

REGIONAL RESILIENCE: PRO-ECOLOGICAL ATTITUDES OF LUBLIN REGION RESIDENTS

Elena MIESZAJKINA^{1*}, Marlena DZIURA²

¹ Lublin University of Technology, Faculty of Management, Department of Management;
e.mieszajkina@pollub.pl, ORCID: 0000-0002-3449-4059

² Lublin University of Technology, Faculty of Management; m.dziura@pollub.edu.pl

* Correspondence author

Purpose: The growing importance of regionalization in the modern world has aroused increasing interest among researchers in regional resilience issues. Residents' behavior plays a crucial role in regionalization's construction, both environmentally, socially, and economically. The article aims to present the results of literature and empirical research on the pro-ecological attitudes of Lublin region's urban and rural residents.

Design/methodology/approach: The research was based on two methods. The analysis and critique literature method allowed to explore the theoretical basis of the topic undertaken and showed the need for research on residents' pro-ecological attitudes. The empirical research was conducted using the diagnostic survey method using the Internet survey technique.

Findings: It was found that the majority of urban and rural residents are ecologically conscious and consider the pro-ecological attitude to be important and necessary. There are slight differences in the extent of ecological activities undertaken by urban and rural residents. Greater environmental awareness is observed among those with higher educational levels.

Research limitations/implications: The research was a pilot study, allowing for the verification of the research problem and checking the research tool. The relevance of the subject matter undertaken and the need for continued research in this area is revealed. It is necessary to clarify the research tool, expand its scope and replicate it on a larger sample.

Practical implications: The main practical effect of the presented research is to confirm that urban and rural residents are taking pro-ecological measures and are aware that their behavior affects the region's environmental status. The information obtained provided a basis for developing recommendations on what local government authorities and organizations working for the sustainable development of regions can undertake to strengthen their resilience.

Social implications: The survey results allow us to assess the extent to which residents understand the relationship between humans and the environment, and whether they think and act ecologically. Confirm the need for systemic measures to strengthen their pro-ecological attitudes.

Originality/value: The article presents the role of residents' pro-ecological attitudes in building regional resilience. Its value is to design a research concept to assess the environmental attitudes of urban and rural residents.

Keywords: regional resilience, sustainable development, pro-ecological attitude.

Category of the paper: Research paper.

1. Introduction

The concept of resilience originated in the 1970s. The term was introduced to the scientific literature by Canadian ecologist Hollings (1973), who defined resilience as the ability of an ecosystem to absorb disturbances and reorganize itself so that it can continue to function in essentially the same form and structure. In subsequent years, resilience issues were addressed by representatives of many other sciences, such as management, economics, psychology, sociology, and urban planning (Masik, 2022). Currently, this concept's assumptions are used in planning sustainable development in the context of global challenges, such as environmental, political, economic and social crises.

The resilience of regions (countries, provinces, cities) means their ability to adapt, survive and even develop in difficult, crisis situations. According to Masik (2022), it is the ability of a region's communities, economy and institutions to withstand, adapt and transform the regional system given internal stresses and external disruptions. When analyzing the resilience of regions, not only current challenges are considered, but also preparation for future unpredictable changes.

The regional resilience concept shares common assumptions with the sustainable development concept. An important aspect of each is ecology. Regions that can effectively maintain healthy ecosystems are better prepared for future environmental challenges and can provide a better life quality for their residents. Environmental care in an era of intensifying climate change should be a priority task in people's and organizations' daily functioning. This is also an obligation under the Polish Constitution and the European Union's environmental policy (Jakubowska, 2008; Szwed, 2022).

Increasing numbers of companies are working by the principles of sustainable development and care for the environment. The Polish population's environmental awareness is also growing. According to the 6th edition of the EKObrometer survey conducted by the SW Research institute, 72% of Poles believe that the current state of the environment is a significant problem (EKObrometr, 2024). Residents' environmental attitudes contribute to the creation of more sustainable and integrated regions, significantly enhancing their ability to cope with various challenges and crises. Concerns about the state of the environment at the place of residence are more often declared by residents of larger cities than in rural areas (Fundacja CBOS, 2020). This research presented here is aimed at a comparative analysis of the pro-ecological attitudes of urban and rural residents in the Lublin region.

2. Residents' pro-ecological attitudes in the concepts of sustainable development and regional resilience

The “sustainable development” concept was defined in 1987 in the World Commission on Environment and Development's Report “Our Common Future” (the Brundtland Report) as a process aimed at satisfying the development aspirations of the current generation, in a way that will enable future generations to realize the same aspirations (UNESCO..., 2024). To achieve this goal, global, integrated action is necessary in three key areas (Figure 1): 1) responsible, long-term economic growth for all nations and communities and the equitable distribution of benefits; 2) conservation of natural resources and the environment; 3) social development (Mieszajkina, 2016).

