Preliminary communication

ATTITUDES AND OPINIONS OF STUDENTS AT THE UNIVERSITY OF SLAVONSKI BROD ON CLIMATE CHANGE

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Abstract: *Climate change is one of the greatest challenges facing the world in the 21st century. The climate is undeniably changing and significant steps need to be taken to reduce the impact and scale of change. Climate change, caused by the increase of greenhouse gases in the atmosphere, is expected to lead to a number of problems that will affect the development of society. Negative impacts include damage from increasingly frequent natural disasters and rising sea levels, pressure on food production, negative effects on human health and many other problems. Public engagement will be critical to an effective response to climate change. A well-informed public that is sufficiently aware of the dangers that climate change can cause and the actions that are being taken to respond to climate change is crucial, as mitigation and adaptation processes cannot begin without changes in individual behaviour and adequate public support for policy decisions. It is precisely for this reason that the aim of this paper is to investigate students' attitudes and opinions on the risks, consequences and opportunities of adapting to climate change. Empirical research was conducted to investigate the perception of climate change from the students' perspective. The survey methods used include research conducted on a random sample of 133 respondents. The paper analyses in detail the knowledge about climate change, its risks and the opportunities available to students at the University of Slavonski Brod.*

Keywords: *climate change, students, education, risks*

1. INTRODUCTION

Climate change is neither a myth nor a phenomenon of the past or the distant future. It is a reality of the present. In addition to the numerous scientific studies that point to the negative consequences of climate change and the urgency of taking action, we are all witnessing this phenomenon as individuals. Documents such as the Paris Agreement and national climate agreements focus on tackling and reducing the climate crisis in the period from now until 2050, which means that a turnaround is needed in the next 25 years. Young people, as the main drivers of the future, should take leadership positions, actively engage, make important decisions and create new rules to build a more sustainable world by utilising knowledge, creativity and the power of togetherness. Previous research has shown that the Croatian population's awareness and concern for protecting the environment from negative climate change is increasing (European Commission, 2008, 2014, 2021; Ančić et al, 2016; Landau et al, 2008; Šimac et al,

2021). As today's young generations are taking responsibility for the future of our planet, it is important to understand their attitudes and awareness of climate change challenges in order to enable their more active participation in decision-making processes and public policy making.

Climate change and the attitudes of a specific population group are often the subject of final and diploma theses, and papers on this topic have been written by Gregorić (2024), Grubešić (2016), Podoreški (2022) and Voloder (2024). Numerous authors have investigated the relationship between high school students' awareness of climate change and their behavioural intentions to reduce their negative impact on the environment, including Maglić, Pavlović and Franc (2022), Nefat and Benazi (2019), Pavlović, Franc, Maglić (2025). With the aim of gaining insight into their level of information and attitudes towards climate change, we conducted a survey among students at the University of Slavonski Brod.

2. RESEARCH METHODOLOGY

This paper is based on the results of a survey conducted among students at the University of Slavonski Brod with the aim of analysing their attitudes and awareness of climate change. The focus was on young people (students) as key actors of future social and environmental changes. A total of 133 students from all faculties of the university, including the Faculty of Mechanical Engineering, the Faculty of Technology, the Faculty of Biotechnical Sciences and the Faculty of Social and Human Sciences, took part in the survey anonymously. The questionnaire analysed general attitudes towards climate change, the level of information, personal concern and willingness to act.

2.1. METHODOLOGY AND STRUCTURE OF THE SURVEY

Between 23 April and 22 May 2025, anonymous responses were collected from students in an online survey created using the Google Forms tool. The survey was distributed mainly via e-mail and social networks, with participants encouraged to forward the survey to their colleagues at the university. This method is known as a snowball system and allows the sample to be expanded within a specific target group. Participation in the survey was completely voluntary and each completion took an average of 5 minutes. The questionnaire was divided into four sections; at the very beginning, survey participants were categorised by gender and university component, the second section contained questions on general attitudes towards climate change (strongly disagree - strongly agree), followed by questions on awareness of climate change (strongly disagree - strongly agree), and finally questions on the importance of individual sources of information (strongly disagree - strongly agree). Due to the topic of this paper, only selected questions from individual parts of the survey were chosen for further analysis, focussing on the responses of students from the Department of Biotechnology. The selected questions are the most relevant for understanding the students' attitudes and level of awareness towards climate and socio-ecological issues, which is in line with the aims of the study.

