



Promoting sustainability competences in education

An Innovative Hybrid
Participatory Approach

A detailed Guide

Index

1. About this Guide	4
1.1. What is this method for?	5
1.2. What is unique about our hybrid participatory approach?	6
1.3. When should I use it?	8
1.4. Is it suitable for me?	10
2. Background: the ECF4CLIM project	12
3. The methodological basis	16
4. The hybrid participatory approach in practice: Sustainability Competence Teams (SCTs) and Committees (SCCs)	20
4.1. Meetings 1 & 2. Assessing sustainability competences and co-designing interventions	26
4.2. Meetings 3 & 4. Implementing and tracking the interventions	46
4.3. Meetings 5 & 6. Co-evaluating the interventions and the participatory process	64
5. The ECF4CLIM project team	86
5.1. Coordinators	87
5.2. Partners	88
5.3. Demonstrations Sites	89

About this Guide



Our innovative hybrid participatory process is designed to support the work of educational communities in the co-design, co-implementation and evaluation of interventions aiming to promote sustainability competences.

It was designed, implemented and evaluated within the framework of the [ECF4CLIM project](#), which is funded by the EU and fosters participatory processes in schools and universities to enable education for sustainability.

This guide is a comprehensive resource for potential users of the participatory process. Drawing on case study material, it supports the planning of its use in specific educational contexts. It also helps potential users decide whether the method is suitable for them.

1.1. What is this method for?

- A tool that supports the development of **sustainability competences** within educational communities.
- A strategy that **encourages reflection and deliberation about the nature of sustainability competences** and their three interconnected spheres: individual, collective, and technical/material.
- A series of processes and techniques that raise **awareness of the current state of sustainability competences** in each specific educational centre (school or university), support the **collaborative design of interventions** to promote them, facilitate joint deliberation on their implementation and enable **participatory evaluation** of the potential impact of such interventions.

1.2. **What is unique** about our hybrid participatory approach?

Participants in the ECF4CLIM experience emphasize:



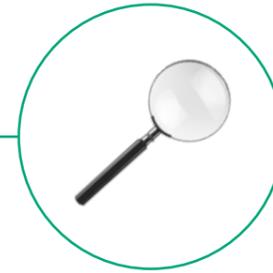
Culture of co-learning

Through the SCTs and SCCs, *new interpersonal relationships* are formed between students and teachers, creating a "culture of co-learning" rather than top-down instruction.



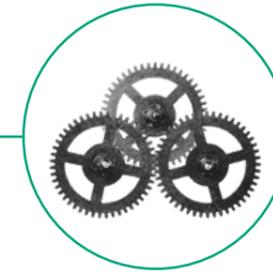
Equal voice

The process deliberately gives *equal voice* to all roles and everyone is encouraged to speak up and contribute. Students feel thrilled to have 'the freedom to speak openly' whenever they want, either with their peers or with other members of their educational community, who they don't usually have the chance to speak to. They feel they have a voice. Teachers, on the other hand, note that hearing students' ideas 'helps you think things through better' as an adult, providing a sort of 'wake-up call' and inspiration. This openness fosters self-efficacy and satisfaction.



Learning experience in itself

Students highlight that working in teams with diverse participants was a learning experience in itself, understanding classmates' opinions and generating "more and better ideas" through group debate.



Bridging the gap between theory and real-world application

The participatory process modelled the very competences of collaboration, critical thinking, and communication. It turned learning into an active, dialogic experience rather than a passive one.



Adjusting expectations

The participatory process helps to align expectations among different stakeholders (with potentially very diverse viewpoints) regarding what sustainability is and how it can be applied to the academic life of the centre. This is useful for designing long-term projects and involving the different members of the educational community in a joint strategy.

1.3. **When** should I use it?

If you are a school or university interested in promoting sustainability competences within your educational community, our hybrid participatory method can support you at different stages of the process. Based on our experience in the ECF4CLIM project, it is especially useful when:



You would like to design meaningful and practical interventions to promote sustainability competences at your school or university.



You are implementing intervention(s) to promote sustainability at your school or university and would like to engage your educational community in monitoring them.



You would like to evaluate ongoing or completed interventions to promote sustainability competences at your school or university.



You would like to co-design, co-implement and co-evaluate interventions to promote sustainability competences at your school or university.

These interventions can be individual, institutional or technical-material in nature.

1.4. Is it **suitable** for me?

To make the most of our hybrid participatory method, your school or university should be committed to engaging the entire educational community and working with a support team with social research skills in an interactive process of design and data appreciation.

Genuine institutional commitment to the hybrid participatory process

The ECF4CLIM experience highlights the pivotal role of headmasters and school management in enabling or hindering transformations in sustainability competences. Our experience also shows that teacher commitment is crucial, not just from those who are already highly aware of the topic. The process cannot rely on the voluntary participation of a few teachers or staff members.

ECF4CLIM educators stress that sustainability initiatives must be institutionalized by integrating them into school routines and curricula, with dedicated time and resources, to ensure continuity and avoid dependence on personal effort.

In addition, there needs to be a willingness to take the outputs of the hybrid participatory process into account when developing or modifying educational programs.

Working with a support team with social science skills

Skills from social research need to be properly integrated into the participatory process, through a support team. Although the method may appear simple, it is also sophisticated and requires certain social research skills. A support team would be necessary for the complete and systematic implementation of the process.

You may also only be interested in certain parts of the process, such as co-designing, co-monitoring and/or co-evaluating interventions, and you may already have the necessary expertise at your school or university.

If you are interested in the process but lack the necessary support team, ECF4CLIM could provide specific training.

Please refer to the contact details of the coordinators in the section ['The ECF4CLIM project team'](#).

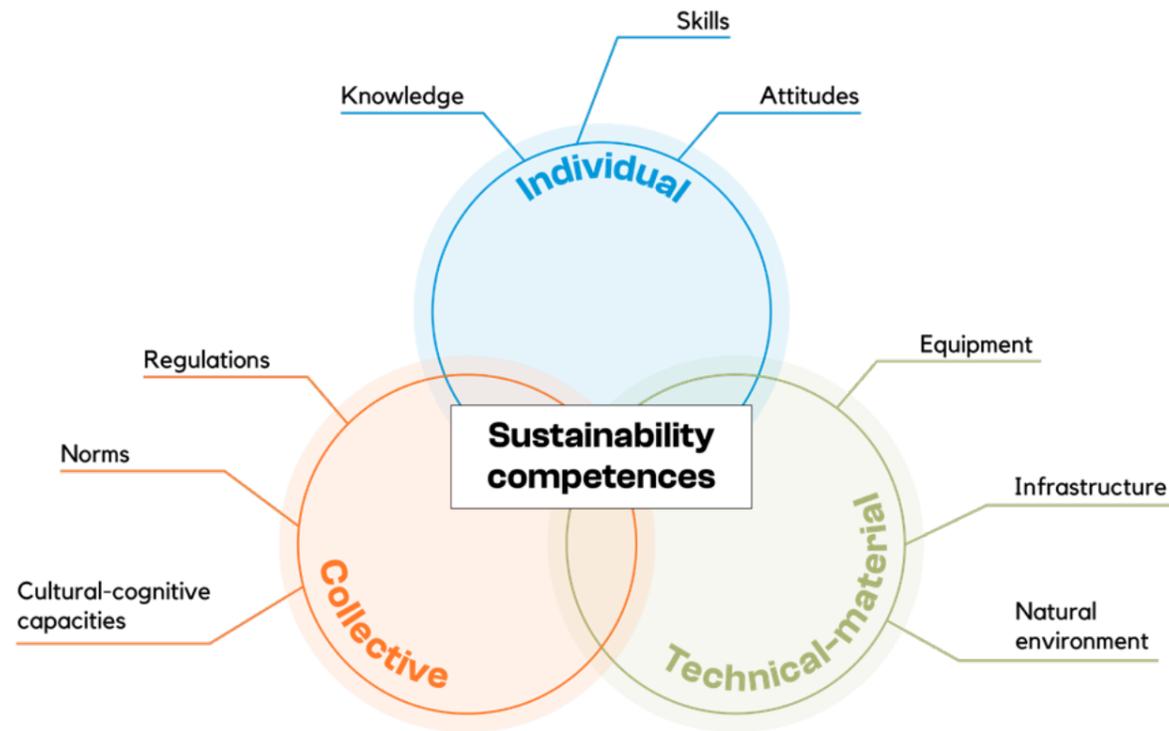
Background: the ECF4CLIM project



In the face of the current socioecological crises, sustainability competences are essential for humankind's survival. In ECF4CLIM, we develop, test and validate a European Competence Framework (ECF) for transformational change, which will empower the educational community to act against climate change and towards sustainable development. Through a multidisciplinary, transdisciplinary and participatory process, our ECF outlines the key drivers for sustainability competences in educational practice.

In ECF4CLIM we broaden the concept of sustainability competences from an individual perspective to spheres of collective and technical-material competences.

- **By individual competences**, we mean the knowledge, skills, and attitudes that enable individuals to act for sustainability.
- **By collective competences**, we refer to the regulations, norms, and cultural-cognitive capacities of an organisation that support sustainability action.
- **By technical-material competences**, we refer to the equipment, infrastructure, and natural environment that enable or support sustainability efforts.



Overview of the three interconnected types of sustainability competences: individual, collective and and technical-material. *ECF4CLIM project roadmap.*

Notably, these three spheres of competence are deeply intertwined.

Applying an **innovative hybrid participatory approach**, rooted in participatory action research and citizen science, ECF4CLIM co-designs the ECF in selected schools and universities, by:

- Elaborating an initial ECF, supported by crowdsourcing of ideas and analysis of existing ECFs.
- Establishing the baseline of sustainability competences, i.e., individual, collective, and technical-material competences.

- Implementing practical, replicable and context adapted technical, behavioural, and organisational interventions that foster the acquisition of competences.
- Evaluating the ability of the interventions to strengthen sustainability competences.
- Validating the ECF.

Our innovative methodological approach provides the broad educational community **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). The proposed hybrid participatory approach is unique in that it **systematically explores individual, organisational and institutional factors that enable or constrain the desired change**. It encourages students, teachers, staff, families and other external stakeholders to work together to **assess sustainability competences and reflect on the impact of actions**. By emphasising creativity, transdisciplinarity and iterative reflection, it supports transformative change and enhances institutional capacity to address sustainability challenges.



The **methodological** **basis**

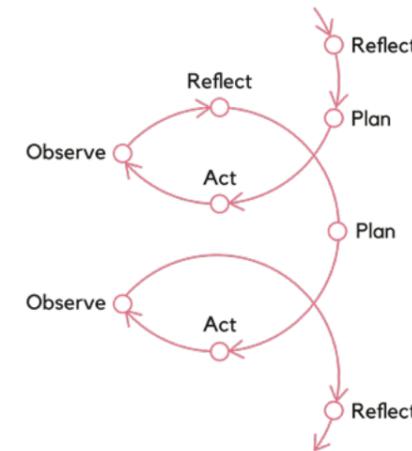


Our innovative hybrid participatory approach strongly relies on the principles of participatory action research and on the STAVE tool (developed, tailored and operationalised in the [EU Pachelbel project](#) to support policy-making for sustainability). It is grounded in action-oriented traditions, drawing on participatory action research, practitioner research (Heikkinen et al, 2020) and citizen science.

Our hybrid participatory design aims to surface site-specific sustainability competences and the obstacles to improving them through deliberation and co-creation (Kemmis, 2014; Prades et al, 2017). Creativity and transdisciplinarity are fundamental components of our hybrid participatory approach.

The key pillars of our hybrid participatory approach are as follows.

- Participatory action research sees **self-reflection** as the driving force for change and transformation. Individuals are not passive subjects but active agents in the research process and in drawing conclusions from what they learn (Kemmis, 2014).
- In line with the principles of the STAVE tool, and to strengthen our capacity for reflection, **iteration** is another pillar in our hybrid participatory approach. Successive interactions within and between different actors contribute to rethink existing knowledge and assumptions (Prades et al, 2017).
- **Creativity** is an essential part of learning for sustainability. Rather than education, which is limited to instruction and transfer of knowledge, creativity supports innovation and problem solving to address complex ecological problems (Sandri, 2013).
- **Transdisciplinarity** is another critical element, as we aim to involve interaction between the academia and the "outside world", most notably including citizens and stakeholders holding various types of experiential knowledge (Ortiz et al, 2020). Complex problems require participation, openness and new and diverse forms of knowledge (Bergman et al, 2008, 2021; Jahn et al, 2012) as well as disciplinary integration (Gibbons et al, 1994).
- Participatory action research is dynamic and reflective by nature and, therefore, new methodological insights may be incorporated to the participatory process. **Sensitivity to context** (adaptive and constructed iteratively through the project) (Wickson et al, 2006) is also crucial in our hybrid participatory approach.



Our focus is therefore on developing practical and applicable tools that promote thinking and self-reflection on sustainability competences at schools and universities, as a first step towards transformational change in the educational community. The practical and applicable tools and methods include deliberative workshops and open debates, mind maps, oval mapping, resource allocation exercises, short surveys, evaluation questionnaires, etc.

