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# Students' Awareness Regarding Environment Protection in Campus Life: Evidence from Romania

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**Abstract:** Climate awareness is a major topic of concern, and the Green Deal in Europe attempts to turn states, communities, and local actors towards more environmentally conscious action to reduce, by 2030, the net greenhouse gas emissions by at least 55%. Universities voluntarily adhered to the 2030 Agenda, displaying a wide variety of approaches to respond to sustainability goals and calls for greening. The purpose of the present study is to establish the students' readiness for action as sustainability promoters, starting with their awareness of environmental issues. Upon focusing on the perceptions of students from the oldest university in western Romania gathered via an online questionnaire in 2023, the research showed that 95.6% of respondents consider climate issues as important or very important to them, even though less than 50% of the sample evaluate their own knowledge of environmental protection as good or very good. The results show that of the parameters that differentiate student awareness and actions, gender and place of residence (on campus/off campus) play a significant role, helping shape tailored strategies and projects to capitalize on students' predispositions to engage (or not) in environment-related activities.

**Keywords:** sustainability; environmental awareness; sustainability awareness; environment protection; on-campus resident; student

## 1. Introduction

The climate crisis is, in the post-COVID-19 society, a major topic of concern, and the Green Deal in Europe attempts to turn states, communities, and local actors toward a more environmentally conscious action to reduce, by 2030, net greenhouse gas emissions by at least 55%. 'Green' became a mantra word, used abundantly to define and/or describe business models [1,2], ways of production [3] and distribution [4], or human resource management [5]. Climate change awareness and environmental mitigation efforts are increasingly present in public discourse, with positions that range from making an argument that green growth can be achieved without harming economic growth to combating (over)consumption [2] or presenting measures leading to environmentally neutral solutions and the adoption of environmentally friendly lifestyles [6]. However, interest in climate issues varies country by country. According to a Eurobarometer measuring the attitudes of European citizens toward climate change published in July 2021, only 26% of Romanians believe that climate change is the single most serious problem facing the world, compared to a European average of 49% [7].

Against this background, higher education institutions are called to act as vectors to achieve a sustainable future through teaching, research, and institutional governance [8]. Along these lines, Mrs. Audrey Azoulay, UNESCO's director general, said, 'We must rebuild our relationships with each other, with the planet, and with technology' [9], urging

educational institutions to actively deal with the challenges of environmental education, environmental awareness, and sustainability competences.

The third decade of the 21st century is not ground zero for educational institutions, including universities and colleges, to address sustainability issues. Educational systems moved from addressing sustainability as an object of study to envisioning education as a means to achieve sustainable development, and, finally, to embracing a holistic approach that equals education to sustainability. This type of learning requires behavior changes through transformative learning [10]. Higher education institutions repeatedly renewed their commitment to sustainability as individual initiatives or through associations and alliances acting regionally (USA and Canada; Australia; New Zealand and Pacific; and the EUA) or globally [11–13], especially after the United Nations adopted the Sustainable Development Goals (SDGs) and Agenda 2030 in 2015 [14]. As Katharine Owens and Angela Halfacre-Hitchcock rightly comment, universities and colleges, due to their complex nature, can be viewed as a microcosm of society or government [15]. When analyzing experiences in implementing sustainability measures, understanding how to successfully spread sustainable principles throughout society is improved. But, as does society as a whole, universities themselves struggle to define what greening [15] and sustainability mean to them [16,17] and with what models to integrate the concept into the fabric of their existence and operations.

There is a growing body of literature that focuses on how universities envision sustainability as part of their mission and/or strategic plans [16–20] on the incorporation of sustainability goals into education, research, and operations [21,22]. Progress toward meeting the expected goals of the sustainability goals voluntarily adopted by universities is uneven, as proven by the ranking systems that measure implementation in universities [23]. Yet, they strive to offer models and align with major concerns of society, to examine global and local challenges, and to instill in their graduates not only a solid education but also local and global awareness.

A comprehensive model to grasp the complexity of a sustainable institution is offered by Velazquez et al. [17], who anticipate that the results will show over time, especially since more and more university members are aware of the damage caused by unsustainable practices in *civitas academica*. These authors believe that cultural awareness seems to be one of the best strategies for catalyzing the implementation of sustainability initiatives in universities. Awareness, at all levels, is essential for the successful transformation of institutions into hubs of sustainable forging of the future.

The literature shows that even when there are pro-environmental attitudes, there may be a gap between attitudes and behavior, as Crumpei et al. presented in comparing ecological attitudes shared by students with their ability to transfer beliefs into moral reasoning in favor of ecological choices [24]. Other studies, such as the one conducted by Gregory Cogut et al., focus exactly on the link between awareness and behavior against the background of a given university initiative to determine change in campus life, but conclude that the ability of awareness to influence sustainable behaviors is behavior-specific and should also consider external variables [25]. However, ecological awareness is an individual topic worthy of study. Most articles on the topic present awareness in a transformational paradigm, enhanced by specific projects, in formal or informal settings [17,25–28]. Owens, for example, calculates 'sustainability awareness scores' in the pre- and post-project moments for faculty, staff, and students commissioned to implement a pro-environment project in academic life, showing that exposure to information is not sufficient to determine a long-lasting change in behavior patterns [15].

Researchers interested in the topic also chose to offer snapshots of student environmental awareness as baselines to evaluate universities' capacity to shape curricular, research, and student service activities. Home confinement caused by the measures to contain the COVID-19 pandemic made students more aware of their use of electricity [29], water, paper, and plastic [30], showing that the adoption of environmentally positive behaviors depends on motivation, environmental knowledge, and the physical availability of sustainable

solutions. Research shows a coordinated effort is needed so that students can make informed decisions based on their actual knowledge and practice and feel empowered to act responsively on and off campus [30,31].

