



D4.4

Compilation of measures co-designed by the educational communities and presented at school and university events











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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.

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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, behavioural, and organisational 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, organisational 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 organisational 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 maximises the broad adoption and applicability of the ECF for the required transformational change towards sustainability.



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1. EXECUTIVE SUMMARY

D4.4. reports on the process of co-designing interventions (measures) to foster sustainability and strengthen sustainability competences in the educational institutions participating in the ECF4CLIM project, at our demonstration sites (DS). We describe the participatory process followed to co-design the measures in question, the demonstration sites where the co-design processes were implemented, and the measures agreed upon in each institution in question. These measures are classified according to the categories of our European Competence Framework for a low carbon economy and sustainability through education, our “roadmap for sustainable education” (D3.3).

The co-design process relies on our **hybrid participatory approach**, partially based on the STAVE tool (Systematic Tool for Behavioural Assumption, Validation and Exploration), which includes elements of research and elements of engagement (Horlick-Jones and Prades, 2014; Espluga et al, 2017), and allows the educational community to jointly identify, understand, assess, and evaluate their own sustainability-related competences and obstacles to improvement. To engage students, teachers, and administrative staff, Sustainability Competence Teams (SCT) were set up at all our demonstration sites. To engage the wider educational community, Sustainability Competence Committees (SCC) were set up, integrating additional actors from the DSs (school directors, sustainability managers, etc.) and other external actors (NGOs, local authorities, etc.). Around 325 representatives from our demonstration sites participated in our SCTs and SCCs.

Our demonstration sites comprise **13 educational institutions** from Finland, Portugal, Romania and Spain, including in each country one primary school (basic education), one secondary school (high school), and one university. An exception is Romania, where two primary schools serve as DSs – one in an urban and another in a rural area.

A total of **159 interventions** were co-designed to empower and promote sustainability at our demonstration sites. The specific measures in Finland, Portugal, Romania, and Spain aim to initiate various types of positive change:

- Measures to promote the **change in the conditions (73 measures)**: targeted at the environmental performance (e.g., equipment, infrastructure, and introduction of methods for monitoring issues such as water, waste, energy, green spaces, and mobility)
- Measures to promote **change in the system (52)**: targeted at the collective competences (pedagogical measures, support for sustainability groups, changes in curricula, cultural and organisational modifications, strategic plans, etc.)
- Measures to promote **change in the people (34)**: targeted at the individual competences (e.g., information and awareness campaigns and training addressed to both students and teachers)

In addition, some interventions are designed to link the three dimensions.



All along the implementation and monitoring process in our next work package, WP5, special attention will be paid to the ways in which the selected measures relate to the four steps in **our roadmap: engagement, connections, visions, and actions.**

Finally, significant **challenges for participatory research in educational settings** deserve being highlighted: substantial time and resource constraints at the DSs; frequent changes of contact persons at the DSs (difficulties to retain committed individuals); limitations posed by other educational commitments, requirements, and schedules. To overcome such challenges, flexibility in the application of the participatory techniques and tools is crucial.



2. OBJECTIVES

The objective of this deliverable is to report on the process of co-designing intervention measures to enhance sustainability and promote sustainability competences in the educational institutions (demonstration sites) participating in the ECF4CLIM project.

This document first describes the participatory process followed to co-design the measures in question. Secondly, it presents the demonstration sites (DS) where the co-design processes were implemented. Thirdly, the measures agreed upon in each institution (demonstration site) are indicated. In the last section, these measures are classified according to the categories of our European Competence Framework for a low carbon economy and sustainability through education, our “road-map for sustainable education” (D3.3). The roadmap outlines four steps, each containing a description of the essential aspects, reflective questions, enablers, and tools for overcoming the constraints to promoting sustainability in education.

The definition of measures to empower citizens and promote collective and individual sustainable competences drew on the findings from our baseline assessment in in Task 4.1 (Collective competences), 4.2 (Individual competences) and 4.3 (Environmental performance). The proposed solutions were co-designed through a hybrid participatory approach engaging students, teachers, administrative staff, scientific and non-academic practitioners, NGOs, other key stakeholders, and public authorities. The solutions include structural/environmental interventions, organizational measures, and measures designed to influence behaviour.

3. METHODOLOGY

The methodologies in the ECF4CLIM project are rooted in the traditions of participatory action research (Kemmis et al. 2017), practitioner research (Heikkinen et al. 2020), and citizen science.

The ECF4CLIM hybrid participatory approach, partially based on the STAVE tool (Systematic Tool for Behavioural Assumption, Validation and Exploration), that includes elements of research and elements of engagement (Horlick-Jones and Prades 2014; Espluga et al. 2016; Prades et al. 2017), allows the educational community to jointly identify, understand, assess, and evaluate their own sustainability-related competences and obstacles to improvement. The communities engage in joint deliberation on how to promote sustainable individual and collective behaviours, and to jointly evaluate the outcomes of the learning experience. This experiential learning process will empower the broader educational community to take steps towards a transformational change for a more sustainable future.

3.1. Participative-deliberative groups and actions

Based in the STAVE approach, at each demonstration site, two types of deliberative groups were set up: **Sustainability Competence Teams (SCTs)**, composed of members of the educational community at the demonstration site; and **Sustainability Competence Committees (SCCs)**, including also external actors such as experts, public authorities, NGOs, members of other educative services, etc. Both types of deliberative groups will meet a minimum of six times along the project. The interventions were co-designed during the first two rounds of meetings of the SCTs and the SCCs. The following and remaining meetings will be devoted to monitoring the implementation of the measures (two meetings in 2023-2024) and to evaluating its effectiveness and impacts (two meetings in 2024-2025).

a) Sustainability Competence Teams

Sustainability Competence Teams (SCT) were set up to analyse the assumptions concerning the mechanisms and conditions required for the interventions to achieve their objectives, that is, improving sustainability competences and environmental performance.

SCTs were established at the different demonstration sites (DS), one consisting of student representatives, the second of teachers, and, when appropriate, a third made up of administrative staff. Every SCT meets several times during the project, according to a pre-established schedule agreed with the participants. Pre-existing structures in the educational institutions are used, in some cases, as the basis for the SCT, avoiding overlaps and unnecessary extra burdens for the involved actors. The singularities and needs of the demonstration sites were considered, in a flexible and adaptable process.

At all demonstration sites, SCTs were constituted for students, and where possible, also for teachers. Where the teacher SCT could not be set up (mainly due to conflicting timetables), the teachers were interviewed individually and the results shared with them. Given the low number of administrative and services personnel at all demonstration sites, no SCTs were set up for this group, but interviews were conducted instead. Both the results of the group discussions and the interviews were integrated into the deliberation within the SCTs and SCCs.

The first SCT meeting was designed to promote reflection on the existing competences and preferences concerning ways of fostering sustainable behaviours and practices. Stimulus materials were used (such as data from environmental audits, short surveys and documentary analysis on the sustainability policies affecting the schools and universities involved) to present key sustainable challenges and potential competences to the participants.

Figure 1: Structure of the 1st SCT meeting

Meeting 1 (October 2022)	1.5 to 2 hours
<ol style="list-style-type: none">1. Welcome and introduction (15 min)2. Short questionnaires: EVOC/CAPA (15 min)3. Insights from environmental audits, short survey, document analysis (30 min)4. Oval Maps (Sticky Notes): drivers & barriers for education for sustainability (30 min)5. Evaluation questionnaire (5 min)6. Farewell & next steps: Instructions for diaries (5 min)	

The SCTs met twice during a period of two-three months (winter holidays included). Between the first and the second SCT sessions, the participants were asked to write in a diary their thoughts about sustainability and educational institutions. Each week, over a period of at least two months, each participant wrote brief notes and/or took photos to respond to the following questions: a) Have you seen anything related to sustainability at your school/university? b) Have you thought about acting in a sustainable way at your school/university? c) Have you done anything related to sustainability? The purpose was to gather new ideas that the participants came to think of in their daily life, following the group sessions. These ideas were collectively discussed in the subsequent SCT meeting. Each demonstration site identified the most suitable way to collect the evidence (e.g., digital platforms or written diaries). The data was compiled and analysed by the research team, and introduced in the second SCT for discussion. We need to acknowledge that at some demonstration sites keeping the diaries proved challenging (time limitations, practicalities of the data gathering process, etc.) and therefore we do not have evidence from all our DS.

The second SCT sought to identify the most suitable measures for promoting sustainability and improving competences. It was designed to stimulate a continuous deliberative & reflective process for co-designing the most suitable measures (of any nature) to promote sustainability-related competences at the demonstration sites. It produced also data useful for joint evaluation of the participatory process and for helping to translate our roadmap into practice.

Figure 2: Structure of the 2nd SCT meeting

Meeting 2 (January 2023)	1.5 to 2 hours
<ol style="list-style-type: none">1. Welcome (5 minutes)2. Setting the scene: the roadmap and the school features (10 minutes)3. Feedback from the 1st SCTs/SCCs & Diaries: deliberation & reflection (30 minutes)4. Co-designing measures: Discussion of proposed measures by thematic groups (environmental, organizational, behavioural, etc.) to produce a final list prioritized through a Resource Allocation exercise (60 minutes)5. Evaluation questionnaire (5 minutes)6. Next Steps (what will happen in practice) (5 minutes)	

b) Sustainability Competence Committees

Sustainability Competence Committees (SCC) were established at all demonstration sites. The committees consisted of representatives from the previous SCTs and other actor groups relevant in the local educational community, such as practitioners, NGOs, stakeholders, and public authorities. Rapporteurs from each SCT (students, teachers, administrative staff) introduced into the SCCs the challenges and proposals identified in their SCT groups. A deliberative co-design process was generated, whereby the groups jointly developed a shared diagnosis of the state of sustainability at the demonstration site, and jointly designed the measures they deemed as the most suitable for fostering sustainability in their own school or university.

The first SCC was designed so as to make the results of the first SCTs known to a broader community of experts and institutional decision-makers, whose reflections and opinions were then synthesized and brought to the discussion of the SCT-2.