3. RESULTS AND DISCUSSION

3.1. SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE STUDENTS

A total of 133 students participated in the study, of which 99 participants (74.4%) were female and 34 participants (25.6%) were male (Figure 1).

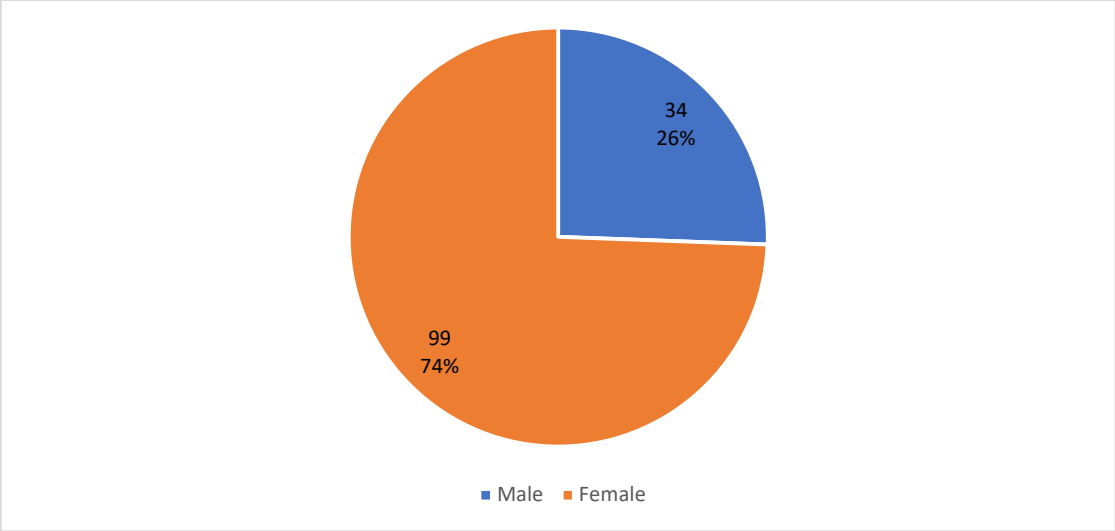

Figure 1. Structure of participants by gender

The survey participants came from a total of four faculties at the University of Slavonski Brod. Most respondents came from the Faculty of Social Sciences and Humanities, namely 73 (54.9 %). Other faculties were represented to a lesser extent: 26 respondents (19.5 %) from the Faculty of Mechanical Engineering, 20 (15 %) from the Faculty of Biotechnical Sciences and 14 respondents (10.5 %) from the Faculty of Engineering (Figure 2).

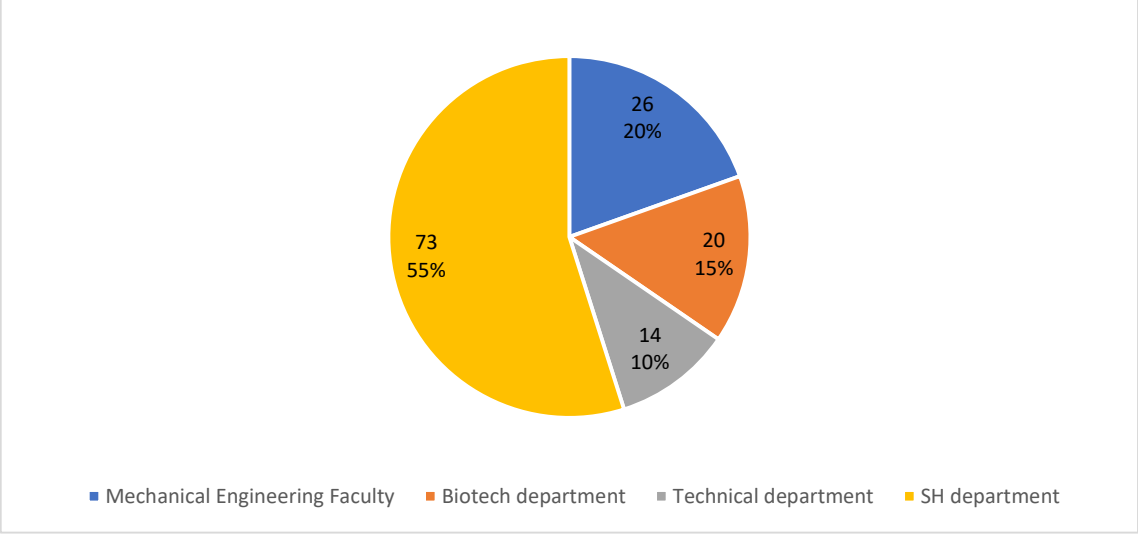

Figure 2. Distribution of respondents by faculty at the University of Slavonski Brod

