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**Student Attitudes towards the Circular Economy:  
A Comparison between Bulgaria and North Macedonia**

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**Abstract**

*The circular economy involves three main processes - waste reduction, resource reuse, and material recycling. This makes it a more sustainable alternative to the linear nature of today's aggressive production and consumption. The need to implement this model requires exploring the interest of younger people in their proactive involvement in the circular economy. The present study is based on a comparative analysis of surveys conducted in the period December 2022 - January 2023 among 204 students in various bachelor's and master's majors with a business focus from the University of Ruse "Angel Kanchev" - Bulgaria and University American College in Skopje - North Macedonia. The research was carried out within the framework of the international Erasmus project - Leaders of the Green Economy, investigating the knowledge, attitudes, motivation, and behaviour of students regarding the circular economy. The conclusions drawn show that students are largely aware of the concept and are motivated to engage in the transition to the circular economy. The presentation and implementation in the curricula of examples of companies that have successfully implemented the principles of the circular economy in their business and production processes could further encourage the participation of young people in these sustainable economic activities. The current study is anticipated to enhance curricula by boosting interest and commitment among future entrepreneurs. In this sense, the research enriches the existing practices and theoretical knowledge in the field of training in corporate social responsibility, economics, and management.*

**Keywords:** circular economy, students, Bulgaria, North Macedonia, sustainable development.

**JEL Classification:** F64, I25.

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## **1. Introduction**

Climate change, long periods of aridity, fluctuations in precipitations, the decrease in biodiversity, the contamination of air and water, and increasing quantities of waste constitute a set of difficulties that the planet undergoes. The functioning of the contemporary society has been threatened by natural calamities which influenced different areas with distinct severity degrees and results. Nevertheless, the greatest challenge is the irreversible climate change. These problems are partly the result of natural changes – climate is not a constant. But at its core, what is happening today is the result of anthropogenic activities involving the unwise exploitation of natural resources and economic models that are out of sync with ecosystems.

It is obvious to all that the exponential growth of the global economy is built on a vicious circle of depletion and disposal. Overconsumption, a feature of the linear economy, combined with a doubling of the world's population, is driving the world towards an irreversible depletion of its resources. The paradox is that society is aware of the devastating consequences of its predatory behaviour, but the crisis of sustainability is deepening. This shows that a radical cultural and social transformation is needed if, indeed, the common goal is to achieve a more sustainable future (van Dijke et al., 2024). In this sense, it can be argued that the path to this goal is the circular economy (CE), but the key lies in transforming desire and knowledge into real action. That is where the role of education comes in (Gavkalova et al., 2023).

According to the Organisation for Economic Co-operation and Development (OECD), education and vocational training have a leading role in the process of transitioning to a more sustainable economy (Ugwu & Aquino, 2023). Hence, educational systems should focus on equipping individuals with the necessary skills and knowledge for employing circular thinking across all aspects of life, from childhood to postgraduate studies (Gavkalova et al., 2023). The OECD focuses on the role of higher education in the transformation towards CE and sustainable development (Tiippana-Usvasalo et al., 2023). It not only creates a workforce adequate to reality but also ensures its sustainability through continuous retraining and adaptation to new technologies and knowledge in the industry (Antonova et al., 2018). Education, therefore, plays a crucial role in building an environmentally skilled workforce capable of addressing the dynamic needs of the CE (Ugwu & Aquino, 2023).

This study seeks to assess the attitudes and preparedness of students from Bulgaria and North Macedonia to engage in the circular transformation process. The data are the result of the activities of the Erasmus+ Leaders of the Green Economy (LGE) international project, which includes four higher education institutions (HEIs) – American University College Skopje (North Macedonia), University of Rijeka (Croatia), University of Ruse “Angel Kanchev” (Bulgaria), and DOBA Business School (Slovenia). The paper follows this structure: 1) Analysis of the nature of CE and the role of education in this context; 2) Definition of the research purpose; 3) Examination of the obtained results, alongside the identification of study limitations and its fundamental contributions; 4) Formulation of concluding remarks.

