D4.2
Baseline Assessment of individual competences

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WHO WE ARE

The ECF consortium consists of ten partners. The project is coordinated by Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas - CIEMAT.

Name	Country	Logo
Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas – **CIEMAT**	ES	
Instituto Superior Técnico. University of Lisbon. **IST**	PT	
Universidad de Sevilla **USE**	ES	
University of Jyväskylä **JYU**	FI	
Universitat Autònoma de Barcelona **UAB**	ES	
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Que Technologies Kefalaiouchiki Etaireia **QUE**	GR	

ABOUT THE PROJECT

Through a multidisciplinary, transdisciplinary and participatory process, ECF4CLIM develops, tests and validates a European Competence Framework (ECF) for transformational change, which will empower the educational community to take action against climate change and towards sustainable development.

Applying a novel hybrid participatory approach, rooted in participatory action research and citizen science, ECF4CLIM co-designs the ECF in selected schools and universities, by: 1) elaborating an initial ECF, supported by crowdsourcing of ideas and analysis of existing ECFs; 2) establishing the baseline of individual and collective competences, as well as environmental performance indicators; 3) implementing practical, replicable and context adapted technical, behavioral, and organizational interventions that foster the acquisition of competences; 4) evaluating the ability of the interventions to strengthen sustainability competences and environmental performance; and 5) validating the ECF.

The proposed ECF is unique in that it encompasses the interacting STEM (Science, Technology, Engineering, and Mathematics)-related, digital and social competences, and systematically explores individual, organizational and institutional factors that enable or constrain the desired change. The novel hybrid participatory approach provides the broad educational community with: an ECF adaptable to a range of settings; new ways of collaboration between public, private and third-sector bodies; and innovative organizational models of engagement and action for sustainability (Sustainability Competence Teams and Committees).

To encourage learning-by-doing, several novel tools will be co-designed with and made available to citizens, including a digital platform for crowdsourcing, IoT solutions for real-time monitoring of selected parameters, and a digital learning space. Participation of various SMEs in the consortium maximizes the broad adoption and applicability of the ECF for the required transformational change towards sustainability.

LEGAL NOTICE

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1. EXECUTIVE SUMMARY

Task 4.2 establishes the baseline of the individual competences in the areas of climate change and sustainability at our Demonstration Sites (DS), i.e., the selected schools and universities in Finland, Portugal, Romania, and Spain. This baseline is to be understood as a **preliminary overview of the perceptions and expectations** of students, teachers and administrative staff **concerning sustainability** at the beginning of the project, prior to the interventions that will be implemented in WP5.

A short survey was conducted to collect data on such perceptions and expectations. Our survey does not seek to produce results that would be statistically representative for the involved four countries or even for the selected demonstration sites (DSs). The objective is to collect evidence from the groups of people we will engage with along the project. The main function of this initial assessment is to generate **useful empirical evidence for our participatory and deliberative process.** Findings from Task 4.2 are used as input into the activities of our Sustainability Competences Teams (SCTs), with an aim to stimulate reflection and the creation of shared understandings of sustainability.

As for the results, the high-to-medium scores on our GreenComp global index would suggest a quite **promising starting point** in terms of the individual perceptions and expectations regarding sustainability. The participants in the short survey declared they were aware of the problems and willing to act. A great majority indeed affirmed that they were already behaving sustainably. Moreover, no significant barriers to action were evoked.

However, these findings must be **interpreted with caution**, for a number of reasons:

→ Our short survey capture participants' personal interpretations (what participants think and claim about their own skills and attitudes), which does not necessarily correspond to their objectively observable knowledge or their 'true' views and opinions concerning sustainability. In addition, this kind of survey cannot capture the potential gaps between 'what we think', 'what we say 'and 'what we do, and findings may also be distorted by a social desirability bias, whereby the participants provide answers that they believe are expected from them.

→ The samples of our surveys were not designed to be representative for our case study countries or demonstration sites.

→ Key contextual factors vary greatly between our case study countries and between the demonstration sites: this goes for example for environmental performance (e.g., transportation and recycling infrastructures), and for collective competences (institutional and organizational commitment and arrangements for sustainability).

In spite of these limitations, the short survey does provide relevant **insights that will help us to orientate the next steps** of our transdisciplinary and participatory process at the DSs. The short survey identified differences and singularities between countries and educational levels, as well as indicated areas of competence that would require especial attention in the SCTs and the SCCs. Survey findings can also inspire reflection within the educational community and help the demonstration sites to co-design the most suitable intervention measures.

The qualitative, deliberative and participatory nature of our SCTs and SCCs helps to overcome some of the above-mentioned limitations of the short survey by providing deeper understandings of the involved causal relationships, as well as on the opportunities for and barriers to sustainability.

It is worth keeping in mind that **our Roadmap** does not relate exclusively to individual competences. Collective competences and environmental performance are the two other pillars of the Roadmap. Findings on the individual competences should be integrated and understood within this framework. Importantly, the Roadmap is more about the community and organisation than about the individual. Collective decisions, action and solutions are therefore key factors that condition individuals' ability and willingness to act.

To conclude, the short survey fulfilled its main **function** as it generated useful **empirical evidence for our participatory and deliberative process**. Key findings from Task 4.2 are being used as input into the activities of our Sustainability Competences Teams (SCTs) to stimulate reflection and the creation of shared understandings of sustainability. An *ex post* assessment of this initial overview will take place at the last phase of the project, in order to **track potential changes in the individuals' perceptions of expectations concerning sustainability** at our DSs.

2. OBJECTIVES

WP4 establishes the baseline of the collective and the individual competences, as well as of the environmental performance at our Demonstration Sites (DS), i.e., the selected schools and universities in Finland, Portugal, Romania, and Spain. The ultimate WP objective is to provide a basis for the subsequent implementation and continuous evaluation of the sustainability-related interventions in WP5.

Task 4.2 assesses the baseline of the **individual competences** regarding climate change and sustainability at our DSs, that is, our selected schools and universities. It needs to be understand as **an initial approach to the individual perceptions and expectations** of students, teachers and administrative staff **concerning sustainability:** environmental awareness, behaviour, and perceived drivers for and barriers to the acquisition of sustainability-related knowledge, skills, and attitudes.

The **main function** of this initial assessment is to generate useful **empirical evidence for our participatory and deliberative process**. Findings from Task 4.2 are used as input into the activities of our Sustainability Competences Teams (SCTs), with an aim to stimulate reflection and the creation of shared understandings of sustainability. In the SCTs, participants have the chance to rethink and reflect on their responses to the short survey. Remarkably, by the time of writing this report, evidence from the SCTs was not yet available. This report therefore only relies on data from the short survey.

An ex-post assessment of this initial overview will be carried out by the end of the project to **track potential changes** in the individual perceptions and expectations at our DSs, by comparing the current situation with the one observed at the end, once the sites have gone through the participatory and deliberative process that constitutes the core of our project.

As indicated above, the baseline assessment of individual and collective competences, together with the analysis of environmental performance, provides the basis for the subsequent implementation and evaluation, in WP5, of the interventions designed to foster sustainability. By doing so it also contributes to the process of **validating our initial European Competence Framework (ECF), our Roadmap** – the document that describes the essential individual and collective competences as well as enablers of and constraints to promoting environmental performance of educational institutions. Our initial ECF aims to provide tools that allow a variety of stakeholders to identify the enablers and constraints, and thereby design appropriate measures to promote sustainability in various educational contexts. (See D3.3 for more details).

Among others in the project, Task 4.2 aims to generate initial elements to support the subsequent implementation and evaluation of our Roadmap.

3. DEFINING INDIVIDUAL COMPETENCES

Following the European Sustainability Competence Framework (GreenComp) (Bianchi et al, 2022), '*a **sustainability competence** empowers learners to embody sustainability values, and embrace complex systems, in order to take or request action that restores and maintains ecosystem health and enhances justice, generating visions for sustainable futures. This definition focuses on developing sustainability knowledge, skills and attitudes for learners so they can think, plan and act with sustainability in mind, to live in tune with the planet'*.

In ECF4CLIM we further elaborate the definition of **sustainability competence '***as an ability to act in an appropriate way to achieve sustainability goals successfully and efficiently'*. This general definition applies both to the individual and the collective competences[1].

Individual competences refer to the '*development of a combination of personal qualities and qualifications', that is, the knowledge, skills, and attitudes that individuals need in order to achieve certain goals through their actions and activities* (Vare, 2022). In our case, such goals are *promoting sustainability and planetary wellbeing* (JYU, Wisdom community 2021). Individual competences are one of the three main aspects of our roadmap towards sustainability[2] and refer to *the **individuals' inner, personal qualities and abilities.***

As a starting point for addressing individual competences, Task 4.2 generates a preliminary overview of the individual perceptions and expectations regarding climate change and sustainability of the groups involved in the project at the different DS.

[1] See D4.1 for the assessment of collective competences.

[2] See D3.3. for the development of an initial ECF

4. METHODOLOGY: THE SHORT SURVEY

The main source of evidence to assess the individual competences is a short survey designed ad hoc by the research team, and administered at the DSs.

The goal is to collect evidence from the concrete educational communities with which we engaged. We therefore do not seek to obtain results that would be statistically representative across Europe. Our objective is more specific: establishing an initial approach to the perceptions and expectations of students, teachers and administrative staff concerning sustainability to allow us to assess them throughout the entire project in a practical and feasible way, and to generate useful evidence for the subsequent stages of the project.

It is important to keep in mind that this survey is only one of the project's tools to evaluate individual competences. Other qualitative, deliberative, and participatory methods, i.e., our SCTs and SCCs, will be applied along the project to further understand and assess the evolution of the individual perceptions and expectations at our DSs along the project.

The key challenge was the intergenerational and cross-cultural nature of our research. We needed a tool that could be meaningfully applied in a wide range of national, cultural, educational and age contexts. To this end the research team engaged in an iterative process of designing and fine-tuning, from a general (literature based), towards a more pragmatic and contextually based approach.

Short survey design

At the conceptual level, the short survey relies mainly on the European Sustainability Competence Framework, GreenComp (Bianchi et al, 2022), and on the notion of planetary boundaries that human activities should not exceed (Rockström et al, 2009). To design the methodology, we conducted a literature review on techniques to measure sustainability competences and attitudes in educational settings (e.g., Michalos et al, 2011; Biasutti & Frate, 2016)[3].

Our starting point is the GreenComp definition of sustainability: *"Sustainability means prioritising the needs of all life forms and of the planet by ensuring that human activity does not exceed planetary boundaries"* (GreenComp, p. 12). More precisely, the four areas of competences in GreenComp (Embodying sustainability values; Embracing complexity in sustainability; Envisioning sustainable futures; Acting for sustainability) are used to structure our short survey. We also consider the nine planetary boundaries that we are, according to Rockström et al. (2009), in risk of trespassing, and which can

[3] It should be noted that by the time of designing this survey our initial ECF (i.e., the Roadmap) was not yet ready.

be clustered in three main categories: socioeconomic activities with strong environmental impact; emissions from fossil energy sources; and conservation of biodiversity and natural ecosystems.

The short survey is also grounded on the theoretical and methodological proposals by Michalos et al. (2011) and Biasutti & Frate (2016). These authors developed scales to measure knowledge, attitudes, and behaviours towards sustainable development among high-school and university students. We adjusted their methodological proposals to the four competence areas and twelve competences in GreenComp (Bianchi, 2022). Finally, we also considered elements from the 'Behaviour questionnaire 'designed and applied in the CLIMACT project[4]. A long list of questions and statements was drawn up to be assessed on a Likert scale, which was refined and simplified through several rounds of review by the research team after several pre-tests, until the final version of the questionnaire was reached.