Figure 3: Structure of the 1st SCC meeting

Meeting SCC-1 (November 2022)	1.5 to 2 hours
<ol style="list-style-type: none">1. Welcome and introduction (5 min)2. Introducing key findings from SCTs (15 min)3. First reactions to the findings (40 min)4. Oval map: drivers and barriers for sustainability (40 min)5. Evaluation questionnaire (5 min)6. Farewell and next steps (5 min)	

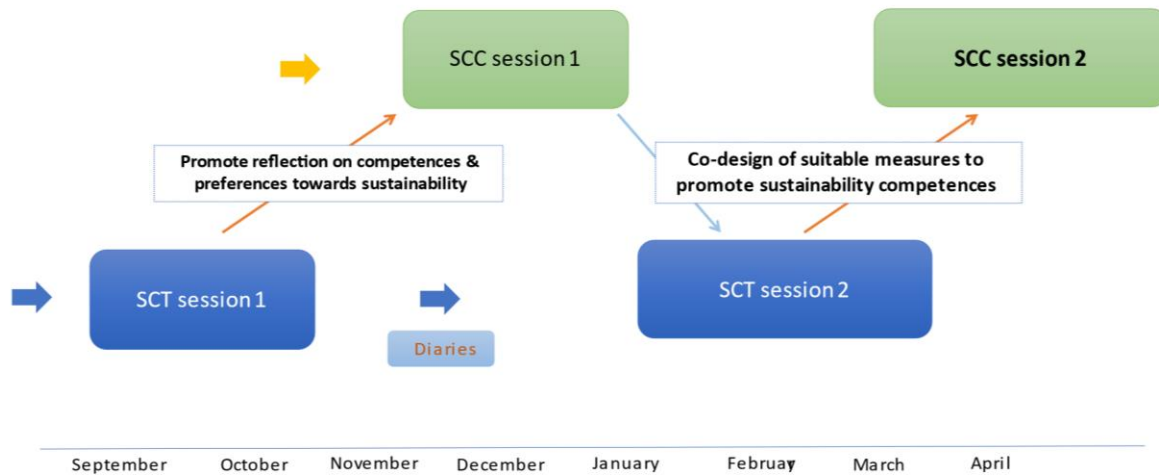
The task of the second SCC was to analyse and assess the list of measures agreed upon in SCT-2, and prioritise them according to their transformative potential and the availability of resources necessary for implementation.

Figure 4: Structure of the 2nd SCC meeting

Meeting SCC-2 (February 2023)	1.5 to 2 hours
<ol style="list-style-type: none">1. Welcome (5 min)2. Setting the scene: Top measures to promote sustainability competences (15 min)3. Co-deciding on the measures (40 min)4. Ranking and selection (15 min)5. Towards implementation (30 min)6. Evaluation questionnaire (5 min)7. Next Steps (5 min)	

The SCCs have met twice, following the first and the second sessions of the SCTs (figure 5).

Figure 5: Sequence of relationships between SCTs and SCCs



At each stage of this process, the aspects addressed included environmental indicators of school performance in key areas (energy, water, green procurement, green spaces, transports, indoor air quality and wastes), individual competences (knowledge, skills, attitudes, and practices) and collective (organisational arrangements, social norms) competences, including the factors that enable or constrain desired change.

The baseline assessment conducted prior to the intervention established the initial state of key environmental performance indicators, the level of knowledge, skills and attitudes at the individual level, and the organisational and institutional factors that enable or constrain the adoption of “sustainable” practices and behaviours at the individual and collective levels. This was achieved by applying key performance indicators (KPIs), questionnaires, interviews, documentary analysis, and joint exploration in reconvened focus groups at the demonstration sites.

Through the bottom-up, reflective, and deliberative process of engagement and co-creation with the students, teachers, school managers and the wider educational community, and based on the results of the initial assessment, the priority interventions were, and will be, defined, planned and implemented in the spirit of participatory action research.

At SCT-2 the participants drew up a list of prioritized measures, discussing their pros and cons. This list of selected measures was passed on to the SCC-2 meeting, where each measure was discussed in terms of their feasibility, transformative potential, as well as the time and resources needed for implementation.

In this way, a definitive list of measures was drawn up, which was later presented to the institution’s governing bodies for final decisions concerning their possible implementation during the

subsequent class period. As some of the representatives of the institution's governing bodies were already engaged in our SCCs, they were already up to date about the proposed solutions.

3.2. List of demonstration sites

The pilot tests are being carried out in 13 educational institutions, which serve as our demonstration sites (DS). These include, in each country, one primary school (basic education), one secondary school (high school), and one university. An exception was Romania, where two primary schools serve as DSs – one in an urban and another in a rural area.

Schools of basic education:

- **Finland: Juhannuskylän koulu** (Juhannuskylä school) is a public primary and lower secondary school (= 'basic school'), from grade 0 (for pupils 5-6 years of age) to grade 9 (14-15 years). In 2021-2022, the school had 831 pupils (vipunen.fi), of which 2/3 in lower secondary school (grades 7-9), and about 90 teachers, of which about 1/6 are class teachers teaching multiple subjects for grades 1-6. Juhannuskylän koulu is located in Tampere, the country's third-largest city by population, and operates under the municipal administration, as most public schools in Finland. In socio-economic terms, the school admission area is of average Finnish level.
- **Portugal: Escola EB 123 da Bobadela** is a public elementary school (ISCED 1 and 2) operating under the municipality of Loures, in the district of Lisbon. The school is located in the parish "União das Freguesias de Santa Iria de Azóia, São João da Talha e Bobadela". The school has community of 910 people includes 792 pupils, 81 teachers, 7 administrative staff, and 30 auxiliary staff. The vast majority of children who attend school are from the neighbourhoods of the parish of Bobadela.
- **Romania: School Nicolae Balcescu** is a public primary school located in Dragasani town, Olt County. It has more than 500 students (6-15 years old) and over 30 teachers. Dragasani is a little town of about 18000 inhabitants in the south of the country. The main economic sectors and job providers are wine growing, small companies producing components for the automotive sector, and services. The town has suffered from a socioeconomic decline for the last three decades.
- **Romania: Sercaia School** is a public primary school placed in the rural area of Brasov county, Transilvania region of Romania. It has 270 students (from 4 to 14), 10 classrooms, one Computer Science lab, one History lab, a Sports Hall, a separate building that hosts the kindergarten, a large green space where students spend their breaks, parking space outside the school yard.

- **Spain:** The **CEIP Mozart** public primary school is located in Alcalá de Henares district, in the Autonomous Community (AC) of Madrid. Created in 2008, it is the youngest district in the city both when it comes to housing stock and demography. It is the only district in the Madrid AC whose population has grown in the past two years. It is the district with the highest percentage of child population in Spain/Madrid CA. The school has 670 students distributed among 10 infant classes (1st, 2nd and 3rd grades) and 18 primary school classes (from 1st to 6th grade).

High schools:

- **Finland:** **Sammon keskuslukio** (Sampo upper secondary school) is a public upper secondary school operated by the Tampere municipality. In 2021-2022 the school had all in all 912 pupils (vipunen.fi) and about 50 teachers. Most of the pupils are within the 15-20-year age group. Students come mostly from Tampere, but also from the surrounding areas. The Finnish central government provides subsidies for both public and private upper general schools.
- **Portugal:** The “**Escola E.B.2,3 de Camarate**” is a public school (ISCED 1 and 2) operating under the municipality of Loures, in the district of Lisbon. In 2021-2022, the school community consisted of 877 people, including 741 pupils, 102 teachers, 9 administrative staff, and 25 auxiliary staff. The area of 11.57 km² and 34 943 inhabitants has a high unemployment rate of around 18%, and includes social housing neighbourhoods with several persisting social problems.
- **Romania:** “**Iulia Zamfirescu**” is a public high school located in Mioveni town, Arges county. It has more than 1300 students (6-19 years old) and more than 60 teachers. The area for collecting students is mainly Mioveni town and its neighborhoods. Mioveni is a small town (approximately 35000 inhabitants) but very dynamic, and in a development boom. The local economy is dominated by industry (automotive and nuclear fuel). This demonstration site was selected as representative of a modern high school in Romania, having a recently built infrastructure (2006), and with students predominantly originating from the local area.
- **Spain:** The **IES Ítaca** Secondary Education School is located close to Seville city, in the region of Andalusia, in a village called Tomares (25,370 inhabitants). In 2022-23, there are 621 students, of which 477 in compulsory secondary education and 144 in high school, and 53 teachers. The school is managed by the regional government, given that in Andalusia, only the primary and infant schools are municipally managed. The students come from families of medium or high socioeconomic status, with parents with permanent jobs and a high educational level.



Universities:

- **Finland: University of Jyväskylä** is a public multidisciplinary research university in Jyväskylä, the country's 7th-largest city in the central Finland. The university aspires to be a global leader in the study of learning, wellbeing, and basic natural phenomena, with sustainability as among the core values. The university is ranked among the top three percent in the world. Of the 14 000 students, 3,9 % come from abroad, and the rest from all parts of Finland. About 15 % of the applicants are admitted to JYU. About a half of the 2,600 employees have permanent posts. Two-thirds of the employees consist of researchers and teachers, with 13 % of foreign nationality. The demonstration site is the Faculty of Education.
- **Portugal: The Instituto Superior Técnico (IST)**, a faculty of the University of Lisbon, is the largest Portuguese public school of Engineering, Architecture, Science, and Technology. It is considered one of the most renowned engineering institutions in Europe. The university campus in Alameda was built in 1937 and was the first autonomous campus in the Portuguese university system. Today, IST has three campuses – in Alameda, Tagus Park and Bobadela – and has 11,000 students and 900 professors/researchers from various nationalities.
- **Romania: University of Pitesti** is a young university in Romania. It was founded in 1962, and experienced rapid development after 1990. There are more than 9000 students, across the three university cycles: bachelor's, master's, and doctorate, across the following faculties: Sciences, Informatics, Physical Education and Sports; Mechanics and Technology; Theology, Letters, History and Arts; Electronics, Communications and Computers, Economics and Law; Education Sciences, Social Sciences and Psychology. Most of the students are of the age between 19 and 24, originating from the local region (dominantly Arges, Olt, Teleorman, and Valcea counties). The number of foreign students is low, typically less than 50. Pitesti is a medium-sized and reasonably prosperous town in Romania (around 180 000 inhabitants), with automotive industry, petrochemistry, services and commerce as the main economic sectors. University of Pitesti has been recognized as a good provider of human resources for the regional labour market. The demonstration site is the Faculty of Science.
- **Spain: The Universitat Autònoma de Barcelona (UAB)** is a public university that runs 105 undergraduate courses covering a wide range of fields including humanities and arts, as well as social, health, experimental, and technical sciences. In addition, UAB offers a total of 67 doctoral programs, and 265 postgraduate programs, including Erasmus Mundus master's degrees. UAB has more than 40.000 students and 3.760 teachers and researchers. The UAB is located in the metropolitan area of Barcelona, in an industry-dominated county (Vallès Occidental). The metropolitan area of Barcelona has a population of about 4 million. The

UAB is the second largest university in the area, after the University of Barcelona (UB). The demonstration site is the Faculty of Political Science and Sociology.