Through these tools and methods, communities engage in joint reflection on how to promote sustainability competences, with the goal of catalysing change towards a more sustainable future (Horlick-Jones and Prades 2014; Espluga et al. 2016; Prades et al. 2017). The communities deliberate on how to promote sustainable behaviours, and to jointly evaluate the outcomes of the learning experience. This experiential learning process empowers the broader educational community to take steps towards a transformational change for a more sustainable future.

In ECF4CLIM, the design and implementation of specific tools and methods were strongly constrained by the limitations of data collection at our schools and universities (Demonstration Sites, or DSs) and by the challenges associated with transdisciplinary research in practice. Participants at our DSs have limited time for data collection, it is difficult to maintain full control over sampling and data collection procedures, and some of the research partners responsible for data collection lack expertise in social science methods. All these constraints must be considered when designing and implementing our hybrid participatory approach. See the section "[Is it suitable for me?](#)".

The hybrid participatory approach in practice:

Sustainability Competence Teams (SCTs) and Committees (SCCs)



Two types of innovative organisational and deliberative structures/groups need to be established at each school or university:

- **Sustainability Competence Teams (SCTs):** Teams consisting of students, teachers, and other staff from educational communities that promote deliberation and reflection on the challenges and competences associated with sustainability in practice within each group.
- **Sustainability Competence Committee (SCCs):** A transdisciplinary committees comprising representatives from the SCTs and the wider educational community that promotes deeper reflection, broadens perspectives and encourages further collaborative thinking and discussion.

The SCTs allow for homogeneous group discussions, with students discussing with students, teachers discussing with teachers, and staff discussing with staff. In contrast, the SCCs allow for heterogeneous group discussions, integrating representatives from the entire educational community.

The ideal number of participants for each SCT (students, teachers and staff) is 6–9, which allows for meaningful discussion in a homogenous group.

If the number of available/interested teachers and/or staff is limited, you can create a single team with them. This happens in some of the schools and universities at ECF4CLIM.

For the SCCs, the ideal number of participants is 8–15, including:

- Representatives from students, teachers and administrative staff (one or two per profile), ideally those participating in the SCTs. If this is not feasible, you may include other students or representatives from student associations, as well as other representatives from the demonstration sites, such as directors and experts in sustainability and/or educational matters.

- Representatives from local/regional authorities responsible for education, energy, waste, etc. at the demonstration sites.
- Representatives from NGOs.
- Representatives from parents' associations.
- Any other relevant stakeholders at the school or university.

In ECF4CLIM around 1,800 participants, including students, teachers, staff, and representatives of the wider educational community from thirteen educational centres in four EU countries, have been actively engaged in understanding their sustainability competences, co-designing interventions to promote them, and assessing and evaluating the outcomes of the learning experience.

Our participatory approach suggests that each team (SCT) and committee (SCC) should meet six times throughout the process. The first two sessions aim to stimulate reflection on sustainability competences at the school or university and support the co-design of interventions to promote them. The next two sessions focus on co-implementing the interventions. The final sessions for the SCTs and SCCs focus on the participatory evaluation of the selected interventions and the entire participatory process.

The timing of the sessions – i.e. when to run them and how long to leave between them – depends on various factors, including the nature of your interventions and your available resources. You just need to consider how long it will take to design, run and analyse the outputs of one session before running the next one. It is essential to plan the whole process carefully in advance.

In ECF4CLIM, we run six SCTs and six SCCs across three school terms. In the first term, we run up to SCT/SCC 1 and 2; in the second term, we run SCT/SCC 3 and 4, and in the third one SCT/SCC 5 and 6. This can be adapted to your needs and resources.

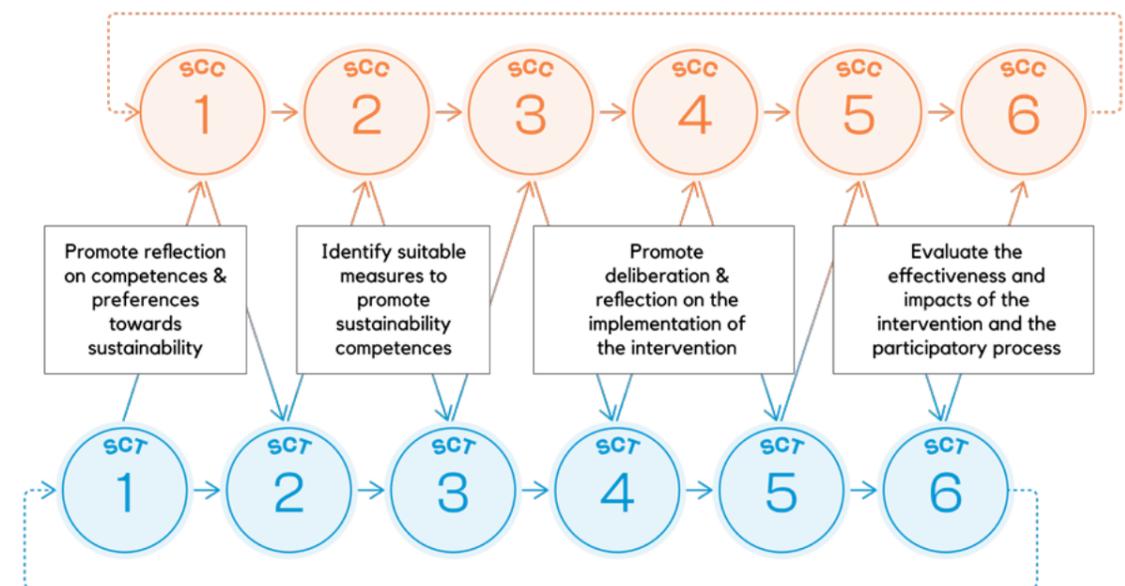
Ideally, the same participants should be involved throughout the entire participatory process.

Experience from the ECF4CLIM project shows that it is not always possible to keep the same participants throughout the

process. If not, new participants should be properly introduced to the others and provided with detailed information on previous steps in the process.

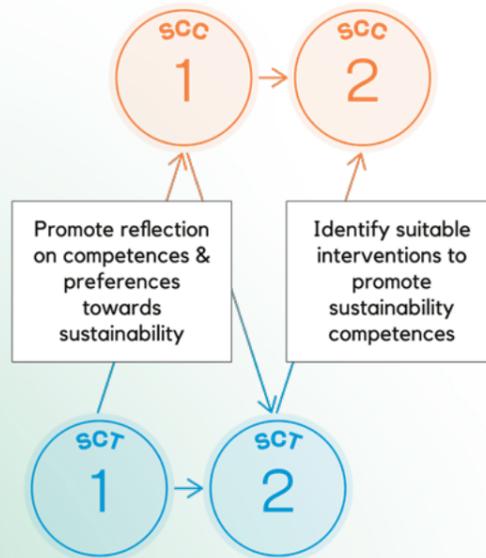
To make the most of our hybrid participatory approach, your school or university should commit to engaging the entire educational community and collaborating with a support team with social research skills. While the hybrid participatory approach may appear simple, it is also sophisticated and requires specific social research skills, such as moderating group discussions, gathering discursive data, and analysing their outcomes (see the section on effective implementation requirements in this guide).

All these suggestions must be adapted to the particularities of each demonstration site.



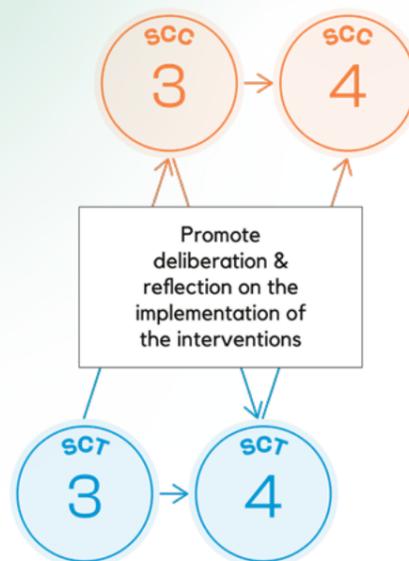
Sequence of relationships between SCTs and SCCs

SCT/SCCs 1 & 2 engage participants in reflection on the starting point of our schools in terms of sustainability competences: How is sustainability understood? How is it integrated into school activities? What are the individual collective sustainability competences? From this starting point, participants engage in a co-design process to identify and define interventions to empower the educational community and promote sustainability competences.



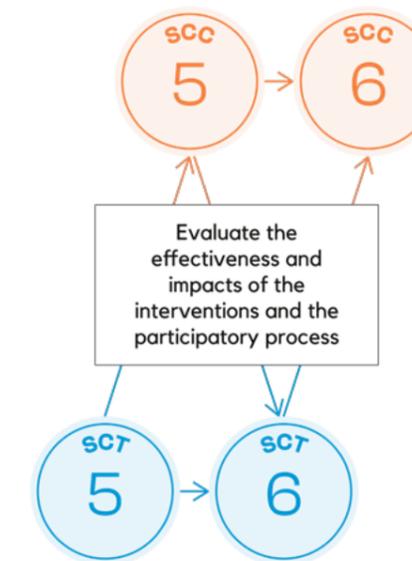
SCT/SCCs 1 & 2 engage participants in reflection on the starting point of our schools in terms of sustainability competences: How is sustainability understood? How is it integrated into school activities? What are the individual collective sustainability competences? From this starting point, participants engage in a co-design process to identify and define interventions to empower the educational community and promote sustainability competences.

In ECF4CLIM, 159 interventions were co-designed. See [D5.4 – Key findings from the joint implementation of the interventions.](#)



SCT/SCCs 3 & 4 promote reflection on ongoing interventions in the DS: How are the interventions evolving? Is there a need for modifications? From this reflection, preliminary insights on the impact of the interventions on individual and collective competences, as well as on environmental performance are gathered.

In ECF4CLIM 73 interventions were co implemented at our schools and universities. See [D5.3 – Report on the identified interventions and actions](#) and [D5.4 – Key findings from the joint implementation of the interventions.](#)



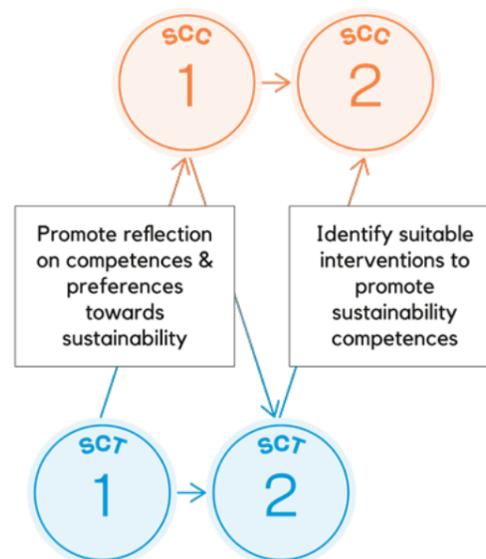
SCT/SCCs 5 & 6 engage all involved actors in the participatory evaluation of the interventions and the participatory process. Participants explore and possibly revisit their 'intervention theories' in light of the experience gained: Did the intervention operate as expected? Which unanticipated factors constrained or facilitated the improvement of sustainability competences? (Theory-based stakeholder evaluation).

In ECF4CLIM 14 interventions were evaluated through our hybrid participatory approach. See [D6.1 – Collective competences for sustainability](#), [D6.2 – Evaluation of the individual competences](#), [D6.3 – Post-Implementation Environmental Assessment of Selected Educational Establishments](#) and [D6.4 – Exploration of intervention theories.](#)

4.1. Meetings 1 & 2.

Assessing sustainability competences and co-designing interventions

SCT/SCCs 1 & 2 engage participants in reflection on the starting point of our schools in terms of sustainability competences: How is sustainability understood? How is it integrated into school activities? What are the individual collective and technical-material sustainability competences? From this starting point, participants engage in a co-design process to identify and define interventions to empower the educational community and promote sustainability competences.



SCT-1 – Sustainability Competence Team meeting 1. Reflecting on sustainability competences

Purpose & preparatory work

The first SCT meeting is designed to promote reflection on the existing competences and preferences concerning ways of fostering sustainable behaviours and practices.

The stimulus materials must be prepared in advance and include available data on the school's environmental performance (e.g. energy and water consumption, waste generation, green procurement); norms and practices that promote sustainability at the school; sustainability-related knowledge, skills and attitudes among the educational community. Any information on the status of individual, collective and technical-material competences would be useful.

At the beginning of the ECF4CLIM project, we conducted a baseline assessment of individual, collective and technical-material competences through short surveys, document analysis and environmental audits. See [D4.1 – Collective competences for sustainability](#), [D4.2 – Baseline Assessment of individual competences](#), [D4.3 – Baseline assessment of the environmental performance](#) and [D4.4 – Compilation of measures co-designed by the educational communities and presented at school and university events](#). These methods and tools are also available at the project Website.

If your school or university does not have such a baseline, you can use the available information on sustainability competences.

 1:30 to 2 hours

- Welcome and introduction (5 min)
- EVOC & CAPA (10 min)
- Insights on sustainability competences at our school/university (15 min)
- Ice-breaker: first reactions to the insights (5 min)
- Oval mapping: drivers and barriers for sustainability (40 min)
- Evaluation questionnaire (5 min)
- Farewell and next steps (5 min)

Protocol, methods and tools

Welcome and introduction (informed consents)

All participants, or their legal representatives for underage children, must sign an informed consent form. This consent form covers both participation in the research and the use of images. Ideally, we will be dealing with the same participants throughout the process, so the proposal is that a single consent will cover the whole process.

