ecs european citizen science

D7.1 European Citizen Science co-designed strategy for policy engagement

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Abstract	Building on a multi-method co-design process involving consortium partners and affiliated entities, this deliverable provides a strategic framework and roadmap for the policy engagement activities of the ECS project. It identifies relevant stakeholders and initiatives, defines the core aims of ECS policy engagement activities, and outlines the role that the work package dedicated to policy impact will play in coordinating, supporting and implementing these activities.
Keywords	Citizen science, stakeholder engagement, policy engagement.

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Version Log

Version	Date	Released by	Nature of Change
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1.0	31.07.2023	Marius Oesterheld, David Ziegler & Silke Voigt-Heucke (MfN); Claudia Fabó Cartas (ECSA)	Final version ready for submission

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List of definitions and acronyms

Acronym	Expansion
AE	Affiliated entity (Entities affiliated to a beneficiary which participate in the action with similar rights and obligations as the beneficiaries)
CC	Creative Commons
CORDIS	Community Research and Development Information Service
CS	Citizen science
CSA	Coordination and Support Action
Data	Information, in particular facts or numbers, collected to be examined and considered as a basis for reasoning, discussion, or calculation. In a research context, examples of data include statistics, results of experiments, measurements, observations resulting from fieldwork, survey results, interview recordings and images. The focus is on research data that is available in digital form. (European Commission, 2016)
Dataset (DS)	A grouping of data
DG R&I	Directorate-General Research and Innovation
DMP	Data Management Plan
EC	European Commission
ECS	European Citizen Science
ECSA	European Citizen Science Association
EOSC	European Open Science Cloud
ERA	European Research Area
EU	European Union
FAIR	Findable, Accessible, Interoperable and Reusable
GA	Grant Agreement
GDPR	General Data Protection Regulation

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ICT	Information and Communication Technology
JRC	Joint Research Centre - European Commission
MCAA	Marie Curie Alumni Association
Metadata	A description of data
NCP	National Contact Point
NGO	Non-Governmental Organization
MLE	Mutual Learning Exercise
NMC	Nordlicht Management Consultant
Open Access	Access that is free to all and free of any restrictions
Open Data	Data that can be freely used, shared and built on by anyone for any purpose
OpenAIRE	Open Access Infrastructure for Research in Europe
PPSR	Public Participation in Scientific Research
PSF	Policy Support Facility
REA	European Research Executive Agency
RPO	Research Performing Organizations
Repository	A location in which data is stored or managed
SD	Stickydot SRL
SDGs	Sustainable Development Goals
SfC	Science for Change, SL
UK	United Kingdom
WP	Work Package

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Executive summary

The 'European Citizen Science co-designed strategy for policy engagement' is Deliverable 7.1 (D7.1) of the EU-funded project European Citizen Science. This deliverable is part of WP7 'Policy impacts and recommendations', whose overall objective is to promote the recognition of citizen science (CS) as a powerful policy-making tool and a valuable research approach for scientific excellence and sustainable development in Europe.

The aim of this deliverable is to produce a comprehensive strategy, informed by a collaborative co-design process facilitated by MfN (the lead beneficiary of WP7). All consortium members actively participated in this process to achieve two main objectives:

- Define the aim, scope, target audience and operational approach of ECS policy engagement activities.
- To outline the role that WP7 will play in the effective implementation of these activities.

This deliverable serves as a strategic framework for all policy engagement efforts of WP7 and the entire project, and presents a roadmap of the planned activities and future tasks. As such, the document will be a valuable reference tool for the planning, preparation and implementation of ECS policy engagement activities by WP7 and further consortium members throughout the lifetime of the project. It is geared primarily towards those who will be involved in ECS policy engagement – the consortium partners, affiliated entities and CS Ambassadors.

By consolidating the collective expertise and perspectives of the consortium members, this deliverable ensures a consistent approach to policy engagement within the project and the support provided by WP7. It lays the groundwork for high-impact policy engagement by analyzing the status quo, setting policy priorities, identifying key actors and documents and defining the role of WP7 within the policy engagement activities of the ECS project. The deliverable will serve as a reference document, enabling efficient alignment, coordination, and monitoring of efforts, while promoting transparency and accountability throughout the process.

With the strategic framework outlined in this deliverable, we aim to promote effective policy engagement, advance the goals of the ECS project and make significant contributions to the field of citizen science. The document will enable WP7 as well as consortium members to navigate the policy landscape with confidence, maximizing the impact of their activities and driving positive change at local, national and international levels.

The core findings of this document are reflected in:

1. Setting policy priorities
2. Identifying key actors and documents
3. Defining the role of WP7 in ECS policy engagement

All findings, inputs and future tasks are summarized in the Roadmap for ECS policy engagement.

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1. Introduction

The introduction briefly describes the ECS project, its aims, structure and project consortium, before outlining the purpose of the ECS policy engagement strategy and explaining the co-design process used to develop it. The deliverable is structured as follows:

The second section sets the scene for the ECS policy engagement strategy by presenting a brief history of EU funding for CS, as well as an overview of the status quo in terms of policy support, funding and infrastructure for CS in countries and regions represented by ECS consortium members. Section 3 defines the target audience for ECS policy engagement activities, provides an overview of the key stakeholder groups, and summarizes the results of a mapping of relevant projects and initiatives in the field of CS. Section 4 presents a set of policy priorities – both for the national and for the European level – which are grounded in input received during the T7.1 co-design process. Section 5 clarifies the role WP7 will play in reaching out to relevant stakeholders, supporting the other consortium members in their own policy engagement activities, and serving as an intermediary between the CS community and stakeholders in the field of policy. Section 6 sketches the future tasks and activities of WP7 and elucidates how they will be shaped by the strategy developed in this deliverable. Section 7 defines the roadmap on the basis of the findings from the other sections.

1.1 Project background

Project description

The overall objective of ECS is to a) broaden the European citizen science community by raising awareness for citizen science, supporting emerging initiatives and networks in countries where citizen science is not yet well-established, reaching out to underrepresented groups and communities, and developing training for citizen science newcomers, and to b) strengthen it by fostering collaboration between different projects and initiatives in the field, involving citizen science practitioners in the co-design of new tools and resources, implementing a variety of capacity-building activities, and advocating for citizen science among policy-makers and other key stakeholders.