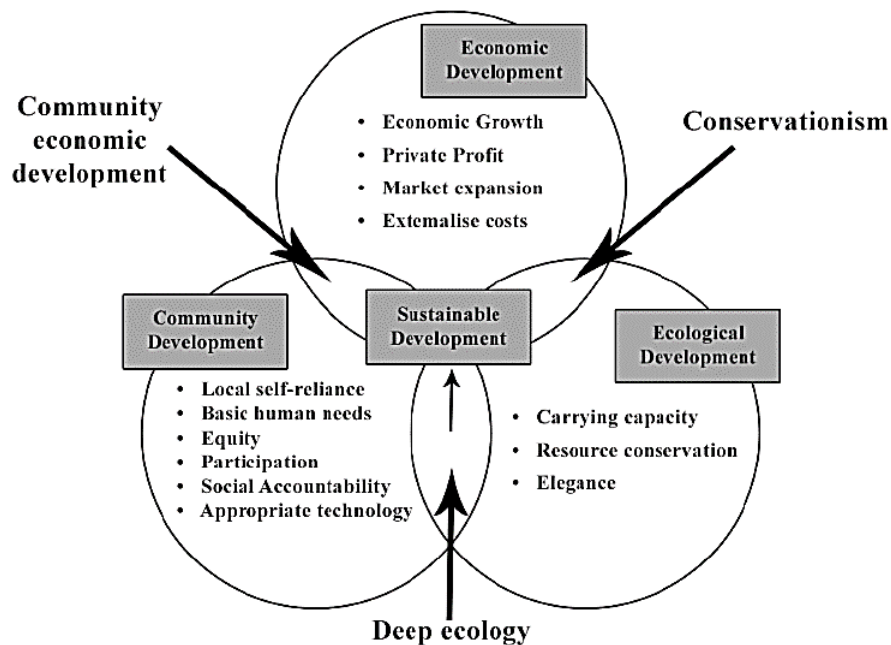


Figure 1. The sustainable development model.

Source: Mieszajkina, 2016, p. 166.

The concept assumes forming the relationship between economic growth and environmental care and life quality in such a way that it does not cause unnecessary, excessive burdens on the environment (Szumski, 2019). Therefore, sustainable development is a specific compromise between the environmental, social and economic needs that determine the well-being of present and future generations (Borys, 2015).

In 2015, 193 leaders of United Nations member countries adopted a document entitled. “Transforming Our World: 2030 Agenda for Sustainable Development” (2024). It contained 17 Sustainable Development Goals and 169 related targets for the world to achieve by 2030. They concern achievements in 5 areas: people, planet, prosperity, peace, partnership (Raczkowska, Mikula, Utzig, 2021). The Agenda emphasizes that global problems, primarily

climate, but also economic and social, are becoming increasingly complex, and cannot be solved at the level of an individual or even a single organization and a single country.

Achieving economic and social goals is largely determined by the state of the environment. Irresponsible human actions are destroying homeostasis mechanisms and causing nature to no longer be a self-regulating system. To achieve a state of equilibrium, it urgently needs human help (Szumski, 2019). The role of the public's ecological awareness, resulting from an understanding of the inextricable link between humans and the environment, is important here. This awareness is the basis for the development of a person willing and able to live in harmony with the natural elements (Perepeczko, 2012).

Ecological activities are also needed to improve the competitiveness, economic performance and resilience of regional units (voivodeships, cities, municipalities). The negative effects of the climate transition are already being experienced around the world. Mitigating and containing climate change is costly and can be somewhat burdensome when considering the multitude of components, processes and interactions occurring within the region's borders. However, this is necessary to provide current and future generations with comparable or better living conditions. The resilience concept is used in the research of phenomena and processes occurring in the territories of different levels of territorial units (Drobniak, 2017). Building regional resilience is a process that requires integrated action at the political, economic and social levels. This holistic approach will overcome existing structural, financial and social constraints (Boyer et al., 2017).

It is necessary to consider each region's specific characteristics, demographic differences, economic structures, geographic context, and environmental and climatic conditions. Activities, positive for the ecosystem of one area, may negatively affect other places or ecosystems. Adequate climate policy is needed, implemented not only at the national level, but also at the level of individual regions (Bronisz, 2024).