Given the topic of the survey, a higher participation of students from the Faculty of Biotechnical Sciences was expected, but the relatively low number of responses received can be partly explained by the overall lower number of students in this faculty. Nevertheless, given the relevance of the topic to their subject, the results from their group provide valuable insights and form the focus of further analysis in this paper.

3.2. ANALYSIS OF GENERAL ATTITUDES TOWARDS CLIMATE CHANGE

Observations in previous research confirm that the climate is changing beyond the limits attributable to various natural variations due to the sudden intensity and speed of warming. This phenomenon is very often attributed to human activities and modern lifestyles (Nefat and Benazi, 2019). When asked whether climate change is caused by modern lifestyle, 74 students (55.6%) responded "I agree", while the next most common response was "I strongly agree" with 34 responses (25.6%), which is consistent with the scientific attitudes mentioned earlier (Figure 3).

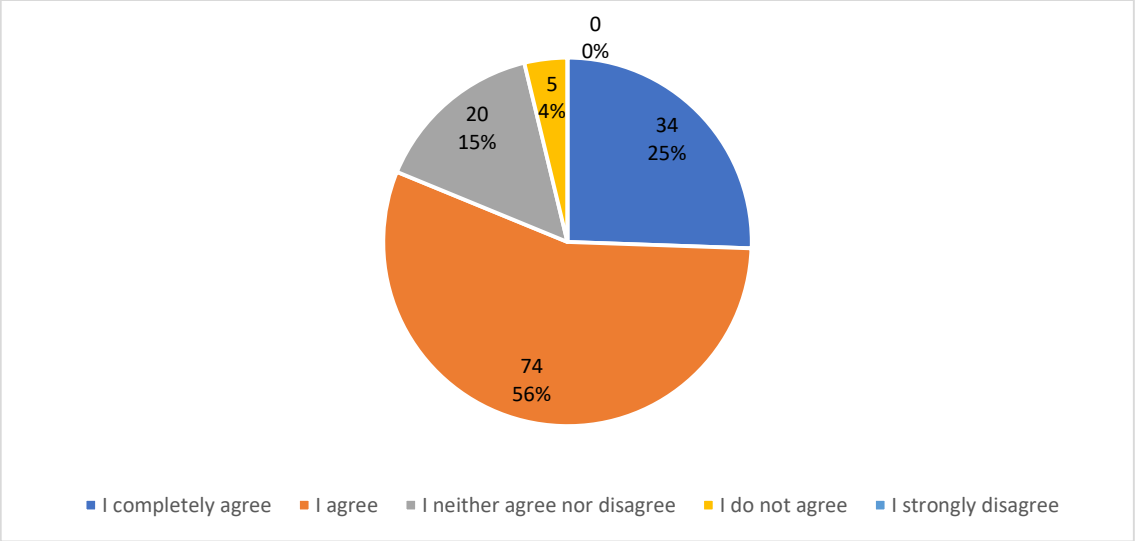

Figure 3. Climate change is caused by the modern lifestyle

When analysing the responses of students from the Department of Biotechnology, the majority also agreed with the statement. 8 students responded with "I completely agree", while 10 students chose "I agree". Only one student took a neutral position and one student disagreed with the statement. These results confirm that students clearly connect the modern way of life, marked by resource consumption and urbanization, with the occurrence of climate change.

The majority of respondents (73 responses) agreed (54.5%), indicating a relatively high level of recognition of the role of humans in the causes of climate change (Figure 4).