Malik et al., for example, pose a research question as to what extent sustainability awareness exists among students in Pakistan [32], believing that awareness of sustainability among students can contribute 'not only to understanding sustainability, but also to contributing to the development of sustainable technology development'. The study correlated greater awareness with curriculum content, with the aim of grasping the link between exposure to education and awareness levels. Vilcapoma et al. propose a different path, examining the cognitive, emotional, and motivational aspects of student environmental awareness and highlighting the fact that there is a variation in the levels of awareness displayed by the surveyed students. Continuous support from experts, teachers, and society is needed to maintain that high levels of awareness, demotivation, and disengagement are easily installed once support systems stop being obvious [33]. An interesting perspective is offered by Szeberenyi et al. when examining the environmental awareness of university students due to education in secondary schools and their beliefs in projecting a sustainable lifestyle. However, even though students are committed to environmental awareness on a theoretical level, in terms of practical activities, this commitment is not fully reflected [34].

In a comprehensive report on the current state of the art in sustainability and higher education, Guia Bianchi [10] examined the numerous frameworks proposed to measure sustainability, sustainability competences, and other aspects of sustainability evaluation. The debate over a proper model is ongoing. Although understanding that they have a decisive impact on the formation of mentalities that lead to the creation of the sustainability mindset [35], universities still struggle to map the field and select a proper mix of factors that could assess their progress towards reaching sustainability goals [36,37]. It is no wonder that some researchers discussing the validity of sustainability assessment frameworks in universities argue that beyond 'checking the boxes' of the various models, it is necessary to pursue 'true sustainability' [18]. Sonetti et al. comment that global rankings, for instance, the Green Metric, display positive features such as openness and accessibility, but the generality of the framework criteria sometimes places universities at a disadvantage since they need to consider the local dimensions and local constraints and face weaknesses outside their domain of responsibility [18].

Given the complexity of the topic and the variety of practices and interests manifested by universities in pursuing sustainability goals, the authors of this study resonate with the topic of backcasting as a path to prepare the main conditions for implementing sustainability assessments under the conditions of a shifting paradigm. Backcasting is defined as creating a desirable (sustainable) future vision, followed by looking back at how this desirable future could be achieved. Defining and planning follow-up activities and developing strategies that lead to that desirable future are carried out accordingly [38,39]. While a toolkit for backcasting sustainability in higher education is still in the making [38], Romanian universities need to reflect on their preparedness to implement sustainability principles in their strategies, teaching, and administrative actions. A strong commitment to sustainability, measurable in the foreseeable future due to the trend in international and European higher education, will determine Romanian universities to pay greater attention to the elements they can influence, even if currently even the twelve best-ranked higher education institutions give moderate prominence to sustainability in their strategic documents [20].

The present study focuses on students, the most fluid and flexible part of the academic world, and on their awareness of environmental issues as the basic layer for transformative actions at institutional and societal levels. Environmental awareness [33,34], individual lifestyles, and readiness to act on awareness are, according to the authors of the present study, issues that influence the success of implementing projects aimed at involving students in sustainability projects and the success of creating a culture of sustainability at institutional and social levels. The present study aims to identify the climate issues visible

to university students at the oldest university in the western part of Romania and to evaluate their willingness to act as promoters of sustainability in campus life as components of a sustainability initiative to be implemented by the university. The following study questions are proposed:

RQ1. What are the perceptions of university students at the selected university about environmental issues, and what level of importance do they attach to these issues?

RQ2. How do students believe that they can contribute to improving environmental protection?

RQ3. Do gender and place of residence play a role in defining student awareness of environmental issues?

The results can establish further directions of action toward attracting students to activities aligned to support institutional sustainability efforts and, as the literature shows, to calibrate the development and customize the support for raising awareness with respect to sustainability initiatives.

## 2. Materials and Methods

Survey techniques were used to assess student attitudes, levels of information, and behaviors. The target group was represented by students from the oldest university in western Romania, Politehnica University of Timisoara, a technical higher education institution that adopted sustainability concepts in its strategic development and currently schools approximately 13,000 students per year. Of the total, approximately 6000 students live in student dormitories provided by the university. In Romania, student residences (dormitories) are the responsibility of universities, making campus life a strong component of university administration. Data were collected through a questionnaire distributed online through student mobile apps provided by the university.

### 2.1. The Questionnaire

The questionnaire was distributed and completed in Romanian. The authors provide English versions of the responses in the article to allow for a larger debate on the issues raised. The questionnaire was built and validated through an evaluation process by sociologists after qualitative and quantitative tests (Appendix A). The research tool, inspired by the Eurobarometer parameters [7] and by the findings of previous research [29–31], aimed to highlight the acknowledged level of information on environmental issues in the student population, to understand the degree of interest in this topic, and to obtain information on the previous pro-environmental behavior of students and their readiness to engage in future greening activities. It included a variety of questions, both closed and open, and concluded with a series of factual questions relating to demographic issues such as gender, age, year of study, and respondents' current place of residence (on campus, in university-curated student dormitories vs. off-campus living). For closed questions, the Likert scale was used.

The validation of the questionnaire was carried out on a sample of 380 residents on and off campus. To ensure greater accuracy of the research instrument, the McDonald's coefficient ω was calculated. This coefficient is recommended for exploratory research in the field of social sciences with research questions [40]. The value of the ω coefficient above 0.7 is considered good for exploratory research and indicates good internal coherence of the items, allowing the progress of the research (Table 1).

**Table 1.** McDonald's *Omega* fidelity estimation value.

| McDonald's Omega | N of Items |
|:---:|:---:|
| 0.780 | 7 |

## 2.2. Sample and Recruitment of Participants

In our study, we included a total of 1023 participants, selected from all years of study. Compared to the total number of approximately 13,000 students enrolled in the institution, the margin error was estimated at $\pm 3.3\%$. The sample was randomly stratified and stratified by gender and place of residence. Literature on differences between students with different residential lives is not abundant; most topics cover the impact of campus housing on student retention [37], their academic success [38], or satisfaction with campus places and spaces. However, the results show that students on campus may have a better sense of support, richer experiences, and a stronger connection to knowable communities in student life [39]. Since residential status is recognized to influence student experiences, the authors of this study decided to conduct research and analysis of the data along this parameter. Gender is often considered of importance in sociological research [7,30–32]. To obtain a balanced sample allowing comparisons, community-based strategies were adopted.

