# D4.1 Blueprint for the European Citizen Science Academy

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| Abstract | This deliverable covers the various steps that have been undertaken to develop the path to creating and developing a European Citizen Science Academy (ECS Academy). The ECS |

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|---|---|
| | Academy is a work package within the European Citizen Science (ECS) project. It seeks to promote citizen science within various stakeholder spheres, countries, by being a point of reference for training material and by regrouping a community of practice around citizen science training and education to develop training needs. This report is an aggregation of documents and reports that have been elaborated throughout the first year of the ECS project, with a community of practice of citizen science educators and trainers, the European Citizen Science Association and the ECS consortium. |
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# List of Definitions and Acronyms

| Abbreviations | Expansion |
|---|---|
| CoP | Community of Practice |
| CS | Citizen Science |
| DoA | Description of Action |
| ECS Academy | European Citizen Science Academy |
| ECSA | European Citizen Science Association |
| EOSC | European Open Science Cloud |
| KPIs | Key Performance Indicators |
| LMS | Learning Management System |
| MCAA | Marie Curie Alumni Association |
| NGO | Non-Governmental Organisation |
| RPO | Research Performing Organisations |
| RFO | Research Funding Organisations |
| RTO | Research Translation Organisations |
| R&I | Research and Innovation |
| SDGs | Sustainable Development Goals |
| WP | Work Package |

# Executive Summary

ECS is a four-year project funded by the European Commission to strengthen and widen the European citizen science community. Building on the predecessor project EU-Citizen.Science, 21 partners and affiliated entities from 15 countries work together to design and implement a variety of activities that serve to build capacity, raise awareness and establish sustainable regional, national and EU-wide networks. Besides the creation of a European Citizen Science Academy, the establishment of a network of ECS Ambassadors, and the implementation of high-level policy events, project activities also entail the provision of FAIR data and tools to be used by the citizen science community and reaching out to new stakeholder groups, including researchers in the forefront of scientific research and businesses as well as those currently underrepresented in citizen science.

In work package four (WP4) of ECS, we focus on the creation of the European Citizen Science Academy (ECS Academy), an initiative to support and enhance education and learning about citizen science. The ECS Academy has several parts - a digital space that is part of the eu-citizen.science platform, a network of educators and trainers who are sharing best practices, needs, and opportunities, and an activity to design, develop and deliver training and education in the area of citizen science. With its multiple objectives and aims, the process of creating the foundation for the ECS Academy has been the focus of WP4 in the first year of the ECS project.

This first deliverable of WP4 outlines the process and documentation for the foundations of the ECS Academy. To ensure the wide acceptance and relevance of the ECS Academy, the early stages of the development followed a co-production process, in which information, ideas, and preferences were shared with the wider citizen science practitioner's community. The process was deliberately open and invited participation from people with an interest in education and training in citizen science, regardless of their affiliation or location. This was done to ensure that it is not viewed as internal to the project's consortium and imposed on the wider ECSA community. This has resulted in multiple interactions with the wider community, including a survey, online meetings and workshops throughout the year, and the co-editing of online documents. The input that was received from this wider community was invaluable in identifying areas of contention and concern about the ECS Academy, as well as shared goals and wishes from it.

In this deliverable, we focus on three major outputs of this process. These are the analysis of the survey of needs for citizen science training; the framework for interaction of the ECS Academy; and the ECS Academy roadmap. The survey demonstrates that there is both interest and need for the establishment of a network of citizen science trainers and educators, and that there is a perceived benefit in sharing knowledge and resources. The framework for interaction sets the basis of the modalities of interaction of the ECS Academy network. Finally, the roadmap explains the objectives, modes of operation, and services that members of the network are interested in. In addition, this deliverable explains the rationale and the process of setting the groundwork for the ECS Academy.

The information from this deliverable will be used in the next period of the project in several ways. It will be used as a basis for a business plan and for approval by ECSA leadership; provide the basis for training and educational activities that the ECS Academy will carry out; and set the terms of communication among the network of trainers and educators within the ECS Academy.

# 1 Introduction

## 1.1 European Citizen Science project background

ECS is a four-year Horizon-funded coordination and support action aimed at widening and strengthening the European citizen science community. The project builds on the extensive work of its predecessor, EU-Citizen.Science, with many partners returning and providing their rich experiences to continue the efforts initiated half a decade ago. In addition, additional partners and affiliated entities are providing an opportunity to extend the reach of citizen science into new areas and stakeholders. This background and continuous involvement in supporting citizen science in Europe allows for a broader contextualisation of the need to support European citizen science initiatives through education and training as well as supported by an international network of similarly aligned individuals, projects, and institutions.

The project has six objectives, which are:
1. Empower the European citizen science community through co-design and co-creation.
2. Strengthen the links and collaboration between existing citizen science initiatives.
3. Increase the participation of citizens from all walks of life in citizen science through an inclusive approach.
4. Build the capacity to conduct excellent research and innovation through citizen science.
5. Raise awareness, support and mainstream citizen science among new actors, new territories, and scientific fields.
6. Better align data infrastructures to the needs of citizen science and improve open science practices employed by citizen science initiatives.

To achieve these goals, the project includes a very wide range of activities, including setting a network of citizen science ambassadors, organising regular coordination meetings among citizen science projects that are funded by Horizon Europe, or putting an effort to ensure that citizen science services are included in the European Open Science Cloud (EOSC).

Like the other parts of the project, the ECS Academy is addressing these six objectives, with a particular focus on Objectives 4 and 5.

## 1.2 Background of the European Citizen Science Academy

The ECS Academy is using the foundations for training in citizen science that were laid in the EU-Citizen.Science project. During the project, an effort to create a repository of training materials and a set of training modules was coordinated by UCL. The training materials are hosted in a dedicated section of the eu-citizen.science platform, and criteria for their selection were set. The criteria helped in identifying which types of training material will be hosted on the platform. These resources range from recorded webinars to reports and files of material that can be used within different educational and training settings.

In addition to the resources, an instance of the open Learning Management System (LMS) Moodle was created at the address Moodle eu-citizen.science (see Figure 1.1). At the end of the project, the LMS hosted 24 self-learning modules. Each of these modules was designed as a stand-alone training that will take about an hour or two to complete, and can be studied at the learners' pace, without any guidance or dedicated support.

This material is being used and there are indications for take up and access to the training material and modules. However, with the development of the ECS project, new opportunities for enhanced training provision were opened.
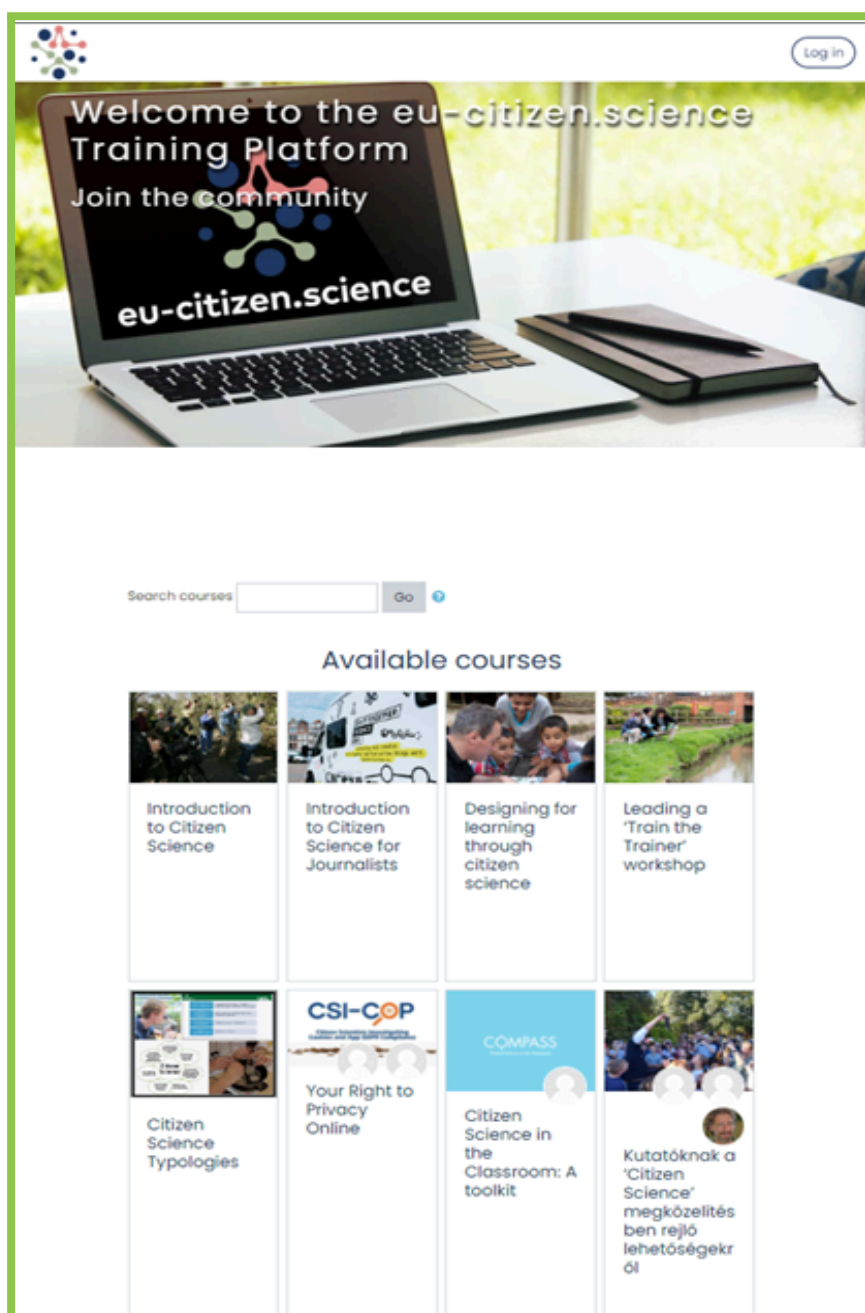
The aim of the ECS Academy is to build on these foundations and provide different forms of training, beyond the passive provision of material and modules. With the increased adoption of citizen science and its mainstreaming, there is a need to provide more support to learners who want to take the existing modules, but also to develop programmes and training that can support new target groups such as research managers or policy professionals. This diverse group of people with different professional and institutional connections will need a wide range of skills and capacities. Including a basic and rapid introduction to citizen science in a language and content that match their needs, to dedicated long residential training that can help participants in designing a citizen science project in their domain. Moreover, as the number of people who are teaching citizen science in higher education increases, there is a need to support them through a community of practice and the sharing of knowledge, best practices, and materials. To achieve this, the ECS project is setting out the ECS Academy as an activity that will outlast it and will become part of the offering of ECSA.

*Figure 1.1: The front page of Moodle eu-citizen.science - the homepage of the ECS Academy*

In the rest of this report, we provide the information on the process of developing the ECS Academy, which pertains to Tasks 4.1 and 4.2 in the DoA. Section 2 highlights the **approach used to build the ECS Academy** in terms of the activities and the rationale behind the processes that were carried out. Section 3 reviews the findings of a study that **identified the needs of CS educators and trainers.** Section 4 explains the **framework for dialogue** that was co-created with the network of educators and trainers to set the approach towards working together. Section 5 provides the co-created **roadmap to the European Citizen Science Academy.** Section 6 ends with a **conclusion and the next steps** in the development of the ECS Academy. The partner that is running

the ECS Academy is Université Paris Cité (UPCité) through the Learning Planet Institute (LPI). For the rest of the document, we will refer to it at UPCité/LPI.

## 1.3 DoA and tasks covered in this report

The objectives of the ECS Academy are described in the DoA as follows:

"To create high quality resources, activities and training events aimed at improving skills and knowledge for CS practitioners, civil society, public authorities, businesses, (in)formal and education establishments, and research funding and performing organisations. Specific objectives of the academy are: (i) a step-change in the uptake of knowledge about designing and utilising CS by research and innovation organisations; (ii) achieving a robust CS integration within the excellence research pillar of Horizon Europe; (iii) providing tailored training to missions, clusters, and networks, (iv) connecting CS educators and trainers across Europe and the world; and (v) providing training for the activities in this project."

The particular tasks that are covered in this deliverable are Tasks 4.1 and 4.2:

T4.1 Setting up the European Citizen Science Academy (M1-16). Leader: UP. Collaborators: ECSA, SD, Ibercivis, CSIC, SfC, MfN, ZSI PL2030, MCAA. This task focuses on analysing online, face to face, and in situ training across Europe. This will enrich the training resources on the eu-citizen.science platform and strengthen the involvement of educators and training providers in the ECS community. The competency framework from LC-GD-10-3-2020 project (GreenSCENT and ECF4CLIM), and the outcomes of the TIME4CS project will be used for the analysis. The analysis will look at data management training to support T3.5 and the CSDA. The task outputs are a report on pan-European CS education, and a network of at least 50 CS educators and trainers.

T4.2 Engaging citizen science educators and trainers (M12-47). Lead: UP. Contributors: SD, MCAA, Ibercivis, SfC, PL2030, CSIC, ECSA, MfN, ZSI, NILU, ECSA Affiliated Entities. The academy will design training activities through two mechanisms. Co-design workshops with members of the European CS community, involving organisations and individuals identified in T4.1. Together with them, we will identify training needs and training sources. With the support of WP5, the involvement of under-represented organisations and countries will be ensured. At least 3 workshops will be held throughout the project at the same time as T2.2 workshops. In addition, WP leaders will regularly discuss specific training needs. All project partners and Affiliated Entities will contribute to the production of new training modules to ensure local relevance and promote uptake. A sustainable model for the use of self-directed learning to support paid in-person and remote training will be developed. We will create 8 new training modules.

# 2 Approach to building the European Citizen Science Academy

## 2.1 Overview

As noted, at the end of the EU-Citizen.Science project, the platform hosted resources and training material, but without an active network of educators and trainers who use them. In parallel, the recent literature is showing a growing interest in training and education activities in citizen science. This is demonstrated, for example, through a special issue of the journal "Citizen Science: Theory and Practice" dedicated to higher education[1] (Hitchcock, Vance-Chalcraft & Aristeidou 2021). In addition, the importance of training was highlighted in the League of European Research Universities in 2016 (Wyler & Haklay 2018). Yet, the learning in citizen science is not (and should not) be limited to higher education. The US National Academy of Science, Engineering, and Medicine (NASEM 2018) recognised the value of learning in citizen science. As Kloetzer et al. (2021) reviewed, citizen science can play a role in formal education, out-of-school education (science and nature clubs, summer camps, outdoor education, etc.), local and global communities (neighbourhood associations, activist associations, online communities, etc.), families, museums, and in online settings. The literature is also indicating areas where there are needs that the current courses on the eu-citizen.science platform are not covering. For example, support for research managers and professional staff at universities, in understanding and supporting research that uses citizen science.

At the same time, the breadth of fields, activities, and practices that are included within citizen science is also creating challenges for educators who want to teach this field (Roche et al. 2020). Those challenges are both conceptual and practical. On the conceptual side, there are challenges pertaining to including participatory activities within a specific disciplinary framework or to adjust data collection and analysis methodology to the patterns that are emerging from this practice. On the practical side, there is a need to develop capacities in recruitment and management of participants, setting up the technical apparatus to support the project, standardised tools for evaluation of project outcomes and goals, and ensuring high quality science communication as part of the project. These aspects create the need to share best practices, resources, teaching plans, assignments, and other elements of training among people in different organisations, disciplines, and countries.