The environmental problems highlighted in the concepts of sustainable development and regional resilience require a systemic combination of actions by regional authorities, businesses, but also residents and other stakeholders. Since people have one of the most important roles in building the region's resilience, it is essential to strengthen their environmental awareness. People are the ones who determine the creation, management and maintenance of all regional systems, such as transportation, water and sewage, energy, waste management, etc. (Desouza, Flanery, 2013). Therefore, environmental education is extremely important. According to Sandner (2007), the methods used to teach environmental knowledge do not completely correspond to the needs of societies exposed to increasingly new challenges. The problem of nature education still lacks a holistic approach to ensure a better understanding of the environment.

Achieving sustainable development goals and the regions' resilience is possible provided that pro-ecological attitudes and behaviors of their inhabitants are consolidated. The term "attitude" means "a person's attitude to life or certain phenomena, expressing his views;

also: a way of acting or behaving towards certain phenomena, events or concerning people.” (PWNa, 2024). The term "pro-ecological" means "conducive to maintaining balance in nature" (PWNb, 2024). Therefore, it is possible to consider a pro-ecological attitude as an individual's way of thinking and acting, which manifests itself in respect for the laws of nature, caring for environmental protection and understanding the relationship between humans and nature.

A person who presents a pro-ecological attitude does not avoid all the conveniences of the modern world but can combine them with living in harmony with nature. Is functioning in such a way that the activities undertaken do not cause a destructive impact on the environment (Perepeczko, 2012). It is aware of the consequences of its actions and makes decisions that have the least possible negative environmental impact. Characterized by a certain awareness of both social and environmental issues (Ziarnicka-Wojtaszek, 2011). In addition to adequate knowledge of the environment and human behavior, also understands that there is an unbroken bond between humans and nature (Seroka-Stolka, 2012). Therefore, a pro-ecological attitude is not easy to develop, it involves understanding the threat that progressive changes in the environment have on people's livelihoods. The realization of this connection forces people to seek appropriate solutions. Therefore, a pro-ecological attitude encompasses many behaviors that will eventually allow a person to live in harmony with nature. They result from a sense of responsibility for their actions, an awareness of environmental problems and a desire to live a sustainable lifestyle (Perepeczko, 2012).

3. Research methodology

The adopted research procedure included an analysis of the literature on the research topic. This allowed us to pose the following research problem: Do the residents of urban and rural Lublin areas have pro-ecological attitudes and what are their similarities and differences? The empirical research aimed to analyze the pro-ecological attitudes of urban and rural residents in the Lublin region. Five hypotheses were formulated:

1. Residents of both areas consider pro-ecological attitudes to be important and recognize environmental problems in the surrounding area.
2. Urban residents have a higher level of environmental awareness than rural residents.
3. Urban residents take more pro-ecological measures than rural residents.
4. The pro-ecological attitudes of the region's residents are more influenced by factors of an internal nature than by factors of an external nature.
5. People with higher levels of education show more advanced environmental attitudes.

To achieve the research goal, a diagnostic survey method was used, an online survey technique. The research tool was an original survey questionnaire consisting of 12 questions. The first four questions were metrics (gender, age, education, place of residence).

The remaining eight questions were used to verify the research hypotheses. The survey questionnaire was distributed to 200 respondents via the Internet. The sample selection was purposeful. The research was a pilot study, therefore the use of a random mechanism and the preparation of a sampling frame, that is, a list of elements that form the study population, was abandoned. The non-random respondent sampling consisted of their subjective selection by the authors, but the goal was to create a near-representative sample. In cities, people living in single-family homes were invited to participate in the survey to ensure that daily living conditions were comparable to those of rural residents. 169 correctly completed questionnaires were obtained.

Research sample structure:

- urban residents: 49.1%, rural: 50.9%;
- women: 54.4%, men: 45.6%;
- 18-24 year olds: 27.8%; 25-34 years: 10.7%; 35-44 years: 26%; 45-54 years: 8.3%; 55-64 years: 9.5%, over 65 years: 17.7%;
- primary education: 4.7%, secondary: 39.1%, vocational: 13.6%, higher: 42.6%.

4. Research results and analysis

The first survey questions concerned the respondents' pro-ecological attitudes and existing environmental problems in the surroundings.

Table 1 shows how important the pro-ecological attitude is to respondents. The rating was made on a scale from 1 - definitely not important to 5 - very important (here and hereafter N denotes the number of respondents).