### 2.2.1. Recruitment of On-Campus Residents

The questionnaire was distributed online through dormitory administrators and student representatives in dormitories (heads of floors and dormitories) to ensure a balanced and representative sample. They used the online communication channels they had at their disposal, with a main focus on WhatsApp groups that exist at the level of each home. In addition, the filling link was also distributed through the online communication channels that the 10 leagues have for communicating with the members of the UPT student community. This approach ensured effective and direct coverage of this population.

### 2.2.2. Recruitment of Participants Residing off Campus

To include off-campus students in the sample, the research team partnered with the university's student leagues. The link to complete the questionnaire was distributed through the channels curated by these organizations. Also, students were invited directly to access the link to the questionnaire during breaks between classes, thus providing wide and diversified access for this category of students. This approach allowed the inclusion of a wide spectrum of opinions and experiences of students, ensuring a balanced and comprehensive perspective on the entire UPT student community. Furthermore, during the recruitment process, the gender distribution in the sample was monitored to balance any observed discrepancies.

These described recruitment methods enabled the creation of a diverse and representative sample, ensuring that the various perspectives and experiences of the students, both on and off campus, are included in the study. The result was a final sample of 511 women and 512 men, with an average age of 22.92 years, and a distribution of 511 people living off campus and 512 in dormitories. Selection was randomized within each stratum.

## 2.3. Data Collection and Processing

Taking into account the generalized access to the Internet and mobile devices of the student population, the online survey was the safest and most efficient method, registering a response rate of approximately 45% and an average completion time of 15 min. Participation was voluntary, and the anonymity and confidentiality of respondents were preserved. Data were collected between May and June 2023.

For the analysis of the collected data, SPSS Statistics 27.0.1.0 software was used.

## 3. Results

The first step in mapping students' awareness of environmental issues was to elicit their evaluation regarding their self-assessed level of information with respect to environmental protection.

Most respondents appreciate that they are informed about environmental issues—43.3% to an average extent, 30.3% to a great extent, and 12.1% to a very large extent (Figure 1). There is also a category of students who declare themselves uninformed about

environmental protection: 10.5% to a small extent and 3.8% to a very small extent. In other words, 85.7% of the respondents declared themselves moderate or above average regarding being informed about environmental protection. Upon comparing on-campus and off-campus residents in the sample, we find a significant difference between the two groups, as evidenced by the test result t = −2.824 ($p$ = 0.005, that is, $p < 0.01$). According to the answers, the averages obtained (on a scale of 1 to 5, in which 1 is to a very small extent and 5 is to a very large extent) of those who live in student dormitories appear to be more informed about environmental protection than those who live with parents or in other off-campus housing (average on-campus residents = 3.43, and average off-campus residents = 3.26).
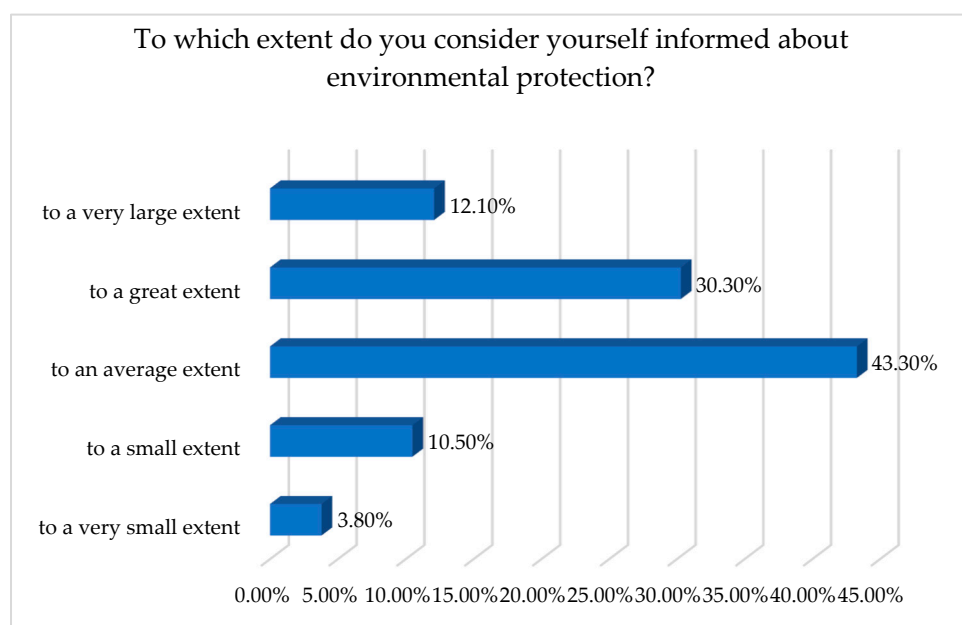


**Figure 1.** Self-assessed level of information with respect to environmental protection.

Although environmental awareness appears to be quite high, the research group refined the answer with an additional question measuring the depth of this perception. When invited to assess to what extent environmental protection is important to them, respondents offered the following responses: very important, 42.8%; quite important, 52.8%; not very important, 3.5%; and not important at all, 0.9%. In other words, 93.6% of the respondents consider environmental protection of medium or above-average importance (Figure 2). A comparison of gender indicates a significant difference between the two groups, as evidenced by the test result t = −3.554 ($p$ = 0.005, that is, $p < 0.01$). According to the averages of the answers obtained (on a scale of 1 to 5, in which 1 is to a very small extent and 5 is to a very large extent), the female respondents declared that environmental protection is more important to them (average female = 3.44, and average male = 3.31), as shown in Figure 2 below.

