

Report

Sensing Our Environment Together: *Citizen Sciences for Climate and Air Quality*

30/09/2025-01/10/2025



Table of Content

Goals of the Workshop	3
General Methodology of the Workshop	3
Introduction - Presentations Round (1h)	4
Session 1 - Engaging and Sustaining Citizen Participation (1h30)	5
Session 2 - Valorizing Results: From Data to Action (1h30)	10
Session 3 - Measurements, Data Platform, and Management (1h30)	13
Session 4 - Citizen Science & Universities (1h15)	20
Session 5 - International Developments (1h15)	24
Workshop Feedback Session	26
Appendix 1 — Consultation of the participants before the workshop	29

Goals of the Workshop

The main objective of the workshop was to bring together academics and societal partners working on climate and air quality issues through participatory research approaches. The session aimed to foster dialogue and mutual understanding between researchers, associations, and local stakeholders, encouraging the exchange of experiences and methodologies. By connecting different actors engaged in citizen science and co-creation, the workshop sought to identify common challenges, explore potential collaborations, and strengthen the collective capacity to address environmental issues through inclusive, science-based action.

This workshop acted as a prototype for the CIVIS Open Labs, aimed at initiating future collaborations and enhancing the transnational aspect of citizen science and participatory research on air quality. By testing new formats of dialogue and co-creation, it sought to inspire similar initiatives throughout the CIVIS alliance and to develop a shared learning community around climate and environmental challenges, but potentially also on other societal issues through the replication of this workshop format.



General Methodology of the Workshop

In the weeks leading up to the event, a consultation process (see Appendix 1) was undertaken to gather inputs, expectations, and emerging needs from both academic and non-academic participants. Based on the insights collected, a series of thematic workshops was organised to enhance interaction among individuals and to address key issues identified during the consultation collectively.

Introduction - Presentations Round (1h)

Format: participants are asked to draw a portrait of one of their neighbours at his/her table without looking at the paper. They can only look at the person. People then exchange the sheet of paper with the person portrayed. He/she adds his/her name and organisation.

We then ask each participant to introduce him/her-self, explaining the projects of participatory research he/she is involved in.

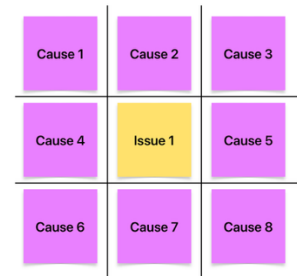
Session 1 - Engaging and Sustaining Citizen Participation (1h30)

Explore the key challenges of disengagement, diversity, and collaboration in citizen participation, and co-create solutions to strengthen long-term involvement

Format — To explore the causes and try to design solutions to the key challenges pre-identified, we designed a workshop using a '[lotus format](#)' (petal method). The participants are separated in three groups, each of them working on one particular issue. The workshop is organised in three steps:

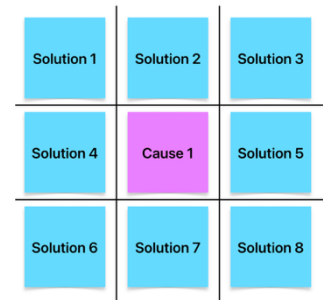
1. Identify & prioritise causes (20')

- Individually, participants must identify the causes of the issue, write 1 cause of the issue by **pink** post-it
- Then, the participant must «prioritise the causes using the dot voting.



2. Generate solutions (45')

- Based on the dot voting, the participants should work on one (or two) cause(s) that receive the majority of votes.
- Again, they have to try to identify possible solutions individually (1 solution to the identified cause by **blue** post-it) and then discuss within the group.



3. Reporting & Synthesis (10' by group)

Reporters from each group explain to the others the causes and possible solutions identified.

Group 1 • Collaboration Dynamics (Different work styles, rhythms, and workflows creating misalignment and friction within the group)

Identified Causes (pink post-its)

- Bad communication – misunderstandings between stakeholders, lack of updates, weak coordination of shared goals.
- Lack of structure – unclear roles, poor organisation of heterogeneous groups, fundamental expectations not discussed.

- Lack of motivation – missing sense of ownership or responsibility, different priorities and engagement levels.
- Time and project management – long projects reduce commitment, lack of time for meetings and revisions.

Proposed Solutions (blue post-its + discussion)

- Improve communication – plan regular reflection meetings, foster open discussion, and clearly verbalise shared priorities.
- Adapt project structure – group participants by interest, assign clear roles and responsibilities, adopt agile project management with short cycles and flexibility, keep projects shorter than one year.
- Enhance motivation and ownership – listen and respond to participants' needs, connect activities to tangible outcomes (e.g., cost efficiency, health, education), introduce small interventions to sustain interest, recognise individual contributions.
- Foster compromise and inclusivity – recognise differences in priorities, encourage flexible and adaptive collaboration models.