In addition, we needed to contemplate the major methodological challenges for surveys assessing individual competences in educational settings (i.e., Viteri et al., 2014, Hoey et al., 2018, Cha et al., 2007):

→ Intergenerational intelligibility: the survey is to be applied to people from different age groups (children, adolescents, adults).
→ Cross-cultural aspects: the survey is to be applied in different languages and cultural contexts.

To address these challenges, we first piloted and fine-tuned the survey designed for adults (high-school and university students, teachers, and administrative staff). Next, we drafted a simplified version for children, keeping in mind the recommendations in the literature, such as limiting the Likert scale to only three options, simplified language, limited number of questions, and use of smileys and cartoons. Both versions were tested in different countries. As for the cross-cultural issues, a combined procedure of translation and consolidation was applied. Two translators independently translated the English version into the native language; then a third person condensed these two translations into a single national version.

We also considered negative emotional reactions (e.g., boredom, stress, intimidation, fear, or anxiety for not responding appropriately) and social desirability biases (such as the tendency among children to copy or to answer what they think the adult would expect them to answer, or the belief among the children that they are the ones being evaluated by teachers).

Finally, when reading the survey findings, one should keep in mind that we are collecting evidence on individuals' self-declared perceptions and expectations, not on their

[4] Several ECF4CLIM partners participated in CLIMACT

externally observed knowledge let alone on their actual behaviours. In addition, the context indeed varies between countries and from one DS to another, both in terms of the environmental performance and existing infrastructures (e.g., for transportation or recycling), and in terms of the institutional commitment and arrangements for sustainability. For all these reasons, the survey findings must be **interpreted with caution**.

Structure of the short survey

The final questionnaire (see Annex A) contained five sections.

a) ***Environmental awareness***. Participants' consciousness, intentions, and attitudes towards the main environmental factors addressed in the ECF4CLIM environmental performance analysis (Task 4.3): energy, water, waste, transport, green spaces, consumption & green procurement[5].

b) ***Sustainable behaviour: drivers and barriers***. Self-declared changes towards more sustainable habits and patterns of behaviours, and the underlying drivers for and barriers to such changes.

c) ***Sustainability Competences (GreenComp):*** The four competence areas in GreenComp (Embodying Sustainability Values; Embracing Complexity; Envisioning Sustainable Futures, and Acting for Sustainability). The questionnaire methodologies of Michalos et al. (2011) and Biasutti & Frate (2016) inspired our design of items to be assessed in each competence area. The table below illustrates the links between the short survey items and the GreenComp dimensions:

Table 1. GreenComp competences and questionnaire items (adults version)

GreenComp Competences		Questionnaire items
Embodying sustainability values	1.1. Valuing sustainability	*C1. The negative impacts of human activities on nature cannot always be solved through more and better technological innovations.*
	1.2. Supporting fairness	*C2. Preserving the ecosystems for future generations is more important than safeguarding the ability of future generations to generate economic welfare.* *C3. Polluting activities should not be allowed even if the polluters pay and compensate the full cost of the damage done to people and ecosystems.*

[5] The initial proposal included a (long) list of items, but after the piloting most of them were excluded for simplification and applicability. Although most items address attitudes towards sustainability, the indicator also includes 3 items on more behavioural aspects

	1.3. Promoting nature	*C4. Our wellbeing, health and security depend on the wellbeing of nature.*
Embracing complexity in sustainability	2.1. Systems thinking	*C5. People are part of nature and the divide between human and ecological systems makes little sense.* *C6. Without gender equality, it will be difficult to achieve sustainable development.*
	2.2. Critical thinking	*C7. Respect for cultural diversity is necessary for achieving sustainable development*
	2.3. Problem framing	*C8. Sustainable development requires that people reflect on what is needed for a good life and happiness.* *C9. I usually like to examine problems from various points of view*
Envisioning sustainable futures	3.1. Futures literacy	*C10. I am able to imagine a better and more sustainable future than the climate catastrophes announced by the media.*
	3.2. Adaptability	*C11. I try to prepare myself for a life in an increasingly uncertain future world.*
	3.3. Exploratory thinking	*C12. All waste may be a potentially reusable resource.*
Acting for sustainability	4.1. Political agency	*C13. Decision-makers (politicians, governments) should support environmental protection and take care of all the people's needs even this may restrict the chances for their countries' businesses or industry*
	4.2. Collective action	*C14. I volunteer to work with local environmental groups.*
	4.3. Individual initiative	*C15. I participate in activities related to collective student life at my school.*

(Likert-type response options: strongly disagree, disagree, neutral, agree, strongly agree, don't know)

d) ***Mobility issues.*** A few items dealing with mobility patterns were included at the request of IST, the partner in charge of Task 4.3. (Baseline assessment of the environmental performance at our DSs).

e) **Sociodemographic data**, inspired by the PISA questionnaire (OECD, 2022).

The children's version contained the same five sections but simplified. Adult and child versions of the questionnaire are included in Annex A.

Evidence from all these sections, together with the evidence from the SCTs and SCCs, will support the initial assessment of the individual perceptions and expectations regarding climate change and sustainability. Notably, section C, which addresses the competences in GreenComp, can be easily related with the main elements of our European Competence Framework, our Roadmap.

In brief, our **Roadmap** is a document that outlines the essential individual and collective competences as well as the enablers for and constraints to promoting environmental performance at educational institutions. It aims to provide tools for different stakeholders to help them identify and understand the enablers and constraints, and thereby assist them in designing appropriate sustainability measures in various educational contexts. The roadmap comprises four steps: engaging people in promoting sustainability; deepening people's understanding of the complexity of sustainability; envisioning alternative futures, mapping possible paths towards sustainability and promoting adaptability for changes and action; and the values and principles, the systemic understanding of sustainability, and the envisioned sustainable futures that will contribute to designing strategies for action. The central purpose of our Roadmap is to facilitate a participatory process that results in clearer visions and purposeful strategies on how to promote and evaluate sustainability in any given context.

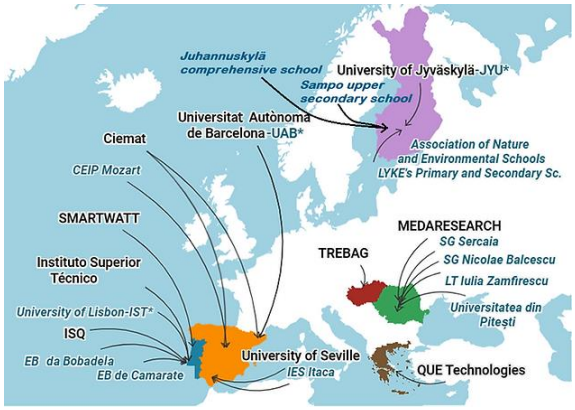
Section C in our short survey can provide evidence on attitudinal aspects to be considered in relation to the four steps of the Roadmap.

4.1. Sample

Twelve educational establishments from four European countries (Finland, Portugal, Romania, and Spain), at three levels of the educational system (basic education, high school and university) participated in this study.

Complying with data protection requirements, informed consent sheets were signed by all participants. In the case of children (students under 18 years of age), the consent form was signed by their parents or legal guardians.

Figure 1. ECF4CLIM Partners



Informed consent sheets are stored securely by the WP team and/or the task partner.

A total of 967 participants took part in the survey. The demographic characteristics of the sample population in each country are shown in Table 2.

Table 2. Demographic characteristics of the sample populations

		Finland	Portugal	Romania	Spain
N		440	153	85	289
Gender (%)	Female	62%	63%	42%	55%
	Male	35%	36%	58%	44%
	Non-binary/ Other	3%	1%	0%	1%
Age (%)	8-14	23%	49%	24%	49%
	15-19	59%	12%	29%	33%
	20-29	3%	5%	19%	10%
	30-39	4%	7%	8%	1%
	40-49	5%	9%	9%	5%
	50-59	5%	13%	7%	3%
	60 or more	2%	5%	4%	0%

Table 3 illustrates participants by country (Finland, Portugal, Romania, and Spain), educational level (basic education, high school and university) and educational profile (students, teachers and staff).

Table 3. Sample by role, educational level, and country

	Finland			Portugal		
	Basic education	High school	University	Basic education	High school	University
Students	100	255	10	76	14	7
Teachers	29	15	4	9	16	11
Staff	2	0	25	2	15	3
	Romania			**Spain**		
	Basic education	High school	University	Basic education	High school	University
Students	20	25	20	121	20	126
Teachers	4	5	4	9	2	6
Staff	2	2	3	2	0	3

Taking into account the singularities of the educational systems of each of the four countries, the sample has been divided into three educational levels named **Basic**

Education, High School and **University** (See Table 4 below). 'Basic Education' comprises primary school, lower secondary school, basic education and middle school (according to the labeling in the different countries) and integrates students from 9 to 14. 'High School' includes upper secondary school and secondary school or education, again depending on the countries' classification, and incorporates students from 14 to 17. University refers to university students aged 17 or over.

Table 4. Basic education and High school sample

Country	Basic education	High school
Finland	4th grade. Primary school (10 years old)	1st grade. Upper secondary school (15 years old)
	7th grade. Lower secondary school (13 years old)	
Portugal	6th and 9th. Basic education (2nd and 3rd cycle) (11 and 14 years old)	10th year. Secondary education (15 years old)
Romania	6th grade. Middle school (12-13 years old)	10th grade. Secondary school (16-17 years old)
Spain	4th, 5th and 6th year. Primary education (between 9 to 12 years old)	3rd year. Secondary education (14-15 years old)

4.2. Data collection & analysis

The short survey was applied either face-to-face or on-line, according to the preferences of the DS in question. Data was collected between September and December 2022. On average, filling the questionnaire took 15-30 minutes.

Data was analysed with the SPSS software (Statistical Package for Social Sciences). Initial descriptive analyses of the relevant variables were performed by country, by educational level, by educational profile and by gender testing the statistical significance (through t-test or chi square contrasts depending on the nature of the dependent variables).

It should be borne in mind that in order to integrate in the same analysis the surveys made with the questionnaire adapted to children (basic education surveys) with the rest, those items that were only asked to adults have been left out. This affects, besides the global indicators, in the case of Environmental awareness to dimensions of 'Energy' and 'Consumption & green procurement' and in the case of Green Comp sustainable competencies to indicators of 'Embracing complexity in sustainability' (ECS) and 'Envisioning sustainable futures' (ESF). In cases where the results of high school students, university students, teachers and/or staff are presented separately (without including basic education students) the index calculated with all items is used.

Considering the relatively small sample sizes of both teachers (11,8%) and administrative staff (6,7%), and in order to avoid distortions and elicit more consistent findings, results by country relate only to the student sample. Moreover, as we had two versions of the short survey (children and adults), detailed analyses of some variables

could only be done with the adult samples (the simplified children's version did not include all the items).

Data from all three DSs (basic education, high schools, and university) for a given country were aggregated in order to allow for cross-country comparisons.

Finally, difficulties during the data collection deserve being mentioned. In some cases, agreeing on a suitable date was a key challenge, due to the little available time for extra-curricular activities. In other cases, achieving large enough samples was very difficult. These problems were solved thanks to the commitment and effort by the local ECF4CLIM teams, although not in all cases we managed to obtained large enough samples.