To refine awareness of environmental protection, respondents were asked to rank the various aspects of concern from a list of issues, with multiple responses being possible. The list and responses can be seen in Figure 3.
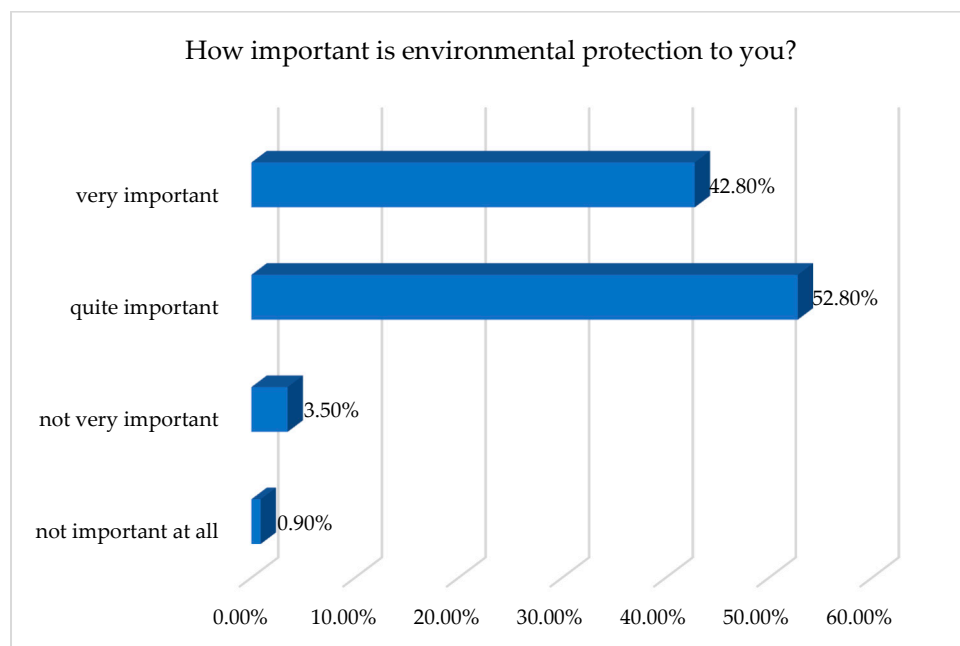
**Figure 2.** Level of importance with respect to the protection of the environment.
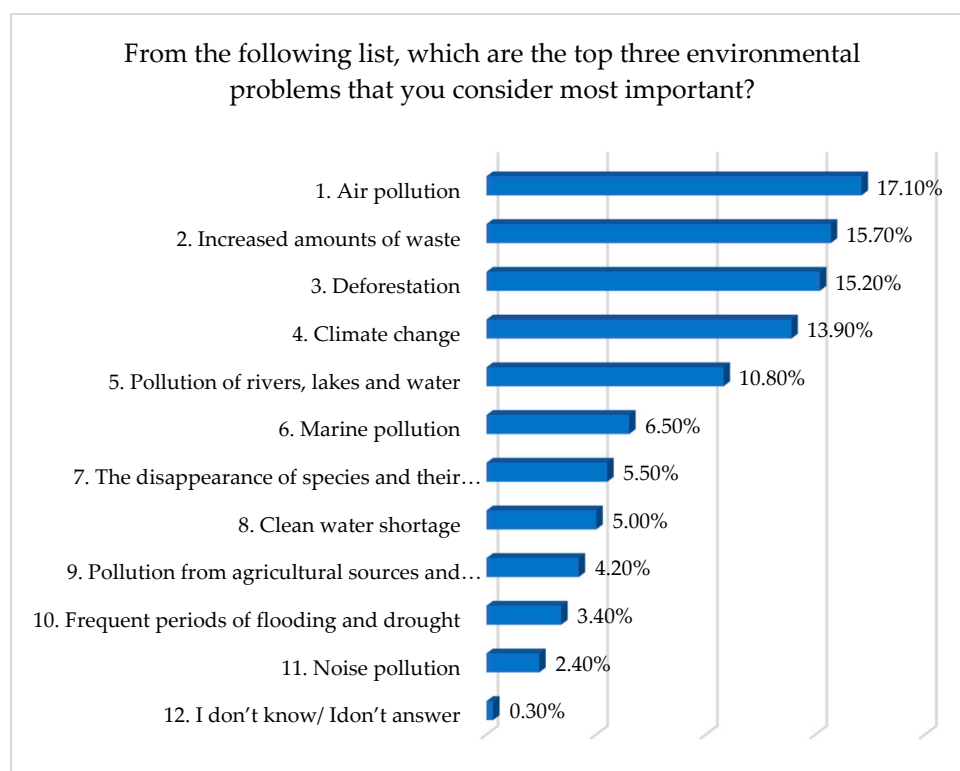


**Figure 3.** Ranking of environmental- and sustainability-related issues.

The main problems reported by respondents are air pollution (17.10%); increased amounts of waste (15.7%); deforestation (15.2%); climate change (13.9%); pollution of rivers, lakes, and groundwater (10.8%); marine pollution (6.5%); decline or extinction of species and their habitats (5.5%); drinking water scarcity (5%); pollution from agricultural sources and soil degradation (4.2%); frequent periods of floods and droughts (3.4%); noise pollution (2.4%); and do not know or do not respond (0.3%). A comparison between respondents by type of residence (on-campus vs. off-campus residents) makes a difference in only

two aspects: the decline or extinction of species and their habitats and the deforestation of forests.

The comparative frequency analysis $\chi^2$ for the decline or extinction of species and their habitats shows a value of 7.747 (df = 1, $p$ = 0.005, that is, $p < 0.01$). The frequency is higher with off-campus residents (125 choices) versus on-campus residents (89 choices).

The comparative frequency analysis $\chi^2$ for the deforestation of forests shows a value of 4.250 (df = 1, $p$ = 0.039, that is, $p < 0.05$). The frequency is higher with off-campus residents (311 choices) than with on-campus residents (279 choices).

In the two aspects where there are differences, those who are off-campus residents are more sensitive to deforestation and the decline or extinction of species and their habitats. The comparative analysis between male and female respondents shows that only one parameter is different between the two groups: the scarcity of drinking water.