## **2. Problem Statement**

Natural issues such as climate change, disturbed biodiversity, overexploitation of natural resources, and pollution, which stem from the ambition for quick financial gain, have been recognised as significant problems for more than 50 years. The environment and its management are fundamental to human well-being and, therefore to human survival (van Dijke et al., 2024). Nakhle et al. (2024) argue that human activity is directly responsible for altering at least 70% of the earth's surface, 66% of the ocean surface, and about 85% of wetlands. The most crucial action is to stop endless consumption and to hurry the transition from a linear economy to a carbon-neutral CE. Meanwhile, the interdependence of global ecosystems makes addressing environmental problems and their transboundary impacts impossible without cooperation and shared responsibility (van Dijke et al., 2024).

Gavkalova et al. (2023) describe CE as an alternative to the traditional linear economy, with three main principles applied: consumption reduction, material reuse, and recycling. They believe that switching to CE can bring substantial economic advantages to various stakeholders, including job creation and, especially, environmental preservation. In 2015, the 2030 Agenda for Sustainable Development, consisting of 17 sustainable development goals (and 169 sub-goals), was approved by UN member countries. These goals aim to guide the global community towards sustainable development through impactful and extreme measures. All of them are based on the three main pillars: social progress, economic growth, and environmental protection. According to the UN, only through joint efforts and an adequate educational process can ecosystems continue to support the well-being and survival of humanity (Nakhle et al., 2024).

In eradicating environmental issues, HEIs hold a particularly meaningful role. These institutions aggregate researchers, innovators, the public and private sectors, and surrounding communities with the aim to look for and integrate solutions. Universities are requested to stand as knowledge issuance and management centres, a link between current knowledge and the formulation of new structures meant to resolve environmental obstacles. The future of universities is closely linked to the provision of training, research, and innovation programmes. These programmes must convey the necessary knowledge and skills to deal with environmental problems at the national and transnational levels (European University Association, 2023).

At the same time, the integration of CE into society and the global economy requires complex and dynamic (systemic) changes in technical and behavioural aspects. These changes involve every sector of society. In order to create a more sustainable society, people must understand the importance of reducing their consumption (Tiippana-Usvasalo et al., 2023). In addition, there is a need to increase knowledge about CE and new sustainable solutions for society. However, without concrete tools, it is difficult to make changes in daily life (van Dijke et al., 2024). Ivanova (2021) argues that the transition to CE cannot happen quickly or automatically, giving the example of the countries of the European Union (EU), which have different traditions and implement various policies to promote

the ecological transition. This is to some extent due to the diverse production structures that are located on the territory of these countries and require different adaptation times.

A 2021 report reveals that Bulgaria is far below the EU average in terms of green transformation. However, the country hides unused potential, not only for more efficient use of resources but also for a radical change of business models. The report highlights the need for swift action to accelerate the green transformation, in which HEIs play a crucial role (Pavlov, 2022). Through education, they can prepare personnel capable of implementing new business practices and technologies that are resource efficient and environmentally friendly. Companies can attain various benefits from the enactment of these practices, for instance cost minimisation, the improvement of competitiveness, and the encouragement of the export potential. To fulfil these goals, however, it is imperative to build a workforce that has the understanding, ability, and willingness to adopt CE standards (Ivanova, 2021).

The second participant in the current research, North Macedonia, also expresses commitment to the process towards sustainable development. Faced with a number of environmental challenges, such as climate change, resource depletion, and pollution, the country has set itself the ambitious goal of smoothly transitioning to CE and proactively solving existing environmental problems. An OECD analysis points to the leadership role of the Ministry of Economy of North Macedonia in the transition to a CE throughout society. National strategic documents aimed at this transition have been developed and the organisation reports remarkable changes in civil society and business. Despite these steps, the OECD concludes, tangible results are still limited by infrastructure deficits, low awareness, and knowledge among stakeholders, and insufficient financial support (OECD, 2024).

One way to mitigate the adverse effects of climate change, uncontrolled use, and overconsumption is through awareness of the need for concerted efforts on the part of the individual and society as a whole. The research of Zheng et al. (2023) asserts that societies owning a greater level of education are more prone to integrate green practices and operate investments in cleaner technologies, which further trigger enhanced environmental quality. This fact endorses the statement that education is the most efficient point through which individuals can be encouraged to participate in a conscious and independent way in the green transformation process. The onset should begin as early as preschool, progress through university, and continue throughout an individual's life (Tiippana-Usvasalo et al., 2023). The infusion of all these aware and educated individuals into a global workforce and entrepreneurs is becoming an increasingly significant factor. The aim is to enable all people to experience CE (van Dijke et al., 2024) so that one can speak of a global circular economy and not just regional experiences.