The *support team* (moderators) briefly introduces the participatory process and the objectives of the first SCT. Next, there is a round of introductions (one minute each), where participants introduce themselves, their role in the demonstration site (student, teacher or administrative staff) and their expectations.

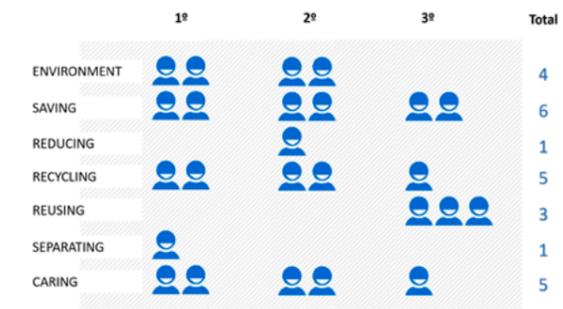
EVOC (evoking and eliciting sustainability conceptions)

EVOC is the shorthand name given by researchers to a questionnaire-based free-association exercise that asks, "What does a given concept evoke for you?" It is a classical tool in representational studies of social psychology. This technique provides a simple, widely useable, and powerful way to identify the notions a given community shares (or does not share) about social issues – in our case, sustainability (Konrad, 2015; Prades, 2017).

Our question is: **'What comes to your mind when you think about sustainability at your school/university?'** Please, write down the five words or sentences that first come to your mind....

For primary schools, ask kids to write down three words or sentences.

The support team collects the answers.



EVOC results in a Spanish primary school (students)

CAPA short questionnaire (addressing personal implication with sustainability)

CAPA (acronym that would correspond to 'capability') is a tool designed to address the participant's personal identification with an issue, in our case, "sustainability". Personal implication is a dimension that frames the representations someone has, enhancing or weakening the possibilities for action if the issue is perceived as more or less important. The self-assessed capacity to actually act and make a difference is also addressed (Poumadère, 2012).

We ask to students, teachers and administrative staff the three following questions. Each question was rated from 1 (no, not at all) to 5 (yes, absolutely).

- Q1. Compared to other issues, "sustainability" is an important issue at my school.
- Q2. How I am educated for sustainability at my school affects me personally.
- Q3. I can take action to enhance sustainability in my school.

The support team collects the answers.

Insights on sustainability competences (raising awareness)

At the beginning of the participatory process, the support team will collect data on the status of sustainability competences. If you have the time and resources, you can carry out environmental audits to gather evidence on the technical-material competences at your educational institution, including

energy and water consumption, waste management, green procurement, and so on. You can rely on short surveys or interviews to assess individual competences, including sustainability knowledge, skills and attitudes. To assess collective competences, you can review sustainability-related norms, plans, and strategies at your educational institution.

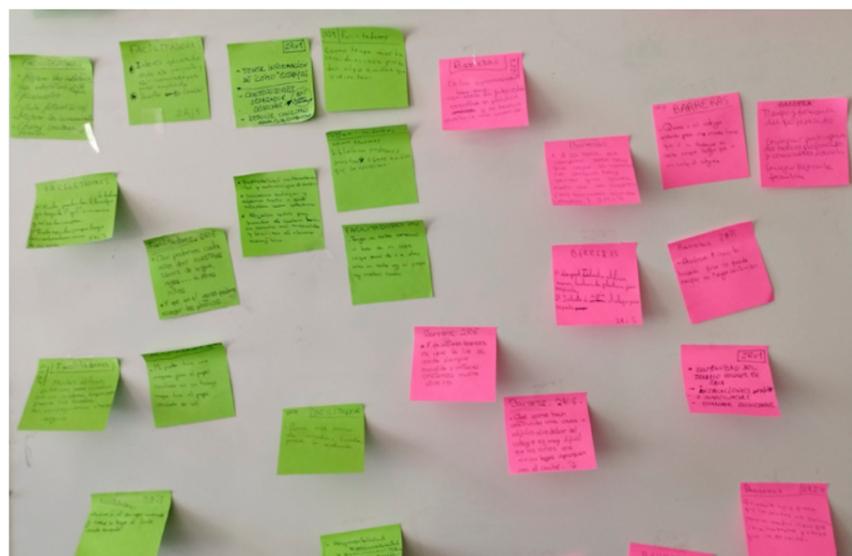
In ECF4CLIM we conducted a baseline assessment of individual, collective and technical-material competences through short surveys, document analysis and environmental audits See [D4.1 – Collective competences for sustainability](#), [D4.2 – Baseline Assessment of individual competences](#), [D4.3 – Baseline assessment of the environmental performance](#) and [D4.4 –Compilation of measures co-designed by the educational communities and presented at school and university events](#).

If your school or university does not have such a baseline, you can use the available information on sustainability competences

Ice-breaker (reflecting on our sustainability competences)

After the moderator has provided a brief introduction to the key insights from the initial sustainability competency assessment, each participant will express their main reactions and impressions.

The support team takes notes of such main reactions/ impressions.



Oval mapping (identifying drivers and barriers for sustainability)

To help the teams agree on the nature and scope of the complex and challenging issues they need to address, and to ensure a shared commitment to action we use simple decision-support methods. The aim is to facilitate the identification of real-life drivers and barriers to sustainability at your school or university.

We rely on the “oval mapping” (or “concept mapping”) technique (Morgan et al., 2008), a low-tech decision-support method that helps groups agree on the nature and boundaries of complex, messy problems that they must tackle and secure shared commitments to action (Rosenhead & Mingers, 2001; Horlick-Jones et al., 2007). Concept mapping has been identified as an empowering method for facilitating learning, thinking, teaching, and research (Åhlberg, 2013).

- Participants are divided in small groups.
- Individually, each participant writes down 2 post-its with drivers and 2 post-its with barriers.
- Each small group debates the drivers and barriers and agrees the 3 most relevant drivers and barriers.
- The small groups go back to the big group and the secretary presents the findings from each group, and debate their drivers and barriers.

INDIVIDUAL POST-ITS				
ID	Driver 1	Driver 2	Barrier 1	Barrier 2
1	Existence of recycling containers		Willingness/Interest	It is not possible to compost food
2	Existence of recycling containers	Green spaces	It is not possible to compost food	Lack of autonomy
3	Existence of recycling containers	Beware of water consumption	It is not possible to compost food	
4	Green spaces		It is not possible to compost food	Better use of green spaces
5	Existence of recycling containers	Faucets with timer	It is not possible to compost food	
6	Willingness to change		It is not possible to compost food	
7	Existence of recycling containers		It is not possible to compost food	More periodic collection of recycling
8	Willingness to change		It is not possible to compost food	No investment in solar panels
9	Existence of recycling containers	Green spaces	It is not possible to compost food	More periodic collection of recycling

Drivers and barriers for sustainability in a Portuguese secondary school (staff)

The support team takes notes on the arguments expressed in the debate, takes pictures of the sticky notes, and collects the sticky notes.

Evaluation questionnaire (assessing the quality of the participatory process)

At the end of the meeting, participants are invited to complete a short survey to evaluate the quality of the session as a participatory and deliberative process. The survey is based on the well-known evaluation criteria of Rowe and Frewer (2000).

- I feel people running the group discussions were neutral in addressing the issue.
- The way the group discussions were run allowed me to have my say.
- It was clear to me what I was supposed to be doing throughout the meetings of the group
- The meetings seemed to provide sufficient time for everyone who wanted to contribute to the group.
- I found the discussion meetings interesting.
- Please add here any other comment/suggestion you may have regarding this meeting and the forthcoming ones (open question).

For adults, each question was rated on a 5-point Likert scale for adults, from 1 (strongly disagree) to 5 (strongly agree) and for kids on a 3-point Likert scale from 1 (disagree) to 3 (agree).

The support team collects the data.

Farewell and next steps

Before closing the session, the moderator thanks participants for their contributions and explains the next steps.

SCC-1 — Sustainability Competence Committee meeting 1. Understanding our sustainability competences

Purpose & preparatory work

As mentioned above, the SCCs are designed to share the main outputs of the deliberations in the different SCTs (of students, teachers and staff) with the broader community of educational actors and institutional decision-makers. The aim is widening the debate and perspectives of the sustainability topics at stake and then bring back those reflections and opinions to the discussion in the subsequent SCT.

To stimulate discussion, the main outputs from the SCTIs need to be summarised in a visual presentation. This time, the presentation should highlight the main drivers and barriers identified by students, teachers and staff in their respective SCTs.

1:30 to 2 hours

- Welcome and introduction (10 min)
- Key findings from SCT1: drivers and barriers for sustainability at your school/university (15 min)
- Ice-breaker: first reactions to the insights (5 min)
- Oval map: rethinking drivers and barriers for sustainability (40 min)
- Evaluation questionnaire (5 min)
- Farewell and next steps (5 min)

Protocol, methods and tools

Welcome and introduction (informed consents)

The moderator invites participants to introduce themselves by stating their name, their role at the demonstration site (e.g. student, teacher, administrative staff, etc.) and their expectations.

If students at your school might feel inhibited about interacting with 'important' adults, you could start with chats in pairs (adults and students) and then move on to the round of introductions.



SCTI meeting at the Portuguese university

Key findings from SCTI (awareness on sustainability competences)

The moderator briefly introduces the key findings from SCTI.

Ice-breaker (reflecting on drivers and barriers for sustainability)

After the moderator has given an overview of the key findings from the identification of drivers and barriers to sustainability at the SCTI meetings, each participant will share their main reactions and impressions.

The support team takes notes on the main arguments: what kind of drivers and barriers emerge first in the discussion, what is the focus of the debate, etc.

Oval mapping (rethinking drivers and barriers for sustainability)

The group is split into two smaller groups. Ideally, each group should include students, teachers and other relevant individuals. Each group nominates a secretary to take notes and share the outputs with the larger group.

- Individually, each participant writes the main barriers (2 post-its) and drivers (2 post-its).
- Each small group debates the drivers and barriers and agrees on the 3 most relevant ones. The secretary writes down the selected main drivers and barriers.
- The small groups go back to the large group and the secretary presents the findings from each small group.
- Final debate on drivers and barriers in the large group.

The support team takes notes on the arguments expressed in the debate, takes pictures of the sticky notes, and then collects them.



Drivers & barriers for sustainability at a Romanian school

Evaluation questionnaire (assessing the quality of the participatory process):

Participants are invited to complete the short survey assessing the quality of the deliberative process as an engagement exercise (Rowe & Frewer, 2000).

Farewell and next steps

Before closing the session, the moderator thanks participants for their contributions and explains the next steps.

SCT-2 — Sustainability Competence Team meeting 2. Co-designing interventions to promote sustainability competences

Purpose & preparatory work

The second SCT involves co-designing the most suitable interventions to promote sustainability and enhance sustainability competences at your school or university. It is designed to stimulate continuous deliberation and reflection on how to collaboratively define suitable sustainability-related interventions.

To facilitate this process and before the meeting, the support team drafts a provisional list of interventions that could address the drivers and barriers identified in the SCT1/SCC1 meetings.

 1:30 to 2 hours

- Welcome and introduction (5 min)
- Setting the scene (15 min)
- Feedback from the SCT/SCC sessions 1: deliberation & reflection (30 min)
- Resource allocation exercise: discussion of proposed interventions (60 min)
- Evaluation questionnaire (5 min)
- Farewell and next steps (5 min)

Protocol, methods and tools

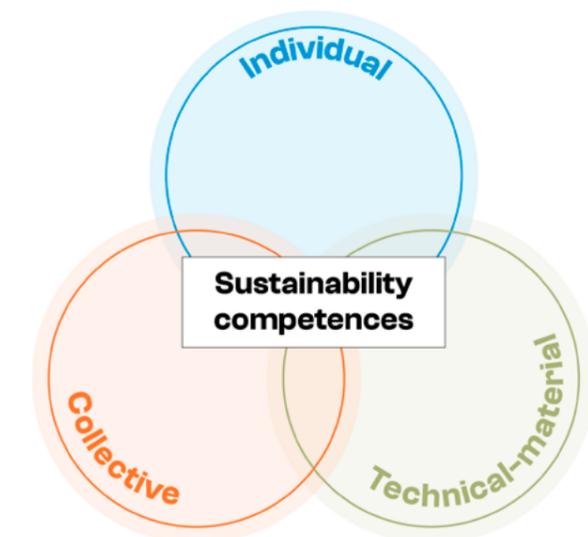
Welcome and introduction (informed consents)

Participants already know each other. They can informally chat before the welcome. If there is someone new, brief round of introductions. The support team introduce the details of the session.

Setting the scene (raising awareness on sustainability competences)

The support team summarizes the main findings from the initial assessment of the individual, the collective, and the technical-material competences.

As mentioned earlier, In ECF4CLIM we conducted a baseline assessment of individual, collective and technical-material competences through short surveys, document analysis and environmental audits. See [D4.1 – Collective competences for sustainability](#), [D4.2 – Baseline Assessment of individual competences](#), [D4.3 – Baseline assessment of the environmental performance](#) and [D4.4 – Compilation of measures co-designed by the educational communities and presented at school and university events](#). If your school or university does not have such a baseline, you can use the available information on sustainability competences.