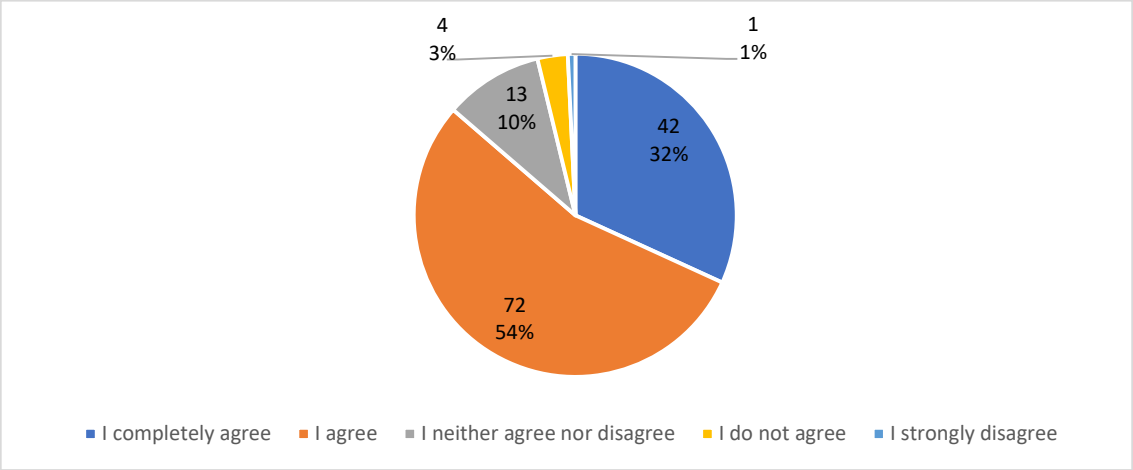

Figure 4. Climate change is primarily a consequence of human activities

When the responses of the bioengineering students are considered separately, it can be seen that 8 (40%) of them indicate that they fully agree, while 11 (55%) indicate that they agree. Only one student (5%) indicated that he was neutral ("I neither agree nor disagree"), while there were no responses expressing disagreement. These results show that the majority of students in the bioengineering department recognise the impact of human activity on climate change, which is in line with expectations given their field of study. This high level of agreement shows that students are aware that humans are an important factor in causing climate change. In addition, 62 students (47%) who 'strongly agree' that climate change has a negative impact on human health and 51 students who 'agree' (38.6%) showed a high awareness of the link between climate change and human health (Figure 5).

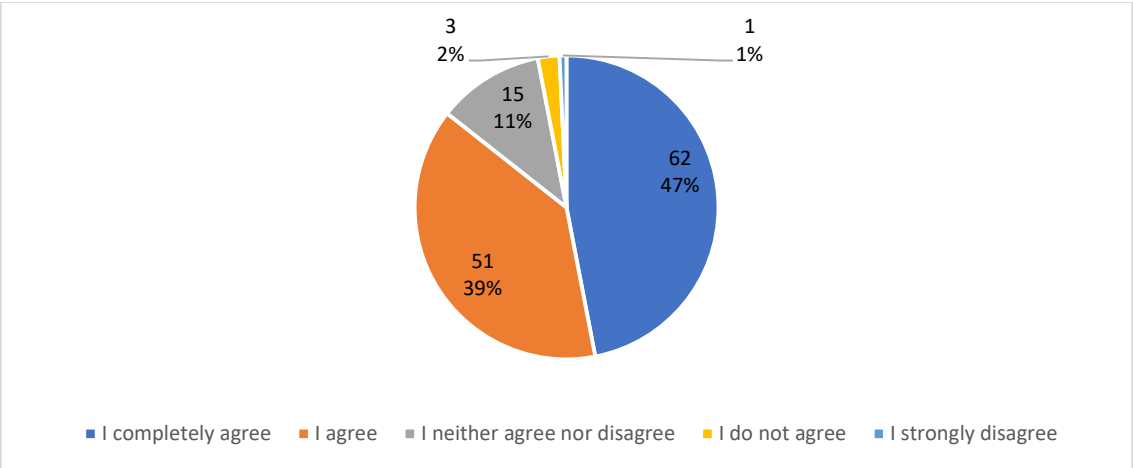

Figure 5. Climate change has a negative impact on human health

When analysing the responses of students from the Biotechnology department, 12 students stated that they strongly agreed and 7 students agreed. Only one student gave a neutral response ("neither agree nor disagree"), while there were no responses expressing disagreement. This level of agreement indicates a high level of awareness among students about the connection

between climate change and public health. The students surveyed strongly agree with the statement that plants and animals are seriously threatened by climate change. Most of them have a clear position on the existence of negative consequences of climate change for flora and fauna, showing a high level of awareness of the state of the natural environment (Figure 6).