The six specific objectives of ECS are:

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

To achieve these objectives, 12 Beneficiaries and 9 Affiliated Entities are collaborating in the following Work Packages:

WP1 – Project management and coordination

WP2 – Strengthening links and collaboration

WP3 – Enhancing digital skills for FAIR and open science communities

WP4 – European citizen science academy

WP5 – Boosting inclusion and diversity for mainstreaming citizen science

WP6 – Communication and outreach for the global citizen science community

WP7 – Policy impacts and recommendations

WP8 – Impact Pathways Assessment

WP9 – Ethics requirements

In addition to taking the lead in the development of ECS policy recommendations, WP7 will complement the activities of the other WPs in three ways. It will generate policy support for the project objectives listed above, boost the impact of ECS awareness-raising and capacity-building activities by engaging with key policy-makers on the local, regional, national and European level, and help ensure the utilization and uptake of ECS outputs and insights in policy contexts.

Particularly close links exist between WP7 and WPs 4 (European citizen science academy) and 5 (Boosting inclusion and diversity for mainstreaming citizen science). In collaboration with WP4, the WP7 team will, for instance, reach out to the emerging Horizon Europe Missions, Clusters, and wider ERA activities to identify capacity-building needs, develop training for policy-makers interested in engaging with CS practitioners and vice versa, and help ensure that the portfolio of the ECS Academy addresses the need to support high-level policy goals such as the SDGs or the European Green Deal.

In the context of WP5, the WP7 team will work closely with AEs and ECS Ambassadors to help advocate for citizen science in countries where the practice is not yet well-established. To this end, WP7 will help organize stakeholder workshops, develop coaching materials to facilitate advocacy for CS, and co-create effective communication strategies for engaging with policy-makers on the local, regional and national level. Moreover, WP7 will join forces with WP5 to promote mechanisms for career incentives to help mainstream citizen science across all scientific fields and disciplines.

1.2 The ECS policy engagement strategy

Policy is understood as a set of plans, ideas, and programs that shape action by government, institutional bodies or other entities. Policy engagement describes how policy-makers and (citizen science) stakeholders negotiate their common interest, and may encompass formal as well as informal interactions. As such, policy-makers are key stakeholders in the field of citizen science (for a clarification of the term policy-maker, see 3.1 Stakeholder mapping). They can play a crucial role not only in funding CS projects, but also in creating institutional frameworks and infrastructures, setting agendas and priorities, or promoting networking and synergies between different actors in the field. They are also an important audience for the outputs and results generated by CS projects, which can be used to inform reports on best practices that are, in turn, helpful in shaping the selection and evaluation criteria of new funding programs. Last but not least, policy-makers play a crucial role in

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supporting citizen science through legitimization (Schade et al., 2021), which is of paramount importance for establishing trust in citizen science among researchers and the public.

Research results produced by CS projects could also be leveraged to advocate for a more extensive use of scientific evidence in policy-making. At present, grounding policy decisions in scientific data is still far from standard procedure, although many scholars as well as policy-makers themselves argue that evidence-based policy-making is a critical component of effective governance (Cairney, 2016; Sucha and Sienkiewicz, 2020; Van Woensel, 2021; Joint Research Centre, 2022). Drawing upon research outcomes generated through citizen science initiatives could be particularly attractive for policy-makers, since, in addition to enhancing the quantity and granularity of available data, they also have the potential to bolster the legitimacy of policy decisions. After all, CS research results have the potential to reflect the knowledge, experiences, and concerns of members of the public (bearing in mind that key aspects of many CS projects are still designed by professional scientists as well as inclusiveness remaining an important issue in citizen science). The inclusion of such information in policy-making processes thus offers a valuable opportunity to foster transparency and promote a more democratic approach to governance.

It is worth pointing out that policy impact is not an obligatory element of CS. Not all CS projects aim to engage with policy-makers and influence policy decisions. Nevertheless, countless CS projects do yield data and insights that could help address pressing societal or ecological issues in a certain locality and are willing to share them with relevant decision-makers.

Despite its potential, the integration of citizen science data into official reporting systems, such as the Sustainable Development Goals (SDGs) or other standard monitoring efforts, faces several challenges.

Challenges in integrating citizen science data can include:

1. **Data quality challenges:** One of the main concerns hindering the integration of citizen science data is the perceived quality of data collected by non-professionals. The accuracy and reliability of such data may be questioned, leading to reluctance to include it in official reports (Turbé et al., 2019; Blaney, R.J.P. et al., 2016).

2. **Standardization and integration challenges:** Citizen science projects often use different methodologies and data collection protocols, making it difficult to standardize and integrate their data into official reporting systems. Ensuring consistency across datasets is essential for accurate and meaningful reporting. Furthermore, integrating data from different sources, including citizen science, into official reporting systems requires appropriate data integration techniques and tools. The complexity involved can be a barrier to implementation (Bishop et al., 2020; Proden & Imaralieva, 2021; Schade et al., 2017).

3. **Lack of infrastructure and data access:** Citizen science initiatives regularly operate independently, without having access to infrastructure for data management and sharing. The lack of resources hinders data sharing and makes it difficult to integrate citizen science data into official reporting. In addition, some citizen science projects may not readily share or provide open access to their data, creating barriers to its sharing and integration into official reporting platforms (Moczek et al., 2021; Schade et al., 2017).

5. **Lack of awareness and support systems**: Limited awareness among decision-makers and reporting agencies of the potential value of citizen science data for official reporting is another challenge. In addition, citizen

science projects and managers frequently face barriers in knowing where and how to share and report their data due to a lack of infrastructure (Voigt-Heucke et al., 2023; Schade et al., 2021).

