crops

D3.2 – Communication strategies for upscaling

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Glossary and abbreviations	
CS	Citizen Science
C&D	Communication and Dissemination
WP	Work Package

Table of contents

Executive Summary

This document is divided into **three parts**.

The **first** one counts three chapters: introduction, state-of-the-art, and case study analysis.

Introduction provides a **general overview** of the importance of science communication for Citizen Science (CS) projects, and of the current trends in the field.

State-of-the-art digs deeper in the current trends of science communication in CS projects, highlighting good practices and shortcomings.

Case study analysis considers a series of **CS projects and platforms** and their experience, training materials, and resources for science communication. It includes the **CROPS CS Champions**, who were interviewed for our podcast series, and some hints from the **Work Package (WP) 2** deliverable 2.2.

The **second** part of this document is about a **survey** for CS **project managers and leaders** that we launched in March 2025 to collect first-hand data on their projects.

The **survey** chapter contains a short summary of the answers of the interviewees, and a discussion of the more important findings.

The **third** section of the document contains the **results and synthesis of findings from the previous sections**, and the guidelines for CS project managers and leaders to empower the communication and dissemination (C&D) impact of their projects.

Results and conclusions is a short chapter summarising the main findings from literature review, case studies, WP2 projects, and our survey.

Communication strategies contain a set of **general recommendations** on how to design a successful C&D strategy, and a series of **specific guidelines** for CS projects belonging to the 5 EU Missions.

1   Introduction

A well-designed Communication and Dissemination Strategy (hereby referred to as C&D strategy) is one of the key factors for a citizen science (CS) project to be successful in reaching its objectives. For the purpose of this document, communication focuses on engaging and retaining active participants, while dissemination targets external stakeholders (e.g., policymakers, researchers) to share and maximize the scientific and societal impact of results.

Communication and dissemination are two sides of the same coin, the main difference is that communication is a **two-way process** where information is exchanged and feedback is possible, while dissemination is a **one-way process** focused on broadcasting information to a wide audience without expecting interaction or response (EU Funds, 2021).

Communication is a key tool to keep participants **motivated**, obtain a **high rate of retention** and improve the **quality** of collected data (Boone *et al.* 2024, Roche *et al.*, 2020).

A well-structured and targeted C&D strategy can help the projects to achieve **social and scientific impact**, engage **policymakers** and local, national and international authorities, and **provide funding** to keep the project going (Adepoju *et al.* 2025).

In the CS project's environment, though, tailored C&D strategies are not always designed and applied, affecting the societal and scientific impact of the projects, the number of engaged citizen scientists, the impact on policymakers and governments, and the possibility of getting funded. In some cases, when these strategies are present, they are often not implemented since the early stages of the project, or they lack solid assessment protocols.

In this document, we will assess the state-of-the-art of science communication in CS projects, explore a series of practical examples, and provide guidance for CS project managers and leaders on how to design and implement a successful C&D strategy. The success of C&D strategies can be measured in terms of Key Exploitable Results (KPIs) and objectives reached. For example, if one of the objectives is to involve schools and teachers to be active participants in your CS project, the KPI could be to reach at least 10 schools, or to have at least 100 observations made by students, and so on. For this reason, it is important to have clear objectives when you design your C&D strategy, and to have measurable outcomes.

2 State-of-the-art of science communication in CS projects

2.1 Introduction

In this chapter we provide a short literature review highlighting the **state-of-the-art** in science communication for CS.

Practical examples will be provided in the case studies analysis (Chapter 5).

Following the general evolution of science communication, CS projects have **changed** their communication approach from traditional, top-down dissemination to more **participatory**, multi-channel, and stakeholder-driven approaches (Magalhães *et al.* 2022, Rüfenacht *et al.* 2021). Also, digital communication (e.g. social media, app, platforms., etc) has become increasingly central in CS project's communication (Magalhães *et al.* 2022).

Four pillars can be identified in science communication: **multi-channel** and **digital** strategies, **participatory** approach and co-design, **accessibility** and **engagement**, and integration in **early stages** of project's design.

2.2 Multi-channel and digital communication

A multi-channel communication approach with a strong digital component (e.g. website, social media, visual and brand identity, newspapers, radio etc) is the **standard** for EU projects (Rüfenacht *et al.* 2021).

However, this approach needs to be supported by **human and financial resources**, being a challenge for CS projects, particularly for small-scale and community- driven ones (Magalhães *et al.* 2022).

2.3 Participatory approach and co-design

In the last years, there was a shift toward C&D strategies fostering **collaborations** among the project' stakeholders and **co-creation processes**, often using workshops, community of practices and participatory labs (Rüfenacht *et al.* 2021, Magalhães *et al.* 2022).

C&D strategies **promoting dialogue** and implementing a feedback mechanism increase participants' trust in the project, motivation, and sustain engagement. This ensures effective and accessible feedback, and it can **improve the quality of data collection** and the perceived **acquired knowledge**.

However, it is not always easy to guarantee that the feedback is **accessible** and understandable for **diverse audiences**. It requires a careful design that

can be demanding in terms of time and money, especially when the target audience is made of non-experts and traditional channels like scientific papers and conferences cannot be used (Roche *et al.* 2020, Peter *et al.* 2021).

2.4   Accessibility and engagement

Since CS projects cannot run without the contribution of citizen scientists, who are almost always volunteers, **science communication** has a key role in **engaging** potential participants and **retaining** them for the duration of the project (Golumbic and Oesterheld, 2023).

To do so, **project description** plays a crucial role, being the **first contact point** between the potential citizen scientists and the project. In their study, Golumbic and Oesterheld (2023) analysed 120 project's descriptions (in English) finding out a great variety in length, content, and style. However, according to the study, most of the project's descriptions are written using an **academic style** that is not easily accessible to the public. This is probably because many CS projects are led by scientists who have never been trained in science communication.

2.5   Integration of C&D strategies in the early stages of project's design

Considering solid C&D strategies during the **early stages** of project's design allows an optimal allocation of resources. Also, it makes it possible to adapt the C&D strategies to different phases of the project (Rüfenacht *et al.* 2021, Thiel *et al.* 2023).

2.6   Storytelling in Citizen Science communication

Storytelling is a **well-established tool** in the fields of science education (Bruner, 1996; Zabel and Gropengießer, 2015), and science communication (Dahlstrom, 2014). In fact, even if at first glance science may seem to be relying only on rational and non-narrative thinking, the truth is that **stories are the privileged way** in which we understand and elaborate the world around us. Therefore, they are **deeply embedded in the scientific culture** and used as multipliers of scientific content (Ritcher *et al.*, 2009).

According to Burns, O'Connor and Stocklmayer (2003), stories can trigger processes such as raising **awareness**, enabling **enjoyment**, fostering **interest**, developing **opinions** and promoting **understanding**. Therefore, storytelling should be a key tool in science communication for CS projects.

Ritcher *et al.* (2009) analysed a series of CS projects, in German, to identify if and how storytelling was used in their communication activities. They noticed that within the analysed projects the word "storytelling" or its German equivalent has never been used. Instead, the chosen word to describe a narrative approach to science communication was **"story"**.

Despite the terminology, all projects analysed by Ritcher *et al.* **integrated a storytelling approach in their communication strategies**, and three main categories can be identified: 1) stories acting as **objectives**, b) stories being applied as **tools** and c) stories acting as **agents**.

Stories can support the **generation of new knowledge**, and exchange of insights, and they can convey messages and attract a broad audience. In some cases, storytelling is also used as a tool to **evaluate** CS research (Constant and Roberts 2017).

3 Case study analysis

3.1 Introduction

In this chapter we discuss the **communication objectives, targets, outcomes, and recommendations** from diverse case studies of impactful CS platforms and projects. These cases were identified in the early stages of the CROPS proposal design, and each of them address a specific issue of C&D in CS projects such as effective communication to diverse audiences, co-creation processes, and international networks.

Each of the case studies summarised its findings in guidelines, best practices, training and other materials to share them with other project managers and leaders.

3.1.1 ACTION

[ACTION (Participatory science toolkit against pollution)](#) was a **three-year programme** dedicated to **transforming the way CS is conducted today**: from a mostly scientist-led process to a more participatory, inclusive, citizen-led one, which acknowledges the diversity of the CS landscape and of the challenges CS teams must meet as their projects evolve.

The project focused on **exploring CS participants' motivation and expectations**, on the crowdsourcing process, gamification, incentives and on the creation of guidelines.

The project has the following **communication objectives**:

1) make CS topics **relatable**
2) promote CS as a **co-creation** practice
3) enhance the **legitimacy and acceptability** of CS generated data
4) develop *ad hoc* **research funding schemes** promoting and supporting CS
5) create **CS desks** in public research bodies and environmental agencies
6) **integrating CS with policy** to engage policymakers
7) **involving people** via different 'hats' (e.g. not only the professional one) and increase the diversity of actors involved

ACTION identified 7 **communication target groups**: CS project managers and teams, citizen scientists, researchers, policy makers, funding bodies, business, and the public.

The main outcome of this project in terms of C&D practices is an **impact assessment methodology** designed for CS projects.

The ACTION methodology considers **5 areas of impact**: scientific, social, economic, political, and environmental, and a total of **22 dimensions.**
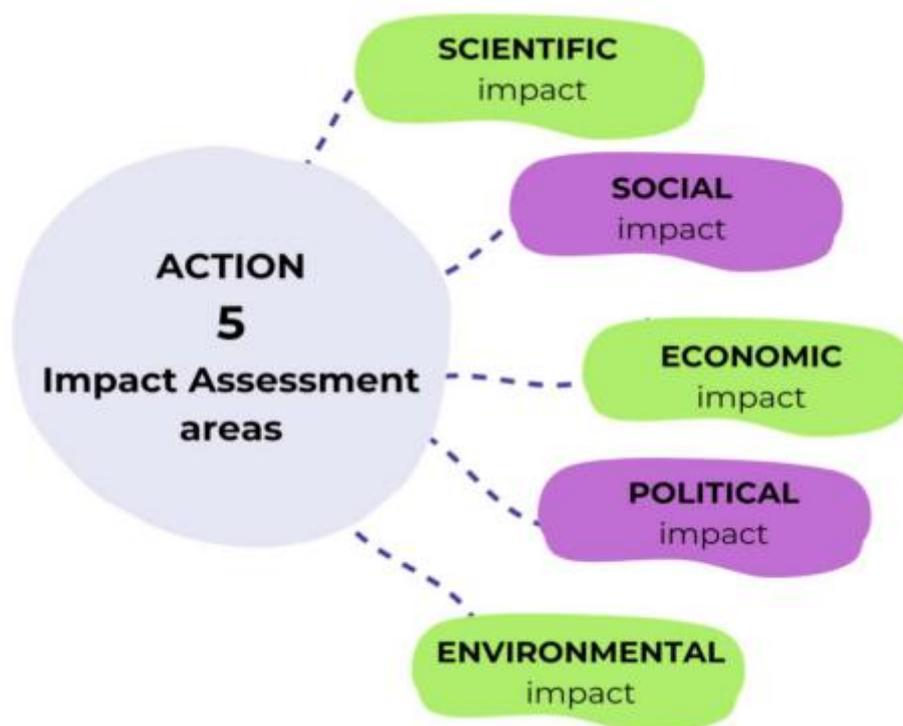
Figure 1 ACTION 5 impact assessment areas

ACTION designed this methodology based on the experience of its pilot projects, and it also accounts for their transformative potential, and for their contribution to the **United Nations Sustainable Development Goals (SDGs).**

ACTION's methodology follows the **Impact Value Chain approach** (see Mitchell 2012), considering the impact as the result of the **input variable**, of the **project's activities**, and of its **tangible results**.

According to ACTION's guidelines, **stakeholder identificatio**n is a key element for a successful project, followed by the analysis of how each will be influenced by the project's actions.

Since every project is different, ACTION recognises that not all their proposed dimensions are equally important for a specific project. To identify the most important dimension, it is possible to use ACTION's **Impact**

Assessment Canvas that offers visual support for the stakeholder mapping process.

Once the targets are identified, ACTION has three recommendations:

1. a target should be addressed providing **useful data;**
2. a target should be addressed with **dedicated actions at local level;**
3. a target should be addressed by **demonstrating innovations** with potential impact at regional, national, or international levels.

The main limit of ACTION's methodology is that it has been developed based mainly on CS projects about pollution, and it has mostly been applied to the same kind of projects.

For this reason, the same methodology was updated and widened by another project, IMPETUS4CS (see subchapter 5.1.2).

ACTION communication guidelines address **policymakers, policy workers, citizen science actors, and scientists**, with the aim to make CS more mainstream among these groups. In its document *"Recommendations to mainstream citizen science in policy"* the ACTION project provides a series of general guidelines and a section with more specific recommendations for Italy, Netherlands, Norway, Spain and UK (Notermans *et al.*, 2022).

The ACTION project identified **5 benefits** and **7 challenges** in mainstreaming CS (see table below).

Table 1 Benefits and challenges of CS mainstreaming

BENEFITS	CHALLENGES
Timely and cost-effective data collection	People are not aware of CS benefits.
More voices are heard, and societally relevant questions can be asked. The relevance and acceptance of policy measures can be increased.	Often, there is a mismatch between CS data and policy questions.
More data allows better decision-making.	There are concerns about the quality of data.
Democracy and partnerships are strengthened.	CS is not always accepted as a scientific method.
Citizens are empowered.	There may be conflicting interests between citizen scientists, researchers, and policymakers.
	There is a lack of inclusive and transparent CS process and prerequisites limit the diversity of citizen scientists.
	There are divergent cultures and legislations.

