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Youth Awareness and Attitudes towards a Circular Economy to Achieve the Green Deal Goals

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Abstract: In order to approach a system change towards a circular economy model (CE) in Europe, the entrepreneurial activities of young people need to be encouraged to achieve the Green Deal (GD) goals. This article presents the evaluation results of young people's awareness and attitudes towards the CE and the GD. The data used in this study was collected by surveying 286 young people from five European countries. The questionnaire covered four areas: (1) belief, (2) knowledge, (3) competence, and (4) young people's ability to deal with the CE. Descriptive and exploratory factor analysis (EFA) was conducted to analyse the questionnaire on the basic factors that motivate young people to the CE and GD. A literature review was conducted to identify the main research concepts and connections. A review included two phases, the first encompassing a search through the Web of Science (WoS) Core Collection for research papers meaningful for further research, followed by Leximancer analysis. The analysis showed that young people believe in the principles and priorities of CE but do not receive enough support to participate and implement the priorities actively. Formal education does not provide enough knowledge to work in this field actively. They are primarily undecided about their understanding of the principles of CE. Responses to whether they can implement the project, business, or entrepreneurial ideas are also uninspiring. Young people do not see themselves as creators of change towards the CE. However, it is encouraging that they approach the CE from different angles and show responsible behaviour in everyday life. Young people's ability to reason, think, evaluate, connect, and create new solutions for the CE is not enviable. Most respondents did not comment on their competence in concepts of the GD and CE. It is encouraging to know that they have already heard about the CE's goals and action plan. Young people do not show significant skills in the practical implementation of CE principles. The analysis has shown that young people are particularly unable to reason, think, and evaluate in an entrepreneurial way when linking the CE to business opportunities. Relating them to business models and entrepreneurship also seems to be problematic. As a result, the majority of them are unable to design, develop, and create new business solutions.

Keywords: circular economy; Green Deal; youth; awareness; competencies

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1. Introduction

Interest in the circular economy (CE) has recently increased due to climate change, environmental damage, and a highly linear economy. The consequences of the linear economy have led many societal actors to take decisive sustainable initiatives to shift to the CE paradigm [1]. However, it is important to notice that the CE as a concept is still ambiguous, as Kirchherr et al. [2] discussed, where authors identified over a hundred definitions. Furthermore, Kovačič Lukman et al. [2] positioned the CE term within the sustainability concept. The CE concept has also been discussed by Korhonen et al. [3],

where authors identified several CE definitions and highlighted the CE transformation, which should be holistic, and where innovations, entrepreneurship, and technological development represent critical areas in the further study of CE development. Desing et al. [4] described the CE as an ideal, represented via a systematic top-down approach, linking global sustainability criteria with initiatives at the company level, where the assumption of the ideal is based on the global consensus for well-being and survival for present and future generations.

Institutions, governments, and local governments are thus involved in creating and enabling appropriate conditions for the transition to a CE [5,6]. Many programmes and policies aim to implement the CE principle. Each contributes to raising expectations for the transition to a CE. The EU CE Action Plan is one of the key building blocks of the European Green Deal (GD), which sets a new EU agenda for sustainable growth in the coming decades [7].

The European Green Deal (GD) is an action plan for a sustainable economy for the European Union [8]. The document promotes a sustainable economy by transforming climate and environmental challenges into new opportunities in all policy areas. The GD presents a new growth strategy to transform the EU into a just and prosperous society. The goal is a modern, competitive, and resource-efficient economy with zero net greenhouse gas emissions in 2050. In line with European climate rules, the EU will reduce net greenhouse gas emissions by at least 55% by 2030 compared to 1990. In 2021, the Commission presented proposals to achieve these targets and make the European GD a reality. In December 2019, the European Commission launched a new European agenda for sustainable growth, the European GD [8], followed in March 2020 by the EU CE Action Plan [8].

The public is becoming increasingly aware of environmental issues. It is a major driving force in the transition to the CE model [9]. Citizens are central to all stakeholders in implementing the concepts of the CE. We need to change the deep ecological culture and social awareness to achieve shifts in the CE. Monitoring public awareness of the CE with appropriate criteria is essential [10]. Special attention must be paid to the younger generation. Their knowledge, attitudes, and behavioural patterns are fundamental to guiding society and successfully implementing the CE as a long-term development strategy across the EU [11]. It is advisable that young people formally consider their potential contribution to the goal of the Green Deal and a climate-neutral Europe by 2050 [12]. By strengthening their commitment to climate action, young people can actively contribute to achieving the region's climate goals.

As environmental protection has become an essential aspect of regional and local policy, the concept of the CE is increasingly promoted. Public awareness of the CE is growing, and there is immensely technical and social innovation potential. Younger generations are more familiar with the concept and behaviours of the CE, such as waste separation and the purchase of recycled and reused goods. Although older generations also contribute positively to recycling efforts and take measures to protect the environment [13], some findings suggest that older people do not actively participate in the recycling process due to their limited physical mobility, which makes it more difficult for them to separate and recycle waste [14].

Public awareness of the idea of a CE is also positively related to the level of education [15]. Young people are interested in European initiatives to reduce environmental impact. However, it is questionable whether young people know the GD guidelines and how familiar they are with EU targets. Young people often seem to be pushed away from European and world politics. Young people focus more on the possibility of pursuing their environmental interests without being aware of the actions of the European Commission. They prefer alternative forms of political engagement (e.g., internet participation, demonstrations, protests, petition signing, boycotts) to political elections and joining political parties, as they feel they can influence political decisions more directly and effectively [16].

Research on youth awareness of the CE is currently quite limited. Although some surveys have been conducted on adult perceptions of the concept of a CE [17], no research

has been found that looks at young people's activities related to the CE to achieve the goals of the GD. Some research assesses individuals' attitudes towards the CE, which is more related to the study of consumer behaviour and lifestyle [17–20]. A survey on attitudes towards and awareness of environmental impacts was conducted with a sample of young Romanians [21]. The results show that the respondents have a high understanding of the environmental problems and the impact of the linear model on the environment. They also have positive attitudes towards sustainable production and circular business models. However, they show lower attitudes toward the adoption of sustainable consumption practices. The European Commission conducts CE-related research mainly at the level of business initiatives [22]. Still, only a tiny number of CE-related research addresses public awareness at the EU level [21]. The Eurobarometer survey [16] has shown that many respondents consider climate change a severe environmental problem in the EU. They believe that GHG emissions should be kept to a minimum to achieve a climate-neutral economy by 2050.

Although schools and universities are institutions with significant transformative potential, they are characterised by several systemic challenges. Limitations in promoting action-oriented and participatory education at the CE and GD are evident at the institutional level, where there is no trace of the integration of education on this topic in the curricula. Even though there is a lack of educational programmes on the GD and CE for young people, there are other activities to educate and promote youth literacy on climate change [23–25]. However, despite prepared climate literacy education programmes [26], their implementation is often challenging due to external pressures [27,28]. As a result, the likelihood of a university student taking at least one course on climate change as part of the core curriculum is extremely low [29].

There is not much research in the field of youth entrepreneurship in the context of the circular economy to achieve the goals of the green agreement. Young people are increasingly engaged in adopting a CE. They are one of the most significant influences on transforming linear to circular models. They also show higher expectations for sustainability than generations before them. Young people are increasingly active in advocating for sustainability and are determined to confront the climate crisis. In the face of relentless climate change, 60% of young people are concerned about the future state of the environment [30]. Their fears are growing due to governments' slow action against climate change. Young people are becoming key protagonists in driving environmental change. Students from Europe and worldwide are taking to the streets and demanding more decisive action to stop environmental damage and climate change. Young people want to be part of this transition. Strategies are needed to facilitate dialogue between young people and decision-makers. Those young people embarking on an entrepreneurial journey need to apply the latest knowledge to a CE. Therefore, our research aimed to gain insight into young people's awareness and understanding of the GD and CE concepts in five European countries. As the transition to the CE model is monitored by the European Commission, further research is needed in the future to raise young people's awareness of the CE in different countries. Our study explored the extent to which young people are familiar with the GD and CE policy guidelines. This study could significantly improve the overview of the current situation and provide a starting point for measuring the effectiveness of these policies.

This paper aims to analyse the knowledge about GD policies among young citizens from different European countries. The analysis will facilitate understanding the orientations and ways to influence the practical implementation of CE initiatives. Our study could contribute to a better understanding of the GD and CE (e.g., competence, information, belief, attitude, and behaviour). In this way, young people can be equipped with new skills and improve their employability in the green and circular economy.

2. A Literature Review from the Concept Perspective

As the introduction shows, the literature regarding the CE is vast and still growing. This paper intends not to represent another literature review of existing definitions and CE concepts but to evaluate youth's current CE and GD competencies. Thus, we have conducted a literature review regarding our research topic to identify the main research concepts and connections.