The comparative frequency analysis $\chi^2$ for drinking water shows a value of 5.653 (df = 1, $p$ = 0.017, that is, $p < 0.05$). The frequency is higher for female students (112) than for male respondents (82). Female students seem to be more sensitive to environmental problems that have an effect on the population, such as the availability of drinking water.

From the general image that the environment is of interest and/or concern, the students were asked to present their environmental-related experiences, such as donations, participation in campaigns, and other activities to help fight climate change, as presented in Figure 4 below.



**Figure 4.** Experience with environment-related activities.

The results show that 19.9% of the students declare that they have never participated in such volunteer actions, indicating that there is still a significant category of the student population that has not actively engaged in direct efforts to protect the environment. The results also show that 22.8% of students indicate that they have rarely engaged in such actions, suggesting that although there is interest in environmental issues, the frequency of participation is low. The largest category, 29.4%, is for students who sometimes participate in environmental cleaning actions; 18.1% of students often participate in these actions, illustrating a segment of the student population with a greater commitment to environmental causes. Finally, 9.8% are always involved in such actions, representing the students dedicated to protecting the environment. When comparing students living in dormitories with those living off campus, we see a significant difference between the two groups, as evidenced by a t score of −4.756 and a $p$-value of 0.001 ($p < 0.01$). By analyzing the average scores obtained on a scale of 1 to 5, where 1 indicates a very low level of engagement and 5

indicates a very high level, we can find that students living on the university campus show greater responsibility in terms of environmental protection through their voluntary participation in cleaning actions. The average response from students living outside dormitories was 2.56, while that of those in dormitories was 2.94. Furthermore, we note significant differences by gender, noting that women responded with a higher level of involvement in volunteering to clean up as environmental protection actions compared to men. This is reflected in a t score of −3.337 and a *p*-value of 0.001 (*p* < 0.01), with an average of 1.280 for women and 1.184 for men.

Another element of interest in the investigation focused on the level of participation of students in the signing of petitions for environmental protection. The results show that 24.3% of the students say that they have never signed such petitions, indicating a significant proportion of the student population who have not opted for this type of support. Of the total, 15.6% of students have signed petitions on a few occasions, suggesting that there is a segment of students who, while recognizing the importance of protecting the environment, choose to participate to a lesser extent in this direction; 27.8% of the respondents sometimes engage in such actions. This is the largest category, indicating that a good proportion of students are open to expressing support for environmental causes even if they do not do so consistently. On the other hand, 18.4% of the students sign petitions frequently and 13.8% do it constantly, making them the most dedicated and informed students on environmental issues. When analyzing the differences between students living in dormitories and those living off campus, we notice a statistically significant difference between these two categories, highlighted by a t score of −1.794 and a *p*-value of 0.073 (*p* < 0.01). By evaluating average scores on a scale of 1 to 5, where 1 represents a minimum commitment and 5 a maximum commitment, we see that on-campus students are more committed to protecting the environment by signing petitions for this cause. The average obtained from students living outside dormitories was 1.328, while those residing in dormitories had an average of 1.378. When examining gender specificities, we recorded statistically significant differences, noting that female respondents also demonstrate a higher level of involvement in volunteer activities for environmental protection compared to male respondents by signing petitions in favor of this cause. This is reflected in a t score of −5.607 and a *p*-value of 0.000 (*p* < 0.01), with an average of 1.371 for women and 1.295 for men.

The study results show that a third of the student population (33.9%) was not directly involved in volunteer actions focused on planting trees as part of environmental protection efforts. Only 20.1% of the students indicated that they had rarely participated in such actions, and 24.6% said that they sometimes participated in tree planting actions. The segment of the student population with greater commitment and dedication to environmental causes is made up of the 12.6% of students who declared that they often participate in such volunteer activities, along with 8.9% of students who said they always participate in environmental-related activities. Additionally, as in the cases presented above, differences were identified between respondents who live on campus and those who reside off campus, in that students in the first category are more involved in volunteer efforts by participating in tree plantings. This is reflected in a t score of −4.790 and a *p*-value of 0.000 (*p* < 0.01), with an average of 1.347 for residents on campus and 1.234 for residents off campus. Once again, female respondents appear to be more involved than male students in volunteer tree-planting efforts. The significant difference between the two groups is evidenced by a t score of −2.803 and a *p*-value of 0.005 (*p* < 0.01), with an average of 1.338 for women and 1.266 for men.

Another focus of the investigation was to identify the degree of financial support students provide to organizations focused on environmental protection. In this context, the aim was to find out how often students donate to such organizations. The results suggest that a significant proportion of students, 41.9%, say they have never donated money to environmental organizations. This reflects the fact that a large part of the student population has not chosen to financially support environmental causes to date. A proportion of 21.5%

of students say they have rarely donated money for such causes, and 20.9% of them sometimes donate money to such organizations. A proportion of 8.6% stated that they often donate money to environmental organizations, and 7.1% of respondents indicated that they always donate to these organizations, representing a group of students deeply dedicated to constantly financially supporting environmental causes. Statistically significant differences were recorded only according to the gender variable, which means that female students also demonstrate a higher level of involvement in volunteer activities for environmental protection compared to male respondents by giving money. This is reflected in a t score of $-2.921$ and a *p*-value of 0.004 ($p < 0.01$), with an average of 1.322 for women and 1.180 for men.