### **3. Aims of the Research**

Based on the fundamental characteristics determining the transition to GO in Bulgaria and North Macedonia, the authors of the current study examine the

perspectives of students pursuing business-oriented majors in both countries. Student attitudes and local community engagement are as important factors as regulations or sector-specific target operations (Pavlov & Ruskova, 2023). Universities that respond dynamically to societal issues and adapt their educational offerings will have a maximum impact on generations of graduates. This impact can be enhanced through continuing professional development schemes and retraining opportunities (European University Association, 2023).

The main purpose of the research is to capture students' current attitudes towards inclusion in PG. Additionally, comparing the results between the two groups of respondents seeks to point out differences or effective practices within educational programmes that can then be addressed or expanded more comprehensively and effectively.

#### **4. Research Methods**

The research methodology was developed within the LGE international project, which started in 2022. The project involves a consortium of four independent educational institutions from Bulgaria, Slovenia, North Macedonia, and Croatia, particularly their business faculties and departments. It aims to investigate students' knowledge, attitudes, opinions, and experiences regarding sustainability and the green and circular economy (Misoska et al., 2023). The current paper focuses on data generated by two of the LGE partners: the University of Ruse Angel Kanchev (URAK) – Bulgaria, and the University American College Skopje (UACS) – North Macedonia. The study timeframe is *December 2022 - January 2023*. The project includes students enrolled in various bachelor's and master's programs of the Faculty of Business and Management (URAK) and the School of Business Economics and Management (UAKS). The project partners unite around the claim that businesses should proactively initiate changes to a more sustainable and green future. And today's business students are largely tomorrow's entrepreneurs who will be expected to implement the CE in their business models.

An online Google Form application was used, with each participating institution disseminating a link to its students through various channels: student email, official groups, etc. The questionnaire aimed to capture information on students' experiences, opinions, and the extent to which CE principles are integrated into relevant university programs (Misoska et al., 2023). At the same time, a significant goal of LGE is, on the one hand, to identify gaps in curricula regarding the principles of sustainability and the CE and, on the other hand, to highlight academic disciplines and practices that stimulate more responsible business thinking. The research analysed the responses to question 5, investigating students' intention to engage in the circular and green economy. The question offers 4 main statements, with the possibility of an answer on a 5-point Likert scale, where 1 is equivalent to “Strongly Disagree” and 5 – “Strongly Agree”.

## 5. Findings

105 students from URAK and 99 students from UACS responded to the survey. The gender ratio is as follows: 80 (76.2%) women vs 25 (23.8%) men at URAK and 41 (41.4%) women vs 58 (58.6%) men at UACS, respectively. 80 (76.2%) students from undergraduate courses and 25 (23.8%) from master's programmes took part in the URAK study. At UACS, the data are, respectively, 75 (75.8%) bachelor and 24 (24.2%) master. While not denying a potential relationship between various demographics (gender, age, major) and student attitudes, the study did not seek or analyse such correlations. The authors aim to gain information about the general picture, where green and sustainable thinking is not the result of gender and age, but of the educational process and social culture.

According to the research methodology, by studying four main claims, this project examines the readiness of students to be included in CE. Table 1 contains information on the first statement: *I am determined to get involved in the CE*. The research shows that a large number of students from Bulgaria and North Macedonia are ready to join CE. Exactly 53 URAK students (50.48%) and 58 UACS students (58.59%) expressed varying degrees of agreement with the statement. A total of 15 students (14.28%) from URAK and 22 students (22.22%) from UACS disagreed or strongly disagreed. There is a discrepancy between the two institutions regarding the lack of clearly expressed student opinion. Over 35% (37) of URAK participants did not give an answer about their participation in CE, while in UACS this number was much lower, with just over 19% (19 students) choosing a neutral answer.