The general recommendations of the ACTION project are to develop a **specific funding system** for CS, to set up **regional and national CS networks**, to promote and disseminate **stories and examples** showing how CS is relevant for policy, to establish an open data platform, to make room for **co-creation activities** in which as many different groups of people as possible take part, and to develop a **local platform** for exchange between CS projects and policymakers (Notermans *et al.*, 2022).

The methods and recommendations of the ACTION project have been improved by the IMPETUS4CS project (see the next sub-chapter).

3.1.2 IMPETUS4CS

The project IMPETUS4CS supports and gives recognition to CS by enabling a wider range of CS initiatives **access innovative funding**.

The aim is to **bring CS closer to society and policymakers** and to acknowledge its role in tackling the greatest challenges of our times.

IMPETUS4CS has a strong focus on CS contributions to the **Green Deal** and the **UN SDGs**.

The project has **5 communication objectives**:

1) enhance the **visibility** of IMPETUS goals, activities and outcomes, throughout its implementation
2) bring attention to the **three Open Calls**
3) raise **awareness** about the **European Union Prize for Citizen Science**
4) strengthen the **understanding of CS** by wider society
5) communicate the **benefits** of citizen science

IMPETUS identified **9 target audiences** in its C&D strategy: citizens and communities, researchers/innovators, policy makers, civic servants, funding agencies, CS associations, platforms and umbrella organisations, EU projects, science and data journalists, and businesses in relevant sectors.

Evaluation represents a crucial part of a project' strategy. It needs to be designed carefully **at the beginning of the project**, according to its objectives, and must have clear and measurable Key Performance Indicators (KPIs). This is clearly stated in the IMPETUS impact assessment methodology (D 5.1), where it is said that this methodology has been explained during the **Accelerator bootcamp** for a project's **early-stages** (ideally, before their kick-off), inviting them to think about their objectives and how to measure them.

In fact, IMPETUS observes that impact assessment is a skill that often is lacking in many CS project teams.

The IMPETUS public assessment methodology represents an **updated version** of the one designed by the ACTION project.

It has **3 focus points**:

1. the assessment of the **Accelerator project** impact
2. the assessment of the **European Citizen Science Prize's** impact on the awarded projects
3. the assessment of the whole **IMPETUS4CS project**
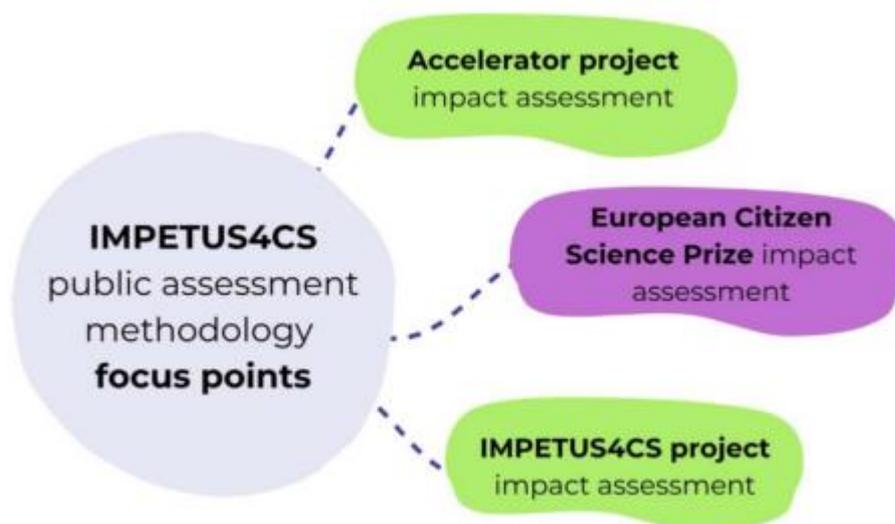
Figure 2 IMPETUS4CS public assessment methodology focus points

Therefore, it is of particular interest for those projects and platforms that function as **accelerators** for other CS projects.

The IMPETUS4CS methodology considers **5 areas** of impact: scientific, social, economic, political, and environmental, and a total of **25 dimensions**. Each dimension is represented by one or more variables and data are gathered mainly through questionnaires.

The monitoring methodology also quantifies the **contribution to the UN SDGs**, considering different parameters such as the citizen's behavioural change and the development of new methods for SDGs monitoring.

The last parameter integrated in the IMPETUS4CS methodology is the alignment with **Responsible Research and Innovation (RRI)** practices on research, ethics, inclusiveness and openness.
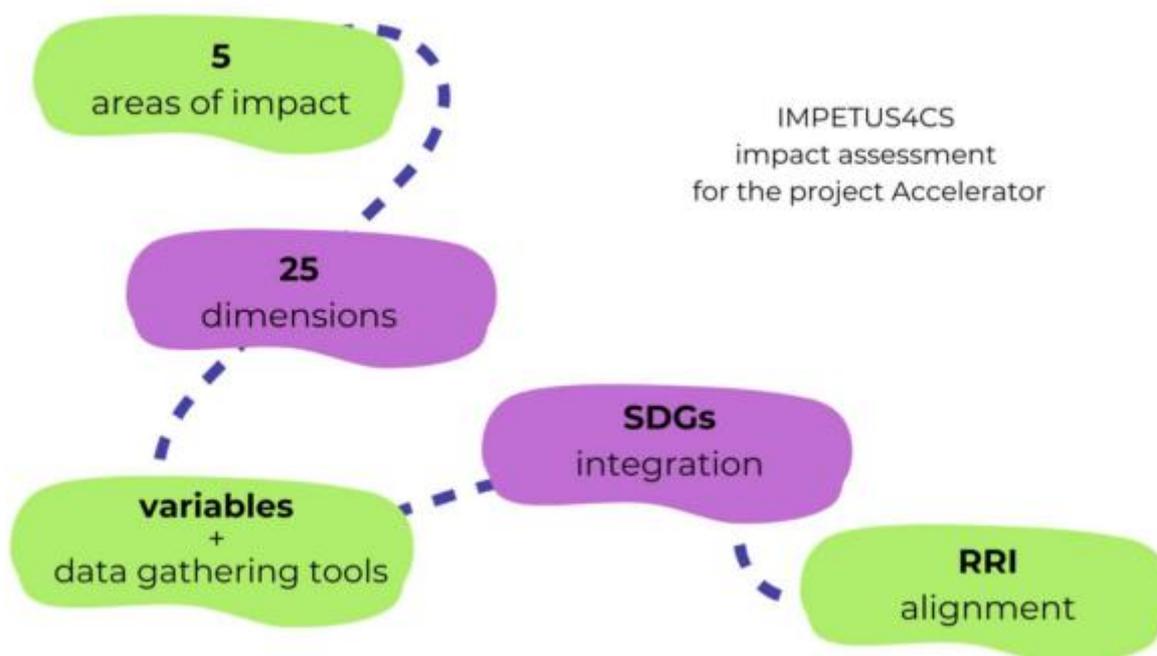
Figure 2 IMPETUS4CS impact assessment strategy areas of impact

The proposed methodology is a **quali-quantitative modular approach** designed to be solid and flexible, guaranteeing reliable cross-project results. It also offers a high degree of personalisation; therefore, each project can easily adapt this methodology to their needs.

So far, the methodology has been applied to **34 projects** from the first round of the IMPETUS accelerator and **will be repeated for another two rounds.**

3.1.3 NEWSERA

NEWSERA is a completed project with the aim to **integrate CS in science communication**, as a tool for open science and innovation for society and promote science literacy.

NEWSERA worked with CS projects from the **quadruple-helix of stakeholders** (government, academia, industry and civil society), as well as science communication experts to understand how CS can become the new paradigm of science communication.

The project's main goals were the analysis of **complex and multidirectional** science communication strategies, the **counteracting of misinformation** and promotion of **data culture**, and the **maximisation of project impact** guaranteeing an effective dissemination, communication and exploitation process.

The **6 communication objectives** of NEWSERA were:

1. Present the NEWSERA **project's aim and scope** to stakeholders, public and other EU projects on similar topics;
2. raise **awareness** on the **potential of CS projects** to **increase trust** in science and technology.
3. present **co-creation methodologies** as an opportunity to consider all stakeholders needs and expectations;
4. make use of **visual narratives** to guarantee effective communication;
5. find ways to connect data collection and analysis that is of **interest for local communities and data journalism**;
6. **map** existing CS projects and make them visible for the wider audience, as well as the quadruple helix stakeholders, science and data journalists.

The project identified **5 target audiences** within their C&D strategy: citizens, academic scientists, policy makers, industries and SMEs, and journalists.

NEWSERA answers the CS project's need to communicate to diverse target audiences with a series of 5 handbooks called "*Blueprint for #CitSciComm*", each of them dedicated to a specific target audience.

In NEWSERA D3.7, Leguina *et al.* (2020) examine the **role of CS as a communication tool itself**. They highlight the potential of CS as a communication tool to **reduce misinformation**.

Misinformation is the communication of false and/or inaccurate information, and it can be done intentionally or not. Nowadays, this kind of information is called "fake news" (Vosoughi et al. 2018), however this term, according to Leguina et al. (2020) doesn't help in understanding the complexity of the phenomenon. In fact, under the term "fake news" we can find wrong information, partial information, and unclear information that can be misunderstood.

According to Laguina *et al.* (2020), CS science can contribute to **increase science literacy** through citizens' participation, and this will help contain the spreading of misinformation..

3.1.4 MICS

[MICS (Measuring Impacts of Citizen Science)](#) is a platform that provides an **easy-to-use tool to assess CS project impact**.

The platform uses a set of **200 questions** with pre-defined answers which users can pick from and provides links to helpful resources as well as recommendations to help increase the impact of the projects.

MICS has the following communication objectives:

1. Provide a **standardised platform**, with metrics and indicators, for measuring impact from conception to realisation and beyond, seeing how it changes over time;
2. produce an **impact summary** to share with communities, stakeholders, funders and policy makers;
3. look at different projects in the same discipline and **compare** their impact.

The platform identified **5 target audiences** for their communication: civic educators and scientists as project managers or project leaders, public authorities and decision-makers (including policymakers), researchers and scientists, citizens' networks such as ECSA, ACSA, CSA or EU-Citizen.Science, and citizens.

More than guidelines, MICS provides a tool for **impact assessment**, supporting CS projects in understanding and quantifying the impact of their actions.

3.1.5 StepChange

StepChange (Science Transformation in EuroPe through Citizens involvement in HeAlth, coNservation and enerGy rEsearch) implemented **five CS initiatives** in the fields of health, energy and environment.

The initiatives tackled the issues of **wildlife conservation** in Slovenia, **non-alcoholic fatty liver disease** in the UK, **energy communities** in Germany, **infectious disease outbreak** preparedness in Italy, and **off-grid renewable energy** in agriculture in Uganda.

The project aimed to explore the potential of CS, formulating **recommendations** and **instruments** for better cementing this approach within R&I institutions as well as changing researchers' mindsets on its value.

StepChange provides a list of its main objectives on its website. They want to ensure that the **CS initiatives processes and outputs** are **aligned** with respective societal contexts, and they foster **engagement with local stakeholders**.

StepChange designed a set of support actions to **foster mutual learning and training**, and a **participatory evaluation approach** tailored for each CS initiative.

3.1.6 Scivil

Scivil is the **Flemish knowledge centre for CS**, acting as a catalyst and matchmaker, bringing together all parties and required tools for strong CS projects. Scivil promotes, connects, supports and innovates CS.

The project has the following communication objectives:

1. Keeping participants motivated;
2. accessibility of messages and results to the target audience (proper dissemination);
3. maintaining openness at every stage of the scientific process;
4. teaching participants more about the project focus and scientific process (proper education).

They identified **3 target audiences** for communication: community managers, science communicators, and science trainers.

In 2019 Scivil set up a **working group on communication and participation**. The working group decided to **document its activities** and the expertise gained in a guide dedicated to those who want to start a citizen CS project.

They recognise that communication is a vital part (up to 95%) of CS. Good communication is required in **every stage** of a CS project, from the **recruitment** of participants to the **engagement** during the project to the **dissemination** of the results.

In the guidelines, the Scivil working group identified a **series of figures** that should ideally be part of the communication team in every CS project: a **community manager**, a **science communicator**, and a **science trainer**.

The role of the community manager is to guarantee a **direct and immediate contact** with the citizen scientists, representing the main contact point for them. The science trainer's duty is to **direct and train** the citizen scientists to collect data, write manuals, and to deliver support while on the field. Finally, the role of the science communicator should be to ensure that **the messages, results included, are communicated correctly** to the target audiences.

This structure seems to be related to a top-down approach; however, it highlights the need for dedicated and competent figures for each communication role.

According to the Scivil guidelines, it is necessary for every project to have a communication plan. This document should clearly set **the objectives** of the project, the **level of engagement** required, the **target audiences**, the **motivation** of the participants who may take part in the project, the **engagement** and the **evaluation**.

According to the Scivil experience, in a communication plan for a CS project the **human dimension** plays a pivotal role. It is important **to investigate the motivations** of the citizen scientists, to keep them engaged and motivated, and to **valorise** their contributions.

Scivil offers several tools to facilitate those who want to start a new citizen science project: a series of questions to direct the reader in the right direction, tables, examples, and tips.

A chapter on the guidelines is dedicated to the project's networks. The **network dimension** and the **synergy with other projects** is often lacking in CS, where many projects are local. A good network can also favour the growth and upscaling of the project, even though the local dimension should not be forgotten.

In CS projects, usually the participants are volunteers, therefore it is important to keep them motivated and to involve them in activities that are **fun and engaging**. Therefore, it is important to balance the quantity of information that the participants need to acquire to contribute to the project.

According to Scivil experience, **social events** help to keep people motivated in the long term: it can be an informal meeting, a game, a group walk or a lunch together.