Cross-cutting Insights

Collaboration issues often emerge from unclear communication and weak structural organisation. Establishing feedback loops and agile reorganisation processes helps maintain group alignment. Motivation and ownership are central: participants remain engaged when they feel heard, responsible, and when their input has visible impact. A balance between structure, flexibility, and continuous dialogue is key to sustaining collaboration.

Group 2 • Disengagement (loss of interest or participation over time)

Identified Causes (pink post-its)

- Lack of purpose & unclear communication – unclear project goals, weak communication from organisers, lack of feedback on results, early misunderstandings.

- Lack of stimulation – not enough engaging activities, few opportunities to interact with others.
- Technical difficulties – complex or unstable tools, connection problems, no helpdesk or support.
- Lack of time – demanding routines, imbalance between effort and recognition.
- Life changes / mobility – participants moving away or changing situations.
- No community – participants feeling isolated, no sense of belonging.

Proposed Solutions (blue post-its + discussion)

- Stimulating motivation – introduce gamification (leaderboards, challenges, badges), organise regular online or in-person events, provide regular feedback (newsletters, trivia, results), empower participants to co-decide project goals and directions.
- Strengthening community – create communication spaces (Discord, WhatsApp, forums), promote informal exchanges between researchers and participants, organise convivial gatherings or receptions.
- Simplifying the technical experience – provide accessible helpdesk or tutorial materials, offer analogue alternatives (paper-based data collection), design user-friendly tools.
- Managing time – plan sufficient time for engagement and follow-up, ensure coordinators stay actively involved, adjust communication frequency to sustain interest without fatigue.

Cross-cutting insights

Disengagement often stems from a combination of low motivation, poor communication, and weak social bonding. Gamification, co-creation, and technical simplicity are powerful levers to sustain engagement. Time management – both for participants and organisers – is crucial: maintaining motivation requires regular and well-planned effort.

Group 3 • Diversity of Participation (Participation is uneven, with some profiles, levels, or types of involvement missing or underrepresented.)

Identified Causes (pink post-its)

- Unequal access to participation – structural barriers such as time, resources, or education level; underrepresentation of working-class, migrant, elderly, or non-digital users.
- Dominant representation of science – public perception of science as technical and expert-driven; humanities and social sciences less visible in communication.
- Mismatch between scientific and societal logics – science structured by disciplines while public problems are thematic and cross-cutting; researchers act as specialists rather than collaborators.
- Temporal and funding misalignment – research projects are short-term while societal change requires long-term engagement; academic cycles (students, grants) are out of sync with community timelines.
- Language and communication barriers – scientific jargon and English dominance limit inclusion; need for translation and diverse communication tools.
- Researcher positionality – asymmetry between researchers and participants; tension between neutrality and engagement.
- Uncertainty management – ambiguity in handling or explaining uncertain citizen data; risks of misunderstanding and loss of trust.
- Different goals and expectations – citizens seek concrete change; scientists focus on data and understanding; funding reinforces academic logic over societal needs.

Discussion Outcomes

- Build trust across publics – acknowledge multiple definitions of science and expertise; co-design communication adapted to each group.
- Work on language and mediation – translate results, use visuals, storytelling, and local languages.

- Balance timescales – align project rhythms with community realities; avoid overly short-term projects for long-term issues.
- Rethink researcher roles – shift from knowledge provider to co-learner; reflect on power and authority dynamics.
- Integrate multiple knowledge systems – value technical, social, and experiential knowledge equally.
- Develop inclusion checklists – identify target groups, map barriers (time, literacy, language, access), and design mitigation strategies.