Although a lot of progress has recently been made (Shanley et al., 2019; Turbé et al., 2019), the impact of such project results on policy decisions may be limited by a wide range of factors. The integration of CS-generated data into official statistics, for example, may be hampered by methodological incompatibility, legal concerns or lacking data interoperability. Moreover, policy-makers are rarely involved at the project design stage, which makes it difficult to align project goals and outputs with their information needs. Other common obstacles include problems with data accessibility, a lack of awareness of and trust in CS on the part of policy actors, as well as the absence of effective communication channels between CS practitioners and policy-makers.

Over the past decade, the field of citizen science has witnessed significant growth and development. As highlighted in Annex C, a selection of lighthouse cases exemplifies the remarkable strides made by various citizen science projects in addressing the challenges hindering the integration of citizen science data into official reporting systems. These cases showcase innovative approaches, successful collaborations, and transformative outcomes achieved through citizen science initiatives. Through these lighthouse cases, valuable lessons can be learned, hopefully leading to the identification of effective strategies and best practices. Building on the achievements of the last decade, the ECS project aims to further catalyze progress in overcoming the challenges faced by citizen science initiatives. By consolidating knowledge from successful lighthouse cases and harnessing collective expertise, the ECS project aims to strengthen policy support for citizen science and encourage wider policy uptake of CS-generated evidence and data. As outlined in the Grant Agreement, the overarching aim of WP7 is to promote the recognition of CS as a powerful policy-making tool and a valuable research approach for scientific excellence and sustainable development in Europe[1]. WP7 comprises the following five interlinked tasks:

- the co-design of a strategy for policy engagement (T7.1)
- the formulation of policy recommendations for CS as a key pillar of open science (T7.2)
- advocacy for CS among key stakeholders at the national, regional, and local level (T7.3)
- the monitoring and identification of opportunities for supporting and strengthening links between CS and the SDGs (T7.4)
- and the organizing of high-level policy events to encourage the uptake of policy recommendations developed in task T7.2 (T7.5)

[1] The effects of citizen science on policy making and sustainable development have been studied by various authors, e.g. Schade et al., 2017; Fraisl et al., 2020; Oturai et al., 2023.

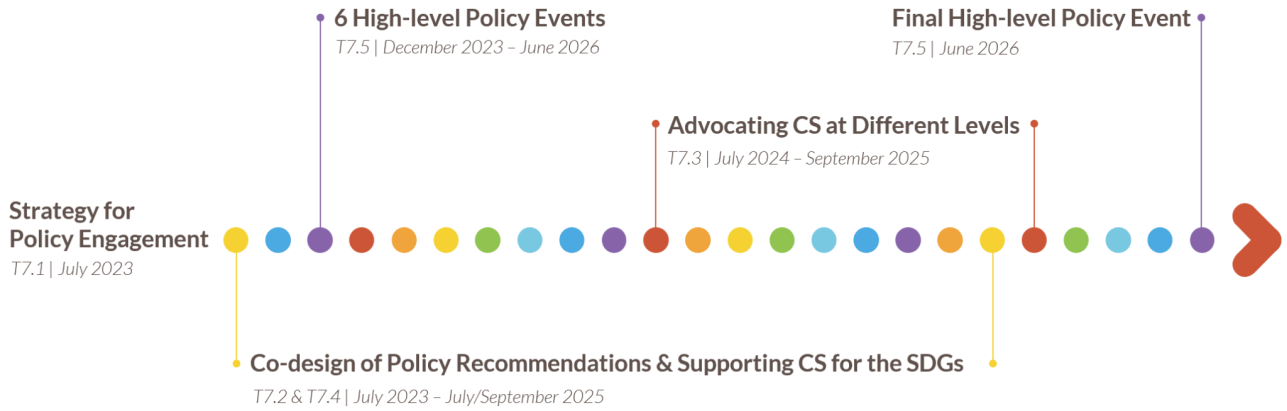

Figure 1. Timeline of tasks within Work Package 7 (WP7).

By harnessing the collective power of the ECS consortium and through the work of WP7, we aim to generate significant momentum to strengthen policy support and accelerate progress towards a more sustainable and inclusive future in Europe.

1.2.1 The co-design process

The present deliverable summarizes the work done in task T7.1 ("Strategy for policy engagement"), which forms the starting point and lays the groundwork for the ECS project's policy engagement efforts. As such, it serves as a framework for all future WP7 activities. Sections 2, 3, 4 and 5 define the target audience of these activities, provide an overview of key stakeholder groups, outline a set of strategic priorities, and elucidate the role of WP7 in coordinating the entire consortium's policy-related activities. Section 6 details the steps that will be taken over the coming three years to engage all relevant stakeholders, translate the ECS policy priorities into concrete actions and outputs, and support consortium partners, AEs and CS Ambassadors[2] in their policy engagement.

In order to ensure that national, regional and local differences with regard to policy priorities and other context-specific parameters are given due consideration, the policy engagement strategy presented in this document was co-designed by all ECS consortium partners and AEs (apart from NMC) using a combination of online workshops and asynchronous collaboration via a survey, a shared Zotero library, a joint stakeholder mapping spreadsheet, and a shared draft document of this deliverable.

The stakeholder mapping spreadsheet was developed by Claudia Fabó Cartas (ECSA) based on input from Alex Amo (SfC) and incorporating suggestions from other consortium members. It will be used as a reference document not only in WP7, but also in connection with all other tasks related to stakeholder engagement – namely T2.1, T2.2, T2.3, T2.5, T5.3, T5.4, T5.5 and T6.1.

[2] In May 2023, ECS launched an open call to recruit 28 Citizen Science Ambassadors (EU-27 + the UK) to represent the project in their respective countries, support and promote the various ECS activities, and raise awareness about citizen science. For more information on this call please refer to https://eu-citizen.science/call_ambassadors/.