"You cannot overestimate the amount of time you will spend communicating with your target audience". - Scivil

3.2.8 EU-Citizen Science

EU Citizen Science is an **online platform** to widen and strengthen the European CS community through **capacity building**, visioning a **globally connected**, inclusive and strong citizen science community for **societal change** in Europe.

The focus of the platform is on European (and then even global) CS networks through a series of communication and dissemination activities supported by 28 ambassadors.

The project has the following communication objectives:

1. Development of a **strategic C&D plan** with the collaboration of partners;
2. creation of a **recognisable visual and brand identity**;
3. development of **social media channels** and the growth of engagement and community of more than 12.000 followers;
4. production of a **digital magazine** in collaboration with the ECS collaboration group, that reaches out to more than 1500 readers;
5. production of two **videos**;
6. organisation and participation in dozens of **national and international events**;
7. strengthening ties with **national and international networks** and associations including the Citizen Science Global Partnership.

EU-Citizen Science identified **6 target audiences**: researchers, civil society, policy makers, private sector, educators, journalists and the media .

The platform acts as a **showcase for CS projects and events**, hosting free **training materials and resources**. It also hosts a **Forum** where the users can chat and connect over different topics.

Users are invited to contribute to the platform's content, but also to **co-design** its services.

To facilitate knowledge and experience exchange among CS projects, EU-Citizen Science offers a platform where participants from different projects can attend the **ECS Collaborative Sessions** where citizen science practitioners can lead online presentations, engage in activities, and create valuable learning moments to strengthen collaboration.

EU-Citizen Science offers dedicated online spaces for CS managers and volunteers to meet, discuss, learn and connect. It also offers an "academy" platform with different courses.

3.1.7 WeObserve

WeObserve is a completed H2020 Coordination and Support Action (CSA) that tackles three key challenges that Citizens Observatories (COs) face: **awareness, acceptability and sustainability**.

The aim of WeObserve was to improve the **coordination** between existing Citizen Observatories and related regional, European and International activities.

The WeObserve mission was to **create a sustainable ecosystem of Citizen Observatories** that can systematically address these identified challenges and help to move citizen science into the mainstream.

The project's communication objectives were:

1. Demonstrating the **societal and economic benefits** of involving citizens in environmental decision making and cooperative planning;
2. **empowering** and enabling citizens to become the 'eyes' of the policy makers;
3. complementing existing **environmental monitoring systems**.

WeObserve identified **2 target audiences**: Citizen Observatory practitioners and aspiring practitioners.

The project created a virtual CoP to consolidate the practice-based knowledge of Citizen Observatories, and to introduce new potential stakeholders to the CoP methodology.

Practitioners were provided with **a toolkit** to build their own CS observatory and a Cookbook to help Citizen Observatory practitioners access existing resources that can help them in setting up and/or running a Citizen Observatory.

3.1.8 Discussion

The selected case studies address the needs and challenges of CS project's communication identified in literature, such as the **lack of targeted communication** to relevant audiences, the need for **funding**, and for policymakers and local administration **support**, the availability of **training material**.

Among the case studies, there is special attention towards **impact assessment**, and for the need to quantify CS impact in a way that is

comparable among different projects in the same fields, and understandable for society and policymakers.

The **collaborative dimension** of CS emerges in all the examined projects and platforms, providing free and accessible training and communication materials, promoting knowledge sharing and co-creation (e.g. Community of Practices), and online spaces for projects to connect and talk (e.g. EU Citizen Science Forum).

Funding, policymakers' support, impact assessment and collaboration are all directly relevant to the successful upscaling of CS projects, as they respond to the more frequent challenges expressed by CS leaders and project managers as reported in literature.

In fact, **effective and targeted communication** is the only way to reach and engage policymakers and other essential stakeholders' groups whose support is essential for CS practices' broader adoption and institutional integration.

By improving C&D strategies and producing tailored, accessible materials, CS projects can increase their visibility, credibility, and potential for replication. Impact assessment is a key process for CS project upscaling, since when projects can demonstrate measurable, comparable outcomes, they are more likely to secure long-term funding, influence policy, and be adopted or adapted by other initiatives.

Also, impact quantification facilitates cross-project learning and benchmarking, which are both crucial for upscaling. Preserving and developing the **collaborative dimension** of CS favours **knowledge exchange**, and the creation and coordination of social and institutional infrastructures (Thomas *et al*., 2021; Von Gönner *et al*., 2023). A more detailed discussion about the benefits of cross-sector collaboration among the quadruple helix (government, academia, industry, and civil society) will be discussed in CROPS' deliverable D5.2 "**Final report on societal working group findings**", which is going to be published in October 2026.

All the above-mentioned elements, collectively create the conditions for CS projects to scale both **horizontally** (across geographies and communities) and **vertically** (into policy and institutional frameworks).

4 CS Champions

4.1 Introduction

The CROPS **CS Champions podcast** is an initiative to share inspirational stories about people who have **made a difference** using CS. The goal was to show the variety of fields in which CS can be applied, the power of communities, and the idea that you don't need to be a superhero to change things if you are supported by other like-minded people.

Even though the CS Champions interviews were not meant to collect data on their C&D activities, we observed that all CS Champions were able to **communicate successfully** with their project's relevant stakeholders, and this made the difference in their outcomes.

In this chapter we are going quickly through the CS Champions projects and their C&D strategies, grouping them according to the EU mission they belong to.

The full stories of the CS Champions can be found in our podcast.

4.2 Restore our Oceans and Waters

We interviewed three CS champions for the EU Mission "Restoring our Oceans and Water": Eleonora De Sabata, Cornelius Eich, and Elena Vignerte.

Both Cornelius Eich and Elena Vignerte are **sportspeople**, and their projects' success leverages also on their influence in their **communities of professional sailors and surfers.**

Eleonora De Sabata is a **journalist,** and she leverages communities of **fishermen, SCUBA divers, students, and ocean lovers**.

All projects from these three CS Champions had **strong scientific impact**, leading to the publication of scientific papers and the increased quality and quantity of data available to marine scientists.

For example, the physical ocean data collected by Cornelius Eich's project Malizia Sea explorer with a professional race boat during the Vendée Globe in 2022 enabled marine scientists to adjust estimates of the CO_2 ocean absorption's rate in the Atlantic and Southern ocean, correcting the previously estimated values by more than 10% (Behncke et al., 2024).

Their slogan is strong and memorable: **"A race we must win, Climate Action now!"**, and it is shown on their sails, gathering lots of visibility during the races.

Projects from [Surfrider](#), the organisation Elena Vignerte belongs to, leveraged the **sports industry** to guarantee the success of their CS projects. They created the **first wearable CS sensor for surfers**.

Eleonora De Sabata's projects ([Osservatorio Mediterraneo](#), [MEDSharks](#), [Clean Sea life](#), and [European Sharks](#)) have a strong impact on both **science, society, and politics**: her projects led to the first Italian law case and fine for marine pollution and contributed to the EU ban on plastic swabs

All these CS Champions' projects use a number of **pictures and videos** in their communication, leveraging also on the **emotions** evoked by the sea. They communicate through **social media**, but also **in-person events** like fairs, sport competitions, and ad-hoc events have a crucial role according to the experience of the interviewees.

Figure 3 Team Malizia sailing during the Ocean Race 2025, the claim "A race we must win" clearly visible

4.3 EU MISSION: 100 climate-neutral & smart cities

For this mission we interviewed three CS Champions: **Kris Vanherle**, an entrepreneur, and **Tim Guily and Thomas Vanoppens**, two politicians from Leuven (Belgium).

Both projects monitor traffic and air quality.

The project from Kris Vanherle (Telraam) represents one of the few examples of **successful business led CS** initiatives, providing a continuous and solid flux of data about traffic monitoring.

Figure 4 Telraam's website homepage, the claim is "your window on local traffic"

Thomas and Tim are, respectively, Deputy Mayor for Digitalisation and advisor for the Smart City of Leuven, who developed a series of projects for citizens to monitor the traffic in Leuven.

Their main communication target is the population of **Leuven**, therefore Thomas and Tim mostly communicate in the local language on their website and social media.

In both cases **online communication** and **user-friendly websites** play a role in the success of the projects. For Kris Vanherle the website is also the first touch point for potential customers that are interested in the data their company provides.

4.4 Adaptation to Climate Change

For this EU Mission we interviewed three CS champions: **Frederik Gerits, and Elizabete and Hélia Marchante**.

Frederik Gerits' project, [Gardens as mini-laboratories for climate change](#), targets two very specific audiences: **farmers and gardeners**. The idea behind the project is to give them a **role in scientific research support.** The communication strategy is based on weekly interactions with the target groups online, via newsletter, and during in-person interactions.

Elizabete and Heliah Marchante's project, "[Invasoras](#)" had a **huge scientific success**, leading to the identification of 75k specimens of alien species detected and uploaded to the Global Biodiversity Information Facility -GBIF database. Their communication target is made of Portuguese people, and they keep their volunteers engaged mostly with **regular interactions on social media**, leaving comments, and launching calls to actions. They also organise in-person participatory actions to remove invasive plants.

Figure 5 Invasoras' website homepage, the whole website is available in local language and in English

4.5 EU MISSION: a soil deal for Europe

For this mission we interviewed two CS Champions: **Nadine Greenhalgh and Jonas Lembrechts**.

Jonas Lembrechts' project [CurieuzeNeuzen in de Tuin](#) involved 5000 citizens in The Netherlands that **placed sensors in their gardens** to monitor heat and drought in soil. The project was successful because of a clear, understandable and catchy communication that won people's trust.

Figure 6 CurieuzeNeuzen in de Tuin project ended in December 2022, the website say thanks to those who collaborated in the project, and the project's news and materials in Dutch.

Nadine Greenhalgh is a project manager at [Basecamp](#), a biotechnology company that wants to improve knowledge in biology. The stakeholders of this project are mainly **biologists and other academics**; therefore, their website contains plenty of scientific information and their most successful C&D products are scientific papers, news and press releases.

4.6 EU MISSION : Cancer. Improving the lives of more than 3 million people

For this mission, we found one champion: **Leonore Vander Donck**, who works for the ISALA project to develop a better knowledge and understanding of the vaginal microbiome.

During a CS Champions webinar hosted by Scientix, Leonore reported that one of the most appreciated gadget given by ISALA to the participants were some very cool tote bag. Not only participants were happy to use them, but they could also recognise each other in the street.

Projects that are under the cancer EU Mission deal with very sensitive topics and situations. They are not easy to contact and whilst they can involve surveys or other engagement strategies at the same time, they need to be extra-careful in their communication.

ISALA's success relies also on its **pop and recognisable visual identity**, which suits online communication on Instagram well. The strength of Leonore Vander Donck's communication is that potentially scary topics like human health are treated in a light and colourful way, still conveying the importance of prevention.

Figure 7 ISALA's homepage showing the project's visual identity and call to action

4.7 Discussion

Interviewing the CS Champions for our podcast, we noticed that while different factors contributed to the success of these projects, **they all implemented a communication strategy that is tailored to their audience**.

The stories of these Champions demonstrate how different CS projects talk to diverse audiences, and how important it is to **identify the communication target(s)** from the beginning.

In the case of **sensitive topics** like cancer and illness prevention, the choice of a brand identity that was **clean, pop, and easy to read** while still conveying the idea that there is a **solid scientific study** behind the message.

5 CS projects with high potential for upscaling

As part of WP2 - Curation task 2.2, a **scalability potential assessment** was undertaken on a selection of over 500 CS projects associated with the 5 EU missions.

Starting from the initial pool of projects, only a few of them were selected because of their **high potential for replicability and upscaling**. While referring the readers to the original document (D2.2 which will be available on www.crops-cs.eu) for a detailed examination of the projects, we have extracted some parts that are directly relevant for C&D strategies.

Independent of the EU Mission they fall under, there are some shared issues that can be addressed using proper C&D tools: the lack of evidence of **impact**, the absence of **public information** about the project, and the non-compliance with the data **open access** principles.

However, there are also issues that are more specifically related to clusters of projects falling under the same EU Mission.

For the EU **soil deal**, for example, one of the problems is the **marginal role** of citizen scientists.

One of the characteristics, not necessarily an issue, that many projects that fall under the **adaptation to climate change** EU mission share is the fact that they often focus on **very local issues**, therefore they have local communities and administrations as main stakeholders. This means that it is important for these projects to **communicate in local languages** and to **translate** training and C&D material that was produced in English. It is also important to organise i**n-person events and meetings** to help the community of citizen scientists to connect and remain engaged over time. The projects focusing on **biodiversity** benefit from the presence of **well-established and widely used platforms** (e.g. iNaturalist), that allows online community building and management.

Projects associated with the **restore our oceans and waters EU mission**, on average need more resources to provide **adequate training** to citizen scientists and to guarantee **high-quality data**. Also, they greatly benefit from the support of reputable institutions and local authorities. In this cluster there are two sub-groups of projects: those who run mostly on local, in-person events, establishing strong connections with local communities, and those who rely more on online platforms and mobile apps.

The success of CS projects that are part of the **EU climate neutral and smart cities** appears to be linked to the engagement, support, and advocacy of the **maker communities**; therefore they should be considered as key stakeholders while designing the project's C&D strategy.

The projects aligned with the **EU mission to defeat cancer** are the most sensitive ones, and it is often difficult to obtain information and data about the projects and their impact. Also, many of them run on **donations** requiring a very **articulated, complex and expensive infrastructure**.

A more detailed description of the characteristics of the projects evaluated for upscaling and the list of selected projects is beyond the scope of this document and can be found in D2.2.

6 Survey

In March 2025 we launched a **survey** to collect information about existing CS practices, protocols, and guidelines, to identify project's needs in terms of communication, upscaling, funding, and interaction with policymakers, and to understand what the best way is to develop our CS transnational communities (Appendix 1).