Table 1.
The importance of pro-ecological attitude for respondents

Group of respondents	Rating										Weighted average rating
	1		2		3		4		5		
	N	%	N	%	N	%	N	%	N	%	
Total sample (169 people)	2	1.2	7	4.1	13	7.7	69	40.8	78	46.2	4.27
Urban residents (83 people)	0	0.0	3	3.6	4	4.8	35	42.2	41	49.4	4.37
Rural residents (86 people)	2	2.3	4	4.7	9	10.5	34	39.5	37	43.0	4.16

Source: own elaboration.

For 87% of respondents, a pro-ecological attitude is very important (answers 4 and 5). An overwhelming majority of urban (91.6%) and rural (82.5%) respondents confirm the importance of pro-ecological behavior, as evidenced by high weighted average ratings. However, there are noticeable differences between the two groups. More urban residents consider this attitude very important, which may be due to greater environmental awareness, access to education, and environmental problems that are more noticeable in urban areas.

Rural residents, although to a slightly lesser degree, also appreciate the importance of pro-ecological attitudes, which may be related to their daily contact with the environment. Differences may also result from different life priorities or environmental education levels. Therefore, respondents were asked whether they were interested in environmental issues (Table 2). Respondents gave answers on a scale of 1 - not at all interested, 5 - very interested.

Table 2.*Respondents' interest in environmental issues*

Group of respondents	Rating										Weighted average rating
	1		2		3		4		5		
	N	%	N	%	N	%	N	%	N	%	
Total sample	13	7.7	18	10.7	57	33.7	48	28.4	33	19.5	3.41
Urban residents	6	7.2	5	6.0	26	31.4	24	28.9	22	26.5	3.61
Rural residents	7	8.1	13	15.1	31	36.1	24	27.9	11	12.8	3.22

Source: own elaboration.

Nearly half of the respondents (47.9%) show a strong interest in ecological topics (ratings of 4 and 5). Regarding this question, there is also an apparent difference between urban (55.4%) and rural (40.7%) residents. This result partly explains the differences in the residents' attitudes of the two groups indicated in the previous question, since people's attitudes are to some extent shaped by the information they have.

Table 3 presents where respondents obtain information about environmental issues. Respondents had the opportunity to indicate more than one answer, therefore the results do not sum to 100%.

Table 3.*Sources of information on ecological issues*

Sources of information	Group of respondents					
	Total sample		Urban residents		Rural residents	
	N	%	N	%	N	%
Internet	133	78.7	62	74.7	71	82.6
Social media	83	49.1	40	48.2	43	50.0
Television	72	42.6	40	48.2	32	37.2
Radio	51	30.2	25	30.1	26	30.2
Family/friends	46	27.2	26	31.3	20	23.3
Journals/magazines	43	25.4	26	31.3	17	19.8
School/university	26	15.4	9	10.8	17	19.8

Source: own elaboration.

Regarding the entire sample, the vast majority of people obtain information on ecology from the Internet (78.7%). Following in second place is social media, from which 56.6% of respondents get their information. The least frequently chosen source of ecological information by respondents is journals and magazines, used by 17.1% of respondents.

Subsequently, respondents were asked about the appearance of particular environmental problems where they live (Table 4). The rating was made on a scale from 1 - definitely not present to 5 - definitely present. Here and hereafter, detailed data by rating is presented for the total sample. Only weighted average ratings are given separately for urban and rural residents.

Table 4.*Occurrence of ecological problems in the respondents' place of residence*

Ecological problems	Rating										Weighted average rating		
	1		2		3		4		5		Total sample	City	Village
	N	%	N	%	N	%	N	%	N	%			
Non-ecological consumer behavior	10	5.9	24	14.2	25	14.8	61	36.1	49	29.0	3.68	3.82	3.55
Improper waste management in the region	9	5.3	32	18.9	37	21.9	45	26.6	46	27.2	3.51	3.53	3.42
Climate change	11	6.5	38	22.5	25	14.8	53	31.4	42	24.9	3.46	3.78	3.22
Low use of renewable energy sources	17	10.1	24	14.2	33	19.5	60	35.5	35	20.7	3.43	3.57	3.30
Air pollution	20	11.8	49	29.0	11	6.5	43	25.4	46	27.2	3.27	3.75	2.81
Water pollution	16	9.5	62	36.7	22	13.0	41	24.3	28	16.6	3.02	3.18	2.81
Soil pollution	17	10.1	58	34.3	30	17.8	41	24.3	23	13.6	2.97	3.10	2.85
Lack of green spaces	62	36.7	43	25.4	12	7.1	22	13.0	30	17.8	2.50	3.05	1.97

Source: own elaboration.

