

GUESS: Gamified User-centered Environmental Sustainability for university Students



Project Result or Activity Title

Intellectual Output or Activity Number	2.1 Identification of user needs ver 0.2
Short Description	The aim of this activity is to identify the needs of university students by collecting responses from the partner universities and analysing the data to determine the various areas in which students struggle with knowledge gaps and lack of awareness related to environmental sustainability.
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Status (D: Draft RD: Revised Draft F: Final)	F
Dissemination Level (P: Public C: Confidential, only for members of the	P

consortium, National Agency, Commission services and project reviewers)			
File Name	GUESS_HOU_2.1 Identification of user needs_V0.2		
Date (versioning) (Please add rows as needed)	2.1 ver0.1	<Date of Submission> 27/03/2024	-
	2.1 ver0.2	<Date of Submission> 01/04/2024	Reviewed by: Efthimios Zervas (HOU) Maria Makrygianni (HOU)

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Executive Summary

In this research, students' needs for information on environmental sustainability are investigated. More specifically, students' awareness, behavior and opinions on environmental sustainability were studied and analyzed. A structured self-report questionnaire was used to collect the data. A total of 2,390 students, from five universities (HOU, UPatras, UMAIA, UPCT and MENDELU) from four countries (Greece, Spain, Portugal and the Czech Republic), participated. The results of the research show that students are concerned about the future of the natural and anthropogenic environment, are informed about sustainability and key environmental issues, and recognize the causes and effects of the most important environmental problems, such as water pollution, air pollution, climate change and waste management. However, overall, the majority of students, although they appear informed about environmental problems, nevertheless recognize the importance of their own contribution to achieving sustainability and state that they need additional training in practices to achieve sustainability and ways to learn to live sustainably.

List of abbreviations

HOU – Hellenic Open University, Greece

UPatras – University of Patras, Greece

UMAIA – University of Maia, Portugal

UPCT – Universidad Politécnica de Cartagena, Spain

MENDELU – Mendel University in Brno, Czech Republic

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Questionnaire on students' need for information on environmental sustainability

Introduction

In recent decades, various environmental problems have concerned the scientific community. Problems such as climate change and global warming, water and air pollution, negative changes in biodiversity affect billions of people every day and make their survival difficult, both locally and globally. However, it was not only the responsibility of adults, but future generations are the most important ones who will face sustainability issues (Ayu et al., 2021).

The term "sustainable development" was first used in the 1987 report "Our Common Future" by Gro Harlem Brundtland's World Commission on Environment and Development, which defined it as "Sustainable development is development that meets the requirements of present without compromising the ability of future generations to meet their own needs". Sustainable development may mean different things to different people, but at its heart it is a strategy for progress that prioritizes social, economic and environmental well-being (Sarah Abraham, n.d.)

Citizens' awareness of environmental sustainability is therefore one of the critical elements of sustainable development that focuses on the environmental dimension. Awareness of environmental sustainability is part of the principle for a change in environmental attitude and behavior in dealing with the natural environment (Hamid et al., 2017). The main models of pro-environmental behaviors are based on a linear progression. Environmental awareness is thought to lead to environmental consciousness

and concern, which in turn is thought to lead to pro-environmental behavior (Kollmuss & Agyeman, 2002). However, environmental awareness should be built into the minds of citizens early on.

Informing citizens and educating them is therefore the bridge to raising awareness about sustainability. Students, however, may be less aware because they do not fully understand what is happening in their environment or how dangerous the effects of environmental problems are worldwide. Students need to be able to reason in science so they can relate concepts to everyday phenomena. Therefore, the educational community must build or increase the awareness of students for environmental sustainability, who constitute the future active citizens (Settlage, 2011).

The purpose of this research is to investigate students' needs for information about environmental sustainability. More specifically, students' awareness, behavior and opinions on environmental sustainability were studied and analyzed, in order to identify the deficiencies that may exist in terms of environmental sustainability, in order to take the necessary measures to strengthen students' awareness in environmental sustainability issues.

Collection

A structured self-report questionnaire was used to collect the data. Students from five European universities participated in the survey, who were asked to answer a questionnaire about their needs for information on environmental sustainability issues. The collection of the questionnaire was carried out from December 2023 to March 2024.

In total, four European countries participated in the survey: Greece with the participation of HOU and UPatras universities, Spain with the participation of UMAIA university, Portugal with the participation of UPCT University and finally the Czech Republic with the participation of MENDELU University.

Questionnaire

The questionnaire used to collect the data consists of four sections with a total of 49 closed-ended questions. The first section studies the awareness and needs of students related to environmental sustainability, the second section studies the environmental



behavior of students, the third section studies the opinions of students on environmental sustainability, while the fourth section gathers the demographic and socio-economic characteristics of the students.

The questionnaire uses a five-point Likert scale to measure environmental consciousness and behavior. For questions about environmental awareness, the scale ranges from "strongly disagree" to "strongly agree".

A pilot study was conducted on a group of twenty (20) random citizens, to evaluate and optimize the content of the final questionnaire and strengthen the validity of the questions. These questionnaires were not included in the survey.

A total of 2,390 students, from five universities (HOU, UPatras, UMAIA, UPCT and MENDELU) from four countries (Greece, Spain, Portugal and the Czech Republic), participated.

Results

Due to the large differences in the number of participants from each university, all data were chosen to be grouped and the data analysis was performed overall for all students from all universities. Descriptive statistical analysis (frequencies-percentages) was followed for the analysis of the results, using the SPSS statistical package. The results are presented in detail for the four sections. For each question, the corresponding figure with the percentages of each answer is presented, followed by a commentary on the results.



A. Awareness/Needs for Environmental Sustainability

Q.1. Environmental protection is very important to me

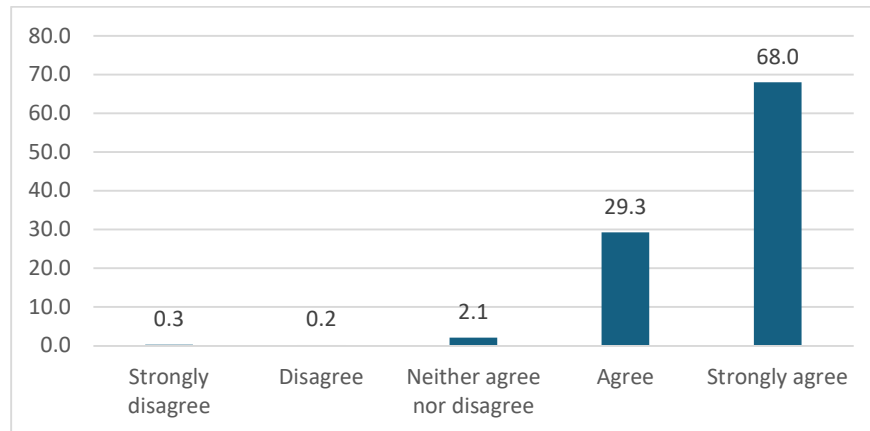


Figure 1 Environmental protection is very important to me.

The results show that almost all the students consider that environmental protection to be very important to them (97.3%, 68% "strongly agree" and 29.3% "agree"), while only the 0.5% of the students disagree with this opinion (0.3% "strongly disagree" and 0.2% "disagree").

Q.2. Environmental problems affect my daily life

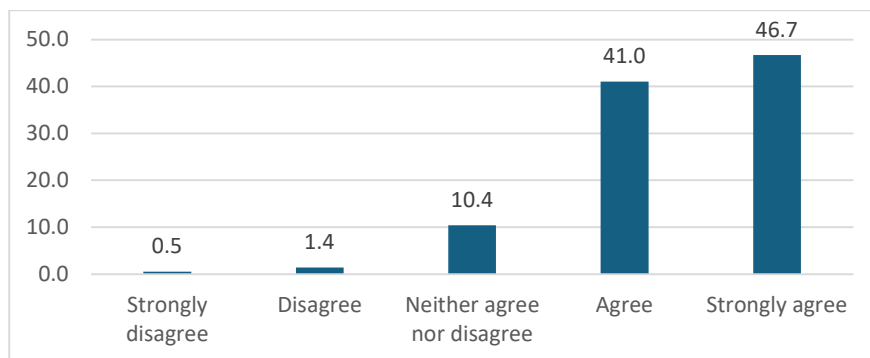


Figure 2 Environmental problems affect my daily life.

The results show that the majority of students consider that environmental problems affect their daily life (87.7%, 41% "agree" and 46.7% "strongly agree"). On the contrary, the 10.4% of the students neither agree nor disagree with this opinion, while only the 1.9% of the students do not consider that environmental problems effect their daily life (0.5% "strongly disagree" and 1.4% "disagree").

Q.3. I recognize that the meaning of the word "Sustainability" the ability to maintain or support a process continuously over time

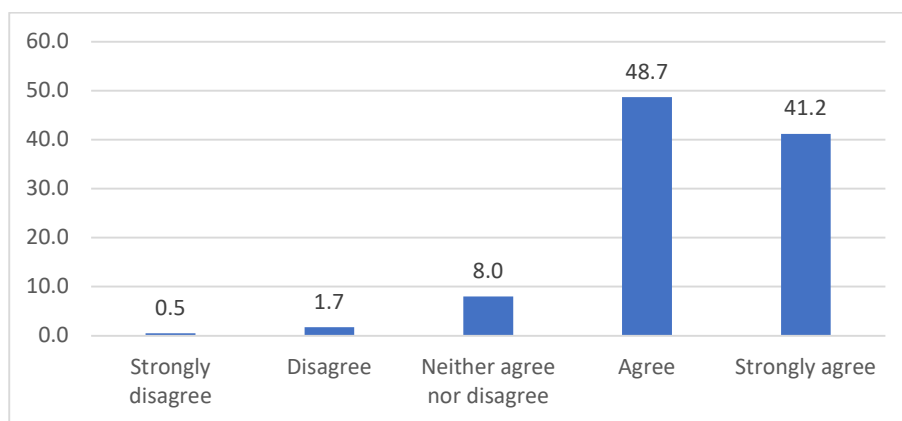


Figure 3 I recognize that the meaning of the word "Sustainability" the ability to maintain or support a process continuously over time.

Regarding the meaning of "sustainability", the results show that the majority of students recognize this definition (89.9%, 48.7% "agree" and 41.2% "strongly agree"). On the contrary, the 8% of the students neither agree nor disagree with this opinion, while there is also a small percentage of 2.2% of students who do not recognize the meaning of "sustainability" (0.5% "strongly disagree" and 1.7 "disagree").

Q.4a. I know about the Sustainable Development Goals (SDGs)

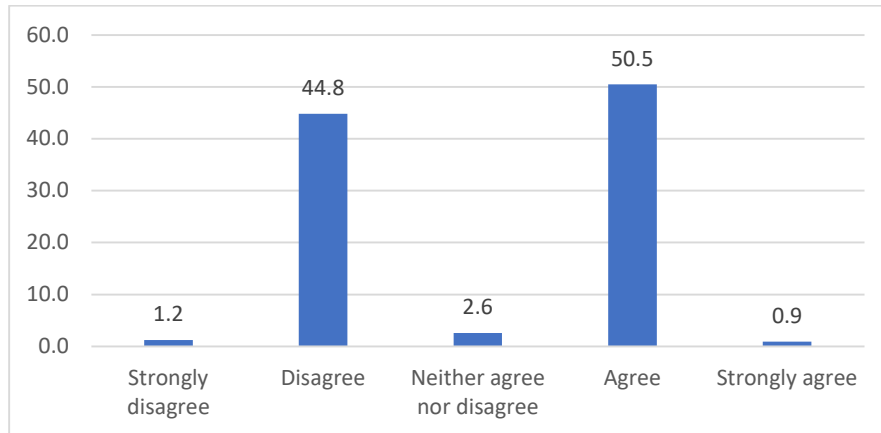


Figure 4a I know about the Sustainable Development Goals (SDGs).