3.3. Samples in each demonstration site

This section indicates the number and type of people that participated in the participatory processes of co-design of measures at each demonstration site, both in the SCTs and in the SCCs. For the former, we also indicate whether data was collected through deliberative groups or only interviews.

a) Sustainability Competence Teams (SCT)

Table 1: Number of participants at each demonstration site by category (students, teachers, staff), in the SCT-1.

	Finland			Portugal			Romania			Spain			Total
	Basic education	High school	University	Basic education	High school	University	Basic education	High school	University	Basic education	High school	University	
SCT-1													
Students	33	7	11	10	21	7	34	12	8	9	34	14	200
Teachers	9	3	2	14	11	10	9	6	4	4	-	6	78
Staff	2	1	1	8	15	7	5	3	2	2	-	3	49
TOTAL	44	11	14	32	47	24	48	21	14	15	34	23	327

Table 2: Methods applied to each collective in each demonstration site for the SCT-1.

	Finland			Portugal			Romania			Spain		
	Basic education	High school	University	Basic education	High school	University	Basic education	High school	University	Basic education	High school	University
SCT-1												
Students	SCT	SCT	SCT	SCT	SCT	Interviews	SCT	SCT	SCT	SCT	SCT	SCT
Teachers	SCT	Interviews	Interviews	SCT	SCT	Interviews	Group interview	SCT	SCT	SCT	Interviews	Interviews
Staff	Interviews	Interview	Interview	SCT	SCT	Interviews	Group interview	SCT	SCT		-	Interviews

Table 3: Number of participants at each demonstration site by category (students, teachers, staff), in the SCT-2.

	Finland			Portugal			Romania			Spain			Total
	Basic education	High school	University	Basic education	High school	University	Basic education	High school	University	Basic education	High school	University	
SCT-2													
Students	26	45	12	2	10	-	36	13	8	9	34	15	210
Teachers	9	5	2	6	9	-	16	9	4	5	-	5	70
Staff	2	-	-	6	10	-	9	6	2	1	-	3	39

TOTAL	37	50	14	14	29	-	61	28	14	15	34	23	319
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Table 4: Methods applied to each collective at each demonstration site for the SCT-2.

SCT-2	Finland			Portugal			Romania			Spain		
	Basic education	High school	University	Basic education	High school	University	Basic education	High school	University	Basic education	High school	University
Students	SCT	SCT	SCT	Group interview	SCT	-	SCT	SCT	SCT	SCT	SCT	SCT
Teachers	SCT	Interviews	Interviews	SCT	SCT	-	Group interviews	Group interview	Group interview	SCT	-	Interviews
Staff	Interviews	-	-	SCT	SCT	-	Group interviews	Group interview	Group interview		-	Interviews

b) Sustainability Competence Committees (SCC)

Table 5: Number of participants in the SCC-1 at each demonstration site / territory.

SCC-1	Finland			Portugal			Romania			Spain		
	Basic education	High school	University	Basic education	High school	University	Basic education	High school	University	Basic education	High school	University
	15		-	4	4	21	15			17	6	9

Table 6: Number of participants in the SCC-2 in each demonstration site / territory.

SCC-2	Finland			Portugal			Romania			Spain		
	Basic education	High school	University	Basic education	High school	University	Basic education	High school	University	Basic education	High school	University
	12		12	14	12	20	15			11	6	8

4. LIST OF CO-DESIGNED MEASURES

At each demonstration site, a participatory co-design process of interventions (or measures) was carried out. Based on the methodology described in the previous section, a list of between 10 and 15 measures was elaborated for each educational institution. Later, in the last SCC, a short list of priority measures suggested for implementation was drawn up at each demonstration site.

The interventions could contribute to the improvement of environmental performance, individual competences, collective competences, or to a combination of the three dimensions under consideration. Moreover, the selection of interventions is guided by their need to contribute to our roadmap designed for testing the ECF, including the four interrelated phases of engagement, connections, visions, and actions.

The lists of measures proposed at each demonstration site, ordered by educational level, are shown in the Annexes. These annexes show, for each case, the total number of measures that the students, teachers, and staff members elaborated through the participatory process, as well as their viability throughout the duration of the ECF4CLIM project. Thus, for example, measures have been proposed that may be of great interest to the educational institution in question, but that cannot be addressed within the framework of this project due to budgetary or time constraints. In such a case, the measure has been excluded for now, but will be kept in records for possible later implementation. Some proposed measures serve to complete, expand, or boost other measures that are already underway, whereas other measures are radically new and viable within the timeframe of this project.

This section presents the proposed measures, classified by the main dimensions of our project: environmental performance, and collective and individual competences for sustainability. In total, the participants at the demonstration sites proposed **159 interventions**.

About a half (73) of these measures are targeted at **environmental performance**, such as equipment, infrastructure, monitoring methods, concerning issues such as water, waste, energy, green spaces, and mobility. The measures are designed to improve the infrastructure for the provision of such services and to install devices that allow continuous monitoring and follow-up of performance.

Another major group of interventions is related to **collective competences** (52), including pedagogical measures, support for sustainability groups, changes in curricula to strengthen sustainability education, cultural and organisational modifications at the educational institution in question, and the elaboration of strategic plans. As illustrated in tasks 4.1 and 4.2, these collective competence measures are crucial for the successful implementation of measures designed to improve individual competences.

The third group of measures targets **individual competences** (34), mainly with information and awareness campaigns and training addressed to both students and teachers. These are usually

measures designed to increase knowledge among individuals and to foster attitudinal and behavioural changes.

In the following subsections these sets of measures are shown in somewhat more detail, based on a typology drawn up by Anna Lehtonen & Niina Mykrä (2023).

Table 7: Co-designed intervention measures by type

Environmental performance (N = 73)	Collective competences (N = 52)	Individual competences (N = 34)
<ul style="list-style-type: none"> – New equipment: 28 – Infrastructure: 27 – Accounting and monitoring: 18 	<ul style="list-style-type: none"> – Pedagogy: 16 – Cooperation: 12 – Curricula: 11 – Culture: 6 – Steering documents: 6 – Research: 1 	<ul style="list-style-type: none"> – Information and awareness: 13 – Learning possibilities: 9 – Field trips: 6 – Events and theme weeks: 4 – Competition and rewards: 2
Co-designed intervention measures by type (total = 159)		

4.1. Environmental performance measures

Among the 73 measures for improving the environment performance of the schools and universities involved in the project, the largest category (27 measures) consists of those designed to improve energy efficiency and energy savings. These were followed by waste-management measures (17), to improvement of green spaces (7) and other spaces at the demonstration site (6), and measures targeted at mobility (7), air quality (4) and food (1). Four measures fall within the generic category of ‘other’ interventions.

Most of the proposals include either the purchase and installation of **new equipment** such as lighting, sensors, faucets, and containers (28 measures), or **infrastructural** modifications (27), such as improving certain spaces (especially green spaces), creating green walls, setting up sustainability labs, or improving the networks of bus and bike lanes. Some 18 measures entail the installation of sensors and other devices to capture data for “**accounting and monitoring**”, under the citizen science related assumption that provision of timely and detailed information to the school/university concerning its environmental impacts, will help create awareness and enable the community to take action in order to improve its environmental performance.

Table 8: Measures related to environmental performance, by type, environmental factors and demonstration site.

Type of measure	Measure	Environmental factors involved	Demonstration Site	Educational level
Accounting and monitoring	Inventory of existing materials and collective storage.	Material resources	Juhannuskylä School (Finland)	Basic Education
	Install faucets with sensors or flow reducers.	Water	EB Bobadela (Portugal)	Basic Education
	Infrastructure improvement – smart sensors for water	Water	Dragasani School (Romania)	Basic Education
	Infrastructure improvement - energy smart monitoring for the buildings	Energy	Dragasani School (Romania)	Basic Education
	Infrastructure improvement - energy smart monitoring for the buildings	Energy	Sercaia school (Romania)	Basic Education
	Install automatic sensor faucets.	Water	CEIP Mozart (Spain)	Basic Education
	Atmospheric pollution sensors. Air quality monitoring	Air quality	CEIP Mozart (Spain)	Basic Education
	Water: Install flow reducers and flushing systems with water flow control	Energy	EB Camarate (Portugal)	High School
	Infrastructure improvement - water sensors at the sanitary facilities	Energy	Mioveni High School (Romania)	High School
	Infrastructure improvement - building energy monitoring	Energy	Mioveni High School (Romania)	High School
	Measuring the impact of shading projected by trees: Installation of control system and monitoring of the influence of shading on the air conditioning needs of the building	Air conditioning, Waste	IES Ítaca, Sevilla (Spain)	High School
	Photovoltaics: Training for the follow-up and monitoring of photovoltaic solar installation installed in the institute and its impact on electricity expenditure	Energy	IES Ítaca, Sevilla (Spain)	High School
	Installation of air quality sensors in classrooms.	Energy	Instituto Superior Técnico (Portugal)	University
	Promote the separation of waste at the Alameda Campus and the Technological and Nuclear Campus. I. "Técnico faz a diferença" Project (In English: "Technician makes the difference" Project): a) Account for the waste produced; b) Acquire and install containers; c) Provide training to the academic community; d) Optimise waste collection with the waste management company	Waste	Instituto Superior Técnico (Portugal)	University
	Develop software applications to simulate the environmental and climate impacts of our activities	Water	University Pitesti, Faculty of Science (Romania)	University