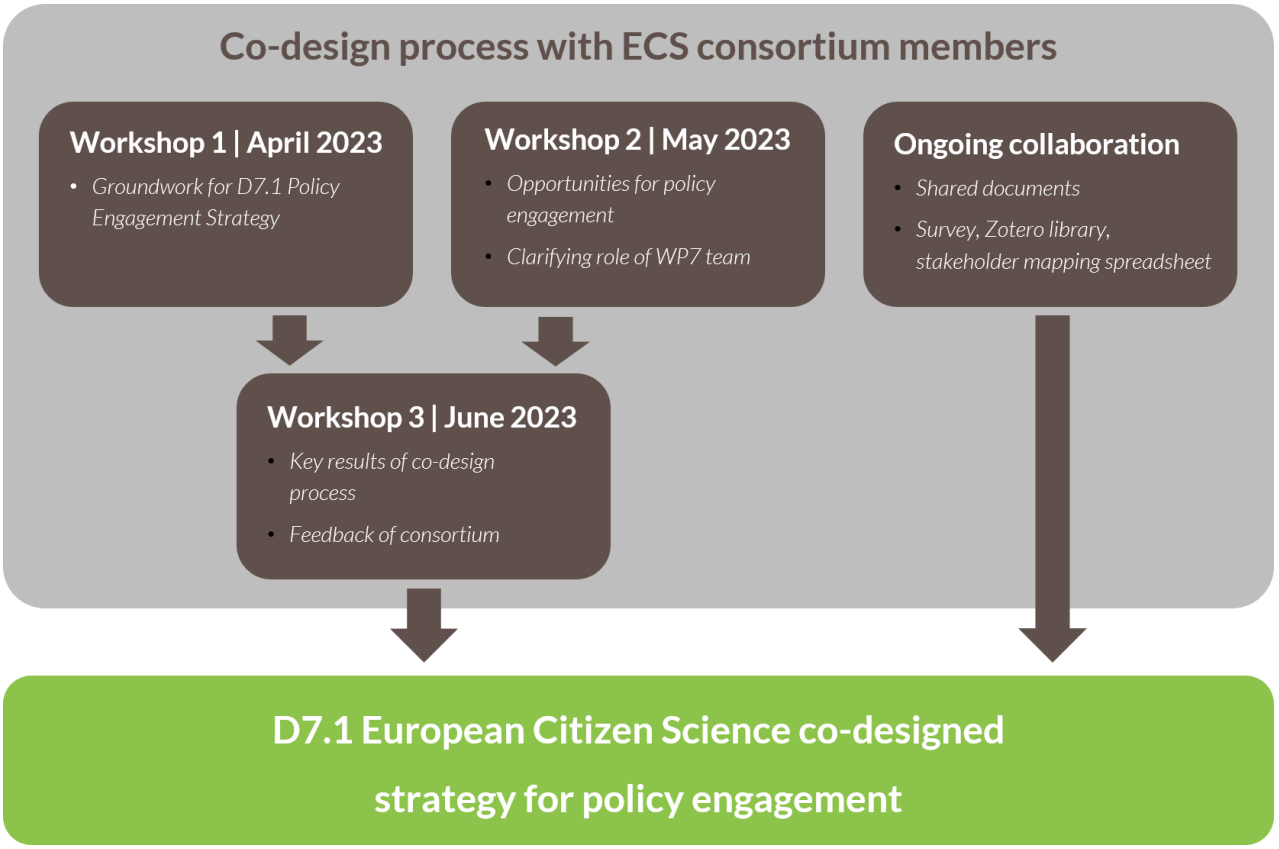

Figure 2. Co-design process of the D7.1 European Citizen Science co-designed strategy for policy engagement.

1.2.2 The co-design workshops

The online co-design workshops took place in April, May, and June 2023.

Workshop 1

During the first session, held on 24 April, a Miro board was used to start laying the groundwork for our policy engagement strategy by defining its aim, scope, and target audience. Specifically, we collected input under the following five headings:

- What is our aim? What kind of change do we want to initiate?
- Name three policy priorities concerning CS in your country/region/city
- Which role can ECS play in terms of policy engagement? Which target audiences should we attempt to reach?
- How shall we define the term 'policy-maker'?
- How should we 'map' or cluster policy-makers?

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Workshop 2

The second session, held on 16 May, aimed to identify opportunities for policy engagement and clarify the role the WP7 team could play to support consortium partners and AEs in their policy engagement activities. A Miro board was once again used to collect answers to the following questions:

- Are there specific windows of opportunities for policy engagement in your country/region/city (e.g. relevant events, consultation processes)? Are there ongoing societal debates that we could leverage to lobby for CS?
- Can you think of any lighthouse projects or success stories in your region/country that we could use to showcase the benefits of CS?
- How can we (the MfN team) support you in your policy engagement? What kind of resources or services would you like us to provide?
- Do you know of any specific monitoring programs or other research efforts in your city/region/country that CS could potentially contribute to?

Workshop 3

Drawing on the results of these two meetings (in combination with the other elements of our co-design approach), the MfN team then produced a first draft of D7.1. The purpose of the third and final co-design workshop on 29 June was to wrap up the co-design process by providing an overview of the key results from the previous two co-design sessions and inviting all consortium members to provide feedback on the policy priorities identified in this first draft of deliverable D7.1. Using a PADLET prepared by Stickydot, the workshop participants were asked to give their feedback for each priority using the "I Like, I Wish, I Wonder" approach. The category 'I like' allowed us to assess whether the consortium members generally appreciate the policy priority in question. The points listed under 'I wish' provided us with constructive criticism and allowed us to identify points that may be missing or need modification. Last but not least, the category 'I wonder' created a value-free space for suggestions and ideas (see Annex A).

2. The status quo: Policy support, funding and infrastructure for citizen science in Europe

EU policy support for citizen science has witnessed significant evolution, driven by an increasing acknowledgment of its role in engaging citizens, advancing scientific research, and addressing societal challenges (for details, see Schade et al., 2021). This is also reflected in the ways citizen science funding has evolved on a European level. In the following, we will provide a brief introduction to the current state of affairs concerning policy support, funding, and infrastructure for citizen science in Europe.

1. **Early Years:** In the early years, EU funding for citizen science was mainly channeled through various research and innovation programs, such as the Framework programs (FP) for Research and Technological Development. These programs supported projects that involved citizens in scientific activities and encouraged their participation in data collection and analysis.