Contrary to the previous question where the students stated that they recognize the concept of "sustainability", from the results of this question it appears that students do not know the Sustainable Development Goals (SDGs). Specifically, it appears that only half of the students are aware of the SDGs (51.4%, 50.5% "agree" and "0.9% "strongly agree"), as the rest half of the students declared they did not know about the SDGs (46%, 1.2% "strongly disagree" and "44.8% "disagree").

Q.4b. If yes, the main source of the information on SDGs is...

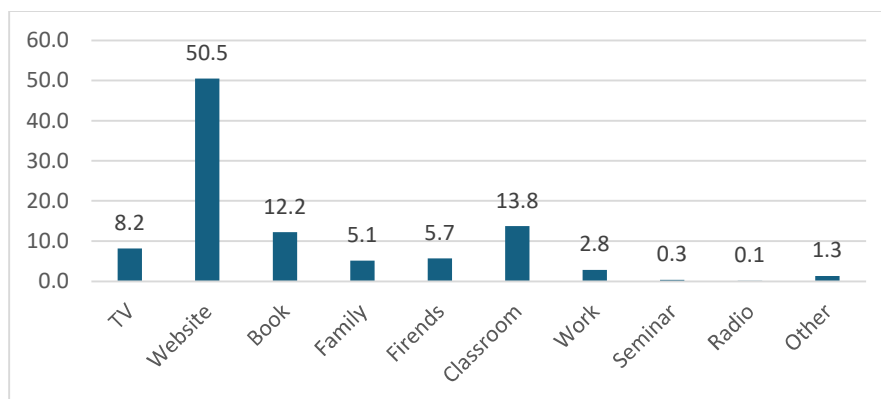


Figure 4b If yes, the main source of the information on SDGs is...



Regarding the main source of information about the SDGs, in terms of students who stated that they know them, the results show that half of the students obtained knowledge through the use of the Internet, visiting a website (50.5%), while only 13.8% of students stated that they obtained knowledge in the classroom and 12.2% of students through books. It seems, therefore, that there is a need for additional information for students coming from the field of education such as universities, so that they know the SDGs and their importance.

Q.5. I am concerned about the sustainable future of the natural environment

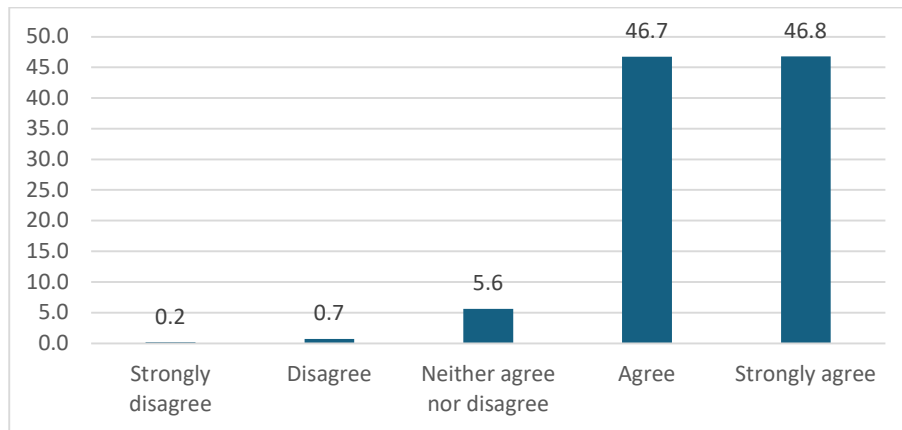


Figure 5 I am concerned about the sustainable future of the natural environment.

Regarding students' concern about the sustainable future of the natural environment, the results show that the vast majority of students are significantly concerned (93.5%, 46.7% "agree" and 46.8% "strongly agree"). On the contrary, the 5.6% of the students neither agree nor disagree with this opinion, while only 0.9% of students are not concerned about the sustainable future of the natural environment (0.2% "strongly disagree" and 0.7% "disagree").

Q.6. I'm concerned about the sustainable future of the anthropogenic environment

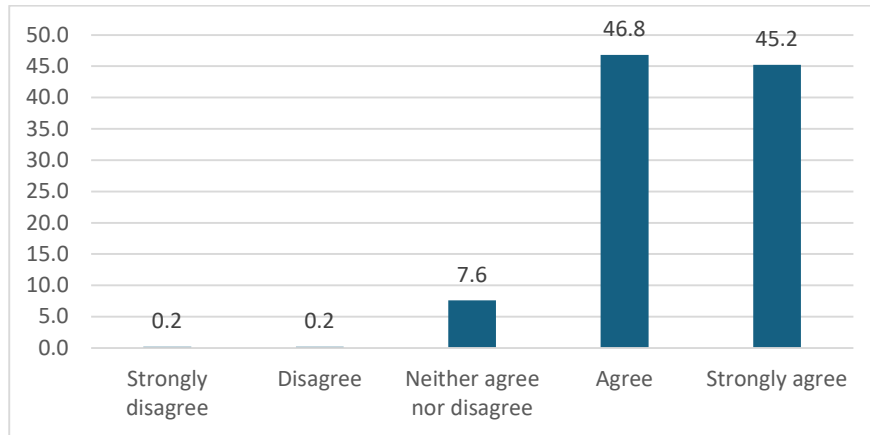


Figure 6 I'm concerned about the sustainable future of the anthropogenic environment.

Regarding students' concern about the sustainable future of the anthropogenic environment, the results follow previous results and show that the vast majority of students are significantly concerned (92%, 46.8% "agree" and 45.2% "strongly agree"). On contrary, the 7.6% of students neither agree nor disagree with this opinion, while only 0.4% of students are not concerned about the sustainable future of the anthropogenic environment (0.2% "strongly disagree" and 0.7 "disagree").

Q.7. I know what actions I need to take to contribute to sustainability

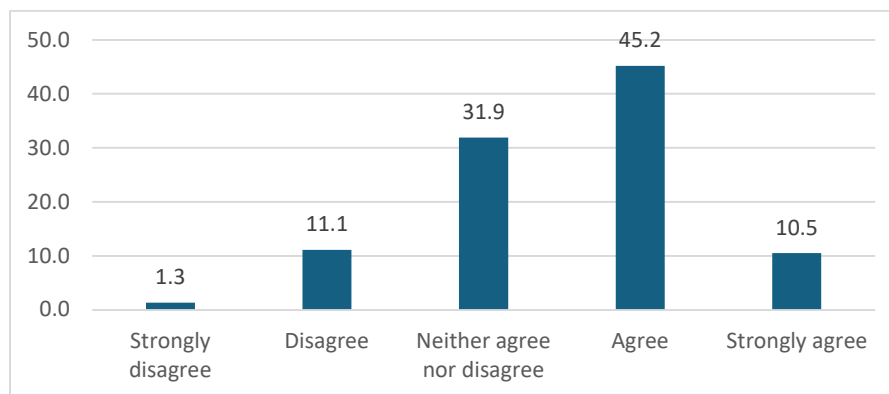


Figure 7 I know what actions I need to take to contribute to sustainability.

Regarding students' knowledge of what actions, they need to take to contribute to sustainability, the results show that only half of the students know what they should do (55.7%, 45.2% "agree" and 10.5% "strongly agree"). On the contrary, almost one in three students neither agree nor disagree, while almost one in eight students does not know what actions they can take to contribute to sustainability (12.5%, 1.3% "strongly disagree" and 11.1% "disagree"). There is, therefore, a need for additional information for students on issues related to sustainability.

Q.8. I know where/how to find information on sustainability

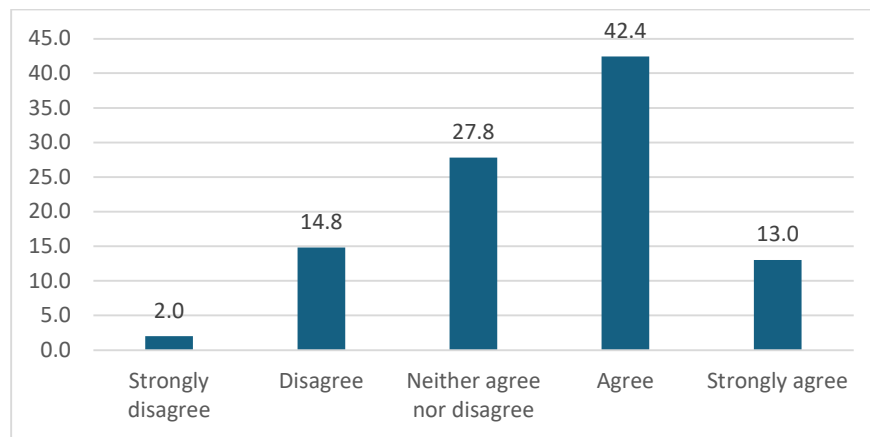


Figure 8 I know where/how to find information on sustainability.

Regarding where and how students can find information on sustainability, the results show that also only half of the students know what to do (55.4%, 42.4% "agree" and 13% "strongly agree"). In contrary, almost one in three students neither agree nor disagree (27.8%), while almost one in six students do not know where and how to find information about sustainability (16.8%, 2.0% "strongly disagree" and 14.8% "disagree"). It seems, therefore, that students, in addition to not knowing what actions they can take to contribute to sustainability, also do not know ways to be informed about it.

Q.9. I know my country's actions to achieve sustainability

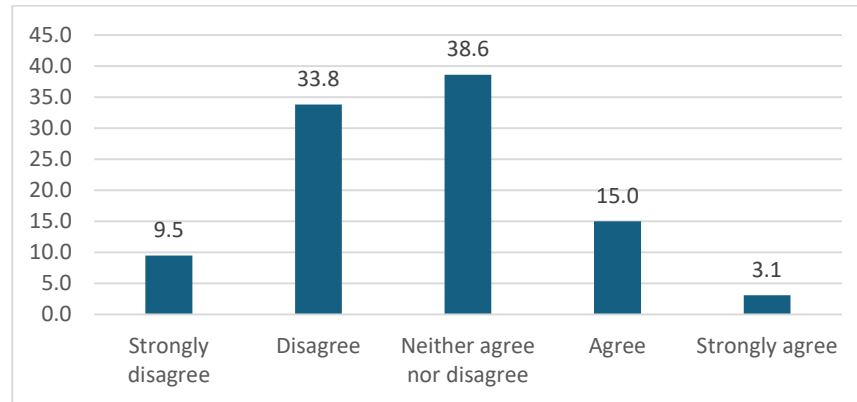


Figure 9 I know my country's actions to achieve sustainability.

Regarding whether students are aware of their country's actions to achieve sustainability, the results show that a small percentage of students are aware of their country's actions (18.1%, 15% "agree" and 3.1% "strongly agree"). On the contrary, 38.6% of students neither agree nor disagree, while the 43.3% of students are not aware of their country's sustainability actions (9.5% "strongly disagree" and 33.8% "disagree"). It seems, therefore, that the students are not informed about their country's sustainability actions either because there is no information from the state or because the students have not personally taken an interest in being informed.