5. RESULTS

This section provides an overview of the individual perceptions and expectations regarding climate change and sustainability at our DS according to our short survey findings. Following the survey structure, we first present findings on the overall perceived environmental awareness (section A), then on the self-declared drivers and barriers for sustainable behaviour (section B), and finally on the GreenComp sustainability competences (section C). The results are presented by country, educational level and educational role. We also include some additional analysis related with gender (5.4).

Tables with the means and the significance tests can be consulted in Annex B.

Comparisons between countries and even between DSs need to be interpreted with caution**.** We should remind that we are collecting evidence on individuals' self-declared perceptions and expectations, not on their externally observed knowledge, let alone on their actual behaviours. We should also consider the variations between countries and from one DS to another, both in terms of the environmental performance and of the institutional commitment and arrangements for sustainability. And, finally, we should keep in mind the sample limitations described earlier. Qualitative evidence from the SCTs and SCCs will help to better understand the singularities underlying such differences.

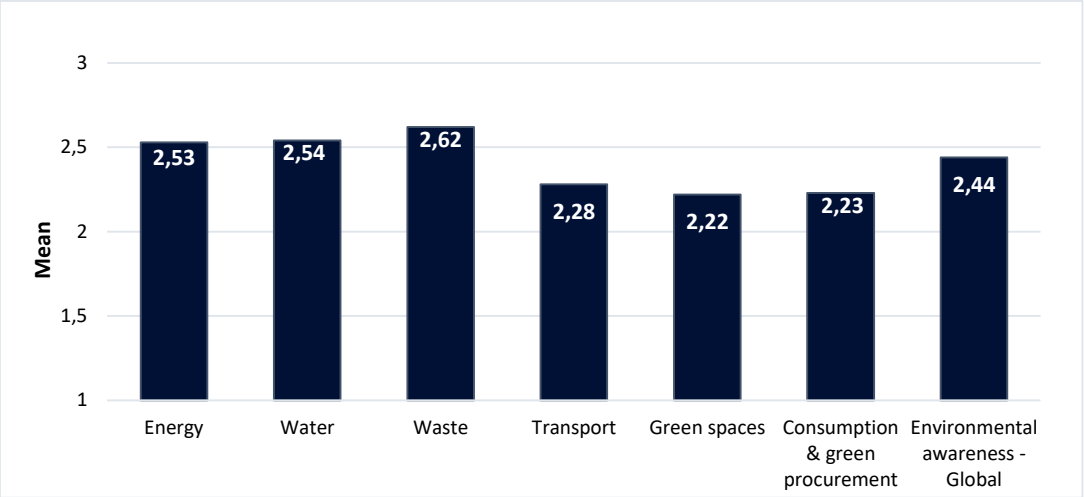
5.1. Environmental awareness

This section assesses our participants' self-declared awareness, intentions, and attitudes towards sustainability. Energy, water, waste, transport, green spaces, and consumption & green procurement were the environmental factors addressed in our short survey. Those were the aspects considered when designing the Environmental Performance Indicators in Task 4.3.

A global index was calculated to obtain a single indicator of the environmental awareness. This index integrates all the responses about intentions and actions regarding the six environmental factors by summing the value of each of the items in the questionnaire's battery of questions and standardizing it to values with a range from 1 (lowest level) to 3 (highest level).

As shown in the next figure, all the environmental factors get high or medium scores. The factors with higher stated environmental awareness are Waste, Water, and Energy, while those with lowest perceived environmental awareness (lowest scores) are Green spaces, Consumption & Green procurement, and Transport. The environmental awareness global index indicates that, in general, participants perceive they are quite aware of sustainability issues and try to act in a more sustainable way.

Figure 2. Environmental awareness

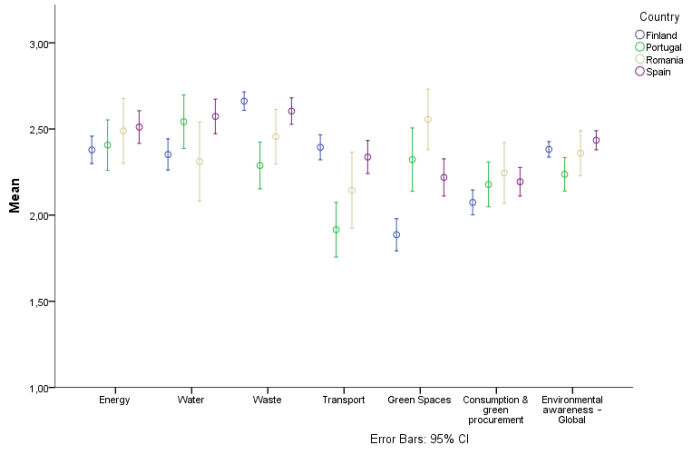


→ By country

The four countries score at medium or high level on the environmental awareness global index. Spain (mean of 2,43) is the country with the highest environmental awareness, followed by Finland (mean of 2,38) and Romania (mean of 2,36). Portugal (mean of 2,24) is the country with the lowest environmental awareness.

There are significant differences between countries. Finland scores the highest on Waste and Transport and the lowest on Green spaces (mean of 1,87). These indicate that they perceive they have a greater disposition to reduce and separate the different types of waste and try to travel more often by bike, on foot or by public transport instead of private transport. However, they do not feel they need to spend more time in green spaces, possibly because they already spend a lot of time in such areas.

Figure 3. Environmental awareness by country



Portugal, by contrast, obtained the lowest score in Transport and Waste. However, they scored the highest on Water, showing high willingness to try and reduce water

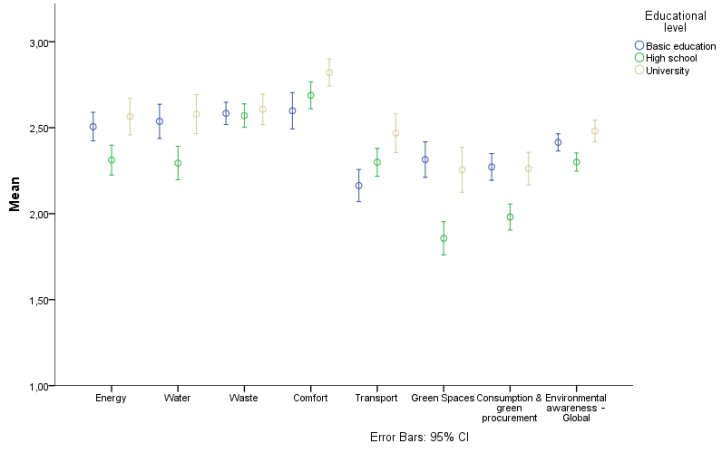
consumption. Romania is the country with the highest score in Green spaces (mean of 2,50), so they are the declaring they would like to spend more time in nature, parks or gardens to a greater extent. However, it is the country with lowest score on water. Spain shows statistically significant differences in almost all environmental factors, always with higher scores than the other countries.

→ By educational level

Scores at the three educational levels are either medium or high, as measured by the global index of environmental awareness. The highest score is found in universities (mean of 2,48) and the lowest in high schools (mean of 2,30).

There are significant differences across educational levels. University obtains the highest scores in almost all environmental factors. University students are especially aware of the need to properly manage waste, energy and water, and reduce their electricity and water consumption and the waste that they produce.

Figure 4. Environmental awareness by educational level



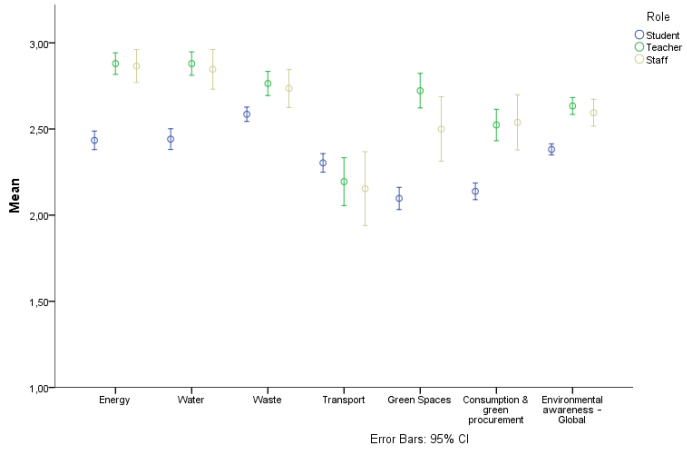
Basic education scores highest on the indicator of green spaces and lowest on transport. Children declare more often than others that they try to spend more time in nature, parks or gardens and travel by bike, on foot or by public transport instead of private means of transport. Finally, high schools show the lowest scores in almost all environmental factors. We find the lowest scores on green spaces (mean of 1,85) and on consumption & green procurement (mean of 1,96). They most seldom express willingness to spend more time in green spaces or try to reduce their meat consumption and purchases of unnecessary things.

→ By educational profile

Students, teachers, and administrative staff score medium or high on the global index of environmental awareness. The highest score is obtained by teachers (mean of 2,63) and the lowest by students (mean of 2,38). Administrative staff shows a mean of 2,59. We find significant differences between educational profiles. Students score lower than

teachers and administrative staff on all the environmental factors, thus indicating a lower environmental awareness among students.

Figure 5. Environmental awareness by educational profile

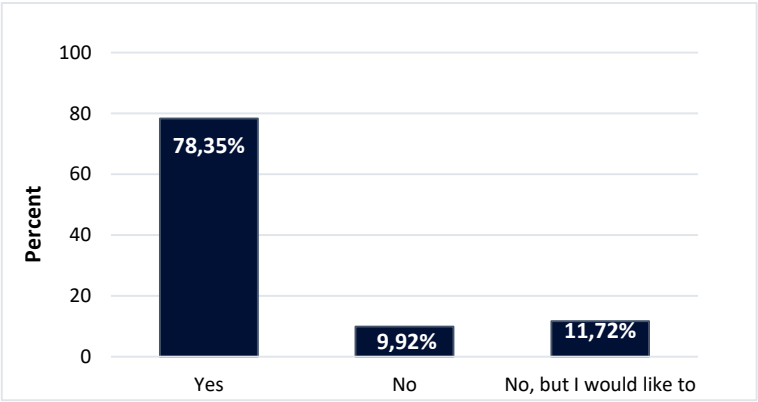


5.2. Sustainable behaviour: drivers & barriers

This section assesses our participants' self-declared sustainable behavior and, more precisely whether the participants perceive they have changed their daily lives to become more sustainable. Special attention is paid to the drivers and barriers facilitating or preventing sustainable actions.

The great majority of our participants, almost 80%, declares they are taking action to become more sustainable.