2. **Horizon 2020:** The Horizon 2020 program, spanning from 2014 to 2020, marked a significant milestone for citizen science funding. It explicitly recognized citizen science as an innovative approach to research and public engagement. Horizon 2020 funded numerous projects that focused on citizen science, promoting collaboration between researchers, citizens, and organizations across different disciplines and sectors. Through the 'Science with and for Society' (SwafS) section within Horizon 2020 alone, 25 projects received a total of EUR 65 million in funding. The recently published CORDIS Results Pack on citizen science (European Commission: Directorate General for Research and Innovation, 2022a) provides an overview of 12 projects across a wide range of topics and disciplines that were funded under the Horizon 2020 program and have made substantial contributions to capacity-building and the development of good practice in the field of citizen science.

3. **The European Open Science Cloud (EOSC):** The European Open Science Cloud initiative emerged as a strategic framework for sharing and accessing scientific data. It recognizes the potential of citizen science data and promotes their integration into the EOSC ecosystem. Funding opportunities within the EOSC framework support initiatives that facilitate data management, interoperability, and accessibility in citizen science.

4. **Horizon Europe:** The current EU research and innovation framework program, Horizon Europe (2021-2027), continues to highlight the importance of citizen science while placing particular emphasis on co-design and co-creation. It aims to further enhance the integration of citizens in research and innovation activities and promote the use of CS for addressing societal challenges. To this end, citizen engagement is incorporated across various clusters and Missions within Horizon Europe dedicated to a wide range of issues. Funding opportunities within Horizon Europe encourage cross-sectoral collaborations and the development of innovative citizen science approaches.

5. **Mutual Learning Exercise on Citizen Science Initiatives – Policy and Practice:** In late 2021, the Horizon Europe Policy Support Facility (PSF) within the Directorate-General for Research and Innovation (DG R&I) initiated a Mutual Learning Exercise (MLE) with representatives of 11 countries that aimed to facilitate the exchange of knowledge and lessons learned, and to develop a set of strategic recommendations geared towards further advancing the uptake and embedding of CS across the EU (Gold et al., 2023).

6. A **new ERA**: In 2020, the EC initiated a campaign to revitalize the European Research Area (ERA) with the aim of fostering a closer alignment between the different member states' research policies and programmes. The joint aims, values, and principles that form one pillar of the new ERA are outlined in the Pact for Research and Innovation in Europe. Adopted in 2021, this document names "increasing society's participation in the ERA" as a key priority (European Commission: Directorate General for Research and Innovation, 2022b). The European Research Area Policy Agenda, in turn, identifies citizen science as a valuable tool in promoting this societal participation in research and innovation. One concrete outcome of this policy agenda is the upscaling of the citizen science project Plastic

Pirates as a ERA pilot action (European Commission: Directorate General for Research and Innovation, 2022c).

In recent years, the incorporation of citizen science and participatory research has gained momentum in various EU initiatives, including for example BiodivERsA, the New Green Deal, and the New Bauhaus. These initiatives recognize the power of involving citizens in scientific processes and decision-making to address pressing environmental and societal challenges.

1. **BiodivERsA:** BiodivERsA is an EU network that supports research on biodiversity and ecosystem services. It actively promotes the involvement of citizens in research activities, acknowledging their role as valuable contributors to data collection, monitoring, and conservation efforts. BiodivERsA funds projects that engage citizens in studying biodiversity, enabling them to contribute to scientific knowledge, raise awareness, and enhance the understanding of ecological dynamics.

1. **The New Green Deal:** The European Green Deal is a comprehensive plan to transform the EU into a sustainable and climate neutral society. It recognizes the importance of involving citizens in environmental policies and decision-making. To support this objective, the newly created Green Deal DataSpace (GDDS), designed as an open ecosystem, plays a pivotal role in supporting these efforts. The GDDS is a ground-breaking cross-domain data space, unlike any previous offering, focused on harnessing the power of citizen science and participatory research. It serves as a platform providing access to a wide range of projects and services, all aimed at contributing to the goals of the European Green Deal. The European Green Deal's commitment to integrating citizen science approaches underlines its commitment to raising environmental awareness, promoting evidence-based policies and fostering a sense of shared responsibility for the well-being of the planet. Through the GDDS, individuals, organizations and institutions are invited to join forces, share knowledge and work together towards a more sustainable and climate-resilient future for all. By embracing this open ecosystem, stakeholders can become active agents of change and strengthen the European Green Deal's vision of a greener, more sustainable Europe.

2. **The New Bauhaus:** The New Bauhaus initiative aims to bring together design, sustainability, and innovation to create more inclusive and aesthetically pleasing living environments. Citizen science and participatory research play a role in engaging citizens in the design and development processes, ensuring that their perspectives, needs, and aspirations are taken into account. By involving citizens as active participants, the New Bauhaus seeks to foster co-creation, collaborative problem-solving, and the integration of local knowledge and values.

By integrating citizen science and participatory research into initiatives such as BiodivERsA, the New Green Deal and the New Bauhaus, the EU is recognising the value of inclusive and participatory approaches to tackling complex challenges. These initiatives provide opportunities for citizens to contribute to scientific research, policy-making and the shaping of sustainable and inclusive societies. As citizen science grows globally, a strategic, multi-scale approach is essential to capitalize on this impetus. Following Vohland et al. 2021, the approach revolves around three pillars: scaling up best practices, connecting with strategic partners, and engaging citizens in research and development.

The EU strategy involves scaling up citizen science initiatives across European countries, adapting solutions to different cultural contexts and larger scales, while sharing best practices and learning from pitfalls through structured methodologies. By working with civil society organizations and using both top-down and bottom-up approaches, the EU aims to address different geographical, cultural, political and social factors and harness the transformative potential of citizen science.

The EU also seeks to align citizen science with European policy priorities, such as the Green Deal, and global agendas, such as the Sustainable Development Goals. To create a strategic environment for citizen science to drive positive change, the EU provides capacity building, promotes knowledge transfer and innovation, and uses regional and structural funds to support under-represented areas. This comprehensive approach ensures that citizen science plays a central role in advancing research and policy outcomes for a more sustainable and inclusive future.

Overall, EU funding for citizen science has witnessed a progressive evolution, with increasing recognition of its value in research, policy-making, and citizen engagement. The funding has played a crucial role in supporting projects, fostering collaborations, and advancing the field of citizen science across Europe.