Q.10. I know the university's actions to achieve sustainability

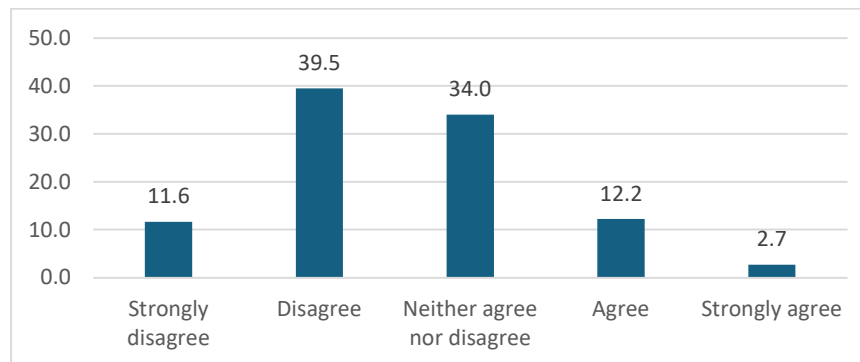


Figure 10 I know the university's actions to achieve sustainability.

Regarding whether students are aware of their university's actions to achieve sustainability, the results show that only a small percentage of students are aware of their university's actions (14.9%, 12.2% "agree" and 2.7% "strongly agree"). On the contrary, 34% of students neither agree nor disagree, while half of students are not aware of their country's sustainability actions (51.1%, 11.6% "strongly disagree" and 39.5% "disagree"). It seem', therefore, that the students are not "nformed about the"r university's sustainability actions either because there are no actions on the part of the university regarding sustainability or because while there are relevant actions these are not known to the students and therefore additional information to the students is require.

Q.11. I know the causes of water pollution

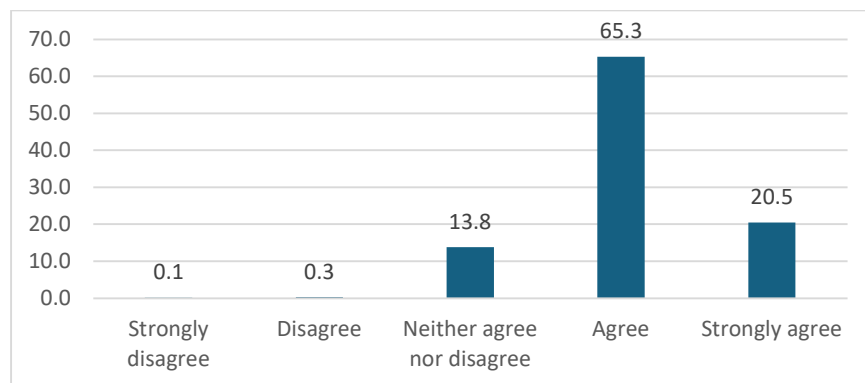


Figure 11 I know the causes of water pollution.

Regarding whether students know the causes of water pollution, the majority of students (almost four of five) state that they know these causes (85.8%, 65.3% "agree" and 20.5% "strongly agree"), while only a small percentage of students neither agree nor disagree (13.8%). It therefore appears that students are informed about water pollution.

Q.12. I know the consequences of water pollution

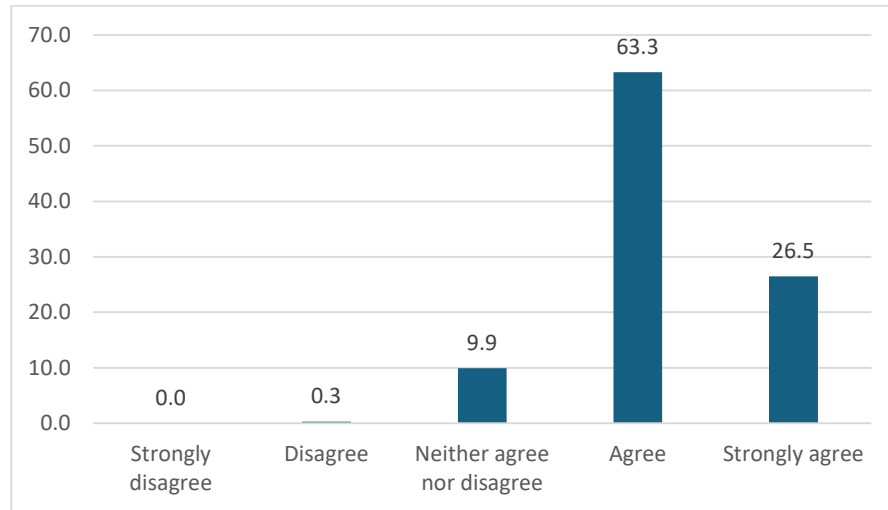


Figure 12 I know the consequences of water pollution.

Corresponding to the previous question, the majority of students (almost nine of ten) state that they know the consequences of water pollution (89.8%, 63.3% "agree" and 26.5% "strongly agree"), while only a small percentage of students neither agree nor disagree (9.9%). It seems therefore, that the students know both the causes of water pollution and the consequences caused by it.

Q.13. I know ways to manage/save water in my space

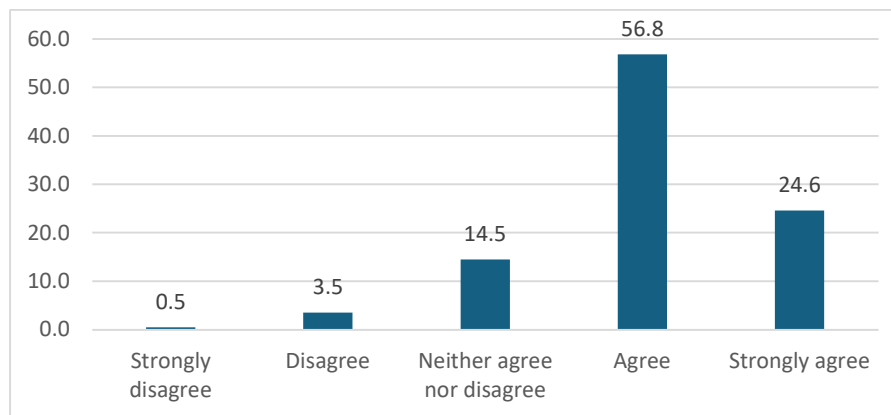


Figure 13 I know ways to manage/save water in my space.

Students are similarly informed about the ways to manage and save water in their area, as the majority of students (almost four of five) state that they know (81.4%, 56.8% "agree" and 24.6% "strongly agree"), while only a small percentage of students neither agree nor disagree (14.5%). However, a small percentage of the students state that they do not know (4%, 0.5% "strongly disagree" and 3.5% "disagree"). Therefore, additional information for students is required, so that all students know ways to manage and save water in their area.

Q.14. I need to know more about water (use, saving, pollution, impacts, etc)

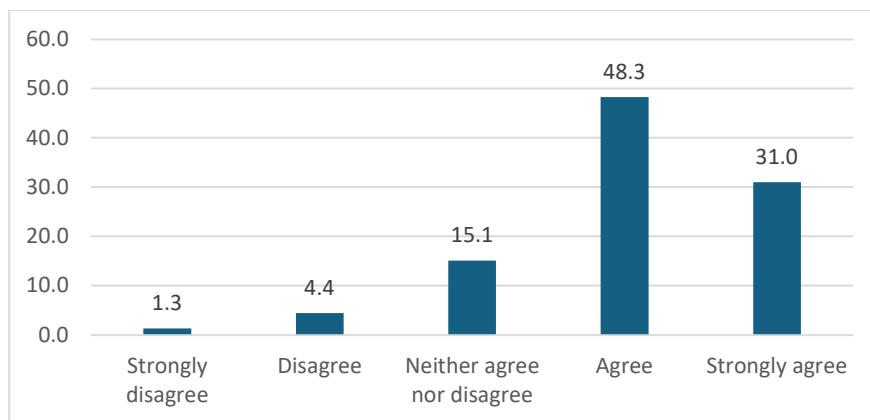


Figure 14 I need to know more about water (use, saving, pollution, impacts, etc).

It is remarkable that, while students state that they know the causes of water pollution and its consequences, as well as ways to manage and save water, four of five students state that they need to learn more about water (use, saving, pollution, impacts, etc.) (79.3%, 48.3% "agree" and 31% "strongly agree"), while only a small percentage of students state that they do not need to learn more (5.7%, 1.3% "strongly disagree" and 4.4% "disagree"). It seems, therefore, that students despite being aware of water-related topics are constantly interested in learning additional about this.

Q.15. I know the environmental impact of waste

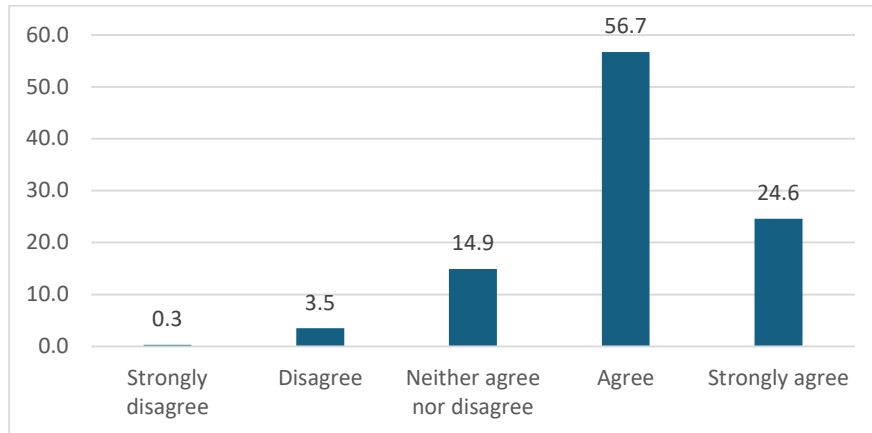


Figure 15 I know the environmental impact of waste.

The results show that the students are also informed about the environmental impacts of waste, as the majority of students (almost four of five) state that they know (81.3%, 56.7% "agree" and 24.6% "strongly agree") and only a small percentage of the students state that they do not know the impacts of waste on the environment (3.8%, 0.3% "strongly disagree" and 3.5% "disagree").

Q.16. I know ways to reduce waste

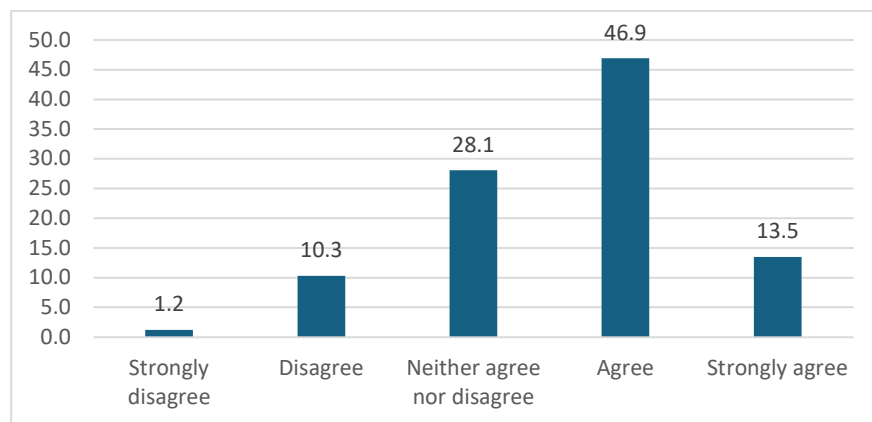


Figure 16 I know ways to reduce waste.