The survey was shared via CROPS and its partners' networks, by ECSA and national CS associations (e.g. CSI – Citizen Science Italia), and by our CS Champions, who also took the survey themselves.

The survey was open to every CS project manager, and we got a total of **30** valid answers.

In our survey, we targeted **CS project managers and leaders**, since they have first-hand information on all the points we wanted to investigate (C&D strategies, funding, relationship with society and policymakers, etc). To avoid overloading them, we designed a questionnaire in which every CROPS partner added a few items regarding topics they were willing to explore in their tasks, to send a single survey (see annex 1 for the survey items).

The questionnaire is divided into **5 sections:** demographics, upscaling, communication strategies, funding schemes, and a final explanation on how the answers to the survey will be used.

The goal was to **integrate the information** we already got from literature review, CS Champions and D 2.2, and to have first-hand feedback on the opportunities and needs identified by the project's managers and leaders.

6.1 Results

We collected answers from projects **from each of the 5 EU Missions,** even though **they are not equally represented**, with a majority of projects falling under the "Restore our Oceans and Waters by 2030" (33,3%) and "Adaptation to Climate Change" (30%), while the latest represented is the EU Mission Cancer project.
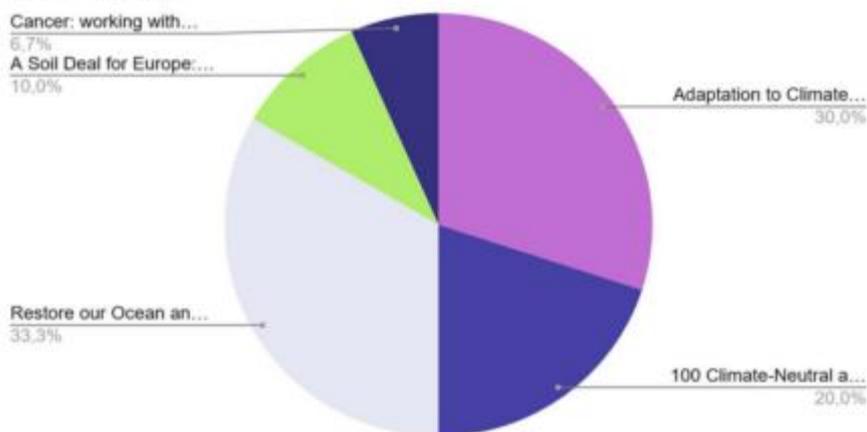
Figure 1 % of EU Missions represented in our survey

According to the survey, most of the projects have been running for **3 or 5 years**, and so far, 37% of them have reached more than 1000 people with their C&D activities.
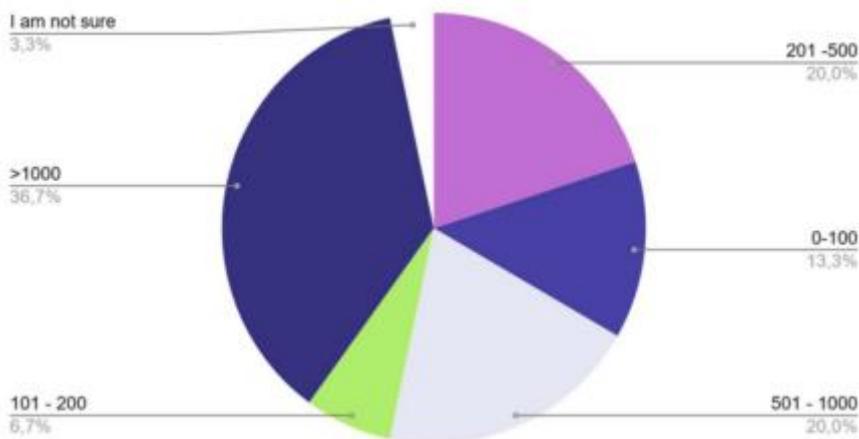
Figure 2 - Number of citizens involved

The main funding scheme used to support these CS projects are **grants**, used by 73% of the projects, and donations (20%). The funds are used mainly for community activities (like training and events), research (data

management and analysis, communication activities, material and equipment, and travelling.

Many projects' leaders and managers find **short-term and small-scale grants problematic** to ensure the long-term sustainability of the project, and they would have applied for long-term funding schemes if possible.

Please select the funding schemes that you use most for your project:
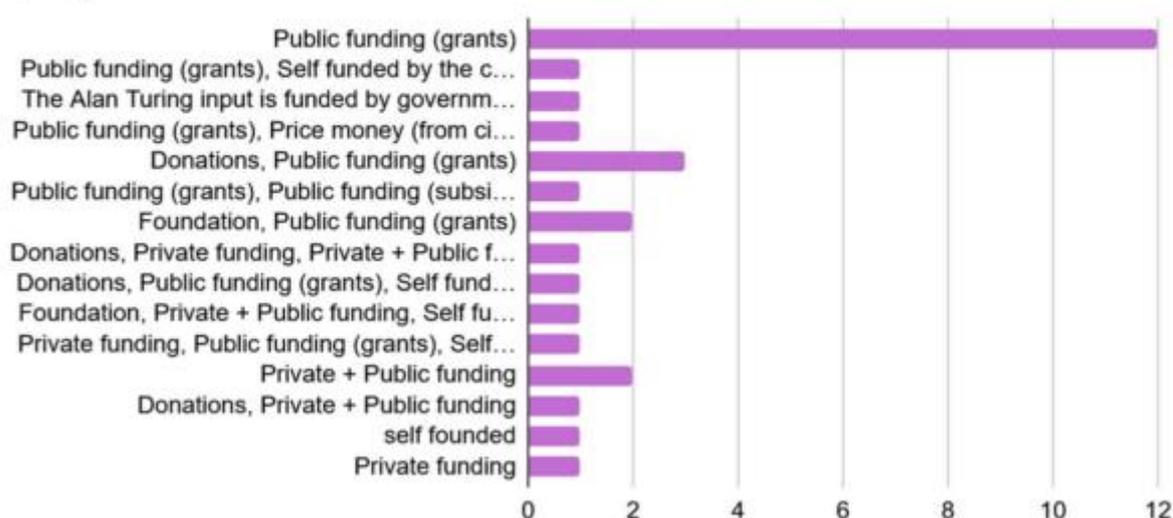
Figure 3 List of the most used funding schemes

Due also to the variety of projects, their impact is perceived in many different fields. Most of the interviewees identified **behavioural change, community engagement and involvement, scientific research, and formal education** as the main fields in which their project has an impact. On the other hand, fewer projects feel that they are having a significant impact on local, national, and international policy.
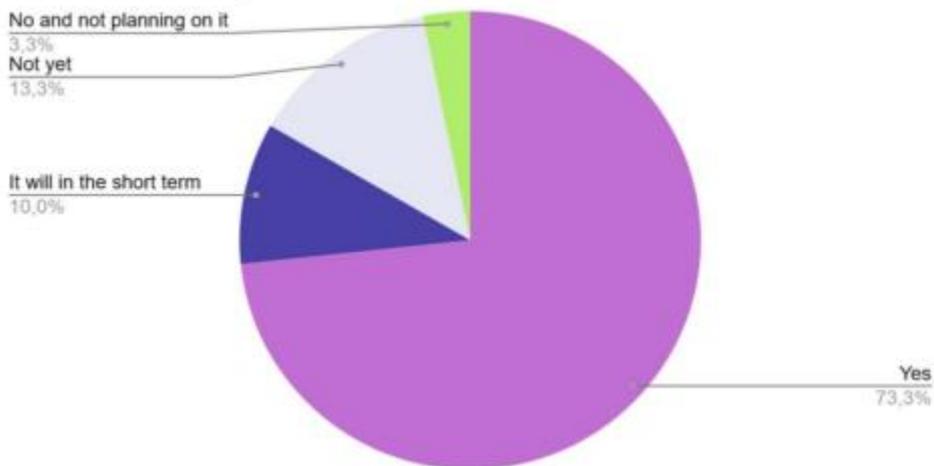
Figure 4 Impact of CS projects on behavioural change

Figure 5 Impact of CS projects in community engagement

38

Do you perceive your project having a positive impact in formal education?

Not yet
13,3%

It will in the short term
3,3%

No and not planning on it
13,3%

Yes
70,0%
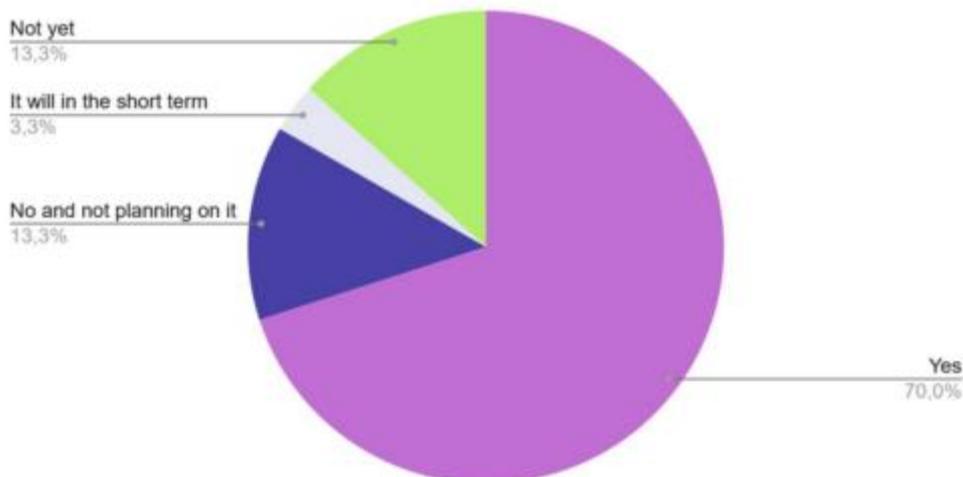
Figure 6 Impact of CS projects in formal education

Do you perceive your project having a positive impact in Scientific research?

No and not planning on it
3,3%

It will in the short term
6,7%

Not yet
6,7%

Yes
83,3%
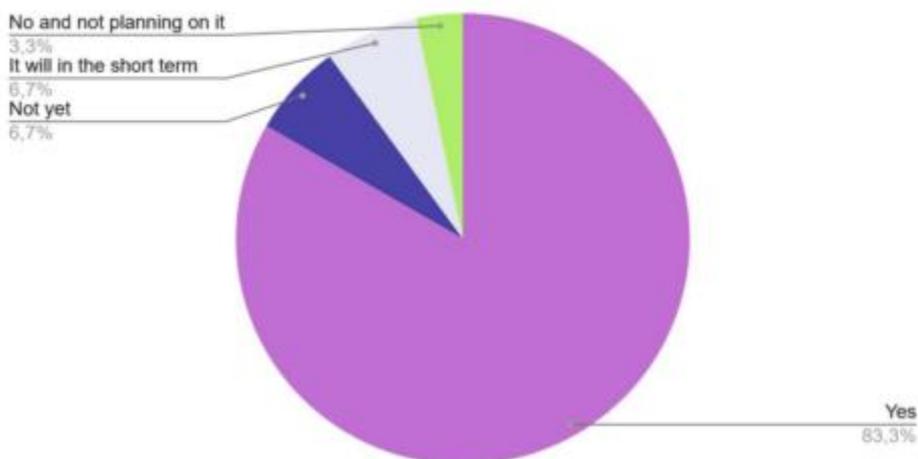
Figure 7 impact of CS projects in scientific research

When it comes to measuring the impact of CS projects, 22% of the interviewees say that they only used quantitative methods, while 67% used a mix of qualitative and quantitative methods, and only 7% use just

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qualitative ones. Only one project answered that they do not have a way to measure their impact, but they are willing to learn and implement one.
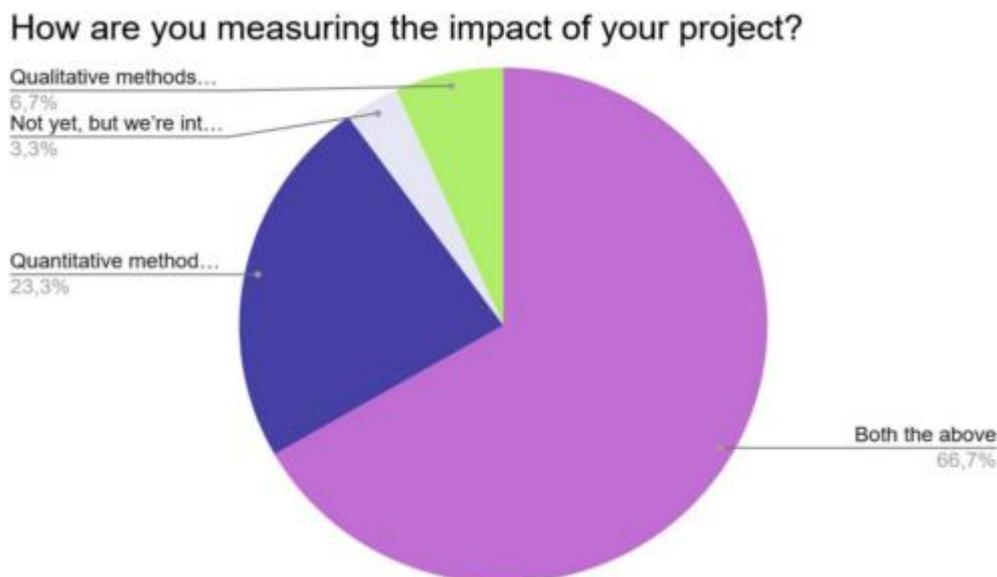
Figure 8 project's impact measurements methods

60% of the interviewees say that they are **interested in upscaling** their project. They are interested in broadening the following topics: replication efforts, types of community involved, methods and technology used, topical or research scope, dissemination efforts, research scope, and geographic region.
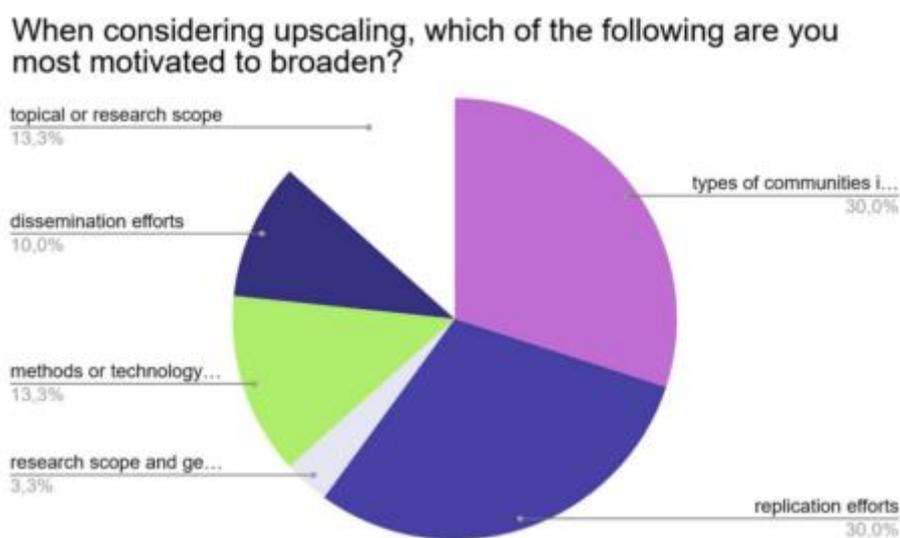
Figure 9 characteristics that CS leaders and project managers are interested to upscale

When it comes to geographical upscaling, **60%** of the interviewees recognise that the most appropriate approach for their project is to **replicate it in a similar context**, while **23%** would choose an **extension of the project's activities and outcomes**.