Shifting the analysis of policy support for CS to the national level reveals a more complex picture, as the following section demonstrates.

Recognizing the challenges posed by collecting comprehensive and up-to-date information on the state of citizen science in Europe through desktop research, the WP7 team of the ECS project took an alternative approach. Rather than relying solely on time-consuming literature reviews and language barriers, we leveraged the collective knowledge and expertise within our consortium. To facilitate this collaborative effort, we developed a user-friendly online survey and distributed it to all consortium members. The form contained the following seven questions:

1. *Is there a dedicated funding program for Citizen Science in this country/region?*
2. *Are there general research funding programs that mention Citizen Science?*
3. *Are there policy or strategy papers published by government institutions, large research organizations or funding agencies that mention Citizen Science?*
4. *Are there any Citizen Science networks, associations, or platforms in this country/region?*
5. *Do you know of any Citizen Science champions (i.e. individuals who actively promote and advocate for CS) in this country/region?*
6. *Are there any Citizen Science offices, coordinators, or contact points (e.g. in RPOs, museums, libraries)?*
7. *Do you know of any large Citizen Science events in this country/region?*

The responses received cover 14 countries and regions: Austria, Belgium (specifically Brussels-Capital Region and Flanders), Croatia, the Czech Republic, Denmark, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, and Spain.

The following graph provides an overview of the results.

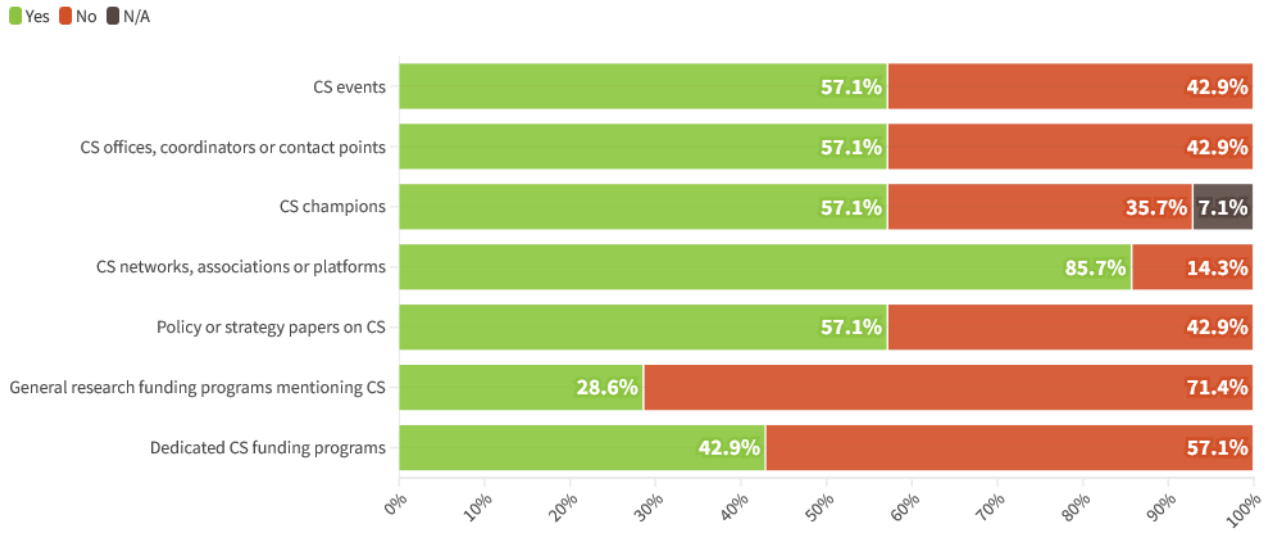

Figure 3. Levels of policy support, funding, and infrastructure for CS across 14 countries in Europe, based on yes/no questions.

These findings clearly indicate significant disparities in the levels of policy support, funding, and infrastructure for citizen science across different countries and regions.

For instance, large CS-related events were only reported for 8 of the 14 countries/regions represented in our survey. Examples include networking events, such as the State of Citizen Science meetup and Citizen Science Network Meeting (both organized by the Waag Futurelab in Amsterdam), annual conferences such as the Austrian Citizen Science Conference or the Forum Citizen Science (Germany), but also events dedicated to specific topics, such as the upcoming international Citizen Science for Health conference, to be held this autumn at the University of Twente. While all these meetings and symposia are geared primarily towards (prospective) CS project coordinators and the broader scientific community and mainly involve talking about and reflecting on CS, several ECS colleagues also listed large-scale hands-on CS activities. In Denmark, for instance, 30.000-60.000 pupils participate each year in a mass experiment (Masseeksperimentet) that is conducted in schools across the country (https://masseeksperiment.dk). In the Czech Republic, numerous citizens count birds each January or contribute observations to the City Nature Challenge, which takes place in numerous Czech cities. Bioblitzes organized by the Natural History Museum of Maremma and the City Nature Challenge Rome also constitute the largest CS events regularly held in Italy.

Regarding CS infrastructure, our survey found that CS offices, coordinators, or contact points affiliated with public institutions such as universities, museums, or libraries exist in 8 of the countries/regions covered. Examples given by consortium members include a number of libraries that co-hosted the Portuguese CS conference Encontro Nacional de Ciência Cidadã 2021, the Croatian National and University Library in Zagreb, as well as the public libraries of Wageningen and Delft. Moreover, CS offices, labs, or hubs can be found in the

National History Museums of Copenhagen, Vienna, Paris and Berlin, as well as at various universities and research institutes in France, Belgium, Austria, Denmark, Germany, and the Netherlands.[3]

According to the responses received, CS policy or strategy papers drafted and/or endorsed by government institutions, large research organizations or funding agencies have been published in 8 of the surveyed countries.[4] Some of these documents were issued by (and pertain to) a single organization, such as Copenhagen University's strategy for talent and cooperation (Talent og samarbejde. STRATEGI 2023) or the strategy paper the Royal Belgian Institute of Natural Sciences (IRSNB) published in 2016. Others emerged out of large-scale cross-institutional collaborations – such as the NPOS2030 Ambition Document "Open Science 2030 in the Netherlands", which is the result of an open consultation that more than 70 institutions and organizations participated in, or the German White Paper Citizen Science Strategy 2030 (Bonn et al., 2022), which was produced in a similarly co-creative process. Yet others were published by government bodies responsible for setting research agendas and providing research funding. In France, for instance, a Research Programming Act (LPR) entitled "Science with and for society" was issued in late 2020. Five months later, a set of concrete measures geared towards implementing this act was presented by the Minister of Higher Education, Research and Innovation.