The region's residents identified non-ecological consumer behavior as the biggest problem, accounting for 65.1% of them indicating answers 4 and 5. This means that many people around them do not care enough about the environment. More than half of the respondents believe that inadequate waste management in the region, i.e. collection, processing, disposal of waste, is very common. Climate change and the low use of renewable energy sources among the region's residents are also significant concerns. A comparison of the respondents' answers from both areas reveals the intensity of environmental problems is higher in cities than in villages. Higher weighted average ratings for all mentioned problems confirm this.

The analyses conducted confirm hypothesis 1.

To verify hypothesis 2, respondents were asked two questions. In the first, respondents were asked to identify among the twenty proposed activities which are environmentally friendly. Respondents were not informed about the number of environmentally friendly activities or which ones are of this nature. Table 5 presents their responses (grey color indicates non-ecological activities). Respondents could mark more than one answer, so the results do not sum to 100%.

Table 5.*Evaluation of activities belonging to pro-ecological ones*

Activities	Answer: YES					
	Total sample		City		Village	
	N	%	N	%	N	%
Waste segregation by residents	153	90.5	77	92.8	76	88.4
Saving water	129	76.3	68	81.9	61	70.9
Planting trees	122	72.2	63	75.9	59	68.6
Saving electricity	110	65.1	54	65.1	56	65.1
Choosing reusable packaging	104	65.1	56	67.5	48	55.8
Selective waste collection by the municipality	110	61.5	57	68.7	53	61.6
Using public transport	85	50.3	43	51.8	43	50.0
Participation in world cleaning actions	71	42.0	35	42.2	36	41.9
Investments for ecology	77	45.6	42	50.6	35	40.7

Cont. table 5.

Buying organic products	67	39.6	33	39.8	34	39.5
Encouraging friends to take pro-ecological actions	61	36.1	32	38.6	29	33.7
Bringing non-ecological behavior to others' attention	50	29.6	26	31.3	24	27.9
Promoting ecological slogans	45	26.6	27	32.5	18	20.9
Purchase of a hybrid/electric car	32	18.9	18	21.7	14	16.3
Using air transport	20	11.8	10	12.0	10	11.6
Using disposable packaging, dishes, etc.	17	10.1	8	9.6	9	10.5
Using cars and other combustion vehicles	10	5.9	3	3.6	7	8.1
Buying products for storing	5	3.0	1	1.2	4	4.7
Using fertilizers and pesticides	2	1.2	0	0.0	2	2.3
Burning waste	4	2.4	3	3.6	1	1.2

Source: own elaboration.

More than 50% of the region's residents considered activities with numbers 1 through 7 as pro-ecological. It is worth noting that in recent years they have been promoted in the mass media. The vast majority of respondents consider waste segregation as a pro-ecological activity. Slightly fewer respondents include saving water and planting trees. However, each item in the environmental action group was marked more often by urban residents. The listed non-ecological behaviors were considered ecological by a few respondents, with slightly more respondents living in rural areas. Therefore, it can be concluded that the region's residents can distinguish between ecological and non-ecological behavior, and their knowledge is greater for activities about which information is widely available.

The second question concerned the possibility of receiving funding to adapt a household to environmental requirements under specific programs implemented at the national or regional level. Respondents provided answers on a scale: 1 - I don't know anything about this program, 2 - I have heard about it but don't know exactly what it is about, 3 - I know what it is about but I don't use it, 4 - I intend to use it, 5 - I have used or am using it. They are presented in Table 6.

Table 6.

Financing pro-ecological activities in the opinion of respondents

Types of financing	Rating										Weighted average rating		
	1		2		3		4		5		Total sample	City	Village
	N	%	N	%	N	%	N	%	N	%			
For photovoltaic installation	16	9.5	32	18.9	57	33.7	14	8.3	50	29.6	3.30	3.23	3.34
For replacing the furnace	18	10.7	32	18.9	71	42.0	20	11.8	28	16.6	3.05	3.01	3.09
For the purchase of a heat pump	25	14.8	34	20.1	80	47.3	14	8.3	15	8.9	2.75	2.81	2.72
For rainwater tanks	51	30.2	33	19.5	46	27.2	19	11.2	19	11.2	2.52	2.63	2.45
For window replacement	50	29.6	31	18.3	58	34.3	19	11.2	10	5.9	2.44	2.46	2.45
For the purchase of electric cars	60	35.5	42	24.9	58	34.3	7	4.1	1	0.6	2.08	2.28	1.92
For the replacement of window sills	76	45.0	28	16.6	49	29.0	11	6.5	4	2.4	2.03	2.12	1.98

Source: own elaboration.