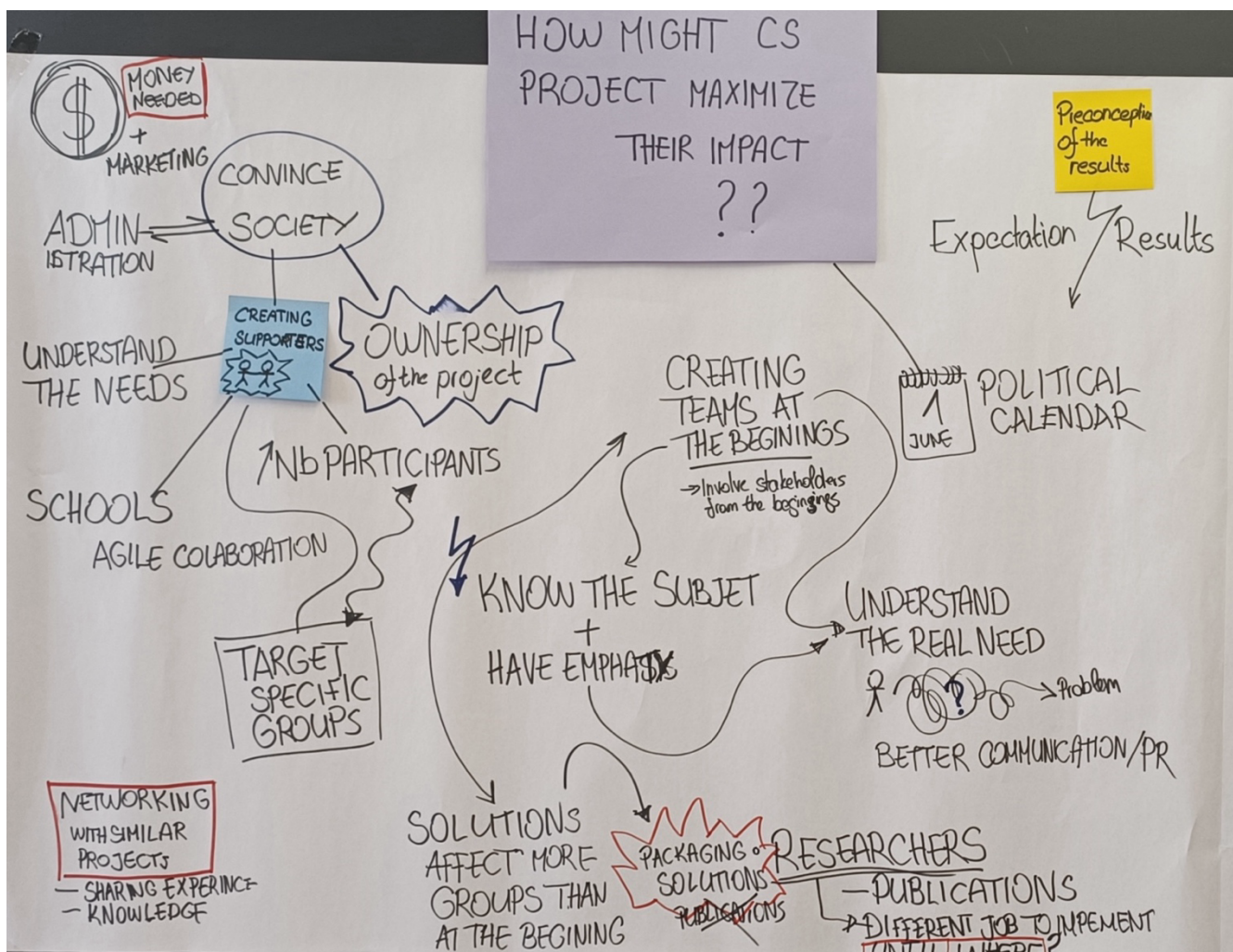
Cross-cutting Insights

Diversity in participation is not merely about recruitment but about epistemic justice. Inclusive citizen science requires reflection on who defines knowledge, in which language, and under what institutional conditions. Achieving true diversity depends on bridging structural, communicational, and cultural gaps between science and society.

Session 2 - Valorizing Results: From Data to Action (1h30)

Identify strategies and protocols to transform citizen science results into actionable outcomes that maximize impact on citizens and policy

This session focused on how to maximize the policy impact of citizen science projects. Participants first pitched their own projects and the challenges they face in achieving real policy influence. The group then split into four teams, each led by one of the presenters. Within these groups, participants discussed the projects in more detail, asked questions, and shared ideas to identify ways to strengthen their impact. The session concluded with a collective reflection on strategies to transform citizen science results into actionable outcomes.



Identified Challenges & Causes

- **Communication gaps** – Results often clash with public preconceptions, leading to rejection or misunderstanding. Scientific findings are sometimes presented without context or adaptation to audience expectations.
- **Lack of contextualization** – Results are shared without considering psychological reactions or prior beliefs, reducing their acceptance and impact.
- **Uncertainty and evidence framing** – Scientific choices (variables, methods) influence outcomes, which may not align with public expectations.
- **Limited stakeholder engagement** – Key actors (e.g., municipalities, dissenting voices) not involved early enough, risking opposition during implementation.
- **Ownership and identity** – Projects lacking personal or symbolic connection fail to generate long-term commitment.
- **School collaboration difficulties** – Institutional constraints and curriculum rigidity can delay integration of citizen science activities.
- **Mismatch between inclusivity and targeting** – Tension between broad participation and strategic targeting of influential or receptive groups.
- **Political timing and agenda** – Impact depends on aligning project actions with political cycles and windows of opportunity.
- **Packaging and dissemination** – Scientific outputs often lack accessible formats for policy or public audiences.
- **Economic sustainability** – Lack of financial models to support scaling, maintenance, and communication efforts.

Proposed Solutions & Actions

- **Adapt communication to preconceptions** – Use storytelling, visuals, and tailored messaging to bridge gaps between scientific results and public beliefs.
- **Foster ownership and identity** – Engage participants in symbolic actions to create emotional and personal investment.
- **Leverage children and schools** – Use children as entry points to reach families and communities; personalize activities to fit school curricula.
- **Strategic stakeholder involvement** – Identify and engage decision-makers and potential blockers early; use empathy and legitimacy to build trust.
- **Use political windows** – Time actions around elections or policy shifts to increase receptivity and pressure for change.