The results indicate the potential to involve students in additional environmental-related activities and increase their participation in sustainability goals. The types of activities that students are ready to embrace in the future were evaluated through an open question. The results are shown in Figure 5 below.
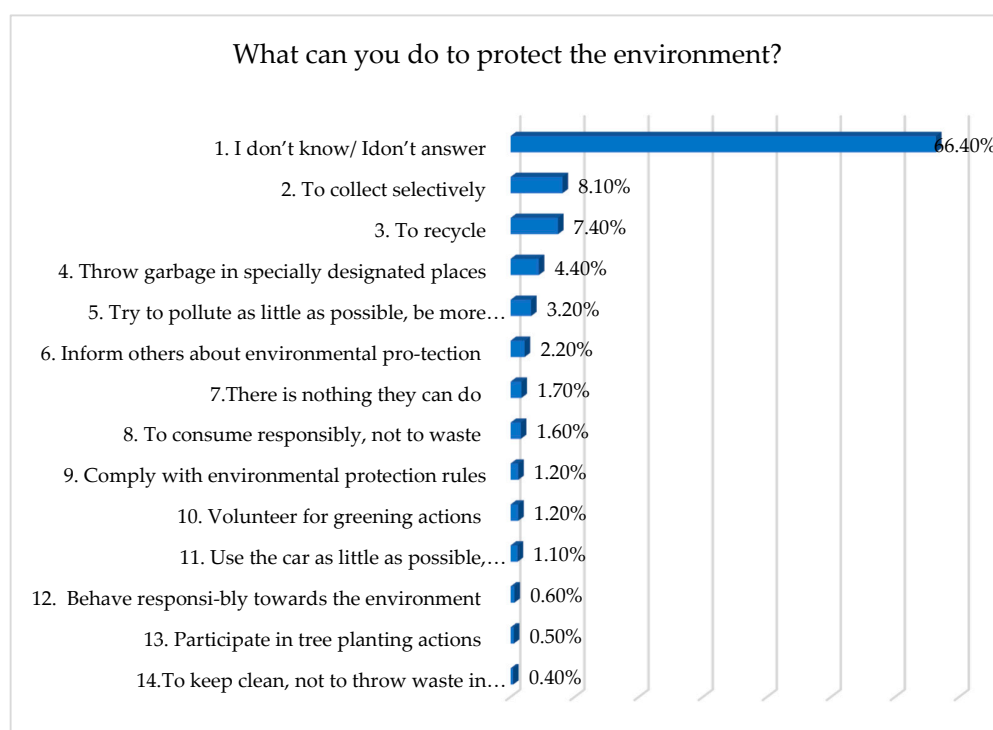


**Figure 5.** Preparedness for pro-environmental actions.

Even with a very high percentage of respondents who did not know or did not respond to the question regarding actions aimed at protecting the environment (66.8%), there is a group imagining future environmentally friendly activities. The list is rendered in descending order of the resulting percentages: collect selectively (8.1%); recycle (7.4%); throw garbage in specially designated places (4.4%); try to pollute as little as possible and be more responsible (3.2%); inform others about environmental protection (2.2%); there is nothing they can do (1.7%); consume responsibly and not waste (1.6%); comply with environmental protection rules (1.2%); volunteer for greening actions (1.2%); use cars as little as possible and walk/use public transport (1.1%); behave responsibly towards the environment (0.6%); participate in tree planting actions (0.5%); and keep clean and not throw waste in unpermitted places (0.4%). It follows that a third of the respondents, 33.6%, believe that they can take actions to protect the environment, and they envisage these actions.

Finally, the students were asked to evaluate their practices in lifestyles related to energy consumption. When asked to evaluate how much attention they pay to energy

consumption in general (consumption of water, electricity, heat, etc.), the students declared that it is also an issue of concern: 41.60% of the respondents declare to an average extent; 32.30% declare to a great extent; and 13.70% declare to a very large extent. This means that 87.60% of the students have a medium or above-average interest in energy consumption. Conversely, 8.90% declare themselves to have interest to a small extent and 3.5% to a very small extent. In conclusion, a large majority of the students surveyed have energy concerns, as seen in Figure 6.
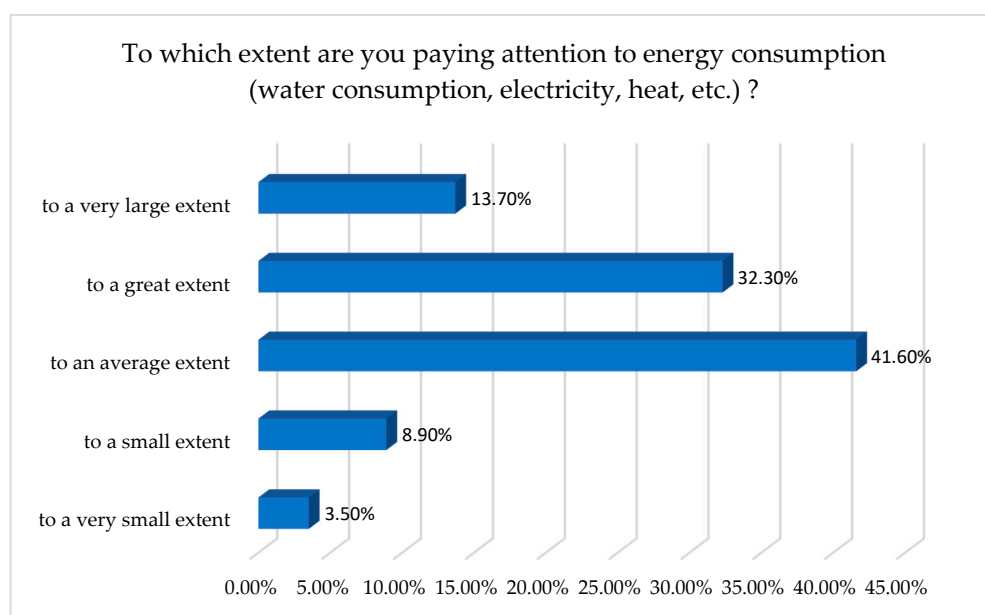


**Figure 6.** Attention paid to energy consumption.

A comparison between male and female respondents in the sample shows a significant difference between the two groups, which is evidenced by the test result t = −3.246 ($p = 0.001$, that is, $p < 0.01$). According to the averages of the answers obtained (on a scale of 1 to 5, in which 1 is to a very small extent and 5 is to a very large extent), the respondents declare that energy consumption is more important to them (average female = 3.53, and average male = 3.34). In other words, the female respondents seem to pay more attention to details.