From the results it appears that, while the students know very well the environmental impacts of waste, they do not know as well ways to reduce waste. Specifically, only three of five know ways to reduce waste (60.4%, 46.9% "agree" and 13.5% "strongly agree"), while a significant percentage of students are not sure that they know (28.1% "neither agree nor disagree"). It seems, therefore, that additional information is needed for students on proper waste management.

Q.17. I know how to recycle materials

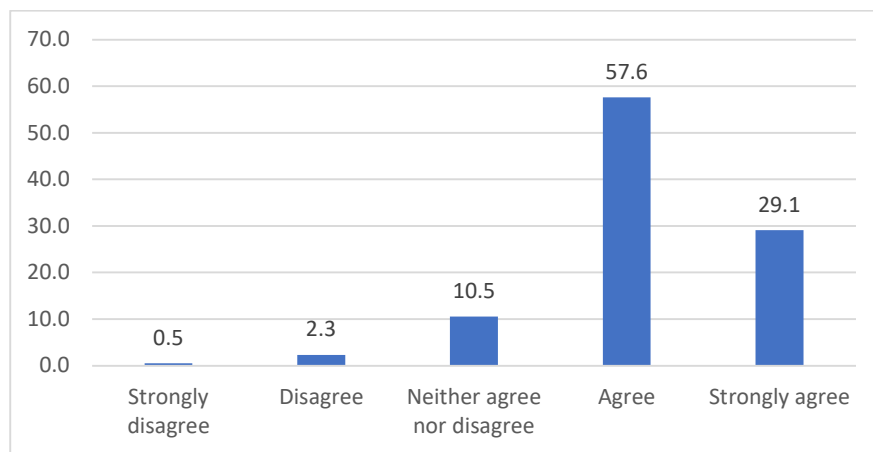


Figure 17 I know how to recycle materials.

Contrary to the previous question, where a significant percentage of students did not know ways to reduce waste, in this question the majority of students know how to recycle materials. Specifically, 86.7% of students report that they know about material recycling (57.6% "agree" and 29.1% "strongly agree"). However, there is a percentage of students who are not sure that they know about recycling (10.5% "neither agree nor disagree"). It seems, therefore, that additional information is needed for students on proper waste management and recycling of materials.

Q.18. I know which products are dangerous for the environment

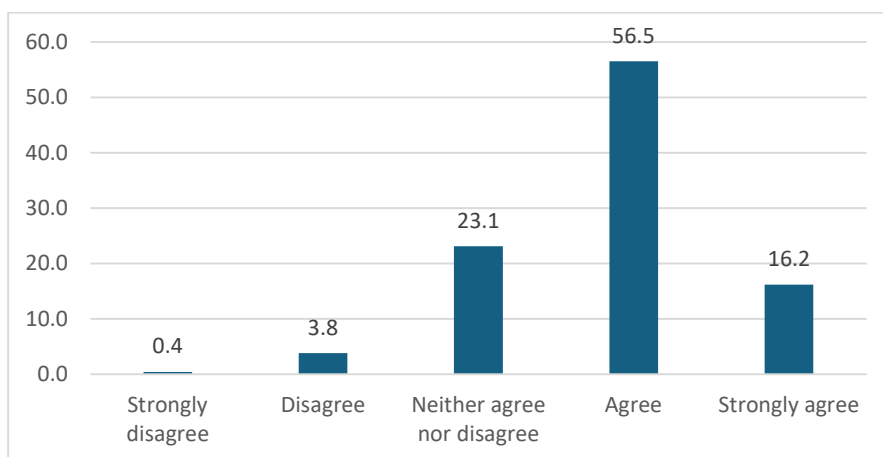


Figure 18 I know which products are dangerous for the environment.

Regarding whether students know which products are dangerous for the environment, almost 3 of 4 students state that they know (72.7%, 56.5% “agree” and 16.2% “strongly agree”). However, there is a significant percentage of students, almost one in four who are not sure that they know about which products are dangerous for the environment (23.1% “neither agree nor disagree”).

Q.19. I know which products are considered ecological

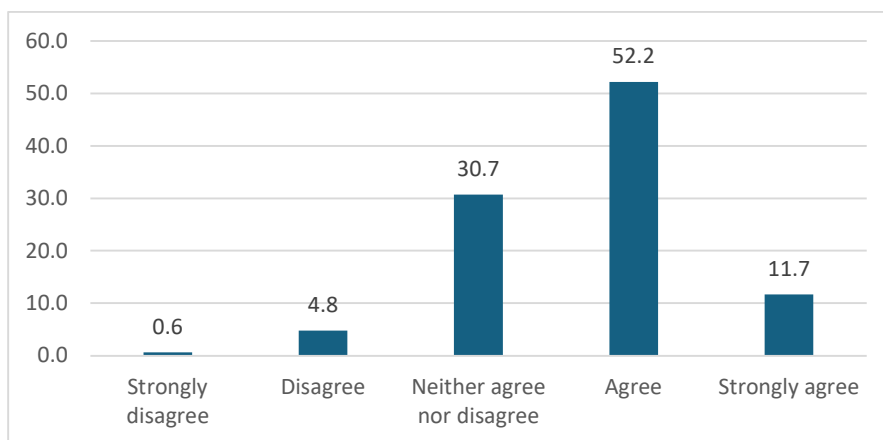


Figure 19 I know which products are considered ecological.

Regarding whether students know which products are considered ecological, almost 3 of 5 students state that they know (63.9%, 52.2% “agree” and 11.7% “strongly agree”). However, there is a significant percentage of students, almost one in three who are not sure that they know about which products are considered ecological (30.7% “neither agree nor disagree”). It seems, therefore, that additional information about ecological products is needed for students.

Q.20. I need to know more about waste, recycling and ecological products

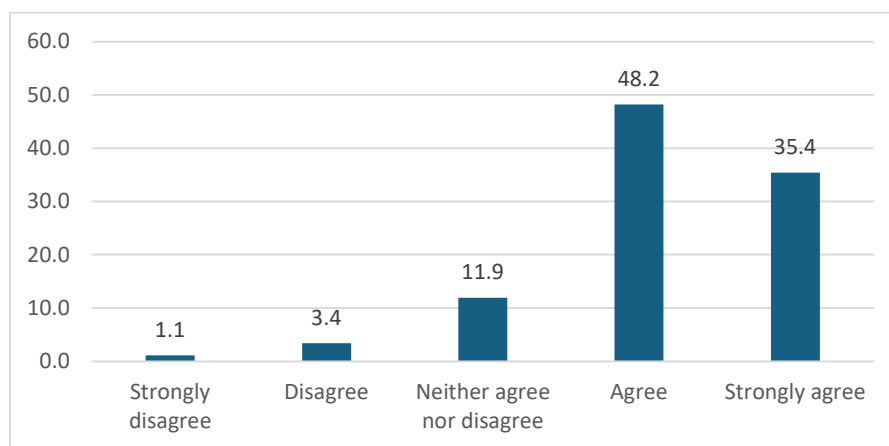


Figure 20 I need to know more about waste, recycling and ecological products.

It is remarkable that, while the majority of students appear to be highly informed about waste management and ecological products, almost four of five students state that they want more information about waste, recycling and ecological products (86.3%, 48.2% “agree” and 35.4% “strongly agree”), while only a very small percentage of students declares that no additional information is needed (4.5%, 1.1% “strongly disagree” and 3.4% “disagree”). It seems therefore, that students despite being aware of waste-related topics are constantly interested in learning additional about this.

Q.21. I know the causes of air pollution

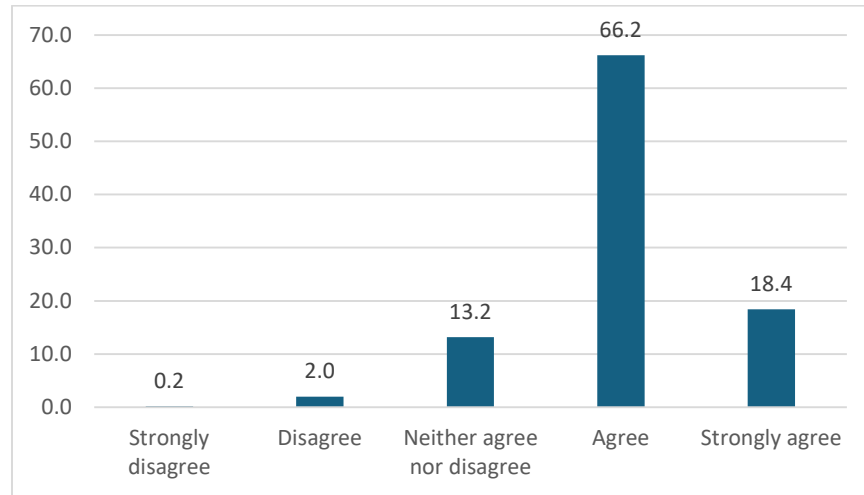


Figure 21 I know the causes of air pollution.

Regarding whether students know the causes of air pollution, the majority of students appear to be highly informed about this issue, as almost four of five students state that they know the causes of air pollution (84.6%, 66.2% "agree" and 18.4% "strongly agree"), while only a small part of the students have a neutral opinion (13.3% neither agree nor disagree).

Q.22. I know the problems caused by air pollution

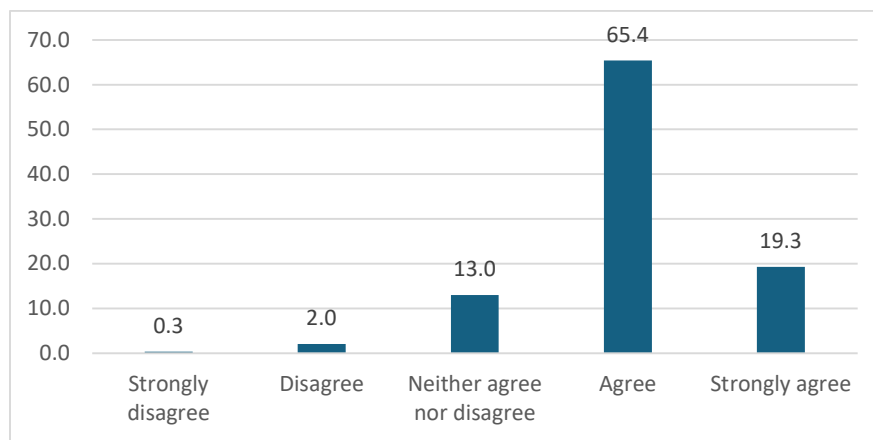


Figure 22 I know the problems caused by air pollution.

Regarding whether students know the problems caused by air pollution, the majority of students appear to be highly informed about this issue, as almost four of five students state that they know the problems caused by air pollution (84.7%, 65.4% "agree" and 19.3% "strongly agree"), while only a small part of the students have a neutral opinion (13% neither agree nor disagree).