Figure 6. Sustainable behaviour: drivers & barriers



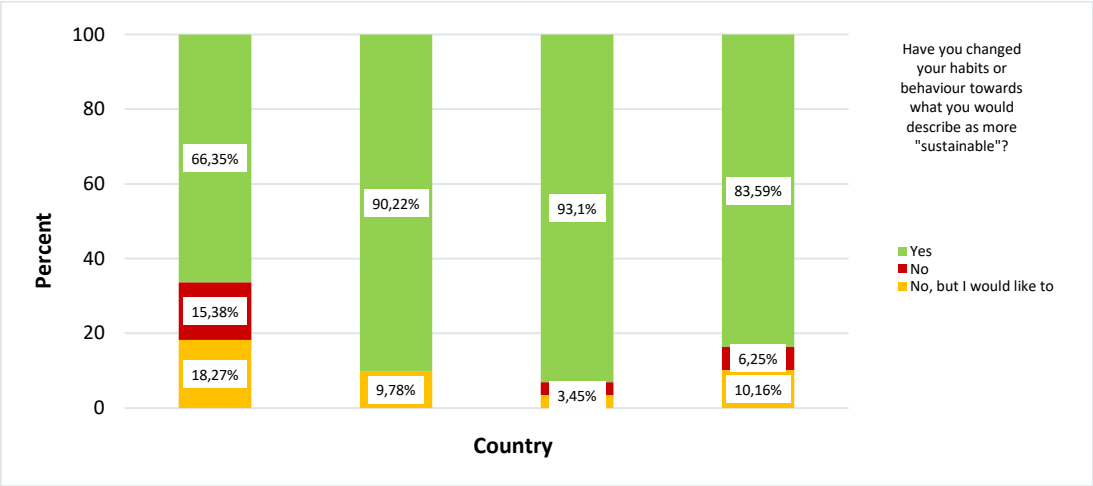
The remaining fifth either claims that they have not made any changes (10%), or that they have not, but would like to do so (12%).

These findings apply to all countries and educational profiles (students, teachers, and administrative staff).

→ By country

There are considerable differences between countries. On the one hand, Romania shows the highest scores (93%), followed by Portugal (90%) and Spain (84%). On the other, Finland presents a quite different pattern: relatively lower number of participants declaring they have made changes towards sustainability (66%), and a higher percentage of participants declaring the have not changed in that way (15%).

Figure 7. Sustainable behaviour: drivers & barriers by country



In all countries, the main driver for becoming more sustainable is the own personal, inner conviction on the need to protect nature and act for it. However, in Finland and Spain, the persuasive role of families to promote sustainable behaviours is significantly stronger, while in Romania the role of schools is perceived as much more influential than in the other three countries.

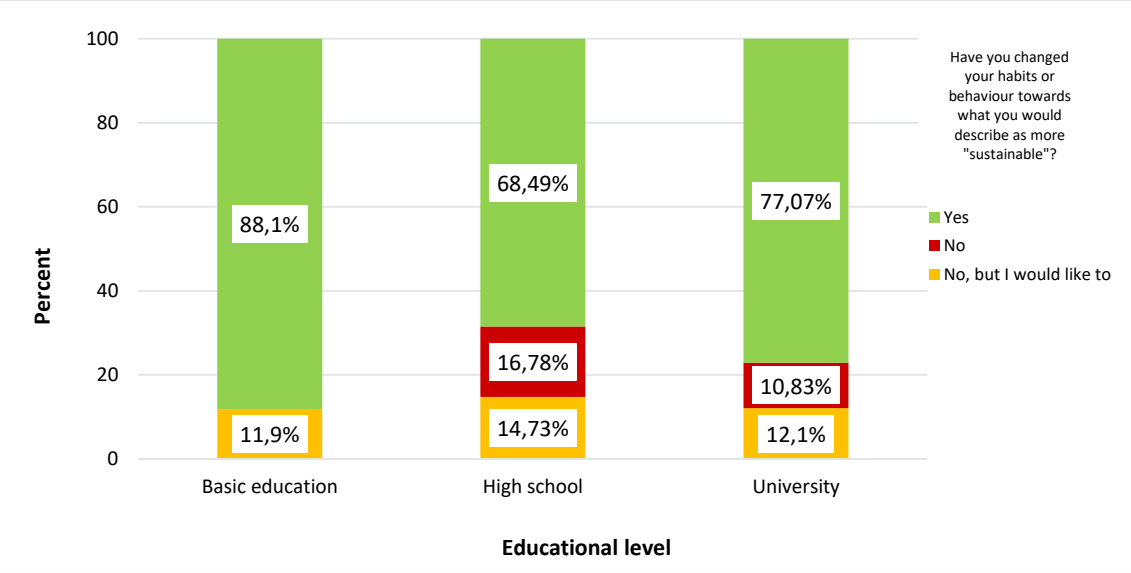
Finland and Spain also show similar profiles when it comes to the perceived main motives for not changing habits. Both show low scores on the questions that suggest the respondent's own lifestyle is already as sustainable as it can be and that individual behaviour alone does not solve climate problems.

Finally, among those declaring they would like to but cannot become more sustainable (12%), the barriers preventing changes also vary among countries. In Finland, lack of time is mentioned as the main obstacle (7%), followed by lack of knowledge. In Spain, the lack of material resources is the main impediment (4%), while in Romania it is the lack of support by the nearest (friends and family).

→ By educational level

Most students declare they have recently changed their habits to make them more sustainable. This is especially true for basic education (88%) and university students (77%). A greater proportion (17%) of high school students declare they have not done so. Overall, approximately 13% of the students said they have not changed but would like to.

Figure 8. Sustainable behaviour: drivers & barriers by educational level



Among basic education students, the main driver for becoming more sustainable is one's own personal, inner conviction on the need to protect nature and act for it. No-one among the children said they were not worried about nature or did not see the need to change behaviour. The barriers identified by those that have not changed but would like to do so were the lack of means (7%) and knowledge (5%).

Environmental awareness and positive attitudes towards sustainability was the main reason for efforts to be more sustainable also among high school students (60%). For those who declared they had not changed behaviour (17%), a variety of barriers was evoked: already sustainable lifestyle (8%); a single behaviour does not make a difference (6%); it is too late (3%); and climate concerns are unfounded (2%).

At the university level, personal conviction (awareness & attitudes) (60%) and persuasion from family (8%) and friends (5%) were the key drivers for sustainable behaviour. As in high schools, university students indicate a variety of barriers for sustainable behaviour: it is too late (9%); already sustainable lifestyle (8%); lack of knowledge (9%) or lack of support from the nearest (9%).

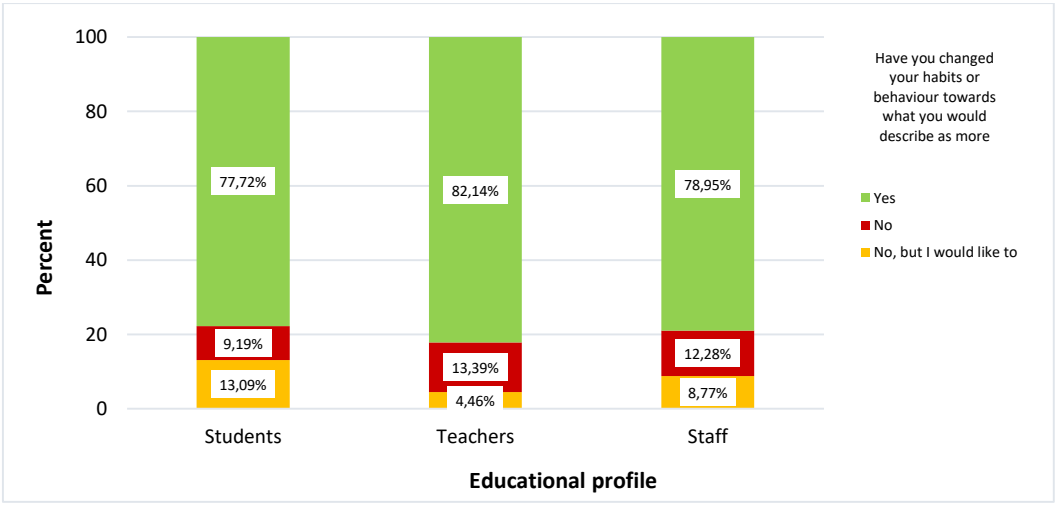
In sum, most students perceive they behave sustainably. The main driver, at all educational levels, relates to the individual environmental awareness and positive attitudes towards sustainability. Barriers are more specific to the age groups.

→ By educational profile

Very small differences could be observed across the different educational profiles: students, teachers, and administrative staff. Among teachers and staff, a somewhat higher percentage of participants than among students declared not having changed at all or showed desire to do so.

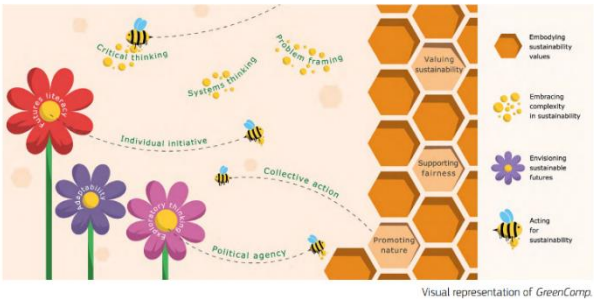
Both staff and teachers agree on the main argument for not changing behaviour: they perceive that their lifestyle is already as sustainable as it could ever be (10% and 13% respectively). As far as the barriers are concerned, staff clearly highlighted the lack of adequate material (6%), while teachers referred equally to lack of time (2%) and material (2%)

Figure 9. Sustainable behaviour: drivers & barriers by educational profile



5.3. Sustainability Competences (GreenComp)

In this section, we consider our participants attitudes regarding the four areas of competences in GreenComp: Embodying sustainability values; Embracing complexity; Envisioning sustainable futures; and Acting for Sustainability[6].



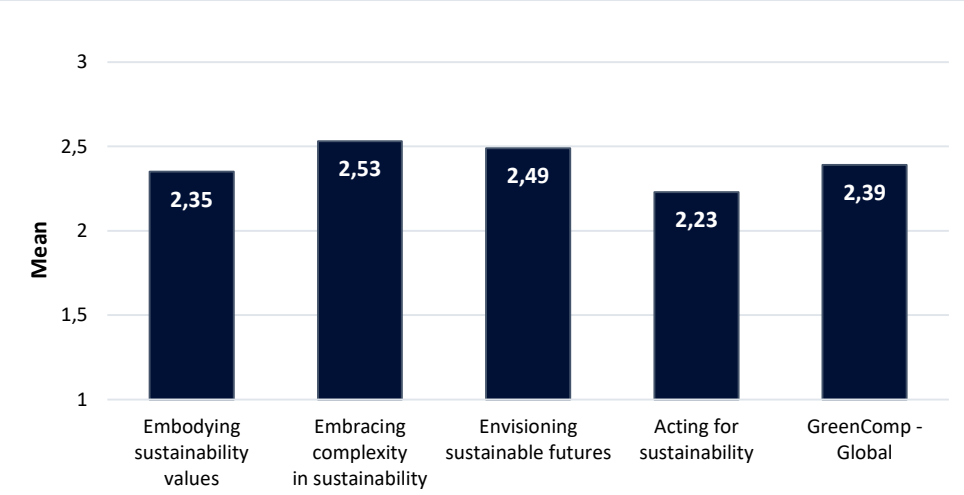
Visual representation of GreenComp

[6] 15 items of the short survey dealt with the GreenComp areas of competences

Embodying sustainability values	Valuing sustainability Supporting fairness Promoting nature
Embracing complexity in sustainability	Systems thinking Critical thinking Problem framing
Envisioning sustainable futures	Futures literacy Adaptability Exploratory thinking
Acting for sustainability	Political agency Collective action Individual initiative

The very first finding is that students, teachers, and administrative staff from all our DS score high (mean of 2,4) on our GreenComp global index. Our participants perceive they had appropriate attitudes needed to enable sustainable behavior and action against climate change. As for the areas of competence, Embracing Complexity and Envisioning Sustainable Futures showed particularly high values, while Acting presented the lowest one. Acting appeared as the most challenging area of competence.