When asked to point out the main factors that will successfully support their project's upscaling to a transnational level, the interviewees identified three main factors: **financial and human resources** (flagged by 93% of the interviewees), **massive communication** (50%), and **specific networks of stakeholders** (43%).

Even though 50% of the interviewees flagged massive communication as one of the key factors for a successful upscaling, only **60%** of the projects have a well-defined **communication goals and strategy**.
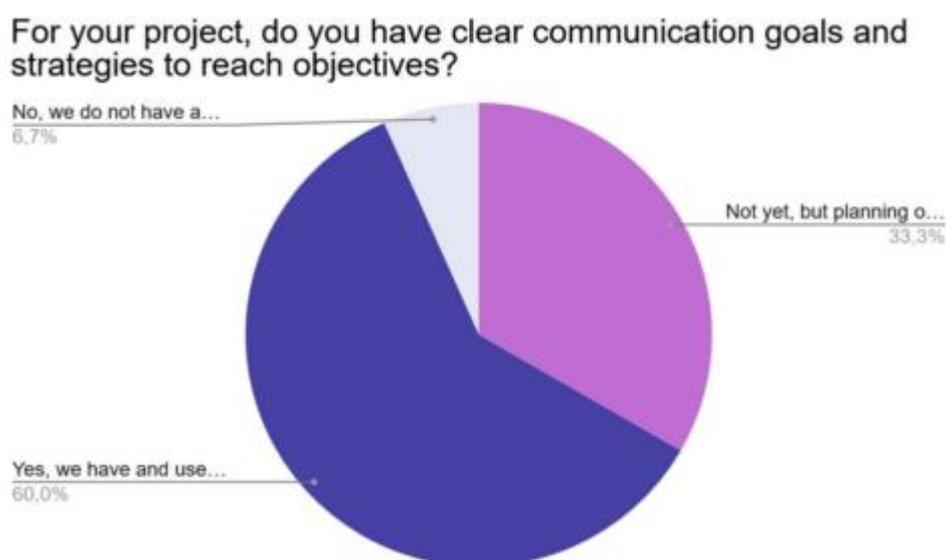
Figure 10 % of CS projects having a defined C&D strategy

When asked which **resources** are the hardest to access, the interviewees reported that **free hardware, software and data** are the hardest, while publications and training materials are easier to find.

The three most important **stakeholders** to be involved to guarantee the project's success, according to the interviewees, are **local governments, academia, and local authorities**.

The projects' communication is mainly directed towards the following groups:

- educators, teachers, science trainers and school managers (66%)

- scientists and researchers (63%)

- local and national governments (53%)

- press and media (46%)

The main age group is **41 -60 years old** (60%) followed by **25-40 years old** (57%), and **19-24** years old (47%), and a generic communication not tailored for different age groups (47%).

The **main C&D activities** are **scientific conferences** (more than 20 projects present their results to 1-3 scientific conferences per year), **scientific papers** (less than 20 projects publish 1-3 papers per year), and **press and news releases** (used by half of the projects).

On behalf of your CS project, about how many times over the course of a year do you attend scientific conferences?

3-5
10,0%

0
10,0%

>5
16,7%

1-3
63,3%
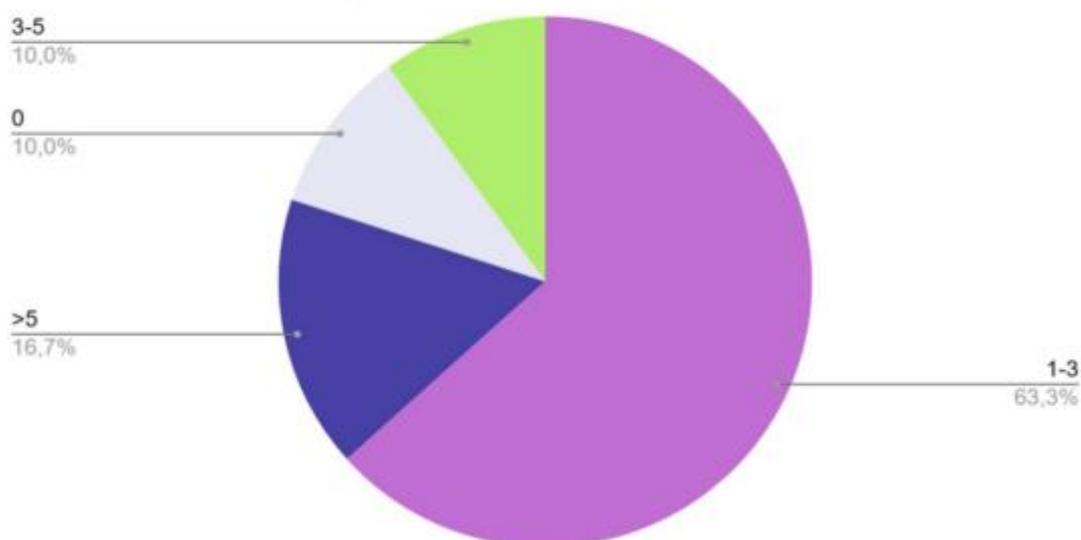
Figure 11 Number of scientific conferences attended per year

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On behalf of your CS project, about how many times over the course of a year do you publish scientific papers?

3-5
10,0%
>5
3,3%
0
23,3%
1-3
63,3%
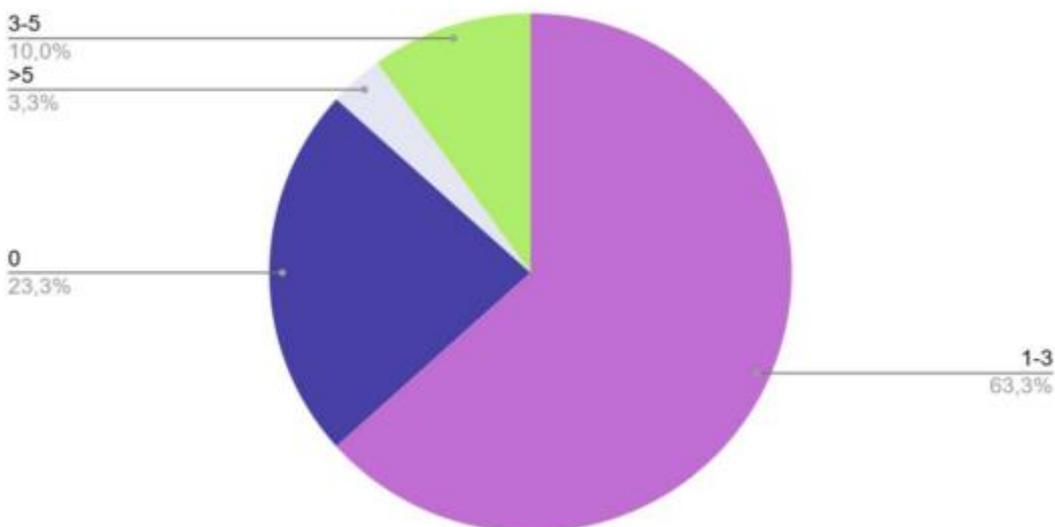
Figure 12 Number of scientific papers published per year

On behalf of your CS project, about how many times over the course of a year do send out press releases?

3-5
6,7%
I am not sure
3,3%
0
20,0%
1-3
50,0%
>5
20,0%
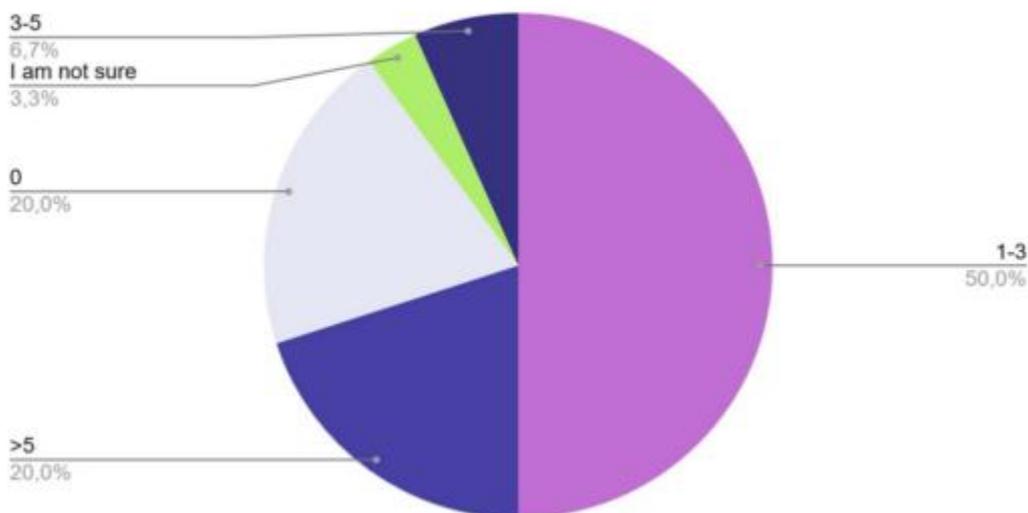
Figure 13 Average numbers of press releases published per year

According to the project managers and leaders that answered our survey, the most important things for their **project' success** are the **regular communication and engagement** of local communities, **on-site and in-person** events, **acknowledgement** of the citizen scientists' contributions, and data collection training.

Finding **adequate public funding schemes**, communicating supporting **opportunities** to a wider audience, dealing with **admin workload**, and gaining confidence of **private funding entities** are on average considered **difficult**. The most difficult tasks, according to the interviewees, are the **communication** of the project's impacts and results, and **financial reporting**.

When explicitly asked to list which communication strategies contributed to the success of their projects, many project managers and leaders answered that a **tailored communication strategy targeting specific audiences** was very powerful in supporting their project's growth. Linked to the need to address specific audiences, one of the answers pointed out how important it is to have content **translated** in local languages.

Another important resource named in some answers are **in-person meetings and training** for the citizen scientists, as well as the availability of **videos and online training** materials.

Also, many projects identified a successful **social media strategy** as the key to their project's success. When it comes to online communication, it is also important to have a clear and accessible website, and replicable online platforms are precious resources for many projects.

6.2 Discussion

Information from our survey confirmed literature data is coherent with what we observed in D2.2 and talking to our CS Champions.

Considering **C&D**, project managers and leaders mostly agree on the importance of having a **clear strategy**, reserving a percentage of the project's funding for that. They recognise also that it is important to **measure the impact of their project**, and to have feedback on how it is going.

However, while agreeing on the importance of all the before-mentioned activities, **40% of the projects do not have clear C&D objectives.**

According to the answers to our survey, this is not due to a lack of willingness to do it, but more to a **lack or scarcity of funding**, and the **absence of communication experts** in the project's teams.

When it comes to **impact areas**, CS projects seem to be **more effective in the social dimension**, fostering cohesion among communities and driving behavioural change, and their scientific impact. The **policy area** remains

difficult, particularly when it comes to **national and international policy**, while local policy considerations seem to be more open to be influenced by CS projects activities.

When asked what they would have done differently to overcome the communication challenges of their project, the most common answer was that they should have a **dedicated communication expert**. In many cases they don't have one because of the lack of funding, with volunteers taking care of communication, but this does not guarantee a consistent and continuous communication flux, penalising the project and reducing its impact. Active engagement of stakeholders, translation in local languages of the project's materials, and the creation of images and videos are other points that project managers and leaders recognise they should have worked more on.

Once again, though, the main problem seems to be the quantity of money and the fact that funding resources are allocated first in other areas like research activities, community activities, and fieldwork.

Communication activities are fourth in priority regarding funding allocation, but since, in many cases, the funding is small, there is not enough money to pay for one or more communication professionals.

The successful communication strategies identified by project managers and leaders are **as diverse as the CS projects are**, showing the need of a tailored and unique approach accounting for each project's specific needs.