	Improvement of infrastructure – installing smart sensors to the water in toilets	Energy	University Pitesti, Faculty of Science (Romania)	University
	Improvement of infrastructure – installing system for energy monitoring in the buildings	Energy	University Pitesti, Faculty of Science (Romania)	University
	Improve available environmental data (on waste, energy, water consumption, etc.). Without knowledge on the starting situation, we cannot know how to improve it.	-	Autonomous University of Barcelona, Faculty of Political Science and Sociology (Spain)	University
Infrastructure	Promoting organic and sustainable food: "Bio Técnico" Project: Adding a kiosk that will give people more options for meals made with organic ingredients.	Waste	Instituto Superior Técnico (Portugal)	University
	Improvement of the green area of the school	Green spaces	Dragasani School (Romania)	Basic Education
	Modernization of sports infrastructure	Spaces	Dragasani School (Romania)	Basic Education
	Mobility, electric transport for students	Mobility	Dragasani School (Romania)	Basic Education
	Improvement of the green area of the school - laboratory/workshop for agricultural activities	Green spaces	Sercaia school (Romania)	Basic Education
	Modernization of sports infrastructure	Spaces	Sercaia school (Romania)	Basic Education
	Mobility, electric transport for students	Mobility	Sercaia school (Romania)	Basic Education
	Laboratory modernization	Spaces	Sercaia school (Romania)	Basic Education
	Tree planting. Teachers training.	Green spaces	CEIP Mozart (Spain)	Basic Education
	Healthy and sustainable food at school canteens.	Food	CEIP Mozart (Spain)	Basic Education
	Install and increase bicycle parking spaces.	Mobility	CEIP Mozart (Spain)	Basic Education
	Reuse (for example clothes)	Waste	CEIP Mozart (Spain)	Basic Education
	Proper maintenance of classroom radiators	Energy	CEIP Mozart (Spain)	Basic Education
	Proper places for bikes to lock.	Mobility	SAMKE High School (Finland)	High School
	Improve the bus and bike lanes network.	Mobility	EB Camarate (Portugal)	High School
Green spaces: Reactivate the school's biological garden.	Green spaces	EB Camarate (Portugal)	High School	
Create green walls (outdoor) or green corridors (indoor) to promote the improvement of local air quality.	Air quality	EB Camarate (Portugal)	High School	

	Improvement of the green area of the school	Green spaces	Mioveni High School (Romania)	High School
	Improving the infrastructure for sports	Spaces	Mioveni High School (Romania)	High School
	Construction of parking for bicycles and scooters	Mobility	Mioveni High School (Romania)	High School
	Pergolas with vegetation: Shading systems. Bioclimatization study. Support for activities	Green spaces	IES Ítaca, Sevilla (Spain)	High School
	Remove cars from the Alameda campus.	Energy	Instituto Superior Técnico (Portugal)	University
	Set-up a lab dedicated to sustainability	Spaces	University Pitesti, Faculty of Science (Romania)	University
	Improvement of green spaces and sport facilities	Mobility	University Pitesti, Faculty of Science (Romania)	University
	Mobility, introducing the electric transport between the different locations of the university	Energy	University Pitesti, Faculty of Science (Romania)	University
	The inner courtyards are perceived as wasted. Reform them to make them friendlier, more useful, open, and integrated into the life of the centre. Not only for improving thermal comfort, but also to make them more welcoming (improve sociability).	Green spaces	Autonomous University of Barcelona, Faculty of Political Science and Sociology (Spain)	University
	Enhance the green spaces around us, which are now neglected. Promote outdoor teaching spaces and more spaces for leisure and activities.	Spaces	Autonomous University of Barcelona, Faculty of Political Science and Sociology (Spain)	University
New equipment	Implement solar panels at the school.	Energy	EB Bobadela (Portugal)	Basic Education
	Implement efficient lighting systems (LED).	Energy	EB Bobadela (Portugal)	Basic Education
	Implement double-glazed windows and thermal blinds.	Energy	EB Bobadela (Portugal)	Basic Education
	Implement more recycling bins inside the school according to the needs.	Waste	EB Bobadela (Portugal)	Basic Education
	Implement recycling "islands" - set of containers for various types of garbage	Waste	EB Bobadela (Portugal)	Basic Education
	Infrastructure improvement - smart lighting	Energy	Dragasani School (Romania)	Basic Education

Infrastructure improvement - selective waste collection	Waste	Dragasani School (Romania)	Basic Education
Infrastructure improvement - installation of solar panels for water heating	Energy	Dragasani School (Romania)	Basic Education
Infrastructure improvement - smart lighting	Energy	Sercaia school (Romania)	Basic Education
Infrastructure improvement - selective waste collection	Waste	Sercaia school (Romania)	Basic Education
Infrastructure improvement - installation of solar panels for water heating	Energy	Sercaia school (Romania)	Basic Education
Infrastructure improvement -water sensors in bathrooms	Energy	Sercaia school (Romania)	Basic Education
Install solar PV panels for self-consumption.	Energy	CEIP Mozart (Spain)	Basic Education
Install insulating windows.	Energy	CEIP Mozart (Spain)	Basic Education
Recycle (containers)	Waste	CEIP Mozart (Spain)	Basic Education
Improving recycling and more bins.	Waste	SAMKE High School (Finland)	High School
Water: Create a grey water reuse system and a rainwater saving system for floor washes and irrigation of green spaces	Water	EB Camarate (Portugal)	High School
Implement efficient lighting systems (LED).	Energy	EB Camarate (Portugal)	High School
Use organic waste compost bins	Waste	EB Camarate (Portugal)	High School
Infrastructure improvement - intelligent lighting	Energy	Mioveni High School (Romania)	High School
Infrastructure improvement - installation of solar panels for water heating	Energy	Mioveni High School (Romania)	High School
Temperature-control assisted by water sprinklers: Install sprinklers in the schoolyard to decrease the temperature during the warm months.	Energy	IES Ítaca, Sevilla (Spain)	University
Installation of solar panels	Green spaces	Instituto Superior Técnico (Portugal)	University
Improvement of infrastructure – installing smart lightening	Waste	University Pitesti, Faculty of Science (Romania)	University
Improvement of infrastructure – installing a modern selective waste collection system	Energy	University Pitesti, Faculty of Science (Romania)	University
Energy: Improve thermal insulation (windows, roofs, screens, etc.). Change shutters and windows to improve insulation. Put screens or plant covers on the roofs and walls (think feasibility)	Energy	Autonomous University of Barcelona, Faculty of Political Science	University

			and Sociology (Spain)	
	Energy: Install more energy-saving mechanisms (sensors, valves, thermostats, replace incandescent lights with LEDs, etc.)	Spaces	Autonomous University of Barcelona, Faculty of Political Science and Sociology (Spain)	University
	Waste: Install more compartmentalized recycling bins around and ban bins with mixed waste. Improve litter signage.	Waste	Autonomous University of Barcelona, Faculty of Political Science and Sociology (Spain)	University

4.2. Collective competence measures

The hybrid participatory process produced a total of 52 proposals of measures to improve collective competences. The proposed measures include pedagogic interventions (16), such as creating space, time and resources to promote collective discussion on sustainability among teachers and students, and favouring the adoption of digital tools at schools. Other measures designed to improve collective competences (12) included facilitating cooperation among the members of the educational community on the design and implementation of activities designed to advance sustainability. Measures related to curricular changes were also numerous (11), and included the introduction of sustainability teaching in specific academic disciplines, design of dedicated courses on sustainability, and various ways of facilitating the teaching of sustainability topics.

Somewhat less frequent were suggestions aimed spurring cultural change at schools and universities (6), for instance via new ways of organizing the school timetables so as to minimise the need for air-conditioning and lighting), modifying the criteria for procurement, and creating participative mechanisms. There were also proposals to elaborate guidance documents (6) on how to introduce sustainability issues in a transversal manner.

Table 9: Measures related to collective competences, by type and demonstration site.

Type	Measure	Demonstration site	Educational level
Pedagogy	Collective discussion among teachers: what does sustainability mean to me -> promoting will-formation and identifying shared goals.	Juhannuskylä School (Finland)	Basic Education
	Acquisition/production of educational materials for sustainability	Dragasani School (Romania)	Basic Education

	Advancing digitalization at school	Dragasani School (Romania)	Basic Education
	Acquisition/production of educational materials on sustainability	Sercaia school (Romania)	Basic Education
	Advancing digitalization at school	Sercaia school (Romania)	Basic Education
	Improving the orchard/vegetable garden. Promoting sustainable work in the school garden.	CEIP Mozart (Spain)	Basic Education
	ECF4CLIM learning spaces	CEIP Mozart (Spain)	Basic Education
	Extension of extracurricular activities regarding sustainability (thematic visits, activities in nature, greening, cleaning some places)	Mioveni High School (Romania)	High School
	Advancing digitalization at school (electronic catalogue, portfolios, homework)	Mioveni High School (Romania)	High School
	Acquisition/production of educational materials for sustainability	Mioveni High School (Romania)	High School
	Sustainability research: activity for fostering new curricular itineraries.	IES Ítaca, Sevilla (Spain)	High School
	Garden box: Development of a garden to grow vegetables, etc. Support for training activities	IES Ítaca, Sevilla (Spain)	High School
	Organising a sustainability breakfast event related to curricula work among teachers and students at the faculty of education and psychology	University of Jyväskylä (Finland)	University
	Improving the communication of activities in the area of sustainability at IST: Create a space for reflection and information sharing; a) Create an event with architecture students to design the space; b) Promote an idea contest; c) Hold an exhibition to present the ideas to the community; c) Consolidate the best ideas, involving professors and students of architecture, materials, and civil construction; e) Build the space.	Instituto Superior Técnico (Portugal)	University
	Development of educational materials for sustainability	University Pitesti, Faculty of Science (Romania)	University
	Advancing digitalization at the university	University Pitesti, Faculty of Science (Romania)	University
Cooperation	Collaboration with Voimia food and cleaning service company to promote the adoption of participatory approaches in integrating sustainability in their practices.	Juhannuskylä School (Finland)	Basic Education
	Supporting the activities of sustainability groups	Dragasani School (Romania)	Basic Education
	Installation of the "we support the sustainability of our city" panel	Dragasani School (Romania)	Basic Education
	Supporting the activities of sustainability groups	Sercaia school (Romania)	Basic Education
	Installation of the "we support the sustainability of our city" panel	Sercaia school (Romania)	Basic Education
	Collaboration with Voimia food and cleaning service company to promote the adoption of participatory approaches in integrating sustainability in their practices	SAMKE High School (Finland)	High School
	Supporting the activities of sustainability groups in the school	Mioveni High School (Romania)	High School