Most respondents know (answers 3, 4, 5) about the possibility of obtaining all the listed subsidies. Most people (71.6%) claim familiarity with subsidy programs for photovoltaic installation, furnace replacement (70.4%) and heat pump purchase (64.5%). However,

few respondents implemented these solutions in practice. The largest number of residents in the region have used or intend to use subsidies for photovoltaic installation (37.9%), slightly fewer (28.4%) for furnace replacement and only 17.2% for heat pump purchase. It should be noted that these three programs are the most heavily promoted in the mass media, while bringing the most benefits to their consumers and the environment. The least known are subsidy programs for replacing window sills and purchasing electric cars - a significant percentage of respondents (45% and 35.5%, respectively) have no knowledge of them. The region's least popular subsidies are replacing window sills (8.9% of respondents intend to use or have used them) and purchasing electric cars (4.7%). The possibility of replacing window sills and windows is not sufficiently promoted in the mass media, and implementing these measures is accompanied by other costs associated with the building renovation. For electric cars, there is a divergence of opinion - not everyone believes that it is an ecological solution. Despite the subsidies, the purchase costs are quite substantial. Comparing the data for urban and rural areas, it can be noticed that the weighted average ratings for most of the listed urban subsidy programs were higher than for rural areas. The exceptions are subsidies for photovoltaics and furnace replacement, which may be due to additional support for rural residents under rural development programs.

The analysis of respondents' answers to the two questions above does not provide the basis for rejecting hypothesis 2 and confirms that urban residents have a higher level of environmental awareness than rural residents. However, it should be noted that the observed differences are not large.

Hypothesis 3 concerned taking pro-ecological measures by residents of the Lublin region. Table 7 presents respondents' answers given on a scale from 1 - I don't do it at all to 5 - I do it very often.

Table 6.
Respondents' undertaking pro-ecological activities

Activities	Rating										Weighted average rating		
	1		2		3		4		5		Total sample	City	Village
	N	%	N	%	N	%	N	%	N	%			
I segregate waste	5	3.0	3	1.8	20	11.8	39	23.1	102	60.4	4.36	4.46	4.27
I don't waste food	4	2.4	12	7.1	33	19.5	49	29.0	71	42.0	4.01	4.01	4.01
I save water	3	1.8	8	4.7	37	21.9	58	34.3	63	37.3	4.01	4.04	3.98
I choose reusable packaging	16	9.5	7	4.1	30	17.8	52	30.8	64	37.9	3.83	3.94	3.73
I save electricity	10	5.9	10	5.9	44	26.0	44	26.0	61	36.1	3.80	3.83	3.78
I use biomass (e.g. I heat my house with wood)	42	24.9	11	6.5	29	17.2	29	17.2	58	34.3	3.30	2.75	3.85
I use organic products	16	9.5	30	17.8	54	32.0	31	18.3	38	22.5	3.27	3.40	3.16
I use renewable energy sources	54	32.0	15	8.9	17	10.1	27	16.0	56	33.1	3.09	2.99	3.20
I collect rainwater	50	29.6	18	10.7	24	14.2	23	13.6	54	32.0	3.08	2.86	3.31
I plant trees	34	20.1	20	11.8	46	27.2	38	22.5	31	18.3	3.07	3.94	3.14
I use public transport or a bike	40	23.7	25	14.8	38	22.5	26	15.4	40	23.7	3.01	3.35	2.67

Cont. table 6.

I draw others' attention to unecological behavior	39	23.1	26	15.4	48	28.4	30	17.8	26	15.4	2.87	2.92	2.83
I encourage my friends to care for the environment	39	23.1	29	17.2	55	32.5	32	18.9	14	8.3	2.72	2.83	2.62
I promote ecological slogans and activities	60	35.5	32	18.9	37	21.9	25	14.8	15	8.9	2.43	2.63	2.23
I participate in world cleaning actions	59	34.9	39	23.1	41	24.3	18	10.7	12	7.1	2.32	2.37	2.27

Source: own elaboration.

Respondents' two most common pro-ecological activities were separating waste, not wasting food and saving water - weighted average ratings above 4. The high position of the first activity is not surprising, since segregating garbage is the residents' obligation. However, it may be surprising that almost 10% of respondents do not segregate waste or do it occasionally (responses 1 and 2). The second activity - not wasting food - indicates changes in people's shopping attitudes. According to research, in Poland, more than half of wasted food comes from households (Oszczędź sobie..., 2024). The fact that 83.5% of respondents do not waste food is probably due not only to a desire to save money, but also for ethical and environmental reasons and a desire to follow the principles of the Zero Waste concept. Another activity that most respondents (71.6%) perform often or very often is saving water, resulting directly in financial savings. The least frequently practised activities are participating in world cleaning campaigns and promoting environmental slogans and activities - just over a third of respondents have never done this. Such campaigns have been undertaken in Poland for 30 years, including in the Lublin region, with many people participating. Respondents' low involvement may result from a lack of time or insufficient information.