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7 Results

Looking at data from literature review, CS Champions, CS projects selected for their upscaling potential, and the answers to our survey, we can identify the following needs for CS projects:

7.1 C&D strategy and impact measurement

Designing a **C&D strategy** in the project's **early stages** is standard in project management, however because many CS projects were born from local communities and often do not have enough funding to hire a professional, this step is sometimes missed.

Also, many projects do not implement **systematic measurement** of their impact, making it hard to measure and demonstrate the effectiveness of their initiative.

The steps to establish a **C&D plan** are well described in literature by multiple authors, and there is no difference between CS projects and other kinds of projects in the **structure** of the plan, but **the content varies**. Projects like NEWSERA can provide **detailed guidance** on how to implement a C&D plan and on how to engage with diverse audiences.

Projects and platforms such as ACTION, IMPETUS4CS and MICS offer support to CS projects in **implementing an impact assessment protocol**.

When it comes to impact assessment, CS projects mostly measure the number of the **scientific publications** and other academic contributions, the **number of people involved** in their initiatives, and the **behavioural changes** generated by the project. This last metric is not easy to measure, and strategies for its measurements and quantification should be further explored.

7.2 Project's specific C&D needs

CS embraces a variety of fields, therefore there is a variety of C&D needs that are project specific.

If we **cluster CS projects according to the EU Missions**, each group has its own peculiarities.

Adaptation to climate change CS projects are usually **very local**, as shown by our CS Champions, featuring **bioblitzes** organised by Quentin Groom and Sofie Meuus, and a project about **invasive plants** in Portugal, carried out by Elizabeta and Helia Marchante. In terms of C&D, the key for the CS

projects falling under the Adaptation to Climate Change mission is the **involvement of local communities**, choosing communication in **local languages** and selecting the **communication channels** most used by the people in the area (for example Elizabeta and Helia's project, Invasoras, has a very active **Facebook page**).

For the **EU mission Cancer: working with Europe's Beating Cancer Plan to improve the lives of more than 3 million people by 2030** the main challenge is represented by the **topic itself**, and the fact that people may not be willing to share sensitive information.

In this case, **projects based on prevention**, like ISALA, may see lots of participation **if their goal is clear**, the use of data is **transparent** and the communication **direct and easy to understand**. It is important to establish **trust** among the project's different players, and to give feedback too the participants about the project's impact.

Projects under the **EU Mission Restore Our Oceans and Waters by 2030** need to involve **specific communities of people** who often go to sea, typically fishermen or sport people (e.g. ocean racers, surfers, etc). These projects need to provide **solid training on how to collect data**, however both the training and the data collection should be made in a way that **does not interfere with the routine activities** of the citizens involved.

When out at sea, the **weight and size of the sensors count**, especially during races and other competitions when people do not have time to stop to send data or to follow complex protocols.

C&D communication for these kinds of projects should focus on winning people's **trust** and **show clearly the positive impact** that participants have in preserving the environment in which they live or work.

CS projects from the **100 Climate-Neutral and Smart Cities** must win the participation of two main stakeholders: **the Makers, and the politicians**.

Many CS projects find it **very difficult to communicate with local policymakers**, and to influence local, regional, or national policies, as it emerges from our survey.

Projects like NEWSERA intercept this need proposing **specific guidelines** to engage with policymakers.

From what we have observed through our CS Champions, it can be a good strategy to **already have local politicians involved in the project** as active players.

Also, topics like **air pollution** or **traffic** are prone to catch the attention of the public opinion and may be **supported by residents** if people are informed and involved in the project.

Maker communities have been identified as key stakeholders in D2.2, therefore it is important to create a direct communication channel with the communities active in the project' s area.

CS projects belonging to the **A Soil Deal for Europe Mission** are usually very **technical and data-centred**, and in many cases the participation of the citizens is **marginal.** Data is and often collected by **placing a sensor** somewhere, without people truly knowing much about what's going on.

The challenges for this kind of project are to **communicate data and scientific topics in an understandable way**, to **empower citizens** making them knowledge-builders and not only data collectors, and to give participants **feedback** and acknowledgements for their contributions.

So far, a variety of guidelines and tools have been developed to favour C&D in CS projects, however it may be **difficult** for people to **navigate among these resources**. For this reason, in the next chapter (communication strategy guidelines) we will provide a series of **step-by-step instructions** to follow to find the best strategy according to the characteristics of the project.

Readers will therefore be able to go more in-depth looking at the suggested resources, or prompted to look for more guidelines by themselves.

8 Communication strategy guidelines

Subchapter 8.1 provides a quick step-by-step guide to design your C&D plan that can be applied to any kind of CS project, while subchapter 8.2 answers the **specific needs** of projects from the 5 EU Missions.

The guidelines will be adapted to different communication channels (such as social media, printed materials to be distributed at conferences, and infopacks to be downloaded) to be sure to reach the project's target audiences.

1

Set the basis of your C&D strategy: go to section 8.1

2

Choose the EU Mission your project mostly align with: go to section 8.2
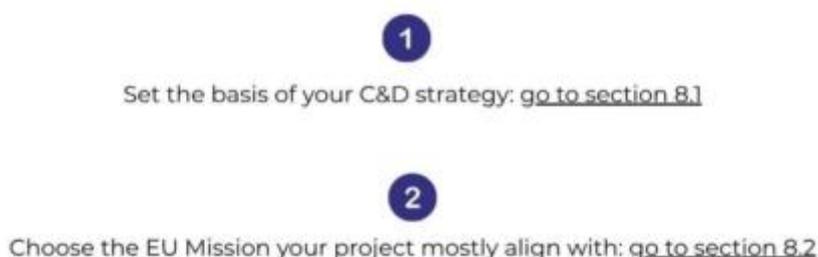
EU MISSION:	NEED HELP WITH:	GO TO PAGE:
Restore our Oceans and Waters	a) data collection and volunteer training	58
	b) in- person engagement	59
	c) app and on-line data collection	60
100 Climate Neutral and Smart Cities	a) engaging with policymakers	61
	b) engaging with Makers communities	62
Adaptation to Climate Change	a)connecting with other project and grow	65
A Soil Deal for Europe	a) active role of Citizen Scientists	66
Beating cancer	a) building trust	66

Figure 8 Map to build your C&D strategy

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8.1.1 What do you want to obtain? Define clear objectives

To know how to navigate, you need to know where to go first. The first step to design your C&D strategy is to define your objectives: what do you want to obtain through your communication activities?

Whether you want to increase the number of involved citizen scientists, reach out to policymakers, or publish more scientific papers, you need to identify the most important goals and clearly express them (Roche et al. 2020, Vohland *et al.* 2021).

Ask yourself:

1. **What is the most important objective I want to reach with my project?** *It can be collecting data on a specific phenomenon, or increase scientific literacy in your area, or protect your neighbourhood from invasive plants, to give you a few examples.*
2. **Are there any secondary/ collateral objectives I would like to reach?** *For example, your main goal could be to increase the air quality in your town, and a collateral objective could be the development of an open access database on air quality, but also the growth of the sense of belonging among your community.*
3. **Are there any mid- term objectives you can reach in your journey to the final goal?** *Maybe your final goal is to increase scientific literacy about biodiversity loss in your area, and some intermediate objectives could be the creation of educational kits for school to involve kids in biodiversity monitoring.*

Tips: the objectives should be concrete, measurable and reachable based on your project's resources. You **can break down** long-term goals or ambitious objectives to more manageable ones and progress one step at the time. Also, every time you reach a goal, even a minor one, don't forget to celebrate it with the community that supported you! Even a "thank you for your hard work" can make a difference.

8.1.2 Who are you talking to? Identification of the main target audiences

Based on the objectives of your project, you should identify **which groups of people are most important** to achieve your goals.

To support the identification of your target audience, you can follow a process **called audience segmentation**, in which you identify, inside a larger population, people who share similar values, beliefs, behaviours, or preferences relevant to the specific topic of your project (Hine *et al.* 2014, Manzoni *et al.* 2021).

For example, if the aim of your project is to influence local regulation on air pollution, you may be interested in reaching out to local authorities and policymakers, but also groups of citizens and local associations.

Ask yourself:

1. **Which group of people is essential for the success of my project?** *These groups will be your key-stakeholders, they can be people who may fund your project, but also those who have the power to implement policies and regulations based on your project's data. It depends on the main objective that you have defined for your project.*
2. **Which group of people can support my project?** *These people are not essential for the project's success but can make your life much easier. For example, if your project involves students, having their families on your side may be worth investing time and energy into.*
3. **Which group of people should be informed about what our project is doing?** *These people may not have a direct influence on your project, but if you keep them informed it will increase your project's reputation and may be useful in the future. For example, if you are working to eradicate invasive plant species from an area you may be interested in letting the local media know. This will give visibility to your initiative and improve your reputation.*

Tips: the identification of key audiences can make the difference for your project' success, however developing tailored communication strategies, tools, and channels is demanding for your project's resources. Avoid choosing too many audiences and focus on those who are relevant to your project.

8.1.3 How do you want to communicate? Channels and tools

Once you identify your target audiences, you should find the best way to talk to them. It is very likely that you should choose a **variety of channels** (social media, in-person events, newsletter, traditional media like

newspapers and television, etc) (Rüfenacht *et al.* 2021, Sanz-García *et al.* 2021).

However, it is not necessary to use all communication channels in every project. Once you know who your audience is, you should just identify which channels they use the most and go for them (Rüfenacht *et al.* 2021).

Ask yourself:

1. **How does your target audience communicate?** *Do they use social media, WhatsApp or telegram groups, etc? You should go where your audience is.*
2. **Where do they get your information from?** *Do they read newspapers and watch television? Or do they prefer to collect information on the internet?*

Tips: multi-channel communication can be demanding in terms of time, human resources and money. Be sure to reserve an appropriate budget from your project's funds for this activity. If your resources are limited, focus on one or two channels and expand your communication when you get more resources.

8.1.4 What do you have to say? Key messages and communication materials

Now that you have clear objectives for your C&D strategy, that you know your target audience and how to reach them, you should decide what to tell them.

Communication about your project should be **clear and interesting** for your public. The aim is to light up their interest and **keep them engaged** throughout the duration of your project. Communicating about your results and impacts can improve your project's reputation and attract more stakeholders.

You should start defining some **key messages** (what is your project about, what do you want citizens to do, what are the expected outcomes etc). The key messages should be **short, clear and consistent:** most likely, you are not going to use them directly as they are, but you will modify and adapt them to the communication channels and materials you chose (Rüfenacht *et al.* 2021).

Ask yourself:

1. **Can I summarise my project in one sentence?** *Choosing a catchy payoff for your project can attract volunteers and makes it clear for policymakers and potential investors what it is about. Some examples are "A race we must win" from Cornelius Eich's project, or "Your window on local traffic" which is Telraam's payoff.*
2. **What are other projects doing?** *If you feel stuck, look for similar projects in your field and see which payoff they choose and how they defined their objectives, value and mission. When you find something that catches your attention ask yourself why and then try to adapt it to your project.*

Tips: when you create tailored communication material be sure that the language is appropriate for your target audience. You can easily find references online about tailored communication materials and formats for your target audience.

8.1.5 It takes money and time: allocate your resources wisely

It doesn't matter if it is online or in-person: good communication requires **time and a dedicated person** (or team). When you allocate your budget, don't forget to consider C&D activities and **save some money** for unforeseen expenses.

Successful CS projects **allocate resources in advance** planning staff time, content creation, outreach events, website and other digital tools and platforms (Rüfenacht *et al.* 2021).

Tips: choosing professional science communicators will give your project a return on investment. If you are short on budget, focus on only a few key-activities. Also, there is no need to re-invent the wheel. There are already many established platforms, apps and tools that you can use for your project without creating new ones (e.g. iNaturalist, BirdNet, etc). Also, do not forget synergies with similar projects: if you work together, you can lower the costs and increase the impacts.

8.1.6 How is it going? C&D evaluation

Once your C&D strategy is up and running, do not forget that you need to monitor and evaluate it. Periodic evaluations of your communication impacts are important to identify issues and strengths of your strategy and adapt consequentially (Rüfenacht *et al.* 2021).

Ask yourself:

1. **How many intermediate steps can I set before reaching my goal?** *Identifying intermediate milestones on your path to the final goal of the project will help you understand where you are and if everything is going as planned. For example, if your final goal is to influence the policy of your town, you may set-up a series of meetings and workshops with relevant groups (e.g. residents, local administration, policymakers etc).*
2. **How can I collect feedback on how the project is going?** *It is important to collect feedback from project's participants and from other involved groups of people. For example, if the main goal of your project is to drive a behavioural change, you may choose to submit a questionnaire to your target group asking if and how they changed their behaviour. You can also collect indirect data, for example if your project is about invasive plants, you can see if the number of invasive species in a certain area has diminished, and if people try to avoid using these plants in their gardens or terraces.*
3. **What can be done better?** *Some things work and some others do not. Do not be afraid to recognise that some of your activities didn't turn out as expected, ask yourself why and use the answers to improve the next actions of your project.*

Tips: do not be worried about evaluating your C&D efforts, if you find out that the outcomes are not what you were expecting, try adapting your strategy. Always remember that your C&D plan should be flexible to adapt to changing and unforeseen circumstances. If you want to evaluate the impact of your CS project you can use MICS, a platform that will help you in the assessment process.

8.2 EU MISSION

According to data collected for D2.2. and through our survey, projects belonging to the same EU Mission may have similar needs. In this section we propose specific guidelines to address the main challenges linked to specific EU Mission.

However, it is possible that a project from a specific EU Mission may find useful information in the guidelines that addresses a different one. For this reason, we invite the readers to have a look not only at the EU Mission, but also at the list of characteristics of the project who may take advantage of our guidelines.

