80.3	14.3	5.4
significance of nature conservation for the environment	62.5	25.6	11.9
overprotection of flora and fauna	16.7	49.2	34.1
reconciling enterprises' goals with nature conservation	15.9	37.8	46.3
degree of environmental pollution in Podkarpackie	22.0	51.5	26.5
Podkarpackie authorities' respect for the environment	10.6	59.4	30

Source: Own elaboration

In contrast, rare problems included overprotection of animated nature and reconciling enterprises' goals with nature conservation, where the latter should certainly be one of the most important factors underpinning the operations of business entities. Among the judgements of the environmental status of the Podkarpackie Province, the majority referred to a low degree of pollution and at the same time, to at most moderate respect of the authorities and audit institutions for the environment quality.

Among the 6 principal environmental objectives included in Table 7, maintenance of environmental cleanliness was indicated as the most important. The next issue that was raised in this respect was the need to conserve energy and resources, including the water resources.

Table 7. Environmental objectives and their significance in the respondents' opinion according to the proportions of 995 responses [%]

Environmental objectives	Significance of env. objectives		
	1	2	3
maintenance of environmental cleanliness	67.9	11.2	20.9
energy and resource (e.g. water)	44.9	23.7	31.4
environmentally friendly production	29.7	25.9	44.4
awareness related to healthy lifestyles	28.4	21.5	50.1
information about harmful products	29.0	17.7	53.3

Source: Own elaboration

To a lesser and moderately equal extent, the respondents pointed out that the production of goods should be managed with its impact on the state of the environment taken into account. The other issues pointed out were the need to disseminate information about products harmful to health and the environment, and the need to raise public awareness of healthy and pro-environmental lifestyles.

The last group of opinions in the sample, with their determinants not taken into account, refers to the entities in charge of the environmental status of Poland. The opinions are collated in Table 8. The data quoted in the table show that the respondents charge all inhabitants with the greatest responsibility for environmental protection, and, by that, they obviously charge with the responsibility themselves, which proves their sensitivity to the nature conservation issues. The respondents ascribe the relevant responsibility, to a lesser or similar extent, to local governments and the managers of businesses and institutions.

Table 8. Entities responsible in the respondents' opinion for the environmental status of Poland according to the proportions of 1,006 responses [%]

The environmentally responsible	Degree of responsibility		
	1	2	3
inhabitants	54.9	14.6	30.5
relevant institutions	48.6	21.0	30.4
state authorities	43.7	16.9	39.4
local government	26.9	22.0	51.1
company/institution managers	25.8	25.5	48.6

Source: Own elaboration

The respondents' responses in this study are concordant with the opinions of those surveyed in the studies of 2014 [13] which show that the state of natural environment primarily depends on individual or organization-based activity of every one of us. The institutional factors (good law, measures taken by the government etc.) are important, too, but they were, however, pointed out less frequently. The institutions that were least frequently indicated as those being responsible for the shaping of the society's environmentally conscious attitudes and behaviour included neighbourly communities and housing cooperatives.

The above evaluation of the study results permitted us to generally describe the development of the respondents' views on the most important environmental problems. As mentioned above, the next aim of the analysis is to attempt to determine relationships between the characteristics of the surveyed and their opinions on environmental issues. The description of the connections considers only those variables which demonstrated statistically significant relationships based on the χ^2 test statistics.

The first variable subjected to the assessment covered different information sources that enabled the respondents to familiarize with the ecological issues. The relevant data are

presented in Table 9. As shown by the statistical analysis, the Internet as the most popular source of information was more frequently used by younger persons and those with poorer environmental knowledge, whereas papers were preferred by persons with wider environmental knowledge, older persons and country dwellers. Radio was more often used for such purposes by respondents with vocational or comprehensive secondary education, while TV - by those who, in their opinion, have poorer environmental knowledge.

In other studies [13], TV as the main source of information about the natural environment was most commonly used by forty- and fifty-year-old people. The Internet was a source of environmental information to young people, aged between 15 and 39 and to those with university education, which partly supports the above insights.