Q.23. I know ways to deal with air pollution

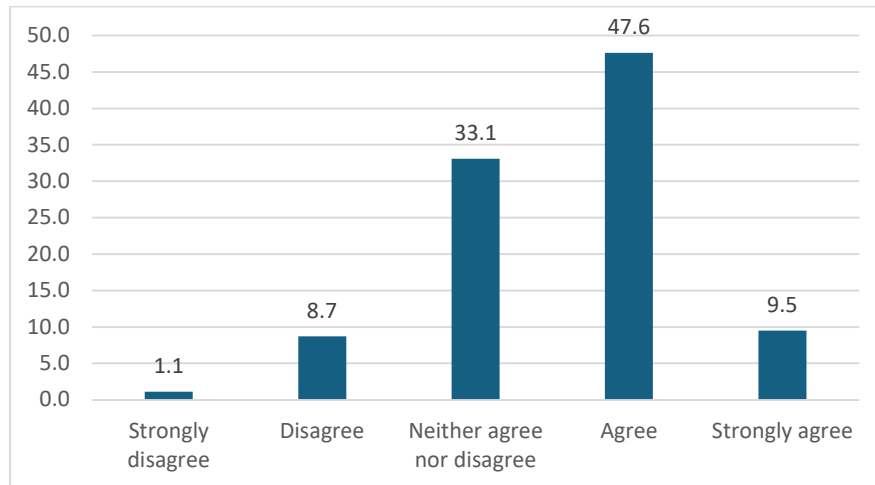


Figure 23 I know ways to deal with air pollution.

Although students know the causes of air pollution and the problems caused by air pollution, the results show that students are not informed about the ways to deal with air pollution as only half of the participants state that they know the corresponding ways (57.1%, 47.6% "agree" and 9.5% "strongly agree"). On the contrary, one in three students declares a neutral attitude (33.1%), as they neither agree nor disagree with this opinion and one of ten students does not know ways to deal with air pollution (9.8%, 1.1% "strongly disagree" and 8.7% "disagree"). Therefore, it seems that additional information is needed for students on ways to deal with air pollution.

Q.24. I need to know more about clean air (pollution, impacts, etc)

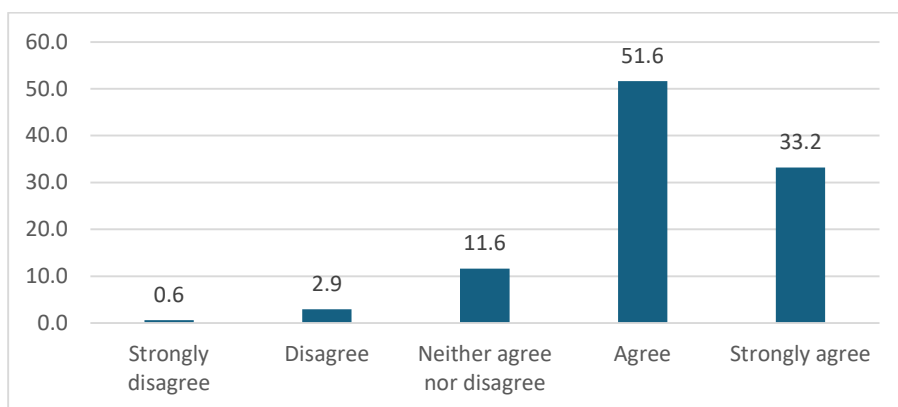


Figure 24 I need to know more about clean air (pollution, impacts, etc).

Similar to before, students state that they need more information about clean air (pollution, impacts, etc.). Specifically, almost four of five students declare a desire to learn more about this topic (84.8%, 51.6% "agree" and 33.2% "strongly agree"). Comparing the results with the previous questions, it seems that the students know the causes and the problems created by air pollution, however they do not know ways to deal with it and they recognize the need for additional information on this important environmental problem.

Q.25. I know the causes of climate change

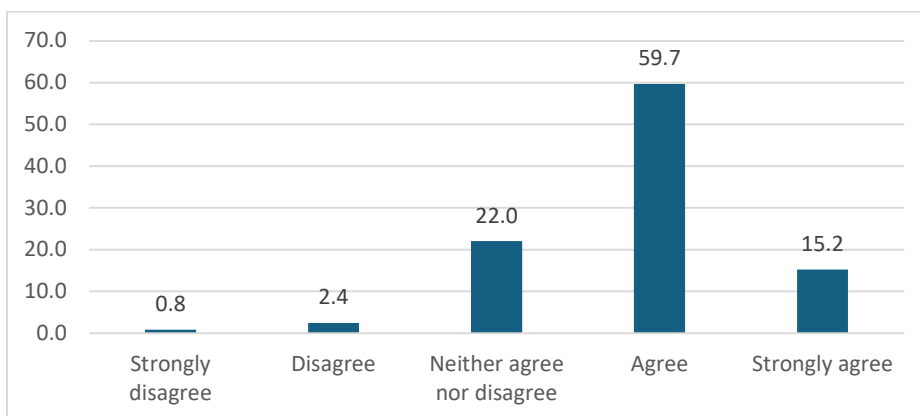


Figure 25 I know the causes of climate change.

Regarding climate change, the majority of students state that they know the causes that cause it. Specifically, almost three of four students state that they know the causes of climate change (74.9%, 59.7% "agree" and 15.2% "strongly agree"). However, a significant percentage of students (22%) have a neutral attitude, as they neither agree nor disagree with this opinion.

Q.26. I know the effects of climate change

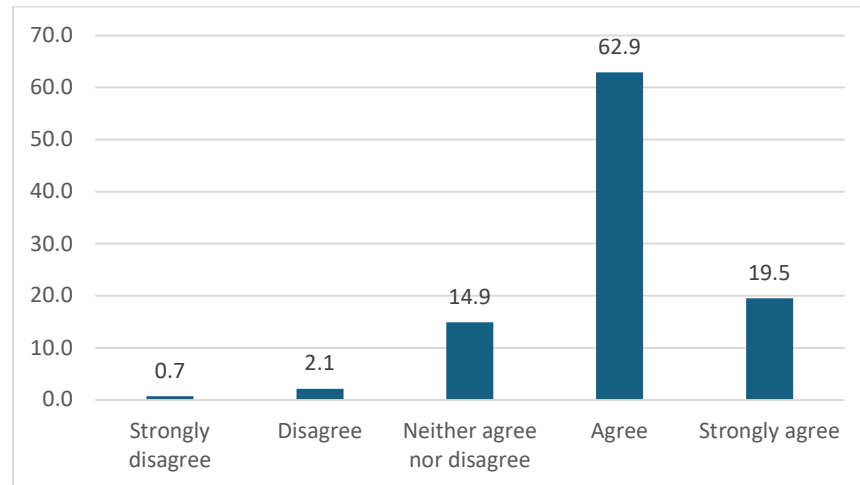


Figure 26 I know the effects of climate change.

As before where the students know the causes of climate change, respectively the students state that they also know the effects of climate change. Specifically, four of five students are informed about this topic (82.4%, 62.9% "agree" and 19.5% "strongly agree"). However, a small percentage of students neither disagree nor disagree with this opinion (14.9%).

Q.27. I know what human activities contribute to the greenhouse effect and climate change

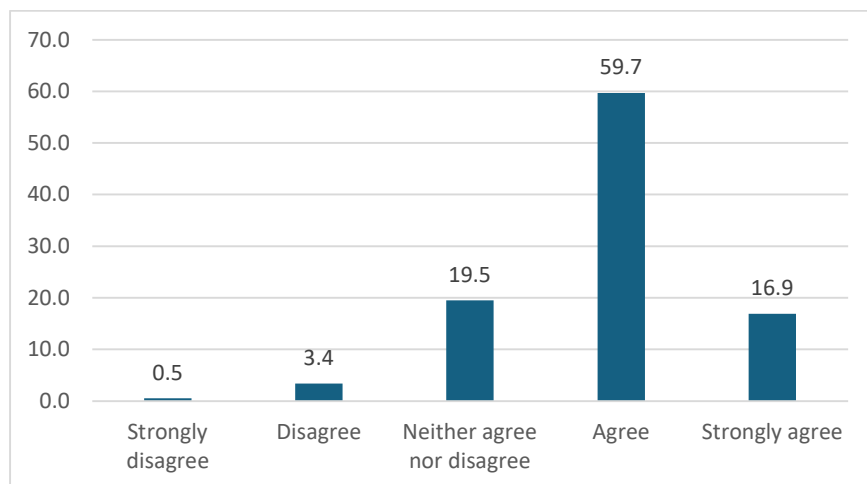


Figure 27 I know what human activities contribute to the greenhouse effect and climate change.

Regarding whether students know what human activities contribute to the greenhouse effect and climate change, the results show that three of four students are informed (76.6%, 59.7% "agree" and 16.9% "strongly agree"). However, one of five students neither agree nor disagree with this opinion (19.5%). Therefore, additional information is required for students on this topic.

Q.28. I know the effects on the environment from the use of fossil fuels

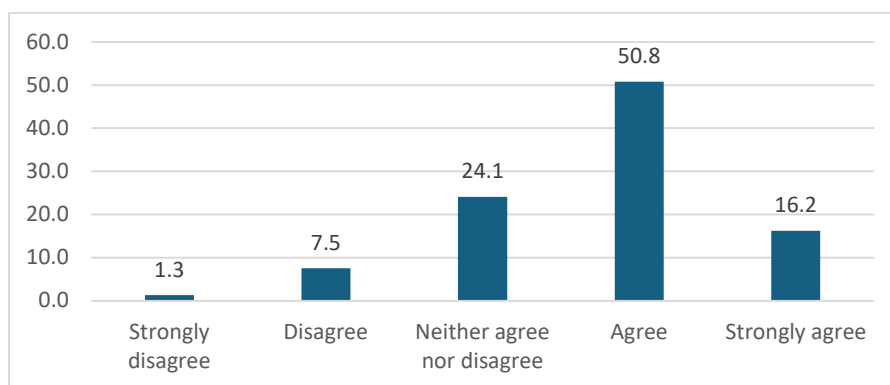


Figure 28 I know the effects on the environment from the use of fossil fuels.

Regarding whether students know the effects on the environment from the use of fossil fuels, the results show that two of three students are informed (67%, 50.8% "agree" and 16.2% "strongly agree"). However, one in four students neither agree nor disagree with this opinion (24.1%). Therefore, additional information is required for students on this topic.

Q.29. I know the benefits of renewable energy sources

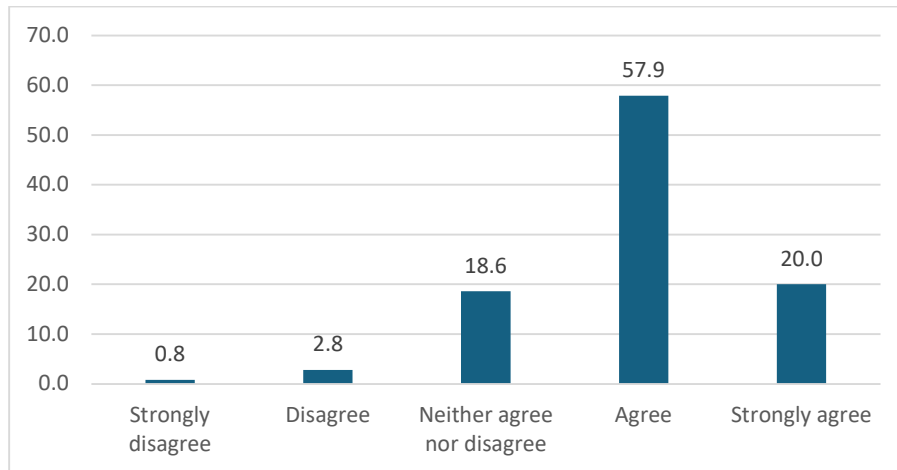


Figure 29 I know the benefits of renewable energy sources.