- **Improve dissemination** – Develop dual publication strategies (scientific and public); use policy briefs, journalistic formats, and simplified language.
- **Build networks** – Connect with similar projects, researchers, and communities to share resources, amplify impact, and sustain momentum.
- **Develop economic models** – Create cost-effective plans for scaling and sustaining projects; explore symbolic pricing or crowd-based funding strategies.
- **Enhance public relations and marketing** – Treat citizen science as a public-facing initiative requiring visibility, branding, and strategic outreach.

Cross-cutting Insights

Maximizing impact in citizen science requires more than producing data. It demands meaningful engagement. Impact arises when participants feel ownership, when communication is adapted to their context, and when results are framed to resonate with their beliefs. Projects must navigate political timing, stakeholder dynamics, and social tensions, recognizing that not all interests align. Researchers need to go beyond their academic roles, becoming facilitators and communicators. Strategic packaging of information, inclusive targeting, and sustainable economic models are essential. Ultimately, citizen science succeeds when it bridges knowledge and action through empathy, clarity, and collaboration.

Session 3 - Measurements, Data Platform, and Management (1h30)

Explore approaches to make air quality data meaningful, enhance participant roles, select appropriate sensors, and assess the potential for a shared index.

Format — World Café: Participants are invited to discuss three topics at three different tables. Every 20 minutes, they rotate to a different table to talk about a new issue. One person stays at each table for the entire session to brief newcomers on what has already been discussed and on the final report.

Table 1: Making Sense of Data for Stakeholders

This table explored how air quality data can be made understandable and meaningful for different audiences, including citizens, policymakers, and other stakeholders. Participants reflected on the importance of contextualizing complex information, avoiding oversimplification, and developing storytelling and communication methods that connect with real life.

1. Context and objectives

The group discussed how to interpret and communicate air quality data effectively without losing scientific rigor. Understanding depends strongly on the purpose of the analysis and on the audience. For single-site studies, detailed time series and charts may be best; for city-wide comparisons, colour-coded maps and dashboards help visualize variations.

2. Approaches and tools for interpretation

- Contextualize results and avoid panic: explain what numbers mean in practical terms.
- Provide comparisons and benchmarks: link local results to standards or historical averages.
- Communicate uncertainty: acknowledge measurement errors and data gaps openly.
- Support decision-making: explain how data can inform action and planning.
- Enable interaction: allow citizens to comment or annotate data trends, encouraging dialogue.
- Maintain contact points: ensure people can reach someone for clarification or follow-up.

3. Communication and engagement strategies

- Use storytelling to make data relatable and engaging.
- Humanize information with metaphors and everyday examples (e.g., trees working harder to produce oxygen).
- Organize participatory events such as hackathons to co-analyse data.
- Collaborate with professional communicators — journalists, media officers, outreach experts.
- Tailor communication levels for different audiences, from quick takeaways to in-depth explanations.
- Use existing trusted channels — schools, community networks, or local media.

- Time communication strategically by linking it to public events or news cycles.

4. Challenges and recommendations

Simplifying without distorting remains a key challenge. Participants highlighted issues like data overload, uncertainty management, and risk of misinterpretation. Recommendations included focusing on clarity of message, contextual explanations, and prioritizing understanding over technical detail.

5. Cross-cutting reflections

Transparency, clarity, and trust were identified as crucial principles. Air pollution offers a rare example of shared societal understanding: most people agree on its existence and on acceptable exposure levels. This consensus can be leveraged to build unified communication and encourage action.

6. Overall synthesis

Making sense of data means turning abstract figures into collective understanding. Participants emphasized that communication should focus on context and meaning rather than just measurement. When supported by storytelling, interaction, and timely outreach, scientific data can become a shared tool for awareness, dialogue, and change.

Table 2: Beyond Data Collection



This table explored how participants can be engaged in research processes beyond the simple act of collecting data. The discussion unfolded around the different phases of involvement, the multiple roles participants can play, and the key benefits and challenges that arise when co-designing and sharing ownership of research activities.

1. Phases of involvement

Participants identified three main phases where engagement can take place: at the beginning, during the ongoing process, and at the end of a project. Interestingly, the group distinguished between science-led and citizen-led beginnings. A science-led start tends to be initiated by researchers, later opening space for public participation, whereas a citizen-led start originates from local concerns or communities, with scientists joining to provide structure and expertise. This distinction shapes the entire collaboration dynamic.

2. Possible roles of participants

- Co-designers: helping to define research questions, adapt methods, and anticipate bottlenecks.
- Local facilitators: providing contextual knowledge of places, habits, and networks that make processes smoother.

- Innovators: suggesting alternative ways to collect or interpret data, expanding scientific mindsets.
- Cultural communicators: bridging the gap between science and local audiences, ensuring communication fits cultural contexts.
- Trainers: supporting peer-to-peer learning, where experienced volunteers train new ones.
- Ambassadors: promoting the project, raising awareness, and fostering local trust.
- Technical contributors: bringing their own expertise or skills to support technical aspects of the project.
- Context providers: carrying sensors, commenting on data, and adding meaning to measurements through lived experience.