Figure 10. Sustainability Competences (GreenComp)



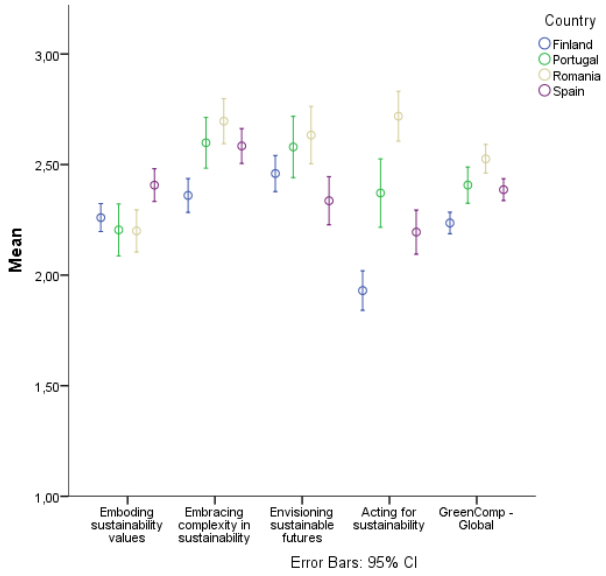
→ By country

There are statistically significant differences between countries. The most noteworthy variances are found between Finland and Romania, with Finland scoring lower and Romania particularly high in some areas of competences. Spain and Portugal show in-between profiles, with Spain closer to Finland, and Portugal closer to Romania. As for the areas of competence, Spain shows the highest values in Embodying Sustainability Values, with statistically significant differences with Romania (the country scoring the lowest in this area of competence).

Finland scored lowest on Embracing Complexity, with statistically significant differences with the other three countries.

Romania stands out in Acting for Sustainability, with ratings that are statistically significantly higher than the other three countries. Portugal follows next, with statistically significant differences with Spain and Finland.

Figure 11. GreenComp by country



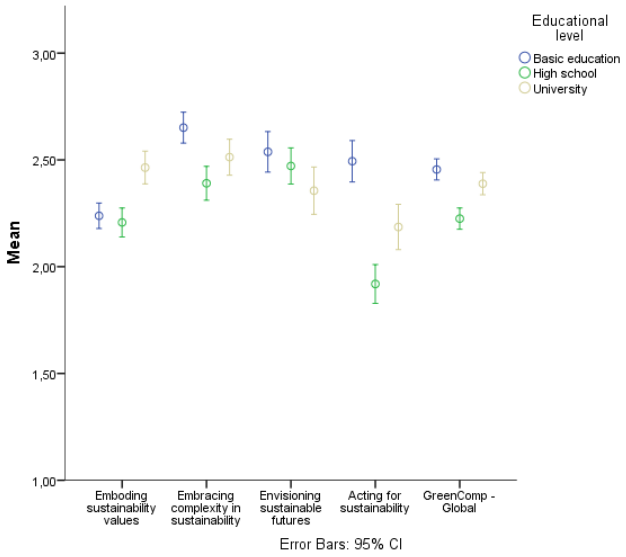
→ By educational level

There is also significant variance across educational levels.

If we look at the Global Index, we can see that basic education shows the highest values, followed by the universities, and the high schools ranking lowest. In fact, high schools present values that are statistically significantly lower than those for the other two educational levels.

Basic education rates particularly high on Embracing Sustainability Values and Acting for Sustainability, whereas universities stand out in Embodying Sustainability Values.
High schools rate significantly lower than others in all the areas of competence.

Figure 12. GreenComp by educational level



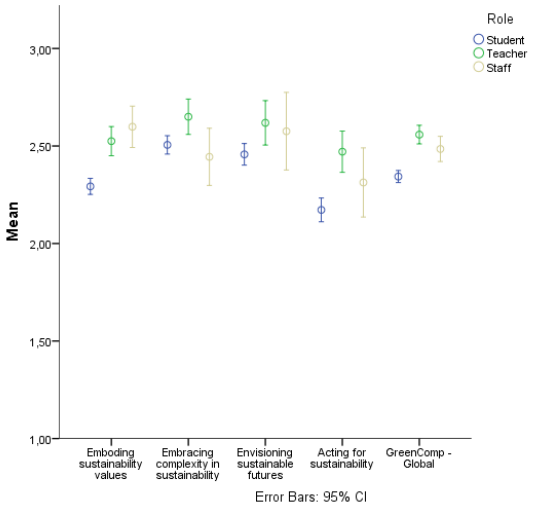
→ By educational profile

We also find significant differences between the educational profiles, with both teachers and staff scoring significantly higher than students on the GreenComp Global Index.

Teachers' ratings are significantly higher than students' in Embodying Sustainability Values, and also higher than staff in Embracing Complexity. On the other hand, staff scores higher than students in Embodying Sustainability Values.

In sum, teachers and staff present quite similar profiles, which, in turn, differ from that of the students.

Figure 13. GreenComp by educational profile

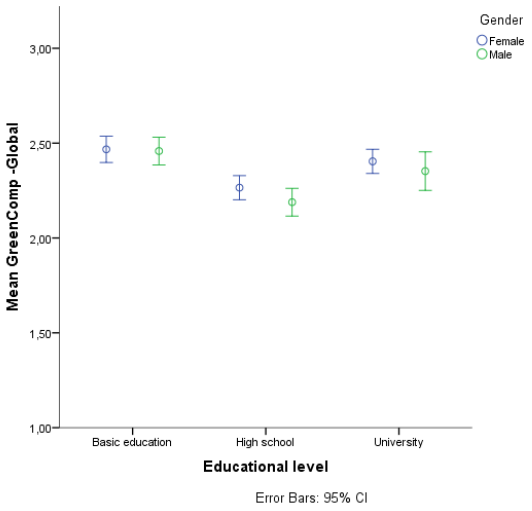


→ By gender

Figure 14 illustrates the differences by gender in the GreenComp global index. In general, males and females scored medium or high although females (mean of 2,43) scored slightly higher than males (mean of 2,33).

In basic education, both boys and girls get practically the same score although girls ' ratings are significantly higher than those of boys in Embracing Complexity. In high school, females present values that are statistically significantly higher than those of males in Embodying Sustainability Values and Embracing Complexity in sustainability. Finally, at universities, there were also significant differences in Embodying sustainability values.

Figure 14. GreenComp by gender



6. CONCLUSIONS

On the data collection:

→ **Lack of time** appeared as a crucial element in our study. Integrating the data-collection processes in the daily routines of our schools and universities was really difficult, especially at some DSs.

→ Consortium partners and individuals at our DSs were **strongly committed to the process** and always tried to find creative ways to overcome the lack of time.

On the empirical evidence:

Environmental awareness:

→ Overall we found remarkably self-declared positive attitudes towards sustainability Most participants at our DSs considered they were quite aware of and willing to act against climate change and towards sustainability.

Sustainable behaviour:

→ The great majority of our participant's (80%) perceived they had already introduced changes in their daily practices towards greater sustainability. However, Finland presented a quite different pattern, with a comparatively lower proportion of participants declaring they had changed (66%), and a comparatively high percentage of participants declaring they had not (15%).

→ Environmental awareness and positive attitudes towards sustainability are the perceived main drivers for becoming more sustainable in all countries and at all educational levels.

→ Self-declared barriers are more specific to countries and educational levels:

- By countries: the main motives for not changing habits in Finland and Spain were the perception that one's own lifestyle was already as sustainable as it could be, and that individual behaviours do not solve climate problems. In Finland, the perceived main barriers to behaviour change were the lack of time and knowledge, whereas in Spain, the lack of material resources, and in Romania the lack of support by friends and family.
- By educational levels: no one in Basic Education said they were not worried about sustainability problems or did not see the need to act. Basic Education childrens who had not changed but would like to do so, evoked the lack of means and knowledge as the main reasons for inaction. Among the 17% of the secondary school students that said they had not changed, the most perceived

common reasons were that their lifestyle was already sustainable as could be; the belief that individual behaviours do not make a difference; that it is too late already; or that climate concerns are unfounded. Those who would like to change but cannot referred mainly to lack of time or lack of support by friends and family. The 10% of the university students expressing that they had not changed also referred to their already sustainable lifestyle or to the lack of impact of individual behaviours.

GreenComp competences:

→ Our data shows high or very high scores on our GreenComp global index (2.39 over 3). Most of our participants perceived they had integrated sustainability as a key value in their daily lives, understood complexity and perceived they were able to envision sustainable futures, and were already acting for sustainability.

→ The area of competence with the lowest overall rating was Acting for Sustainability, mainly because of the comparatively lower values in Finland (1,95). Embodying sustainability values was another competence area showing relatively low scores.

Differences between countries:

→ There were statistically significant differences between countries, with Finland showing the lowest and Romania the highest values on many items. Spain and Portugal were in between the two, with Spain closer to Finland and Portugal closer to Romania.

→ Finland scored comparatively low on sustainable behaviour (i.e., willingness to make concrete lifestyle changes to become more sustainable) and in two of the GreenComp areas of competences: Embracing Complexity and Acting for Sustainability.

→ Spain scored the highest and Portugal the lowest on Environmental Awareness.

→ Romania presented the highest ratings in all the sustainable behaviour related areas.

Differences between educational levels:

→ There were statistically significant differences among educational levels.

→ Students from basic education most often stated they had changed their behaviours to become more sustainable. They also scored significantly higher on the GreenComp global index.

→ On the contrary, secondary school students showed the lowest ratings both in sustainable behaviours and in GreenComp.

→ University students presented an in-between profile, closer to the primary school students.

- **Gender and other attitudinal variables**

→ Overall, females showed higher ratings in Embodying Sustainability Values and in Embracing Complexity, with statistically significant differences between high schools and universities.

7. DISCUSSION

The short survey provides an initial overview of the current individual perceptions and expectations towards climate change and sustainability at our DSs. Taking this initial picture as the starting point, we will be able to track potential changes and, more importantly, to promote understanding of, and engagement with, our Roadmap.

The high-to-medium scores on our GreenComp global index would suggest a quite promising starting point in terms of the individual competences for sustainability (i.e., the inner personal qualities and abilities to engage, connect, envision and act). Our participants self-declared they are aware of the problem and willing to act. In fact, a great majority perceived they are already behaving sustainably, and no significant barriers to action were evoked.

However, for a number of reasons the kind of quantitative research carried out here entails significant **limitations**, which warrant caution, when interpreting the findings:

→ Our short survey capture participants' personal interpretations (what participants think and claim about their own skills and attitudes), which does not necessarily correspond to their objectively observable knowledge or their 'true' views and opinions concerning sustainability. In addition, this kind of survey cannot capture the potential gaps between 'what we think', 'what we say 'and 'what we do, and findings may also be distorted by a social desirability bias, whereby the participants provide answers that they believe are expected from (Lynch, 2002; Garfinkel, 1967; Goffman, 1969).

→ The samples of our surveys were not designed to be representative for our case study countries or demonstration sites.

→ Key contextual factors vary greatly between our case study countries and between the demonstration sites: this goes for example for environmental performance (e.g., transportation and recycling infrastructures), and for collective competences (institutional and organizational commitment and arrangements for sustainability).