More detailed information could be sent to participants in advance if/where feasible. Try to include a visual representation of the three types of competences.

Feedback from SCTI/SCC1 (reflecting on sustainability conceptions)

The support team introduces the results from EVOC/CAPA exercises and participants share their first reactions.

The support team takes notes on the discussion.

Feedback from SCTI/SCC1 sessions (co-designing interventions to promote sustainability competences)

The support team introduces a provisional list of interventions to promote sustainability competences, based on the identified drivers and barriers from the first sessions of the SCT and SCC. The moderator then invites participants to deliberate on the list, considering which options may be more contextually relevant and suggesting new interventions or disregarding others.

The moderator emphasises the need for transparency and legitimacy in the decision-making process, providing guidance on the co-design process.

- All interventions may be relevant.
- Some interventions will be implemented in the short term while others may be relevant for the future.
- Reasons for exclusion will be justified.
- It is an open process.

After adding items and suggesting rewordings, participants agree on the final list of interventions.

Resource allocation exercise (ranking the interventions)

To help the teams agree on the nature and scope of the interventions and to ensure a shared commitment to action we use simple decision-support methods, in particular, a resource allocation exercise.

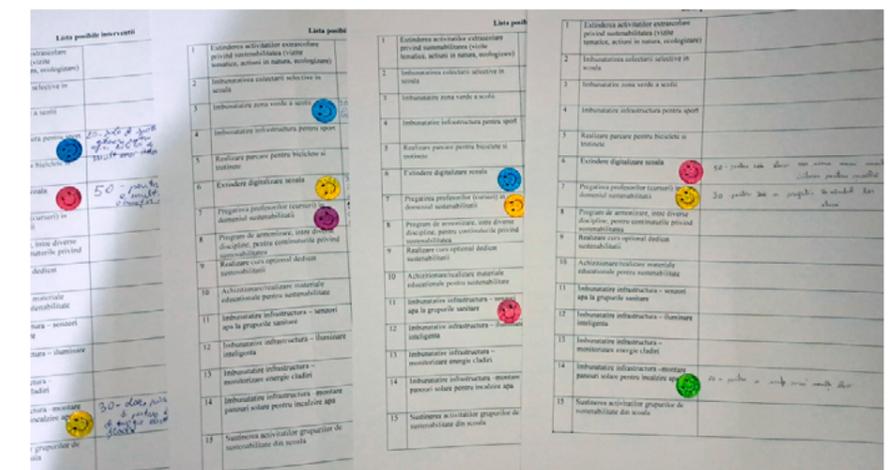
Measure	Resources
1.	●
2.	● ●
3.	●

This simple Problem Structuring Method helps to summarize and rank group preferences on a quantitative basis (Horlick-Jones, 2008; 2012).

Participants are told that they are in charge of investing in the school and are given a budget of 100 points for the next academic course. They then rank the final list of co-designed interventions.

- Individual exercise: each participant received 3 dots of different colours (50, 30, 20 points) and allocate them to the different interventions.

The support team sums the totals, collects the final list with the rankings and takes pictures. These results are the ones to be presented to the SCC2.



Resource allocation exercise in the Romanian high school

Evaluation questionnaire

Participants are invited to complete the short survey assessing the quality of the deliberative process as an engagement exercise (Rowe & Frewer, 2000).

Farewell and next steps

Before closing the session, the moderator thanks participants for their contributions and explains the next steps.

SCC-2 — Sustainability Competence Committee meeting 2. Co-designing interventions to promote sustainability competences

Purpose & preparatory work

SCC2 aims to involve the wider educational community in participatory decision-making and select the most suitable interventions to promote sustainability-related competences at school or university level.

Representatives from this community will analyse and assess the list of interventions agreed upon in SCT2, prioritising them according to their transformative potential and the availability of the necessary resources for implementation.

In terms of preparatory work, the support team compiles a final list of suggested interventions from all the SCT2 groups (students, teachers and staff) and creates a visual presentation

 1:30 to 2 hours

- Welcome and introduction (5 min)
- Icebreaker: top interventions to promote sustainability competences (15 min)
- How, Now, Wow: co-deciding (40 min) and raking the interventions (15 min)
- Open debate: from theory to practice (30 min)
- Evaluation questionnaire (5 min)
- Farewell and next steps (5 min)

Protocol, methods and tools

Welcome and introduction

The participants already know each other. They can chat informally before the welcome. If there is someone new, a brief round of introductions will be held.

The support team will then introduce the details of the session.

Icebreaker: top interventions to promote sustainability competences

The support team introduces the top interventions identified in the different SCTs (those for students, teachers and staff), specifying who suggested what.

The support team then explains the process for pre-selecting the five or six interventions that each participant considers to be the most relevant for the school or university, either in the short or long term. The moderator then tries to group these interventions into categories in line with individual, collective, and technical-material competences, such as:

- Raising awareness on ... (individual competence)
- Supporting organizational changes to ... (collective competence)
- Developing curricula interventions to incorporate sustainability in ... (collective)
- Improving environmental performance related to ... - waste/energy/air quality/...(technical-material)
- Any other

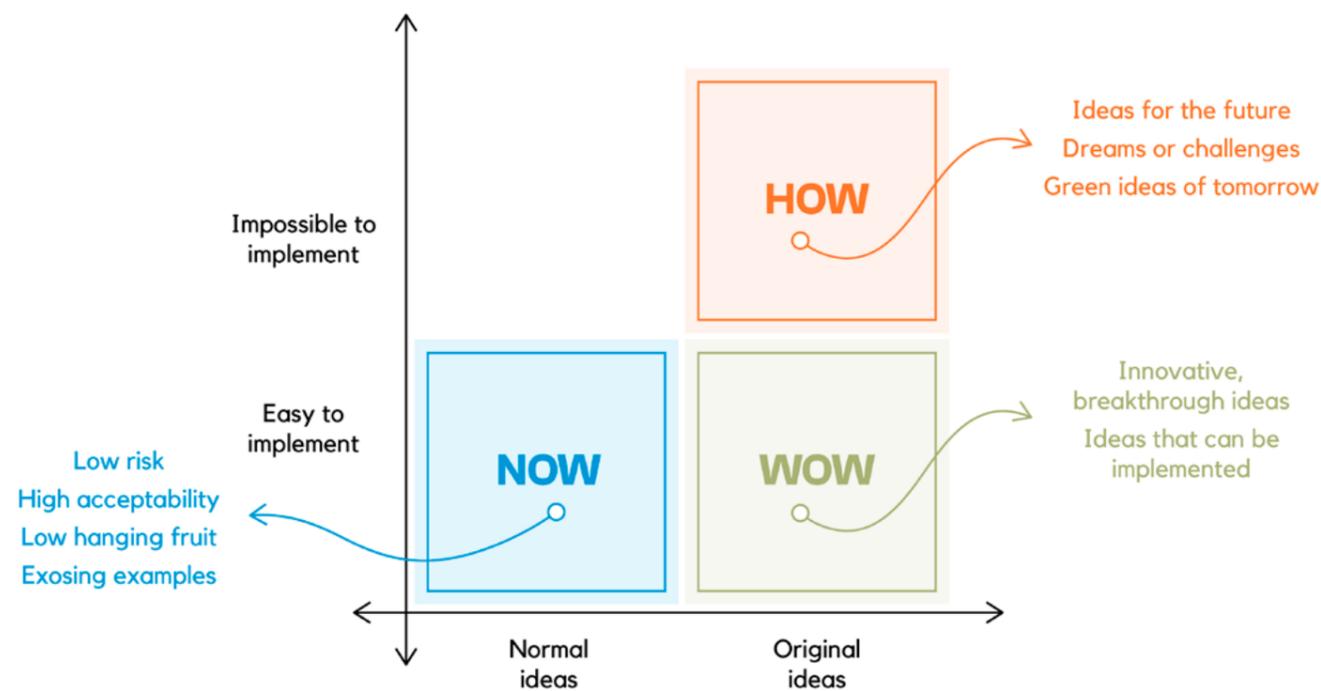
The moderator drafts a new list with a maximum of 10 – 12 interventions.

The support team takes photos on the new list and notes on the arguments used by participants when selecting/neglecting interventions.

How, Now, Wow (co-designing and ranking the interventions)?

The moderator explains the HOW; NOW; WOW technique to further prioritize the new list of interventions (Vullings et al., 2009). The aim is rethinking the interventions from a new perspective in order to finally identify the ones that you would really like to be implemented at your school/university. Participants are the ones to decide.

Two dimensions are considered: originality (i.e. the transformative capability) and easiness of its implementation.



Innovation matrix (HOW–NOW–WOW) used to prioritize the new list of interventions.

- HOW/ Orange ideas: original ideas, impossible to implement. Breakthrough ideas in terms of impact, but impossible to implement right now given the existing (technological, institutional, individual, economic...) constrains.

- NOW/Blue ideas: normal ideas, easy to implement. Typically, the most feasible options to fill existing gaps. They normally result in incremental benefits.
- WOW/Green ideas. Original ideas, easy to implement. Potential for orbit-shifting change and possible to implement within the current reality.

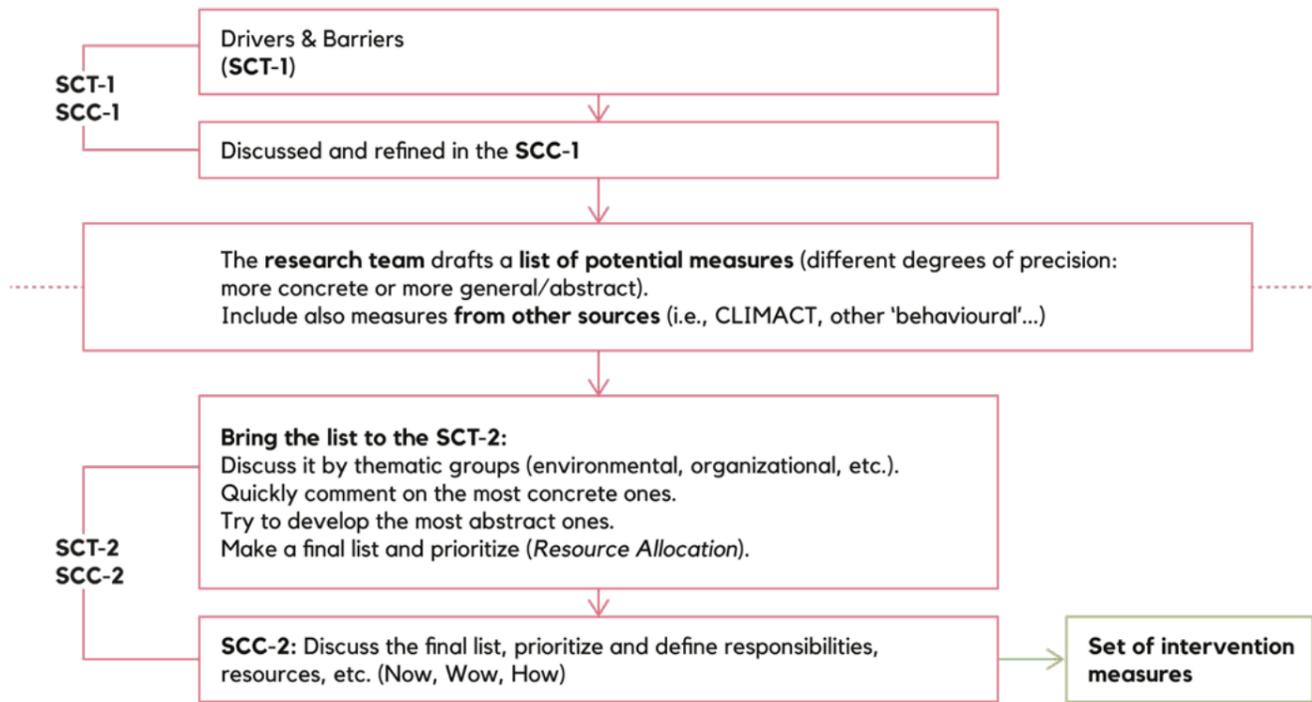
The moderator explains the steps to be followed in the exercise as follows:

- An empty matrix is placed on the wall or a pin board.
- Participants are given six post-its: Two blue, two yellow and two green.
- Participants write down their six preferred interventions on the post-its (two HOW, two NOW, and two WOW) and place them in the matrix.
- Participants then explain the reasons/arguments for their decisions.
- The moderator makes a synthesis of the final matrix.



How, Now, Wow exercise in the Spanish primary school

The support team takes a photo of the final matrix and creates a PowerPoint or Word document with the interventions included under each heading. They also take notes on the underlying arguments.



Overview of SCT/SCC Rounds 1 & 2

Open debate (from theory to practice: the Action Plan)

Participants are invited to reflect on a 'concrete participatory action': who does what with who, when and with which resources for the different types of interventions?

For the selected interventions, participants generate ideas and proposals regarding:

- Who should be involved (human resources)?
- What is needed (economic resources)?
- How (technical and/or organizational viability)?
- When (timing)?
- And... Institutional commitment.



The support team takes notes on all the suggestions and arguments for all the interventions. Try to be as exhaustive as possible.