8.2.1 Restore our Oceans and Waters

8.2.1.1 Data collection and volunteers training

Data collection has been proven to be particularly critical in Oceans related CS projects (see chapter 5, as well as providing proper training to participants). Whether your project is going to be mostly based on in-person interactions or on digital communities, we suggest you to:

1. **Provide accessible training material.** To be accessible for your target audience you should provide translation in local languages, avoid technical jargon and use a clear language, keep it simple and short. Usually, videos are more friendly than wall of texts, and images can reinforce the message, however if you are making videos be sure to have good video and audio quality.
2. **Design clear protocols for data collection.** The protocols should be easy to follow even for non-scientists and should be ideally replicable by other projects. Look at what other projects in your field are doing, if they have an established data collection protocol that works, ask them if they are willing to share it. Not only will you begin your project using a solid procedure that has already been tested, but you will also obtain data that is easy to share and compare with other projects.
3. **Set-up validation steps for the collected data,** with the support of experts. You can also use automated validation algorithms and AI to support your work, based on the quantity and quality of your data.
4. When handling data, **don't forget that there are standards to follow** and that you should respect the privacy regulation. It may be more difficult if you work on international projects involving people from

different countries, but it is something you shouldn't underestimate and if needed you can ask for the support of an expert.

Suggested resources:

- Fraisl D. *et al.*, 2022. Citizen science in environmental and ecological sciences (https://doi.org/10.1038/s43586-022-00144-4)
- Kelly *et al*, 2020. Citizen science and marine conservation: a global review (https://doi.org/10.1098/rstb.2019.0461)
- EU Citizen Science: https://www.citizenscience.eu/
- CS Champions podcast ep. 1: from protecting sharks to denouncing marine litter - how citizen science impacts policy

8.2.1.2 Projects based mostly on in-person engagement

If your project is going to work mostly with local communities, or specific groups like surfers, fishermen, professional sailors etc. you may want to consider a strategy based mostly on in-person engagement and activities.

These are some guidelines that you may find useful for your project.

1. **Meet the people where they work, play, and train**: scientists and project managers should meet the community of fishermen, surfers, sailors that they want to involve in their project. It is important that scientists and project managers move to where their target communities are, directly where the people work or train, or at specific sector fairs or conventions.

2. **Co-creation** will increase the project's acceptance rate, and it is important for the involved citizens to perceive that they are doing something important for something they care about. For example, protecting the environment that gives them fishes, or where they can play their favourite sport. An example is Eleonora De Sabata, CS project leader and marine journalist, who demonstrates the real impact of her project discovering sources of marine littering and leading to trials against the industries who were the source of the pollution, discovering new species, establishing a Mediterranean Marine observatory, and protecting sharks. Eleonora De Sabata's projects are based on the trustful relationship she establishes with the citizens involved in her project. A relationship that is built through

personal knowledge and time invested in listening to people, their needs and their concerns.

3. Something that will help you and your project, is **having a touchpoint in the community**. Someone who has a role in the group of people you want to involve and that may be your spokesperson inside the community. In this sense our CS Champions Cornelius Eich and Elena Vignerte are very good examples of athletes who are also Ocean advocates and that inspire people to follow in their footsteps.

4. **Provide chances for recognition and feedback opportunities for the involved citizens.** It can be a badge people can put on their boat, invitations to interviews and public events, acknowledgment of scientific publications. People should feel that what they are doing is important and they must get recognition of their efforts. Many projects also produce gadgets and merchandise (e.g. Surfrider) that supporters can wear.

Apparel That Makes A Difference

100% of every purchase directly supports our campaigns and initiatives across the country.

Summer Collection

Shop our latest collection of sustainably-sourced apparel and accessories.

Figure 4 example of project's merchandise by Surfrider

Suggested resources:

- The pillars of the sea: strategies to achieve successful marine citizen science programs in the Mediterranean area – Coppari M. et al 2024 (https://bmcecolevol.biomedcentral.com/articles/10.1186/s12862-024-02289-0#Sec2)
- EU Citizen Science platform: https://www.citizenscience.eu/

- CS Champions ep. 1: from protecting sharks to denouncing marine litter – how citizen science impacts policy
- CS Champions ep. 8: surfing for water quality monitoring – a surfer point of view on CS

8.2.1.3 Projects based mostly on app and on-line data collection

If your project is mostly based on apps and online data collection, you may find it useful to embed data collection directly into events like races and competitions.

1. **Increase participation and motivation of citizen scientists** by regularly implementing data collection during events and competitions, or in people's regular routine. Marine athletes can collect data by applying sensors on their surf, boats, etc every time they go out to train. For example, Team Malizia, a team of professional sail racers, printed the payoff of their project ("A race we must win, climate action now!") on their sails giving visibility to their project not only during the races, but also in every news about the team, even when not strictly related to their CS project.
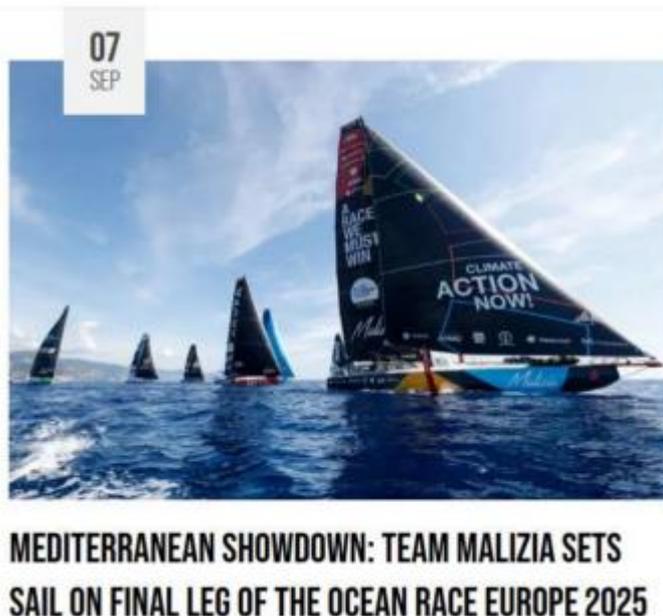

Figure 5 Team Malizia clearly states their project's payoff on their sails.

2. Be sure that the **data collection activity does not interfere** with the competition or the everyday training. Sensors should be light, small, and easy to use, and apps well optimised to run smoothly on mobile devices.

3. If your project uses an app, be sure that it enforces habit formation, with **reminders and rewards for regular updates**, without being invasive.
4. Do not forget that you need to comply with **privacy and data protection laws**, be sure to handle data correctly and ask for professional advice if necessary.
5. Establish clear protocols and update them if needed.

Suggested resources:

- Fraisl D. *et al.*, 2022. Citizen science in environmental and ecological sciences (https://doi.org/10.1038/s43586-022-00144-4)
- CS Champions ep. 8 podcast: surfing for water quality monitoring - a surfer point of view on citizen science
- CS Champions podcast ep. 4: sailing at 38kts while collecting essential ocean data – CS in and for professional offshore racing

8.2.2 100 Climate-Neutral and Smart Cities

8.2.2.1 Engaging with policymakers

When it comes to the climate-neutral and smart cities project, the main challenge is to communicate with policymakers and be sure that they use the data from the project to improve the quality of life in their cities.

Many CS projects struggle to get in touch with their local policymakers and administrators, and it gets even harder when they move from a local/regional to a national or international scale.

Here are some suggestions on how to talk to policymakers to be sure they understand what your project is doing, why it is important, and what role they can play in it.

1. **Align your project's objectives with the current policy framework, agenda**, and decision-making process to be sure that your voice is heard. Protocols will not be changed to accommodate you and your project; therefore, you should try to adapt. You can find information about these processes online, and if on a local scale, you can also ask the policymakers you want to involve how to do it: for example you

may start presenting your project at a city council meeting or invite some policymakers to an informal talk about your project.

1. Be sure to **involve local media** and to give relevance to your project's achievements and key events. You may also invite local authorities to attend significant events of your project.
2. **Use storytelling** to make your project memorable. Storytelling is a powerful communication tool (see chapter): our brain craves stories and remembers them well. For example, if your project is about improving the air quality in your neighbourhood you may tell the story of how much pollutants a kid will breathe on their way to school, or of how many particles accumulate every day on the blankets that are hanged on the balcony to dry.
3. **Share concrete examples of projects who had a significant impact in their city, communities,** etc. There are plenty of CS projects that really made a difference, you can find many examples on the EU Citizen Science platform, but it is worth also exploring your national CS platforms.

Resources:

- NEWSERA: [Blueprint for #CitSciComm with and for policymakers](#)
- Hecker *et al.* 2018. Innovation in citizen science – perspectives on science (https://doi.org/10.5334/CSTP.114)
- When U. *et al.* 2021. Capturing and communicating impact of citizen science for policy: A storytelling approach. https://doi.org/10.1016/j.jenvman.2021.113082.
- CS Champions podcast ep. 2: [your window on local traffic - making a business out of citizen science for smart cities](#)
- CS Champions podcast ep. 6: [Building smart cities of the future with citizen science - the case of Leuven, Belgium](#)

8.2.2.2 Engaging with Makers communities

As reported in D2.2, the involvement of Makers communities is of critical importance in CS projects about smart and climate-neutral cities. Makers are groups of people focused on creative and hands-on technology, and they can support CS in many ways.

If you think that your project will benefit from engaging the Makers communities, you may find some of the following points interesting.

1. **Co-creation** is the base to build a solid relationship with the Makers communities. The project, its goals, values, and expected impacts

should be discussed together. Designing the project together since its early phases will also help you in identifying how the specific skills of the members of the Makers community can support it.

2. It is important to offer a **variety of different positions inside your project**, so that the Makers may choose the one that best suits them. Some will be happy to join as a software or hardware engineer, others as community managers or process creators.

3. Use **collaborative methodologies** such as workshops, hackathons, etc. If you are not familiar with them, consider hiring a professional facilitator for these activities.

4. Be sure that **the work of the Makers community is always acknowledged.** You may use different channels to do it, from adding people's names and official acknowledgments on scientific papers, to inviting Makers to talk at scientific conferences, to contacting local media, and so on.

Resources:

- Baudry J. *et al*. 2021. The collectives of online citizen science (https://doi.org/10.1177/03063127211058791)
- Boone A. *et al*. 2024. Reimagining Meaningful Data Work through Citizen Science (https://doi.org/10.1145/3687049)
- Cappa F. *et al*. 2018. Bring them aboard: Rewarding participation in technology-mediated citizen science projects (https://doi.org/10.1016/j.chb.2018.08.017)

8.2.3 Adaptation to climate change

8.2.3.1 Involving local communities

Projects falling under the Adaptation to Climate Change umbrella usually focuses on **local issues**, therefore involving local communities is a crucial aspect for their success.

If you are planning to set-up one of these projects, here are some guidelines you may find useful.

1. **Use the local language.** English communication is OK for international interactions and EU projects reports, but it will not work on a non-native English community. If there is more than one linguistic group in your community, you should consider providing

information and training materials in all the languages spoken by the different communities.

2. **Choose the right communication channel.** Which is the most used by the local community, Facebook or TikTok? Or maybe they mostly rely on WhatsApp or Telegram groups? You should go where your target audience is, because the opposite is not going to happen. If you don't know which communication channel is the most used, you may want to run a quick survey to find it out.

3. **Listen to your community**. This kind of CS projects may be born from people's will to do something to protect the place where they live or work. People who decide to join the forces to improve their quality of life, or to protect the environment, are powerful allies and there are high chances that they remain motivated throughout the duration of the whole project.

4. **Value and integrate local knowledge.** Local communities know a lot about the place where they live, even though they often do not communicate it following the scientific standard. This doesn't mean that they are ignorant or that they don't know what is going on. You can value their knowledge by organising co-creation events and workshops.

5. If you are not part of the local community, **find someone that may introduce you to the people.** This will help the process of building trust, and people may be more willing to join the project.

6. **Be flexible and inclusive.** Not all people have plenty of free time to dedicate to a CS project. There are also differences in the availability of people covering different social roles, for example in a country where childcare is traditionally delegated to women, they will have less free time to join your project, and they may be free at different times of the day with respect to the men. If your project requires in-person meetings be sure to choose a time where all the community representatives can join.

Resources:

- Liñán S. et al. 2022. A new theoretical engagement framework for citizen science projects: using a multi-temporal approach to address long-term public engagement challenges. https://doi.org/10.1088/1748-9326/ac939d.
- NEWSERA: Blueprint for #CitSciComm with and for Citizen scientists and society at large

- CS Champions podcast ep. 9: [bioblitz events to monitor biodiversity in the face of climate change](#)
- CS Champions podcast ep. 7: [citizens' role for a planet "on the move" - detection and eradication of invasive plant species in Portugal](#)

2.8.3.2 Connecting with other projects and grow

If you aim to make your local CS project grow, you should try to **leverage on existing CS networks** to increase your connections and visibility.

1. If there is a **national CS association** in your country, you should join it and explore its resources. Join CS meetings and events to meet other projects to add to your network.
2. You can also use online platforms such as the **EU Citizen Science platform or SciStarter** to find similar projects in your field.
3. **Share your data, experiences, and resources** with other projects to encourage knowledge exchange. Promote and join collaborative events and campaigns with other CS projects.
4. **Curate your project visibility** to increase the number of volunteers. Use a multi-channel communication approach and don't forget about traditional media.

Resources:

- Futch S. *et al.* 2024. Exploring Project Connections Across the Citizen Science Landscape: A Social Network Analysis of Shared Volunteers (https://doi.org/10.1177/21582440241298424)
- NEWSERA: [Blueprint for #CitSciComm with and for Citizen scientists and society at large](#)
- SciStarter: https://scistarter.org/
- EU Citizen Science: https://www.citizenscience.eu/
- [CROPS transnational communities](#)

8.2.4 A Soil Deal for Europe

8.2.4.1 Active role of Citizen Scientists

Citizen scientists' involvement in **knowledge building** is a critical point in regarding CS projects of the Soil Deal Mission, and it is important that your volunteers aren't only data collectors, but that there is a process of knowledge exchange and co-creation.