Table 9. Factors influencing the choice of sources of information about environmental issues according to the proportions of 993 responses [%]

Information sources	Inf. source rank	Distinctive characteristics of respondents and proportions of responses [%]														
		Age			Sex			Place of residence			Education			Environmental knowledge		
		≤ 25	> 25	Stat. sign.	F	M	Stat. sign.	Country	City/Town	Stat. sign.	voc./compreh. sec.	univ.	Stat. sign.	poor	ext.	Stat. sign.
papers	1	22.2	30.6	**	28.0	26.1	*	31.4	22.1	**				24.5	36.3	**
	2	21.9	21.6		24.2	18.0		20.7	23.0					21.5	22.6	
	3	55.9	47.8		47.8	55.9		47.9	54.9					54.0	41.1	
radio	1										28.8	19.7	**			
	2										31.7	31.8				
	3										39.5	48.5				
television	1													59.0	50.0	*
	2													23.9	24.8	
	3													17.1	25.2	
Internet	1	75.8	60.1	**										68.3	60.2	*
	2	6.2	13.5											9.4	14.6	
	3	18.0	26.4											22.3	25.2	

* - significance at probability level of p=0.05
** - significance at probability level of p=0.01
Source: Own elaboration

For the world's 5 biggest environmental problems considered in the first part of the analysis, the statistically significant differentiation between the levels of their significance referred only to people with a different level of education, as represented by the data collated in Table 10. It appears that graduates from higher education institutions see a greater environmental hazard in the greenhouse effect and global warming, while other people see it in the "ozone hole" phenomenon.

Table 10. The world's biggest environmental problems as judged by the respondents and their education levels according to the proportions of 997 responses [%]

Education	Environmental problems and proportions of responses [%]					
	global warming rank			"ozone hole" rank		
	1	2	3	1	2	3
Voc./compreh. sec.	42.9	19.3	37.8	41.5	21.5	37.0
University	47.7	22.2	30.1	32.5	22.2	45.3
Statistical significance	*			*		

* - significance at probability level of p=0.05
** - significance at probability level of p=0.01
Source: Own elaboration

The differentiation between opinions about the main problems related to environmental protection in Poland and EU countries is shown in Table 11. It can be noted that towards the most important of these problems, i.e. impunity of perpetrators, people with poorer environmental knowledge were stricter in their judgments in a statistically relevant way, whereas those who described their environmental knowledge to be wider, attributed greater significance to too intensive economic development. The latter opinion was also shared by city and town dwellers.

Table 11. Factors influencing the judgments of the environmental problems in Poland and the EU according to the proportions of 997 responses [%]

Environmental problems	Problem rank	Respondents and proportions of their responses [%]								
		Place of residence			Education			Environmental knowledge		
		Country	City/Town	Stat. sign.	voc./compreh. sec.	univ.	Stat. sign.	poor	ext.	Stat. sign.
ineffective monitoring	1				24.3	32.8	**			
	2				19.9	22.1				
	3				55.8	45.1				
impunity of perpetrators	1							53.8	44,9	*
	2							20.7	22.2	
	3							25.5	32.9	
too intensive socio-economic development	1	34.3	41.0	*				35.0	45.3	*
	2	21.4	16.6					20.1	16.5	
	3	44.3	42.4					44.9	38.2	

* - significance at probability level of p=0.05
** - significance at probability level of p=0.01
Source: Own elaboration

Ineffective monitoring turned out to be the weakest factor, in terms of statistically significant dissimilarity, to differentiate between the respondent's judgments of nature conservation barriers, whereby it was more frequently pointed out by university graduates.

The next subject of the study was the assessment of the adverse effect of different economic sectors on the environment. The study results are collated in Table 12. As previously stated, the chemical industry was identified to have the strongest adverse effect on the environment, as shown by the responses of older people and those with lower education levels. Younger people, people with vocational and comprehensive secondary education as

well as men more often indicated the adverse effect of transport. The environmental damaging effect of agriculture was noticed by people with poorer environmental knowledge. Further, danger to the environment from the mining industry was indicated by university graduates, while danger from the public utilities - by country dwellers.