The literature review included two phases, the first encompassing a search through the Web of Science (WoS) Core Collection for research papers meaningful for further research, followed by an analysis with Leximancer. The initial search was conducted on 24 August 2022, with results refined by "Article or review article" and "English language". Due to the inclusion of all the terms ("youth", "Green Deal", "circular economy", and "entrepreneurship") providing zero results, the search terms were separated into a diversity of combinations, which can be seen in Table 1.

Table 1. Search results through the Web of Science (WoS) Core Collection.

Search Terms	Initial No. of Search Results	Final No. of Search Results
((ALL = ("circular economy")) AND ALL = (education)) AND ALL = (youth)	62	16
((ALL = (youth)) AND ALL = ("Green Deal")) AND ALL = (education)	1	11
(ALL = (youth)) AND ALL = ("Green Deal")	2	
((ALL = ("Green Deal")) AND ALL = (entrepreneurship)) AND ALL = (education)	6	6
((ALL = ("circular economy")) AND ALL = (education)) AND ALL = (youth OR young	136	24
(ALL = (entrepreneurship)) AND ALL = ("Green Deal")	15	13

The second phase encompasses content research to define our research topic's current state-of-the-art and future trends. Thus, the research papers were individually analysed to comply with the search terms and adhere to the scientific area researched in our paper. After examining and eliminating duplicated documents and those not adhering to our research, we ended with 47 original research papers. These were then further analysed from the content perspective using Leximancer V4.51.07. The Leximancer tool is suitable for defining concepts and correlations, enabling a definition of thematic and semantic term relations, using two co-occurrence information—semantic and relational [31]. Such an in-depth view into literature research offers a better understanding of circular economy education and competencies by youth narrative inquiry. The algorithms used in Leximancer are statistical, integrate nonlinear dynamics and machine learning, and determine concepts and relationships [32]. As a result, concepts and relationships are visualised via a concept map [33], expressed by the circles and different colours, where the size indicates concepts clustered together, and colours identify the importance (e.g., red denotes the most important theme). The concept of distance indicates their relationships [34]. Thus, semantically weak associated concepts are mapped far from each other, whereas overlapping indicates very close concepts [35].

The analysis exposed four dominant themes, "circles", which are coloured according to their significance, with sustainable development in red the most significant content-wise, followed by the climate in yellow, recycling in blue, and energy in green (Figure 1). Each theme is formulated upon the most influential concept, with each concept having a relevance factor to other concepts within its theme.

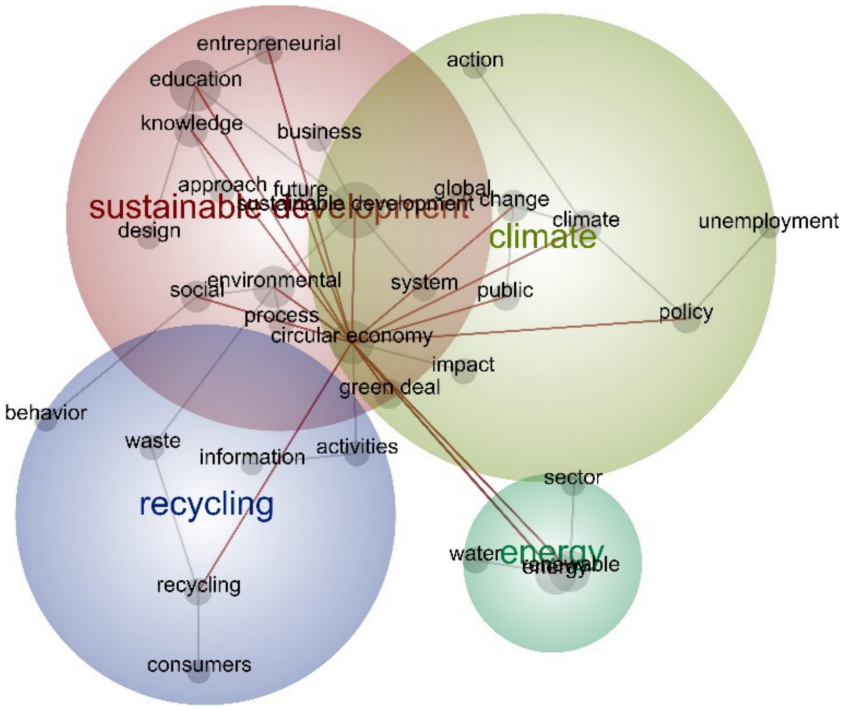

Figure 1. A network-based visual representation of concepts connected with circular economy and Green Deal, entrepreneurship, and youth.

The analysis results indicate the CE, which revealed a strong likelihood towards *business* (25%), *GD* (22%), *impact* (21%), and *entrepreneurship* (21%). In the case of GD, a strong likelihood was detected towards *business* (16%), *consumers* (12%), *sector* (10%), and *CE* (8%). As visible from the picture, GD is more focused on climate research studies, whereas CE is more focused on sustainable development studies. Both the CE and GD indicate a connection between *education* and *entrepreneurship*, which have a strong likelihood (48%).

Overall, the analysis identified several connections of chosen terms within selected research papers, which indicates that current studies recognise the importance of an interdisciplinary approach toward selected research themes. Furthermore, it has been identified that the education about the CE is more in line with the sustainable development or "sustainability" approach, whereas in the case of the GD, the focus is on climate change and the energy sector.

3. Methods

3.1. Research Framework

The research framework included approaches to studying youth awareness as proposed in similar studies [18,21,36]. These were linked to public awareness of CE and a broader understanding of environmental behaviour [37]. The research framework was closely related to the nine priorities of the EU's GD: biodiversity, farm-to-table, sustainable agriculture, clean energy, sustainable industry, construction and reconstruction, sustainable mobility, pollution reduction, and climate action. The survey provided an excellent opportunity to explore young people's education and knowledge about the CE and GD as it depends on them to build a future CE-oriented society. The questionnaire was designed to consider the European context of the CE concept [38].

3.2. Sample and Procedure

We first conducted an office survey (state-of-the-art national reports) and a field survey (competency questionnaires) to map existing competencies and identify knowledge gaps and educational opportunities. The survey aims to assess the level of competencies of

young people in relation to the GD in entrepreneurship to identify gaps and create new educational materials.

The questionnaire on young people's competencies was distributed in five countries (Austria, Slovenia, Poland, Greece, and Lithuania). The sample consisted of 286 respondents divided into three groups: young people between 15 and 17 years old. The second group was young people between 18 and 24 years old. The third group was young people between 19 and 30 years old.

The questionnaire was conducted anonymously and did not target participants with a specific background (e.g., environmental engineering students, entrepreneurship students) but focused on the general youth population, as we want to survey the current state-of-the-art regarding the CE, GD, and entrepreneurship. The study's main objective was to investigate young people's awareness of the CE and GD. The survey was distributed through the project and partner websites, Facebook, and direct contacts. There were 25 questions in total, divided into different sections.

Descriptive and causal non-experimental methods were used to investigate the young people's knowledge of the GD and CE. A specific non-random sample of adolescents was selected, including 118 males and 168 females (41% and 59%, respectively). To check reliability, Cronbach's value of the questionnaire was set at 0.807, considered high.

3.3. Statistical Analysis

The quantitative data were collected to perform the necessary statistical processing and induction. The data were analysed using the statistical analysis programme JASP [39] developed by the University of Amsterdam. It is easy to use and offers standard analysis procedures in classical and Bayesian forms. We used descriptive analysis to investigate relationships between variables [40], which allows us to examine how underlying constructs influence responses to a set of measured variables. This way, it is possible to identify underlying variables or factors that explain any correlation patterns within the observed variables.

Data were analysed using exploratory factor analysis (EFA) with maximum likelihood extraction, and oblimin rotation was performed to determine the factor structure [41]. EFA is a statistical method primarily used to examine the nature and number of factors underlying responses to the items in the instrument [42]. The three primary functions of EFA are: (1) examining the data for patterns, (2) identifying relationships between patterns, and (3) data reduction [43]. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were used to assess the suitability of the data obtained for EFA [44]. Maximum likelihood was used as the factor extraction method. Since engagement is assumed to be a multidimensional construct with correlated factors, oblimin was used as an oblique rotation.

3.4. Questionnaire

The questionnaire consisted of three basic demographic questions (age group, country, gender). In addition, the questionnaire contained general questions on the public understanding of the CE and GD. Most of the questions were related to the respondents' beliefs, attitudes, and behaviour. The whole questionnaire consisted of 22 questions, most of which (19 questions) were defined by a five-point Likert scale [45] with possible answers: (1) strongly disagree; (2) I disagree; (3) neutral; (4) I agree; (5) I strongly agree. In the statistical evaluation of the answers, the answers were rated with numerical values from 1 to 5. In the end, there were two choice questions and one open question. The questionnaire can be found in Appendix A.

The questionnaire focused on general questions and information from the respondents on the GD and the CE Action Plan. We were interested in whether the young people could explain and discuss the ideas and concepts of the GD and CE. The questions also related to their ability to link the principles of the GD and CE with business models and entrepreneurship and their ability to argue and evaluate entrepreneurial approaches. In

the analysis, we found it essential to check the respondents' ability to design, develop, and create new solutions in business for sustainable development.