Evaluation questionnaire (assessing the quality of the participatory process):

Short survey to assess the quality of the deliberative process as an engagement exercise (Rowe & Frewer, 2000).

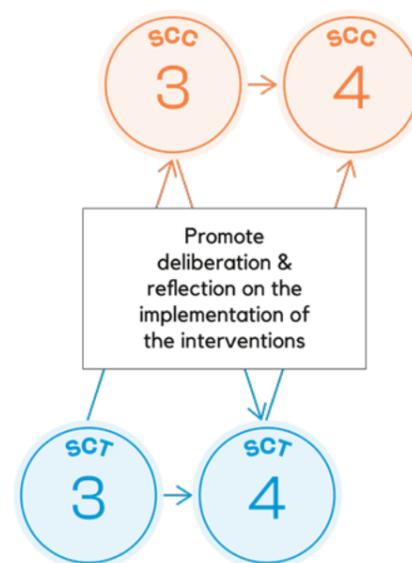
Farewell and next steps

Before closing the session, the moderator thanks participants for their contributions and explains the next steps.

4.2. Meetings 3 & 4.

Implementing and tracking the interventions

SCT/SCCs 3 & 4 promote reflection on ongoing interventions in the DS: How are the interventions evolving? Is there a need for modifications? From this reflection, preliminary insights on the impact of the interventions on individual, collective and technical-material competences are gathered.



Based on the results of SCT2 and SCC2, the support team draws up the final, prioritised list of intervention measures to be implemented. These measures (or at least some of them) are adopted by the school administration and implemented according to a transparent timeline. SCT3, SCC3, SCT4 and SCC4 will then be used to monitor progress and ensure that these measures are not neglected. This will guarantee that progress is being made towards the planned objectives and maintain a regular flow of information between the administration, the entities responsible for implementing the interventions and the school community (students, teachers and staff).

SCT-3 – Sustainability Competence Team meeting 3. Monitoring the interventions

Purpose & preparatory work

The third sessions of our SCTs focus on monitoring the interventions and encouraging self-reflection and critical thinking on how they may (or otherwise) affect our sustainability competences.

As for the preparatory work, each school or university, in close collaboration with the support team (if possible), selects in advance up to three interventions to be discussed in STC3. You can choose interventions that are performing particularly well or poorly (in order to understand the underlying causes), that are already ongoing or in the design stage, and so on. Where possible, try to select one intervention that focuses on individual competences, one on collective competences and one on technical-material competences. The key lies in selecting interventions that are particularly relevant to your school or university. Each school or university, in collaboration with the support team (when possible) prepares visual materials describing the selected interventions.

 1:30 to 2 hours

Protocol, methods and tools

Welcome and introduction

The moderator checks who the team participants are this time and reminds potential new participants of the SCT dynamic.

Sustainability conceptions survey (reflecting on sustainability thinking)

Participants are invited to complete a short survey on sustainability conceptions, which was designed ad hoc in ECF4CLIM. The design of the survey drew on three main sources: literature review of the currently dominant views on sustainability and sustainable development; two ECF4CLIM webinars with education-sector practitioners and the ECF4CLIM team to identify gaps and misunderstandings between disciplines regarding sustainability and its application in educational settings (see [D8.5 – Transdisciplinary Dialogue Strategy](#)); and decades-long experience of many ECF4CLIM members on sustainability-related research and practice (e.g. Lehtonen, 2004; 2005; 2008; 2009 and forthcoming; Nokkala et al. 2024; de Perthuis et al. 2002).

These sources provided a basis for the survey on sustainability conceptions, including four models of sustainability.¹ As mentioned earlier, we did not aim to produce a scientifically validated survey, but a practical and applicable tool to stimulate thinking and self-reflection on sustainability.

¹ 1) The conventional three-pillar model, adopted as the dominant conception of sustainability at the Rio 1992 conference on environment and development (UNCED 1992); 2) The planetary boundaries concept, popularised in the 2010s, notably following the publications of Rockström et al. (2009) and Steffens et al. (2015); 3) The bioeconomy model advocated especially by scholars in ecological and institutional economics, with their foundations traceable to the eco-development Ideas in the 1970s (Sachs 1980; 1999) – and theoretically, all the way to the old American institutionalism of the early 20th century (e.g., Veblen, 1919; Clark, 1995); and 4) Degrowth thinking, spearheaded today by research centres in Barcelona (e.g. Martínez-Alier, 2002; Kallis, 2019), Leeds and Vienna, with close links with grassroots movements advocating degrowth at the local level.

- Welcome and introduction (5 min)
- Sustainability conceptions survey (10 min)
- Reflecting on the interventions (60 min)
 - Ice-breaker: First impressions on the on-going interventions
 - Oval mapping 1: barriers and enablers for on-going interventions
 - Oval mapping 2: further improvement of on-going interventions
- Evaluation questionnaire (5 min)
- Farewell and next steps (5 min)

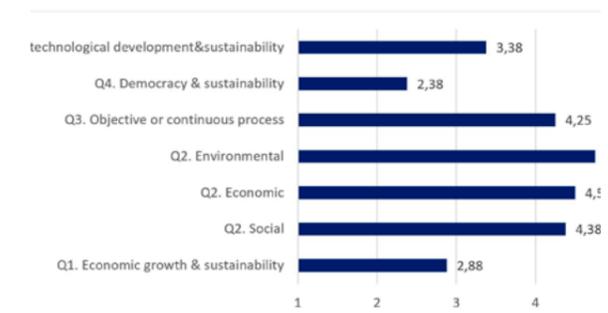
Two versions of the survey are available; one for primary schools (with a single open question) and another for secondary schools and universities (with five questions to be rated on a 5-point Likert-scale and a one open-ended question). Participants complete the survey individually, without discussing with the others. The survey is repeated in SCT4 to stimulate further reflection and track possible changes in the participants' sustainability conceptions.

Sustainability conceptions: short survey for kids

- Q1. There has been a lot of talk about sustainability in this project. What does it mean to you?

Sustainability conceptions: short survey for adults

- Q1. Are economic growth and sustainability compatible with each other?
- Q2. How would you characterise the relative importance of the social, economic, and environmental dimensions of sustainability?
- Q3. Is sustainability an objective (an end-state to be achieved) or a continuous process?
- Q4. Are democracy and sustainability compatible with each other?
- Q5. Is technological development an impediment to or a precondition for sustainability?
- Q6. Please describe, in a few words, what – if anything – motivates you to take action towards greater sustainability, and why.



SCT3 sustainability conceptions survey results in the Romanian university (students)

Ice-breaker (what is going on at your school/university)

The support team introduces the selected interventions and opens the discussion by asking the participants how involved they were in designing and implementing them.

The moderator then invites participants to take part in an 'ice-breaker' debate about their experiences and expectations.

"Ice-breaker"

- How actively have you been involved in the execution of the planned interventions?
- Has the experience been good?
- Have things worked out as expected?
- Has your thinking (values/attitudes/knowledge) changed during the process?

If there are enough people and there is not much time, you can split into two smaller groups to do this exercise.

Oval mapping 1 (identifying drivers and barriers to the interventions)

To encourage further reflection and deliberation, participants engage in a discussion about the drivers and barriers they encounter when implementing interventions in their school or university, and how these relate to sustainability competences (individual, collective, and/or technical-material).

The moderator briefly introduces the three spheres of the ECF4CLIM analytical framework for sustainability competences (individual, collective, and technical-material) and asks participants to consider their relevance in their interventions.

Oval mapping 1

- Which of these spheres (individual, collective, technical-material) is the most important for your intervention?
- Why?
- Is there something constraining or enabling the realisation of the planned intervention?
- Are there some other constraints or enablers?
- What has helped to overcome the challenges?

Barriers (sentences):

Lack of resources

Lack of willingness in the school community to take care of the garden and vegetable garden over time

Lack of concern for the environment by some students, who may spoil or dirty the space

If access to space is limited or controlled, it may discourage and take away interest from students.

Drivers (sentences):

The fact that the school gains a living space and outdoor classes

The fact that it is a way of contacting nature and learning more about it is something that many students do not have.

The "base" already exists. In other words, the "base" is not a newly constructed space; it already boasts trees, a pond, a vegetable garden, and animals.

The fact that there are shadows is important for the success of classes in space.

As there are many students who like the space, this makes it easier to care for and even create brigades just to take care of the space.

The moderator emphasises that there is no single, unequivocal answer to the question of which of the three spheres is the most important in your intervention. It is precisely this ambiguity that gives our analytical framework its meaning and usefulness, as it draws attention to the interactions between the 'spheres' and how answers depend on the perspective adopted.

For primary schools with children, the concept mapping focuses solely on identifying enablers and constraints for successfully implementing the interventions.

The support team takes notes on the arguments expressed in the debate, takes pictures of the sticky notes, and collects the sticky notes.

Oval mapping 2 (envisioning ways for improvement)

The final stage of our SCT3 involves gathering evidence on how to improve the interventions. Using oval mapping once more, the moderator invites participants to reflect on ways to improve and write down up to three proposals for each intervention. Through these proposals, our educational communities engage in joint reflection on how to promote sustainable competences and actively contribute to the learning experience at school or university.

Oval mapping 2

- How to communicate the activity in an inspiring way?
- How to share our experiences with others?
- How to attract further participants?

The support team takes notes on the arguments expressed in the debate, takes pictures of the sticky notes, and collects the sticky notes.

Evaluation questionnaire (assessing the quality of the participatory process):

Short survey to assess the quality of the deliberative process as an engagement exercise (Rowe & Frewer, 2000).

Farewell and next steps

Before closing the session, the moderator thanks participants for their contributions and explains the next steps.

SCC-3 — Sustainability Competence Committee meeting 3. Monitoring the interventions

Purpose & preparatory work

At SCC3, the wider educational community at each school or university (including NGOs, relevant public and private sector organisations, etc.) reflects on the development of the interventions and suggests modifications or changes, if necessary.

Regarding the preparatory work, each school or university selects the interventions to be discussed at SCC3 in advance, in close collaboration with the support team. You can select either an intervention that has already been monitored in SCT3 or one that has not and prepare visual presentations of these interventions.

 1:30 to 2 hours

- Welcome and introduction (5 min)
- Oval mapping: reflecting on the interventions (70 min)
 - Intervention 1
- Explaining the intervention (5 min)
- Introducing outputs from SCT3 (10 min)
- Deliberating on ways forward (20 min)
 - Intervention 2
- Explaining the intervention (5 min)
- Introducing outputs from SCT3 (10 min)
- Deliberating on ways forward (20 min)
- Evaluation questionnaire (5 min.)
- Farewell and next steps (5 min)

Protocol, methods, and tools

Welcome and introduction

The moderator checks who the team participants are this time and reminds potential new participants of the SCC dynamic.

Oval mapping (reflecting and deliberating on the intervention)

The support team introduces the selected on-going intervention(s), including its objectives, status and implementation, and preliminary findings. Afterwards the moderator invites participants to an open debate about their preliminary impressions and expectations. To encourage further reflection and to actively involve the wider educational community in the monitoring and progress of the interventions, the participants engaged in a new concept mapping exercise.

Oval mapping: ways to improve the interventions

(See [SCT-4 – Sustainability Competence Team meeting 4. Monitoring the interventions](#))

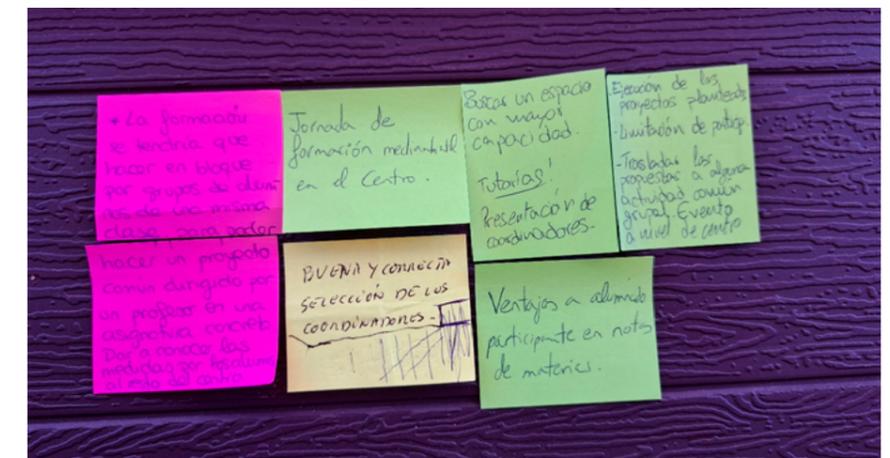
- How to overcome the identified barriers?
- How to communicate the activity in an inspiring way?
- How to attract more participants?
- How to motivate?
- How to involve more local institutions/entities, generate additional resources?
- How to institutionalize the intervention

Participants write down up to three concrete suggestions for improving each intervention.

This whole process (getting to know the interventions, sharing first impressions and working together on ways forward) is repeated for each selected intervention.

- Conduct training with a whole group of pupils from the same class.
- Carry out the proposed projects within a specific subject.

- Present the results of the training to the rest of the school.
- Organise an environmental training day at the school.
- Good and correct selection of participating environmental coordinators.
- Look for a space with greater capacity.
- Develop the projects proposed in tutorials.
- Give advantages to students participating in some subjects.
- Execute the projects proposed because of the training.