Table 12. Factors influencing the judgments of significance of industries with regard to environmental hazards, according to the proportions of 995 responses [%]

Industry	Industry significance	Respondents and proportions of their responses [%]														
		Age			Sex			Place of residence			Education			Environmental knowledge		
		≤ 25	> 25	stat. sign.	women	men	stat. sign.	country	town/city	stat. sign.	voc./compreh. sec.	univ.	stat. sign.	poor	ext.	stat. sign.
chemical industry	1	55.4	66.3								60.4	59				
	2	18.5	13.1	*							17.2	12	*			
	3	26.1	23.6								22.4	28				
agriculture	1													42.0	33.6	
	2													17.5	16.6	*
	3													40.5	49.8	
mining industry	1										32.7	40				
	2										24.5	21	*			
	3										42.8	37				
transport	1	38.8	33.2		32.4	40.1					37.4	32				
	2	18.5	26.2	*	23.0	23.3	*				19.9	28	**			
	3	42.6	40.6		44.6	36.6					42.7	39				
public utilities	1							30.5	26.2							
	2							22.8	18.6	*						
	3							46.7	55.3							

* - significance at probability level of p=0.05
** - significance at probability level of p=0.01
Source: Own elaboration

Table 13 contains selected environmental issues differentiating between the respondents. It turned out that in this case, the adverse effect of pollutants on human health was stressed most strongly. This problem was more frequently indicated by people who have, in their belief, wider environmental knowledge, as well as by older people, university graduates and women. All these groups of people also assessed, more frequently than other respondents, the environment in Poland to be more polluted. Women and university graduates attributed greater significance of nature conservation for the environment. The same respondents and those having wider environmental knowledge also pointed out reconciling of enterprises' goals with nature conservation.

Table 13. Factors influencing the judgments of selected environmental issues according to the proportions of 1,036 responses [%]

Environmental issues	Phenomenon significance	Respondents and proportions of their responses [%]											
		Age			Sex			Education			Environmental knowledge		
		≤ 25	> 25	stat. sign.	women	men	stat. sign.	voc./compreh. sec.	univ.	stat. sign.	poor	ext.	stat. sign.
harmfulness of pollutants to health	1	75.7	83.4		85.7	72.3		75.9	87.6		78.0	88.0	
	2	17.5	12.1	**	11.0	19.1	**	17.6	8.8	**	16.0	8.5	**
	3	6.8	4.5		3.2	8.6		6.5	3.6		6.0	3.4	
significance of nature conservation for the environment	1				67.4	55.4		60.2	66.5				
	2				23.5	28.6	**	25.3	26.0	**			
	3				9.1	16.0		14.5	7.5				
overprotection of flora and fauna	1	14.9	17.9		15.0	19.1					14.4	24.8	
	2	54.1	46.0	*	55.8	39.6	**				50.2	45.7	**
	3	31.0	36.1		29.2	41.3					35.4	29.5	
reconciling enterprises' goals with nature conservation	1							13.1	20.7		12.9	26.4	
	2							35.6	41.2	**	38.0	36.8	**
	3							51.3	38.1		49.1	36.8	
degree of environmental pollution in Poland	1	38.0	45.2		46.8	35.6		39.4	47.2		38.7	54.7	
	2	45.7	43.4	*	42.8	46.5	**	44.1	44.6	**	45.6	39.7	**
	3	16.3	11.4		10.4	17.9		16.5	8.2		15.7	5.6	
degree of environmental pollution in Podkarpackie	1	17.8	24.8		23.7	19.6					18.5	33.8	
	2	52.4	50.8	*	54.7	46.5	**				52.4	48.3	**
	3	29.8	24.4		21.6	33.9					29.1	17.9	
Podkarpackie authorities' respect for the environment	1				10.0	11.5							
	2				63.9	52.7	**						
	3				26.1	35.8							

* - significance at probability level of p=0.05
** - significance at probability level of p=0.01
Source: Own elaboration

Older people, people with wider environmental knowledge and men more often responded affirmatively to the question relating to overprotection of animated nature. The degree of environmental pollution in the Podkarpackie Province was in turn considered high by people having (in their opinion) wider environmental knowledge, younger people and women, whereas men more often noticed the local government's respect for the environment in the area in question.