We wanted to check young people's belief in introducing CE to their entrepreneurial activities. The question is whether young people perceive the priorities of the GD and the principles of CE as a starting point for ensuring Europe's long-term sustainability (Q.1). The level of youth optimism also needs to be assessed, especially concerning the contribution to positive, sustainable change in Europe (Q.2). Question Q.3 was designed to test whether respondents believe CE's principles and priorities can contribute to achieving global sustainability. The questionnaire aimed to ask whether young people need further education and training to understand better and raise awareness (Q.4). It is questionable whether young people have enough knowledge about the GD and CE to become more sustainable (Q.5). It is helpful to ask whether young people are aware of the sustainable consequences of their daily activities (Q.6).

We also wanted to test the young people's knowledge of the CE and GD. The knowledge factor included three questions that assessed young people's knowledge, information, and ability to put CE into practice. With question Q.7, we tried to check whether the young people could explain and discuss the ideas and concepts of the GD and CE. It is necessary to ask the young people if they have ever heard about the aims of the GD and the CE Action Plan (Q.8). It is also helpful to check whether the young people can implement, study, and apply the topics of the GD and CE principles in real cases or illustrate them in case studies (Q.9).

We wanted to check young people's qualifications for introducing CE into their entrepreneurial activities with the questionnaire. The Qualification factor comprised seven questions assessing young people's ability to introduce the CE and GD into sustainable practices. It is also vital that young people receive sufficient support from their environment to actively participate in and implement the priorities of CE (Q.10). With question Q.11, we wanted to check how active young people are in promoting and solving challenges in their local environment about GD priorities and CE issues. With question Q.12, we wanted to check whether respondents had enough knowledge about the GD and CE. We also felt it was essential to identify how young people implement GD priorities and CE principles in their projects, business, or entrepreneurial ideas (Q.13). It is necessary to ask whether young people see themselves as change agents and integrate the priorities of the GD into their business (Q.14). It is essential to ask whether young people's formal education provides sufficient knowledge to work actively in the fields of the GD and CE (Q.15). We were also interested in young people's ability to look at GD priorities differently (Q.16).

The Ability factor included three questions that assessed young people's ability to reason, think, evaluate, connect, and create new solutions for CE. The questionnaire referred to respondents' beliefs, attitudes, and behaviours. With the questions, we wanted to check whether the respondents can argue, think, and evaluate the entrepreneurship of the GD and CE in business opportunities (Q.17). As the analysis relates to young people's entrepreneurial activities, we were interested in their ability to link the principles of GD and CE to business models and entrepreneurship (Q.18). We also tested young people's ability to design, develop, and create new business and entrepreneurial solutions for GD and CE (Q.19).

Finally, there were two questions with an option (Q.20 and Q.21) to understand which GD priorities have the most knowledge and for which priority they would like to receive more information. The question for proposals was also raised (Q.22).

4. Results

The survey analysis results provide valuable and in-depth information about the needs of the target groups and their knowledge gaps. A total of 82 surveys were completed in Austria, 59 in Slovenia, 53 in Poland, 43 in Greece, and 49 in Lithuania. The survey

of participants was conducted between April and June 2021 using online questionnaires (Table A1).

4.1. Descriptive Analysis of Socio-Demographic Data of the Respondents

The selected sample had the following characteristics: More than 67% of the respondents were between 18 and 24 years old, and almost 20% were older than 24 years. Both groups represent tertiary-level students. The proportion of respondents younger than 18 was lower and represented secondary-level participants. Respondents in the age group of 18–24 years were the most likely to participate in the survey, consistent with the experience from other similar surveys [46,47]. Figure 2 shows the number of respondents grouped by country and age.

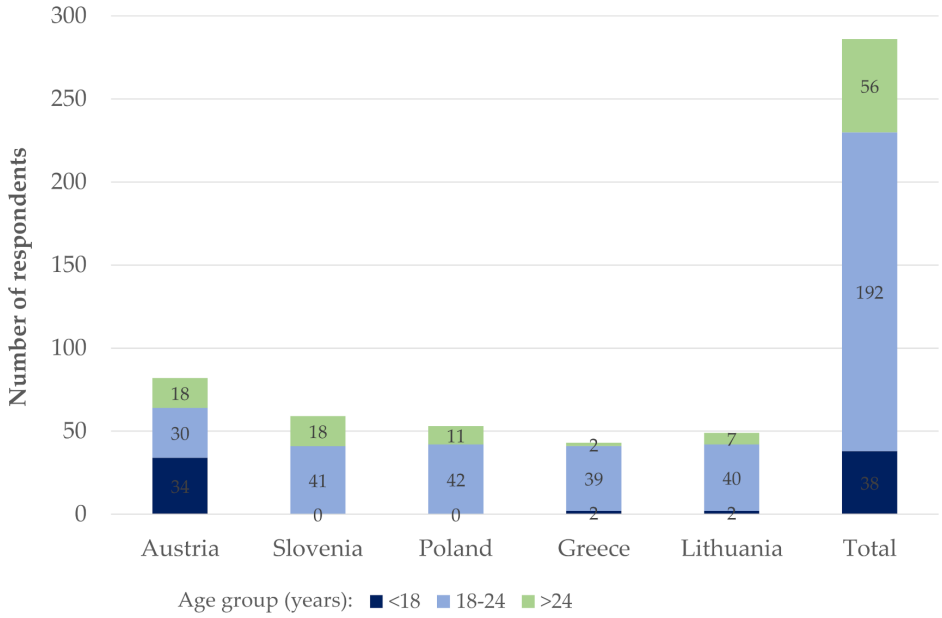

Figure 2. A number of respondents grouped by age and country.

Most respondents are from Austria (82), followed by Slovenians (59), Poles (53), Lithuanians (49), and Greeks (43). Additional information on the socio-demographic data of the respondents is shown in Table A2. The respondents' demographic data by country and gender are shown in Table A3.

4.2. Results of Exploratory Factor Analysis

An exploratory factor analysis (EFA) using the statistical software tool JASP was used to analyse the questionnaire on the basic factors that motivate young people towards the CE and GD. The data were checked for multivariate assumptions (normality, linearity, homogeneity, and homoscedasticity). All assumptions were met except for minor heteroscedasticity problems. A review of the data did not reveal any missing data values. The EFA analysis was conducted using the guidelines described in Preacher and MacCallum [48].

An inter-item correlation matrix was constructed to assess the suitability of the items of the instrument. Gunuc and Kuzu [49] highlighted that correlation coefficient values greater than 0.90 indicate redundancy of the items. To determine the factor solution to be extracted, the Kaiser criterion [50] and scree plot [51] were used. The Kaiser criterion of eigenvalue greater than 1.0 was used to retain the number of factors [52]. Hair et al. [53] highlighted the need for a KMO value above 0.50 and the significance of Bartlett's test of sphericity before proceeding with EFA. A factor loading value of 0.71 and above is considered to be "excellent", 0.70–0.63 "very good", 0.62–0.55 "good", 0.54–0.45 "fair", and

0.44–0.32 "poor" [54]. Both statistical assumptions and theoretical considerations were employed in retaining the useful items and extracting the latent factors in a parsimonious and interpretable manner. Since the normality assumptions were satisfied, Maximum Likelihood was used as the method of factor extraction.

The factor analysis appropriateness was examined using Bartlett's sphericity test to determine if the correlations among variables are sufficiently high enough to indicate the existence of factors [55]. This can be calculated by Bartlett's test of sphericity, where if the significance value is less than 0.05, then the matrix is not an identity matrix. Another test is the Keiser–Meyer–Olkin (KMO), which represents an index that identifies the degree of correlation among variables [55]. In the KMO analysis, a value of 0.6 or higher is considered acceptable for performing factor analysis [56]. Both tests indicated that factor analysis is feasible, allowing for further analysis. In the present study, the KMO sampling adequacy value was found to be 0.899, and Bartlett's test of sphericity was significant (χ^2 = 3602.653 (171), $p < 0.001$). The KMO and Bartlett's test statistics provided support for performing EFA. Parallel analysis and scree plot examination revealed four common factors, and a four-factor model was tested based on theory. Based on the statistical analysis, four common factors were defined: Ability, Knowledge, Qualification, and Belief. Questions were divided into four factors named according to their relevance. Due to the expected correlation of the factors, the highest probability estimate with direct circumference rotation was used. When testing all 19 questions, we used the criterion that the loadings should be greater than 0.40. Table 2 shows the factor loadings. The model had a simple structure, with each item loading on only one factor. This model had a moderate fit: the RMSEA showed a reasonable fit of 0.092, 90% CI [0.08, 0.10], whereas the TLI (0.87) indicated room for possible improvement.

We used the reliability test to check how strongly our items "it together". The reliability of all four factors was very high, with Cronbach's α 0.93 for the "ability" factor, 0.87 for the "knowledge" factor, 0.86 for the "qualification" factor, and 0.82 for the "belief" factor. The mean scores for each factor were: "ability" factor M = 7.21 (*SD* = 3.28), "knowledge" factor M = 8.549 (*SD* = 3.27), "qualification" factor M = 19.038 (*SD* = 5.75), and "belief" factor M = 23.86 (*SD* = 4.50).