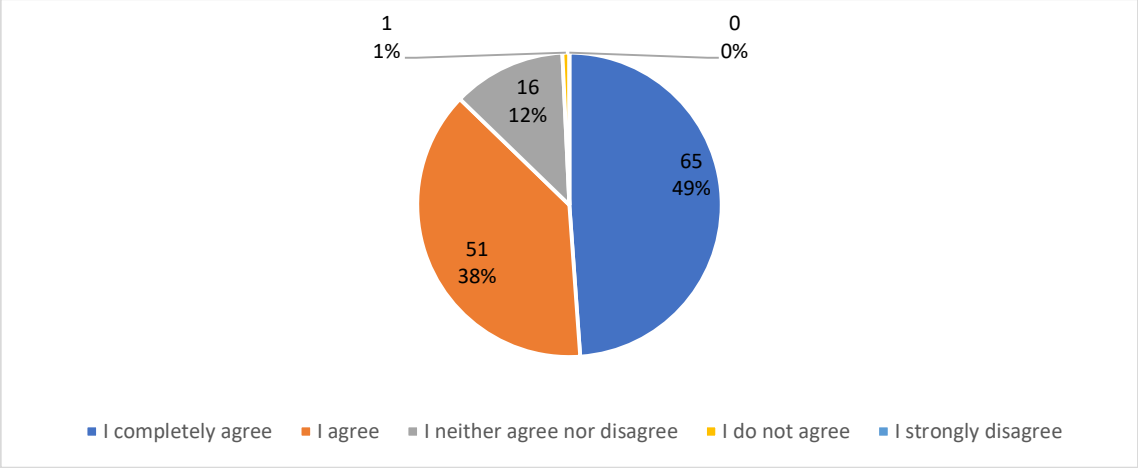

Figure 6. Plants and animals are seriously threatened by climate change

There is also a high level of agreement with the statement that plants and animals are seriously threatened by climate change among students in the Department of Biotechnology. Almost all students expressed a favourable opinion, with the majority fully agreeing with the statement (48.9%). Only one student took a neutral position. These results confirm the high level of ecological awareness in this group and indicate an understanding of the impact of climate change on biodiversity and natural ecosystems, which is particularly important given their field of study. The statement that climate change has a negative impact on global food security was met with overwhelming agreement among respondents: 59 students (44.7 %) agreed with this statement, 41 (31.1 %) agreed completely. However, it is interesting to note that more than a fifth of participants (21.2%) took a neutral position, expressing neither clear agreement nor disagreement (Figure 7).