The development of the ECS Academy was conceived, from the start, as an entity that will outlast the ECS project. It is, therefore, an activity that will integrate into the European Citizen Science Association (ECSA) organisation and needs to be owned and shaped by the organisation and its members. Beyond this group, there will be other educators and trainers who are not affiliated with ECSA but can have a part in the ECS Academy. As a result of these considerations, the ECS Academy development process was envisaged as an open activity that goes beyond the ECS Consortium. The ECS Consortium was kept up-to-date and has been actively involved in the development, with regular update meetings that were dedicated to Tasks 4.1 and 4.2.

Therefore, the rationale behind the development of the ECS Academy is one of co-creation and co-design. It needs to take into account the resources that are available for the ECS Academy during the project's lifetime, but with a view that this period will support the sustainability of the initiative beyond the project, so it should be seen as start-up funding. The process was set in such a way that ensured ongoing engagement with the potential participants in the ECS Academy and to provide plenty of opportunities to ensure that ideas and wishes of the wider community will be included in the design. The co-creation approach is also set to continue

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[1] https://theoryandpractice.citizenscienceassociation.org/collections/citizen-science-in-higher-education
Note: An aggregated list of links shared as footnotes is found below the bibliography.

through the operation of the ECS Academy, with members of its network contributing to the development of its content, delivery of training, evaluating its processes and adjusting them, and so forth.

The process started with a survey to identify citizen science educators and trainers, their educational/training activities in the domain, the services and needs they would need to bring their activity forward. Survey respondents who indicated they would like to be part of a network, shaped the network of citizen science educators and trainers. Our next step with this network was the co-creation of the roadmap document for the ECS Academy (see Section 5). To achieve this, several online meetings were organised (details below) and a shared editing and commenting process took place. The creation of the roadmap provided the network with a purposeful activity that brings people together, while also articulating the interests and wishes of the members of the network. Finally, the framework for dialogue was developed as a way to set up a code of conduct and set the ground for the next steps in the development of the ECS Academy. The following section explains the methodology of these activities (i.e., the survey, the roadmap, and the framework for dialogue).

## 2.2 Survey

A survey was sent to individuals and associations identified within the citizen science community in March 2023. The email which accompanied the survey contextualised the survey in the following way:

- **That the survey was part of the European Citizen Science project,** and as part of it, we were establishing a European Citizen Science Academy, and that as part of this academy we were establishing a network of citizen science educators and trainers.
- **The aim of the survey was** to understand citizen science educators' and trainers' needs and whether they would like to form or be part of a network.
- **Deadlines, the approximate time it would take to fill in the survey, and that none of the questions were obligatory.** By making none of the questions obligatory, we hoped to make the survey feel more accessible to interested respondents.
- **The audience for which the survey was intended** was specified. In this case, the survey was intended for citizen science educators and trainers, for which we developed the following definition: "*an individual that provides both formal and/or informal education to participants, project organisers, and to early and experienced researchers in the area of citizen science and community science. This can be, for example, a course or a class for students about citizen science and/or an activity with visitors to a museum during the summer holidays*". We elaborated this definition to facilitate individuals with a broad range of expertise to be able to answer. As citizen science is not yet a professionalised field, it can include a wide range of informal and formal education and or teaching practices.
- **The aim of the ECS Academy** was communicated to provide training material which responds to identified training gaps with trainers, educators, and desk analysis, facilitate the integration of citizen science in 'elite science', and support the achievement of high policy goals such as the EU Green Deal and the Sustainable Development Goals (SDGs). This does not cover all the aims of the ECS Academy for the duration of the ECS project, namely facilitating institutional transformation in various R&I organisations. However, key aspects of the ECS Academy were transmitted.
- **The aim of the network** was explained "to co-create this academy, identify both gaps and needs of citizen science trainers and educators, share opportunities (including paid ones) and increase collaboration around citizen science training". Similarly, this aim is not exhaustive but provides key ambitions of the ECS project in relation to a network of citizen science educators and trainers.

As mentioned above, the survey served the purpose of identifying people that might be interested in engaging with the ECS Academy and gather information about the state of citizen science training and education.

In addition to these purposes, the survey asked respondents what type of service would facilitate citizen science training and teaching, how they would be willing to contribute to the ECS Academy, and how they

would prefer to be kept up to date on and in touch with the ECS Academy (see Annex 1 for the complete survey).

GDRP and research ethics were complied with by mentioning and asking individuals interested to answer the survey to first consent to the data policy of the ECS project.

In total, we received 129 responses when closing the survey in April 2023. This survey provided critical initial content to the roadmap and allowed us to re-contact 110 individuals out of the 129 to kick start the ECS network of citizen science educators and trainers that would co-create the ECS Academy with us. It allowed us to reach our project milestone of creating a network of 50 citizen science educators and trainers by the 31st July 2023.

Survey results were disseminated via a report published on the 25th of July 2023 on Zenodo[2]. This report constitutes Section 3 of this deliverable. The analysis of the survey and the writing up of the report was done with the help of an intern, co-author of the report.

## 2.3 Building a network of citizen science educators and trainers

The survey provided a preliminary list of individuals who are interested and or who have experience in training and education in citizen science. Knowingly, this list is not exhaustive, as it required a willingness to answer the survey. It is likely that other people might be interested and will be willing to engage with the network once it is operational. However, this group represents a good starting point for people who will shape the network and will start to be active within it. The network was "kicked off" on the 1st of June 2023 with 80 survey respondents attending it.

To create the network, we considered the way to work, collectively, on a purposeful activity that would bring people together.

We started with foundational activities to shape the inner workings of the ECS Academy and its network base, such as working on a document entitled "Roadmap to the ECS Academy" to delineate characteristics of the ECS Academy and develop a framework for dialogue to set the tone of interaction within the network member base, and between network coordinators and the network base. Reporting back the survey results via Zenodo provided another opportunity for engagement.

During the reporting period, the network was activated centrally - a mailing list that is stored by UPCité/LPI was used to send announcements about events and results. This allows one-to-many communication but does not activate the network with many-to-many communication. However, members were encouraged to contact the UPCité/LPI team, so messages could be shared widely during the regular communication of UPCité/LPI with the network.

The next stage in the evolution of the network is the establishment of an automated mailing list and a Moodle space. For the mailing list an open-source tool was identified (Mailman - list.org) and it is in the process of being configured on the eu-citizen.science platform. For the Moodle space, the eu-citizen.science Moodle space will be used and configured to be appropriate for network interaction and contribution to the ECS Academy. The configuration of these tools is further elaborated in Section 5. Once these tools are set the network can start operating between members with the UPCité/LPI team acting as moderators.

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[2] https://zenodo.org/records/8183969

## 2.4 Framework for dialogue

A framework for dialogue is a facilitation approach used to create a shared understanding between a group of people to develop a dialogue (see Helde, 2012, p.114). This can be created via a set of agreements, rules, modalities of interaction and principles. The idea behind it, is to work with and develop a shared understanding between the network members to ensure that members of the group feel equipped with the necessary conditions to contribute, feel safe to contribute, and for the moderators to delineate and refine what can be expected of the network.

A framework for dialogue is best when constructed by the members of the group themselves. The network of citizen science educators and trainers is shaped for them to contribute to the ECS Academy. We need them to contribute to the ECS Academy to make the ECS Academy viable. Therefore, it is essential that the needs of the community are heard. The co-creation process of the framework for dialogue, can allow for ownership of the network to be shared and handled by the network members themselves - and not kept in the hands of the organisers.

A framework for dialogue is meant to be ever evolving, to adapt to the needs of the network as it changes over time. Therefore, the dimensions of the network are not set in stone and should be reviewed. Therefore, we expect the framework for dialogue to change because of the open nature of the network, its changing needs and the changing needs of the ECS Academy. We expect that, like all emerging and forming things - at some point, this framework for dialogue will be more stable as the ECS Academy also shapes and refines itself to meet the needs of citizen science trainers and educators and the broader citizen science community.

This tool was adopted based on a training taken by UPCité/LPI member on facilitation led by Stickydot[3], a partner of the ECS Consortium.

To build a framework for dialogue, two online workshops were conducted of one hour each. What informs this framework for dialogue is members' responses to the following two questions via a Padlet (an online tool for sharing ideas and notes): 1) What would they need to feel comfortable to contribute, 2) What would they need to have access to the network. Members could anonymously add what they would need to feel comfortable to contribute and have access to the network and indicate with heart emoticons resonance and/or a shared need with other members inputs.

Section 5 reports the current framework for dialogue, which includes the following aspects:

1.  How to report outputs of network meetings.
2.  Who are members of the network, what are their expectations and what is the aim of the network and network member introduction.
3.  Management and purpose of the mailing list server (listserv).
4.  Purpose, target audience and the language of newsletter.
5.  Network's ground principles and acknowledgement.
6.  Contributions of network members outside and during meetings.
7.  Regularity of network meetings.

## 2.5 Roadmap for the European Citizen Science Academy

The purpose of the roadmap document is to create a shared vision, objectives, and ideas about services and the mode of operation of the ECS Academy. This document is envisaged as a live document that will be updated and evolve with the evolution of the ECS Academy. The current document includes all considerations received from

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[3] https://stickydot.eu/news/sign-up-now-for-the-new-stickydot-facilitation-skills-training/

the various consultations carried out to develop it. It currently represents a vision of the ECS Academy . To concretize the development of the ECS Academy, this document will have to revisited with the constraints, capacity and the needs of ECSA, the ECS project as a whole and the network of citizen science educators and trainers. For example, to maintain the financial ability to run the ECS Academy, paid services will need to receive priority over free ones, and some of the activities that people wish to receive might be expensive and beyond the scope of what is possible to achieve within the ECS project's budget. Therefore, the document currently represents the basis for a more specific and operational plan of the ECS Academy, while expressing the full range of wishes gathered throughout its various iterations, depicted by Table 2.1.

*Table 2.1: Iteration process of the Roadmap document*

| When | Activity | Audience |
|---|---|---|
| March-April 2023 | Survey (see Appendix 1) | Citizen science educators and trainers |
| | **1st draft of Roadmap** | |
| 1st of June | Network of citizen science educators and trainers Kick Off meeting | Network members |
| 21st of June | 1st workshop to work on the Roadmap "ECS Academy Roadmap - Co-creation session" | Network members |
| 13th of July | 1st workshop to work on Framework for dialogue | Network members |
| 18th of July | Consortium meeting | ECS consortium |
| 19th of September | 2nd workshop to work on Roadmap | Network members |
| 29th of September | 2nd workshop to work on Framework for dialogue. | Network members |
| 23rd of October | 3rd workshop to work on Roadmap | Network members |

The process of developing the roadmap provided an opportunity for members of the network to interact, share points of view, and work together. The document itself served as a purposeful outcome of this joint effort. A total of three workshops with the network and one with the ECS consortium were organised to work on the roadmap document. Five versions of the roadmap were iterated as a result of the process.

The process of developing the roadmap was carried out between January to October 2023. Below, the workshops and their contribution to development of the roadmap document is elaborated.

The initial shared roadmap document was shaped through discussions with actors who are already providing training in this area (Stickydot, Scientific Knowledge Services); input during the kick-off meeting of Work Package 4 of the European Citizen Science project; the survey sent out to citizen science educators and trainers; and lessons learned from the EU-Citizen.Science project.

The first workshop with the network of citizen science educators and trainers to work on the roadmap on the 21st of June gathered 30 participants. It introduced the first version of the roadmap, with its diverse sections. Network members were invited to provide feedback to all sections by either voicing it during the meeting, commenting on the shared Google document, leaving a comment in a table dedicated under each section for comments on the Google document, and by directly adding their input using the suggestion mode of a Google document. The document was left open for input after the meeting. The feedback received during the first online workshop and by participants after, iterated the 2nd version of the roadmap, which was presented to the ECS consortium on the 18th of July.

During the ECS consortium meeting, we focused on the operational principles of the roadmap. UPCité/LPI asked the consortium to cast three votes on three operational principles they thought could prove to be most contentious (see Figure 2.1 below, which demonstrates the voting process). The 1h30min workshop focused on mitigating the risks that could emerge from these contentious points. Contentious operational principles are highlighted with an Asterix (*) in Section 5 that introduces the roadmap document. A major outcome of the meeting was to characterise the services by mentioning what the role of the ECS Academy would be in relation to each service, who would be carrying out the activity, the mode of delivery of the service and whether the provision of the service would be collaborative between the ECS Academy and other actors. This consortium meeting workshop produced a 3rd version of the roadmap that was presented and sent to the network of citizen science educators and trainers during the second workshop.

The second workshop with the network focused on prioritising the list of services that was gathered from survey results. 35 services in total were gathered from survey results. During this second workshop, network members were asked, via a Padlet, to vote on the service they thought was a priority for the ECS Academy to focus on and highlight the opportunities they may have to deliver this service. This exercise was to activate the development of the ECS Academy services.

From the prioritisation exercise 6 services received more than 10 "likes", 7 received more than 5 "likes", 18 had at least 1 "like", 2 with zero "likes" and one was added. These results are to be taken with a pinch of salt as the Padlet was configured in such a way that services would climb up the page with the number of votes it received. Therefore, this may have disrupted the voting process as the services kept on shifting. However, the configuration of the Padlet was removed, and the Padlet was left and disseminated via email to enable network members to vote after the workshop. Table 2.2 provides the list of services and their votes. A fourth version of the roadmap was iterated.
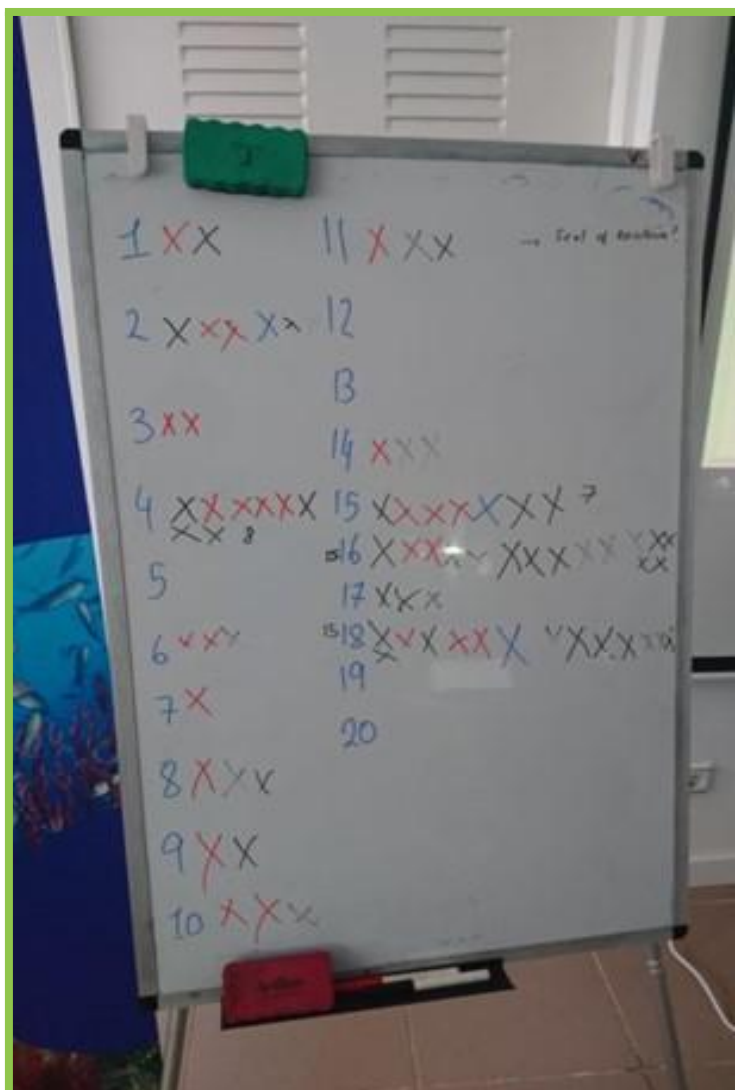
*Figure 2.1: Consortium input on operational principles of the ECS Academy*