Regarding whether students know what the benefits of renewable energy sources are, the results show that almost three of four students are informed (77.9%, 57.9% "agree" and 20% "strongly agree"). However, one of five students neither agree nor disagree with this opinion (18.6%). Therefore, it is necessary to inform students more about the benefits of using renewable energy sources, mainly in terms of environmental benefits.

Q.30. I need to know more about climate change (causes, effects, mitigation, etc)

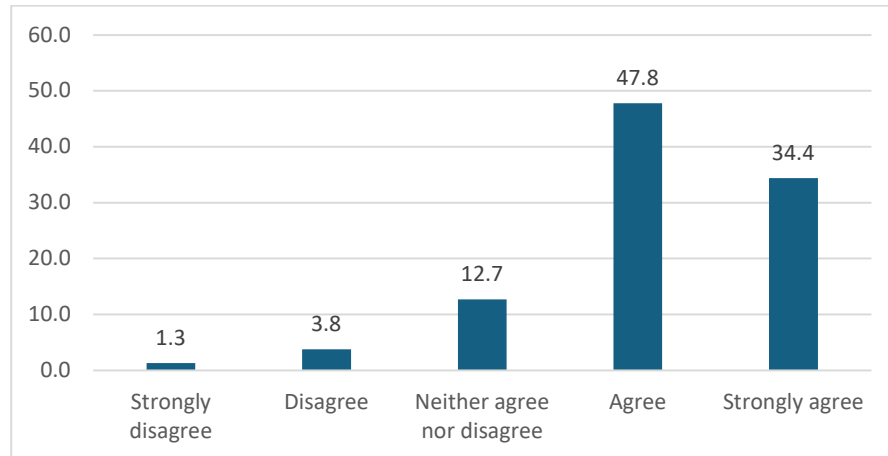


Figure 30 I need to know more about climate change (causes, effects, mitigation, etc).

It is remarkable that while the majority of students know the causes and effects of climate change, as well as what human activities contribute to greenhouse effect and climate change, four of five students state that they need additional information on this topic (82.2%, 47.8% "agree" and 34.4% "strongly agree"). It therefore appears that students are constantly interested in enriching knowledge regarding key environmental problems such as climate change.

Q.31. I know ways to save electricity in my space

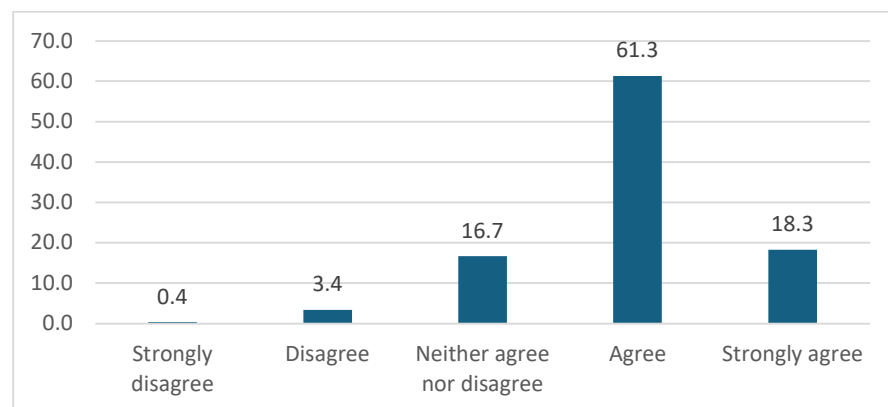


Figure 31 I know ways to save electricity in my space.

Regarding the management of electricity, the results show that the majority of students know ways to save electricity in their space. Specifically, four of five students are informed on this topic (79.6%, 61.3% "agree" and 18.3% "strongly agree"). On contrary, a small percentage of students (16.7%) neither agree nor disagree with this opinion.

Q.32. I need to know more about energy (use, savings, production, environmental effects, etc)

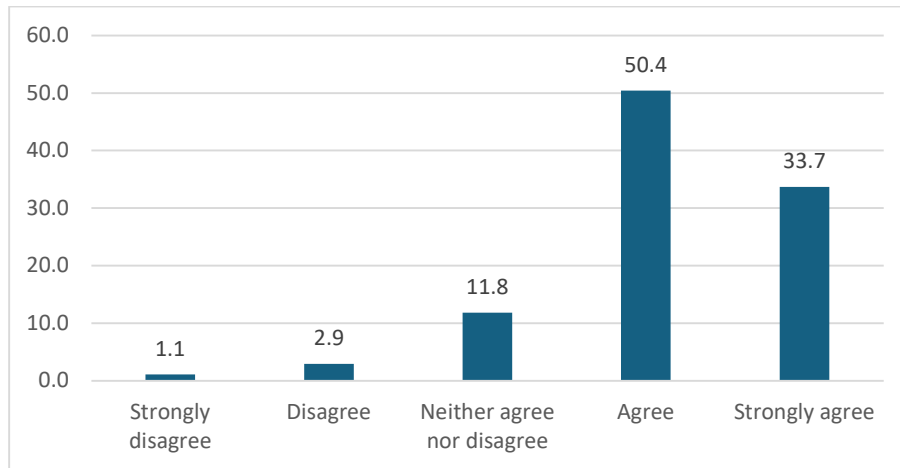


Figure 32 I need to know more about energy (use, savings, production, environmental effects, etc).

Contrary to the previous question, where students present themselves informed about energy saving, the results show that the majority of students state that they need to know more about energy (use, savings, production, environmental effects, etc.). Specifically, almost four of five students state that they want additional information about energy (84.1%, 50.4% "agree" and 33.7% "strongly agree").

B. Behavior for Environmental Sustainability

Q.33. I plan my studies taking into account environmental sustainability

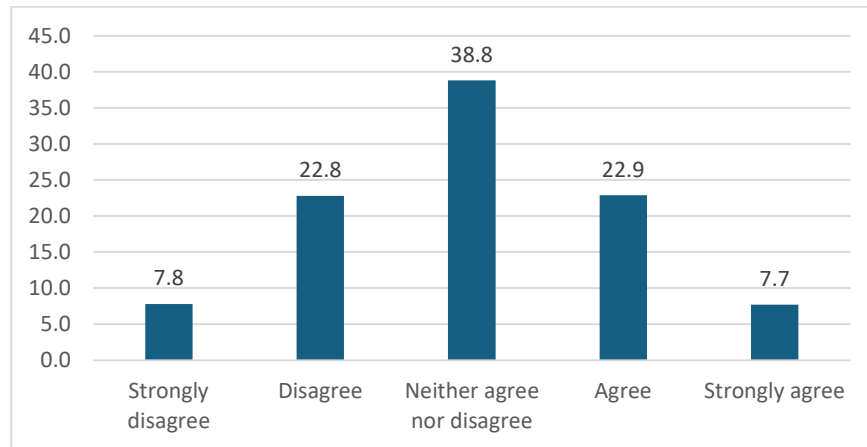


Figure 33 I plan my studies taking into account environmental sustainability.

Studying whether students plan their studies taking into account environmental sustainability, the results show that students' opinions are divided. Specifically, 30.6% of students (30.6%, 22.8% "strongly disagree" and 22.8% "disagree") plan their studies taking into account environmental sustainability and an equal 30.6% of students do not take environmental sustainability into account (30.6%, 22.9% "agree" and 7.7% "strongly agree"). The remaining 38.8% of students neither agree nor disagree with this opinion. It appears therefore, that the students are divided into three almost equal groups: students who take environmental sustainability into account when planning their studies, students who do not take it into account, and students who maintain a neutral attitude.

Q.34. I attend courses related to environmental sustainability

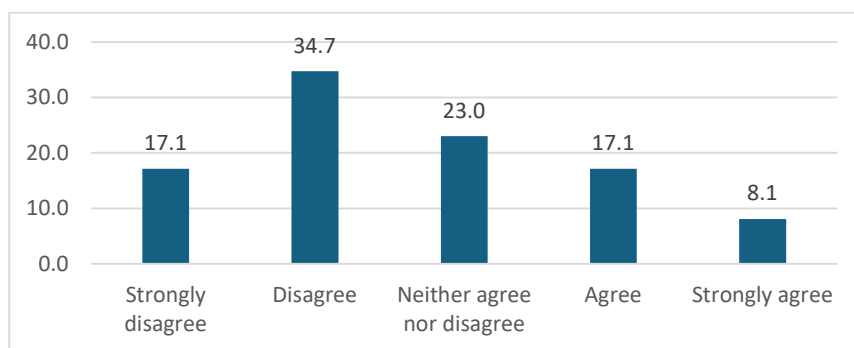


Figure 34 I attend courses related to environmental sustainability.

Regarding whether students attend courses related to environmental sustainability, half of the participants state that they do not attend related courses (51.8%, 17.1% "strongly disagree" and 34.7% "disagree"). In contrast, almost one of four students maintains a neutral attitude (23%), while only one of four students states that they attend courses related to environmental sustainability (25.2%, 17.1% "agree" and 8.1% "strongly agree"). The non-attendance by students of courses related to environmental sustainability is due to the fact that students come from various disciplines that are not all related to environmental issues. However, could all students in their universities get some general knowledge about the environment and especially about environmental sustainability.

Q.35. I search for information / read news about environmental sustainability

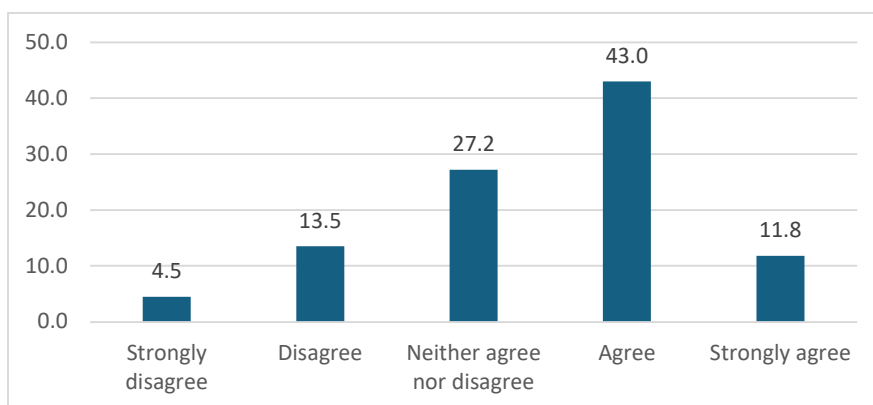


Figure 35 I search for information / read news about environmental sustainability.

Regarding whether students search for information and read news about environmental sustainability, almost half of the students state that they search for relevant information (54.8%, 43% "agree" and 11.8% "strongly agree"). On the contrary, 27.2% of students maintain a neutral attitude, while almost one in four students seems not interested in looking for information about environmental sustainability (18%, 4.5% "strongly disagree" and 13.5% "disagree"). It seems, therefore, that a significant percentage of students are not interested in receiving information on environmental sustainability issues.