Therefore, the results obtained from the questionnaire indicate that students are moderately or to a very large extent, at least by their self-assessment, aware of environmental issues and the importance of the promotion of environmental protection, even with a relatively low experience of involvement with pro-environment actions and a low understanding of possibilities to engage in environmentally responsible lifestyles or actions. Campus residents seem more aware of environmental issues, and female respondents showed a greater predisposition to pay attention to details compared to male respondents. Overall, given the attitudes and behaviors indicated by students, these results can serve as a basis for informed, data-driven strategies to enhance students' roles in promoting environmentally friendly lifestyles.

At the end of the questionnaire, the students could formulate their message for a more environmentally conscious future. Of the 93 messages, 61 were on topic, displaying a wide variety of tones and moods, from scientific, narrow specialization indications ('Comply with NTPA 001/002*—the Romanian standard for residual water management') to citizen initiatives ('Come with the green belt around Timisoara!'), friendly encouragement ('Come on planet! Resist!'; or 'Be Batman, always on the lookout. STAY GREEN'; or 'Green is the new sexy!'), or playful nudges ('Don't drink beer from PET. It's better in GLASS bottles anyways!!!'). A synthetic representation of the messages is presented in Figure 7 below.
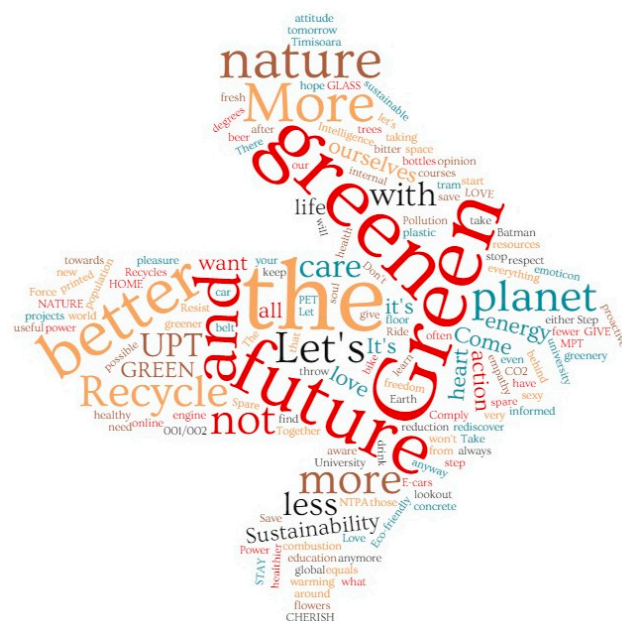
**Figure 7.** Student messages for a (more) environmentally friendly future.

Some of the messages directly refer to university and university life, such as the following: 'A greener University!'; 'Green in education, green for the population!'; 'More online projects and fewer printed courses!'; 'By taking care of nature, we take care of ourselves and our future. A green UPT!'; 'Step by step, action by action, towards a more sustainable tomorrow #UPT'; 'A green UPT!'; 'Eco-friendly UPT'; and 'Sustainability in the university! # UPT'.

A series of messages target pollution or waste management: 'Let's not throw plastic on the floor'; 'Recycle more'; 'Pollution reduction!'; 'E-cars'; 'Recycle for a better life and a healthier planet'; 'Recycle and save the planet'; 'Let's learn to spare resources! More by tram, less by car'; 'Green energy equals green space/place'; 'Let's have a fresh start.'; 'Ride your bike more often!!!'; and 'Save trees. Let's stop global warming'.

Other messages can be grouped as 'miscellanea', or those not necessarily indicating a direction of action: 'Intelligence and health for freedom!'; 'There is hope even after the bitter end'; Love, Cherish, Give'. 'We want a better life'; 'A proactive attitude, an informed opinion'; 'It's not for us, it's for those who come after us'; and 'I care!'.

Although the number of messages is not very large, they resonate with the dedicated group of students who declared a high level of information and interest in environmental issues and the readiness to act on their beliefs. The larger-sized words such as 'green', 'greener', 'future', 'planet', and 'recycle' can be used as key concepts around which future nudge messages can be developed for campus campaigns. Such an exercise can be used to stir student creativity by calling for actions for volunteering in university-led pro-environment projects.

## 4. Discussion

Exploring the students' awareness of environmental issues highlighted the fact that the vast majority of respondents evaluated their knowledge of the topic as medium, high, or very high. The sources of this information could be due to prior schooling, curriculum at the university, or media campaigns, whether they are aware of these ties or not. When selecting a given course of action at the university level, a specific component should deepen this component of information, as highlighted by examples in many universities presented as case studies [8]. The assessment of the level of importance attached to environmental issues shows that a very large percentage of respondents, 95.6%, declare that environmental protection occupies a fairly important or very important place in their

minds. Positive environmental attitudes in Romanian students were observed in other studies [24], encouraging the interpretation that there exists a good potential for action towards environmental protection and sustainable actions. The mindset of the students allows for such an approach [35]. A ranking of environmental concerns carried out by the students in the sample places air pollution, increasing amounts of waste, deforestation, climate change, and pollution of rivers, lakes, or groundwater at the top. The last places in the ranking are occupied by drinking water scarcity, pollution from agricultural sources and soil degradation, frequent periods of floods and droughts, and noise pollution.

The attempt to identify the willingness to contribute to improving environmental protection created an image of low involvement in such issues. The students in the sample did not have a clear view of their ability to positively influence environmental protection, as indicated by the result of 66.4% no responses. However, the ones that had some proposals offered intentions of actions worth presenting: to collect selectively, to recycle, to throw garbage in specially designed places, to try to pollute as little as possible, to be more responsible, etc. This readiness can be harnessed through appropriate support systems in campus life in the way of actionable initiatives. Keywords supporting such actions can be found in the messages proposed by the respondents: 'Green planet', 'Greener UPT', 'A greener University!', and 'Green in education, green for the population'. These results resonate with the findings of Debrah et al. in that there is a disconnect between student knowledge and awareness of environmental issues and their ability to act upon them [31].