Comparing the respondents' answers, it should be noted that urban residents were much more likely to indicate ratings of 4 and 5 than rural residents. Weighted average ratings are also higher for urban areas for 11 of the 15 pro-ecological measures proposed for evaluation. The exceptions are not wasting food, where the weighted average ratings are the same, and the use of biomass, use of renewable energy sources and rainwater collection, where they are slightly higher for rural areas. Therefore, there is no basis for rejecting hypothesis 3.

Residents were then asked what motivates them to be pro-ecological. Respondents were asked to rate each proposed motivator on a scale from 1 - no impact to 5 - very high impact. The responses are presented in Table 7.

Table 7.
Factors motivating respondents to adopt a pro-ecological attitude

Factors	Rating										Weighted average rating		
	1		2		3		4		5		Total sample	City	Village
	N	%	N	%	N	%	N	%	N	%			
Personal values and beliefs	9	5.3	10	5.9	31	18.3	54	32.0	65	38.5	3.92	4.04	3.81
Ecological awareness	8	4.7	12	7.1	30	17.8	63	37.3	56	33.1	3.87	3.92	3.83
Educational programs	7	4.1	16	9.5	37	21.9	52	30.8	57	33.7	3.81	3.87	3.74
State of the local environment	14	8.3	12	7.1	29	17.2	55	32.5	59	34.9	3.79	3.86	3.72
Available ecological information	12	7.1	14	8.3	37	21.9	61	36.1	45	26.6	3.67	3.82	3.52
Noticeable or anticipated financial benefits	9	5.3	22	13.0	36	21.3	56	33.1	46	27.2	3.64	3.67	3.60
Observed attitudes in the family and environment	18	10.7	15	8.9	35	20.7	52	30.8	49	29.0	3.59	3.59	3.58
Media and social campaigns	16	9.5	19	11.2	34	20.1	55	32.5	45	26.6	3.56	3.66	3.47
Available ecological technologies	19	11.2	15	8.9	40	23.7	59	34.9	36	21.3	3.46	3.40	3.52
Local culture	17	10.1	20	11.8	43	25.4	52	30.8	37	21.9	3.43	3.47	3.38
Available financial subsidies	25	14.8	15	8.9	42	24.9	48	28.4	39	23.1	3.36	3.37	3.37
Government and local programs	23	13.6	25	14.8	46	27.2	46	27.2	29	17.2	3.20	3.31	3.08

Source: own elaboration.

All the factors mentioned in the survey have an impact on building the ecological attitude of the region's residents. They are most motivated by their own values and personal beliefs, with 70.5% of respondents answering 4 and 5, and a weighted average of 3.92. Almost the same result occurs with ecological awareness. Education and information about ecology are quite important in building pro-ecological attitudes. Attitudes such as these also result largely from observing the state of the local environment. It is worrying that financial subsidies and government and local programs are the least likely to activate respondents to be "eco" (weighted average ratings of 3.36 and 3.2, respectively). There are no significant differences between urban and rural residents, although almost all factors affect urban residents slightly more. Among those proposed for evaluation were internal motivators, which derive from personal beliefs and values, and external motivators, based on incentives from the environment. Respondents' answers analysis reveals that internal factors (e.g., values, beliefs, desire for financial benefits) contribute slightly more strongly to building respondents' pro-ecological attitudes than external factors (education, information, ecological programs, etc.). The differences are more noticeable in urban areas. Regarding the entire sample, they are so insignificant that Hypothesis 4 cannot be confirmed with absolute certainty that internal factors are more influential than external ones.

Hypothesis 5 assumed that people with higher education levels showed more advanced pro-ecological attitudes. Table 8 presents data on the frequency of undertaking the environmental activities listed in Table 6 by level of education.