	Coaching and empowering Students union's Academic affairs sub-committee for promoting sustainability in the current curriculum development process.	University of Jyväskylä (Finland)	University
	Facilitate collaboration and communication with and through the Wisdom community together with students about the acute needs and challenges involved in the promotion of sustainability through the design of the curricula in various fields.	University of Jyväskylä (Finland)	University
	Collaboration with the campus restaurant in promotion of sustainability and vegetarian meals	University of Jyväskylä (Finland)	University
	Support for the activity of groups for sustainability	University Pitesti, Faculty of Science (Romania)	University
	Motivate students to get involved and mobilize for environmental, global, social justice causes, etc. Promote environmental volunteering on campus (under decent conditions).	Autonomous University of Barcelona, Faculty of Political Science and Sociology (Spain)	University
Curricula	Integrate the assessment of energy consumption into the disciplines.	EB Bobadela (Portugal)	Basic Education
	Harmonization program of the contents of various disciplines (regarding sustainability)	Dragasani School (Romania)	Basic Education
	Harmonization program of the contents of various disciplines (regarding sustainability)	Sercaia school (Romania)	Basic Education
	Integrate the assessment of energy consumption into the disciplines.	EB Camarate (Portugal)	High School
	Harmonization program, between various disciplines, for the contents regarding sustainability	Mioveni High School (Romania)	High School
	Creation of an optional course dedicated to sustainability	Mioveni High School (Romania)	High School
	Organising discussions on sustainability in curricula work: Seminar and a panel discussion on sustainability and curricula in dialogue between personnel and students.	University of Jyväskylä (Finland)	University
	Integrating in the study programme an open optional course that would allow participating in the development of sustainability work at JYU. This way, the students could, for example, participate in promoting sustainability, and help elaborate vegetarian meals and menus at the campus restaurants.	University of Jyväskylä (Finland)	University
	Promoting sustainability in teaching: the creation of the curricular unit "Climate Crisis and Fair Transition," which is common to all IST courses.	Instituto Superior Técnico (Portugal)	University
	Programme to harmonise the sustainability contents of different courses	University Pitesti, Faculty of Science (Romania)	University
	Developing of a dedicated course on sustainability and climate change adaptation	University Pitesti, Faculty of Science (Romania)	University
	Culture	Using students' ideas and peer-mentoring to sustainability.	Juhannuskylä School (Finland)
Time for careful planning of procurements.		Juhannuskylä School (Finland)	Basic Education
Improve sustainable mobility		CEIP Mozart (Spain)	Basic Education

	Inclusion of sustainability issues in IST's activities and strategic plan.	Instituto Superior Técnico (Portugal)	University
	Make more efficient use of space by managing timetables (make better use of air-conditioned classrooms). Create more common and comfortable spaces; encourage and enable co-working among teachers.	Autonomous University of Barcelona, Faculty of Political Science and Sociology (Spain)	University
	Adjust the starting hour of the classes according to the seasons.	EB Bobadela (Portugal)	Basic Education
Steering documents	Integrate sustainability among the criteria for procurement.	Juhannuskylä School (Finland)	Basic Education
	Define a waste management strategy (with staff members)	EB Camarate (Portugal)	High School
	Internal regulations for equipment repair: Introduce an internal regulation that prioritises reparation over acquisition in case of equipment failures	IES Ítaca, Sevilla (Spain)	High School
	An integrated plan of initiatives for the outdoor space of the Alameda Campus to make the campus a sustainable and biodiverse space: I. "Técnico + Verde" project - (In English: "Technical + Green" Project). Objectives: Promote a Biodiversity and Permaculture Garden (Hortus IST); Promote green meadow zones; Construction of a green wall; Installation of green roofs; Promote the APIST Pedagogical Garden; Build comfortable and communicative gardens on campus; Increase furniture in green spaces to promote contact with nature.	Instituto Superior Técnico (Portugal)	University
	Food system: Rethink the food offered in campus restaurants and cafes, by including healthier, sustainable and socially fair options. There should be a food plan for the restaurant menus, cafeterias, vending machines, and lunch boxes, which privileges health, environmental and social criteria (food sovereignty).	Autonomous University of Barcelona, Faculty of Political Science and Sociology (Spain)	University
	Food system: There is a (perhaps unfounded) perception that a lot of food is 'wasted'. Supply and demand do not match. Have a plan to minimize food waste.	Autonomous University of Barcelona, Faculty of Political Science and Sociology (Spain)	University
	Research	Promote master and doctoral theses in the field of sustainability.	Instituto Superior Técnico (Portugal)

4.3. Individual competence measures

A total of 34 measures were proposed to strengthen the individual competences. The most numerous category consists of measures designed to provide information and raise awareness among the education community (13), mainly through campaigns and advertisement. Frequent

were also suggestions for to training and learning (9). A wide range of courses, conferences, seminars, debates, etc. were proposed by the participants in the co-design of measures. The proposals also included field trips (6) to destinations such as a water museum, the “energy route”, and a waste recycling centre, and thematic days or weeks (4) dedicated to themes such as sustainability, cooking, or “greenness”. Among the proposed campaigns, there were also competitions, intended to stimulate behavioural change.

Table 10: Measures to strengthen individual competences, by type and demonstration site.

Types	Measures	Demonstration site	Educational level
Information and awareness	Discussion cards and posters for the corridors and school restaurant and staff room.	Juhannuskylä School (Finland)	Basic Education
	Reducing food waste. Campaign.	SAMKE High School (Finland)	High School
	More visibility to sustainability: anti-commercials, info about the impact of sustainability actions and campaigns & data of consumption.	SAMKE High School (Finland)	High School
	Promote awareness of the role of green spaces in the quality of the outdoor air among the school community.	EB Camarate (Portugal)	High School
	Water: Promote awareness among the school community about habits that can help reduce water consumption at home and school.	EB Camarate (Portugal)	High School
	Promote awareness-raising actions for the school community about the correct separation of waste and the impact this has on the environment.	EB Camarate (Portugal)	High School
	Improving selective collection of wastes in the school	Mioveni High School (Romania)	High School
	Proper use of sorting waste containers: Awareness of selective waste collection, especially in the schoolyard.	IES Ítaca, Sevilla (Spain)	High School
	Waste recycling: Awareness and training program at local recycling points.	IES Ítaca, Sevilla (Spain)	High School
	Improve the communication of sustainability activities at IST: Use existing tools to communicate sustainability: website, newsletter, social networks, and short videos.	Instituto Superior Técnico (Portugal)	University
	Waste: Promote reuse of objects. Organize materials exchange services on the campus. Fairs, barter markets, etc. could be held, also in collaboration with the neighbouring towns.	Autonomous University of Barcelona, Faculty of Political Science and Sociology (Spain)	University
	Communication and awareness: Make the improvement actions that are taken more visible. Report, not only on the things that are done, but also on what could be done (recommendations, good practices, etc.).	Autonomous University of Barcelona, Faculty of Political Science and Sociology (Spain)	University

	Improve awareness of the size of the campus and how easy it is to walk. The distances are not that long, and the campus is not big enough to justify the current number of on-campus bus services.	Autonomous University of Barcelona, Faculty of Political Science and Sociology (Spain)	University
Learning possibilities	Students' vegetarian cook book.	Juhannuskylä School (Finland)	Basic Education
	Training courses (in the field of sustainability) for the teachers	Dragasani School (Romania)	Basic Education
	Creation of an optional course dedicated to sustainability	Dragasani School (Romania)	Basic Education
	Training courses (in the field of sustainability) for the teachers	Sercaia school (Romania)	Basic Education
	Implement projects for learning how to drive a bicycle for the entire school community, to be carried out at school.	EB Camarate (Portugal)	High School
	Environmental programs. Sustainability awareness. Dynamic awareness (for students). Participation of students in environmental education programs	IES Ítaca, Sevilla (Spain)	High School
	Programme "train the trainers" for sustainability	University Pitesti, Faculty of Science (Romania)	University
	Creation of an optional course dedicated to sustainability	Sercaia school (Romania)	Basic Education
	Training programme for teachers (in the field of sustainability)	Mioveni High School (Romania)	High School
Field trips	Field trips to the water museum.	EB Bobadela (Portugal)	Basic Education
	Energy route: ADENE—information sessions and face-to-face training.	EB Bobadela (Portugal)	Basic Education
	Environmental education. Umbralejo (nature school) field trip	CEIP Mozart (Spain)	Basic Education
	More interesting excursions and lessons where students are active and concrete action included	SAMKE High School (Finland)	High School
	Energy route: ADENE—information sessions and face-to-face training.	EB Camarate (Portugal)	High School
	Field Trips to "Valorsul" recycling centre.	EB Camarate (Portugal)	High School
Events and theme weeks	"The oldest dress" theme day.	Juhannuskylä School (Finland)	Basic Education
	Tasting event for vegetarian dishes.	Juhannuskylä School (Finland)	Basic Education
	Organising a sustainability week or an event together with Students' unions sustainability subcommittee	University of Jyväskylä (Finland)	University
	Improve the communication of activities in the area of sustainability at IST: Participate in dissemination actions: European Researcher's Night; Técnico Day; Técnico Green Week; Integration week for new students.	Instituto Superior Técnico (Portugal)	University

Competition and rewards	Create reward programmes and competition between classes or buildings to stimulate more efficient waste separation.	EB Bobadela (Portugal)	Basic Education
	Create reward programmes and competition between classes or buildings to stimulate more efficient waste separation.	EB Camarate (Portugal)	High School

5. CONCLUSIONS

A hybrid participatory co-design process of sustainability interventions was carried out in each demonstration site, resulting in a list of 159 concrete measures to be implemented.