Table 2. Four-factor model loadings.

	Factor Belief	Factor Qualification	Factor Ability	Factor Knowledge	Uniqueness
Q.17	0.091	0.005	**0.918**	0.029	0.095
Q.18	0.007	0.067	**0.790**	0.120	0.167
Q.19	−0.037	0.116	**0.746**	0.060	0.268
Q.7	−0.068	−0.011	0.104	**0.882**	0.144
Q.8	0.170	0.030	0.079	**0.637**	0.395
Q.9	0.019	0.128	0.358	**0.496**	0.259
Q.10	−0.062	**0.781**	0.111	−0.132	0.402
Q.11	0.117	**0.618**	−0.026	0.127	0.482
Q.12	−0.070	**0.599**	0.216	0.108	0.361
Q.13	−0.017	**0.566**	0.298	0.020	0.382
Q.14	0.082	**0.506**	−0.047	0.265	0.534
Q.15	0.002	**0.452**	0.273	0.033	0.550
Q.16	0.294	**0.431**	−0.220	0.314	0.520
Q.1	**0.865**	−0.005	0.034	0.010	0.242
Q.2	**0.825**	0.058	0.053	−0.088	0.332
Q.3	**0.662**	0.010	0.080	0.101	0.478
Q.4	**0.622**	−0.173	0.046	0.081	0.610
Q.5	**0.578**	−0.095	−0.100	−0.163	0.671
Q.6	**0.412**	0.362	−0.157	0.190	0.551

Note: Factor loadings have been sorted and bolded for ease of reading. The applied rotation method was oblimin.

The presentation of the path diagram with respect to the four chosen factors is shown in Figure 3.

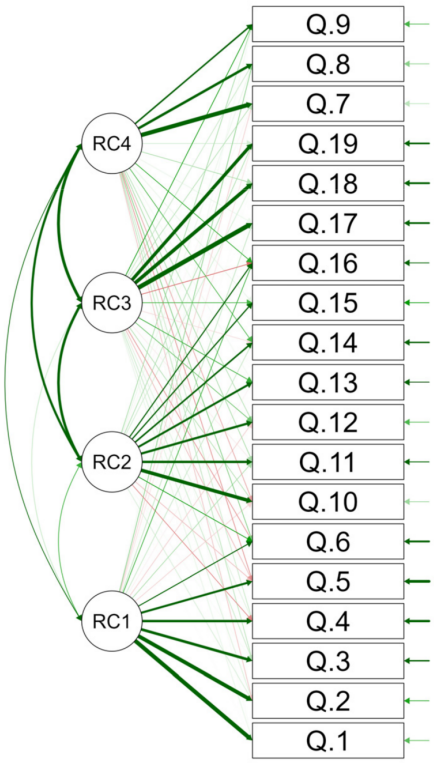

Figure 3. Representation of the Path diagram from JASP. RC1 = Factor Belief, RC2 = Factor Qualification, RC3 = Factor Ability, RC4 = Factor Knowledge.

4.2.1. Belief in the Principles and Priorities of the Circular Economy

The results of the statistical analysis are shown in Table A4. The results of the survey are shown graphically in Figure 4.

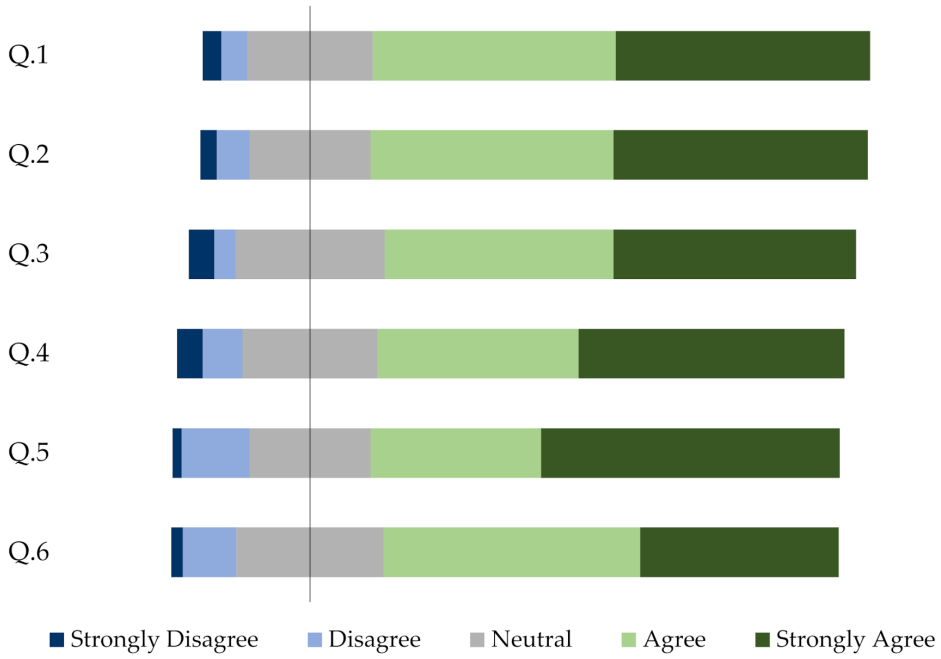

Figure 4. The survey results on belief in the principles and priorities of the circular economy.

The analysis results show that young people believe in the principles and priorities of the CE (Figure 4). For most of the belief questions (**Q.1–5**), most answered that they fully

agreed with the statements. We did not find any significant differences when we compare respondents' answers from different countries.

Most respondents to question **Q.1** answered that the priorities of the GD and CE principles are the starting point for ensuring Europe's long-term sustainability. For question **Q.2**, most respondents answered that they are convinced that implementing the GD and the CE Action Plan will bring about positive, sustainable change in Europe. Most respondents answered question **Q.3** that they are confident that the CE principles and priorities set out in the GD can help achieve global sustainability. Most respondents feel that they need further education and training on the preferences of the GD and the principles of the CE (**Q.4**). Most strongly believe education is necessary for better understanding and awareness of sustainable development. Respondents firmly believe they need more knowledge about the GD and CE to become more sustainable (**Q.5**). When respondents were asked if they were aware of the sustainable consequences of their daily activities (**Q.6**), most agreed.

4.2.2. Knowledge, Information, and Ability of Young People for Practical Implementation of the CE

The results of the statistical analysis are shown in Table A5. The results of the survey are shown graphically in Figure 5.

For question **Q.7**, most respondents remained neutral in their definition of the ability to explain and discuss the ideas and concepts of the GD and CE. Although 45% of young people in Austria say they know the basic concepts of the GD and CE, only 30% say they can participate in discussions about these issues more or less. Twenty-five respondents from Slovenia (42%) are convinced that they know how to explain and discuss ideas related to the concepts of the GD and the principles of the CE. In Poland, 62% of respondents generally have no or minimal ability to explain and discuss the ideas of the GD and CE. Only 2% agreed that they could explain the concepts of the GD and CE. According to the results, respondents from Greece have already heard about GDs and CEs. Still, they cannot discuss these issues in detail. Although 41% of respondents in Lithuania are familiar with the basic concepts of the GD and CE, only 20% say they are more or less able to participate in discussions on these topics.

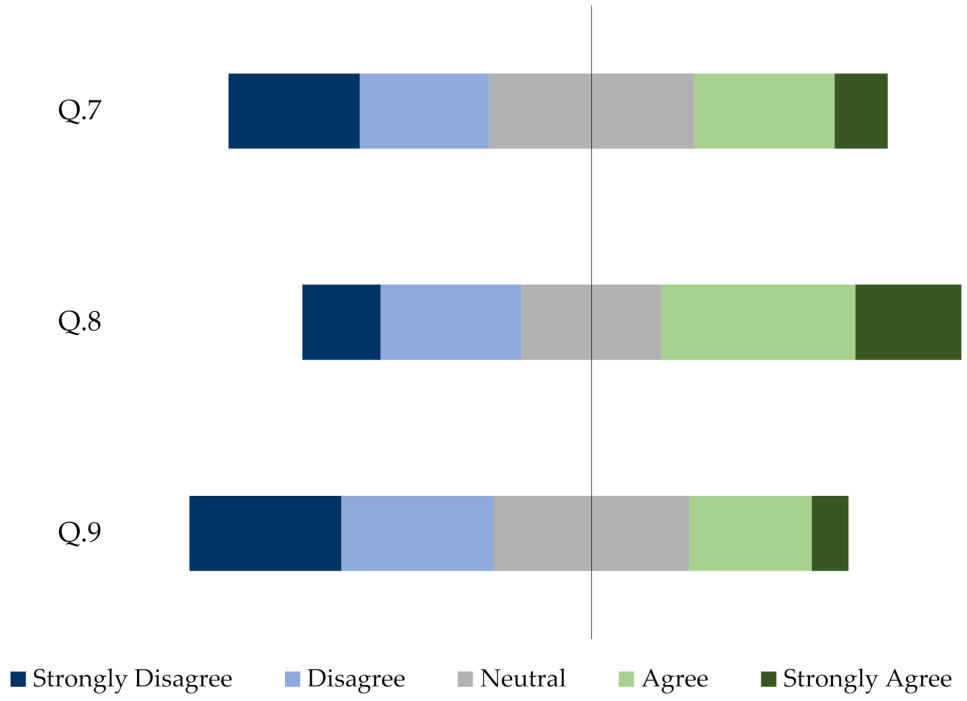

Figure 5. Results of the survey on young people's knowledge, information, and the ability for practical implementation of CE.