*Table 2.2: Services prioritisation from network members*

| Number | Service | Votes |
|:------:|---------|:-----:|
| 1 | Offer open educational resources in a format that is suitable for translation and adaptation to different languages. The ECS Academy will provide a repository of training material, best practice examples, educational worksheet examples and templates in editable format. The repository will also include examples of stories and vignettes that can be used in different training settings. | 22 |
| 2 | Act as a repository and a hub for training material, training modules, course syllabuses, and similar material that is provided by the network members and | 19 |

| | | |
|---|---|---|
| | that was collected by other partners in the ECSA network. | |
| 3 | Share funding opportunities for developing training materials in citizen science. | 16 |
| 4 | Offer courses that are suitable for self-learning and online. | 13 |
| 5 | Provide accreditation, a formal acknowledgement of experience/skills, and accredited capacity development programmes for trainers and educators. | 12 |
| 6 | Provide a forum for discussion and collaboration around the development and provision of training resources and activities (e.g., proposing and coordinating a new course). | 11 |
| 7 | Have a mechanism to receive feedback from participants - interest from trainers to understand whether participants have implemented what they have learnt or not. | 8 |
| 8 | Run workshops at each ECSA conference. | 8 |
| 9 | Policy advocacy: Support the recognition of trainers in citizen science and for the profession of citizen science coordinator within the education and higher education system and within other actors. Such recognition will be based on the competencies and skills that such a person acquires. | 8 |
| 10 | Provide accreditation to workshops and training using agreed quality criteria. This will usually be paid service unless the course is covered by project funding or there is another mechanism to cover the cost of evaluation and accreditation. | 7 |
| 11 | Support the development and sharing of ethics advice regarding training provision in citizen science (including the teaching of the ethics of citizen science). | 7 |
| 12 | Offer courses that are instructor-led online, offline and hybrid (most should be paid). | 7 |
| 13 | Provide tools for self-assessment that will allow learners to assess their skills and knowledge of citizen science. | 6 |
| 14 | Regularly evaluate the resources and courses by both trainees and trainers, in order to improve its practice and request for updates. | 5 |
| 15 | Support the tracking of participation and development of skills and competencies. | 5 |
| 16 | ECS Academy will provide operational support for training activities including marketing, payment, and providing certificates. | 5 |

| 17 | Provide review and feedback on new courses (e.g., using the eu-citizen.science template for module development). | 4 |
|---|---|---|
| 18 | Provide reliable guidance (e.g., moment to moment/practical level) by being able to immediately contact someone with questions when something goes a bit off (e.g., I split half of it, I added too many drops). | 4 |
| 19 | Provide and maintain access to learning platform Moodle, including payment infrastructure that is linked to ECSA's systems; structured formative and summative evaluation of learners' progress; support for certification automation. | 3 |
| 20 | Support peer evaluation and feedback of training resources and courses. | 3 |
| 21 | Sharing opportunities for training and provision of training. | 3 |
| 22 | Identify collaboratively topics that are suitable for new training and encourage the development of new training modules, courses, and resources. | 2 |
| 23 | Links and information about legal advice (e.g., copyright, licensing). | 2 |
| 24 | Provide recognition (or accreditation) to participants. This will usually be paid service, unless the course is covered by project funding or there is another mechanism to cover the cost of evaluation and accreditation. | 2 |
| 25 | Support pathways of development and help CS educators and trainers with their work with students. For example, enabling CS educators and trainers to recommend a list of training, perhaps more advanced with personal experience, in addition to a directory of people to contact to speak about relevant topics; or a collection of links to theses and dissertations on CS so it can help CS educators and trainers supervise graduate students. | 2 |
| 26 | Providing opportunities to create new training activities. | 1 |
| 27 | Offer support for the development of courses in an agreed format and support the development and hosting of new modules. In cases where this is done with a research project, appropriate funding will be required to support the development. Guidelines and support sessions will be provided occasionally to support network members. | 1 |
| 28 | Alongside training, a virtual space for interested people to ask legal questions on the blueprint of the Emmett Environmental Law & Policy Clinic at Harvard Law School - this space could be co-created. In this same endeavour, someone is highlighting the need for more lawyers and legal scholars engaged. | 1 |
| 29 | Support proposal development by ECSA HQ and ECSA members and network members when it is relevant. | 1 |
| 30 | The network will run a bi-monthly newsletter and a bi-monthly online meetup | 1 |

| 31 | Promotion and recruitment services towards the target audiences, such as identification of a relevant audience for a training activity, outreach to them, informing them about training, etc. Support the inclusion of actors from civil society and intermediaries that can reach out to them. Promote training activities of members. Supporting freelance and SME provision of training opportunities. | 1 |
|---|---|---|
| 32 | The network will run a moderated, closed listserv. | 0 |
| 33 | Where appropriate, develop data services to assess and develop competencies within target groups. | 0 |
| 34 | Create a "curriculum structure" Create a "curriculum structure" with the essential topics that a citizen science training should have. Make this structure modular, so that as you go through the modules, more specific topics become. Thus, module 1 is more generic, with the most essential topics to be covered; module 2 goes into more depth on one of those topics from module 1 (and so on). | *Added later by a network member |

During the last workshop with network members on September 29th, we focused on developing the top chosen service, which was to:

*"Offer open educational resources in a format that is suitable for translation and adaptation to different languages. The ECS Academy will provide a repository of training material, best practice examples, educational worksheet examples and templates in editable format. The repository will also include examples of stories and vignettes that can be used in different training settings".*

As this statement includes many different services, it was broken down into three services: 1) Offer open educational resources in a format that is suitable for translation and adaptation to different languages, 2) The ECS Academy will provide a repository of training material, best practice examples, educational worksheet examples and templates in editable format, 3) The repository will also include examples of stories and vignettes that can be used in different training settings. We focused on understanding, for example, to what extent educational resources would be open and offered an Excel file to upload training material. This last workshop brought us to our last iterated version of the roadmap, which is reported in Section 5.

In addition, the roadmap document was introduced in various instances to garner interest for the ECS Academy, such as the CSA conference[4], Journée de rencontre sur la médiation et les sciences participatives, à l'École de la médiation[5], Universcience and more internally at the Learning Planet Institute.

The roadmap is intended to be an open document that is updated and that represents the plans and wishes of the people who are part of the ECS Academy. The roadmap document is Section 5 of this deliverable.

# 3 Report on the survey to identify needs of citizen science educators and trainers

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[4] https://citizenscience.org/home/events/conferences/csci-2023/
[5] https://www.estim-mediation.fr/journee-mediation-scientifiques-recherches-participatives/

## 3.1 Introduction

The European Citizen Science (ECS) project is a four year EU-funded project that started in August 2022 and will end in July 2026. It includes twenty-one organisations in total and is led by the European Citizen Science Association (ECSA). The aim of the project is to widen and strengthen citizen science within Europe. It seeks to do so by strengthening the citizen science community, enhancing digital skills for FAIR (data which meet principles of Findability, Accessibility, Interoperability, and Reusability), CARE (Collective Benefit, Authority to Control, Responsibility, Ethics)) and open science communities, developing the eu-citizen.science platform through co-design, developing the ECS Academy, boosting inclusion and diversity, advocating for citizen science and working on policy impact and investigation of the impact of citizen science on research, society and economy. This report focuses on the identified needs of citizen science educators and trainers via a survey sent within the context of building up the European Citizen Science Academy (ECS Academy). **A citizen science educator and trainer** was defined for the purpose of the survey as an individual who provides both formal and/or informal education to participants, project organisers, and to early and experienced researchers in the area of citizen science and community science. This could be, for example, a course or a class for students about citizen science and/or an activity with visitors to a museum during the summer holidays. In the grant agreement of ECS, the European Citizen Science Academy has several objectives. The first is to achieve a step-change in the in the uptake of knowledge about designing and utilising citizen science by research and innovation organisations (R&I), such as public libraries, museums, research performing organisations, research funders and research translation organisations. The second is to achieve a robust integration of citizen science within the excellence research pillar of Horizon Europe, by developing a network of top researchers that use and or are looking to be supported in their use of citizen science as a research methodology. It will do so by providing tailored training to missions, clusters, and networks, which are based on identified needs of these stakeholders, and that address high policy goals such as the EU Green Deal and the Sustainable Development Goals (SDGs). In addition, it seeks to connect citizen science educators and trainers across Europe and the world and provide training for the activities in the ECS project. The Université Paris Cité/Learning Planet Institute is leading this effort.

As a first endeavour to establish the ECS Academy, a network of citizen science educators and trainers was established so that the ECS Academy could be endorsed and co-created from the start with citizen science educators and trainers. To create this network, a survey was sent to citizen science educators and trainers, and diverse mailing lists (i.e., listserv), to ask about their training/educational activities with citizen science and their needs in relation to a network and an academy (i.e., what type of services would be useful to them) and how they would be willing to engage with the ECS Academy. This report elaborates on the answers received.

## 3.2 Methodology

### 3.2.1 Survey Design

The survey was structured into distinct sections to identify the profile of citizen science educators and trainers, to identify their citizen science training/educational activities, characterise these, and understand their needs in terms of a network and an academy, and also more widely, at a European level. This survey was developed from November 2022 to March 2023. The survey was piloted alongside email templates that addressed individual educators and trainers and mailing lists, from January to February 2023. Piloting the survey with email templates allowed us to fine tune the standard email invitation and the survey to ensure that it was understood by the target audience.

Individuals corresponding to the definition given to citizen science educators and trainers were identified (for example, people who developed a

MOOC on citizen science), alongside pertinent listserv in January 2023. These individuals were identified by either being part of an organisation that gave citizen science training, and or by in-house knowledge of Muki Haklay and Cléa Montanari. Secondly, mailing lists such as listserv that were linked to citizen science (ECSA, CSA, Ecology, etc.) and national networks were identified (e.g., the Citizen Science centre at the Vrije Universiteit Brussel).

The survey was disseminated to these educators and trainers and the relevant listservs on March 16th, and it was left open for a month until April 14th. Survey results were downloaded on the 15th of April.

## 3.2.2 Analysis of the survey

Quantitative and qualitative analysis was conducted to analyse the survey responses. In order to group open questions on training, a framework developed by an EU funded project called PATTERN (Piloting open and responsible Activities and Trainings Towards the Enhancement of Researchers Networks) was used. This framework elaborated categories for different audiences, training formats, scientific fields, learning resource types. Additional categories were created to fit the data of this survey, such as 'citizen science' as a scientific field.

With regards to open ended questions, an inductive analysis was carried out by the authors of the report. This inductive analysis led respondents' open answers about needs, services, to be regrouped in the following three themes: infrastructure and support, engagement, and recognition. Unique statements that pertained to the broader need of European citizen science educators and networks were left apart.

## 3.2.3 Survey results

### Demography of respondents

The survey was answered by 129 individuals. Among them, researchers and academics represented the largest percentage, comprising 59 individuals (48.8%). Research support was the second largest category, with 38 individuals (30.2%). Teachers/trainers accounted for 7

individuals (5.6%), while doctoral/PhD and postdoctoral researchers each comprised 5 individuals (3.9%).

In terms of experience in providing training or teaching in citizen science, 98 respondents (76%), reported having such experience.

With regards to training affiliation, an overwhelming majority of 96 respondents (74%), mentioned that the training they provided was associated with institutions like universities, museums, or research centres.

### Citizen science training activity

#### Type of training
In terms of citizen science training activities, about 47 respondents (36.4%) carried out training/workshops/seminar. 36 respondents (28.6%) gave bachelor/master level courses. 5 respondents (4%) mentioned their citizen science activity to be in relation to research supervision, and an equal number of respondents developed e-learning modules.

#### Mode of training
Training mode refers to in-person, online and hybrid. This means that training types could be of different modes. The most common format, which comprised 49 respondents (38.9%) was hybrid (i.e., in-person and online). In-person training was the second most popular format, selected by 36 respondents (28.6%). 7 respondents (5.6%) reported their activities to be carried out online.

#### Scientific field
Citizen science activities were found in a broad range of academic fields, which included citizen science itself (see recently published book 'Science of Citizen Science'[6]). 42 respondents (32.8%) indicated actively providing training in the field of citizen science, such as history of citizen science, case analysis, co-creation, citizen science related to

[6] Vohland, K., Land-Zandstra, A., Ceccaroni, L., Lemmens, R., Perelló, J., Ponti, M., ... & Wagenknecht, K. (2021). *The science of citizen science* (p. 529). Springer Nature

plastic waste, etc. 33 respondents (25.6%) mentioned conducting citizen science training in regards to Environmental Studies, such as for water management and biodiversity. Figure 3.1 demonstrates the scientific fields represented alongside the number of respondents carrying out a citizen science activity in that field.
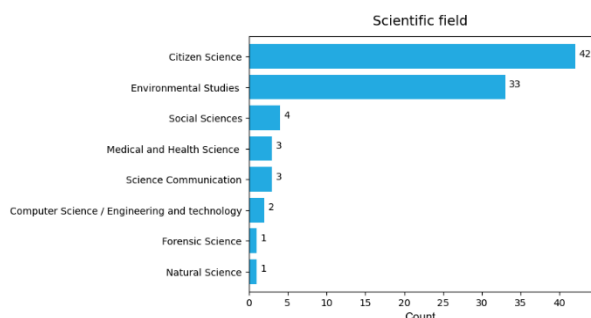


*Figure 3.1: Citizen science activities represented in scientific fields*

**Target audience**
37 respondents (29%) indicated their training to be aimed at students (i.e., both bachelor and master students). 18 respondents (14%) indicated researchers and academics to be the target audience of their citizen science training activity. The 15 respondents' (12%) training focused on volunteers and community members. 13 respondents (10%) provided training to individuals who were both students and professionals.

## Services

The survey asked what services could facilitate present and future training and teaching in citizen science. Respondents could choose multiple answers.

Out of 7 different types of services, open access training material in an editable format that can be translated into different languages emerged as the most desirable service, with 91 (70.5%) respondents. This was followed by an access to a network of citizen science educators and trainers from 87 (67.4%) respondents and the need for a training material directory and repository by 84 respondents (65%).
79 respondents (61%) indicated an interest in modular educational resources that can be easily reused in different contexts. 60 respondents (46.5%) indicated an interest for an announcement

service for different citizen science education and training opportunities. Figure 3.2 summarises respondents' interest in the 7 proposed services.
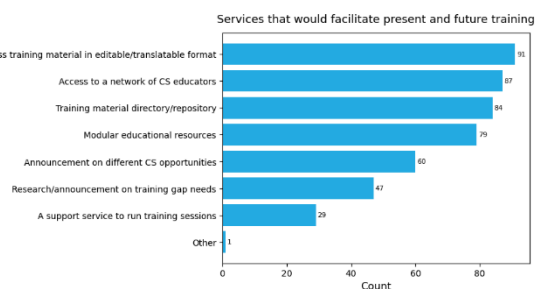


*Figure 3.2: Services helpful to citizen science educators and trainers*

In addition, three open questions allowed the respondents to elaborate on ideas of services that could be useful or facilitate citizen science training activities, at the individual and at the European level. Respondents' elaboration on useful services were put into three themes. The first one, 'Infrastructure & Support' includes services that pertain to online tools such as a platform, portals and or 'spaces', and or resources such as training and repositories. The second category, 'Engagement' includes, for example, the need to share best practices between citizen science educators and trainers. The third category, 'Recognition,' includes, for example, the need for awareness raising and support of citizen science in higher education institutions and training accreditation of both citizen science trainers and educators and participants.