Dedicated funding, i.e. funding programs explicitly aimed at supporting CS projects and initiatives (sometimes under the umbrella of open science), is currently only available in six countries. General research funding programs that are not exclusively targeted at CS projects, but still encourage applicants to consider incorporating a participatory dimension into their proposals, are even rarer. This indicates that CS is still far from being mainstreamed as one element of excellent and innovative scientific research.

However, the fact that regional or national CS associations or networks are active in 12 out of the 14 countries/regions represented in our survey shows that, even in places with little available funding or policy support, there is still a vibrant CS community grounded in bottom-up initiatives.

To sum up, four elements of institutional and strategic support for CS can be found in 57.1% of the countries and regions covered by our survey: 1) regular and/or large-scale CS events; 2) CS champions (i.e. individuals actively promoting and advocating for CS); 3) some form of strategy or policy paper on CS; and 4) a decentralized institutional infrastructure in the form of CS hubs, labs, or coordination offices. Regional or national CS associations and networks exist in 85.7% of the countries represented in our data. Financial support for CS is still more limited. Dedicated CS funding schemes are currently available in 42.9% of the countries/regions we surveyed, whereas general research funding programs that encourage applicants to incorporate CS into their projects only exist in 28.6% of them. Overall, our findings show that the levels of policy support, funding, and infrastructure for citizen science across different countries and regions differ considerably. In order to maximize the policy impact of the ECS project, the WP7 team will therefore collaborate closely with consortium partners, AEs, and CS Ambassadors to tailor the policy engagement activities of WP7 to the specific conditions and challenges of the various localities they represent.

[3] Examples include the INRAE Occitanie-Montpellier Centre, the Vrije Universiteit Brussel, TU Wien, Universität Innsbruck, University of Leiden, TU Delft, Southern Denmark University, Uni Münster, Leibniz Universität Hannover, and many more.

[4] In addition to filling in this short survey, several consortium members volunteered to collect policy or strategy papers published by government institutions, large research organizations or funding agencies in their country or region in a shared Zotero library.

3. Identifying key actors and documents

One of the core aims of T7.1 is the identification and mapping of relevant stakeholders. In the context of a WP dedicated to policy impacts and recommendations, it seems obvious who these stakeholders are: policy-makers – a term that is widely used and (at least at first glance) easily understood. However, initial conversations with consortium partners revealed slightly divergent views regarding the question of who falls into this category. During the first T7.1 co-design session, the consortium members were thus asked to share their understanding of who qualifies as a policy-maker within the framework of the ECS project. Many colleagues took this opportunity to point out that the term 'policy-maker' might be overly restrictive and lead us to overlook certain highly important actors in the field of CS-related policy. Building on their contributions, the WP7 team therefore identified two relevant stakeholder groups and developed the following context-specific working definitions:

1. **Decision-makers:** This term refers to any person working in relevant institutions and agencies who are in a position to shape the respective institution's policies regarding CS. This includes not only public policy (i.e. guidelines, regulations and actions implemented by elected politicians or government institutions) but also the CS-related policies or strategies of RPOs, civil society organizations, or private funding providers. Institutions and organizations that were identified by the ECS consortium as relevant to the field of CS include ministries and other government bodies on the national, regional and local level, funding agencies, NGOs, universities and research institutes, as well as EU institutions (such as the DG, the European Parliament etc.).

2. **Policy professionals:** This group includes persons who do not have the authority to make policy decisions, but who exert significant influence on policy-making by collecting and synthesizing information, providing scientific advice and developing policy proposals. These policy professionals, who are often academics serving in expert groups or high-level civil servants, can serve as key intermediaries between the ECS consortium and actual decision-makers. Their role is vital in bridging the gap between the wealth of knowledge and insights generated by the ECS project and the formulation of evidence-based policies. By synthesizing complex scientific findings and providing well-informed proposals, they facilitate effective communication and collaboration between the ECS consortium and decision-makers, contributing to the successful integration of citizen science-driven evidence into policy-making processes.

3.1 Stakeholder mapping

EU policy support and funding for citizen science has developed significantly, driven by a growing recognition of its role in engaging citizens, advancing scientific research and addressing societal challenges (see Schade et al., 2020 for details). This evolution is evident in different stakeholder sectors in the European context. As part of the 'Strategy for Policy Engagement' (T7.1), two subtasks related to stakeholder mapping were carried out. Firstly, all partners and AEs (except NMC) carried out a 'national stakeholder mapping exercise'. Secondly, MfN, SD and MCAA collaborated to identify key EU stakeholders. The stakeholder mapping spreadsheet was used to complete both subtasks. This comprehensive mapping will allow for targeted and effective engagement with stakeholders involved in policy support, funding, and infrastructure for citizen science in Europe.