**Table 1. Answers to the question: I am determined to get involved in circular economy (number/percentage) – 1 (Strongly Disagree) to 5 (Strongly Agree)**

Question #1	1	2	3	4	5
URAK (N=105)	5 (4.76%)	10 (9.52%)	37 (35.24%)	35 (33.34%)	18 (17.14%)
UACS (N=99)	10 (10.10%)	12 (12.12%)	19 (19.19%)	40 (40.40%)	18 (18.19%)

Source: Leaders of the Green Economy project (2023).

Concerning the next statement, there are no notable variations in the attitudes of students hailing from Bulgaria and North Macedonia (Table 2).

**Table 2. Answers to the question: My professional goal is to become involved in the circular economy (number/percentage) – 1 (Strongly Disagree) to 5 (Strongly Agree)**

Question #2	1	2	3	4	5
URAK (N=105)	12 (11.43%)	22 (20.95%)	42 (40.00%)	21 (20.00%)	8 (7.62%)
UACS (N=99)	18 (18.19%)	11 (11.11%)	38 (38.38%)	21 (21.21%)	11 (11.11%)

Source: Leaders of the Green Economy project (2023).

About a third of the students from the two educational institutions, to varying degrees, confirm that they have set a professional goal to participate in the CE proactively – 29 (27.62%) of the students from URAK and 32 (32.32%) from UACS express agreement and strong agreement with the statement My professional goal is

to become involved in the CE. The proportion of students who disagreed and categorically disagreed with the statement was similar – 34 (32.38%) for URAK and 29 (29.30%) for UACS. In both higher schools, there is a significant number of students who are not confident that they would link their professional development to the principles of the CE – 42 (40.00%) from URAK and 38 (38.38%) from UACS mark a neutral response to the formulated statement. In general, the data show that a significant share of students from both educational institutions – over 72% of URAK and over 67% of UACS have not included the CE principles in their professional goals.

The following statement reflects the confidence of students from Bulgaria and North Macedonia regarding their inclusion in the CE (Table 3). The statement *I am ready to do anything to become involved in the CE* is supported to varying degrees by 33 (31.42%) of the students of URAK and 29 (29.29%) of the UACS respondents. Accordingly, 39 (37.15%) of URAK and 38 (38.39) of UACS survey participants disagreed and strongly disagreed. 33 (31.43%) from URAK and 32 (32.32%) from UACS have a neutral opinion. Apparently, the results are similar to those derived from the previous statement. The sum of those who disagree to varying degrees and those who did not state a clear position with the statement shows uncertainty among students regarding their readiness to be included in the CE – at URAK, this total share is over 68%, and at UACS – over 70%.

**Table 3. Answers to the question: I am ready to do anything to become involved in the circular economy (number/percentage) – 1 (Strongly Disagree) to 5 (Strongly Agree)**

Question #3	1	2	3	4	5
URAK (N=105)	19 (18.10%)	20 (19.05%)	33 (31.43%)	23 (21.90%)	10 (9.52%)
UACS (N=99)	18 (18.19%)	20 (20.20%)	32 (32.32%)	19 (19.19%)	10 (10.10%)

Source: Leaders of the Green Economy project (2023).

The next statement – *I will make every effort to become part of the CE* reflects the desire of the students to actively get involved in the CE (Table 4). The willingness of the respondents can be distinguished from their readiness and confidence, considered in the previous questions, which is to some extent confirmed by the results obtained. To varying degrees, 46 (43.81%) of the respondents from URAK and 38 (38.38%) from UACS show agreement with the statement, and 28 (26.67%) from URAK and 27 (27.27%) from UACS respectively disagree. The number of those who did not express a position remains similar to the previous statements – 31 (29.52%) from Bulgaria and 34 (34.35%) from North Macedonia. Again, we have a high percentage of students who disagree or do not have a position.

**Table 4. Answers to the question: I will make every effort to become part of the circular economy (number/percentage) – 1 (Strongly Disagree) to 5 (Strongly Agree)**

Question #4	1	2	3	4	5
URAK (N=105)	13 (12.38%)	15 (14.29%)	31 (29.52%)	29 (27.62%)	17 (16.19%)
UACS (N=99)	13 (13.13%)	14 (14.14%)	34 (34.35%)	25 (25.25%)	13 (13.13%)

Source: Leaders of the Green Economy project (2023).