In short, the remarkable high levels of perceived environmental awareness, GreenComp competences and commitment to sustainable behaviour may at least partly reflect participants' aspirations rather than their everyday habits and practices. Through our transdisciplinary and participatory approach, and more precisely through our Sustainability Competence Teams (SCTs) and Sustainability Competence Committees (SCCs), we will have the opportunity to further explore these potential gaps and overcome some of these constrains.

In spite of these limitations, the short survey does provide **useful insights** that help us **to orientate the next steps** of our transdisciplinary and participatory process at the DS. We should remember that this was, precisely, its main function.

Thus, on the one hand, the short survey identified differences and singularities that would require especial attention in the SCTs and the SCCs, such as:

→ In terms of competences: Acting for Sustainability appeared as the area that would require further attention in our SCTs and SCCs. Why is it so? What is the meaning of change in the different contexts?

→ In terms of countries: are Finns indeed less concerned and ready to act than citizens in the other three countries? Are the structural conditions and practices in Finland (e.g., access to and use of green spaces) so good that individual actions are not considered as relevant and urgent as elsewhere? What is the role of the social desirability bias?

→ In terms of educational levels: why are students at secondary schools comparatively less concerned and ready to act than basic education children and/or university students and personnel? Is the social desirability bias stronger at one educational level than at another?

→ …?

On the other hand, given that our short survey was designed before the Roadmap, more evidence will need to be generated to validate the Roadmap and stimulate transformational change. If we look at the different steps in the Roadmap, and more precisely at the suggested drivers and barriers, additional issues that could be dealt with in the SCTs and SCCs include:

→ Engagement: Skills for dialogue and listening, skills to facilitate value reflection processes and attitudes towards research.

→ Embracing: lifecycle thinking, critical assessment of personal thinking, and recognizing different kinds of sustainability problems in daily life.

→ Envisioning: intra- and interpersonal competences, creative thinking, and understanding the value and meaning of visioning.

→ Acting: Teamwork, attitudes towards wellbeing, and the ability to identify the impacts of one's own behaviour on a sustainable future.

The reflective and deliberative nature of our SCTs and SCCs can indeed help to assess this type of knowledge, skills and attitudes in the next steps of the project.

Another useful insight from the survey findings relates to its potential for inspiring reflection within the educational community on their existing levels of environmental awareness, sustainable behaviours and attitudes, and help the demonstrations sites to co-design the most suitable intervention measures.

Finally, we also need to keep in mind that the Roadmap does not exclusively relate to individual competences: collective competences and environmental performance are the two other pillars of the Roadmap. Findings on individual competences are to be integrated and understood within this framework. Importantly, the Roadmap is more

about the community and organisation than about the individual. Findings from the short survey indicate that the lack of time was considered as an important barrier. Decisions made at the community or the organisation in question are crucial in determining the amount of time that individuals have for different tasks and activities. In brief, collective-level decisions and solutions have a significant bearing on the individual-level problems and opportunities.

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ANNEX A. SHORT SURVEY

ADULTS VERSION

Section A
First, a few questions concerning **your environmental attitudes/behaviours**. *If you do not have an opinion, please mark 'Don't' know'. If you do not understand the question, please leave the answer blank (= No answer).*

	Always	Usually	Some-times	Rarely	Never	Don't know
A1 ...I try consume less electricity / try to save more energy.	☐	☐	☐	☐	☐	☐
A2 ... I take into account energy efficiency as a criterion when purchasing household appliances and electronic equipment.	☐	☐	☐	☐	☐	☐
A3 ...I use water sparingly, and I try to reduce my consumption of water.	☐	☐	☐	☐	☐	☐
A4 ...I try generate less waste.	☐	☐	☐	☐	☐	☐
A5 ...I separate my household waste and thus reduce the use of new materials.	☐	☐	☐	☐	☐	☐
A6 ...I try to deposit each waste in the appropriate container.	☐	☐	☐	☐	☐	☐
A7 ...I separate food waste and other organic matter from the rest of the waste.	☐	☐	☐	☐	☐	☐
A8 ... If I feel cold at home, I first put on a sweater/jacket rather than turning on the heating.	☐	☐	☐	☐	☐	☐
A9 ...I try do more trips by bike or on foot (instead of travelling by car or other type of private transport).	☐	☐	☐	☐	☐	☐
A10 ... I try to use public transport more often (instead of travelling by car or other type of private transport).	☐	☐	☐	☐	☐	☐
A11 ... I try to spend more time in green spaces (including nature, forests, parks, gardens, etc.).	☐	☐	☐	☐	☐	☐
A12 ... I try to reduce my meat consumption.	☐	☐	☐	☐	☐	☐
A13 ... I try to consume less processed / precooked foods.	☐	☐	☐	☐	☐	☐
A14 ... Whenever I can, I buy products without packaging.	☐	☐	☐	☐	☐	☐
A15 … I reflect carefully what I need and try not to buy unnecessary things.	☐	☐	☐	☐	☐	☐

Section B

Recently (e.g., during the past year), have you changed your habits or behaviour towards what you would describe as more "sustainable"?

(Please tick only one box)

***If YES**: (Please select the most appropriate answer below) (only one)*

- ☐ *Yes, because I have decided so, out of personal conviction.*
- ☐ *Yes, I had no choice because my family has persuaded me to do so.*
- ☐ *Yes, I had no choice because my friends have persuaded me to do so.*
- ☐ *Yes, I had no choice because the school has persuaded me / I have been taught at school to do so.*
- ☐ *Yes, I had no choice because (other: _____)*

***If NOT**: (Please select the most appropriate answer below) (only one)*

NO, not at all:

- ☐ *No, because my lifestyle is already as sustainable as it could ever be.*
- ☐ *No, because I think that concerns for climate change and sustainability are unfounded.*
- ☐ *No, I don't see a reason to change because I think it is too late – climate and sustainability catastrophes are inevitable.*
- ☐ *No, I don't see a reason to change because the behaviour of a single person does almost nothing to improve sustainability or solve climate problems.*

No, although I would like:

- ☐ *No. I would like to change but I can't because I don't have enough knowledge.*
- ☐ *No. I would like to change but I can't because I do not have the adequate means (material).*
- ☐ *No. I would like to change but I can't because I don't have enough time.*
- ☐ *No. I would like to change but I can't because I don't have the adequate support from my nearest (family, friends, colleagues, classmates, etc.).*
- ☐ *No. I would like to change but I can't because (other: _____)*

Section C

Below we formulate claims **about the relation between humans, development and nature**. Could you tell us to what extent do you agree or disagree with each of them?

If you do not have an opinion, please mark 'Don't' know'. If you do not understand the question, please leave the answer blank (= No Answer).

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Don't know
C1. The negative impacts of human activities on nature can always be solved through more and better technological innovations.	☐	☐	☐	☐	☐	☐
C2. Preserving the ecosystems for future generations is more important than ensuring the ability of future generations to generate economic welfare.	☐	☐	☐	☐	☐	☐
C3. Polluting activities should be allowed as long as the polluters pay and compensate the full cost of the damage done to people and ecosystems.	☐	☐	☐	☐	☐	☐
C4. Our wellbeing, health, and security depend on the wellbeing of nature.	☐	☐	☐	☐	☐	☐
C5. People are part of nature and the divide between human and ecological systems makes little sense.	☐	☐	☐	☐	☐	☐
C6. Without gender equality, it will be difficult to achieve sustainable development.	☐	☐	☐	☐	☐	☐
C7. Respect for cultural diversity is necessary for achieving sustainable development	☐	☐	☐	☐	☐	☐
C8. Sustainable development requires that people reflect on what is needed for a good life and happiness.	☐	☐	☐	☐	☐	☐
C9. I usually like to examine problems from various points of view	☐	☐	☐	☐	☐	☐
C10. I am able to imagine a better and more sustainable future than the climate catastrophes announced by the media.	☐	☐	☐	☐	☐	☐
C11. I try to prepare myself for a life in an increasingly uncertain future world.	☐	☐	☐	☐	☐	☐
C12. All waste may be a potentially reusable resource.	☐	☐	☐	☐	☐	☐
C13. Decision-makers (politicians, governments) should support environmental protection and take care of all the people's needs even if this may pose limitations for their countries' businesses or industry.	☐	☐	☐	☐	☐	☐
C14. I volunteer to work with local environmental groups.	☐	☐	☐	☐	☐	☐
C15. I participate in collective student activities in my school.	☐	☐	☐	☐	☐	☐

Section D

D1. How long does it usually take for you to get from home to school?
(Please tick only one box)

- ☐ Less than 15 minutes
- ☐ 15 - 30 minutes
- ☐ 31 - 60 minutes
- ☐ 61 - 90 minutes
- ☐ More than 90 minutes

D2. Do you travel to school by…

	Never	Sometimes	Almost always	Always
Foot	☐	☐	☐	☐
Bicycle	☐	☐	☐	☐
Bus	☐	☐	☐	☐
Metro	☐	☐	☐	☐
Train	☐	☐	☐	☐
Tram	☐	☐	☐	☐
Boat	☐	☐	☐	☐
Car	☐	☐	☐	☐
Motorcycle	☐	☐	☐	☐
Other _____	☐	☐	☐	☐

D3. Do you practice car sharing?

- ☐ *Yes (If yes: Average number of passengers on car sharing: _____)*
- ☐ *No*

D4. Do you use public transport for weekend trips with your family?

- ☐ *Yes*
- ☐ *No*

D5: What is the approximate distance from your house to the school? (Km)

_____

D6: In an average month, how much money do you spend on travelling between home and school?

_____

Section E

E1. What grade are you in? _____

E2. In which year were you born?

- Year _____

E3 Gender:

☐ *Female*

☐ *Male*

☐ *Non-binary / Other*

E4. Overall, how satisfied are you with your life as a whole?
(Please tick only one box)

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

0 1 2 3 4 5 6 7 8 9 10

Not at all satisfied — Completely satisfied

E5. Overall, how concerned are you about climate change?
(Please tick only one box)

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

0 1 2 3 4 5 6 7 8 9 10

Not at all worried — Extremely worried

E6. Overall, how concerned are you about the energy crises?
(Please tick only one box)

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

0 1 2 3 4 5 6 7 8 9 10

Not at all worried — Extremely worried

E7. In what country were you and your parents born?
(Please write down the name of the countries in the left column and then tick only one box in each other column)

	You	Mother	Father
Country A: _____	☐	☐	☐
Country B: _____	☐	☐	☐
Country C: _____	☐	☐	☐

E8. Who do you live with at home?

(Please tick one box on each row)

	Yes	No
Your mother	☐	☐
Your father	☐	☐
Your grandmother	☐	☐
Your grandfather	☐	☐
Your siblings (including step-sisters or step brothers)	☐	☐
Other relatives (e.g., aunts, uncles, cousins)	☐	☐
Your child / children	☐	☐

E9. What is the highest level of schooling completed by your parents?

(Please tick only one box in each column)

	Your mother	**Your father**
Early childhood education ('less than primary' for educational attainment)	☐	☐
Compulsory education (Primary education and Lower secondary education)	☐	☐
Upper secondary education and/or Post-secondary non-tertiary education	☐	☐
Higher education (Bachelor's or equivalent level and/or Master's or equivalent level)	☐	☐
Doctoral or equivalent level	☐	☐

E10. What are your parents' professions?