3. Benefits

- Locally grounded and more effective solutions that better reflect real-life conditions.
- Stronger social ties and community engagement emerging from shared involvement.
- Richer qualitative data rooted in local traditions and cultural practices.
- Ability to cross-check and validate findings at a local scale.
- Voluntary contributions that strengthen the project's social value.
- Intergenerational exchange between young and older participants, offering diverse perspectives.
- Emergence of new questions and ideas as projects evolve through interaction.
- Better contextual understanding from people who know the area and its dynamics.
- Empowerment of participants, improving their skills, confidence, and quality of life.

4. Challenges

- Training is required to ensure data quality and methodological understanding.
- Communication and mediation skills are crucial to connect diverse groups.
- Expectations must be managed to avoid disappointment or disengagement.
- Projects become more complex and require stronger coordination efforts.
- Personal motivations may sometimes differ from research objectives.
- Data should be accessible and open, using user-friendly formats.
- Continuous coordination is needed to align scientific and civic agendas.
- Ethical awareness and privacy training are essential for responsible participation.
- Data management becomes heavier with larger and more diverse contributions.
- Participants' availability varies, which can affect continuity.
- Privacy concerns arise around photos, recordings, and personal data.
- Meaningful participation requires considerable time from both sides.

5. Cross-cutting issues

Culture and communication emerged as central themes throughout the discussion. To make research meaningful, scientists must understand the audiences they work with and tailor the way they share findings. Striking a balance between scientific rigor and openness to participation was seen as key: keeping the process accessible without oversimplifying complexity. Sustaining engagement over time also appeared as a major challenge — participation should be seen as a long-term process, not a one-off activity.

6. Overall synthesis

Going beyond data collection means rethinking how research is done and who it is for. When citizens are involved in design, analysis, and interpretation, research becomes more grounded, creative, and socially relevant. However, this broader inclusion requires time, coordination, training, and ethical care. Despite these challenges, participants agreed that such collaboration leads to more sustainable, legitimate, and empowering research outcomes.

Table 3: Choosing the Right Sensor



This table explored how to choose the most appropriate air quality sensors depending on project objectives, resources, and contexts. Participants discussed the technical, financial, and social trade-offs between high-tech and low-tech sensors, reflecting on how different devices shape both data quality and citizen engagement.

1. Context and key questions

The conversation focused on identifying the advantages and limitations of various types of sensors, from low-cost to highly sophisticated ones. Participants examined how sensor choice impacts data precision, accessibility, and the ability to involve citizens effectively. Calibration, data openness, and equity in access to technology were recurring themes.

2. Types of sensors discussed

- Passive samplers (e.g., diffusion tubes for NO₂): low-cost, long-term deployment (weeks to a month), giving average exposure data but not short-term peaks. Requires affordable lab analysis.
- High-end personal sensors (e.g., aethalometers): portable, precise, and real-time but very expensive (~€8000), limiting widespread use.
- Satellite-based sensors: capture large-scale air columns but poor for near-ground accuracy.

- Low-cost sensors: measure PM10, PM2.5, and NOx, offering dense networks and trend detection, but need recalibration and interpretation support.
- Official monitoring stations: reference-grade instruments used for calibration and validation of other sensors.

3. Criteria for choosing a sensor

- Project objectives: awareness, education, or policy validation.
- Available funding: high-end sensors offer precision but are rarely affordable for citizen-led work.
- Data needs: many low-cost data points vs. few high-precision ones.
- Calibration and validation with official data to ensure credibility.
- Openness and transparency of data and technology.
- User accessibility: technical skills required to operate or interpret sensors.
- Sensor location: placement strongly affects data interpretation.

4. Benefits and limitations

Low-cost sensors democratize monitoring, allowing participation where budgets are limited. However, they need calibration, maintenance, and interpretation to ensure reliability. High-end sensors provide precise, validated data but reduce accessibility due to cost and complexity. Hidden costs of low-cost devices, such as six-month recalibrations, can also challenge sustainability.

5. Cross-cutting issues and reflections

Choosing a sensor is not only a technical decision but also a social and ethical one. The physical location of sensors significantly affects interpretations of air quality. Open data and transparency are vital for trust and empowerment. Participants suggested developing an open, regularly updated list of sensors ranked by quality, openness, and usability for future citizen projects.

6. Overall synthesis

There is no universal ‘best’ sensor. The optimal choice depends on project goals, resources, and context. Low-cost sensors broaden inclusion and coverage but have technical trade-offs. High-end instruments ensure precision but limit engagement. Combining both approaches—using hybrid systems with clear calibration methods—offers the most promising direction for participatory air quality monitoring.

Session 4 - Citizen Science & Universities (1h15)

Explore how universities can better support and integrate citizen science through institutional development and teaching practices. This session aims to identify the needs for pedagogical offer on citizen science within the universities.