Suggestions for improving the interventions. Spanish high school.

The support team takes notes on the arguments expressed in the debate, takes pictures of the sticky notes, and collects the sticky notes.

Evaluation questionnaire (assessing the quality of the participatory process)

As in all our SCT and SCC meetings, to check the quality of the session as a participatory and deliberative process, participants are invited to complete a short questionnaire based on Rowe & Frewer's evaluation criteria (Rowe & Frewer, 2000).

Farewell and next steps

Before closing the session, the moderator thanks participants for their contributions and explains the next steps.

SCT-4 — Sustainability Competence Team meeting 4. Monitoring the interventions

Purpose & preparatory work

The 4th session of our SCT focuses on further developing and broadening the perspectives of the interventions on the one hand, and on how the interventions and their objectives are linked to different environmental challenges and different stakeholders on the other.

As for the preparatory work, each school or university, in close collaboration with the support team, selects in advance the interventions to be discussed in SCT4. If possible, we try to select interventions aimed at improving the different spheres of our sustainability competences (individual, collective, environmental). You could either select an intervention that has not been discussed before in SCT3/ SCC3 meetings, or an intervention that has already been discussed in previous meetings. The support team then prepares visual presentations of these interventions.

In addition, the support team needs to analyse the results of the short survey on sustainability conceptions applied in SCT3 and prepare a brief visual presentation to share with participants.

 1:30 to 2 hours

- Welcome and introduction (5 min)
- Introducing the interventions (10 min)
- Ice-breaker: what is the problem? (10 min)
- Mind map: understanding the systemic nature of sustainability competences (30 min)
- Open debate: reflecting on sustainability conceptions (20 min)
- Evaluation questionnaire (5 min)
- Farewell and next steps (5 min)

Protocol, methods and tools

Welcome and introduction

The moderator checks who the team participants are this time and reminds potential new participants of the SCT dynamic.

Introducing the interventions

The support team briefly introduces the selected interventions.

Ice-breaker (what is the problem?)

As in SCT3 and following the principles of participatory action research and transdisciplinarity, we further encourage self-reflection on the interventions (Kermis et al., 2014; Bergman & Jahn, 2008; Bergman et al. 2021).

Ice-breaker: What is the problem?

- Objective & status of the implementation.
- What is the intervention and what does it aim to have impact on or change?

The moderator invites participants to discuss the various issues that impact or interfere with the intervention and its objectives: e.g., infrastructures, service providers, cultural habits, rules, resources, people's competences such as knowledge, skills, and attitudes, etc.

Mind map (understanding the systemic nature of sustainability interventions)

Creativity is an essential part of learning for sustainability, as it promotes innovation and problem-solving in order to address complex ecological issues. This approach is more effective than education that is limited to instruction and knowledge transfer (Sandri, 2013). Our creative exercise is designed using mind mapping methods because they are dynamic, activity-based and participatory, and support systems thinking, which is an essential domain of sustainability competences (Palmberg et al., 2017). The mind-mapping method helps activate participants and organise individual and collective mental activity (Mautenbaev, 2018).

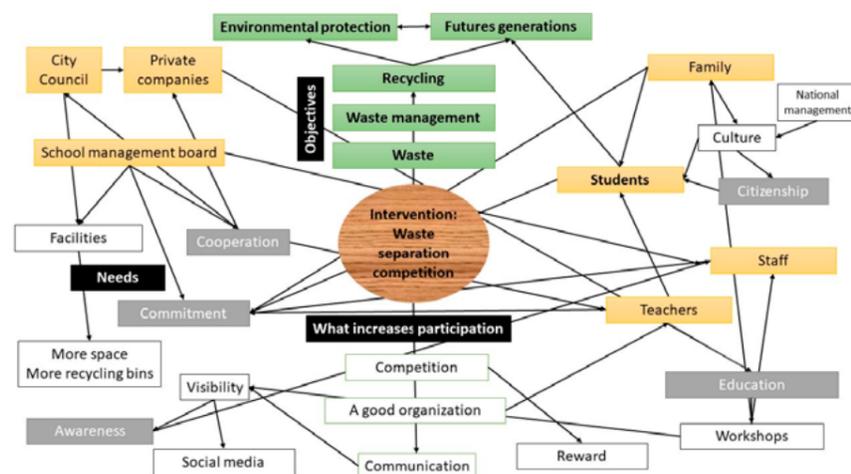
This exercise aims to encourage collective thinking, make connections and different perspectives on sustainability visible, and elevate the group's understanding of the problems and possible ways to change the situation through interventions. Participants are invited to create a mind map together on a large sheet of paper or a board using words, colours and pictures. They also take a photo of their collective drawing.

Mind map: the systemic nature of the interventions

- What kind of issues have impact on or interfere in the intervention and its object? How they have an impact? Why?
- How the interventions and their aims are interconnected and connected to different challenges and different stakeholders?

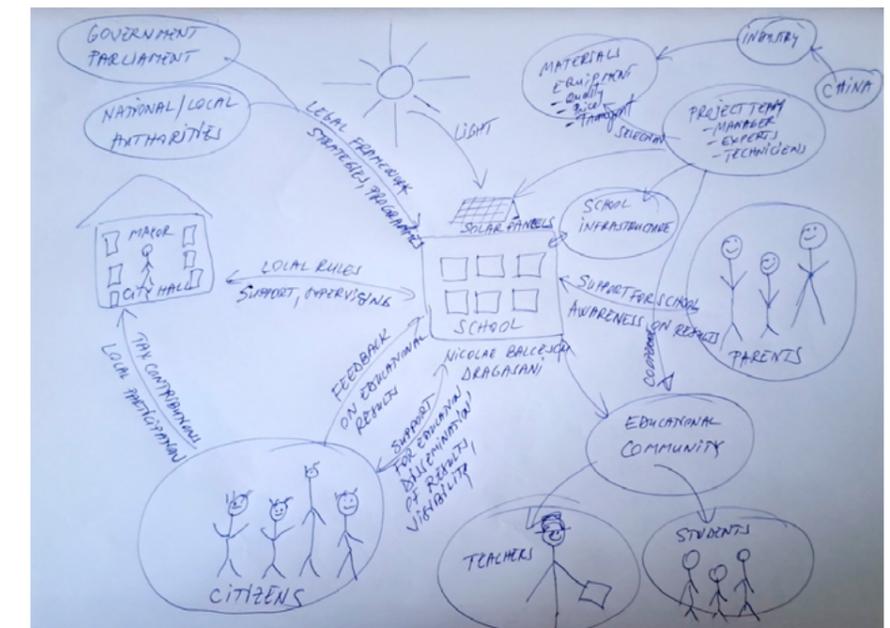
Participants collaboratively create a mind map with the help of the facilitator's questions: How do they have an impact? Why? How are the interventions and their aims interconnected and connected to different challenges and stakeholders? How does the intervention relate to or connect with sustainability in your school or university? What aspects facilitated the intervention? What did not work?

In ECF4CLIM, to help participants grasp the concept, an example from Finland regarding school lunches was provided. See [Connections of School Lunches](#).



Mind map. Portuguese primary school.

In the final debate, participants conclude how the interventions and their aims are interconnected and connected to different challenges and stakeholders.



Mind map. Romanian primary school.

Open debate (rethinking sustainability conceptions)

Next, to enrich the evidence and stimulate further thinking on sustainability, the support team presents the results of the short survey on sustainability conceptions applied in SCT3 and the facilitator engages participants in an open debate on their impressions and reactions to the results.

Sustainability conceptions: open debate (See [SCT-3 – Sustainability Competence Team meeting 3. Monitoring the interventions](#) and [SCT-4 – Sustainability Competence Team meeting 4. Monitoring the interventions](#))

- Do the visions and conceptions on sustainability change or do they remain the same? Why?
- What are the main arguments underlying current (or part) visions or conceptions of sustainability?
- Do the changes relate to the ECF4CLIM participatory process and/or interventions?

At the end of the discussion, and in order to track possible changes in the sustainability conceptions, participants were asked to repeat the short survey.

Evaluation questionnaire (assessing the quality of the participatory process):

As in all our SCT and SCC meetings, to check the quality of the session as a participatory and deliberative process, participants are invited to complete a short questionnaire based on Rowe & Frewer’s evaluation criteria (Rowe & Frewer, 2000).

Farewell and next steps

Before closing the session, the moderator thanks participants for their contributions and explains the next steps.

SCC-4 – Sustainability Competence Committee meeting 4. Monitoring the interventions

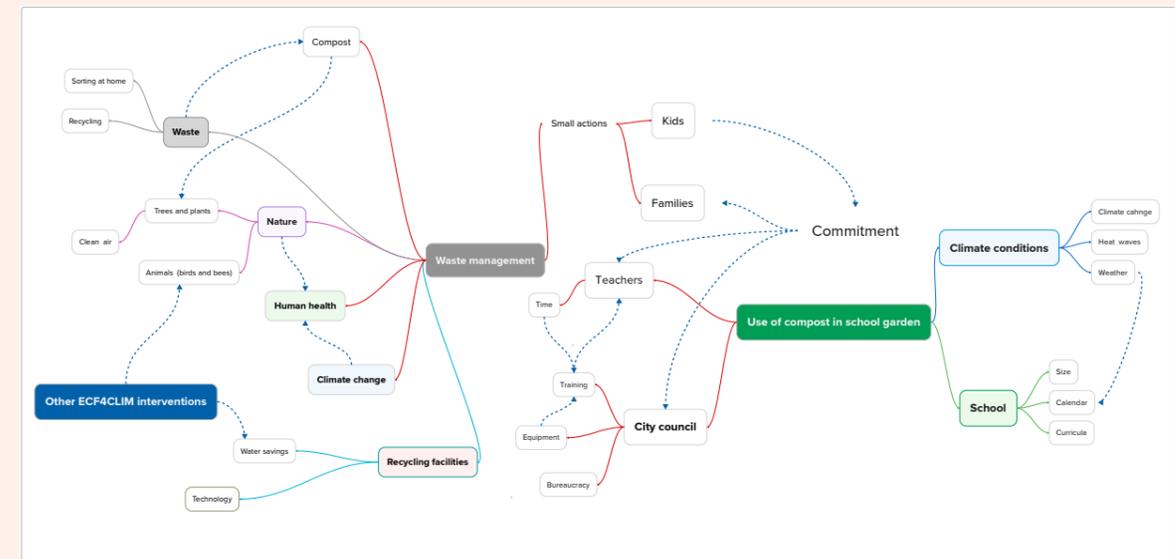
Purpose & preparatory work

In SCC4, the wider educational community in each DS (NGOs, relevant public and private sector organisations, etc.) continues to monitor the interventions, deepening the framing of the problem and the connections between everyday school life, and sustainability and developing proposals to further improve the interventions.

In terms of preparatory work, the support team helps the school/university to prepare the stimulus materials to be discussed in SCC4. As each school or university may have up to three SCT4 sessions (one with students, one with teachers and one with staff), you could have up to three mind maps per intervention.

If at your school/university the creative exercises of teachers, students and staff focused on the same intervention, the support team directly presents all their mind maps, highlighting similarities and differences in terms of strengths and weaknesses of the intervention.

If at your school or university, the creative exercises at SCT4s focused on more than one intervention (as in the ECF4CLIM example below), the support team produces a single mind map for each intervention, showing the main similarities and differences in terms of strengths and weaknesses. Indeed, this requires prior analysis by the support team.

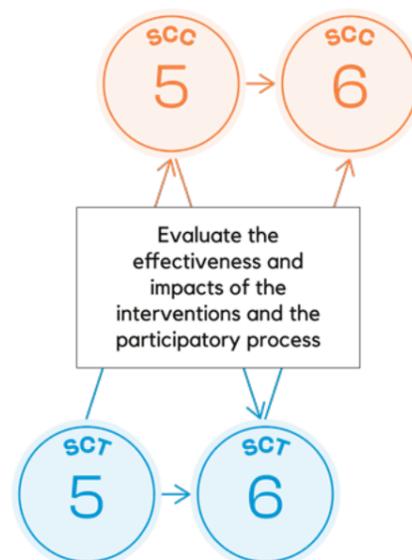


Integrated mind map of teachers and students’ outputs from three interconnected interventions (Primary school, Spain).

4.3. Meetings 5 & 6.

Co-evaluating the interventions and the participatory process

SCT/SCCs 5 & 6 engage all involved actors in the participatory evaluation of the interventions and the participatory process. Participants explore and possibly revisit their 'intervention theories' in light of the experience gained: Did the intervention operate as expected? Which unanticipated factors constrained or facilitated the improvement of sustainability competences? (Theory-based stakeholder evaluation).



SCT-5 — Sustainability Competence Team meeting 5. Evaluating the interventions

Purpose & preparatory work

The fifth session of SCT focuses on evaluating the interventions, exploring the pathways to success and failure, identifying the expected and unexpected outcomes, and generating ideas for redesign. The support team includes a moderator and one or two secretaries. The moderator facilitates the session, while the one or two secretaries record observations using an observation protocol and take photos (and, where possible, audio recordings). New participants (or their legal representatives for underage children) must sign an informed consent form at the start of the session.