## Infrastructure & Support

- A portal to advertise bids and calls for citizen science training and teaching.
- A platform where citizen science training could be offered to get in touch with potential participants.
- A space to ask legal questions about citizen science projects to students, such as the Emmett Environmental Law & Policy Clinic at Harvard Law School.
- Guidance on a moment-to-moment and practical level (e.g., to immediately be able to contact someone with questions when something goes wrong).
- A repository of training material with a clear subject matter, goal and audience, so that the wheel is not reinvented, but that expertise is shared, and efforts streamlined.
- Access to accessible training, so that these can be adapted, translated, jointly elaborated and up taken.
- Resources on how to design workshops, which methods to use for different types of projects, skills in presentation, skills in and access to software for online course design, skills in and access to software for web design, skills in events booking and management skills and software access, skills in health and safety (risk assessment) and software access.
- A team to help with organisational aspects of training.
- Tools for student supervision such as a collection of thesis and dissertations on citizen science topics. A directory of contacts to speak about relevant topics and advanced international training with personal experience.
- Funding for training and proposal development for joint funding by the European Citizen Science Association (ECSA) involving members through higher education affiliated entities.
- Technological support to stay in contact with people.
- Feedback & evaluation on training/participation.
- Access to quantitative data (for scientific disciplines such as meteorology and climatology).
- A common fund to invite network experts to workshops.
- Resources such as cheap smart mobile phones and or appropriate testing kits and equipment. These are positive for engagement.

## Engagement

- Engaging in citizen science projects outside of one's own field.
- Encounters between approaches and trainers with different backgrounds.
- The sharing of best practices and tools in teaching citizen science.
- A need for international ethics cafés and workshops for an exchange of expertise, knowledge and skills.
- More lawyers and legal scholars engaged in citizen science.

## Recognition

- A need to raise awareness of citizen science towards higher education institutions to inform training needs.
- Citizen science is branded and recognised as a valuable practice that requires well-considered methods and dedicated training at universities.
- Have stronger visibility and inclusion of courses within universities/higher education institutions and their promotion.
- A need to raise awareness of citizen science towards higher education institutions to inform training needs.
- Citizen science is branded and recognised as a valuable practice that requires
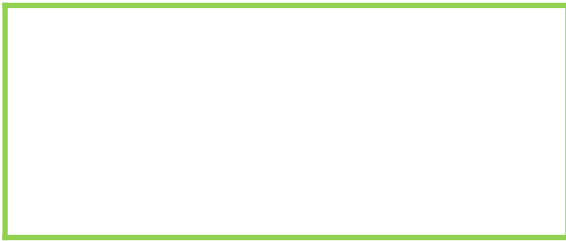
- well-considered methods and dedicated training at universities.
- Have stronger visibility and inclusion of courses within universities/higher education institutions and their promotion.

In addition, a few more services were highlighted, unique to the question of what respondents thought *European* citizen science trainers and educators need to thrive.

*"The pure engagement of citizens to thrive for a better quality of life, combined with a set of didactic and knowledge skills."*

**Services for citizen science educators and trainers at the European level**

- More widespread knowledge of the strategic importance of citizen science at the community level.
- Access to insurance for running events and courses.
- The need to demonstrate citizen science value to and network with young people.
- Connect with NGOs striving for environmental/societal improvements.
- Introduce citizen science to schools by the direct involvement of motivated teachers or professional educators.
- More connections to existing participatory social science activities.
- National coordination.

### Contribution

Amongst the respondents, the majority (i.e., 90 respondents, 69.8%) expressed their willingness to contribute by responding to questions, sharing experiences, and providing expertise in citizen science training. In addition, 61 respondents (47.3%) indicated that they are willing to grant access to their own training materials and organise and facilitate network activities. 55 respondents (42.6%) indicated an interest in co-facilitating trainers' workshops, and 49 respondents (38%) showed interest in developing training materials based on identified needs for the network. Figure 3.3 reports the number of respondents willing to contribute in various ways.
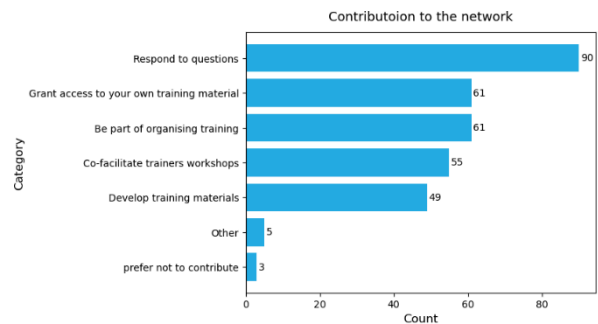


*Figure 3.3: Preferred mode of contribution by respondents*

In addition to the above-mentioned way of contributing, individuals highlighted that in order to share training material, they would need to know if their training was of the 'right kind' and that they would be more willing to contribute training material if there was a well organised initiative on developing materials, which depended on subject matter and audience.
Respondents also highlighted the willingness to contribute but the lack of time to do so, and or the trickiness of not being based in Europe.

*"I am interested in being part of the network and sharing my experience. Unfortunately, my biggest constraint is the lack of time, that's why I haven't ticked any other possibilities to get involved for the moment."*

*"I would also be happy to contribute in more ways, although the time difference with the West Coast of Canada can be a challenge!"*

Finally, one respondent highlighted that they were not planning to teach citizen science but that they were interested in engaging with the ECS Academy to help from a pedagogical point of view to design citizen science training with experts.

### Mode of engagement

Respondents could choose between multiple options on the way they would like to be engaged.

90 respondents (69.8%) highlighted they would prefer to be engaged via a newsletter. This was followed by stories and experiences by 51 respondents (39.5%) and a closed listserv by 47 respondents (36.4%). Online meetups/calls and open listservs also received significant interest, from 46 respondents (35.7%). Figure 3.4 highlights all suggested modes to stay engaged with the ECS Academy and respondents' preferred modalities.



*Figure 3.4: Communication modes to stay engaged with ECS Academy*

In addition, respondents were asked at which frequency they would prefer to receive their chosen mode to stay engaged. The preferred frequency matched the preferred mode of communication, a newsletter monthly.
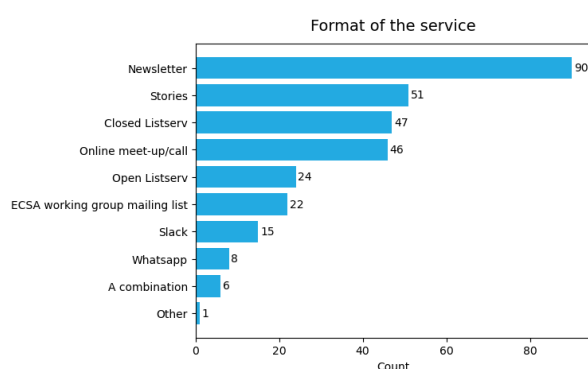
Individuals who preferred mailing lists, highlighted a preference to stick to existing mailing lists within the citizen science community.

In addition, respondents shared preferences on what they would like the newsletter to contain. New initiatives, programmes and/or training opportunities were mentioned. A respondent suggested a shared calendar between the network of citizen science educators and trainers where different organisations can upload their training, webinars, talks, etc. A respondent suggested that the academic calendar is taken into account (e.g., August, a month when many university teachers are updating course material).

Some respondents highlighted that they do not want to get overwhelmed by communication from the citizen science network of educators and trainers and, therefore, would prefer occasional announcements of relevant resources or research. On a similar note, a respondent highlighted the feeling of being overwhelmed by the 'amount' of information that needs to be processed daily. Therefore, they hoped this network information to be well-structured and resourceful instead of being overwhelming.

## 3.3 Limitations

The questionnaire had a limitation regarding the implementation of question logic in the google form. As none of the questions were obligatory, some questions that were meant to show only if the respondent had answered 'yes' showed when no answer was given to the question. For example, the participants were asked if they have or are giving training and teaching in citizen science and if the answer was yes, then to specify below. Some respondents didn't select either yes or no but were able and specified their training.

In addition, the number of services was broad, and one respondent mentioned that they were unsure about what was meant with what type of services citizen science trainers and educators would need to thrive, whether it would allow them to find more ways to do training and or be trained. The notion of services may have been ambiguous as the services could come from two sources, the ECS Academy and the network of educators and trainers themselves.

## 3.4 Kick-off event

110 respondents out of 129 said they would be interested to be re-contacted to stay engaged in the creation of the European Citizen Science Academy (Figure 3.5. depicts the result). A kick-off event with these 110 individuals was organised on June 1st. Out of the 110 respondents, the event was attended by 80 respondents.
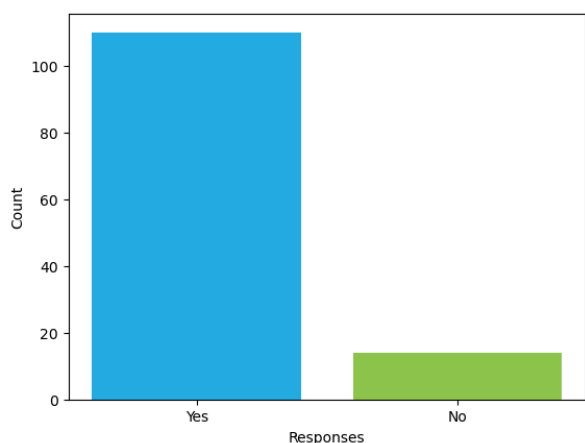


*Figure 3.5: Number of respondents that wanted to be re-contacted to co-create the ECS Academy*

## 3.5 Next steps

The European Citizen Science Academy is a four-year endeavour with the ambition to co-create it with a network of citizen science educators and trainers. The 110 respondents mentioned to be interested to stay engaged in the creation of the ECS Academy set the basis of this network.

During the kick-off event, the results of the survey were presented alongside a working document, called the 'Roadmap to the European Citizen Science Academy' that provides the first iteration and skeletal document for the development of the guidance document for the ECS Academy.

Respondents were invited to share comments in the form of direct suggestions, comments in a Google document, or by email to iterate the

introduction, input, vision, stakeholders and target groups, learning framework, operational principles, services offered by the ECS Academy, logic model that set the basis of the ECS Academy. In addition, on the 21st of June 2023, a meeting was organised, to collaboratively work on this Roadmap. A total of 25 respondents attended it, and provided suggestions to each section, and to missing sections of the roadmap, such as "Risks and Mitigations" and "Business plan". This roadmap will be continually elaborated by respondents that will eventually form and shape a network of citizen science educators and trainers, alongside the ECS consortium, ECSA members and ECSA.

A third workshop will soon be organised with interested respondents to elaborate on how and which services will be offered by the ECS Academy.

# 4 Framework for dialogue

The framework for dialogue is addressing the two following questions which were shared with members of the network: 1) What would they need to feel comfortable to contribute and 2) What would they need to have access to the network. Network members could vote on each other's statements by clicking on a heart emoticon. A total of 8 statements were added by members to the question of what they would need to feel comfortable to contribute. A total of 7 statements were added by members to the question of what they would need to have access to the network. As mentioned above, two workshops were then organised with interested network members to concretize solutions and tools that could be established to respond to these needs.

To work on these 15 statements, they were regrouped and condensed into seven aspects:
1. How to report outputs of network meetings.
2. Who are members of the network, what are their expectations and what is the aim of the network, and network member introduction.
3. Management and purpose of the listserv.
4. Purpose, target audience, language of newsletter.
5. Network's ground principles and acknowledgement.
6. Contributions of network members outside and during meetings.
7. Regularity of network meetings.

Table 4.1 summarises the statements with the number of votes/likes attributed to each statement, which demonstrates the resonance of other network members to the statements. The third column of Table 4.1 highlights how each statement contributed to the development of the various aspects of the framework for dialogue.

*Table 4.1: Statements shared by network members, the number of support each statement received from network members, and aspects they were included in*

| Statements | Votes | Aspects |
|---|---|---|
| Bullet points of most important points and tasks to be done | 10 | How to report outputs of network meetings. |
| Clear understanding of the aims of the network and the member base | 6 | Who are members of the network, what are their expectations and what is the aim of the network. |
| I've seen a little debate in the chat about what we mean by "citizen science educators and trainings" … it would be nice just to outline a very concise educator/training profile, just to clarify what we are talking about. | 6 | Who are members of the network, what are their expectations and what is the aim of the network. |
| I don't take notes while listening and participating. A brief abstract of what was discussed would be a useful reminder. | 5 | How to report outputs of network meetings. |

| | | |
|---|---|---|
| Better knowledge on the different partners and expectations | 5 | Who are members of the network, what are their expectations and what is the aim of the network. |
| I suggest that social sciences, humanities, and the arts are considered as a field with many useful approaches for building cities' science projects. | 4 | Network's ground principles and acknowledgement. |
| Since different CS projects could have different needs, it would be nice to consider an organisation considering thematic areas (e.g., ecology, medicine) | 4 | Network's ground principles and acknowledgement. |
| Announcing, sharing, and connecting various events, project activities, policy agendas, funding mechanisms, etc. | 3 | Management, introduction, and purpose of the listserv. |
| Objectives defined at different levels: small and bigger objectives/local, national, and international level/… | 3 | NA |
| I would need to feel welcomed/accepted by for example feeling listened to, or heard, as though what I say is not stupid (i.e., judged). | 3 | Network's ground principles and acknowledgement. |
| Recognition of own contributions (attribution). Social learning space - with moderation to ensure constructive and collaborative exchanges. | 2 | Network's ground principles and acknowledgement. |
| The activities to be well chaired to drive clear, crisp contributions. The main ideas to be reported for being followed up | 1 | Network's ground principles and acknowledgement. & How to report outputs of network meetings. |
| I will require clear information and instruction of what is required. | NA | Who are members of the network, what are their expectations and what is the aim of the network, |
| What do you expect as a contribution, and for what, and when? | NA | Who are members of the network, what are their expectations and what is the aim of the network |

## 4.1 Workshops

### 4.1.1 First workshop

During the first workshop on July 14, 2023, we were able to address statements that pertained to: how meeting outcomes should be reported to the network, how to know who constituted the member base of the network, expectations of network member base and the definition of a citizen science educator and trainer.

Suggestions and/or additional input were brought from the survey and facilitation techniques learnt during the Stickydot course referred to in section 2.4 to inform needs of network members. For example, survey responses such as "a community of practice, sharing best practices, sharing opportunities for training" gave input about what the aim of network. In addition, a tool learnt from the Stickydot facilitation course, a slide deck in PowerPoint, was suggested as a tool to network members to know each other's profiles.

These inputs facilitated the discussion and provided an already existing basis to what had been shared by network members. This ensured that different voices of the network were kept in mind when developing this framework for dialogue, as few members of the network joined these workshops. In addition, prior to the meeting on the aim of the network, the UPCité/LPI team discussed what we thought the ECS Academy needed in relation to the network - what it could represent for the ECS Academy. An ECSA WG was suggested during the framework for the dialogue workshop.

*1st theme:* **How to report outputs of network meetings**

*Outcomes:*
- Emails that are sent to recap outcomes of network meetings are succinct by including action points and a link to a Google drive that contains all documents pertinent to the network.
- That an email is sent to the network if an update or a change is put in place in this common repository/Google drive.
- Tasks are not given to network members after the meeting, but the work is done during meetings.