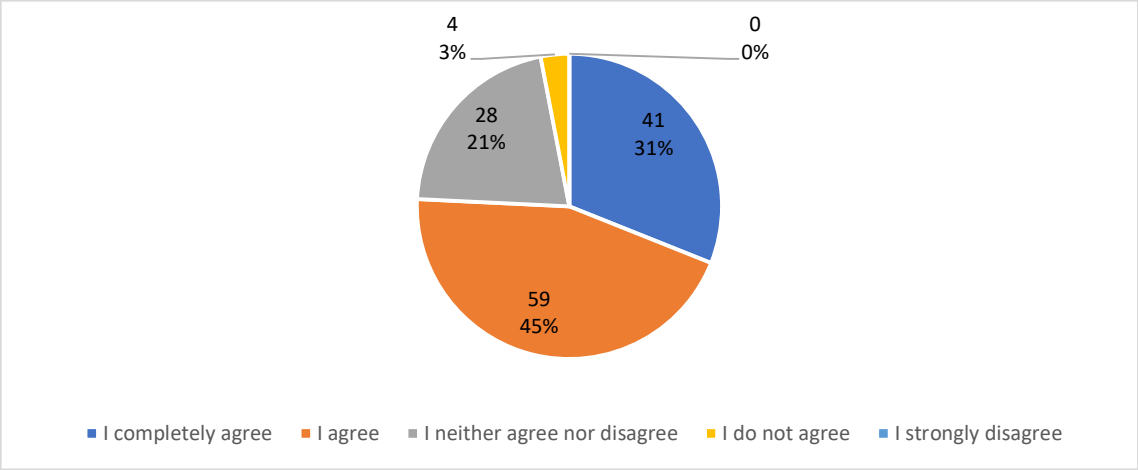

Figure 7. Climate change has a negative impact on food security in the world

This percentage represents a significant proportion, especially in the context of the issue of global food security as one of the main consequences of climate change. The data obtained indicates a certain lack of information, confidence or interest among some students. Looking at the responses of students from the Biotechnology department, there is a slightly clearer agreement with this statement. 9 students fully agreed, 10 somewhat agreed and only one student took a neutral position. These results show that students in this subject area recognise the connection between climate change and global challenges in the area of food security to a greater extent, which corresponds to their field of interest and education. Almost half 65 students (48.9%) of the students surveyed disagree with the statement that nature can combat climate change on its own. The percentages of “do not agree at all" with 28 answer (21.1%) of responses and “neither agree nor disagree” with 29 answer (21.8%) are roughly equal. Only 6% of students stated that they agreed and 2.3% completely agreed (Figure 8).

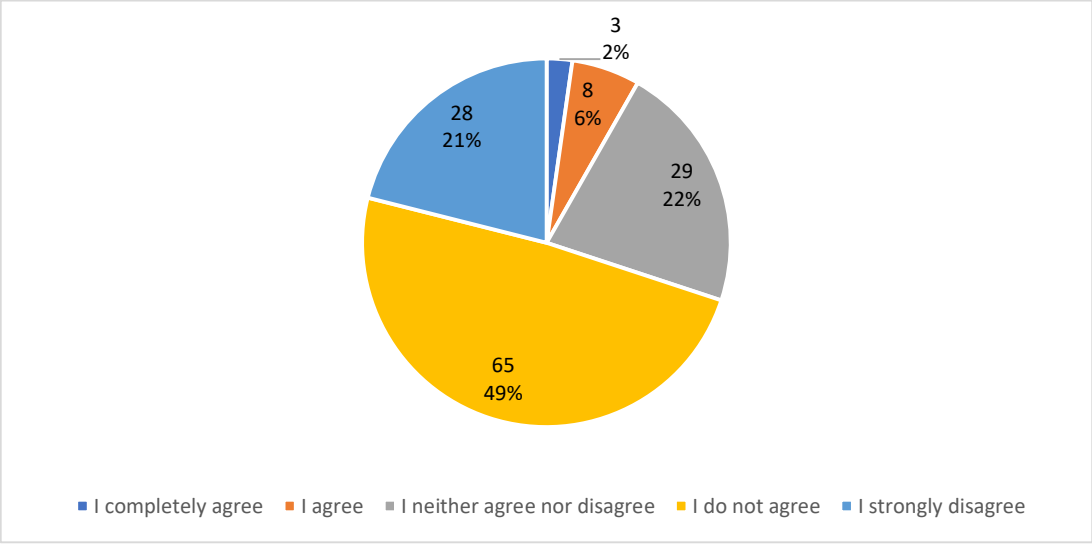

Figure 8. Nature can fight climate change itself

A similar pattern can be observed among students in the biotechnology department: 10 disagree with the statement and 4 strongly disagree. 3 students took a neutral position, while 3 also chose the answer “agree”. Although the majority of bioengineering students disagreed with the statement, the presence of several conflicting responses could indicate a different understanding of the role of natural mechanisms in the context of climate change or the need for additional education and clarification of concepts such as natural resilience and ecosystem adaptation. Frequent and severe extreme weather events such as floods, heatwaves and storms as a result of climate change were observed by almost all students surveyed; 59 (44.4%) 'strongly agree' and 58 (43.6%) 'agree' responses (Figure 9).