(Please tick only one box)

	Your mother	**Your father**
No job (i.e. she is not working for pay)	☐	☐
Armed forces (e.g., captain, lieutenant, sergeant, corporal, private)	☐	☐
Labourer (e.g., hotel or office cleaner, farm labourer, mining labourer, factory labourer, kitchen helper, newspaper vendor, mail carrier)	☐	☐
Machine operator (e.g., miner, paper products machine operator, sewing machine operator, dry-cleaning machine operator)	☐	☐
Craft and trades worker (e.g., house builder, dress maker, jewellery maker, building painter, mechanic, handicraft worker)	☐	☐
Skilled worker (e.g., cattle or dairy farmer, fisher, gardener)	☐	☐
Services and sales worker (e.g., cook, waitress, hairdresser, street food vendor, grocer, store cashier, hospital orderly)	☐	☐
Clerical worker (e.g., secretary, data entry clerk, bank teller, hotel receptionist)	☐	☐
Technical worker (e.g., building inspector, nursing aide, bookkeeper, chef)	☐	☐
Professional (e.g., engineer, nurse, doctor, school teacher, accountant, computer programmer, lawyer)	☐	☐
Manager (e.g., government official, sales manager, building construction supervisor, hotel or restaurant manager)	☐	☐

KIDS VERSION

Section A

First, a few questions concerning **your environmental attitudes/behaviours**.

If you do not have an opinion, please mark 'Don't' know'. If you do not understand the question, please leave the answer blank (= No answer).

		Always	Some-times	Never	Don't know ?
	*AK1 ...I try reduce my electricity consumption*	☐	☐	☐	☐
	*AK2 ...I use water sparingly, and try to reduce my water consumption.*	☐	☐	☐	☐
	*AK3 ...I try reduce the amount of waste that I produce.*	☐	☐	☐	☐
	*AK4 ...I separate my household waste and thus reduce the use of new materials.*	☐	☐	☐	☐
	*AK5 ...I try to deposit each type of waste in the appropriate container.*	☐	☐	☐	☐
	*AK6 ...I separate food waste and other organic matter from other types of waste.*	☐	☐	☐	☐
	*AK7 ... If I feel cold at home, I first put on a sweater/jacket rather than turning up the heat.*	☐	☐	☐	☐
	*AK8 ...I try do more trips by bike or on foot (instead of travelling by car or other type of individual transport).*	☐	☐	☐	☐
	*AK9 ... I try to use public transport more often (instead of travelling by car or other type of private transport).*	☐	☐	☐	☐
	*AK10 ... I try to spend more time in green spaces (nature, forests, parks, gardens, etc.).*	☐	☐	☐	☐
	*AK11 ... I try to reduce my meat consumption.*	☐	☐	☐	☐
	*AK12 ... I reflect carefully what I need and try not to buy unnecessary things.*	☐	☐	☐	☐

Section B

BK1. In recent times (e.g., during the past year), have you changed your behaviours to make them more sustainable and respectful of the environment?

(Please tick only one box)

Yes

- ☐ *Yes, because I have decided to do so out of personal conviction. I think it is important that people think about protecting nature and act for it.*
- ☐ *Yes, I try to do things that help protect the nature, because my family, friends or schoolfriends have persuaded me to do so.*

Not

- ☐ *No, because I am not worried about nature, pollution or climate change, and therefore don't see the need to do things in favour of nature protection.*
- ☐ *No. I would like to protect nature, and save water and electricity, but I don't know how.*
- ☐ *No. I would like to change, but I cannot, because I don't have enough time or the necessary means to do so (for instance, for separating waste we do not have recycling bins at home or at school; or I don't have a bike; etc.).*
- ☐ *No. I would like to change but I can't because I don't have the adequate support from my nearest (family, friends, colleagues, classmates, etc.).*

Section C

Below we formulate claims **about the relation between humans and nature**. Please tell us to what extent you agree or disagree with each claim.

If you do not have an opinion, please mark 'Don't' know'. If you do not understand the question, please leave the answer blank (= No Answer).

	Agree	Neutral	Disagree	Don't know
CK1. If we have more and better technology, we can protect the nature, save water and energy, and reduce pollution and waste.	☐	☐	☐	☐
CK2. Preserving nature for your possible children and grandchildren is more important than ensuring they earn more money and are able to buy and consume more.	☐	☐	☐	☐
CK3. Polluting activities should be allowed as long as the polluters pay and compensate the full cost of the damage done to people and nature.	☐	☐	☐	☐
CK4. Our wellbeing, health, and safety depend on the wellbeing of nature.	☐	☐	☐	☐
CK5. The divide between humans and nature makes little sense, because humans are a part of nature.	☐	☐	☐	☐
CK6. Equal treatment of men and women is important for achieving sustainable development.	☐	☐	☐	☐
CK7. People should reflect on what is needed for a good life and happiness and avoid buying unnecessary stuff.	☐	☐	☐	☐
CK8. I can imagine a better and more sustainable future despite the worrying news and information about climate change.	☐	☐	☐	☐
CK9. All waste can be reused somehow.	☐	☐	☐	☐
CK10. Politicians and governments should support environmental protection even if this may cause harm or limitations for their countries' business and industry.	☐	☐	☐	☐
CK11. I volunteer to work with local environmental groups.	☐	☐	☐	☐
CK12. I participate in collective student activities in my school.	☐	☐	☐	☐

Section D

DK1. How long does it usually take for you to get from home to school?
(Please tick only one box)

- ☐ Less than 15 minutes
- ☐ 15 - 30 minutes
- ☐ 31 - 60 minutes
- ☐ 61 - 90 minutes
- ☐ More than 90 minutes

DK2. Do you travel to school by…

	Never	Sometimes	Almost always	Always
Foot	☐	☐	☐	☐
Bicycle	☐	☐	☐	☐
Bus	☐	☐	☐	☐
Metro	☐	☐	☐	☐
Train	☐	☐	☐	☐
Tram	☐	☐	☐	☐
Boat	☐	☐	☐	☐
Car	☐	☐	☐	☐
Motorcycle	☐	☐	☐	☐
Other _____	☐	☐	☐	☐

DK3. Do you practice car sharing?

- ☐ *Yes*
  - *(If yes: Average number of passengers on car sharing: _____)*
- ☐ *No*

DK4. Do you use public transport for weekend outings with your family?

- ☐ *Yes*
- ☐ *No*

DK5: What is the approximate distance (in km) from your hole to your school?

_____

DK6: Approximately how much money per day do you spend for travelling between home and school?

_____

Section E

EK1. What grade are you in? _____

EK2. In which year were you born?

- Year _____

EK3 Gender:

☐ *Female*
☐ *Male*
☐ *Non-binary / Other*

EK5. Overall, how satisfied are you with your life as a whole?
(Please tick only one box)

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
0 1 2 3 4 5 6 7 8 9 10

Not at all satisfied  Completely satisfied 

EK6. Overall, how worried are you about climate change?
(Please tick only one box)

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
0 1 2 3 4 5 6 7 8 9 10

Not at all worried — Extremely worried

EK7. In what country were you and your parents born?
(Please write down the name of the countries in the left column and then tick only one box in each other column)

	You	Mother	Father
Country A: _____	☐	☐	☐
Country B: _____	☐	☐	☐
Country C: _____	☐	☐	☐

EK8. With whom do you live, at home?

(Please tick one box on each row)	Yes	No
Your mother _____	☐	☐
Your father _____	☐	☐

Your grandmother _____	☐	☐
Your grandfather _____	☐	☐
Your siblings (including step-sisters or step brothers) ___	☐	☐
Other relatives (e.g., aunts, uncles, cousins) _____	☐	☐
Your child / children _____	☐	☐

ANNEX B. TABLES

ENVIRONMENTAL AWARENESS

By country

	Country							
	Finland		Portugal		Romania		Spain	
	Mean	Count	Mean	Count	Mean	Count	Mean	Count
Energy	2,34	(363)	2,35	(97)	2,48	(65)	2,47	(267)
Water	2,30	(363)	2,55	(97)	2,28	(65)	2,52	(267)
Waste	2,66	(363)	2,27	(97)	2,37	(65)	2,60	(267)
Transport	2,38	(363)	1,98	(97)	2,14	(65)	2,24	(267)
Green Spaces	1,87	(363)	2,29	(97)	2,50	(65)	2,25	(267)
Consumption & green procurement	2,04	(363)	2,14	(97)	2,24	(65)	2,18	(267)
Environmental awareness – Global	2,38	(363)	2,24	(97)	2,36	(65)	2,43	(267)

Comparisons of Column Means[a]

	Country			
	Finland	Portugal	Romania	Spain
	(A)	(B)	(C)	(D)
Energy				
Water		A		A
Waste	B C			B C
Transport	B C			B
Green Spaces		A	A	A
Consumption & green procurement				A
Environmental awareness – Global				B

Results are based on two-sided tests assuming equal variances with significance level ,05. For each significant pair, the key of the smaller category appears under the category with larger mean.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

By educational level

	Educational level					
	Basic education		High school		University	
	Mean	Count	Mean	Count	Mean	Count
Energy	2,41	(315)	2,31	(314)	2,56	(163)
Water	2,45	(315)	2,28	(314)	2,54	(163)
Waste	2,58	(315)	2,56	(314)	2,60	(163)
Transport	2,15	(315)	2,28	(314)	2,45	(163)
Green Spaces	2,27	(315)	1,85	(314)	2,26	(163)
Consumption & green procurement	2,22	(315)	1,96	(314)	2,24	(163)
Environmental awareness – Global	2,41	(315)	2,30	(314)	2,48	(163)

Comparisons of Column Means[a]

	Educational level		
	Basic education	High school	University
	(A)	(B)	(C)
Energy			B
Water	B		B
Waste			
Transport		A	A B
Green Spaces	B		B
Consumption & green procurement	B		B
Environmental awareness – Global	B		B

Results are based on two-sided tests assuming equal variances with significance level ,05. For each significant pair, the key of the smaller category appears under the category with larger mean.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

By educational profile

	Role					
	Student		Teacher		Staff	
	Mean	Count	Mean	Count	Mean	Count
Energy	2,40	(792)	2,88	(114)	2,85	(59)
Water	2,40	(792)	2,88	(114)	2,83	(59)
Waste	2,58	(792)	2,76	(114)	2,74	(59)
Transport	2,27	(792)	2,21	(114)	2,17	(59)
Green Spaces	2,10	(792)	2,72	(114)	2,51	(59)
Consumption & green procurement	2,12	(792)	2,51	(114)	2,55	(59)
Environmental awareness – Global	2,38	(792)	2,63	(114)	2,59	(59)

Comparisons of Column Means[a]

	Role		
	Student	Teacher	Staff
	(A)	(B)	(C)
Energy		A	A
Water		A	A
Waste		A	A
Transport			
Green Spaces		A	A
Consumption & green procurement		A	A
Environmental awareness – Global		A	A

Results are based on two-sided tests assuming equal variances with significance level ,05. For each significant pair, the key of the smaller category appears under the category with larger mean.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

SUSTAINABLE BEHAVIOUR: DRIVERS & BARRIERS

By country

Kids	Country							
	Finland		Portugal		Romania		Spain	
	%	Count	%	Count	%	Count	%	Count
Yes, because I have decided to do so out of personal conviction. I think it is important that people think about protecting nature and act for it.	12,8%	(40)	54,3%	(50)	29,3%	(17)	32,4%	(83)
Yes, I try to do things that help protect the nature, because my family, friends or school friends have persuaded me to do so.	1,3%	(4)	18,5%	(17)	3,4%	(2)	9,4%	(24)
No, because I am not worried about nature, pollution or climate change, and therefore don't see the need to do things in favour of nature protection	0,0%	(0)	0,0%	(0)	0,0%	(0)	0,0%	(0)
No. I would like to protect nature, and save water and electricity, but I don't know how.	1,0%	(3)	1,1%	(1)	1,7%	(1)	2,7%	(7)
No. I would like to change, but I cannot, because I don't have enough time or the necessary means to do so	1,9%	(6)	8,7%	(8)	0,0%	(0)	1,2%	(3)
No. I would like to change but I can't because I don't have the adequate support from my nearest	0,6%	(2)	0,0%	(0)	0,0%	(0)	0,4%	(1)