Most of these measures (73) have to do with environmental performance, such as equipment, infrastructure, and monitoring methods targeted at the various environmental factors (water, waste, energy, green spaces, mobility, etc.) in the educational institution in question. This lends support to our findings from Tasks 4.1 and 4.2, which showed that the environmental dimension is usually the first concern whenever one thinks of improving sustainability. Hence, at most of our demonstration sites, the participants tended to immediately think about ways to improve the quality of the school/university buildings and install measurement and control devices to minimise the environmental burden from the provision of energy, waste, water, biodiversity, and other services.

Another earlier finding was validated here, namely the vital importance of the measures designed to strengthen collective competences. These included as many as 52 measures, ranging from pedagogical proposals, support for sustainability groups, curricula changes for introducing sustainability issues, cultural and organizational adjustments at the schools and universities, as well as the elaboration of strategic plans. As we saw in tasks 4.1 and 4.2, collective competences are crucial for the successful improvement of individual competences, which is the final objective of the ECF.

The third group of measures were designed to reinforce individual competences (34), mainly through communication, information provision, awareness campaigns, training, etc. All these informative and persuasive activities are addressed both to students and to teachers, and their main goal seems to be to increase knowledge among individuals and stimulate attitudinal and behavioural change.

Some interventions are designed to link the three dimensions. For instance, improving environmental performance can help enhance the individual competences for sustainability, when the installation of sensors and devices collecting data on energy expenditure or waste production spurs a group or an individual to reduce the environmental impact of their actions. Such a linkage is obviously based on the assumption that knowledge of the environmental impact of individual behaviour will indeed lead to desired behaviour change. Other assumption is that to improve the



individual competences, the collective ones need to be improved first, although, in some occasions, individual competences are requested for the improvement of the collective ones.

Measures for fostering collective competences included modification of pedagogical methods and curricula. However, most educational institutions have little say on the curricula, which are usually either elaborated by national, regional or municipal authorities, or changing them requires a commitment from the management and the educational community that is not easy to obtain. Some proposals are therefore difficult to put into practice, which can be an obstacle to improving individual competencies in sustainability. Other suggestions for improving the collective competences, such as re-organising school schedules, or modifying the procurement criteria can be very difficult to implement. The barriers to efforts at substantially improving collective competences for sustainability in education are therefore numerous. For overcoming such obstacles, the commitment of the highest management of the educational institution in question is essential.

6. NEXT STEPS

All the lists of measures presented in this report were submitted to the scrutiny of the SCCs in their second meeting, where the feasibility of each measure was assessed in the light of the characteristics and resources available at the demonstration site in question. In this way, the number of proposals was reduced to almost a third of the original (see the tables in the annex for the accepted measures).

At each demonstration site, the research team took the final list to the management team of the institution as well as to other relevant internal bodies, to negotiate its implementation during the following academic year (2023-2024)

All along the implementation and monitoring process in our next work package, WP5, special attention will be paid to the ways in which the different measures relate to the different steps in our roadmap: engagement, connections, visions and actions. The figures below illustrate how, at this stage of the project, we envision such a monitoring process (Lehtonen & Mykrä, 2023).

COMPETENCE?

1. ENGAGEMENT

GREENCOMP:

- VALUING SUSTAINABILITY
- SUPPORTING FAIRNESS
- PROMOTING NATURE



EMBODYING SUSTAINABILITY VALUES

ENVIRONMENTAL PERFORMANCE: CHANGE OF THE CONDITIONS
 NEW EQUIPMENT, INFRASTRUCTURE, ACCOUNTING and MONITORING

- How to engage students in learning from new facilities?
- How to find the best ways to promote nature?

INDIVIDUAL COMPETENCE: CHANGE OF THE PEOPLE
 FIELD TRIPS, EVENTS and THEME WEEKS, INFORMATION and AWARENESS, LEARNING POSSIBILITIES, COMPETITION and REWARDS

- How to involve all the students and teachers in learning?
- What is the most important knowledge?

COLLECTIVE COMPETENCE: CHANGE OF THE SYSTEM
 CURRICULA, PEDAGOGY, CULTURE, STEERING DOCUMENTS, COOPERATION, RESEARCH

- How to find the place and time for engaging people?
- How to embed sustainability values in curriculum and school culture?

COMPETENCE?

2. CONNECTIONS

GREENCOMP:

- SYSTEMS THINKING
- CRITICAL THINKING
- PROBLEM FRAMING



EMBRACING COMPLEXITY

ENVIRONMENTAL PERFORMANCE: CHANGE OF THE CONDITIONS
 NEW EQUIPMENT, INFRASTRUCTURE, ACCOUNTING and MONITORING

- How to use measurements to learn about connections between consumption and environmental impact?
- What is the most crucial thing to change at school?

INDIVIDUAL COMPETENCE: CHANGE OF THE PEOPLE
 FIELD TRIPS, EVENTS and THEME WEEKS, INFORMATION and AWARENESS, LEARNING POSSIBILITIES, COMPETITION and REWARDS

- How the every day acts are connected to big picture of sustainability?
- How to turn the external motivation into internal motivation?

COLLECTIVE COMPETENCE: CHANGE OF THE SYSTEM
 CURRICULA, PEDAGOGY, CULTURE, STEERING DOCUMENTS, COOPERATION, RESEARCH

- What are the most important partnerships?
- What kind of structures are constraints on change?

COMPETENCE?

3. VISION

GREENCOMP:

- FUTURES LITERACY
- ADAPTABILITY
- EXPLORATORY THINKING



ENVIRIONING SUSTAINABLE FUTURES

ENVIRONMENTAL PERFORMANCE: CHANGE OF THE CONDITIONS
 NEW EQUIPMENT, INFRASTRUCTURE, ACCOUNTING and MONITORING

- What is the educational goal of the procurement?
- How students can use this experience in their future?

INDIVIDUAL COMPETENCE: CHANGE OF THE PEOPLE
 FIELD TRIPS, EVENTS and THEME WEEKS, INFORMATION and AWARENESS, LEARNING POSSIBILITIES, COMPETITION and REWARDS

- How to envision and create the preferred future together?
- How to deal with uncertainty?

COLLECTIVE COMPETENCE: CHANGE OF THE SYSTEM
 CURRICULA, PEDAGOGY, CULTURE, STEERING DOCUMENTS, COOPERATION, RESEARCH

- How to plan research based and creative strategies?
- How to envision steps for long term objectives

COMPETENCE?

ENVIRONMENTAL PERFORMANCE:
CHANGE OF THE CONDITIONS
 NEW EQUIPMENT, INFRASTRUCTURE,
 ACCOUNTING and MONITORING

INDIVIDUAL COMPETENCE:
CHANGE OF THE PEOPLE
 FIELD TRIPS, EVENTS and THEME WEEKS,
 INFORMATION and AWARENESS, LEARNING
 POSSIBILITIES, COMPETITION and REWARDS

COLLECTIVE COMPETENCE:
CHANGE OF THE SYSTEM
 CURRICULA, PEDAGOGY, CULTURE,
 STEERING DOCUMENTS,
 COOPERATION, RESEARCH

4. ACTION

GREENCOMP:

- POLITICAL AGENCY
- COLLABORATION
- INDIVIDUAL AGENCY



- How other schools can learn from this measure?
- How to increase the students' competence to make same kind of measures in their lives?

- How to activate learners?
- How to promote learning to have impact on policies?

- How the school can change the whole society?
- How to connect the strategies to the concret everyday life?

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8. ANNEXES

The tables of the annexes show the total number and description of the measures proposed by students, teachers, and staff members. For each one, it is indicated also its viability according to the reflections of the participants in the SCT-2 and SCC-2.

Thus, for example, measures have been proposed that may be of great interest to the educational center, but that cannot be addressed within the framework of this project due to budgetary or time limitations, so they will be discarded now, although they can be recovered later, in case the educational centres want to promote them in the future. In other cases, some proposed measures intend to complete, expand, or boost other measures that are already underway. While other types of measures are radically new and viable within the time frame of this project. All these characteristics have been indicated in the ‘comments’ column of the tables.

Annex 1: List of co-designed measures at the basic education demonstration sites

This section presents the co-decided measures in the schools of the basic education level. It is to be noted that in the case of Romania, the participatory process was implemented at two schools of basic education.