In conclusion, the results of the research show that a significant proportion of students from Bulgaria (50.48%) and North Macedonia (58.59%) express a determination to be included in the CE (Table 1). The results are weaker in terms of their professional commitment (Table 2): URAK – 27.62%, UACS – 32.32%, and confidence (Table 3): URAK – 31.42%, UACS – 29.29%. That gives reason to indicate gaps in the practical orientation of training related to CE. Students' uncertainty is a likely indicator that they are not aware of what business expects of them in terms of implementing CE principles in business operations and planning.

It is also important to note that both URAK and UACS recognise that there are not enough examples from the practice of local organisations that have implemented CE principles in their curricula (Misoska et al., 2023). Therefore, students acquire a purely theoretical understanding of the essence and benefits of CE. Still, the insufficiently in-depth connection between these skills and the actual use of knowledge causes uncertainty among students. As a result, they are rather unable to link their professional development with the principles of CE. However, 43.81% of URAK participants and 38.38% of UACS participants are willing to fully apply their knowledge and creativity for the transition from linear to CE. It is crucial that the education system, and universities, in particular, improve this preparation by providing concrete opportunities for development. This can only be achieved through direct cooperation with companies that already apply or are preparing to apply green economy principles in their operations (Pavlov & Ruskova, 2023). Concerns arise about the percentage of students who did not provide a definite opinion in relation to the overall results. For all four statements, neutral responses ranged from 19% to 42%. This result among students probably stems from a lack of knowledge of the principles of CE, which calls for higher education institutions to scrutinise these findings. To some extent, the answer “*I have no opinion*” is comparable to “*I do not know*”, and if this is indeed the case, a lack of basic understanding of the CE model will hamper efforts to implement it as a viable alternative to linear economics. Hence, schools should make a dedicated effort to enhance the abilities and expertise of their students.

### **5.1 Limitations of the Study**

The anonymity of the questionnaires does not allow a discussion of the answers with each of the students and the understanding of the reasons for their answers. That is especially important in the context of those who disagree and strongly disagree with the statements and respectively express reluctance to become part of the CE. Knowing their likely concerns and fears would be an appropriate starting point for creating an educational approach that would enhance students' confidence and readiness to participate in the CE.

The study covered a small and geographically concentrated sample of 204 students from only two universities, one in Bulgaria and one in North Macedonia. At the same time, the focus on business-oriented majors may also distort the results, as students from other disciplines may have different levels of awareness and attitudes towards the CE. This does not allow generalisations about the attitudes of students as a whole in the two institutions and countries studied, but provides



a good starting point for expanding research in the field based on the interim results of the current study. The main goal of the LGE project, within which the research was carried out, is to improve training in disciplines directly related to the study of CE principles. In the two universities presented, these disciplines are developed and studied as a priority in business-oriented specialities.

In addition, as stated earlier, the current study did not look for a relationship between student attitudes and various demographic characteristics such as gender and age. Such correlations are the subject of additional analyses to be presented to the scientific community.

## ***5.2 Applicability and Future Research***

The results of the study will allow educational institutions to improve their programmes in the direction of greener, more sustainable, and more circular thinking. In this sense, the research enriches the existing practices and theoretical knowledge in the field of training in corporate social responsibility, economics, and management. That will make the graduates much more prepared for the active inclusion in the labour market and much more adequate to the growing demands for production and consumption in line with the principles of the CE.

## **6. Conclusions**

The survey conducted among students from Bulgaria and North Macedonia shows a desire among young people to contribute their professional skills, entrepreneurial spirit, and creativity to the effective process of transformation towards a circular economy. The optimistic results are somewhat overshadowed by the apparent uncertainty of a significant proportion of the respondents. This uncertainty is probably a consequence of the lack of practical experience and examples from the real business processes of organisations local to the students.

The percentage of respondents who did not take a firm position on any of the formulated statements is also a source of concern. Their share remains relatively the same for all four formulated statements. This shows that many students most likely do not have the necessary theoretical foundation to form an informed opinion about the advantages or challenges associated with the transition from a linear to a circular economy.

The research seeks to show and succeed in proving that the educational process plays a vital role in making young people aware of the complex relationships between the environment and the economy. Understanding these connections is critical to the concept of CE, and only by recognising and comprehending them can significant strides be made towards a more environmentally friendly and sustainable global future.

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