Most respondents agreed that they had already heard about the objectives of the GD and the Circular Economy Action Plan. Looking at the results of the answers to question **Q.8**, young people from Austria are the most informed as they have heard the most about the GD and CE. They are followed by young people from Slovenia, Greece, and Lithuania. The analysis shows that young people from Poland are the least informed in this area. Only ten respondents from Poland said they had heard about the aims of the GD and the CE Action Plan. Ten respondents remained neutral, whereas more than half (62%) had already heard of details on this topic.

For question **Q.9**, most respondents remained neutral on their ability to implement, test, and apply the principle of the CE in real cases or illustrate it in case studies. Respondents from Austria, Slovenia, and Greece mainly remained neutral, and less than a quarter would be able to implement the CE in a practical case. The vast majority of respondents from Poland indicated that they would not be able to implement, study, and apply the CE, which means that participants strongly disagree (34%) or disagree (26%). The situation is similar for respondents from Lithuania, most of whom are unable to implement a CE.

4.2.3. Competence to Introduce CE and GD to Sustainable Practices

The results of the statistical analysis are shown in Table A6. The survey results on young people's competence to introduce the CE and GD to sustainable practices are shown in Figure 6.

Most respondents answered question **Q.10** that they do not think they receive enough support from their environment to participate and implement GD and CE priorities actively. A large proportion of respondents from Austria (37%) believe that they do not receive enough support, 40% remain neutral, and about 21% believe that support from their environment is sufficient for them to participate in the priority themes actively. Most respondents from Slovenia, Greece, and Lithuania believe they do not receive enough support from the local environment when implementing the priorities of the GD or the principles of the CE. This claim stems either from the fact that they do not know where to get this support or do not receive it when needed. Respondents from Poland are even more explicit that most do not receive enough support to implement the CE (40% totally disagree, 34% disagree).

Most young people in all countries remain more or less neutral in their assessment of young people's activities to promote and address the challenges in their local environment regarding GD priorities and CE issues (**Q.11**). Their neutral stance suggests a lack of knowledge, encouragement, and opportunities for engagement.

Most remained undecided when respondents were asked if they had sufficient knowledge and understanding of GD priorities and CE principles to implement innovative solutions (**Q.12**). Respondents from Austria, Slovenia, and Greece took a neutral stance on this question. Among the respondents from Poland and Lithuania, it is noticeable that most of them do not think they have sufficient knowledge on this topic. Therefore, young people must obtain more knowledge.

When respondents were asked whether they could implement the priorities of the GD and the principles of the CE in their projects, business, or entrepreneurial ideas (**Q.13**), most were undecided. Respondents from Slovenia and Poland said they could not implement the CE principle. Only 1 out of 59 respondents from Slovenia believe that they can easily implement the priorities of the GD and CE principles in their projects or business ideas. 64% of respondents from Poland strongly disagreed (30%) and disagreed (34%) with the claim. Only five respondents agreed, whereas 26% remained neutral. Respondents from Lithuania mostly disagreed that they could not implement their ideas.

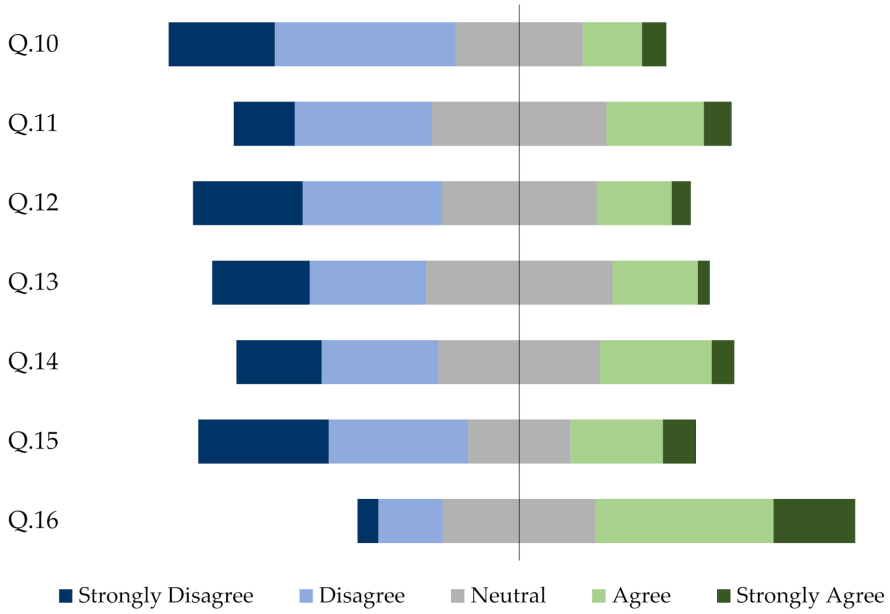

Figure 6. Results of the survey on the competence of young people to introduce CE and GD to sustainable practices.

Nevertheless, almost 37% can imagine that they are good at integrating the priorities and principles of the CE into their business. Respondents from Austria and Greece mainly remained undecided. Only 20% of the Austrian respondents can imagine that the importance and principles of the CE can be well integrated into their business activities. Only 6 out of 43 respondents from Greece answered yes to this question.

When asked by respondents whether they see themselves as agents of change in the economy towards a CE (**Q.14**), most young people in all countries are more or less neutral. Despite the apathetic attitude of the majority, some respondents from Austria (15%) see themselves as "agents of change" who can have a strong understanding of the essential issues of the business. Young people from Slovenia want to see themselves as "agents of change" in line with the priorities of the GD, and 41% of them currently agree with this, which is an encouraging figure compared to other countries. It is also worth mentioning the results of respondents from Lithuania, where most respondents answered that they do not see themselves as shapers of change towards a CE.

Most young people in all countries disagreed when asked whether their formal education (secondary, vocational, or higher) gave them sufficient knowledge about the GD and CE priorities to work actively in this field (Q.15). Young people do not seem to receive sufficient support from their environment or the education system.

Respondents mostly approach sustainability issues from different angles (e.g., GD priorities. In the last question from this segment (**Q.16**), most agreed to look at the CE from different angles and adopt responsible behaviour in everyday life. More than 52% of respondents agreed or strongly agreed. Interestingly, almost 31% of respondents remained neutral.

4.2.4. The Ability of Young People to Reason, Think, Evaluate, Connect, and Create New Solutions for CE

The results of the statistical analysis are shown in Table A7. The survey results on young people's ability to reason, think, evaluate, connect, and create new solutions for a CE are shown in Figure 7.

In response to question **Q.17** on whether respondents can argue, think, and evaluate the entrepreneurial spirit of the GD and CE in business opportunities, the majority answered that they were not able to do so. Respondents from Austria were mostly reserved about their ability to assess the entrepreneurship of the GD and CE. However, compared to respondents

from other countries, quite a few (30%) were convinced that they could contribute. Most respondents from Slovenia, Poland, and Greece agree that they cannot argue, think, and evaluate the entrepreneurship of the GD and CE on business occasions. The results show that respondents cannot reason, think, and assess green business and the CE on business occasions. The situation is similar for respondents from Lithuania, but 24% of respondents agree that they can argue, think, and evaluate the GD and CE as business opportunities.

Most respondents to question **Q.18** answered that they could not connect the principles of the GD and CE with business models and entrepreneurship. Respondents from Austria were mainly neutral about their ability to link the principles of the GD and CE with business models and entrepreneurship. However, compared to respondents from other countries, quite a few (25%) were convinced that they have these skills. Most Slovenian respondents did not know how to connect them (30% did not strongly agree, 29% did not agree, and 30% remained neutral with their answers). If we combine the answers "do not agree at all" and "do not agree" as "no" and "agree" and "fully agree" as "yes", we get the data that 64% of the respondents from Poland say they do not know how to connect with business models and entrepreneurship. A total of 17% answered "yes", and 19% abstained. Respondents from Greece and Lithuania overwhelmingly say they cannot connect the principles of the GD and CE with business models and entrepreneurship.

Most respondents answered question **Q.19** that they cannot design, develop, and create new business models and entrepreneurial solutions related to the GD and CE. Most respondents from all countries cannot create new solutions related to the GD and CE. A slightly higher percentage of those who believe they could develop a practical business solution was found among respondents from Austria (29%) and Lithuania (25%).