At ECF4CLIM we design simple observation protocols to capture ethnographic elements, promote contextualization and facilitate the transfer, the flexibility and, in case of need, the re-adaptation of the methods and tools (Lynch, 2002).

Observation protocol SCT3 (Kids)		Observation protocol SCC4	
Write your notes here:		Write your notes here:	
Date		Date	
Number of participants and profile (role, gender...)		Number of participants and profile (role, gender...)	
Selected interventions. Intervention 1: _____		Title and short description of the intervention 1:	
First impressions		Debate: impressions	

As for the preparatory work, each school or university, in close collaboration with the support team, selects in advance the intervention to be discussed during SCT5. If possible, the selected intervention should address the different spheres of sustainability competences (individual, collective, techno-material).

The support team should prepare visual presentations of these interventions. For each intervention to be evaluated, its objectives and characteristics should be presented, as well as the impacts observed after its implementation, including intended, unintended and unanticipated consequences, as well as experiences regarding hindering and facilitating factors.

The support team will use observation protocols to capture ethnographic elements, promoting contextualization and facilitate the transfer, the flexibility and, in case of need, the re-adaptation of the methods and tools (Lynch, 2002).

 1:30 to 2 hours

- Welcome (5 min)
- Presentation of the selected interventions (15 min)
- Role-play on the selected intervention(s) (35 min)
- Final discussion on the key questions (20 min)
- Evaluation questionnaire (5 min)
- Farewell and next steps (5 min)

Protocol, methods and tools

Welcome

As the participants already know each other, they can chat informally before the session begins. If someone new joins, take a moment to make brief introductions. The support team will then present the session details.

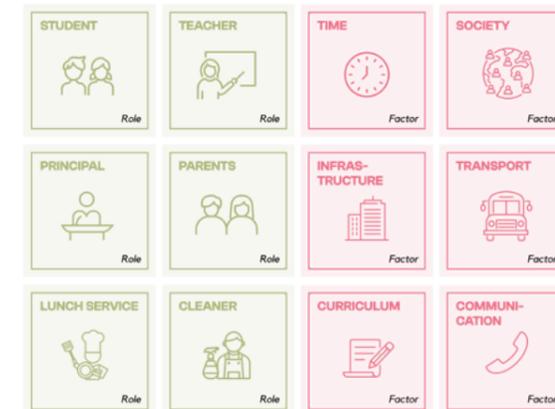
Presentation of the selected interventions

To help participants become familiar with the selected intervention(s), the support team presents them, outlining their objectives and main characteristics, the observed impacts after its implementation (including intended, unintended, and unanticipated consequences). They also share the experience gained regarding the obstacles encountered and the factors that have facilitated their development.

Role-play on the selected interventions

Participants simulate the roles and perspectives of various stakeholders in the field of sustainable education. These roles may include a teacher, a student, a school principal, a cleaning company representative, a parents' association member, or a town hall representative, among others.

Additionally, a set of 'factors' that influence the promotion of sustainability at the school or university are identified. These factors may include elements such as time, resources, the educational project, planning and logistics, and legislation. All of these factors are represented on cards that are distributed among the participants.



Roles and factors cards for the role-playing activity (examples)

The support team assigns a moderator and a secretary for the role play from among the participants. If there are more than ten participants, the group should be divided into smaller groups, each with its own moderator and secretary.

All participants sit around one large table, with the 'role' and 'factor' cards laid out in front of them. Each participant is then invited to choose a role.

The role-playing activity is divided into two parts. In the first part, the group reflects on 'failure stories' and pathways to failure. The second part focuses on 'success stories' and visions for the future.

During the first part, the group discusses which 'factors' contributed to the FAILURE of the intervention. If someone feels that an important factor is missing, they can write it on a blank card. Each participant chooses a role to play and places their card(s) on the table for all to see. Then, from the perspective of their chosen role and considering its associated responsibilities, each participant argues which factors — including the actions

and behaviour of relevant actors — explain why the intervention did not have the expected and hoped-for positive impact and produced undesirable unintended consequences.

In the second part, the group examines the factors that led to the SUCCESS of the intervention. If someone believes that a significant factor is missing, they can write it on a blank card. Each participant selects a role and places their card on the table for all to see. From that role's perspective, they then discuss which factors could explain why the intervention achieved its intended and unintended positive outcomes.

Finally, the support team carries out a summary discussion on the factors and actions most likely to lead to failure and success.



SCT5 role-playing activity in the Finish high school.

Final discussion on the key questions

To guide the discussion, the moderator presents a set of questions for open debate. Participants are now speaking for themselves, rather than in their roles in the role-play activity.

The final debate focuses on the following key questions:

- Why did the intervention reach/not reach its objectives? (Explaining success/failure).
- Why and how did the intervention generate unanticipated outcomes, both positive and negative?
- What were the surprises and key learnings? Did the intervention operate as expected, or did some initial assumptions turn out to be erroneous?

- How would you improve the intervention(s) if you were to start again?
- Which other factors, beyond the intervention itself, might have contributed to the observed positive or negative outcomes?

The support team takes notes on points of agreement and disagreement, identifying areas of consensus as well as divergent views on the ideas discussed.

The debate may conclude with a final question: What is your take-home message from this SCT concerning the intervention(s) discussed? This question provides useful insight into how each participant values the intervention(s).

Part III: Final discussion on the key evaluation questions	The final discussion introduces an agreement on:
	<p>Success elements:</p> <ol style="list-style-type: none"> (1) Water/resource savings (2) Enhancing the education for sustainability by practical demonstration (3) The better hygiene (4) The simplicity in use, better comfort, and reducing time wastage (5) A very good example to increase the confidence in the results of measures and importance of the co-design <p>Failure elements:</p> <ol style="list-style-type: none"> (1) Financial constraints to do many similar actions (2) Option to use batteries for electricity supply of sensors (impact on the environment); possibility to replace by rechargeables. <p>In terms of surprises and learning, the way the intervention was done was an important element. Starting from an idea that seemed utopian to us, the project team taught us how to carefully plan everything and how to identify possible obstacles and solutions. The implementation was so natural that only now can we realize the multiple paths to failure that were avoided.</p> <p>There were no hypotheses that were contradicted during the implementation.</p> <p>How would you improve the intervention if you had to start over? We would probably try to attract additional funds and make a bigger intervention in the sanitary groups, for example modernizing the doors of the individual cubicles.</p>

SCT5 final discussion on key evaluation questions activity in a Romanian high school.

Evaluation questionnaire (assessing the quality of the participatory process)

As usual, the session closes by going through a brief evaluation questionnaire. This short survey assesses the quality of the deliberative process as an engagement exercise (Rowe & Frewer, 2000).

Farewell and next steps

Before closing the session, the moderator thanks participants for their contributions and explains the next steps.

SCC-5 — Sustainability Competence Committee meeting 5. Evaluating the interventions

Purpose & preparatory work

SCC5 convenes the broader educational community (NGOs, school representatives, public authorities, etc.) to validate and extend SCT5 findings, reflect on roles and responsibilities, and co-develop improvements if the interventions were to be implemented again.

In terms of preparatory work, the support team helps the school or university to prepare the stimulus materials to be discussed in SCC5. As each school or university may conduct up to three SCT5 sessions (one with students, one with teachers and one with staff), you could have up to three sets of results per intervention.

If at your school or university the role-playing activity of students, teachers, and staff focused on the same intervention, the support team directly presents all the role-play results, highlighting similarities and differences in terms of failure and success factors of the intervention. If the exercises at SCT5s focused on more than one intervention, the support team produces a presentation of role-play results for each intervention. This step requires prior analysis by the support team.

As in previous sessions, the support team will use observation protocols to capture ethnographic elements, promoting contextualization and facilitate the transfer, the flexibility and, in case of need, the re-adaptation of the methods and tools (Lynch, 2002).

 1:30 to 2 hours

- Welcome and introduction (5 min)
- Presentation of the intervention(s) (15 min)
- Presentation of the SCT5 role-play outcomes (10 min)
- Discussion 1: Reflection on their own role and responsibilities (20 min)
- Presentation of the SCT5 outcome on the evaluation questions (10 min)
- Discussion 2: Collective reflection on how to improve the interventions (20 min)
- Evaluation questionnaire (5 min)
- Farewell and next steps (5 min)

Protocol, methods, and tools

Welcome and introduction

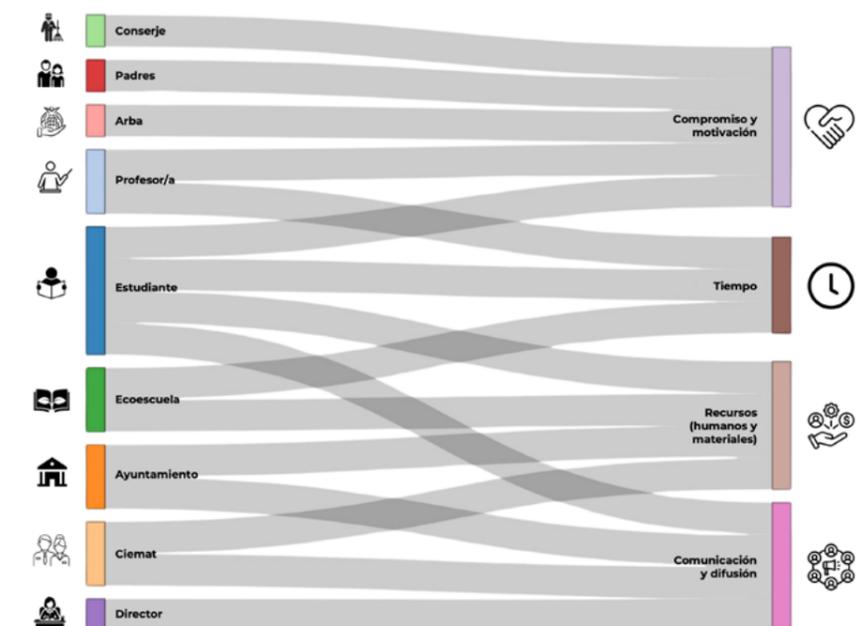
The moderator checks who the committee participants are this time and reminds potential new participants of the SCC dynamic. For new participants, informed consents must be signed

Presentation of the intervention(s)

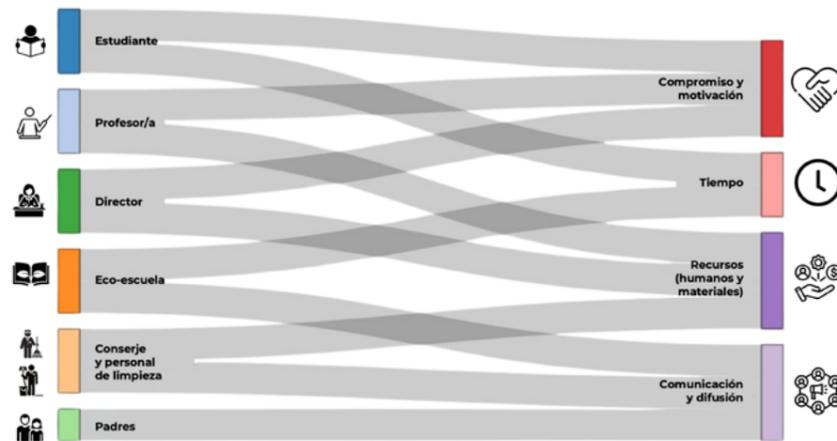
The support team presents the intervention(s) discussed in the SCT5 sessions, outlining their objectives and main characteristics, the observed impacts and the experience gained regarding the obstacles encountered and the factors that have facilitated their development.

Presentation of the SCT5 role-play outcomes

The results of the SCT5 role-play activities (separately for students, teachers and staff, if applicable) are presented, focusing on the "failure factors" that lead to or could lead to failure, and on the "success factors" that ensure the intervention succeeds or could be improved.



Students. Overview results role-playing activity in the Spanish primary school.



Teachers. Overview results role-playing activity in the Spanish primary school.

Discussion 1: Reflection on their own role and responsibilities

The roles and responsibilities of the different actors in achieving success or failure are discussed. From their own perspective, each participant explains to what extent they agree or disagree with the actor responsibilities identified in SCT5 as crucial for their actor group. Participants also reflect on what might be missing.

Presentation of the SCT5 outcome on the evaluation questions

The support team presents the outcomes on the evaluation questions regarding the achievement of the intervention's objectives, the reasons behind its success or failure, the unanticipated positive and negative outcomes, the surprises and lessons learned throughout the process, and how the intervention(s) could be improved if it were to be started again.

Discussion 2: Collective reflection on how to improve the interventions

Once these questions have been presented, a group discussion takes place. From a collective perspective - "we as a group"- participants reflect on the transformative action leading to success. The questions used to generate the debate would be:

- What could be done to improve the intervention(s), if it/they were to start again?

- Which other factors than the intervention may have engendered change?
- What is the role of the intervention(s) within the broader picture, i.e. the efforts towards sustainability at the school/university?

After a brief discussion, each participant writes down a summary of their views. Then, the support team collects them.