Table 11: List of measures proposed at the demonstration site of the Juhannuskylä school (Finland)

	Measures	Comments
1	Inventory of existing materials and collective storage.	Pre-selected measure
2	Tasting event for vegetarian dishes.	Pre-selected measure
3	Students’ cooking book for vegetarian alternatives.	Pre-selected measure
4	Making the spaces of the school more clean and comfortable. Making recycling more efficient with more bins. Campaign. Using students’ ideas and peer-mentoring to sustainability.	Pre-selected measure
5	Time for careful planning of procurements.	Proposal of interest for the future, but which probably will not be carried out during the project

6	Elevating positive attitudes and will. Collective discussion among teachers: what does sustainability mean to me -> promoting will-formation and finding collective goals. Morning assemblies, info breaks for whole school.	Pre-selected measure
7	Discussion cards and posters for the corridors and school restaurant and staff room.	Pre-selected measure
8	Oldest dress theme day.	Pre-selected measure
9	Influencing on the criteria procurements: how to consider sustainability aspects.	Proposal of interest for the future, but which probably will not be carried out during the project
10	Collaboration with Voimia food and cleaning service company to promote participatory approach in developing sustainability in their practices.	Proposal of interest for the future, but which probably will not be carried out during the project

Table 12: List of measures proposed at the demonstration site of EB Bobadela (Portugal)

	Measures	Comments
1	Water: Install faucets with sensors or flow reducers.	This will probably not be done during the project, dependent on funds
2	Water: Take field trips to the water museum.	Pre-selected measure
3	Energy: Implement solar panels at the school.	Pre-selected measure. There will be a meeting with the municipal council to see the feasibility)
4	Energy: Implement efficient lighting systems (LED).	This will probably not be done during the project, dependent on funds
5	Energy: Implement double-glazed windows and thermal blinds.	In implementation
6	Change the beginning of the classes depending on the seasons of the year	This will not be done during the project
7	Energy route: ADENE—information sessions and face-to-face training.	Pre-selected measure
8	Energy: Integrate the assessment of energy consumption into the disciplines.	Already in implementation and to continue
9	Waste: Implement more recycling bins inside the school according to the needs.	Pre-selected measure
10	Waste: Implement recycling "islands" - set of containers for various types of garbage	Pre-selected measure

11	Waste: Create reward programmes and competition between classes or buildings in favour of more efficient waste separation.	Pre-selected measure. The second main measure
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Table 13: List of measures proposed at the demonstration site of Dragasani School (Romania)

	Measures	Comments
1	Training courses (in the field of sustainability) for the teachers	Pre-selected measure
2	Harmonization program of the contents of various disciplines (regarding sustainability)	This will probably not be done during the project
3	Creation of an optional course dedicated to sustainability	This will probably not be done during the project
4	Acquisition/production of educational materials for sustainability	This will probably not be done during the project
5	Infrastructure improvement – smart sensors for water	Pre-selected measure
6	Infrastructure improvement - smart lighting	Pre-selected measure
7	Infrastructure improvement - selective waste collection	Pre-selected measure
8	Infrastructure improvement - energy smart monitoring for the buildings	Pre-selected measure
9	Infrastructure improvement - installation of solar panels for water heating	Pre-selected measure. This is the main measure to carry out.
10	Extending of the school digitization	It was prioritized, but it will probably not be done during the project
11	Supporting the activities of sustainability groups	This will probably not be done during the project
12	Improvement of the green area of the school	This will probably not be done during the project, dependent on funds
13	Modernization of sports infrastructure	It was prioritized, but it will probably not be done during the project
14	Mobility, electric transport for students	This will probably not be done during the project
15	Installation of the "we support the sustainability of our city" panel	This will probably not be done during the project

Table 14: List of measures proposed at the demonstration site of Sercaia school (Romania)

	Measures	Comments
1	Training courses (in the field of sustainability) for the teachers	Pre-selected measure
2	Harmonization program of the contents of various disciplines (regarding sustainability)	This will probably not be done during the project
3	Creation of an optional course dedicated to sustainability	Pre-selected measure
4	Acquisition/production of educational materials for sustainability	This will probably not be done during the project
5	Infrastructure improvement - smart lighting	Pre-selected measure
6	Infrastructure improvement - selective waste collection	It was prioritized, but it will probably not be done during the project
7	Infrastructure improvement - energy smart monitoring for the buildings	It was prioritized, but it will probably not be done during the project
8	Infrastructure improvement - installation of solar panels for water heating	Pre-selected measure. This is the main measure to carry out.
9	Extending of the digitalization of the school	It was prioritized, but it will probably not be done during the project
10	Supporting the activities of sustainability groups	Pre-selected measure
11	Improvement of the green area of the school - laboratory/workshop for agricultural activities	This will probably not be done during the project
12	Modernization of sports infrastructure	It was prioritized, but it will probably not be done during the project
13	Mobility, electric transport for students	This will probably not be done during the project
14	Installation of the "we support the sustainability of our city" panel	This will probably not be done during the project
15	Infrastructure improvement -water sensors in bathrooms	Pre-selected measure

16	Laboratory modernization	This will probably not be done during the project
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Table 15: List of measures proposed at the demonstration site of CEIP Mozart (Spain)

	Measures	Comments
1	Install solar PV panels for self-consumption combined with an activity in which the students prepare an investigative report about solar energy	Pre-selected measure. It will be implemented the next scholar year
2	Increase the number of trees combined with a sustainability training programme for teachers.	Pre-selected measure. It will be implemented the next scholar year
3	Install insulating windows combined with an awareness campaign about energy efficiency.	Pre-selected measure. It will be implemented the next scholar year
4	Improve the orchard/vegetable garden. Promoting sustainable work in the school garden.	Pre-selected measure. In implementation
5	Install automatic sensor faucets.	This will probably not be done during the project
6	Healthy and sustainable school canteens. Awareness campaign on Sustainable and healthy food in the form of workshops with students.	Pre-selected measure. In implementation
7	Install and increase bicycle parking spaces.	This will probably not be done during the project
8	Reuse (for example clothes). Second hand flea market connected with the resulting CO2 and water savings	Pre-selected measure. In implementation
9	Atmospheric pollution sensors. Outdoor air quality monitoring by students and families combined with a reflection event with families	Pre-selected measure. It will be implemented the next scholar year
10	Environmental education. Umbralejo (nature school town) field trip	Pre-selected measure. In implementation
11	ECF4CLIM learning spaces	This will probably not be done during the project The use of the learning space is part of the activities of the ECF4CLIM project. A testing phase is planned for the next school term. Its use is planned as stimulus materials for SCT2 and SCCs

12	Proper maintenance of classroom radiators	This will probably not be done during the project
13	Recycle (containers)	This will probably not be done during the project
14	Improve sustainable mobility	This will probably not be done during the project

Annex 2: List of co-designed measures at high school demonstration sites

This section presents the co-decided measures in the selected high schools.

Table 16: List of measures proposed at the demonstration site of SAMKE High School (Finland)

	Measures	Comments
1	Establishing a students' (climate soldiers) team that designs together and carries out interventions to promote sustainability (The students get one study credit out of participation). This team will focus on implementing also the ECF4CLIM measures (below).	Pre-selected measure
2	Decreasing the amount of wasted food. Campaign.	Pre-selected measure
3	Improving recycling and more bins.	Pre-selected measure
4	More visibility to sustainability: anti commercials, info about impact of sustainability actions and campaigns & data of consumption to the screens.	This will probably not be done during the project
5	More interesting excursions and lessons where students are active and concrete action included	This will probably not be done during the project
6	Proper places for bikes to lock.	This will probably not be done during the project
7	Collecting feedback about the quality of the vegetarian dishes at the school restaurant through and inquiry. Trying to influence in the Voimia food and cleaning service company	Pre-selected measure

Table 17: List of measures proposed at the demonstration site of EB Camarate (Portugal)

	Measures	Comments
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1	Improve the bus and bike lanes network.	Very unlikely to be implemented. It does not depend on the school
2	Implement projects for learning how to drive a bicycle for the entire school community, to be carried out at school.	Pre-selected measure. In implementation
3	Green spaces: Reactivate the school's biological garden.	Pre-selected measure. This is the Main Measure). The school had to prepare a layout with everything they needed to redo the place and present a preliminary budget for us to start working together.
4	Create green walls (outdoor) or green corridors (indoor) to promote the improvement of local air quality.	This will probably not be done during the project
5	Promote awareness of the role of green species in the quality of the outdoor air among the school community.	Pre-selected measure (to be implemented, but after measure 4).
6	Water: Promote awareness among the school community about behavioral habits that can contribute to reducing water consumption at home and school.	This will probably not be done during the project
7	Water: Create a grey water reuse system and a rainwater saving system for floor washes and irrigation of green spaces	This will probably not be done during the project
8	Water: Install flow reducers and flushing systems with water flow control	This will probably not be done during the project
9	Energy: Implement efficient lighting systems (LED).	This will probably not be done during the project, dependent on funds
10	Energy route: ADENE—information sessions and face-to-face training.	Pre-selected measure
11	Energy: Integrate the assessment of energy consumption into the disciplines.	Pre-selected measure (already implemented and to continuing)
12	Waste: Promote awareness-raising actions for the school community about the correct selective separation of waste and the impact on the environment.	Pre-selected measure
13	Waste: Create reward programmes and competition between classes or buildings in favour of more efficient waste separation.	Pre-selected measure
14	Field Trips to “Valorsul” (recycling center).	Pre-selected measure (probably will be implemented)
15	Use organic waste compost bins	This will probably not be done during the project
16	Define a waste management strategy (with staff members)	This will probably not be done during the project

Table 18: List of measures proposed at the demonstration site of Mioveni high school (Romania)

	Measures	Comments
1	Extension of extracurricular activities regarding sustainability (thematic visits, actions in nature, greening, cleaning some places)	Pre-selected measure
2	Improving selective collection of wastes in the school	It has been prioritized, but depending on the center's possibilities
3	Improvement of the green area of the school	This will probably not be done during the project
4	Improving the infrastructure for sports	Pre-selected measure
5	Construction of parking for bicycles and scooters	This will probably not be done during the project
6	Extension of school digitization (electronic catalogue, portfolios, homeworks)	Pre-selected measure (but depending on the center's possibilities)
7	Training programme for teachers (in the field of sustainability)	Pre-selected measure
8	Harmonization program, between various disciplines, for the contents regarding sustainability	This will probably not be done during the project
9	Creation of an optional course dedicated to sustainability	This will probably not be done during the project
10	Acquisition/production of educational materials for sustainability	Pre-selected measure
11	Infrastructure improvement - water sensors at the sanitary facilities	Pre-selected measure
12	Infrastructure improvement - intelligent lighting	This will probably not be done during the project
13	Infrastructure improvement - building energy monitoring	This will probably not be done during the project
14	Infrastructure improvement - installation of solar panels for water heating	Pre-selected measure. This is the main action to be done
15	Supporting the activities of sustainability groups in the school	This will probably not be done during the project

Table 19: List of measures proposed at the demonstration site of IES Ítaca, Sevilla (Spain)

	Measure	Description
1	Measuring the impact of shading projected by trees: Installation of control system and monitoring of the influence of shading on the air conditioning needs of the building	Preliminary steps will be done next school year for evaluating the feasibility to achieve this measure.