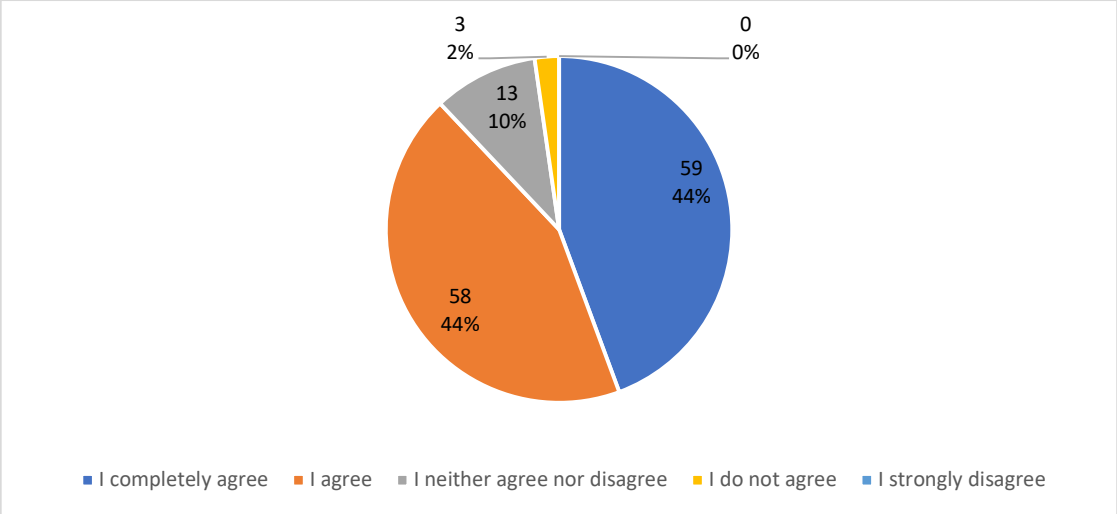

Figure 9. The effects of climate change have become increasingly noticeable in recent years

This level of agreement shows that climate change has become a concrete experience for the general population. The majority of students in the biotechnology faculty also strongly agreed with the statement, which further confirms the sensitivity of this group to environmental and climate issues. The majority of students surveyed do not believe that it is too late to combat climate change (Figure 10).

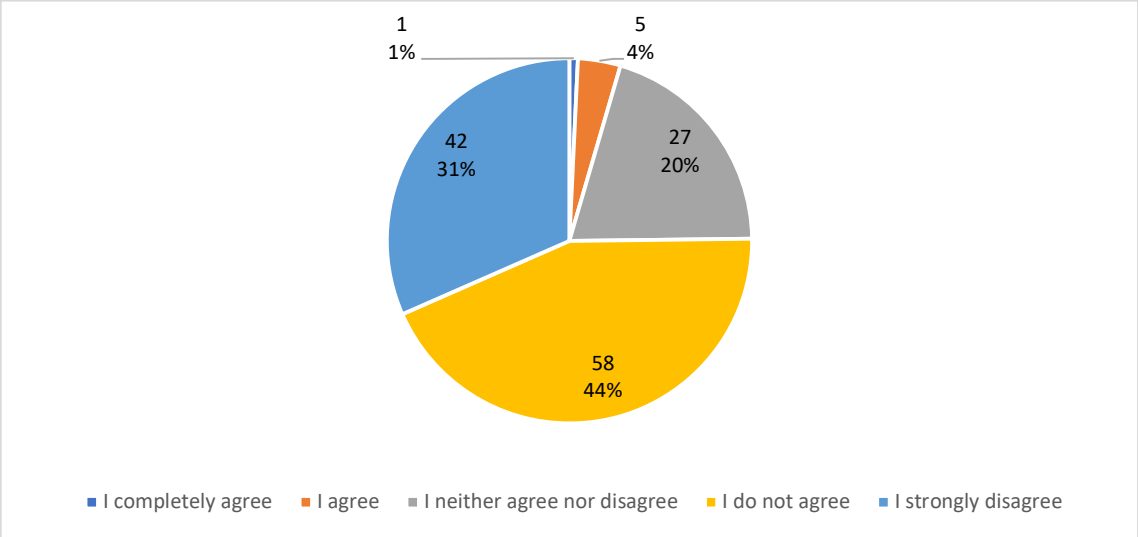

Figure 10. It is too late to fight climate change

More than three quarters of participants disagreed with the statement that the fight against climate change is already lost. 58 (43.6%) of respondents answered "disagree" and a further 42 (31.6%) "strongly disagree". 27 (20.3%) were undecided, while only 6 (4.6%) of respondents thought it was too late to act. These results show that students still believe in the possibility of mitigating climate change through active action, particularly students of biotechnical sciences, 16 of whom agreed with the statement "strongly disagree" and "disagree". Only one student partially agreed with this statement, while three students took a neutral position. The views on the connection between agriculture and climate change show a certain division among the students (Figure 11).