These key points allowed us to understand network members' wishes regarding the form and frequency of communication, interactions and facilitation of meetings. In response to this first point, a Google drive that includes all relevant documents to networks was created.

**2nd theme: Who are members of the network, what are their expectations and what is the aim of the network**

The second theme regrouped statements that pertained to members wanting to better understand who the members of the network were, what were their expectations and what was the aim of the network. The following insights were shared, alongside a new definition for 'citizen science educators and trainers'.

*Outcomes:*
- Members sharing mistakes and innovations so that their work can become more efficient.
- Identifying and defining the relationship between the network and the ECS Academy, how they are interconnected in creating a roadmap and infrastructure of training in citizen science.
- To establish a common base for training in citizen science, defining what it entails and what topics should be covered.
- PowerPoint presentation where partners can share input on different tools and methods, who they are, training needs and resources (e.g., their position, how they came in contact with CS, their expectations and why they decided to join the group, where they would have training needs and how they could contribute).

- Definition of citizen science trainers and educators refined: *"An individual that provides both formal and/or informal education to participants in the area of citizen science and Community Science."* In addition, during the workshop, network members debated on the term's trainers and educators and training and teaching. Suggestions such as mentoring, coaching, facilitator were discussed, but the term trainers and educators was kept, considered to be the best fitting.

Idea of creating a safe and accessible space (e.g., Moodle or eu-citizen.science platform) to share information (*more broadly relevant as an infrastructure*).

## 4.1.2 Second workshop

The second workshop was designed differently to address more statements, further elaborate on the different aspects of the framework for dialogue, respond to a critique of a network member on how to use meeting space (i.e., to use network meetings as a space where network members can contribute to something concretely). Practical suggestions were prepared prior to the workshop to answer network needs and their indicated preferred mode of communication (i.e., monthly newsletter, stories, a closed mailing list/listserv and online meet-up calls). The following aspects of the framework of dialogue are elaborated below:

- Management, introduction, and purpose of the mailing list server (listserv).
- Purpose, target audience, language of the newsletter.
- Network's ground principles and acknowledgement.
- Contributions of network members outside and during meetings.
- Regularity of network meetings.
- Network member introduction (subcategory of "Who are members of the network, what are their expectations and what is the aim of the network").

### Management, the introduction, and purpose of the listserv

Management of the listserv was decided to be an open subscription management system. This mailing list will be hosted by ECSA. It will be moderated, to ensure conformity with the agreed standards.

Each new subscriber to the mailing list will receive a welcoming email thanking the subscriber for their subscription, highlighting how they can adjust their preferences, and or unsubscribe, announce the purpose of the listserv, the 'code of conduct', the relationship between the network and the ECS academy (i.e., how they are interconnected), how the network functions, such as comments/contributions are made on the Word document, a possibility for introducing oneself on Moodle, about network meetings, about the listserv and the newsletter, bring them up to date about the development of the ECS academy, and introduce who are the moderators of the listserv. This may be very dense, but it is worthy of experimentation and adjustment.

The purpose of listserv was decided to be the following: announcements, sharing and connecting various events, talking about project activities, policy agendas, fundings mechanisms, etc.

### Purpose, target audience and the language of newsletter

The purpose, language and target audience of the listserv were discussed during the second workshop. The newsletter would be for the community of educators and trainers and could include stories and experiences in different languages. The aspect of enabling members of the network to write interventions and columns in different languages was suggested by a network member to make it more inclusive.

## Network's ground principles and acknowledgements

Ground principles and acknowledgements were elaborated to set the tone of interaction and also address needs that emerged from the network members to feel comfortable to contribute and to access the network. For example, one member shared that to feel comfortable to contribute they "would need to feel welcomed/accepted by, for example, feeling listened to, or heard, as though what I say is not stupid (i.e., judged)". This received three votes. In addition, network members also shared that to access the network they needed that the "[…] social sciences, humanities and the arts are considered as a field with many useful approaches for building citizen science projects".

Therefore, to address these needs ground principles and acknowledgements were formulated with network members.

Acknowledgements:
- We recognise that citizen science projects are wide in scope, with different needs and interests and across many disciplines.
- We recognise that every contribution is valuable.

Ground Principles:
- Contributions seek to be clear and crisp.
- Contributions and exchanges seek to be constructive and collaborative.
- Contributions of members are rightly attributed.
- All points of view are equal. Allow them to finish before you speak.
- No pressure to contribute, but all are welcome to talk.
- Respect timekeeping.
- Respect the time of others.
- Be curious and actively listen.
- Check with colleagues before answering whether you have understood their message correctly.
- Use "I" statements where possible to avoid general statements and/or miss-representation.
- Ask yourself; how can I formulate my point so that it is constructive to the discussion - it can bring it forward.

These ground principles and acknowledgement are still in their iteration and have not been adopted by the whole network - but have been agreed and worked on by a few members of the network. In addition, as mentioned above, these will change as the network evolves.

## Contributions of network members outside and during meetings

In terms of the modes of contribution of network members outside and during meetings, Google workspace (e.g., Google Docs) has been used as a tool for collaboration and contributions during and outside network meetings, such as the roadmap where network members were invited to leave comments, write their input in dedicated tables to a specific section of the roadmap etc. Moreover, sending us emails with their contributions was also one way network members could contribute to the roadmap.

It was discussed whether rules should be established to drive contributions and ensure that everyone can have an equal voice during meetings - such as raising virtual hands and or using a hand technique to demonstrate whether a person wants to bring in a new point or answer to someone else's point. It was decided that no rules would facilitate this, and that it would be left to the chair. In addition, it was discussed that there could be more than one chair, to accommodate different time zones, and have co-moderators.

Bringing in Google Docs as direct spaces of contributions has been demonstrated to be the most fruitful and direct way to ask members to contribute to tasks. This may be because it engages network members and facilitators at the same level of collaboration and contribution. At times, using other tools such as Padlets, Miro boards and or PowerPoint slides removes the facilitator as a direct contributor but asks others to contribute. An open collaboration between facilitators and network members on a Google document may make the ECS Academy feel more like a joint project. This is in line with the intention of co-creating the ECS Academy with the network.

Therefore, the use and choice of tools should be reflected on as they seem to affect how one can relate to another. This is also affected by the preliminary relationship between the two actors. As we are seeking to engage network members as co-creators of the ECS Academy, using a PowerPoint presentation may make them feel not as co-creators but as contributors. Google Docs allows for work to be presented with an idea that it is not set in stone ready to be presented.

### Network member introduction

Another aspect of the framework is a shared interest of network members who would like to know about each other. This could be, for example, on a PowerPoint presentation, as mentioned above, that would serve as a slide deck. During the second workshop, the following categories were elaborated:
- Work position.
- How individuals got in contact with citizen science.
- Expectations in relation to the network.
- The 'why' for joining the network (*optional).
- Training needs.
- How they can contribute (providing examples of ways individuals can/could contribute.
- Contact details to get in touch.

### Regularity of network meetings

Network meetings should have a clear reason. For example, network meetings could have a clear theme or focus. This theme and focus could be the factor which informs who the meeting will be chaired by. Network members suggested that network meetings could happen on a monthly basis and adapt to a bi-monthly meeting if seen as more pertinent.

## 4.1.3 Summary & conclusions of outputs

To date, the two workshops have allowed us to develop the following aspects that help shape the network:
1. How to report meeting minutes.
2. Ground principles and acknowledgements that will guide network interaction during and outside of meetings.
3. Communication and purpose of a listserv.
4. Content, audience, and language of a newsletter.
5. Collaborative infrastructures.

Aspects that were elaborated within the scope of the framework for dialogue go beyond what a framework for dialogue generally entails. These aspects form what can be called more broadly a framework of interaction of the network. These aspects delineated a framework for dialogue, via a set of ground principles and acknowledgements that will be used to guide dialogues. However, other aspects delineate the infrastructure that will allow for the network to exchange services between themselves, such as the exchange of training resources and needs and with the ECS Academy such as developing trainings modules or guides.

## 4.2 Existing infrastructure

Currently, network members can not communicate between themselves, but have only been able to communicate between themselves during workshops and network meetings. A Google contact list has been kept, and emails sent to the network using 'bcc' option, which allows for one sender to send emails to multiple recipients but for recipients to not see other recipients. The bcc option was chosen to maintain anonymity of individuals. However, as per a preferred mode of communication of network members, a mailing list hosted by ECSA and installed on the eu-citizen.science platform is in the process of being created.

In addition, a Moodle space for the network is also being developed as it is a tool that holds the potential to deliver many of the needs and some of the services highlighted/requested by network members from the ECS Academy. For example, one of the favoured services of the network can be satisfied by Moodle, a repository of training as an Excel file uploaded on the course space for the network of educators and trainers. In addition, instead of a PowerPoint slide deck an Excel file can serve the purpose of network members introducing themselves. This may make the search option easiest, if network members want to find someone engaged in their field more directly.



*Figure 4.1: Screenshot of the Moodle space on the eu-citizen.science platform dedicated to members of the citizen science educators and trainers network*

Figure 4.1 demonstrates a screenshot of the first draft of the Moodle space for the ECS network. This Moodle space is under construction and its usability should be tested with network members, using a user usability test, for example.

## 4.3 Risks and our approach to engaging the network

The first kick off meeting started well with 80 out of 110 members of the network joining. However, as we have done some of the workshops, the numbers have dwindled, which is to be expected. As Schlager, Fusco and Schank (2002) already identified, the maintenance of online communities requires continuous effort and management and there are issues with participation. Network engagement is fundamental for the well functioning of the ECS Academy and will be an effort for the next period.

The roadmap to the ECS Academy and the work done within the scope of the framework for dialogue, constitute essential pieces that will inform the relationship and role between the ECS Academy and the network of citizen science educators. It will be important to keep in mind, as a community-based approach, that what is developed for the network in relation to the ECS Academy is relevant and facilitates the work of network members as citizen science educators and trainers and as contributors to the functioning of the ECS Academy.

The usability of the infrastructure and the solicitation of network members for a clear task are two ways to work towards the latter.

# 5 Roadmap to the European Citizen Science Academy

This section includes the results of the co-created document that expresses the joint ideas, concepts, and interests of the people who participated in the network meetings of the ECS Academy roadmap development. The section includes what is, inherently, a standalone document that will continue to evolve as the ECS Academy evolves.

| Name (optional) | Affiliation / Role | Country of Affiliation |
|---|---|---|
| Dave Wall | National Biodiversity Data Centre | Ireland |
| Chiara Fedrigotti | MUSE, Science Museum Trento/Researcher | Italy |
| Mohammad Gharesifard | University of Groningen/ Assistant Professor | The Netherlands |
| Cláudia Pato de Carvalho and C-coordinator of the CES Working Group on Citizen science and Education | Researcher at the Centre for Social Studies (CES), Coimbra | Portugal |
| Antonella Passani | Partner and Head of Research at T6 Ecosystems srl | Italy |
| Dani Lin Hunter | North Carolina State University, Postdoctoral Scholar/Project Manager | USA |
| Laura Esbrí | PhD student Universitat de Barcelona | Spain |
| Anna Berti Suman | The Sensing for Justice Project | Italy |
| Jorge Barba | Fundación Ibercivis / Developer & Project Manager | Spain |
| Ilídio André Costa | Santa Bárbara School Cluster / Porto Planetarium – Ciência Viva Center / Institute of Astrophysics and Space Science – University of Porto - Teacher & Researcher | Portugal |
| Claudia Fabó Cartas | European Citizen Science Association (ECSA)/Project officer/manager | Germany |
| Antonella Radicchi | Researcher, University of Siena | Italy |

| | | |
|---|---|---|
| Yaela Golumbic | Mofet / Steinhardt natural history museum | Israel |
| Elena Buzan | University of Primorska -Researcher | Slovenia |
| Cristina Castracani | University of Parma - Assistant Researcher | Italy |
| Emma Rudzinskaite | Earthwatch Europe | United Kingdom |
| Oliver Vaczi | Herman Otto Institute Nonprofit Ltd. | Hungary |
| Olamide Todowede | Research Fellow, University of Nottingham | United Kingdom |
| Uta Wehn | IHE Delft | Netherlands |
| Egle Butkeviciene | Kaunas University of Technology | Lithuania |
| Olivia Höhener | UZH/ ETH Zurich | Switzerland |
| Gemma Rodríguez | Science for Change/Science Education Specialist | Spain |
| Annelies Duerinckx | Scivil | Belgium |
| Jorge Sanabria | Tecnologico de Monterrey: Institute for the Future of Education / Innovation Hub Europe | Mexico/Spain |
| Alice Mauchline | University of Reading | UK |
| Anna Molter | University College Dublin | Ireland |
| Ruben Riosa | Responsible communication // Marie Curie Alumni Association (MCAA) | France |
| Daniele Tubino de Souza | Water Resources Management, University of Wageningen | The Netherlands |
| Ignacio Atal | Université Paris Cité | France |
| Anouk Spelt | University of Leiden | Netherlands |
| Barbara Groot | VU Amsterdam / Assistant professor | The Netherlands |
| Marc Penalver Grau | Norwegian Institute for Air Research (NILU) | Norway |

| Carla Perucca Iannitelli | Science to policy Specialist, Science for Change | Spain |
| --- | --- | --- |
| Mark Charlton | De Montfort University, Leicester | UK |
| Rita Campos | Centre for Social Studies (CES), University of Coimbra<br>Researcher and co-coordinator of the Working Group on Citizen science and Education | Portugal |
| Elisabet Bonfill Molina | Institute of Marine Sciences CSIC | Spain |
| Florence Gignac | Stickydot / Project assistant | Belgium |
| Agostino Letardi | ENEA | Italy |
| Michael Køie Poulsen | NORDECO | Denmark |
| Christiane Grill | LBG OIS Center | Austria |
| Dobrivoje Lale Eric | Center for the Promotion of Science, Belgrade<br>Head of Department (running CS projects and creating a national CS funding programme which starts in the Autumn 2023) | Serbia |
| Catherine Wilson | Loughborough University | UK |
| Jane Nolan | UCD | Ireland |
| Sofia Oliveira | University of Porto | Portugal |
| Gitte Kragh | Aarhus University / NORDECO | Denmark |
| Marius Oesterheld | Museum für Naturkunde Berlin | Germany |
| Michelle Prysby | Virginia Tech (Virginia Master Naturalist Program) | USA |
| Karen Soacha | Institute of Marine Sciences CSIC | Spain |
| Katie Parsons | Researcher, University of Hull | UK |
| Katerina Zourou | Senior Researcher, Web2Learn | Greece |
| Aoibhéann Bird | Insight Centre for Data Analytics, | Ireland |

| | Education & Public Engagement Manager | |
|---|---|---|
| Tiberius Ignat | SKS Knowledge Services | Germany |
| Jacqueline Goldin | University of the Western Cape and Chairperson of Interim Committee for a Citizen Science South Africa Association | South Africa |
| Elizabeth Bruton | UCD | Ireland |
| Andrea Sforzi | Maremma Natural History Museum/Director | Italy |
| James Sprinks | Earthwatch Europe | UK |
| Andrzej Klimczuk | SGH Warsaw School of Economics | Poland |
| Mary Kelly-Quinn | University College Dublin | Ireland |
| Lucía Moreno | Fundación Ibercivis/Political scientist | Spain |
| Alessia Smaniotto | EHESS/OPERAS | France |
| Rosa Arias | Science for Change | Spain |

**Purpose and aims of this document**

The Roadmap document provides the first iteration and skeletal document for the development of the guidance document for the European Citizen Science Academy. The purpose of the document is to provide a space for discussion, identification of core issues and contentions, as well as areas of agreement. The aim is to co-create the document - first with the network of educators and trainers, then with European Citizen Science Association (ECSA) staff and the wider ECSA community, and then with anyone with an interest in citizen science. The document will be expanded at a later stage. For example, each of the services, which is currently a bullet point, will be described, including how it will be carried out, who will run it, what is the role of different actors and the frequency of delivery.