The respondents with different levels of environmental knowledge had the most different judgments of the principal nature conservation objectives presented in Table 14. The respondents with poorer environmental knowledge turned out to be more unequivocal when indicating the rank for those objectives in respect of maintenance of environmental cleanliness and of the need to conserve energy and natural resources. The next question – next in terms of the greatest number of chosen opinions about significance of the environmental objectives – was that relating to the dissemination of information about products harmful to public health and the environment. This certainly offers a chance to modify people's behaviour in their both private and working life. In a statistically relevant way, such beliefs were more frequently expressed by younger than older people, and more frequently by country dwellers compared to city and town dwellers. Men in turn placed greater emphasis on the need to shape the production process so as to make it friendly to the environment.

Table 14. Factors influencing the judgments of the environmental objectives in Poland and the EU according to the proportions of 995 responses [%]

Environmental objectives	Objective significance	Respondents and proportions of their responses [%]														
		Age			Sex			Place of residence			Education			Environmental knowledge		
		≤ 25	> 25	stat. sign.	women	men	stat. sign.	country	town/city	stat. sign.	voc./compreh. sec.	univ.	stat. sign.	poor	ext.	stat. sign.
environmental cleanliness	1													69.7	61.9	
	2													11.1	11.5	*
	3													19.2	26.5	
energy and resource conservation	1													46.9	38.1	
	2													23.3	25.2	*
	3													29.8	36.7	
environmentally friendly production	1				27.6	32.7										
	2				24.8	27.6	*									
	3				47.6	39.7										
awareness of healthy lifestyles	1										23.8	36.1		26.5	35.0	
	2										22.7	19.5	**	21.6	21.2	*
	3										53.5	44.4		51.9	43.8	
information about harmful products	1	30.3	28.2					33.6	23.5							
	2	21.2	15.3	*				18.8	16.3	**						
	3	48.5	56.5					47.6	60.2							

* - significance at probability level of p=0.05
** - significance at probability level of p=0.01
Source: Own elaboration

The need for awareness of healthy lifestyles, which need is more strongly linked to the respondents' individual behaviour, and which was more commonly demonstrated by people with a higher level of environmental knowledge and by university graduates, was also included in the environmental objectives.

The last problem at issue is the respondents' opinions about the entities responsible for the environmental status of Poland. The opinions are given in Table 15. Out of all the cases taken into account in the study, Poland's inhabitants were attributed the biggest role – most often by country dwellers and university graduates. This of course demonstrates the sensitivity of the respondents themselves to environmental issues and to the maintenance of environmental cleanliness. Responsibility for the realization of the objectives in the above regard, was in turn attributed, albeit with slightly lesser intensity, to the relevant institutions. This response was more commonly chosen by women, university graduates and people claiming to have a higher level of environmental knowledge.

Table 15. Factors influencing the judgments of the responsibility for the environmental status of Poland according to the proportions of 1,006 responses [%]

The environmentally responsible	Responsibility rank	Respondents and proportions of their responses [%]														
		Age			Sex			Place of residence			Education			Environmental knowledge		
		≤ 25	> 25	stat. sign.	women	men	stat. sign.	country	town/city	stat. sign.	voc./compreh. sec.	univ.	stat. sign.	poor	ext.	stat. sign.
inhabitants	1							58.0	51.0		51.3	60.8				
	2							14.7	14.6	*	14.9	14.1	**			
	3							27.3	34.4		33.8	25.1				
local government	1	25.4	28.0											26.4	28.8	
	2	18.1	24.6	**										20.5	27.1	*
	3	56.5	47.4											53.2	44.1	
company/institution managers	1										28.8	20.9				
	2										25.7	25.4	*			
	3										45.5	53.7				
relevant institutions	1				52.1	43.4					51.3	44.2		50.2	43.2	
	2				18.2	25.2	**				21.3	20.4	*	21.4	19.7	*
	3				29.8	31.4					27.4	35.4		28.4	37.1	

* - significance at probability level of p=0.05
** - significance at probability level of p=0.01
Source: Own elaboration

Apart from those above-named entities, also local governments were indicated as the responsible for the environmental status of Poland. This response was more frequently chosen by older people and those with wider environmental knowledge. Given that businesses and institutions have a direct influence on the state of their precincts, thus having also an impact on the environmental protection, their managements, too, were the subject of assessment in respect of environmental responsibility. The study results show that the role of the business and institution managers was more appreciated by people with vocational and comprehensive secondary education.