Table 10.*Respondents' undertaking of pro-ecological activities divided by education*

Activities	Weighted average rating			
	Higher	Secondary	Vocational	Elementary
I segregate waste	4.21	3.91	3.78	3.75
I don't waste food	4.58	4.24	4.09	4.25
I save water	4.33	3.82	3.65	3.63
I choose reusable packaging	4.14	3.74	3.35	3.25
I save electricity	4.22	3.61	3.22	3.38
I use biomass (e.g. I heat my house with wood)	3.04	3.44	3.52	3.75
I use organic products	3.61	3.05	2.96	2.88
I use renewable energy sources	2.93	3.32	3.13	2.63
I collect rainwater	3.17	2.97	3.00	2.13
I plant trees	3.06	3.21	2.83	3.13
I use public transport or a bike	3.31	2.85	3.04	2.88
I draw others' attention to unecological behavior	3.03	2.88	2.74	1.75
I encourage my friends to care for the environment	2.96	2.70	2.61	1.50
I promote ecological slogans and activities	2.79	2.23	2.13	1.63
I participate in world cleaning actions	2.63	2.17	2.00	1.75

Source: own elaboration.

People with higher education are more involved practically in all environmental activities. Exceptions include activities such as the use of biomass, the use of renewable energy sources and rainwater collection. However, the validity of the inference for this question is slightly limited, as the survey included 72 people with higher education, 23 with vocational education, 66 with secondary education and only 8 with primary education. Nevertheless, hypothesis 5 can be considered confirmed.

5. Conclusions

Research has revealed that a pro-ecological attitude is important to Lublin region residents. People living in cities and villages are undertaking a variety of pro-ecological activities, which is optimistic concerning the region's environmental protection and resilience. People's attitudes are the result of complex processes and are influenced by factors such as: values and beliefs, information and knowledge, personal experiences, contacts with other people or situations, emotions, social influences, actions of public, economic, and social entities. Internal and external motivators affect the behavior of urban and rural residents with varying degrees of intensity. It's worth considering what can be changed, added, better targeted to support pro-ecological attitudes.

Based on the analysis of respondents' answers, proposals were formulated to strengthen the pro-ecological attitudes of Lublin region residents. Since they depend to the greatest extent on people's values and beliefs and ecological awareness, educational activities should be intensified. Residents need to understand why it is worth taking care of the environment. It is necessary to organize information campaigns, workshops and training on ecology,

environmental protection and sustainable lifestyles for different age groups. Relevant topics can be introduced into the primary and secondary school curriculum through various activities, environmental weeks and competitions can be implemented, students can be involved in developing environmental projects, field trips to local environmental organizations can be organized. It is worthwhile to take advantage of the interesting environmental projects of International Development Norway (Climate protection in Norway..., 2024). Ecological education for adults can take many forms. For professionally active people, educational workshops can be held at workplaces. For the unemployed, such projects could be organized by local government units, local non-government organizations, universities of the third age, cultural centers, schools and universities.

A significant role in developing pro-ecological attitudes comes from various social campaigns promoting, for example, proper segregation of waste, energy and water conservation, reduction of plastic consumption, choosing public transportation or bicycles instead of cars. Initiatives such as conducting regular information campaigns on Facebook, Instagram or TikTok to promote ecological habits and their benefits can be helpful. A way to reach a wide range of people is to engage influencers. Information promoting pro-ecological practices can be conveyed to older people through articles and guides in local newspapers, radio and television spots, leaflets in clinics, offices, etc.

The Institute for the Development of Ecological Thought conducts a variety of projects aimed at implementing sustainable development principles and raising public awareness in this regard. An interesting solution is the ecological calendar, which includes all the popular "ecological days". Its popularization, as well as the organization of relevant events by local authorities and pro-ecological organizations, would help educate and inspire urban and rural residents to take small actions and change their habits to a more pro-ecological one (Instytut Rozwoju Myśli Ekologicznej..., 2024).

Financial incentives, i.e. introducing discounts and subsidies for those who choose environmentally friendly solutions, play an important role in building pro-ecological attitudes. Many such programs are already being implemented. People who participated in the surveys have information on the ongoing programs. However, their motivational impact is not significant. Programs such as "Clean Air," "My Electricity," "My Water" and others have great potential, but their implementation encounters some difficulties, including overly complicated bureaucracy, which delays the implementation of applications and discourages residents from submitting them. Various media campaigns are also being conducted to strengthen the environmental awareness of urban and rural residents. They present ecological problems, the consequences of destroying nature, and prove the necessity of environmental care. However, many experts believe that these campaigns often do not reach a wide enough audience or are not convincing enough to change people's daily habits.

To develop the ecological attitudes of urban and rural residents, there is a need for cooperation between authorities, environmental organizations and associations, business, educational and scientific institutions. Developing ecological awareness effectively for people of different ages is possible by achieving a synergistic effect of interaction between many participants. Each plays an important role, but only coordinated action, based on shared goals and an understanding of the challenges, will enable real change and build more stable, resilient and adaptive communities that can weather crises and thrive despite the challenges that arise.

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