**The document is intended to provide ideas and is not aimed to commit ECSA to any specific path, since it will need to take into consideration many other factors. The document is represented as the collection of ideas from the community of trainers and educators.**

At this very early stage, the purpose is to identify high-level comments and suggestions about the principles for the operation of the European Citizen Science Academy. The document is kept short to allow for the identification of core principles, services, and issues, as well as the identification of missing parts. It should be treated as a "strawman" to be knocked and argued against - although not all the aspects have the same level of freedom. Aspects that are less open for discussion are indicated as such. However, the suggestions need to be pragmatic and recognise that the ECS academy is created with minimal resources and will need to operate sustainably after the end of the project (thus, courses and training activities cannot be free as there is a need to pay for the trainers and maintain the ECS academy).
Comments are welcome in any form that you find convenient and suitable for what you feel comfortable with - you can use the "suggesting" mode in Google Docs to add or change text, use the commenting function to make comments or discuss comments from other people, or use the tables that are provided under each section to leave your comments and suggestions. These will be reviewed and used for the next iteration of the document. If you prefer, you can email [Cléa Montanari](#) to share more detailed comments. Comments are welcomed in both named and anonymous modes of Google Docs.

**Glossary**

**Educators and trainers** - an individual that provides both formal and/or informal education to participants, project organisers, and to early and experienced researchers in the area of citizen science and community science. This can be, for example, a course or a class for students about citizen science and/or an activity with visitors to a museum during the summer holidays.

**Education/Training** - an activity that is designed to increase knowledge and capacity of the learner about the subject.

**Citizen scientists** - participants in a citizen science project who do not have a leadership role and are a recipient of project-specific training (e.g., how to carry out the scientific data collection or how to ring a bird) but are not interested in knowledge and skills related to developing, running, and maintaining citizen science projects.

## 5.1 Introduction – what is the European Citizen Science Academy building on?

Citizen science is currently enjoying increased awareness and attention across Europe. There are multiple indicators for policy makers' attention, and willingness to dedicate resources to the development of the field

and increase its adoption as a mainstream approach for scientific inquiry, public engagement and involvement in science, and as a way to democratise research and innovation.

Starting at the global level, the recently adopted UNESCO Recommendations on Open Science recognise citizen science, scientific volunteering, and scientific crowdsourcing. Currently, guidelines for the implementation of the recommendations at the institutional level call for active efforts by scientific institutions to develop participatory and citizen science support capacity.

At the European level, the recently completed Mutual Learning Exercise on Citizen Science Initiative saw the national government actors (science ministry or the national science funder) focusing their attention on providing better support for citizen science. The top science funder in Europe, the European Research Council (ERC), dedicated its 2022 annual event to citizen science. In addition, DG RTD is encouraging institutions to provide better support for citizen science. The TIME4CS and INCENTIVE projects provide live demonstrations of institutional support, while the European Citizen Science project is actively engaged in increasing institutional capacity. Networks of universities, such as CIRCLE U, are actively investing in citizen science support at the institutional level. Citizen science is beginning to make an important contribution to the enforcement of environmental law in Europe.

All these signals are making students, researchers, research managers and administrators (such as library staff), university leaders, and policy professionals aware of the importance of citizen science. With awareness comes the need to learn and deepen the knowledge in the area of citizen science. For a student or a researcher, that might be an understanding of how citizen science can be included in their research project. For a policy professional it might be learning the potentials and limitations of using citizen science within a policy area. For teachers at different levels of education, this can contribute to enhancing scientific education and supporting student-led projects. All in all, this creates the need to provide training to increase awareness and capacity.

The aim of the European Citizen Science Academy ("ECS Academy" for the rest of this document) is to address this need - both as a creator of content and as a promoter and sharer of content created by others. The purpose of this document is to provide the suggested vision and principles for the ECS Academy operation.

The ECS Academy is being developed against the background of an evolving landscape of educational provision and training in the area of citizen science and in open science more widely. Over the past decade, both formal and informal training, courses, and workshops have been developed in the area of citizen science. These range from short, single-hour introductory workshops, which only provide an entry point to citizen science, to a proposed MSc programme to educate professionals in this area. In many cases, citizen science is part of a generic training in open science or as part of science communication or science and society training. Many resources have been developed over the years to support such training, and many of them are offered in open access formats, or as open educational resources. Some of these resources are listed on the eu-citizen.science platform, and the platform also hosts a Moodle instance (an open source virtual learning environment) which already contains over 20 free-to-access training modules.

The ECS Academy will operate as both infrastructure and creator of educational content and formats, and this will create tension within the network of educators. Therefore, there is a need to sensitively engage with those who are running training activities commercially, or already established training within their institutions, which attracts (fee paying) students, as the ECS Academy should work to support such activities and not to compete with them. Appropriate measures need to be taken to address it.

It is noteworthy that the ECS Academy is funded and run as part of the ECS project. The funding means that the ECS Academy can be co-created in a way that suits the network of educators and trainers that are forming it, but at the same time, put some constraints and demands on the activities. For transparency, Figure 5.1 below highlights the text of the ECS Grant Agreement, which is largely responsible for shaping the ECS Academy. Currently the grant agreement commits to key performance indicators (KPI), such as the creation of 12 training

modules or trainings guides that will be delivered by the ECS Academy. There are other KPIs that are mentioned in the grant agreement and will have a direct impact on the ECS Academy, as achieving them is a priority.

In total, there is a commitment for 12 training modules; engaging 1000 researchers and 400 other quintuple helix stakeholders getting trained in various aspects of citizen science; engaging 400 early career researchers in events and training; and establishing a network of trainers and educators with 50 organisations.

Beyond the project, it is envisaged that the ECS Academy will continue to operate under the auspices of ECSA for the foreseeable future and will sustain itself financially. It will mean that all the costs that are associated with the ECS Academy - the cost of staff such as a coordinator or content creator, the maintenance and development of training, the maintenance of the platform including security and functional updates, and the promotion of the activities will be covered from revenue that is raised from its activity. In practice, this could mean the support of at least one post within ECSA of the ECS Academy coordinator, and potentially other positions or funding for freelancers to support and maintain the ECS Academy. A detailed budget and business plan will be developed through the ECS project to provide a realistic estimation of these costs. To achieve this, the ECS Academy needs to be of real value to all its stakeholders and demonstrate the development of a mixed provision of free and paid training.

*Table 5.1: Work Package 4 tasks*

| Work package WP4 – European Citizen Science Academy | Comments (beyond the original WP description) |
|---|---|
| **Objectives** | |
| To create high-quality resources, activities and training events aimed at improving skills and knowledge for CS practitioners, civil society, public authorities, businesses, (in)formal and education establishments, and research funding and performing organisations. Specific objectives of the academy are: (i) a step-change in the uptake of knowledge about designing and utilising CS by research and innovation organisations; (ii) achieving a robust CS integration within the excellence research pillar of Horizon Europe; (iii) providing tailored training to missions, clusters, and networks; (iv) connecting CS educators and trainers across Europe and the world; and (v) providing training for the activities in this project. | In line with the evolution of the ECS Academy, the emphasis might move towards a more infrastructure role and to limit the content creation in areas to allow network members to generate and guide novel areas of training. |
| **Description** | |
| **T4.1 Setting up the European Citizen Science Academy (August 2022-November 2023)**. This task focuses on analysing online, face-to-face, and in situ training across Europe. This will enrich the training resources on the eu-citizen.science platform and strengthen the involvement of educators and training providers in the ECS community. The competency framework from the LC-GD-10-3-2020 project | Additional opportunities of using outcomes of projects other than the ones cited in T4.1 are emerging. These are outcomes of the PATTERN project or the infrastructure of COESO (VERA).<br>The ECS Academy network of educators and trainers can facilitate the engagement with more actors, for example, with the Centre for Social Studies (CES, Coimbra, Portugal). |

| | |
|---|---|
| (GreenSCENT and ECF4CLIM) and the outcomes of the TIME4CS project will be used for the analysis. The analysis will look at data management training to support T3.5 and the CSDA. The task outputs are a report on pan-European CS education and a network of at least 50 CS educators and trainers. | The frameworks of GreenSCENT and ECF4CLIM were not deemed as suitable for citizen science, unfortunately. |
| **T4.2 Engaging citizen science educators and trainers (July 2023-June 2026)**. The academy will design training activities through two mechanisms. Co-design workshops with members of the European CS community, involving organisations and individuals identified in T4.1. Together with them, we will identify training needs and training sources. With the support of WP5, the involvement of under-represented organisations and countries will be ensured. At least 3 workshops will be held throughout the project at the same time as T2.2 workshops. In addition, WP leaders will regularly discuss specific training needs. All project partners and Affiliated Entities will contribute to the production of new training modules to ensure local relevance and promote uptake. A sustainable model for the use of self-directed learning to support paid in-person and remote training will be developed. We will create 8 new training modules. | |
| **T4.3 Promoting citizen science within scientific excellence (January 2023-May 2026)**. This task focuses on the need to increase the awareness, adoption, and use of CS within European elite science. This will be done with training material and activities that are directed at Marie Skłodowska-Curie Actions (MCSA) and European Research Council (ERC) funded projects. A network of MCSA and ERC grantees that have been utilising CS will be created. MCAA will play an active role in this task utilising its network of more than 19K members. In addition, we will reach out to the Association of ERC Grantees and the Global Young Academy. Three training modules will be created (e.g., running CS within a frontier project), running in person or remotely twice a year. In each year, a training school of a week will provide concentrated training. Support will be offered to applicants who want to integrate CS into their research. In total, we will train 800 researchers. Special attention will be paid in the session to ensure that aspects of data quantity, quality, coverage, and analysis methods are shared with learners, with appropriate resources provided to support this. | |

| | |
|---|---|
| **T4.4 Citizen Science capacity within Horizon Europe Missions, Clusters and ERA activities (July 2023-May 2026)**. Within WP5 and WP7, a dedicated effort includes reaching out to the emerging Horizon Europe Missions, Clusters, and wider ERA activities. In addition, attention to the Green Deal and the Sustainable Development Goals (SDGs) is required to ensure that the training addresses the need to support these high-level policy goals. This task will ensure that relevant training resources are packaged, and necessary training support is provided, to allow easy access for newcomers in CS activities. Within T5.4 and T7.2, a dedicated section will include identifying training, capacity building, and knowledge needs. 8 targeted training guides, which are documents that provide clear pathways for learning about citizen science in such a way that it can be utilised to address a specific aspect, will be developed with links and guidance based on existing resources. The training guides will be developed and co-created with bodies that are involved in the missions, Green Deal, and addressing the SDGs. | |
| **T4.5 Institutional transformation for embedding citizen science within R&I institutions through capacity building (January 2023-May 2026)**. Leader: UP. Collaborators: ZSI, CSIC, SD, PL2030, MCAA, NILU, ECSA Affiliated Entities. Using the learning from the competency framework and TIME4CS (see T4.1), four training modules will be developed that are aimed at organisations within R&I that are new to CS. Modules for research funders, research translation organisations, libraries as well as research-performing organisations (RPOs) will be created. These modules will be designed to take no more than a day of training and will be run by ECSA Affiliated Entities as well as PL2030. They will then be used for one training session each year in person and another remotely. Participants will be recruited through the EARTO, the Eureka Network, the European University Association, the PL2030 as well as other networks and alliances. | There is a potential of linking to other projects and lessons from other projects, for example, Input from ZSI / PRO-Ethics: Target Group: RFOS. Content: Ethics Framework |

## 5.2 Input for the Roadmap

This document received input from several sources in the period from January to October 2023.

This document was first constructed through discussions with actors who are already providing training in this area (Stickydot, Scientific Knowledge Services), a survey that was carried out with trainers and educators, and lessons learned from the EU-Citizen.Science project. Further input was provided during the kick-off meeting of Work Package 4 of the European Citizen Science project, and the meeting with the people who expressed an interest in the educators' and trainers' network.

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In detail: the survey that was disseminated to these educators and trainers and the relevant mailing list on March 16th, 2023, and was left open for a month until April 14th (see Report). Survey results were downloaded on the 15th of April. The responses to the survey came from 129 people. Of these, 110 people expressed an interest in remaining on the mailing list and being updated about the development of the network as part of the European Citizen Science Academy (ECS Academy).

On 1st June 2023, the first kick off meeting of the network was carried out with about 80 people. Further workshops include the 1st Workshop working on the roadmap on 21st June with 30 participants, and a workshop to work on a dialogue framework with 19 participants on 14th July.
In July 2023, the ECS consortium provided additional guidance during a workshop with project partners and affiliated entities.

Further opportunities for input can be provided to the international "sister" associations - the US CSA and the Australian CSA. Networks such as EUN (the European Schoolnet of Ministries of Education) and other university networks can also be relevant stakeholders.

## 5.3 Vision of the European Citizen Science Academy

Before setting the vision, it is critical to emphasise that the ECS Academy will eventually become an integral part of ECSA and it is aimed at supporting and enhancing the organisation. It is also not aiming to compete with ECSA or ECSA members - it aims to train, to provide opportunities to be trained, and to share training. The ECS Academy will resolutely not provide formal courses, for example, with accredited European Credit Transfer and Accumulation System (ECTS) points. It is not aimed to be affiliated with specific universities and is aimed to be open to collaboration with a range of institutions. Most of its work will be done through collaboration and co-creation of training materials and activities. The ECS Academy is expected to run courses with ECTS accrediting institutions and to ensure that they provide high-quality citizen science education. As such, it can provide informal or formal endorsement of training activities and it might become an accrediting body in the sense of ensuring quality and providing a recognised recognition of courses and training activities that are supported by the ECS Academy and, therefore, are of adequate quality.

### 5.3.1 Vision

The vision of the ECS Academy is suggested as follows:

*The ECS Academy will be the European hub and the **go-to** place for learning on participatory and citizen science in Europe. The ECS Academy will act as a hub, marketplace, and knowledge repository. The ECS Academy will be a training promoter and deliverer. The ECS Academy will endeavour that its practice enables individuals engaged with citizen science to utilise the material and training if they wish. The ECS Academy will enhance the inclusion of citizen science in research projects and as part of Open Science practices. The ECS Academy will support the outreach and growth of citizen science across the European Research Area and the world.*

### 5.3.2 Objectives

To achieve its vision, these are objectives of the ECS Academy:
1. Through training and education, enhance the transformative impact of citizen science and promote it as a transdisciplinary tool for community empowerment to address global challenges.
2. Provide a knowledge hub, with a repository for reusable material for education and training on different aspects of citizen science.
3. Facilitate the sharing of knowledge, needs, best practices, innovations, and open educational resources in the field of citizen science at different levels of education - from schools to continual professional development. This will include aspects of designing, implementing, and maintaining citizen science

projects, sharing best practices and guidance, and paying attention to the ways citizen science is practised in different domains (e.g., environment, health, and arts).
4. Support a network of citizen science educators and trainers, with particular benefits to ECSA members.The network can act as a community of practice around training and education.
5. Support the activities of ECSA in a way that will enhance the capacities and sustainability of the organisation.
6. Facilitate and initiate training sessions and activities for different stakeholders.
7. Act as a marketplace to promote and run training activities.
8. Support the voluntary accreditation and maintenance of high standards in citizen science education, including identifying experts who can support citizen science initiatives as mentors or external experts.