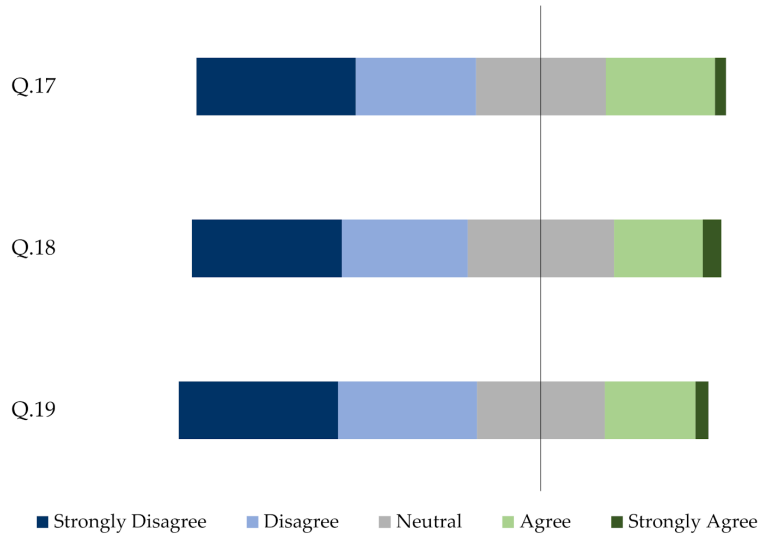

Figure 7. Results of the survey on the ability of young people to argue, think, evaluate, connect, and create new solutions for CE.

4.3. Priority Themes of GD

Respondents were also asked to indicate the priority topic of the GD they know and understand the most about (**Q.20**). The most frequent answer was "climate action (mitigation)", followed by "clean energy" and "sustainable mobility" (Figure 8). Climate change is an acute issue for young people all over the world. They experience the effects of climate change at every turn, so, unsurprisingly, their priority concerns are linked to action to mitigate climate change. Not surprisingly, the priority issues are also concerns about introducing clean energy and its use for transport.

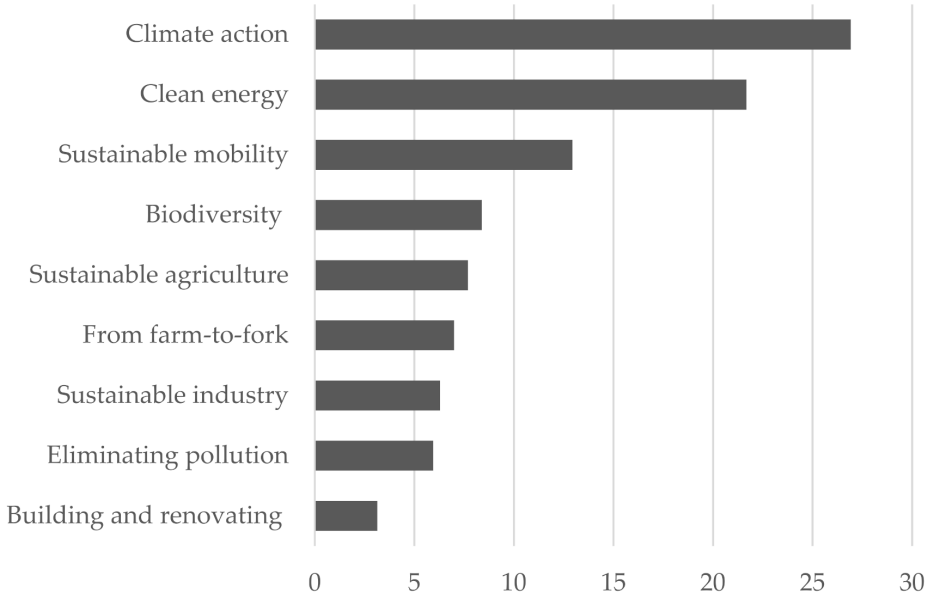

Figure 8. Priority themes of GD with the greatest knowledge and understanding.

Respondents were asked to indicate a priority topic of the GD on which they felt they needed additional knowledge for further work (Q.21). The most frequent answer was "Sustainable industry", followed by "Biodiversity", and "Elimination of pollution". An overview of the priority topics with the required additional knowledge can be found in Figure 9.

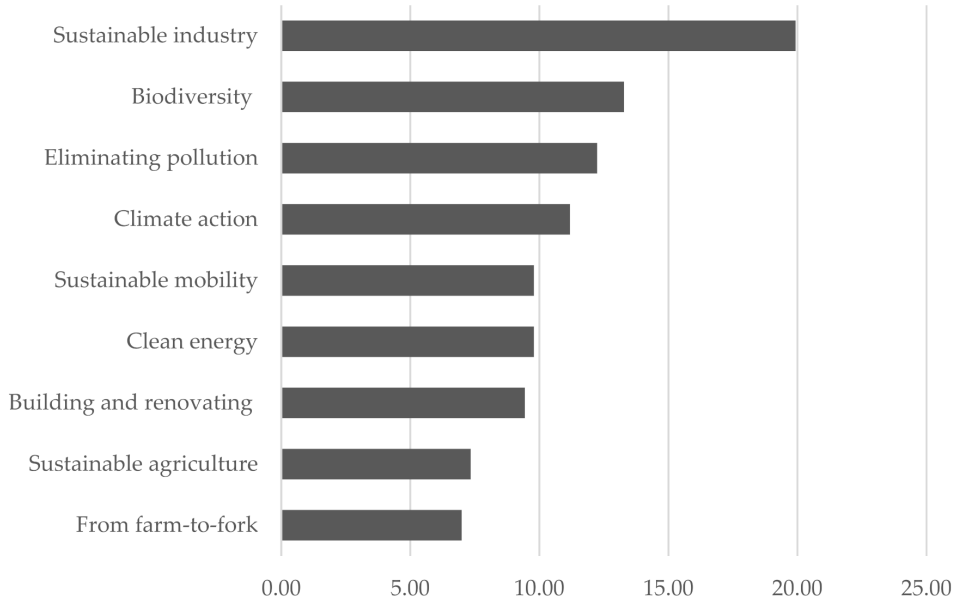

Figure 9. Priority topics from GD with the need for additional knowledge.

We also reviewed how the priorities of young people from different countries differ. Although young people from Austria and Poland have the most knowledge about "climate action", Slovenia has the most knowledge about "sustainable mobility". Young people from Greece had the most knowledge gained in "From farm-to-fork", whereas Lithuania's knowledge is focused on "clean energy". We were also interested in what additional knowledge is most desirable in this area. The answers are summarised in Table 3. The table shows that young people are interested in the different focus areas of the GD. However,

they lack knowledge about these topics and general educational opportunities to increase their potential for business opportunities.

Table 3. The most acquired and most desirable thematic knowledge of young people.

Country	Most Acquired	Most Desirable
Austria	Climate action	Biodiversity
Slovenia	Sustainable mobility	Eliminating pollution
Poland	Climate action	Sustainable industry
Greece	From farm-to-fork	Climate action
Lithuania	Clean energy	Sustainable mobility

We also asked an open question: is there a topic not mentioned above that would interest you (**Q.22**)? For the majority of respondents, the most important topics were addressed. The respondents from Austria have additional interesting topics such as animal welfare, greenhouse gases, and sustainable tourism. Slovenian respondents made the following suggestions: sustainable mobility and climate protection; change in biodiversity throughout history. One of the suggestions was related to raw materials: from raw materials to products/consumers. A respondent from Greece suggested that he would like to know more about the greenhouse effect.

5. Discussion

The findings from more than 286 young people in five countries showed that they strongly believe in the principles and priorities of the CE. Although young people think a lot about the environment and engage in limited circular activities, they also face several barriers to their participation in the CE. One of these obstacles is a lack of knowledge. Research has shown that they need more knowledge about the GD and CE to become more sustainable.

One of the most telling findings of the research is that despite their strong belief in the CE, young people are not sufficiently trained to reason, think, evaluate, make connections, and create new solutions for the CE. Young people see themselves as the ones who are well informed about the CE but do not have the opportunity to implement, study, and apply the principle of the CE in real cases. Young people are engaged and concerned about the environment and their future. Still, it is recommended that we further support them through education and awareness-raising to enhance their understanding of the activities needed to limit the worst impacts of climate change, including circular behaviour. We need to inspire them to motivate themselves to improve their skills through education and provide opportunities for activation to support them on their journey.

5.1. Belief in the Circular Economy

Belief in the principles of the CE is the first step toward change. Young people believe in the CE's principles and priorities, and most answered that they fully agree with the statements mentioned. The respondents show that it is imperative to them to ensure the long-term sustainability of Europe. Since the survey was conducted some time ago, it would be interesting to study how much the current geopolitical situation influences young people in their perception of the CE. It is to be expected that the reduction in energy supply and food could further increase young people's awareness of the importance of implementing CE principles for sustainable change in Europe. They are also aware of the significance of the CE in ensuring global sustainability. The need for more knowledge about the concepts of the CE is widespread among young people. This need shows their hope that they are important contributors to this concept and are willing to expand their knowledge. However, we must not allow their high demand for knowledge to turn into losing momentum and importance because of their youth and exclusion from the possibility of practical work in the CE. The findings show that climate anxiety and dissatisfaction with government responses are widespread among young people in countries around the world

and influence their daily actions [30]. Therefore, further research on the emotional impact of climate change on children and young people is urgently needed.