Format 1 — Mapping the educational needs on a line (5 minutes)

To identify the needs of pedagogical offer regarding citizen science, we ask the group to stand on a line drawn on the floor. This line represents a scale of the offer in terms of quantity, with the following points:

- No need for a pedagogical offer in universities
- Need for 5 ECTS (1 course)
- Need for 15 ECTS (Block of option courses)
- Need for 30 ECTS (1 semester)
- Need for 60 ECTS (1 specialised master).



The group positioned itself in favour of developing an offer. Nobody assumed there was no need for a training offer from the universities. Most of the participants were closed to the 15 and 30 ECTS offer. Interestingly, the students were in favour of a reduced offer (5 ECTS), while the participants from associations were more inclined to support the 60 ECTS proposal.

Format 2 — Discussion in subgroups defined according to the profiles of the participants

We split the participants into four tables. One table regroups mostly students. A second table regroups mostly people from associations. The last two tables regroup mostly academic profiles. Each group discussed the needs, priorities, and possible approaches to integrating CS into higher education.

1. Students' Table

Students envision Citizen Science teaching as a participatory and experiential process that combines ethical awareness, technical skills, and social engagement. They call for a mix of interactive formats, real-world projects, and community-building experiences that show how science can address societal needs and involve citizens meaningfully.

Key points

- Understanding social, institutional, and financial realities (e.g., planning and funding, how to reach institutions).
- Awareness of ethical and privacy-related issues when working with citizens or data.
- Interest in practical formats: interactive classes, individual projects, hands-on lessons, and expert speeches.
- Learning the different types of Citizen Science and their relevance in various contexts.
- Desire to understand why CS is important, and how it can create a community and involve people in meaningful topics.

2. Associations' Table

Associations call for the structural integration of Citizen Science in higher education. They envision it as a shared learning process that brings together different forms of knowledge and fosters long-term cooperation. Recognition of partners' engagement and the sustainability of collaborations are considered key success factors.

Key points

- Need for structured programmes or modules on Citizen Science **across all curricula**, not isolated educational offers.
- Strong preference for project-based learning, inspired by ‘Science Shops’ or service-learning models.
- Importance of transdisciplinary teamwork between students, researchers, and community partners.
- The educational offer should include several specific topics, such as project management, tools for citizen science, transdisciplinarity, etc.

3. Academics’ Tables

Academics focused on the pedagogical, epistemological, and institutional dimensions of Citizen Science teaching. They discussed how to embed CS within curricula while maintaining scientific rigour and interdisciplinarity. They promote active, project-based pedagogy, data literacy, and European cooperation. Embedding CS across curricula requires institutional support, recognition mechanisms, and opportunities for co-teaching with practitioners and citizens.

Key points

- Citizen Science as an opportunity to engage students across disciplines and build transdisciplinary skills. CS can empower students by exposing them to real projects, policy relevance, and societal challenges

The idea is to make students at *capacity at exploring* the scientific method to explain to others.

- Learning outcomes: collecting data, disseminating data, managing group dynamics, citizens empowerment, ethics.
- Regarding the form of teaching, it should encompass the diversity of students' backgrounds, favour reverse teaching, include multiple teachers and approaches, and give students agility.

- Teaching CS should include inviting external experts, encouraging reflexivity, and connecting to European contexts (e.g., CIVIS, what are the existing courses that could be already reused?).
- The question of where the program is attached is key. Is it the faculty level? The transdisciplinary nature of this kind of teaching requires an action that might go beyond the faculty's scale.
- Academics highlighted the need for open, transferable course models adaptable across universities and disciplines.
- The offer should also be available for workers as a certificate in the lifelong learning programs.

4. Overall Synthesis

Across all groups, there is a shared belief that Citizen Science should be taught as an interdisciplinary, participatory, and practice-based approach. These perspectives outline a common vision: Citizen Science should not be limited to extracurricular initiatives but become a structured and recognised component of higher education. Teaching CS means transmitting both scientific and civic skills – enabling students to engage with society and to co-create knowledge in meaningful ways.

Session 5 - International Developments (1h15)

Identify expectations and opportunities of international collaborations to strengthen citizen science initiatives and their global impact.

This session was an open discussion on the expectations and benefits of international collaboration in citizen science. Participants explored what added value a global network could bring, including opportunities for knowledge exchange, joint projects, capacity building, and increased impact across different territories.



5 key points and interest of an international collaboration:

1. Workshops and Capacity Building

- Offer hands-on workshops: method training, co-design, proposal writing, textbook creation.
- Include sessions open to citizens: how to generate political impact, learn from other universities.
- **1.5 days** is an optimal length for workshops.
- Support should be **topic- and method-oriented**, simple, and encourage live exchange rather than excessive emails.

2. International Exchange and Networking

- Facilitate both online communities and participation in existing networks.
- Promote **exchanges of good practices, tools, data, teaching material, and protocols**.
- Live interaction is key for meaningful collaboration.