## 5.4 Stakeholders, target groups, and additional actors

This section identifies stakeholders, target groups and additional actors that constitute the ECS Academy.

The ECS Academy needs to be an entity that responds and works with a set of stakeholders that provide for it the structure and governance, which will be involved, benefited, or impacted by the activities of the ECS Academy. The ECS Academy **stakeholders** are people who are actively involved in the ECS Academy, have a direct governance or management role regarding the ECS Academy's operations, or are impacted directly by its work.

The ECS Academy needs to identify the target groups that will use its training and for whom the ECS Academy will aim its activities. The **target groups** are groups that the ECS Academy will reach out to and provide services to. In many of these target groups, people will have a single interaction with the ECS Academy (e.g., receiving a training section).

Additional actors beyond these two major groups, which will be needed to develop pathways to reach the target group, are also noted.

### 5.4.1 Stakeholders

1. **ECSA team** - ECS Academy is part of the services that ECSA provides to its members and the wider citizen science community. ECSA team will have a role in integrating the ECS Academy into projects, promotions, and association activities.
2. **ECSA board** - As the governance forum for ECSA, the board will provide advice and agree on the directions of the ECS Academy. This could also be indirectly, through the guidance that the board provides to the ECSA team and its director.
3. **Network members** - the network of citizen science trainers and educators is a central part of the ECS Academy, a source for its knowledge and outreach, and the people who stand to contribute and benefit from it. As the people who actively drive the ECS Academy, network members need to have a say in its direction and development of it.
4. **ECSA working groups** - specific working groups in ECSA are likely to be especially interested in the ECS Academy, such as the Open Science and Citizen Science group, or the Higher Education working group.
5. **Wider ECSA community** - ECSA members are the promoters and beneficiaries of the ECS Academy and should have the ability to comment as well as influence its development.

### 5.4.2 Target Groups

Not all target groups are the same - some will be the recipients of training (e.g., students) while others will be paying clients (cultural institutions potentially, paying for training for their staff). It is expected that different groups will have different learning pathways.

These include:
1. Higher education institutions that will use the training.
2. Cultural institutions such as museums, libraries, and other cultural centres.
3. Teachers at different school levels and further education institutions (informal learning and vocational training).
4. Students at undergraduate and postgraduate levels.
5. PhD students and early career researchers.
6. Postdoctoral researchers and experienced researchers.
7. Research administrators and facilitators.
8. Participatory research practitioners.
9. Staff at civil society organisations, including non-governmental organisations (NGOs), informal groups and staff at maker spaces.
10. Policy professionals (e.g., local, regional and central government in areas of education, science, and environment).
11. Legal professionals, in particular in the environmental sector or in community oriented work.
12. Research funders in government and non-governmental bodies such as philanthropic funders.
13. Learned societies and associations of a specific focus area (e.g., national academies) for their members.
14. Civil society organisations and NGOs.
15. Private and social enterprises, such as water companies.

### 5.4.3 Additional actors

Special attention must be paid to the following actors who will assist the ECS Academy in reaching out to its target groups. They are not direct stakeholders in the operation of the ECS Academy, but nevertheless noteworthy to ensure that the right messages and actions are integrated into the activities of the ECS Academy to reach out to them.
1. Open science actors and gatekeepers - such as OpenAIRE CoP of training coordinators, Open Science working groups in UNESCO.
2. Science Communication and outreach actors - such as Public Engagement officers in universities, associations that are dedicated to science communication and engagement (e.g., ECSITE, Living Knowledge network).
3. Associations of libraries such as LIBER.
4. University alliances and organisations (such as the ones supported by the European Research Area (ERA) efforts, the League of European Research Universities, and the European Universities Association).
5. Associations of knowledge transfer intermediaries, such as the European Association of Research and Technology Organisations (EARTO).
6. Networks of cultural institutions, such as the Network of European Museum Organisations (NEMO).
7. Associations of science funding bodies (e.g., Belmont forum).

## 5.5 Learning framework

The ECS Academy will support the development of a pluralistic learning framework, which will assume that citizen science and the associated skills are part of the additional skills and competencies that practitioners and scientists develop. Similar to other competencies and skills in the field of open science (e.g., data management or responsible research and innovation), the target audience for the ECS Academy are those who are designing and implementing citizen science activities, or those that have an impact on such activities (e.g., universities research professionals, or national research funders).

- The ECS Academy will build on existing learning frameworks or competencies frameworks (e.g., LIBER[7], EU Expert group on education and skills[8]).
- The ECS Academy will utilise best practices and, through its network, will reach educational experts for online, offline, and hybrid learning.
- The ECS Academy will have a specific focus on competency-based learning and provision, with a particular attention to problem- or scenario-based learning with active learning as an approach. The principle of "learning by doing" is central to the development and delivery of training activities.
- The ECS Academy will rely on common classifications of levels of expertise to organise learning activities and will support learners through a clear indication of prerequisite knowledge for each of the activities, with an emphasis on skills.
- The ECS Academy will consider approaches in educational thinking such as "Education 4.0"[9].
- As the activities of the network evolve, and if members of the ECS Academy are interested, a new framework can be developed through interaction between members of the network.

## 5.6 Operational principles

By August 2026, the ECS Academy (the resources, training activities, and the network) need to be self-sustainable financially and be an integral part of the ECSA network. To achieve the vision that was noted above, principles for the operation of the ECS Academy are necessary. The following principles are suggested for the ECS Academy [note - more contentious points are highlighted in * or ** and will be refined during the operational phase of the ECS Academy]:

1. **Professional and project owner/facilitator audience** – the ECS Academy will support training about citizen science through activities and network support. It is aimed at individuals from the target groups acting as citizen science project owners, facilitators and coordinators of a citizen science project, or working in policy or research management in an area that is impacted by or impacting citizen science. It is not aimed at citizen scientists unless they want to act as project owners or facilitators.
2. ***Self-sustaining** - the ECS Academy aims to be self-sustaining financially and generate funding that will allow it to create new training opportunities, maintain and enhance the network, and update existing resources. Possible profits should flow back into the ECS Academy and/or benefit the citizen science community. It would be possible to support inclusivity and a common fund to invite network experts to workshops.
3. **Open to all with benefits to ECSA members** - the ECS Academy and network are open to anyone from all over the world. The provision of opportunities for training or leading a paid training session or activity must create a benefit for ECSA members, without becoming too large an obstacle that will completely exclude non-members. All network members can share material that will be stored on Zenodo and promoted (and therefore citable).
4. **\*\* Active support to EU and nationally funded projects** - the ECS Academy will actively engage with European and nationally funded projects, providing a space to maintain training material that emerges from projects, and offer training to such projects. This will enhance the ability of ECSA to offer services as a partner in projects and will be used to provide benefits for ECSA members, for example, in delivering such training and joining projects to do so.
5. **Responsive to ECSA working groups** - the ECS Academy will work with ECSA working groups to support their activities. It will help working groups and provide a space for working groups to share training material or training activities.
6. **Mixing paid and open educational opportunities** - the ECS Academy will follow a freemium model, similar to "Future Learn" and other educational outlets, where some of the material is free for self-learners, while other activities are paid. For example, paid workshops and trainer-guided sessions

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[7] https://libereurope.eu/article/open-science-skills-diagram/
[8] https://op.europa.eu/en/publication-detail/-/publication/3b4e1847-c9ca-11e7-8e69-01aa75ed71a1
[9] https://www.redalyc.org/journal/3314/331470794006/html/

will be offered on the basis of free and open courses that are available on the platform. Appropriate benefit sharing mechanisms will be established to ensure benefits to network members and to the ECSA community.

7. **Equitable and inclusive** – the ECS Academy in its training and educational material will promote inclusion, including encouraging the use of plural sources for the educational resources (e.g., from non-Western scholars). The ECS Academy will include guidelines for equity, equality, and inclusion in its operation, using guidelines from the ECSA EIE working group. Provide special support and opportunities for members from underrepresented regions and groups and provide opportunities for training (and income) where it is relevant. Attention will be paid to different age groups, including working with third age organisations, as well as the common attention to young people, school children, and families.

8. **Multidisciplinary** – the ECS Academy will host and support both generic citizen science material and training, as well as material that is suitable for teaching citizen science within a specific domain or discipline.

9. **Multilingual** - the ECS Academy's main language will be English, but it will support and promote the translation of material to many European languages, and welcome non-European languages.

10. **High quality** – the ECS Academy will continue to develop the ECS quality criteria for training material and courses and will use it for the acceptance and promotion of training (e.g., using the ECSA 10 Principles and ECSA Characteristics of citizen science to decide if a course is relevant to its activities). It will be able to become a trusted citizen science educational provider.

11. **Modular** - Material will be developed and shared through modular educational resources which can be reused in various contexts.

12. **Supporting hybrid learning** – the ECS Academy will support material that can be used online, offline or in a hybrid learning environment. Not all materials need to fit this criteria and some of it can be designed and used only in one mode.

13. **Supporting open and closed courses** - the ECS Academy will promote and facilitate both courses that were created on the eu-citizen.science platform and relevant courses that are offered by network members, assisting the development of a market of citizen science training. Network members can decide if material and courses are open or closed, free or paid, and the ECS Academy will establish procedures and guidelines for the use of such resources.

14. **Responsive to market needs and creating the market** - the ECS Academy will respond to emerging needs in the field of citizen science through proactive development of training materials and activities. At the same time, where opportunities support the creation and promotion of new areas of activities (for example, a new area of science or research where citizen science is not used yet), it will put an effort into creating a market for training in this area.

15. **\*\* Appropriate fees** - the ECS Academy will offer a sustainable fee structure, and within it consider how a fee structure that can support learning by people with limited means (e.g., citizen scientists, professionals from a medium and low-income country) can participate in the training. It is our goal to provide opportunities for learners with limited financial resources to benefit from courses and training and to adjust payment to the context and abilities of participants.

16. **\*\* Collaboration** - In general, the ECS Academy will aim not to knowingly create training that directly competes with an existing course that is already run by a network member, unless the member is involved and agrees. The ECS Academy will aim to create training in novel areas of opportunity which are not yet addressed. The ECS Academy will encourage collaboration where it is more effective than competition (e.g., collaboration between members in running a training course in a new language or region).

17. **Network support** – the ECS Academy will support a network of citizen science trainers and educators, providing services to the network as agreed by its members and within the capacity of ECSA.

18. **\*\* Governance** – the ECS Academy will develop an agreed governance model that will take into account the wishes and interests of the network members and ECSA.

## 5.7 Services offered by the European Citizen Science Academy to trainers and educators

The ECS Academy services are designed to be provided in perpetuity, with the assumption that it will be sustainable by the end of the ECS project. The list below is, by their nature, ambitious and expansive. Both during the ECS project and beyond it, there will be limits on resources, such as time and funding, that will limit what is possible to achieve. At a later stage, the services will be prioritised, and sustainability will be a factor.
For the purpose of this document, a service is an activity that is taken by the ECS Academy, coordinated by it, or supported technically by it. A more general definition, based on the FitSM standard is "a way to provide value to a user through bringing about results that they want to achieve". Notice that some of the services are aimed at supporting the internal operation of the ECS Academy (supporting the network of educators and trainers) and some are aimed at external users (for example, learners who use the material).

In the Table 5.2 below, when specific services are described, the following specific aspects categorise them:
1. **The role of the ECS Academy** - coordination/creation/delivery/maintenance.
2. **Who** - core staff/network/specific person (this means who is carrying out the activity, for example, the ECS Academy staff who are the people who do the day-to-day maintenance, members of the network, or a specific person such as freelancer).
3. **Mode of delivery** - online/offline/hybrid.
4. **Collaboration** - alone/collaboratively (is the activity done by the ECS Academy autonomously or in collaboration with other institutions).

*Table 5.2: Characterising services of the ECS Academy*

| Service | Type of Activity |
|---|---|
| 1 Identify collaboratively topics that are suitable for new training and encourage the development of new training modules, courses, and resources. | Coordination, Core staff & network, Online & offline, Alone |
| 2 Provide opportunities to create new training activities. | Coordination/creation/delivery, Core staff & network, Online & offline, Collaboration |
| 3 Provide a forum for discussion and collaboration around the development and provision of training resources and activities (e.g., proposing and coordinating a new course). | Coordination, Core staff, Online, Alone |
| 4 Provide and maintain access to learning platform Moodle, including payment infrastructure that is linked to ECSA's systems; structured formative and summative evaluation of learners progress; support for certification automation. | Coordination, Core staff & network, Online, Alone |
| 5 Provide tools for self-assessment that will allow learners to assess their skills and knowledge of citizen science. | Delivery, Core staff & network, Online, |

| | Alone |
|---|---|
| 6 Regularly evaluate the resources and courses by both trainees and trainers, in order to improve its practice and request for updates. | Coordination, Core staff & network, Online, Alone |
| 7 Act as a repository and a hub for training material, training modules, course syllabuses, and similar material that is provided by the network members and that was collected by other partners in the ECSA network. | Coordination, Core staff & network, Online, Alone |
| 8 Offer open educational resources in a format that is suitable for translation and adaptation to different languages. The ECS Academy will provide a repository of training material, best practice examples, educational worksheet examples and templates in editable format. The repository will also include examples of stories and vignettes that can be used in different training settings. | Coordination/delivery, Core staff & network, Online, Alone |
| 9 Links and information about legal advice (e.g., copyright, licensing). | Coordination/delivery, Core staff & network, Online, Alone |
| 10 Offer support for the development of courses in an agreed format and support the development and hosting of new modules. In cases where this is done with a research project, appropriate funding will be required to support the development. Guidelines and support sessions will be provided occasionally to support network members. | Coordination/creation, Core staff, Online, Alone/collaboration |
| 11 Provide review and feedback on new courses (e.g., using the eu-citizen.science template for module development). | Coordination, Network, Online, Collaboration |
| 12 Have a mechanism to receive feedback from participants - interest from trainers to understand whether participants have implemented what they have learnt or not. | Delivery, Core staff & network, Online, Collaboration |
| 13 Support peer evaluation and feedback of training resources and courses. | Coordination, Network, Online, Collaboration |
| 14 Provide accreditation to workshops and training using an agreed quality criteria. This will usually be paid service, unless the course is covered by project funding or there is another mechanism to cover the cost of evaluation and accreditation. | Delivery, Core staff, Online , Alone |
| 15 Provide accreditation, a formal acknowledgement of experience/skills, and accredited capacity development programmes for trainers and educators. | Delivery, Core staff, |

| | |
|---|---|
| | Online/offline, Collaboration |
| 16 Provide recognition (or accreditation) to participants. This will usually be paid service, unless the course is covered from project funding or there is another mechanism to cover the cost of evaluation and accreditation. | Delivery, Core staff, Online/offline, Collaboration |
| 17 Support pathways of development and help CS educators and trainers with their work with students. For example, enabling CS educators and trainers to recommend a list of training, perhaps more advanced with personal experience, in addition to a directory of people to contact to speak about relevant topics; or a collection of links to theses and dissertations on CS so it can help CS educators and trainers supervise graduate students. | Coordination, Core staff & network, Online, Collaboration |
| 18 Support the tracking of participation and development of skills and competencies. | Coordination, Core staff, Online, Alone |
| 19 Sharing opportunities for training and provision of training. | Coordination, Core staff & network, Online, Collaboration |
| 20 Provide reliable guidance (e.g., moment to moment/practical level) by being able to immediately contact someone with questions when something goes a bit off (e.g., I split half of it, I added too many drops). | Coordination, Network, Online, Collaboration |
| 21 Alongside training, a virtual space for interested people to ask legal questions on the blueprint of the Emmett Environmental Law & Policy Clinic at Harvard law school - this space could be co-created. In this same endeavour, someone is highlighting the need for more lawyers and legal scholars engaged. | Coordination, Network, Online, Alone |
| 22 Support the development and sharing of ethics advice regarding training provision in citizen science (including the teaching of the ethics of citizen science). | Coordination, Network, Online, Alone |
| 23 Share funding opportunities for developing training materials in citizen science. | Coordination, Network, Online, Alone |
| 24 Support proposal development by ECSA HQ and ECSA members and network members when it is relevant. | Coordination, Core staff & Network, Online, Alone |
| 25 The network will run a bi-monthly newsletter and also a bi-monthly online meetup. | Coordination, Core staff, |

| | |
|---|---|
| | Online, Alone |
| 26 The network will run a moderated, closed listserv. | Coordination, Core staff, Online, Alone |
| 27 Run workshops at each ECSA conference. | Delivery, Core staff & network, Offline and online, Collaboration |
| 28 Policy advocacy: Support the recognition of trainers in citizen science and for the profession of citizen science coordinator within the education and higher education system and within other actors. Such recognition will be based on the competencies and skills that such a person acquires. | Coordination, Core staff & network, Online and offline, Collaboration |
| 29 Promotion and recruitment services towards the target audiences, such as identification of a relevant audience for a training activity, outreach to them, informing them about training, etc. Support the inclusion of actors from civil society and intermediaries that can reach out to them. Promote training activities of members. Supporting freelance and SME provision of training opportunities. | Coordination, Core staff & network, Online and offline, Collaboration |
| 30 Offer courses that are suitable for self-learning and online. | Delivery, Core staff & network, online, Collaboration |
| 31 Offer courses that are instructor-led online, offline and hybrid (most should be paid). | Delivery, Core staff & network, Online, Collaboration |
| 32 ECS Academy will provide operational support for training activities including marketing, payment, and providing certificates. | Delivery, Core staff & network, Online, Collaboration |
| 33 Where appropriate, develop data services to assess and develop competencies within target groups. | Delivery, Core staff & network, Online, Collaboration |