Examples of an SCC5 debate in a Spanish elementary school. The intervention discussed was a tree-planting activity in the schoolyard. Summary results

1. How would you improve the intervention(s) if you were to start again?

Among the most prominent suggestions for improvement, emphasis was placed on the importance of "providing families with sufficient notice" so that they can prepare adequately, thereby avoiding any last-minute arrangements that might reduce participation or comfort during practical activities such as tree planting. (...)

Participants stressed that one of the main challenges is ensuring proper continuity and long-term follow-up of the activity, rather than letting it become a one-off experience. They underlined the need for "ongoing follow-up: so that planting is seen as being continually cared for, continually maintained." This includes tasks such as regular watering, fertilizing, pruning, and soil and pest treatment, all critical to allowing the trees to fully grow and achieve their environmental objectives, such as creating microclimates or enriching the soil.

From an educational standpoint, participants proposed closely integrating the activity into the regular academic curriculum. They noted the importance of conducting preparatory curricular tasks related to planting, such as studying the "weather conditions, climate, soil conditions, distance between buildings and trees." (...)

It was also suggested that the school take advantage of active methodologies, such as project-based or problem-based learning, and develop “field diaries or logbooks,” thus enhancing transversal sustainability competencies.

Coordination with external entities was cited as a critical area for improvement. Specifically, the lack of synchronization between parallel projects, such as Eco-schools and other municipal programs, was seen as a limiting factor. (...)

2. What was the role of the intervention in triggering change? Which other factors than the intervention may have engendered the observed changes in competences or environmental performance?

Regarding external factors that brought about changes beyond the specific intervention being analysed, attendees noted that an initial culture of sustainability already existed within the school—based on activities such as paper recycling—thus creating a favourable context for new environmental initiatives.

Additionally, the active commitment of the educational community and the AMPA (Parents’ Association) was identified as decisive, as previous and ongoing collaboration in the school environment greatly facilitated the cultural shift needed for such projects. They also highlighted the institutional support provided by the local government as a key success element: “the local council has given us a park to use... we are reinforcing all of this,” suggesting that backing from local authorities was vital in securing additional resources and suitable spaces.

3. What is the role of the intervention in the overall SD work at the school/university (strategies, action plans, etc.)?

Participants regarded the intervention as a crucial part of the school’s overall sustainability efforts. They viewed concrete actions like this as fundamental to strengthening genuine environmental awareness among students, teachers, and families.

They also underscored how the project fosters a strong sense of community and belonging, encouraging students to feel proud of caring for their surroundings and to see that they are “leaving something for future generations.”

Moreover, they mentioned the possibility of using this intervention as an example or reference point for other educational centres and communities, thus facilitating the replication and scaling of similar initiatives and enriching the educational landscape in terms of sustainability.

Evaluation questionnaire (assessing the quality of the participatory process)

Once again, the session closes by going through a brief workshop evaluation questionnaire, a short survey that assesses the quality of the deliberative process.

Farewell and next steps

Before closing the session, the moderator thanks participants for their contributions and explains the next steps.

SCT-6 — Sustainability Competence Team meeting 6. Evaluating the whole process

As mentioned above, SCT6 & SCC6 focus on evaluating the process as a whole. To this end, after an overview of the main outputs of the participatory process by the support teams at each DS, participants engage in reflection and deliberation on both the outcomes and the process itself.

Part of the debate in both SCT6 and SCC6, focuses on evaluating the outputs of our hybrid participatory approach and, more specifically, on whether it was successful in enhancing self-reflection and deliberation on sustainability competences. Using Problem Structuring Methods (PSM), participants individually identify the main contributions of the hybrid participatory process and then engage in a debate to prioritize these contributions.

Purpose & preparatory work

The sixth SCT session focuses on evaluating the main contributions of the whole participatory process in terms of the three sustainability competence spheres (individual competences, collective competences, and techno-material competences).

It aims to assess both the practical outcomes and the process facilitated through the hybrid participatory method, in order to identify the obstacles encountered during the project and deliberate on ways to overcome them. In short, the goal is to discuss how the whole process could be improved if it were to start again.

As in previous sessions, the support team will use observation protocols to capture ethnographic elements, promoting contextualization and facilitate the transfer, the flexibility and, in case of need, the re-adaptation of the methods and tools (Lynch, 2002).

To prepare the presentation of the interventions, the support team can draw on the reports and experiences from previous SCTs (notably SCT5, but also SCT3 and SCT4).

 1:30 to 2 hours

- Welcome (5 min)
- Presentation of the findings from the whole process (20 min)
- Discussion 1: Project contributions in terms of outcomes and processes (30 min)
- Discussion 2: Interactions between the three spheres of sustainability competences (10 min)
- Final discussion (10 min)
- Evaluation questionnaire (5 min)
- Farewell and next steps (5 min)

Protocol, methods and tools

Welcome

The session begins with a welcome to all participants, followed by a short presentation of new participants. It then provides a brief reminder of the SCT rules.

Presentation of the findings from the whole process

The support team presents a summary of the main findings from the entire hybrid participatory process, focusing on the following aspects:

- The objectives and results (in terms of individual competences, collective competences and techno-material competences).
- The methods and tools.
- The "success and failure factors": drivers and obstacles (in implementation).

To prepare this presentation, the support team can draw on the reports and experiences from previous SCTs, notably SCT5, but also SCT3 and SCT4).

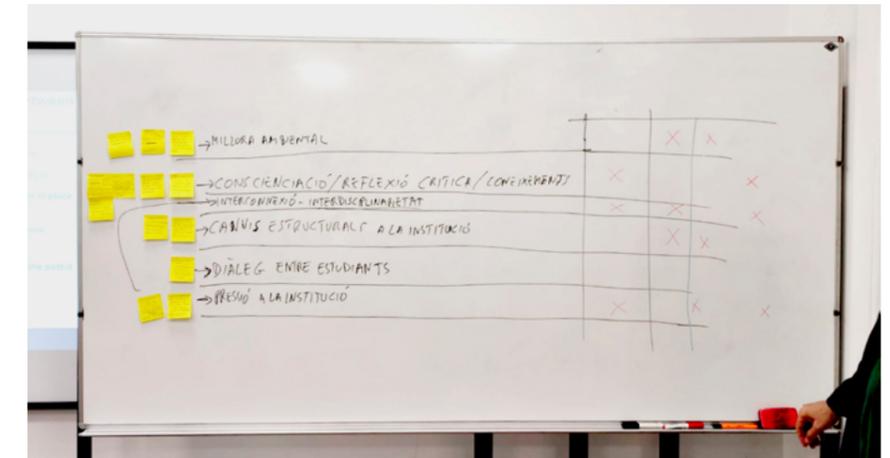
Discussion 1. Contributions in terms of outcomes and processes

After the presentation of the main findings of the interventions and the hybrid participatory process in terms of outcomes, each participant is asked to write 2-3 ideas on contributions on post-it notes. Then the group discusses the contributions described on the post-its until they achieve a consensus on a list of key contributions of the project. Once this is completed, each participant, individually, ranks the contributions in order of importance using sticky dots.

Example of ranked key contributions	Total score
1. Promoting environmental awareness/visibility at school	11
2. Including sustainability in teaching more than before	8
3. Organizing recycling	7
4. Establishing and organizing the students' environmental team	5
5. Promoting vegetarian food	2
6. The excursions	1

Final ranking of the outputs of the whole process in the Finnish high school.

Finally, a final debate is proposed on which they think they are the main contributions of the hybrid participatory process. Once again, each participant writes 2-3 ideas on contributions on a post-it.



Examples of post-it note participatory synthesis in a Spanish university.

Discussion 2: Interactions between the three spheres of sustainability competences

The second group discussion in this meeting focuses on reflecting on the different spheres of sustainability competences. The aim is to identify the interconnections between the three spheres: individual competences, collective competences, and techno-material competences. The discussion begins by showing on a whiteboard the figure illustrating the three spheres, together with the lists of contributions generated during the first group discussion.

Each participant is then asked to write the three main contributions on post-its and place them on the figure. This is followed by a brief final discussion in which participants reflect on which spheres they consider the most important and why.

The moderator or secretary summarises the debate, describing the consensus opinion on a post-it. Then, the support team collects the post-its.



Interaction between spheres of sustainability competences. Spanish primary school.

Final discussion

The session concludes with a final group discussion on plans and ideas for the future. After the discussions held, each participant is asked to explain what they hope to do in the future regarding sustainability, both in the school or educational field, and in the personal sphere of daily life.

Evaluation questionnaire (assessing the quality of the participatory process)

Once again, the session closes by going through a brief workshop evaluation questionnaire, a short survey that assesses the quality of the deliberative process.

Farewell and next steps

Before closing the session, the moderator thanks participants for their contributions and explains the next steps.

SCC-6 – Sustainability Competence Committee meeting 6. Evaluating the whole process

Purpose & preparatory work

SCC6 engages the broader educational community to validate and extend the outcomes of SCT6, reflect collectively on the experience and findings, and co-produce targeted policy recommendations for different actor groups within and beyond schools and universities.

The discussion addresses on the main contributions across the different spheres of sustainability competences (individual, collective, and techno-material), and formulate concrete recommendations to guide future sustainability initiatives. The forum includes a diverse range of stakeholders from the site's community.

A moderator leads and facilitates the session, and a secretary records the discussion following the observation protocol. As in previous sessions, all new participants must sign the informed consent form. Photographs and, where feasible, audio recordings will be taken.

Session's materials include a concise overview of the project's initial objectives and current progress. The support team should prepare a presentation of the outcomes of the different SCT6 (students, teachers, staff), highlighting ranked contributions and interconnections across the three sustainability spheres.

 1:30 to 2 hours

- Welcome (5 min)
- Presentation of SCT6 outcomes, followed by a discussion (30 min)
- Debate to prepare recommendations for further action (20 min)
- Final discussion (10 min)
- Farewell, thanks, and next steps (10 min)

Protocol, methods, and tools

Presentation and discussion of SCT6 outcomes

The session begins with a presentation summarising the rankings established at the SCT6 sessions, indicating the most significant contributions. Each participant then asked to write on a post-it note the most important contribution they would prioritise. Next, a brief presentation summarising SCT6 views on the interconnections is given, followed by short debate. Finally, there will be a discussion about the importance of the hybrid participatory process as a whole, considering the participants' experience and views.

Example of project contributions agreed and ranked in the Romanian SCC6

Understanding and applying green energy concepts (especially solar energy)

Improved teamwork and collaboration across diverse student groups

Raised awareness of individual environmental impact and responsibility

Development of critical thinking and problem-solving related to sustainability

Sustainability as a lifestyle and long-term personal commitment

Hands-on learning leading to real-life green energy skills

The power of group unity and collective competence to drive change

Modernizing infrastructure with sustainable solutions (e.g., reducing waste, energy, and water use)

Linking science, society, and nature in understanding sustainability

Encouraging open expression, idea sharing, and student voice

Orientation to feasible practice – small actions with big environmental impact

Seeing sustainability as a career driver and professional responsibility

Eco-friendly alternatives for energy generation and responsible resource use

Transfer of knowledge: from learning to teaching others and inspiring change

Interdisciplinary collaboration – blending technical, social, and environmental perspectives

Debate to prepare recommendations for further actions

To prepare recommendations for further action within the school, university and beyond, each participant first elaborates on policy recommendations that can foster transformative change towards sustainability for different stakeholders, such as teachers, the leadership team, students, the municipality, regional/national authorities and the EU. Then, the support team moderates a group discussion on each recommendation.

Finally, the group selects the three most important recommendations for each target group and ranks them in order of importance. The secretary records these recommendations on post-its.

The ECF4CLIM project team



5.1. Coordinators



Ana Prades

Scientific researcher and Head of
the Socio-technical Research Centre
(CISOT/CIEMAT)



Yolanda Lechón

Research profesor at Energy Systems
Analysis Unit of CIEMAT

5.2. Partners



CIEMAT

Coordinator
(Ana Prades,
Yolanda Lechón)



**University of Seville
(US)**



**Universitat
Autònoma de
Barcelona (UAB)**



**Instituto Superior
Técnico Lisboa**



ISQ

Meda Research



Smartwatt

Trebag



Enlitia



QUE



**University of
Jyväskylä**



**Primary CEIP
Mozart**

Victor de Diego



**Secondary IES
ITACA**

Carolina Clavijo
Aumont



**Universitat
Autònoma de
Barcelona (UAB)**

Anna Florensa



**University of
Jyväskylä**

Ulla Helimo



**Sampo upper
secondary
school**

Tuija Ylöniemi



**Juhannuskylä
comprehensive
school**

Noora Sallinen



**Escola Básica
Camarate**

Patrícia Pereira



**Instituto
Superior Técnico**

Silvia Di
Salvatore



**Escola Básica
Bobadela**

Fernanda
Almeida



**Scoala
Gimnaziala
Nicolae
Balcescu**

Maria Dragut



**Scoala
Gimnaziala
Sercaia**

Delia Ganea



**Liceul Teoretic
Iulia Zamfirescu**

Roxana Stroe,
Ion Dumitru
Voiculescu



**Universitatea
din Pitesti**

lect. Dr. Gabriel
Ghita, conf. Dr.
Madalina Marian



ecf4clim.eu



**Funded by
the European Union**

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101036505. This document reflects only the author's view and the Research Executive Agency (REA) and European Commission cannot be held responsible for any use that may be made of the information it contains.