Adults	Country							
	Finland		Portugal		Romania		Spain	
	%	Count	%	Count	%	Count	%	Count
Yes, because I have decided so, out of personal conviction	43,3%	(135)	17,4%	(16)	51,7%	(30)	33,2%	(85)
Yes, I had no choice because my family has persuaded me to do so	6,4%	(20)	0,0%	(0)	1,7%	(1)	7,0%	(18)
Yes, I had no choice because my friends have persuaded me to do so	0,0%	(0)	0,0%	(0)	1,7%	(1)	0,0%	(0)
Yes, I had no choice because the school has persuaded me. I have been taught at school to do so	0,6%	(2)	0,0%	(0)	5,2%	(3)	1,6%	(4)
Yes, I had no choice because: other	1,9%	(6)	0,0%	(0)	0,0%	(0)	0,0%	(0)
No, because my lifestyle is already as sustainable as it could ever be	6,7%	(21)	0,0%	(0)	1,7%	(1)	3,1%	(8)
No, because I think that concerns for climate change and sustainability are unfounded	2,2%	(7)	0,0%	(0)	0,0%	(0)	0,0%	(0)
No, because I think it is too late. Climate and sustainability catastrophes are inevitable	0,3%	(1)	0,0%	(0)	0,0%	(0)	0,4%	(1)

No, because the behaviour of a single person does almost nothing to improve sustainability or solve climate problems	6,1%	(19)	0,0%	(0)	1,7%	(1)	2,7%	(7)
No, I would like to change but I can t because I don t have enough knowledge	2,6%	(8)	0,0%	(0)	0,0%	(0)	0,8%	(2)
No, I would like to change but I can t because I do not have the adequate means (material)	1,0%	(3)	0,0%	(0)	0,0%	(0)	3,9%	(10)
No, I would like to change but I can t because I don t have enough time	6,4%	(20)	0,0%	(0)	0,0%	(0)	0,4%	(1)
No, I would like to change but I can t because I don t have the adequate support from my nearest	0,0%	(0)	0,0%	(0)	1,7%	(1)	0,4%	(1)
No, I would like to change but I can t because: other	4,8%	(15)	0,0%	(0)	0,0%	(0)	0,4%	(1)

By educational level

	Basic education	
	Column N %	Count
Yes, because I have decided to do so out of personal conviction. I think it is important that people think about protecting nature and act for it.	70,6%	(190)
Yes, I try to do things that help protect the nature, because my family, friends or school friends have persuaded me to do so.	17,5%	(47)
No, because I am not worried about nature, pollution or climate change, and therefore don’t see the need to do things in favour of nature protection	0,0%	(0)
No. I would like to protect nature, and save water and electricity, but I don’t know how.	4,5%	(12)
No. I would like to change, but I cannot, because I don't have enough time or the necessary means to do so	6,3%	(17)
No. I would like to change but I can’t because I don’t have the adequate support from my nearest	1,1%	(3)

	High school		University	
	Column N %	Count	Column N %	Count
Yes, because I have decided so, out of personal conviction	60,7%	(210)	67,8%	(145)
Yes, I had no choice because my family has persuaded me to do so	6,4%	(22)	7,9%	(17)
Yes, I had no choice because my friends have persuaded me to do so	0,0%	(0)	,5%	(1)
Yes, I had no choice because the school has persuaded me. I have been taught at school to do so	1,4%	(5)	1,9%	(4)

Yes, I had no choice because: other	1,7%	(6)	0,0%	(0)
No, because my lifestyle is already as sustainable as it could ever be	7,8%	(27)	7,9%	(17)
No, because I think that concerns for climate change and sustainability are unfounded	2,0%	(7)	0,0%	(0)
No, because I think it is too late. Climate and sustainability catastrophes are inevitable	,3%	(1)	,9%	(2)
No, because the behaviour of a single person does almost nothing to improve sustainability or solve climate problems	5,8%	(20)	3,3%	(7)
No, I would like to change but I can t because I don t have enough knowledge	2,3%	(8)	,9%	(2)
No, I would like to change but I can t because I do not have the adequate means	1,4%	(5)	5,6%	(12)
No, I would like to change but I can t because I don t have enough time	6,1%	(21)	,5%	(1)
No, I would like to change but I can t because I don t have the adequate support from my nearest	,3%	(1)	,9%	(2)
No, I would like to change but I can t because: other	3,8%	(13)	1,9%	(4)

By educational profile

	Teacher		Staff	
	Column N %	Count	Column N %	Count
Yes, because I have decided so, out of personal conviction	79,5%	(89)	77,2%	(44)
Yes, I had no choice because my family has persuaded me to do so	0,9%	(1)	1,8%	(1)
Yes, I had no choice because: other	1,8%	(2)	0,0%	(0)
No, because my lifestyle is already as sustainable as it could ever be	13,4%	(15)	10,5%	(6)
No, because I think it is too late. Climate and sustainability catastrophes are inevitable	0,0%	(0)	1,8%	(1)
No, I would like to change but I can t because I do not have the adequate means	1,8%	(2)	5,3%	(3)
No, I would like to change but I can t because I don t have enough time	1,8%	(2)	1,8%	(1)
No, I would like to change but I can t because I don t have the adequate support from my nearest	0,0%	(0)	1,8%	(1)
No, I would like to change but I can t because: other	0,9%	(1)	0,0%	(0)

SUSTAINABILITY COMPETENCES (GREENCOMP)

By country

	Country							
	Finland		Portugal		Romania		Spain	
	Mean	Count	Mean	Count	Mean	Count	Mean	Count
Embodying sustainability values	2,30	(363)	2,29	(97)	2,19	(65)	2,37	(267)
Embracing complexity in sustainability	2,43	(363)	2,63	(97)	2,68	(65)	2,65	(267)
Envisioning sustainable futures	2,46	(363)	2,58	(97)	2,58	(65)	2,45	(267)
Acting for sustainability	1,95	(363)	2,46	(97)	2,73	(65)	2,20	(267)
GreenComp -Global	2,24	(363)	2,41	(97)	2,53	(65)	2,39	(267)

Comparisons of Column Means[a]

	Country			
	Finland	Portugal	Romania	Spain
	(A)	(B)	(C)	(D)
Embodying sustainability values				C
Embracing complexity in sustainability		A	A	A
Envisioning sustainable futures				
Acting for sustainability		A D	A B D	A
GreenComp -Global		A	A D	A

Results are based on two-sided tests assuming equal variances with significance level ,05. For each significant pair, the key of the smaller category appears under the category with larger mean.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

By educational level

	Educational level					
	Basic education		High school		University	
	Mean	Count	Mean	Count	Mean	Count
Embodying sustainability values	2,27	(315)	2,26	(314)	2,46	(163)
Embracing complexity in sustainability	2,69	(315)	2,42	(314)	2,56	(163)
Envisioning sustainable futures	2,55	(315)	2,46	(314)	2,42	(163)
Acting for sustainability	2,47	(315)	1,95	(314)	2,15	(163)
GreenComp -Global	2,46	(315)	2,23	(314)	2,39	(163)

Comparisons of Column Means[a]

	Educational level		
	Basic education	High school	University
	(A)	(B)	(C)
Embodying sustainability values			A B
Embracing complexity in sustainability	B C		B
Envisioning sustainable futures	C		
Acting for sustainability	B C		B
GreenComp -Global	B		B

Results are based on two-sided tests assuming equal variances with significance level ,05. For each significant pair, the key of the smaller category appears under the category with larger mean.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

By educational profile

	Role					
	Student		Teacher		Staff	
	Mean	Count	Mean	Count	Mean	Count
Embodying sustainability values	2,31	(792)	2,56	(114)	2,61	(59)
Embracing complexity in sustainability	2,56	(792)	2,66	(114)	2,44	(59)
Envisioning sustainable futures	2,48	(792)	2,60	(114)	2,52	(59)
Acting for sustainability	2,17	(792)	2,44	(114)	2,38	(59)
GreenComp -Global	2,34	(792)	2,56	(114)	2,48	(59)

Comparisons of Column Means[a]

	Role		
	Student	Teacher	Staff
	(A)	(B)	(C)
Embodying sustainability values		A	A
Embracing complexity in sustainability		C	
Envisioning sustainable futures			
Acting for sustainability		A	
GreenComp -Global		A	A

Results are based on two-sided tests assuming equal variances with significance level ,05. For each significant pair, the key of the smaller category appears under the category with larger mean.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

By gender

Basic education	Gender			
	Female		Male	
	Mean	Count	Mean	Count
Embodying sustainability values	2,30	(161)	2,25	(139)
Embracing complexity in sustainability	2,74	(161)	2,63	(139)
Envisioning sustainable futures	2,55	(161)	2,57	(139)
Acting for sustainability	2,51	(161)	2,46	(139)
GreenComp -Global	2,47	(161)	2,46	(139)

Comparisons of Column Means[a]

Basic education	Gender	
	Female	Male
	(A)	(B)
Embodying sustainability values		
Embracing complexity in sustainability	B	
Envisioning sustainable futures		
Acting for sustainability		
GreenComp -Global		

Results are based on two-sided tests assuming equal variances with significance level ,05. For each significant pair, the key of the smaller category appears under the category with larger mean.

a. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

High school	Gender			
	Female		Male	
	Mean	Count	Mean	Count
Embodying sustainability values	2,36	(163)	2,18	(147)
Embracing complexity in sustainability	2,52	(163)	2,37	(147)
Envisioning sustainable futures	2,41	(163)	2,38	(147)
Acting for sustainability	2,00	(163)	1,91	(147)
GreenComp -Global	2,29	(163)	2,19	(147)

Comparisons of Column Means[a,b]

High school	Gender	
	Female	Male
	(A)	(B)
Embodying sustainability values	B	
Embracing complexity in sustainability	B	
Envisioning sustainable futures		
Acting for sustainability		
GreenComp -Global		

Results are based on two-sided tests assuming equal variances with significance level ,05. For each significant pair, the key of the smaller category appears under the category with larger mean.

a. Educational level = High school

b. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

University	Gender			
	Female		Male	
	Mean	Count	Mean	Count
Embodying sustainability values	2,55	(102)	2,31	(57)
Embracing complexity in sustainability	2,66	(102)	2,64	(57)
Envisioning sustainable futures	2,45	(102)	2,59	(57)
Acting for sustainability	2,18	(102)	2,09	(57)
GreenComp -Global	2,49	(102)	2,42	(57)

Comparisons of Column Means[a,b]

University	Gender	
	Female	Male
	(A)	(B)
Embodying sustainability values	B	
Embracing complexity in sustainability		
Envisioning sustainable futures		
Acting for sustainability		
GreenComp -Global		

Results are based on two-sided tests assuming equal variances with significance level ,05. For each significant pair, the key of the smaller category appears under the category with larger mean.

a. Educational level = University

b. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.