## 5.8 Governance

By necessity, the ECS Academy will start operating within the governance structure of the ECS project. This will mean that decisions will be made by the ECS Academy work package leaders (Université Paris Cité/Learning

Planet Institute) with the agreement of the project coordinator (ECSA) and the partners of the project. The code for operation will be the ECS consortium agreement, and the ECS grant agreement. This form will be in place until the end of the project (July 2026).

However, during this period, the ongoing governance structure of the ECS Academy will be developed and set. The proposed structure follows the guidance from the ECSA working group (https://www.ecsa.ngo/wp-content/uploads/2023/05/ECSA-Guidelines-for-working-groups.pdf) and mixed with the guidance of ECSA staff.

In the long run, the ECS Academy could be operated by an ECSA training officer.
Depending on the structure of the business model and the amount of money available, this person should be supported by other members of staff. Possible roles are content creator/training coordinator and event coordinator/promoter. All operational decisions will be set between the ECS Academy staff and ECSA management, since all the cost implications are for ECSA. In addition, the ECS Academy network will operate either as a working group on citizen science training and education or a similar structure according to ECSA rules. The ECS Academy working group will have at least 4 meetings a year, including an annual meeting to select a chair and vice-chair. The ECS Academy working group will contribute to the ECS Academy in identifying training and teaching needs, updates from the network, promotion of training opportunities, and maintaining the content of training material on the eu-citizen.science platform.
The ECS Academy will develop a budget that will be presented and approved by ECSA management and with their approval by the board.
The ECS Academy will have an operational manual and a code of ethics and conduct. All of these will be developed with the working group and approved by ECSA management and board.

## 5.9 Value proposition

The analysis for the ECS project was based on both desk analysis, partner interviews and subsequent SWOT analysis and arrived to six possible value propositions, two of them were elaborated further/in depth and the ECS Academy resulted as a key value proposition (VP). As part of the ECS project, a value proposition analysis was carried out, with the goal to build a sustainable business model. The ECS Academy is one of two promising value propositions that may be relevant to the long-term sustainability of the ECS-platform. In the further development of the eu-citizen.science, the goals from this roadmap will be linked with the necessities of the business model. Initial ideas were collected during a workshop using the "Value Proposition Canvas" method (see photos below).

*Figure 5.1: Analysis of value proposition for the ECS Academy (source from project partner Nordlicht Management Consultants)*

*Figure 5.2: Value proposition canvas during the ECS consortium meeting (July, 2023)*

## 5.10 Risks and Mitigation measures

The ECS Academy will maintain a risk register that will be developed as part of its detailed operational plan and will be maintained by its director.

The ECS Academy will take a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis which will be linked to the sustainability plan of ECS.

A preliminary SWOT analysis identified the following:

**Strengths** - ECSA affiliation and exclusive access and control of the eu-citizen.science platform, ability to activate the ECSA network. Funding for the first three years of operation. Existing infrastructure to provide training. Experience from the EU-Citizen.Science project.

**Weaknesses** - No track record or experience in monetising training within ECSA's activities, limitations on operation within the EU grant agreement; increased number of established actors who are delivering training; integration of citizen science within Higher Education is already well established.

**Opportunities** - Increasing demand and recognition of citizen science. No other training body dedicated to citizen science exists. Interest from universities, research funders, and public institutions in integrating citizen science. Interest from researchers.



**Threats** - established and agnostic science training providers entering the market (e.g., Pearson education). Disputes inside the community of trainers about benefits from the ECS Academy. Disputes inside the ECSA community.

## 5.11 Development Plan

The ECS Academy will start operating in January 2024. During the first part of 2024, the effort will be on experimentation with training delivery, development of guidelines and standards, and identifying opportunities for training through the network and ECS project partners. The task dedicated to the sustainability of the platform/project will provide further information and guidance on business development.

From the second part of 2024, experimentation in free and paid courses will commence. This will continue through 2025, with an established sustainability plan in the second part of 2025 and 2026.

# 6 Conclusion and next steps

In this report, we have covered the rationale and process of developing the ECS Academy, we have looked at the survey, the framework for dialogue and the roadmap for the ECS Academy. Via our activities, we have created a network of citizen science educators and trainers of 110 individuals, reaching our project milestone of creating a network of citizen science educators and trainers of 50 individuals by the 31 of July 2023.

In addition, we have elaborated a document that sets the basic principles and mode or operation of the ECS Academy, developed a framework for dialogue to guide the interactions within the network and between the ECS Academy coordination/activities and network contributions. Both documents are still works in progress, and the creation of the network is yet to be established.

Our next step will focus on concretising the network by finalising its infrastructure (i.e., mailing list, and Moodle space), creating joint activities and developing on the operational principles and services highlighted in the Roadmap. A first service will be developed and focused on to ensure the good quality of the first ECS Academy service. This will set the quality for the following services that will be developed. In addition, the development of the services, the iterations of the modus operandi of the Academy will be further expanded based on the business plan we elaborate alongside WP6 of the ECS project. This is to ensure the path for long-term sustainability of the ECS Academy, beyond the ECS project and as an integral part of ECSA.

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Citizen Science Association, C*Sci 2023 https://citizenscience.org/home/events/conferences/csci-2023/

Citizen Science: Theory and practice special issue on citizen science in Higher education https://theoryandpractice.citizenscienceassociation.org/collections/citizen-science-in-higher-education

ERC: Citizen Science and Frontiers Research, Annual event 2022 https://erc.europa.eu/news-events/events/citizen-science-and-frontier-research-erc-annual-event-2022

European Commission: Mutual Learning Exercise citizen science initiatives https://ec.europa.eu/research-and-innovation/en/statistics/policy-support-facility/psf-challenge/mutual-learning-exercise-citizen-science-initiatives-policy-and-practice

European Commission: Providing researchers with the skills and competencies they need to practise Open Science https://op.europa.eu/en/publication-detail/-/publication/3b4e1847-c9ca-11e7-8e69-01aa75ed71a1

INCENTIVE project website https://incentive-project.eu/

JRC: Civic monitoring for environmental enforcement. Exploring the potential and use of evidence gathered by lay people https://publications.jrc.ec.europa.eu/repository/handle/JRC132206

LIBER: Identifying Open Science skills for library & researchers
https://libereurope.eu/article/open-science-skills-diagram/

Link to event at L'école de la médiation « Quelle place pour la médiation dans les formats de production collective des connaissances ? »
https://www.estim-mediation.fr/journee-mediation-scientifiques-recherches-participatives/

Sign up page to Stickydot facilitation skills training
https://stickydot.eu/news/sign-up-now-for-the-new-stickydot-facilitation-skills-training/

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UNESCO Recommendations on open science https://www.unesco.org/en/open-science?hub=686

# Annex 1: Survey to "Identifying needs for citizen science trainings"

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| Section 1 of 6 |
| Identifying needs for citizen science training |
| Dear respondent, here is a small description of the use of our survey; The eu-citizen.science is a website that includes resources and information about citizen science, and is aimed at increasing the adoption and support for citizen science in Europe and beyond. Part of the purpose of the eu-citizen.science platform is to support training in citizen science. We, at the Learning Planet Institute with other partners of the European Citizen Science project (ECS) are setting up the European Citizen Science Academy, within eu-citizen.science platform, as a hub for training in citizen science. We are currently starting to work on the plan for the academy and, as with many things in citizen science, we want your input to start the co-production process. The survey that you see here will help us in identifying people with an interest, experience, and knowledge of training and teaching in citizen science, teaching and training needs and needs of trainers and educators.<br><br>**Information about data handling:** The data received in this survey will be handled and used in accordance to GDPR regulations. The personal data which is transmitted to us and stored is the information you provide filling in the entry marks. Your data will not be shared with third parties. The data is deleted as soon as it is no longer required to achieve the purpose for which it was collected. In this case it is to identify and respond to citizen science training and teaching needs, and needs of citizen science educators and trainers.<br><br>Thank you for taking the time to answer our questions;<br><br>And we would like to acknowledge that The European Citizen Science (ECS) project has received funding from the European Union's Horizon Europe Framework Programme for Research and Innovation under grant agreement No. 101058509<br><br>Learning Planet Institute (LPI) team - Muki Haklay, Cléa Montanari |

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| Section 2 of 6 |
| Personal details |
| *Description of section:* Our survey asks for personal details to help us identify who is interested, has experience and or knowledge of citizen science training and teaching. *Note:* None of these questions are obligatory if you would prefer to remain anonymous. Note that this data will only be used, as mentioned above, for the purpose of the survey. At the end of this survey you can choose whether you would like to be kept informed about the development of this project. |
| Qu 2.1 What is your first and last name? |
| Qu 2.2 What is your e-mail address? |
| Qu 2.3 What is your occupation? |

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| Section 3 of 6 |
| Experience in citizen science teaching and training |
| *Description of section:* We would like to ask you about your experience in citizen science teaching and training to understand your level of knowledge and experience. |

| Qu 3.1 What is your experience in training and teaching citizen science? |
| :--- |
| Qu 3.2 If you have or are giving training and teaching in citizen science please answer yes below to the characterize them. Thank you<br>Answer: Yes or No |

| Section 4 of 6 (this section showed up if a respondent selected yes to question 3.2) |
| :--- |
| Training and teaching characteristics |
| *Description of section:*<br>We would like to identity gaps in citizen science training and teaching. Below we ask you to give characteristics of the training and teaching you have given on citizen science to better account for what already exists. Thank you for your contribution. |
| Qu 4.1 Is the teaching(s) and training(s) affiliated to an organization(s)? |
| Qu 4.2 What type of training(s) and teaching(s) is it (e.g. online, offline, a week long, two hours, undergraduate/master course etc.)? |
| Qu 4.3 What is the field or subject of the training(s) and teaching(s)? |
| Qu 4.4 For who (i.e. audience) is the training(s) and teaching(s) for? |
| Qu 4.5 A box to provide any other information about the training(s) and teaching(s); thank you. |

| Section 5 of 6 |
| :--- |
| Identification of pertinent services, style/format, and how you can participate |
| *Description of section:*<br><br>In this section, we ask you what type of service(s) you believe would facilitate citizen science training and teaching and in which format / style this service(s) would be most useful in. In addition, we ask how you would be willing to contribute.<br><br>*Note:* * Multiple answers are possible in this section |
| Qu 5.1 What kind of service(s) would facilitate your (present/future) training(s) and teaching(s) in citizen science? *<br><br><ul><li>Training material directory and repository</li><li>Research/announcements on training gap needs</li><li>Announcement service on different CS education/training opportunies</li><li>Open access training material and in editable format that can be translated into different languages.</li><li>A support service to run training sessions, such as registration, payment etc.</li><li>Modular educational resources that can be reused in different context (e.g., a 5 minute activity, a 10 minutes activity)</li><li>Access to a network of CS educators and trainers</li><li>Other</li></ul> |
| Qu 5.2 How would you be willing to contribute to this service(s)? *<br><br><ul><li>Be part of organizing, facilitating a network of CS educators and trainers</li><li>Grant access to your own training material (e.g. uploading it on eu-citizen.science portal)</li><li>Develop training materials based on training needs</li></ul> |

- Co-facilitate trainers workshops
- Respond to questions; share your experiences/expertise with your fellow peers
- I would prefer not to contribute- that is okay! Thank you nonetheless,
- Other

**Qu 5.3** This space is for any elaboration of ideas of what services would be most useful for you to undertake teaching and training in citizen science or how you would like to contribute and remarks.

**Qu 5.4** In which format/style would you prefer to receive service(s)? *
*Note:* After selecting from the below options, a text box is available to elaborate on frequency, mailing lists, other format and/or combinations of formats.

- Newsletter – (please highlight preferred frequency below - e.g. weekly/monthly/bi-monthly/quarter)
- Online meet-up/call- (please highlight preferred frequency below- e.g. every month or two-months)
- Closed Listserv (i.e. mailing list) that is moderated for low traffic
- Open Listserv (i.e. mailing list) that is open for all so people can ask questions whenever they want
- Whatsapp group
- Slack area
- Using existing ECSA working group mailing lists (A preferred group? please elaborate which group below)
- Stories about individuals experiences and other training insights, shared on a blog and promoted on social media
- A combination (please let us know below)
- Other

**Qu 5.5** Thank you for giving us more explanations on the frequency, mailing lists, other formats and/or combination of formats! We understand that formats may be dependent on type of services. Thank you for letting us know;

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Section 6 of 6

Thank you!

*Description of section:*
Below we ask how you would like to engage with us. Thank you,

**Qu 6.1** Would you like to be recontacted to stay engaged in the creation of the European Citizen Science Academy?
Answer: Yes or No

**Qu 6.2** Would you like to be kept informed about future developments of the European Citizen Science Academy?
Answer: Yes or No

**Qu 6.3** If you have any more thoughts or opinions about what you would need as an individual citizen science trainer and educator to thrive, please include your ideas here.

**Qu 6.4** Do you have a broader idea of what European citizen science trainers and educators need to thrive?

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End of survey

End of survey text:
Thank you very much for taking the time to fill out this survey and give us a better understanding of how the Citizen Science Academy could respond to the needs of citizen science training and teaching.

If you would like to get in touch; have any questions/concerns please contact Cléa Montanari ([clea.montanari@learningplanetinstitute.org](clea.montanari@learningplanetinstitute.org))