An analysis of the residential status of the respondents shows that the residents declare an increased level of knowledge and awareness of environmental protection. On campus, students also indicated more interest in several aspects related to the environment, such as forest loss through deforestation and the decline or extinction of species and their habitats. Although this aspect was not analyzed in the surveyed literature [41,42], the authors of this study believe that the cohesion and support of the system perceived by campus residents may also explain the increased environmental problems.

The female respondents in the sample appear to be more interested in environmental protection than the male respondents, a result consistent with the findings of studies evaluating gendered responses in students [19,43,44]. These findings are again worthy of refinement through in-depth research methods and can be capitalized on in the process of drafting strategies to involve students in environmental-related actions and/or campaigns.

The findings of this study can be used as a basis for implementing greening strategies on campuses. They are already beneficial for students, educators, university managers, and researchers to better target environmental-related measures and campaigns with more focused education for sustainability through action and example, while keeping in mind the fact that the student body cannot be treated as a monolithic entity but falls into groups with specific expectations and features to be accounted for in (future) strategies or projects.

## 5. Conclusions

Building sustainable communities within the university, and especially within the student population, is a complex task influenced by many factors. To properly steer the process and plan for transformative actions via projects, curriculum content, or administrative measures while appealing to the interests and concerns of the students, it is important to understand their awareness of the issues and their readiness to act and to attract them in the co-creation of the plans. A sustainable society is not about individuals becoming part of a pre-designed social or economic category, but about people who understand the consequences of a concrete, specific issue and become involved in decision making about it. Therefore, a solid understanding of the initial characteristics of students is an asset for universities engaged in the implementation of sustainability principles. Before inviting students to join actions presented as 'shared interests' with those presented by faculty, administrators, and university leaders, a complete understanding of who students are and what their values, beliefs, and experiences are can foster a climate of trust and an informed decision about the necessary resources, support systems, and communication

strategies to facilitate the implementation of planned measures and action policies, as shown by the experiences described in case studies that enrich the educational and research literature [6,17,25–28].

The results described in the present study account for the specific characteristics of students in a large technical university in western Romania, showing that students with greater integration with university life through on-campus living can be the driving force of change, as their overall knowledge of sustainability-related issues is initially higher than that of off-campus residents. The differences encountered in the parameters of gender and residence indicate the need for customized approaches and nuanced support systems to respond to needs and expectations. In addition, the messages that students proposed for a more sustainable future are clues to the keywords that resonate with their mindset. Further research should refine data on sustainability issues relevant to students and correlate student views with those present as the other major stakeholders of university life: faculty members, administrative staff, and university leadership. Given the low penetration of sustainability concerns in Romanian higher education institutions [20], but with the idea that universities, due to the complexity of factors, pursue sustainability goals, elements that support transformative action need to be addressed at an early stage [38,39].

## 6. Limitations of the Study

The authors of this study acknowledge some limitations. First, the study is a snapshot of the current level of awareness of environmental-related topics among the student population of the selected university. Further research should consider new parameters, such as the context of the formation of the sustainability mindset of students, correlations between formal studies and embraced lifestyles, direct and indirect effects of awareness of consequences, and ascription of responsibility for environmental behavior during the academic years. Also, a factorial analysis can provide more information for analysis and action. Furthermore, following the analysis with a comparative perspective can help grasp the possibility of better understanding the needs, expectations, and real actions of students, seen not only as future specialists and citizens [28,43] but also as co-creators of a (future) sustainable university.

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## Appendix A

Student awareness of environmental protection and readiness to engage in environment-related actions.

Questionnaire

1.    To which extent do you consider yourself informed about environmental protection?

      (1)     to a very small extent
      (2)     to a small extent
      (3)     to an average extent
      (4)     to a great extent
      (5)     to a very large extent

2.    How important is environmental protection to you?

      (1)     not important at all
      (2)     not very important
      (3)     quite important
      (4)     very important

3.    From the following list, which are the top three environmental problems that you consider most important? (multiple answers possible)

      (1)     climate change
      (2)     increased amounts of waste
      (3)     air pollution
      (4)     marine pollution
      (5)     pollution of rivers, lakes and water
      (6)     noise pollution
      (7)     frequent periods of flood
      (8)     clean water shortage
      (9)     pollution from agricultural sources and soil degradation
      (10)    the disappearance of species and their natural habitats
      (11)    deforestation
      (12)    I don't know/don't answer
      (13)    Other _____

4.    What can you do to protect the environment?

5.    To what extent you consider yourself informed about the energy consumption of the equipment you are using

      (1)     to a very small extent
      (2)     to a small extent
      (3)     to an average extent
      (4)     to a great extent
      (5)     to a very large extent

6.    Have you ever been involved in volunteer actions for protecting the environment?

| | Never | Rarely | Sometimes | Often | Always | Don't Know/Don't Answer |
|---|---|---|---|---|---|---|
| I voluntarily participated in clean-up actions | ❏ | ❏ | ❏ | ❏ | ❏ | ❏ |
| I signed petitions for environmental protection | ❏ | ❏ | ❏ | ❏ | ❏ | ❏ |
| I voluntarily participated in tree planting actions | ❏ | ❏ | ❏ | ❏ | ❏ | ❏ |
| I donated to organizations that protect the environment | ❏ | ❏ | ❏ | ❏ | ❏ | ❏ |

7.  What would you tell your generation to do, to ensure a greener future? (open answer)

8.  What is your gender?

    (1)  Female
    (2)  Male
    (3)  Other
    (4)  Prefer not to say _____

9.  Which of these best describes the general area where you live?

    (1)  On campus
    (2)  In the city
    (3)  Prefer not to say

10. The academic year

    (1)  Bachelor's degree, 1st year
    (2)  Bachelor's degree, 2nd year
    (3)  Bachelor's degree, 3rd year
    (4)  Bachelor's degree, 4th year
    (5)  Master, year 1
    (6)  Master, year 2

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