5.2. Knowledge, Information, and Skills

Understanding complex systems is important to promote circular behaviour. Despite the wider acceptance and value of circular behaviour in the private sector among policymakers and civil society, young people should be better informed about future communication strategies. This information will strengthen cooperation with other stakeholders. This is crucial if we successfully break down behavioural barriers and move to a CE.

The majority of respondents did not comment on their ability to explain and discuss the ideas and concepts of the GD and CE. It is encouraging to learn that they have already heard about the GD's goals and action plan. Therefore, it is feared that a lack of practical knowledge leads to a lack of active concern for the environment. This is supported by other research [20] showing that environmental knowledge and perceptions of sustainable development and the CE impact environmental concerns. Increased concern for the environment as a behavioural intention can act as a mediator for sustainable consumer behaviour. Individual environmental knowledge can lead to more sustainable consumer behaviour regarding water consumption, energy consumption, and purchase of sustainably produced food [20].

Our study has shown that young people need practical knowledge to implement CE principles. Several previous studies have begun to suggest new pedagogical approaches and tools that educators could use to accelerate the transition to a CE at all levels of education [57–60]. The role of education and communication is crucial in the transition to a CE. It is currently at a low level of maturity [58]. All pedagogical approaches that promote problem-based learning and interactivity are welcome. Different approaches and exercises are possible, such as a practical game, the simulation of the CE [59], a decommissioning laboratory, the simulation of an eco-industrial park, policy tools, circular conversation, circular futures [57], or other simulations and serious games for more efficient energy use [60]. Young people should be considered essential promoters who can bring the concept of the CE into society through everyday social practices and other voluntary activities [61].

5.3. Competences of Young People in the Circular Economy

Young people do not receive enough support from their environment to actively engage in or implement the priorities of the GD and CE principles. As a result, they remain less interested in taking action to tackle challenges in their local environment. Formal education does not provide enough knowledge to work in this area actively. These activities are mainly undefined in terms of knowledge and understanding of the priorities of the GD and CE principles. The answers to the question about the ability to transform the CE into a project, business, or entrepreneurial idea are also uninspiring. Young people do not see themselves as creators of change in the economy towards the CE. However, the finding is encouraging that most respondents view the CE from multiple perspectives and demonstrate responsible behaviour in their everyday lives.

As a society, we have pinned our hopes on the next generation to develop the CE and participate in solving practical environmental problems. However, we are responsible for educating the youth and encouraging their actions. The education system can play a central role in fostering the skills needed to move young people from those who react first to those who create change and build a better world. The findings of this study show that the more we work together and educate young people, the more opportunities we have to encourage the CE to take action. The skills that young people learn or value focus on acting and reacting. Although this is important, the long-term breadth of skills will determine whether they can meet the complex challenges that lie ahead.

5.4. Abilities in the Circular Economy

The findings show that young people have already developed conceptual ideas about the CE, a positive indicator of an engaged and educated young generation. However, respondents found it challenging to engage in systems-based CE thinking. For example, although most respondents believe in the principles and priorities of the CE, most of them indicated that they are unable to reason, think, evaluate, connect, and create new solutions in terms of the CE. Our results suggest that young people cannot connect and understand the whole concept of the CE. The analysis showed that young people are mainly unable to reason, think, and evaluate entrepreneurship in terms of the CE in business opportunities. They also seem to find it challenging to link business models and entrepreneurship. As a result, they are not skilled enough to design, develop, and create new business and entrepreneurship solutions. At this point, respondents have different ideas and perceptions about the CE and GD when filling out the survey should also be pointed out. This could explain that the respondents have different conceptualisations in mind, leading to them not being able to put the CE into practice.

5.5. Differences according to Nationality

Comparing the results according to the respondents' nationality is also interesting. In Austria, 82 questionnaires were completed. On the theoretical level, most respondents are basically familiar with the central issues of the GD and CE. However, this relationship is consistently reversed in the practical implementation of the CE. Respondents do not have a link between theory and practice, meaning they do not know how to translate the topic into real activities and integrate it into existing companies and "know-how". In Slovenia, 59 questionnaires were completed. Respondents are well aware of sustainability challenges but are somewhat less aware of the current priorities of the GD and the action plan of the CE. It is commendable that they show a high intrinsic motivation to deal with this issue. However, they do not have a corresponding knowledge of the GD priorities and the CE principles of entrepreneurship. In Poland, 100 questionnaires were completed. The young people in the study largely agree that GD issues and CE principles are important to ensure Europe's long-term sustainability. At the same time, it is clear that their knowledge and skills are not sufficient to get involved in introducing change. Therefore, young people need to be educated about the CE and involved at a young age when they feel the need and are ready to engage in sustainable development. According to a survey conducted in Greece, young people have already heard about the GD and CE. Still, they cannot discuss it in-depth and implement the actions mentioned in the GD. On the theoretical level, most Lithuanian respondents are familiar with the key issues of the GD and CE. However, they were significantly less confident about the useful links to real-life examples, businesses, and entrepreneurship. A significant proportion of respondents could be considered "change-makers" aware and considerate of their daily negative impacts on sustainability. They are convinced that the principles of the GD and CE could reduce negative impacts and bring about positive, sustainable change in Europe. Our study shows that young people need more support to deepen their knowledge to achieve these goals.

6. Conclusions

In conclusion, we would like to emphasise the importance of achieving a more significant influence on young people's practical implementation of the CE and GD. The results of our field research in five EU countries show a lack of knowledge about linking entrepreneurial opportunities to the priorities of the GD and the principles of the CE in most areas. The research showed a lack of a systematic approach to this topical and realistic issue. Through our further research, we aim to promote positive behaviour change among young people and contribute to the sustainability of the EU.

Young people are the builders of tomorrow and must play a more significant role in advising business and political leaders on the most critical issues facing the planet and its present and future generations. The European Green Agreement commits the Commission

to develop a European competence framework for schools, training institutions, and universities to develop attitudes, skills, and knowledge on climate change and sustainable development [8]. Looking to the future, educating young people is key to the transition to a CE. It is also crucial to develop an appropriate and interdisciplinary environmental curriculum to move closer to sustainable development and the CE goals. We must strive to train young people in the practical implementation of the CE. Based on exciting experiences, young people would come to think more meaningfully and make better decisions. It is necessary to empower them to bring about visible change because, after all, they are the most important actors in the future of our planet.

The study has shown that young people are engaged and concerned about the environment and its future. Further support through education and awareness-raising is recommended to foster their understanding. It is even more important to involve young people in active training in argumentation, thinking, evaluation, networking, and creating new solutions in the direction of a CE. This can be achieved through practical, interactive, repetitive, and engaging experiences to gain better practical knowledge in young people.

Understanding complex systems is essential to promote circular behaviour, and educational programmes that address systems thinking need to be introduced. Most respondents have heard of the goals and action plan of the GD, which is encouraging. Our study has shown that young people are eager for practical knowledge, information, and skills to implement the principles of the CE. They do not receive enough support from their environment to actively engage with or implement the GD's priorities and the circular economy's principles. Young people do not see themselves as change agents in the economy towards the CE, but most see the CE from multiple perspectives and demonstrate responsible behaviour in their daily lives. The findings of this study show that young people develop conceptual ideas about the circular economy but that systems-based thinking about the CE is a challenge for them. Young people have difficulties connecting and understanding the whole concept of the CE. As a result, most of them are not able to think and evaluate entrepreneurship in the context of the CE. They also find it challenging to link business models and entrepreneurship as they are not sufficiently trained to design, develop, and create new business and entrepreneurial solutions.

We must strive to engage young people in acquiring knowledge and the ability to put the CE into practice. They are eager to gain new knowledge and practical experience. Decision-makers should listen to young people, take concrete action, and show them that their ideas are valued. Empowering young people to create the change they want to see is necessary. After all, young people are the most important stakeholders for the future of our planet. It is their future, and they should shape that future.

Further recommendations for systemic action steps to engage young people more intensively in the GD and CE concept could include:

- Motivating and fostering young people's hope for the future and the positive impact their individual and collective actions can have on them create a strong motivation to act.
- Raising awareness of the circular economy and sustainable business is one of the main goals of all educational institutions, from kindergarten to lifelong learning.
- Businesses need to raise awareness of the GD and CE so that young people entering the workforce are as aware and active as possible in promoting the CE.
- Long-term cooperation based on trust and transparency needs to be established with young people as consumers.
- Create interdisciplinary, responsive environmental education resources and curricula aligned with the Sustainable Development Goals and promote career development opportunities for young people.
- CE education and teaching should be conducted in a way that makes sense.
- Encouraging young people to become civically engaged in climate issues by disseminating environmental and climate literacy.
- Develop a wide range of skills and provide opportunities for the active use of knowledge and the practical application of the CE.