3. Collaborative Projects with Added Value

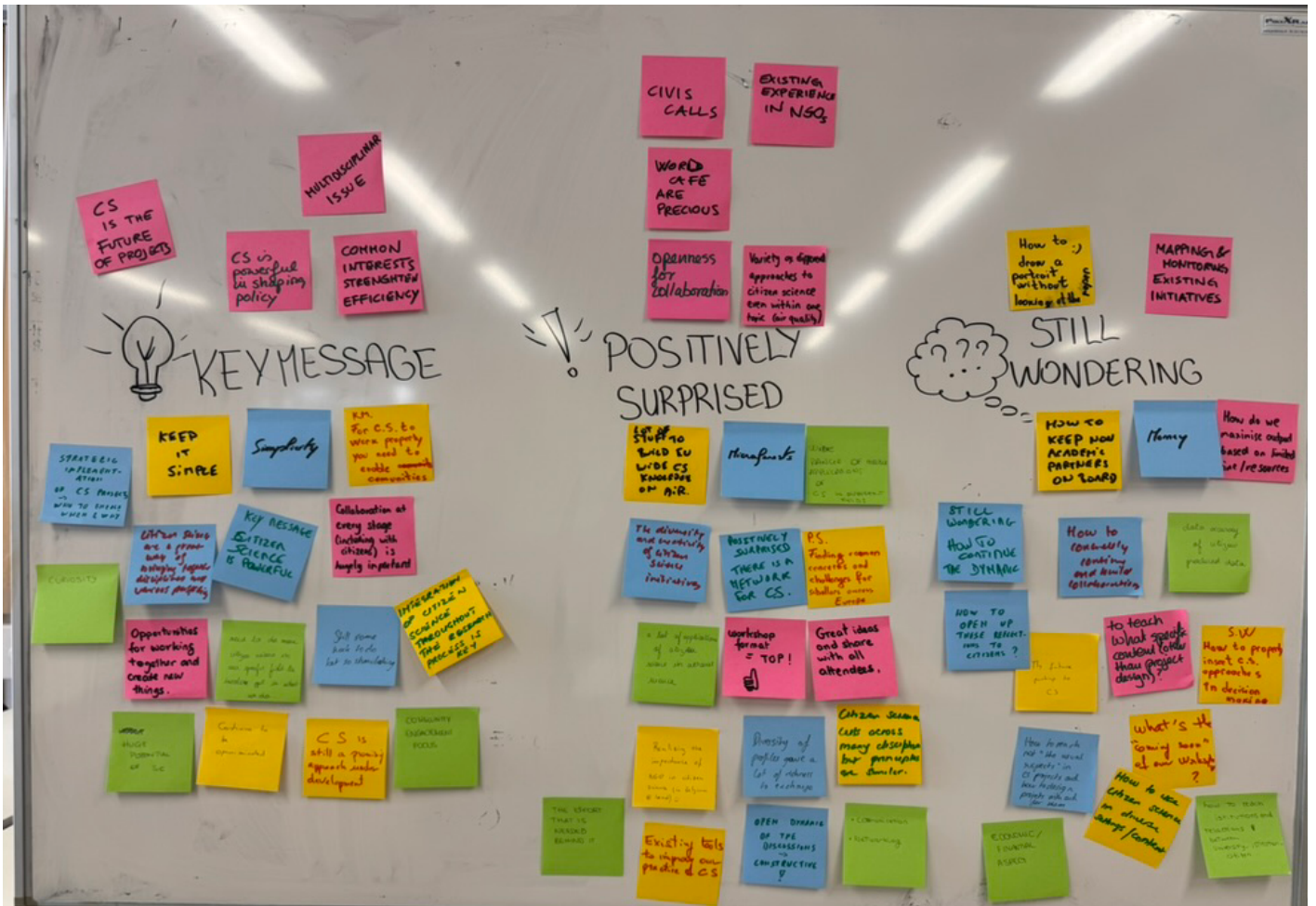
- Develop international projects around relevant themes, e.g., **moving communities** (migration, tourism).
- Decide between **common European projects** vs **replication of similar projects in different territories** for comparative analysis.

4. Sharing Opportunities and Funding

- Share information about funding, calls, and international opportunities.
- Promote collaborative use of resources to strengthen the global impact of citizen science initiatives.

Workshop Feedback Session

Participants were asked to identify a few key elements from the workshop : they key messages they bring home, what positively surprised them, and what they are still wondering about.



Key Message

- Citizen Science (CS) is the future of collaborative projects.
- CS can help shape policies and influence decisions.
- Keep it simple

- Collaboration and co-design are essential at every stage.
- CS connects common interests and strengthens communities.
- Working together allows us to create new and meaningful things.
- CS brings efficiency through cooperation.
- Science belongs to everyone – inclusivity and openness matter.
- CS is still developing – it's a learning process for all.