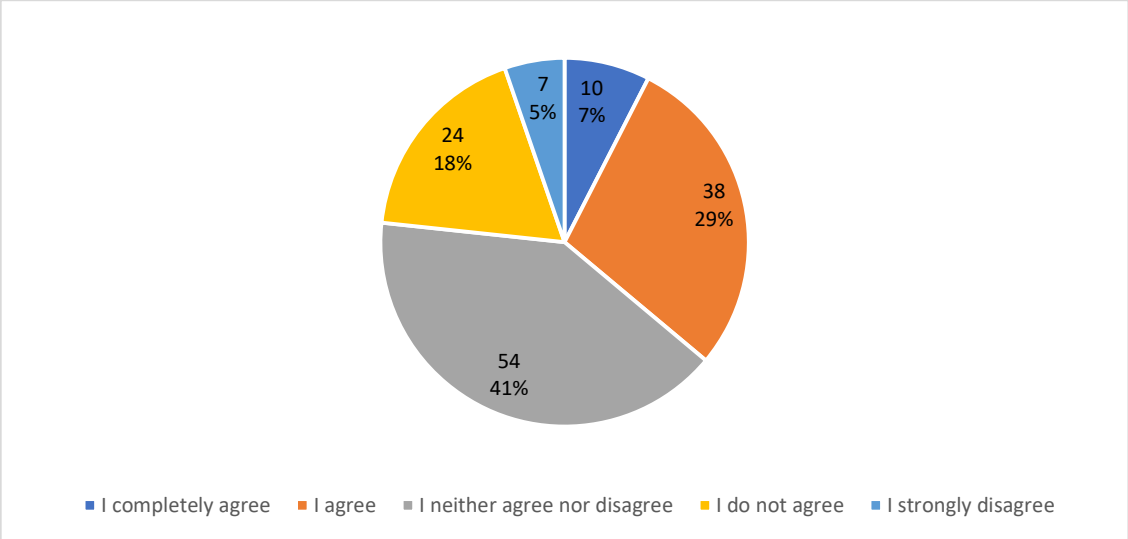

Figure 11. Agriculture is a major contributor to climate change

Although more than a third of respondents agree with the statement that agriculture is a major contributor to climate change (38 students (28.6%) "agree" and 10 students (7.5%) "completely agree"), as many as 54 (40.6%) of respondents take a neutral position and are neither clearly in favour nor against this statement. On the other hand, 31 (23.3%) of the students surveyed disagree with the statement (18% “disagree” and 5.3% “strongly disagree”). The results for biotechnology students show a slightly higher awareness of this connection. 12 students agreed or strongly agreed with the statement, but 6 students were undecided, while 2 students disagreed. Although awareness of the impact of agriculture on climate is slightly higher in the university's biotechnology department than among students in other departments, the results indicate that additional education and emphasis on the specific impact of each sector on climate change is needed.

4. CONCLUSION

The results of the conducted research show that the students of the University of Slavonski Brod, especially the students of the Faculty of Biotechnology, are highly aware of the existence and seriousness of climate change and its consequences for the environment, health and society as a whole. The majority of respondents expressed concern about global warming and supported the need for action. Despite the high level of concern and basic knowledge identified, the survey revealed certain deficits in terms of in-depth understanding of the causes of climate change, indicating the need for additional and better quality education on this topic. It was found that a significant number of respondents most often obtain information via the internet and social networks, while a smaller number rely on scientific papers, specialised literature or formal education. While modern media can play an important role in spreading awareness, their content is often not professionally scrutinised or not prepared thoroughly enough. It is therefore crucial to encourage students to utilise diverse and credible sources of information in order to gain a more complete picture of the causes, consequences and possible solutions to the problem of climate change. Educational institutions are responsible for promoting students' media literacy and introducing them to reliable and relevant content. Ultimately, the results of this study can serve as a basis for further research and the development of educational strategies aimed at raising awareness of climate change and promoting sustainable behaviour among students and the wider community.

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