Q.36. I participate in events (e.g. seminar, speech, workshop) related to environmental sustainability

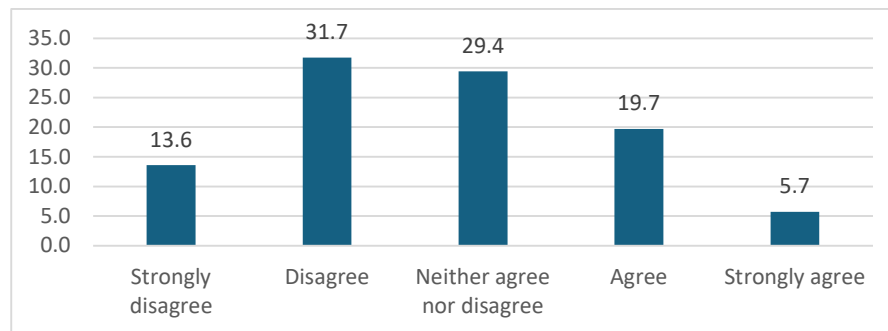


Figure 36 I participate in events (e.g. seminar, speech, workshop) related to environmental sustainability.

Regarding whether students participate in events (e.g. seminar, speech, workshop) related to environmental sustainability, almost half of the students state that they do not participate in such events (45.3%, 13.6% "strongly disagree" and 31.7% "disagree"). On the contrary, 29.4% of students maintain a neutral attitude, while only one in four students seems interested in participating in such events (25.4%, 19.7% "agree" and 5.7% "strongly agree"). It seems, therefore, that a significant percentage of students are not interested in receiving information on environmental sustainability issues by participating in events related to environmental sustainability.

Q.37. I'm talking about environmental sustainability with my friends and family

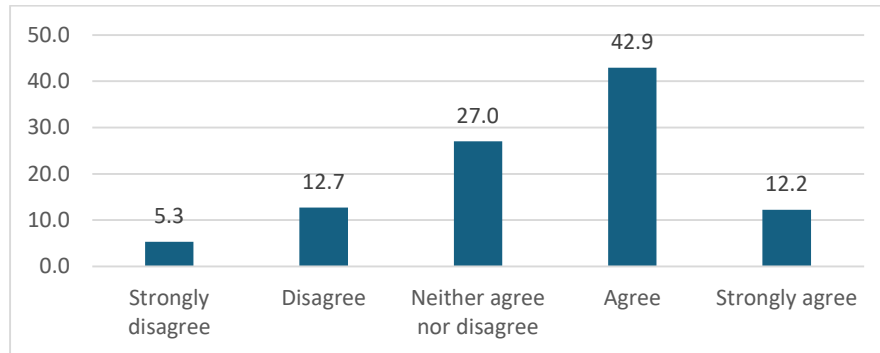


Figure 37 I'm talking about environmental sustainability with my friends and family.

Studying whether students are talking about environmental sustainability with their friends and family, almost half of the students state that they do (55.1%, 42.9% "agree" and 12.2% "strongly agree"). On the contrary, 27% of students maintain a neutral attitude, while only one in five students seems not to do so (18%, 5.3% "strongly disagree" and 12.7% "disagree"). It appears, therefore, that a significant part of students is interested in sharing information with their friends and family about environmental sustainability.

C. Opinion for Environmental Sustainability

Q.38. I wonder if things I do can harm the natural environment

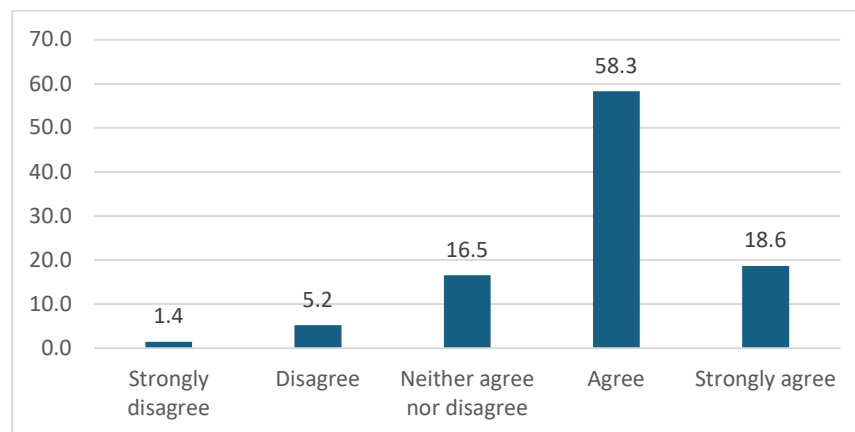


Figure 38 I wonder if things I do can harm the natural environment.

Regarding whether students are wonder if things they do can harm the natural environment, almost three of four students state that they wonder (76.9%, 58.3% "agree" and 18.6% "strongly agree"), while on contrary 16.5% of students maintains a neutral attitude.

Q.39. I believe that my own contribution to achieving sustainability is essential

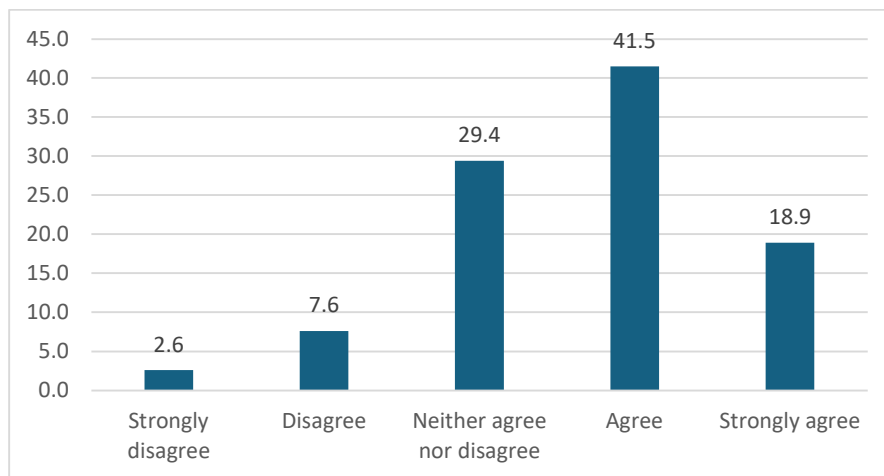


Figure 39 I believe that my own contribution to achieving sustainability is essential.

Regarding whether students believe that their own contribution to achieving sustainability is essential, three of five students believe that their own contribution is essential (60.4%, 41.5% "agree" and 18.9% "strongly agree"), while on the contrary, 29.4% of students maintains a neutral stance. It appears, therefore, that a significant part of students considers their contribution to achieving sustainability important, however a significant part of students should be informed about their significant contribution to achieving sustainability.

Q.40. I believe that I need additional training on practices to achieve sustainability

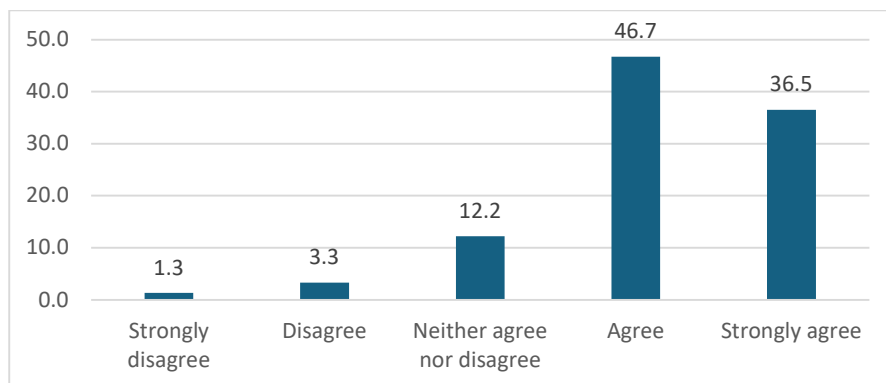


Figure 40 I believe that I need additional training on practices to achieve sustainability.

Regarding whether students believe that they need additional training on practices to achieve sustainability, almost four of five students state that they need additional training (83.2%, 46.7% "agree" and 36.5% "strongly agree"). On the contrary, only a small percentage of students do not state that additional training is needed (4.6%. 1.3% "strongly disagree" and 3.3% "disagree"). It therefore appears that students recognize the importance of training in achieving sustainability.

Q.41. I believe that I need additional training to live sustainably

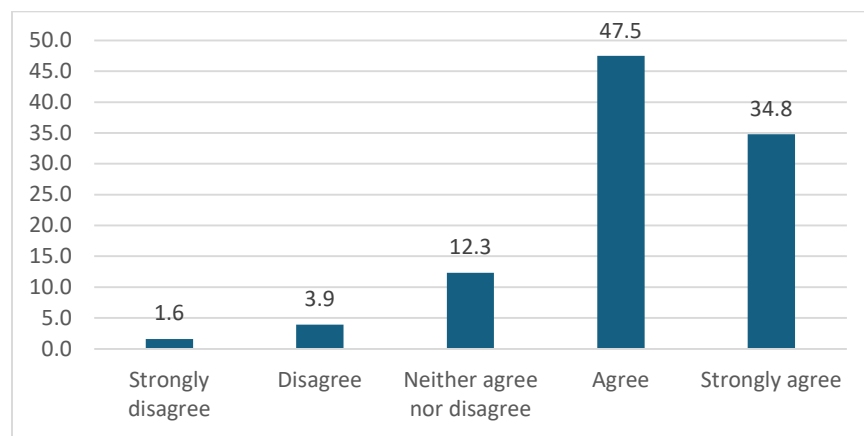


Figure 41 I believe that I need additional training to live sustainably.

Regarding whether students believe that they need additional training to live sustainably, almost four of five students state that they need additional training (82.3%, 47.5% "agree" and 34.8% "strongly agree"). On the contrary, only a small percentage of students do not state that additional training is needed (5.5%. 1.6% "strongly disagree" and 3.9% "disagree"). It therefore appears that students recognize the importance of training to live sustainably.

Q.42. For me, raising the awareness of college students about the sustainability is essential

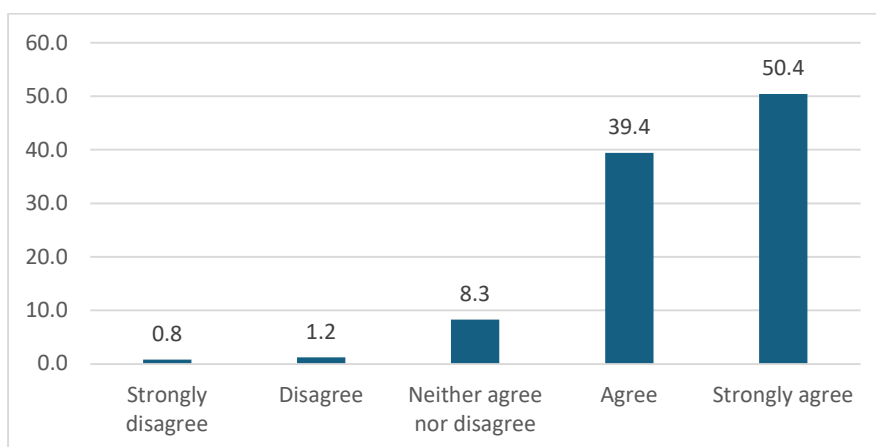


Figure 42 For me, raising the awareness of college students about the sustainability is essential.

Regarding whether students believe that raising awareness of college students about sustainability is essential, nine of ten students state that raising awareness of college students is essential (89.8%, 39.4% "agree" and 50.4% "strongly agree"). It therefore appears that students recognize the importance of sustainability and the importance of raising student awareness on this issue.