Positively Surprised

- Diversity of participants and perspectives was inspiring.
- Participants were enthusiastic, creative, and full of ideas.
- Cross-disciplinary exchanges worked better than expected.
- Many existing CS experiences and good practices already exist.
- Associations and non-academic partners are already deeply involved.
- CS can fit within universities without losing its participatory essence.
- Collaboration between universities and communities is already happening.
- CS is both a scientific and a social process.
- The European and CIVIS dimensions were motivating.
- The energy and openness of the discussions exceeded expectations.

Still Wondering

- How can we keep non-academic partners engaged over time?
- How to connect, coordinate, and scale existing CS initiatives?
- How to measure the policy and social impact of CS projects?
- How to ensure sustainable and long-term funding?
- How to teach, evaluate, and certify Citizen Science competences?

- How to make CS more inclusive and reach underrepresented citizens?
- What differentiates CS from other participatory approaches?
- How to move from discussion to concrete next steps?

Appendix 1 — Consultation of the participants before the workshop

We would like to have your feedback on this preliminary programme we are proposing. In particular, what are the aspects you would like to discuss for each thematic workshop? What would you like to showcase from your experience? What do you expect from these workshops?

Could you please add your suggestions and comments below each Workshop section?

Engaging and Sustaining Citizen Participation

Suggestions: ... Where to start with citizen participation - building an interested "audience".

How to cater to different "audiences" (eg children, broader public, particular interest groups).

The step 'before': looking for intrinsic motivation. How to build citizen - science alliances on engaging topics ?

How to deal with different temporalities of citizen and science engagement ?

- How to maintain communication with a community with different temporalities ?

My goal would be to see how to continue the initiatives already underway without "losing" participants

How to make it easy for the "beginners" but interesting enough for the "experts", without losing them ?

How to deal with a moving community of people coming and leaving the project ?

- - So that what is implemented at the beginning benefits to those who join later.
- - So that the system can evolve based on the needs identified during the project.
- - What impact will it have on the community of people who leave?

How can participants be monitored - sensor still connected or not, helpline, etc. ?

How can participants' autonomy be promoted ?

How to be inclusive with a project which is very technical ?

How to reach communities / people who usually do not participate in this kind of initiative

How to make meet the objectives of scientists / experts and the expectations of participants for example in the formulation of common research questions

How to create bridges between participants = mutual assistance, creation of a community spirit, common language ?

How can we account for the different work rhythms between institutions, academics, and citizens ?

How to convince the more experienced scholars that citizen science approaches can enhance their research an not replace their work?

Showcase and promote how examples of data monitoring have lead to stricter policies (are these known?)

How to empower residents to be an active part of positive change?

Valorisation of the results: From Data to Action (Policy, etc.)

Suggestions: ... Challenges with data quality, how to best combine quantitative and qualitative data

How to go from understanding the problem through data and observations to suggesting solutions ?

How to test-drive possible solutions ? Citizen-science data collection and analysis of real-world policy implementations ?

Should a project be started or maintained if no one of the "action administration" are part of it ? = possible actions limited.

How manage the cleaning of data in order to use them at a scientific level ?

Risk of key project personnel leaving : how can this fragility be addressed ? What tools can partners use to work together ?

How to get sustainability of the data - data base, open data system, etc. ?

Security of the data

How data can be useful/meaningful for citizen

How to integrate better qualitative data in quantitative initiatives and in policy measures

The complexity of communication and concrete measures people can make in their daily life

How to properly link citizens, researchers and authorities through citizen science approaches in order to enhance the decision making process?

What typology of actors and stakeholders should be involved in a framework aimed at embedding citizen science in common practices, planning or decision making?

how long would it take to go from (citizen science) data to action (implementing policy)? (It would be helpful to look at some case studies from around Europe/Africa as I can imagine that this varies widely as well)

Measurements, Data Platform, and Management

Suggestions: ...Best ways to obtain data depending on audience (eg apps, web forms, interviews, remote devices etc)

Open data, to which level ?

How to open up data analysis to citizens ?

How to make the best use of the data collected (at the scientific level, in order to ultimately argue for possible public action).

How to make data accessible : individual data / everyone's data ?

Building a sensor by yourself = people understand how it works and better chance that take care of it ? / versus buying one : cost, management, unity of sensors, etc.

How to accompany data to make them meaningful for people

How to address and communicate on the complexity of measurement, risks, and uncertainties

Which are the main features needed by a citizen science tool to be accessed by a diverse group of people?

Which are the best ways to collect data from vulnerable groups?

Lending out sensors and passing them on? Collaborate with schools or universities and send them out with a teaching package? or send out sensors to individuals (who e.g. only need to pay a deposit)?

How to secure funds to buy sensors?

No universal air quality index exists thus far for all countries of the world. Colour codes vary (<https://aqihub.info/>), with European countries often adopting a more alarmist colour scale than countries that face on average much higher pollution levels (reflecting air quality inequality).

Additional Comments

... do you know of any teaching material around air quality monitoring via established citizen science programs?