1. **Encourage inclusive participation and reflection.** Clearly explain the research questions to your project's participants, formulating them in an understandable and relatable way.
2. **Create horizontal spaces** for volunteers to communicate and discuss with each other about the project's processes and outcomes.
3. **Provide training, resources, and ongoing support to the project's participants.** You may try different formats for your training: in-presence events, online video, handbooks, etc.
4. **Recognise and celebrate contributions** from all participants and integrate different kinds of knowledge in your project. When you share your results, be sure that they are in a form that is accessible to all the participants. For example, you may use non-scientific articles on local media, or organise dedicated events for your project's volunteers.

Resources:

- Senabre E. 2018. Participatory design of citizen science experiments. (https://doi.org/10.3916/C54-2018-03)
- NEWSERA: Blueprint for #CitSciComm with and for Citizen scientists and society at large
- NEWSERA: Blueprint for #CitSciComm with and for Career Scientists
- CS Champions podcast ep. 5: nosing around in gardens - citizen science to monitor soil in urban environments
- CS Champions podcast ep. 10: how soil samples from local communities can be the next big thing for biotechnology

8.2.5 Beating Cancer

In CS projects about cancer (and health in general) the sensitive topic and the potential fragility of patients participating in the data collection process are the main issues to be addressed, together with compliance with privacy regulations.

8.2.5.1 Building trust

Project participants need to trust that their **privacy** will be protected, and that their **data** will have a significant impact. To do so, you may follow these steps:

1. **Establish a trustful relationship with your volunteers.** Clearly state the objectives of your project, which data will be collected and how they will be shared and with whom.
2. **Follow solid protocols** for data collections and sharing, keeping in mind that you may be working with very sensitive information. Ask an expert to follow you in this process. You should find a balance between data accessibility (e.g. uploading on an open CS platform) and patient privacy.
3. **Obtain ethical approval and informed consent** from all your participants and be aware of power dynamics and vulnerable groups involved in your project. You may want to choose, for example, spokespersons from the more vulnerable groups to be sure that their voice is heard and the data collection process is respectful of their needs.
4. Empower your project participants thinking of them as **co-researchers, not only data collectors**, and always acknowledge their contribution.
5. Be sure that your data are collected using a **standardised, solid protocol** to make them useful for scientific research and favour the knowledge exchange process with other projects.

Resources:

- Broeder *et al.* 2016. Citizen Science for public health (https://doi.org/10.1093/heapro/daw086)
- Todowede O. *et al.* 2024. Best practice guidelines for citizen science in mental health research: systematic review and evidence synthesis (https://doi.org/10.3389/fpsyt.2023.1175311)
- CS Champions podcast ep. 11: Vaginal swabs to revolutionise women's health research: how citizen science helps to investigate the female microbiome

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Annexes

Annex 1: survey items

<u>SECTION 1 - Growing citizen science- CROPS Qs</u>

CROPS is a project funded by the European Union (GA 101131696) aspiring to support the transition of citizen science from small-scale to a Europe-wide level, moving it towards a modern, open-science approach.

To support the upscaling of citizen science, in CROPS we are working to:

- 📍 **appraise** *existing citizen science practices*

- 📚 *create* **protocols and guidance** *for the upscaling of citizen science*

- ✏️ *identify and guide* **practical considerations**, *including communication and funding*

- 👫 *develop* **transnational citizen science communities.**

<u>*In order to achieve these interweaving tasks, we need to hear from you, citizen science project managers and practitioners!*</u>

This form will give us context to our most pressing questions, guide the definition of upscaling protocols and in turn will go to you, to create and inform the citizen science transnational community! **The following questions are aimed at <u>citizen science project managers</u>, so if your role does not involve overseeing aspects of citizen science activities, please be so kind to forward the link to whom it may concern.**

⏰ *The filling up should take no more than* **10 minutes** *if you have all information with you.*

Thank you for your cooperation,

The CROPS consortium
https://www.crops-cs.eu/

- Email:

All data shared in this survey will be treated following the privacy policy agreement and below consent form:

You are invited to participate in research activities conducted within the CROPS project. This research aims to advance citizen science initiatives across Europe. Your participation is voluntary, and you may withdraw at any time without consequence.

Purpose of Data Collection

- *Your data will be used for research purposes within the CROPS project.*

- *The collected information may be used in reports, publications, and presentations related to the project.*
- *Data may be anonymized and shared in open-access repositories if necessary.*

Data Protection & Confidentiality

- *All personal data will be stored securely and handled in accordance with GDPR (EU 2016/679).*
- *If any personal information is collected, it will be anonymized or pseudonymized when used in research.*
- *Your data will not be shared with third parties beyond project partners without additional consent.*
- *Your emails will only be used to share updates inside the project and will not be shared outside.*

Your Rights

- *You have the right to access, rectify, or request the deletion of your data.*
- *You can withdraw consent at any time without providing a reason.*

Ethics

CROPS and all those involved from beneficiary and partner organisations will conduct research and commit to abide strictly to the following principles: · Respect human dignity and integrity. · Ensure honesty and transparency towards participants and notably getting free and informed consent. · Protect vulnerable persons. · Ensure privacy and confidentiality. · Share the benefits with disadvantaged populations. · Follow the highest standards of research integrity (i.e. avoiding any kind of fabrication, falsification, plagiarism, unjustified double funding, or other type of research misconduct) as defined in the European Code of Conduct for Research Integrity.

Consent Statement

By ticking the box below, you confirm that:

☐ *You have read and understood this information.*

☐ *You voluntarily agree to participate.*

☐ *You understand your rights regarding your data*

☐ *You understand CROPS team will use your email to share only relevant resources and results from CROPS project to upscale your citizen science project*

Yes, I agree to the treatment of data

- **Please state the name of the citizen science project you represent**
- **Project website link**
- **Which Horizon Europe Mission does your project align with most closely?** *Adaptation to Climate Change: supporting EU regions, cities and local authorities in their efforts to build resilience against the impacts of climate change | Cancer: working with Europe's Beating Cancer Plan to improve the lives of more than 3 million people by 2030 through prevention, cure and solutions to live longer and better | Restore our Ocean and Waters by 2030: protect and restore the health of our ocean and waters through research and innovation, citizen engagement and blue investments | 100 Climate-Neutral and Smart Cities by 2030: supporting European cities to substantially contribute to the Green Deal target of reducing emissions by 55% by 2030 and, in more practical terms, to offer cleaner air, safer transport and less congestion and noise to their citizens | A Soil Deal for Europe: reduce desertification, conserve soil organic carbon stocks, stop soil sealing and increase re-use of urban soils, reduce soil pollution and enhance restoration, prevent erosion, improve soil structure to enhance soil biodiversity, reduce the EU global footprint on soils, improve soil literacy in society*
- **Do you perceive your project having a positive impact in any of these areas?** *(Choose all that apply) Behaviour change (e.g., increased recycling, conservation efforts) | Community engagement and involvement | Formal education (schools, univeristies) | Scientific research (innovation, new discoveries, relevant data collection) | Technological advances | Politics | Local policy influence | National policy influence | International policy influence | Social inclusion (gender, race, disabilities, etc.)*
- **How are you measuring the impact of your project?**
- **Can you provide an example of a measurable impact your project has had that aligns with one or more EU Missions?**

SECTION 2 - UPSCALING: Broadening the horizons of your citizen science project

*At CROPS we define **upscaling** for citizen science projects as the **broadening** of either/or:*

💡 *topical or research scope*
🕹️ *methods or technology used*
👫 *types of communities involved*
🔁 *replication efforts*
📡 *dissemination efforts*

across geographical 🌍 ***and temporal*** 🕐 ***dimensions*** *towards increased data volume, enhanced trust in science and behavioural change, targeted policy and/or legal reforms.*

Keeping this definition in mind, please answer the next questions.

- **On a scale from 1 to 5 how satisfied are you with respect to the contributions from your community and/practitioners to-date?**
- **On a scale from 1 to 5, how motivated are you and your organisation to upscale your citizen science project?**
- **When considering upscaling, which of the following are you most motivated to broaden?** *Topical or research scope | methods or technology used | types of communities involved | replication efforts | dissemination efforts | Other*
- **When considering geographical upscaling, what would you recognise as the most appropriate approach given your project characteristics?** *Extend activities and outcomes (e.g. from neighbourhood to city to region)| Replicate in another similar context (e.g. from Barcelona to Amsterdam) | I am not motivated in upscaling geographically | Other*
- **What resources would you require the most for your project to become transnational across the EU?** *(Choose 3 max) Financial and human resources | Deployment of technical equipment | Extended IT storage and processing capability | Specific networks of stakeholders (e.g. schools) | Massive communication | Other*
- **What training topics/areas do you believe would be needed to become transnational?**
- **To what extent do you argue that the following resources were openly available and provided in an accessible manner during the development of your citizen science project?** *Data | Software | Hardware | Outputs (e.g. publications and reports) | Training resources |*
- **Beyond citizens, how critical for upscaling would it be for your project to actively engage each of the following stakeholders:** *Incubators/ accelerators/ social innovation entities | NGO's/ Grassroots communities | Private sponsors | Local governments and authorities | National governments | Local authorities | Networks (e.g. city networks, mayors, etc) | Journalists | Activists | Academia/ Researchers | Influencers | Local or national projects | European or international projects | Students |*
- **Which (if any) open data repositories or platforms do you use to share your data?** *Project website | Subject-specific platforms (iNaturalist, EMODNet etc.) | General data platforms or repositories (Zenodo, EOSC, GitHub) | I do not share my data on any repositories or platforms | I am not sure | Other*

SECTION 3- Communication strategies

These following questions will help us to define clear communication strategies to upscale citizen science projects. 📡

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- **For your project, do you have clear communication goals and strategies to reach objectives?** *Yes, we have and use a communication strategy | Not yet, but planning on it | No, we do not have a communication strategy | I am not sure*

- **Who is your project mainly communicating to?** *(Select all that apply) Educators, Teachers, Science trainers and School managers | Students | Museums | Libraries | Outdoor guides and athletes | Artist designs and art academics | National projects | European projects | Policymakers | Scientists and researchers | Press and media | Businesses | Local and national governments | European Union and related missions | Other*

- **What is the age of the main target audience of your communication?** *5- 12 years old | 13- 18 years old | 19- 24 years old | 25-40 years old | 41- 60 years old | 60+ years old | All the above, we do not have a specific target audience age range*

- **Within your project, you are actively collaborating with:** *Incubators/ accelerators/ social innovation entities | NGO's/ Grassroots communities | Private sponsors | Local governments and authorities | National governments | Networks (e.g. city networks, mayors, etc) | Journalists | Activists | Science communicators | Influencers | Local or national projects | European or international projects*

- **On behalf of your citizen science project, about how many times over the course of a year do you engage in each of the following activities?** *Attend scientific conferences | Present in scientific conferences | Publish scientific papers (as author or co-author) | Send out press releases*

- **For how many years has you project been active?** *1| 2| 3 | 5 | 5-10 | 10- 15 | 15 – 20| >20*

- **How many citizens have you involved since the start of your project?** *0-100 | 101 – 200 | 201- 500 | 501- 1000 | >1000 | I am not sure*

- **Considering the past and current communication activities of your project, how important has been for your project success to:** *Communicate and engage regularly with local communities | Run on-site and in-person events about your project with local communities | Have good quality videos and photos in your project's communication | Have catchy written communication (e.g. copywriting, slogan, etc) for your project | Provide feedback to the participants after the data collection activity | Acknowledge the people who collected the data every time that you use/ present them | Involve your project participants in scientific events or conferences to present the results | Provide training to project's participants before data collection activities | Use different languages in communication materials | Be present on Social Medias | Be consistent with press engagement*

- **What communication strategy do you think contributed the most to the success of your project?**

- **What would you have done differently to overcome communication challenges?**

SECTION 4- Funding Schemes

*Since funding is often an issue for the sustainability, success and upscaling of citizen science projects, your answers to the following questions will help us to **recommend successful funding pathways** for the upscaling of projects in the future.* 💸

- **Please select the funding schemes that you use most for your project:** *Crowdfunding | Donations | Foundation | Private funding | Public funding (grants) | Public funding (subventions) | Public funding (subsidies) | Private + Public funding | Self funded by the community | Other*

- **To what type of activities do you allocate mostly the funding received?** *Research activities (data management and analysis) | Communication activities (website and social media) | Fieldwork (data collection) | Community activities (trainings and events) | Materials and equipment | Travelling | I am not sure | Other*

- **How important do you consider these funding schemes for citizen science projects in general?** *Crowdfunding | Donations | Foundations | Private funding | Public funding (grants) | Public funding (subventions) | Public funding (subsidies) | Private + Public funding | In-kind contribution | Non-monetary resources (free trainings, free materials and equipment)*

- **How much do you consider these funding tasks a challenge?** *Finding adequate public funding schemes | Communicating support opportunities to a wide audience (e.g. donations) | Dealing with admin workload | Gaining confidence of private funding entities | Eligibility | Managing mixed funding sources at the same time | Having steady resources for projects daily activities | Writing up applications | Communicating the project impact & success | Finance reporting*

- **What funding schemes have contributed the most to the success of your project?**

- **What would you do differently in your funding scheme to overcome challenges?**

SECTION 5- Hit send and thank you for your contribution!

Your answers will be fundamental in designing upscaling materials to bring citizen science to the next level in Europe and beyond.

For any questions or concerns regarding this survey, please refer to tania.moreira@inova.business

Annex 2 – Survey results

The answers to the questions are available [here](#).