- Develop and provide access to research infrastructures that enable young people to participate in the CE actively.
- Provide forums for collaboration with young people where we can further motivate them to contribute ideas to the CE.

This research focuses on young people's entrepreneurial attitudes and skills in Central and Eastern Europe and represents only part of the research effort needed to achieve a circular economy. The circular economy is a unique systemic challenge where much research will be needed on behaviour and lifestyles and on introducing change in existing businesses (designers, engineers) and the public sector (teachers, administrators).

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Conflicts of Interest: The authors declare no conflict of interest.

Appendix A. Questionnaire

A competencies questionnaire

GREEN DEAL AND CIRCULAR ECONOMY COMPETENCIES QUESTIONNAIRE

Welcome.

Erasmus+ project, youth business activities in terms of circular economy to achieve Green Deal goals aims to assess the levels of competencies regarding the Green Deal and circular economy business activities among youth in order to identify possible competencies gaps and design new learning materials based on the analysed responses from this questionnaire and the state-of-the-art national reports.

We would appreciate it if you would take about 5 min to respond to the enclosed questionnaire. Your responses will be used for statistical assessment only. Your participation is voluntary and you may refuse to answer any questions.

The answers you provide will be kept confidential. There are no foreseeable risks to you as a participant in this project, nor are there any direct benefits. However, your participation is extremely valued.

The following questionnaire consists of 25 questions.

Thank you for your time and contribution.

General questions:

Age group:

1 <18 years; 2 (18–20 years); 3 (20–22 years); 4 (22–24 years); 5 >24 years

Country:

Austria, Slovenia, Greece, Poland, Lithuania
Sex: M, F
Topical questions
Statements below are linked to Green Deal, where nine key priorities are:

1. Biodiversity—measures to protect our fragile ecosystem;
2. From farm-to-fork—ways to ensure more sustainable food systems;
3. Sustainable agriculture—sustainability in EU agriculture and rural areas thanks to the common agricultural policy (CAP);
4. Clean energy—clean energy;
5. Sustainable industry—ways to ensure more sustainable, environmentally-respectful production cycles;
6. Building and renovating—the need for a cleaner construction sector;
7. Sustainable mobility—promoting more sustainable means of transport;
8. Eliminating pollution—measures to cut pollution rapidly and efficiently;
9. Climate action—making the EU climate neutral by 2050.

Please, give your personal opinions on the following statements, based on the five-stage Likert scale: strongly disagree (1), disagree (2), neutral (3), agree (4), strongly agree (5).

Table A1. Core questionnaire.

No.	Question
Q.1	GD priorities and principles of CE are the starting point for ensuring Europe's long-term sustainability.
Q.2	I believe that the implementation of GD and the CE Action Plan will bring positive, sustainable change in Europe.
Q.3	I believe that the principles and priorities of CE set out in GD can help achieve global sustainability.
Q.4	I need more training and education on the priorities of GD and CE principles to understand better and raise awareness.
Q.5	I need more knowledge about GD and CE to become more sustainable.
Q.6	I am aware of the sustainable consequences of my daily activities.
Q.7	I can explain and discuss the ideas and concepts of GD and CE.
Q.8	I have heard about the objectives of GD and the CE Action Plan.
Q.9	I can implement, study, and apply GD issues and CE principles in real cases or illustrate them in case studies.
Q.10	I receive sufficient support from my environment for active participation and implementation of the GD priorities and CE principles.
Q.11	I actively promote and address the challenges in my local environment related to GD priorities and CE issues.
Q.12	I have sufficient knowledge and understanding of the GD priorities and CE principles to implement innovative solutions.
Q.13	I can easily incorporate GD priorities and CE principles into my project, business, or business ideas.
Q.14	As a business change designer, I see myself implementing GD priorities and CE principles.
Q.15	My formal education (secondary, vocational, or tertiary) has provided me with sufficient knowledge of GD priorities and CE to work in the fields of GD and CE actively.
Q.16	I approach sustainability issues from different angles (e.g., GD priorities).
Q.17	I can argue, think, and evaluate the entrepreneurship of GD and CE in business opportunities.
Q.18	I can connect the principles of GD and CE with business models and entrepreneurship.
Q.19	I can design, develop, and create new business and entrepreneurship solutions for GD and CE.

QUESTION with one possible answer
Q.20. Please indicate the priority topic of GD in which you have the most knowledge and understanding.

a. Biodiversity
b. From farm-to-fork
c. Sustainable agriculture
d. Clean energy
e. Sustainable industry
f. Building and renovating
g. Sustainable mobility
h. Eliminating pollution
i. Climate action

Q.21. Please indicate the priority topic of GD in which you think you need additional knowledge for your further work.

a. Biodiversity
b. From farm-to-fork
c. Sustainable agriculture
d. Clean energy
e. Sustainable industry
f. Building and renovating
g. Sustainable mobility
h. Eliminating pollution
i. Climate action

Q.22. Open question: Is there a topic not mentioned above that would interest you?

Appendix B

Table A2. Distribution of the Socio-Demographic Data of the Respondents.

Age Group	Frequency (*N*)	Percentage (%)	Frequency Male (*N*)	Percentage of Male (%)	Frequency Female (*N*)	Percentage of Female (%)
<18	38	13.3	9	7.6	29	17.3
18–24	192	67.1	84	71.2	108	64.3
>24	56	19.6	25	21.2	31	18.5
Total	286	100.0	118	100.0	168	100.0

Table A3. Respondents' Demographic Data by Country and Gender.

Country	Frequency (*N*)	Gender	Percentage (%)
Total	118	Male	41.3
	168	Female	58.7
Austria	27	Male	32.9
	55	Female	67.1
Slovenia	29	Male	49.2
	30	Female	50.8
Poland	23	Male	43.4
	30	Female	56.6
Greek	19	Male	44.2
	24	Female	55.8
Lithuania	20	Male	40.8
	29	Female	59.2

Appendix C

Table A4. Questions Asked and Results of Descriptive Analysis for the Belief Factor.

No.	Question	Mode	Median	Mean	*SD*
Q.1	GD priorities and principles of CE are the starting point for ensuring Europe's long-term sustainability.	5	4	4.03	0.99
Q.2	I believe that the implementation of GD and the CE Action Plan will bring positive, sustainable change in Europe.	5	4	4.03	0.99
Q.3	I believe that the principles and priorities of CE set out in GD can help achieve global sustainability.	5	4	3.96	1.03
Q.4	I need more training and education on the priorities of GD and CE principles to understand better and raise awareness.	5	4	3.96	1.09
Q.5	I need more knowledge about GD and CE to become more sustainable.	5	4	4.02	1.08
Q.6	I am aware of the sustainable consequences of my daily activities.	4	4	3.86	0.99

Table A5. The Questions Asked and the Results of the Descriptive Analysis for the Knowledge Factor.

No.	Question	Mode	Median	Mean	*SD*
Q.7	I can explain and discuss the ideas and concepts of GD and CE.	3.00	3.00	2.78	1.22
Q.8	I have heard about the objectives of GD and the CE Action Plan.	4.00	3.00	3.16	1.27
Q.9	I can implement, study, and apply GD issues and CE principles in real cases or illustrate them in case studies.	3.00	3.00	2.61	1.19

Table A6. The Questions Asked and the Results of the Descriptive Analysis for the Qualification Factor.

No.	Question	Mode	Median	Mean	*SD*
Q.10	I receive sufficient support from my environment for active participation and implementation of the GD priorities and CE principles.	2.00	2.00	2.43	1.10
Q.11	I actively promote and address the challenges in my local environment related to GD priorities and CE issues.	3.00	3.00	2.79	1.07
Q.12	I have sufficient knowledge and understanding of the GD priorities and CE principles to implement innovative solutions.	3.00	2.50	2.51	1.11
Q.13	I can easily incorporate GD priorities and CE principles into my project, business, or business ideas.	3.00	3.00	2.59	1.06
Q.14	As a business change designer, I see myself implementing GD priorities and CE principles.	3.00	3.00	2.74	1.12
Q.15	My formal education (secondary, vocational, or tertiary) has provided me with sufficient knowledge of GD priorities and CE to work in the fields of GD and CE actively.	2.00	2.00	2.51	1.25
Q.16	I approach sustainability issues from different angles (e.g., GD priorities).	4.00	4.00	3.47	1.05

Table A7. The Questions Asked and the Results of the Descriptive Analysis for the Ability Factor.

No.	Question	Mode	Median	Mean	*SD*
Q.17	I can argue, think, and evaluate the entrepreneurship of GD and CE in business opportunities.	1.00	2.00	2.42	1.18
Q.18	I can connect the principles of GD and CE with business models and entrepreneurship.	1.00	2.00	2.43	1.17
Q.19	I can design, develop, and create new business and entrepreneurship solutions for GD and CE.	1.00	2.00	2.36	1.15

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