2	Internal regulations for equipment repair: Development of an internal regulation that establishes as a priority way of repairing equipment against new acquisition	This will probably not be done during the project
3	Photovoltaics: Training for the follow-up and monitoring of photovoltaic solar installation installed in the institute and its impact on electricity expenditure	This will probably not be done during the project
4	Environmental programs. Sustainability awareness. Dynamic awareness (for students). Participation of students in environmental education programs	Pre-selected measure
5	Sustainability research: activity for fostering new curricular itineraries.	Preliminary steps will be done next school year for evaluating the feasibility to achieve this measure.
6	Pergolas with vegetation: Shading systems. Bioclimatization study. Support for activities	Preliminary steps will be done next school year for evaluating the feasibility to achieve this measure.
7	Garden box: Development of a garden to grow vegetables, etc. Support for training activities	This will probably not be done during the project
8	Proper use of sorting garbage containers: Awareness of selective garbage collection, especially in the schoolyard.	Pre-selected measure
9	Waste recycling: Awareness and training program in local recycling points.	Pre-selected measure
10	Nebulized water assisted temperature controlled: Installed nebulizers in the schoolyard to decrease the temperature in warm months.	This will probably not be done during the project

Annex 3: List of co-designed measures at the university demonstration sites

This section presents the co-decided measures at the selected universities.

Table 20: List of measures proposed at the demonstration site of the University of Jyväskylä (Finland)

	Measures	Comments
1	Organising discussions on sustainability in curricula work among teachers and students:	Pre-selected measure (in implementation, partly done)

	<ul style="list-style-type: none"> – Seminar and a panel discussion on sustainability and curricula in dialogue between personnel and students. – Organising a sustainability breakfast event related to curricula work among teachers and students at the faculty of education and psychology – Coaching and empowering Students union’s Academic affairs sub-committee for promoting sustainability in the current curriculum development process. – ☒ Facilitate communication through Wisdom community and with students about the acute needs and challenges of promotion of sustainability in the curricula development of different fields. 	
2	Better integrate sustainability in the studies (practice and pedagogy): Pilot course on sustainability competences for psychology students	Pre-selected measure
3	Better integrate sustainability in the studies: Preparing concrete teaching and study materials of each step of the ECF Roadmap	Pre-selected measure
4	Suggesting of an open voluntary course that would allow participating in sustainability development work at JYU integrated in the study schedule. This could enable for example participation in promoting sustainability, favouring vegetarian meals at the campus restaurants	This will probably not be done during the project
5	Organising an event to make sustainability more visible and possibilities to make change more accessible together with Students’ unions sustainability subcommittee	Pre-selected measure
6	Writing news about the relevance and challenges of promotion of sustainability in curricula development, emphasising the perspectives of students	Pre-selected measure
7	Collaboration with campus restaurant in promotion of sustainability and vegetarian meals	This will probably not be done during the project

Table 21: List of measures proposed at the demonstration site of the University of Lisboa, Instituto Superior Técnico (Portugal)

	Measures	Comments
1	Promoting sustainability in teaching: the creation of the curricular unit "Climate Crisis and Fair Transition," which is transversal to all IST courses.	Pre-selected measure (in implementation)
2	Promote master and doctoral theses in the field of sustainability.	Pre-selected measure (in implementation, partly done)
3	Remove cars from the Alameda campus.	Very difficult to implement in the near future

4	Installation of air quality sensors in classrooms.	Pre-selected measure (already implemented).
5	Installation of solar panels in the Civil building.	Pre-selected measure (in implementation, partly done)
6	An integrated plan of initiatives for the outdoor space of the Alameda Campus to make the campus a sustainable and biodiverse space: I. "Técnico + Verde" project - (In English: "Technical + Green" Project). Objectives: Promote a Biodiversity and Permaculture Garden (Hortus IST); Promote green meadow zones; Construction of a green wall; Installation of green roofs; Promote the APIST Pedagogical Garden; Build comfortable and communicative gardens on campus; Increase furniture in green spaces to promote contact with nature.	Pre-selected measure (Ongoing and to continue for years to come).
7	Improve the communication of activities in the area of sustainability at IST: I. Use existing tools to communicate sustainability: the website, the newsletter, the social networks, and short videos.	Pre-selected measure (one of the Main Measures)
8	Improve the communication of activities in the area of sustainability at IST: II. Create a space for reflection and information sharing: a) Create an event with architecture students to design the space; b) Promote an idea contest; c) Hold an exhibition to present the ideas to the community; c) Consolidate the best ideas, involving professors and students of architecture, materials, and civil construction; e) Build the space.	Pre-selected measure (The Main Measure -The one that will take the most funds)
9	Improve the communication of activities in the area of sustainability at IST: III. Participate in dissemination actions: European Researcher's Night; Técnico Day; Técnico Green Week; Integration week for new students.	Pre-selected measure (one of the Main Measures)
10	Inclusion of sustainability issues in IST's activities and strategic plan.	This will probably not be done during the project
9	Promoting organic and sustainable food: I. "Bio Técnico" Project: Adding a kiosk that will give people more options for meals made with organic ingredients.	Pre-selected measure (in implementation, partly done)
10	Promote the separation of waste at the Alameda Campus and the Technological and Nuclear Campus. I. "Técnico faz a diferença" Project (In English: "Técnico makes the difference" Project): a) Accounting for the waste produced; b) Acquire and install containers; c) Provide training to the academic community; d) Optimise waste collection with the waste management company	Pre-selected measure (already implemented and to continue)

Table 22: List of measures proposed at the demonstration site of the University Pitesti, Faculty of Science (Romania)

	Measures	Comments
1	Programme “train the trainers” for sustainability	Pre-selected measure (The main measure)
2	Programme to harmonise the sustainability contents of different course	This will probably not be done during the project
3	Developing of a dedicated course on sustainability and climate change adaptation	Pre-selected measure (The second main measure)
4	Development of educational materials for sustainability	This will probably not be done during the project
5	Set-up a lab dedicated to sustainability	This will probably not be done during the project
6	Develop software applications to simulate the effect on environment of our activities and climate changes	This will probably not be done during the project
7	Improvement of infrastructure – installing smart sensors to the water in toilets	This will probably not be done during the project
8	Improvement of infrastructure – installing smart lightening	This will probably not be done during the project
9	Improvement of infrastructure – installing a modern selective waste collection system	This will probably not be done during the project
10	Improvement of infrastructure – installing system for energy monitoring in the buildings	This will probably not be done during the project
11	Extending the digitalization in the university	This will probably not be done during the project
12	Support for the activity of groups for sustainability	Pre-selected measure
13	Improvement of green spaces and sport facilities	This will probably not be done during the project
14	Mobility, introducing the electric transport between the different locations of the university	This will probably not be done during the project

Table 23: List of measures proposed at the demonstration site of the Autonomous University of Barcelona, Faculty of Political Science and Sociology (Spain)

	Measures	Comments
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1	Energy: Improve thermal insulation (windows, roofs, screens, etc.) (especially due to heat). Change shutters and windows to improve insulation. Put screens or plant covers on the roofs and walls (think feasibility)	This will probably not be all done during the project (already planned by the University, it will be implemented soon, although it will be deployed through a long-term timetable)
2	Energy: Install more energy-saving mechanisms (sensors, valves, thermostats, replace incandescent lights with LEDs, etc.)	Pre-selected measure (partially done, more efforts and resources should be devoted to it) (it corresponds to a infrastructural university plan)
3	The inner spaces and courtyards are perceived as wasted. Reform them to make them friendlier, more useful, open and integrated into the life of the centre. Not only for improving thermal comfort, but also to make them more welcoming (improve socialization and disseminate sustainability issues and data).	Pre-selected measure (The campus strategic plan contemplates this, but not done yet)
4	Enhance the green spaces around us, which are now forgotten. Promote outdoor teaching spaces and more spaces for leisure and activities.	This will probably not be done during the project (the campus strategic plan contemplates this, but not done yet)
5	Make more efficient use of spaces by managing timetables (make better use of air-conditioned classrooms). Tend to more common and better conditioned spaces (and tend to co-working for teachers)	This will probably not be done during the project
6	Waste: Promote the 'reuse' of objects. Organize materials exchange services within the campus. Fairs, barter markets, etc. could be held, also in collaboration with the surrounding towns.	This will probably not be done during the project (the campus strategic plan contemplates this, but not done yet)
7	Waste: Install more compartmentalized recycling bins around and ban bins with mixed waste. Improve litter signage.	Outside the scope of the current project (the campus strategic plan contemplates this, but not done yet)
8	Foster more transversal and less rigid teaching spaces, which allow projects to be carried out between different subjects, living-labs, etc., and which allow to deal with issues of sustainability, energy/climate transition, food system impacts, etc.	Pre-selected measure
9	Motivate students to involve themselves and mobilize in environmental, global, social justice causes, etc. Promote environmental volunteering on campus (under decent conditions).	Pre-selected measure
10	Improve available environmental data (on waste, energy, water consumption, etc.). If we don't know what the starting situation is, we won't know how to contribute to it.	Pre-selected measure. Main action to be done (strategically combined with other actions such as 3, 8, 11)
11	Communication and awareness: Make the improvement actions that are taken more visible. Report, not only on the things that are done,	Pre-selected measure



D4.4. Compilation of measures co-designed by the educational communities and presented at school and university events

	but also on what could be done (recommendations, good practices, etc.).	
12	Food system: Rethink the food offer in campus restaurants and cafes, to offer more healthy, sustainable and socially fair options. There should be a food plan for the campus, which includes all the options (menus, cafeterias, vending and lunch boxes), with health, environmental and social criteria (food sovereignty).	This will probably not be done during the project
13	Food system: There is a (perhaps unfounded) perception that a lot of food is 'wasted'. Supply and demand are not well adjusted. Have a plan for minimize food waste.	This will probably not be done during the project
14	Improve awareness of the size of the campus and how easy it is to walk (the distances are not that far). Nor is the campus so big that so many internal buses are needed.	Pre-selected measure