DISCUSSION

The survey paper by L. Kłos [8] can be considered very close to the present study in terms of subject matters. The conclusions emerging from that paper in the context of the above-presented phenomena are therefore provided below:

1. The number of people indicating the environment contamination as a dangerous phenomenon for Poland has noticeably decreased.
2. The responsibility for the state of natural environment lies, in the respondents' opinion, primarily with the inhabitants themselves as well as with the local authorities which inspire increasing trust.
3. The higher level of the society's preparedness to take action for the environment is noticeable as maintaining the ecological values becomes more and more important to an increasing number of Poles.
4. Their own and their family's health as well as their concern for the future generations are to the Poles a motive for undertaking pro-environmental activities.

5. Town and city dwellers more frequently pointed out the emergence of conflictual situations related to environmental protection in their place of residence, e.g. the problems with waste disposal, designating green areas for building development in towns and cities or with mapping out transport routes etc. [8].

The data of 2014, included in the Report of the Ministry of the Environment [13] show that, in the opinion of the majority of the respondents, the environmental problems are not the most important challenge Poland is faced with. Such a belief may result in dangerous elimination of the need of Poland's inhabitants to independently search for information about the natural environment and its protection, and in settling for the information transmitted in mass media.

CONCLUSIONS

The study was aimed at analysing opinions about the current environmental problems and related action. The research material included 1,036 survey questionnaires filled in by people living, in the vast majority of cases, in the Podkarpackie Province. The determinants of differentiation between the respondents' opinions, adopted for the study, were the respondents' age, sex, place of residence, education and the declared level of environmental knowledge. The evaluation of the impact of the respondents' characteristics on their views was based on the chi-square test statistics.

It was found in the first part of the analysis, which did not cover the above determinants, that the most important sources of environmental knowledge were the Internet and television. Air pollution, global warming, deforestation and soil erosion emerged in turn as the most important environmental problems for the respondents, while the chemical industry and agriculture were indicated as the entities that bear the greatest responsibility for the environment contamination. The aspiration to maintain environmental cleanliness and the need to conserve energy and natural resources were identified as the principal environmental objectives. All citizens and relevant institutions were found to bear the greatest responsibility for the realization of those objectives.

When taken into account, the determinants of the respondents' opinions did not always differentiate between them in a statistically relevant way, which is a result of moderately great similarity of the opinions spread among different social groups. They turned out to be, however, replaceable in some situations. The world's biggest environmental problems in the form of global warming or the "ozone hole" were only seen differently by people with different education levels. From among the economic sectors that have the strongest adverse effect on the environment, older people and people with vocational and comprehensive secondary education more often chose the chemical industry, while younger people, men and again, those without university education chose transport. Agriculture was indicated by people declaring to have poor environmental knowledge, the mining industry - by university graduates, and the public utilities were chosen by country dwellers. Among the difficulties related to the realization of the nature conservation objectives, the most commonly indicated – by people with poor environmental knowledge – was impunity of perpetrators. The next most common difficulty was too intensive economic development, as indicated by city and town dwellers and people with wider environmental knowledge, while monitoring ineffectiveness more frequently pointed out by university graduates.

Overall, the differentiation between the opinions expressed by the social groups under study is often slight and, on the other hand, not always consistent with the expectations. Tellingly, no positive correlation can be in some cases found between the consensus of opinion about the problems, the state and the activities that may affect the environment and the levels of education and environmental knowledge. This shows that higher education does not guarantee sufficient knowledge of environmental issues and one's belief about the extent

of one's knowledge in this respect can be misguided. This entails that even more effort should be put into the promotion of knowledge, especially information concerning the causes of the environmental degradation. Furthermore, the identification of impunity of perpetrators of the nature devastation as the main environmental problem indicates the need to develop a mindset and to shape behaviour that will encourage respect for the environment.

The results of this study seem promising because they represent a positive trend in awareness and environmental behaviour of the Podkarpackie Province inhabitants, which is in concordance with the opinions of the majority of Poles.

The implementation of educational projects and the activity carried out by many governmental and non-governmental institutions foster the slow increase in social information covering issues related to climate change and practices for environmental protection. Moreover, through the promotion of a number of everyday activities (like saving water and energy, sorting waste) we can have an influence on the environment quality and biodiversity protection. It should be noted that the climate change has a direct impact on the life of all plant and animal species on the Earth. The effects can be already observed in the polar climate.

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