D. Demographic and socio-economic data

Q.43. Sex

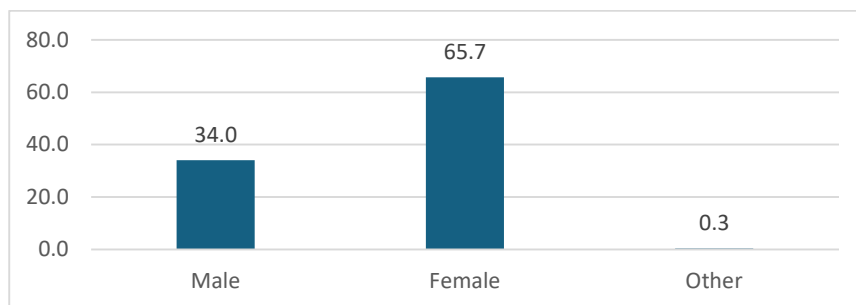


Figure 43 Sex.

Regarding the gender distribution, the majority of students, almost two of thirds of students (65.7%) are female, while the remaining 34% are male.

Q.44. Age

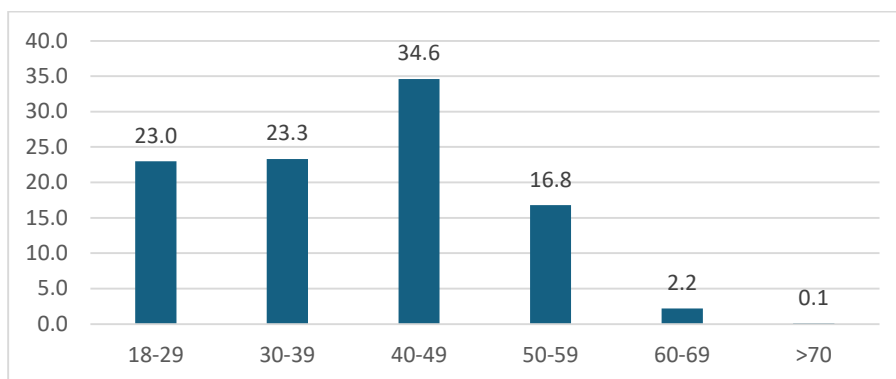


Figure 44 Age.

Regarding the age distribution of students, almost one in three students (34.6%) belongs to the 40-49 age group, followed by the 30-39 age group with 23.3% and the 18-29 age group with 23%. There is also a significant percentage of students (16.8%) belonging to the 50-59 age group. The average age of students is 39.5 years. The large student average is mainly due to the fact that the largest number of students come from non-conventional universities, where students of various age groups take courses (mainly at master level).

Q.45. Work

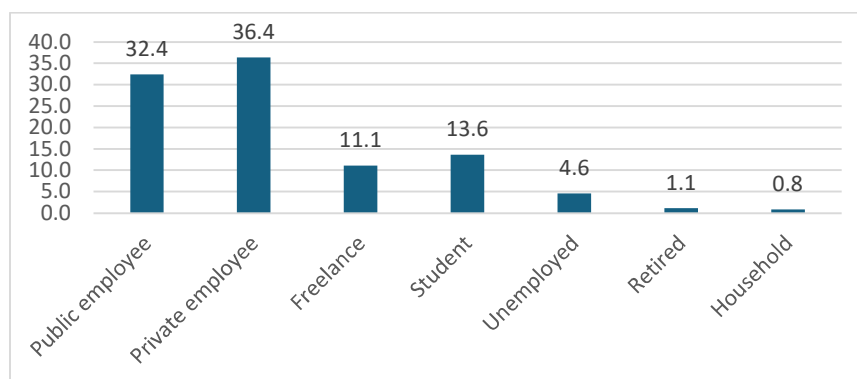


Figure 45 Work.

Regarding the work situation of students, as mentioned above, most students come from non-conventional universities and therefore do not represent the classic student model. More specifically, the majority of students, four of five, are employees (32.4% public employees, 36.4% private employees and 11.1% freelancers). In addition, the 4.6% of students are unemployed and only 13.6% declare that they are exclusively students.

Q.46. University

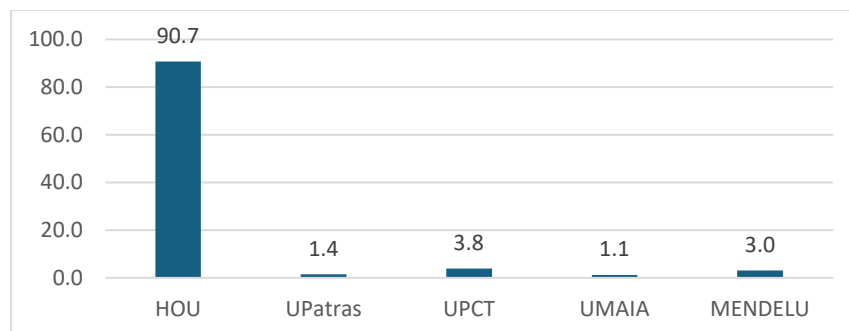


Figure 46 University.

Studying the university origin of the students, the results show that the majority of students, nine of ten students (90.7%), come from the HOU (Greece), while the participation of the remaining universities occupies the 9.3%: 3.8% from UPCT (Spain),

3.0% from MENDELU (Czech), 1.4% from UPatras (Greece) and 1.1% from UMAIA (Portugal).

Q.47. Year of studies

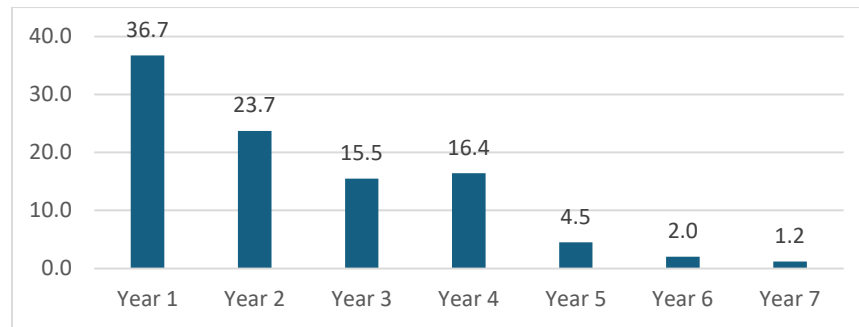


Figure 47 Year of studies.

Regarding students' year of study, 36.7% of students, almost one in three, state that they are in their first year of study, while 23.7% are in their second year of study. This is followed by 16.4% of students in their fourth year of study and 15.5% of students in their third year of study.

Q.48. Country of residence

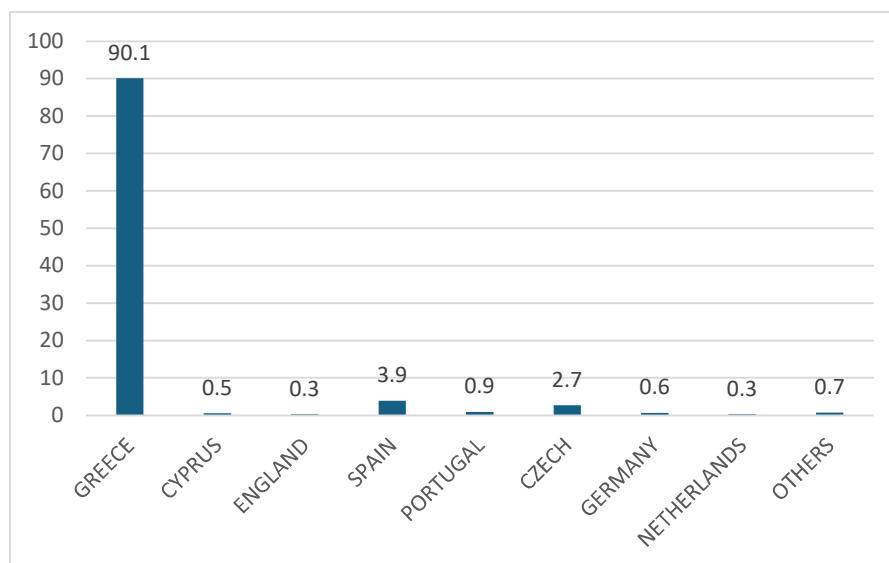


Figure 48 Country of residence.

Depending on the university of origin of the students and the country of residence of the students varies. Nine of ten students live in Greece (90.1%), while 3.9% live in Spain. It is followed by the Czech Republic with 2.7% and Portugal with 0.9%. In addition, 0.6% of students declare Germany as their country of residence, while there is also a percentage of 0.5% of students who live in Cyprus. The remaining 1.3% of students live in other European or non-European countries. The results of the students' country of residence are agree with the results of the number of students from each university.

Q.49. Nationality

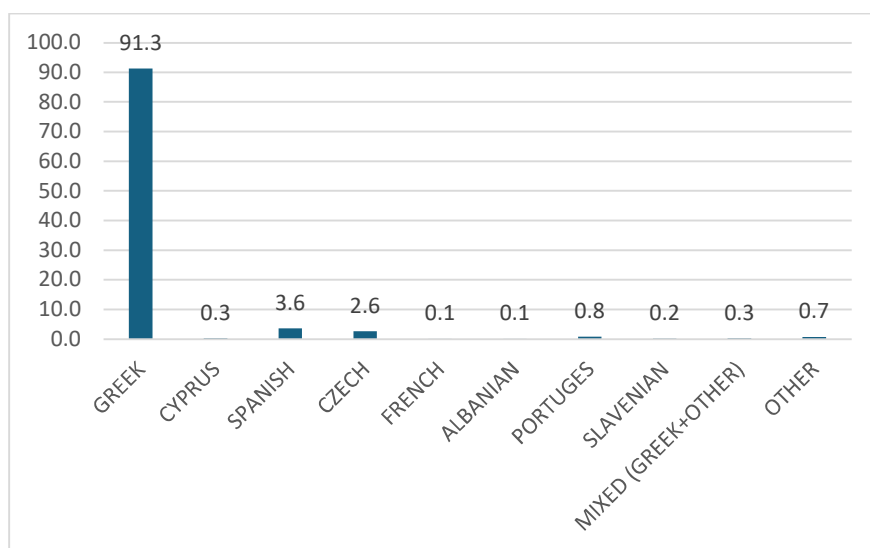


Figure 49 Nationality.

Finally, regarding the nationality of the students, nine of ten students declare Greek nationality (91.3%). It is followed by 3.6% of students who declare Spanish nationality and 2.6% of students who declare Czech nationality. In addition, 0.8% of students declare Portuguese nationality, while the remaining 1.7% declare various nationalities or mixed nationality (e.g. Greek and Cypriot nationality). The nationality results follow the previous results of the number of students by university and the students' country of residence.

Conclusions

In this research, the students' need for information on sustainability issues was investigated. The majority of students are concerned about the future of the natural and anthropogenic environment and are informed about sustainability and key environmental issues. Furthermore, students seem to recognize the causes and effects of major environmental problems, such as water pollution, air pollution, climate change and waste management. However, almost half of the students are not aware of the SDGs.

In addition, a significant part of the students does not know ways and actions to achieve environmental sustainability and does not follow relevant actions. The students' need for additional information on environmental sustainability issues is therefore evident. In general, the majority of students appear knowledgeable about environmental problems, however recognize the importance of their own contribution to achieving sustainability and state that they need additional training in practices to achieve sustainability and ways to learn to live sustainably.

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2023-1-EL01-KA220-HED-000161272

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