In order to optimize the resulting stakeholder list and increase the efficiency of stakeholder engagement efforts, consortium members only included those organizations and institutions with which they had previously interacted, along with designated contact persons. Policy-makers were initially categorized into the following 'stakeholder sectors' based on their affiliation:

- **European Union institutions and bodies:** EU institutions exercise legislative, executive and regulatory functions within the European union. Aside from the European Commission, which proposes policies and initiatives based on evidence and consultation with stakeholders, and the European Parliament, which reviews and amends these proposals, representing the interests of citizens, EU institutions identified by the consortium members as relevant in the context of CS include those that provide scientific advice to inform EU policy-making processes (such as the JRC), as well as EU bodies and agencies that support the implementation of EU policies and programs in specific sectors (e.g. the REA).
- **Funders (private and public):** By developing funding calls, defining selection criteria, and providing financial resources to successful applicants, funding agencies can have a significant impact on the future development of CS. Although public funding providers in particular often operate within the framework of policies set by other government bodies, they still have a certain leeway in translating these policies into concrete funding programs. In other words, they do play a role in shaping the implementation of public policies. In addition to public research funding agencies active across all scientific fields, the consortium members also identified a number of private funding providers and funding agencies dedicated to specific disciplines or strategic goals.
- **Ministries and other government bodies (from local to national level; i.e. government bodies and agencies):** Government bodies and agencies are key players in all stages of the policy cycle. They are involved in developing, formulating, implementing, monitoring, and evaluating public policy (including guidelines, regulations, and actions). To do so, they rely on the scientific advice of internal and external experts, consult with stakeholders, and take public opinion into account to develop policies that are aligned with their political agendas and the well-being of citizens. Government bodies added to the shared stakeholder mapping spreadsheet by consortium members mainly included ministries and departments, but also regional governments, municipalities, parliamentary offices etc.

Based on input provided by the consortium during the first co-design workshop in April 2023, RPOs and think tanks (including universities, research institutes and associations of research institutes) were later added as a fifth stakeholder sector. The reasoning behind this decision was that well-connected RPOs and think tanks operating in fields related to high-profile policy issues (such as biodiversity, climate change, digitization etc.) can often exert considerable influence on public policy. Finally, a sixth category – NGOs and intergovernmental organizations – was introduced to accommodate a number of stakeholders listed in the shared spreadsheet that represent either organized civil society (including for instance nature conservation groups) or supranational organizations such as the UN and its agencies. Obviously, these six categories are not always clearly demarcated or mutually exclusive. We therefore decided to categorize stakeholders by the dimension of their activities most relevant to our ECS policy engagement strategy.

Another layer of information added in response to feedback from the consortium was the policy field or area the stakeholder in question primarily engaged with. Lastly, policy-makers were tagged with their respective sphere of activity: local, regional, national, European or global.

In order to comply with the GDPR, we asked the consortium partners to only share publicly available contact information (i.e. information that anyone could look up online) and instructed them not to list private email addresses that relevant decision-makers had given them in confidence.

In cases where project partners were already in contact with a relevant stakeholder whose email address is not publicly available, the consortium member in question wrote to this person to ask whether they would give us permission to contact them in the context of our stakeholder engagement activities. An email template for this purpose was prepared by the MfN team and shared with the whole consortium.

As of 24 July 2023, the spreadsheet listed 111 policy-makers and policy professionals. These 111 policy actors are distributed across the above-mentioned three mapping dimensions (stakeholder sector, policy field and sphere of activity) as follows: 5 of the policy-makers and policy professionals identified operate on the local level, 9 are active on the European and 6 on the global level, and 8 were categorized as regional stakeholders. The overwhelming majority of policy-makers and policy professionals listed in our shared stakeholder mapping spreadsheet, however, operate on the national level. In total, we have identified 83 national-level policy actors. In terms of the stakeholder sector, ministries and other government bodies constitute the largest group (34 entries), followed closely by public funding providers (31 entries), as well as RPOs and think tanks (27 entries). The remaining four stakeholder sectors – EU institutions, private funding providers, NGOs and intergovernmental organizations, and other (one parish council and one association comprising both RPOs and funding providers) – are less strongly represented (with less than 10 entries per category). Regarding policy fields,[5] the policy-makers or policy professionals identified were in some cases assigned to several categories. Overall, we have identified 63 policy stakeholders working in various policy fields, 17 active in the area of ecology, biodiversity and conservation, 14 who focus primarily on issues around sustainable development, 12 working in the field of research and education policy, and 9 policy-makers and policy professionals with a primary focus on industry, technology, and economy. The remaining three policy fields – public health, agriculture, and arts, culture and heritage – are currently represented by less than 5 stakeholders each.

[5] The policy fields used in this deliverable were developed inductively based on the input received via the shared stakeholder mapping spreadsheet.

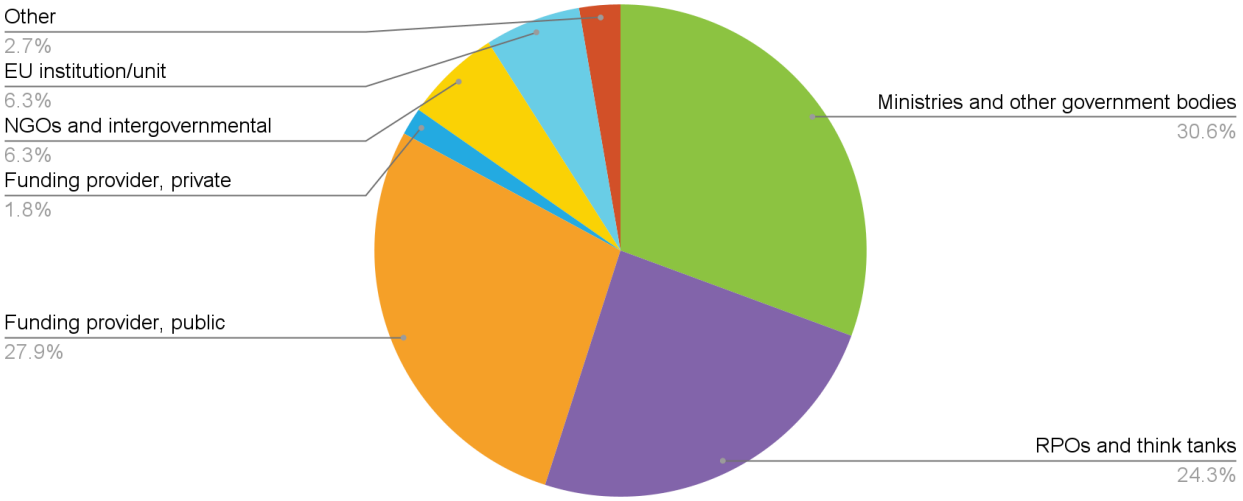

Figure 4. Policy sector of mapped stakeholders (n=111).

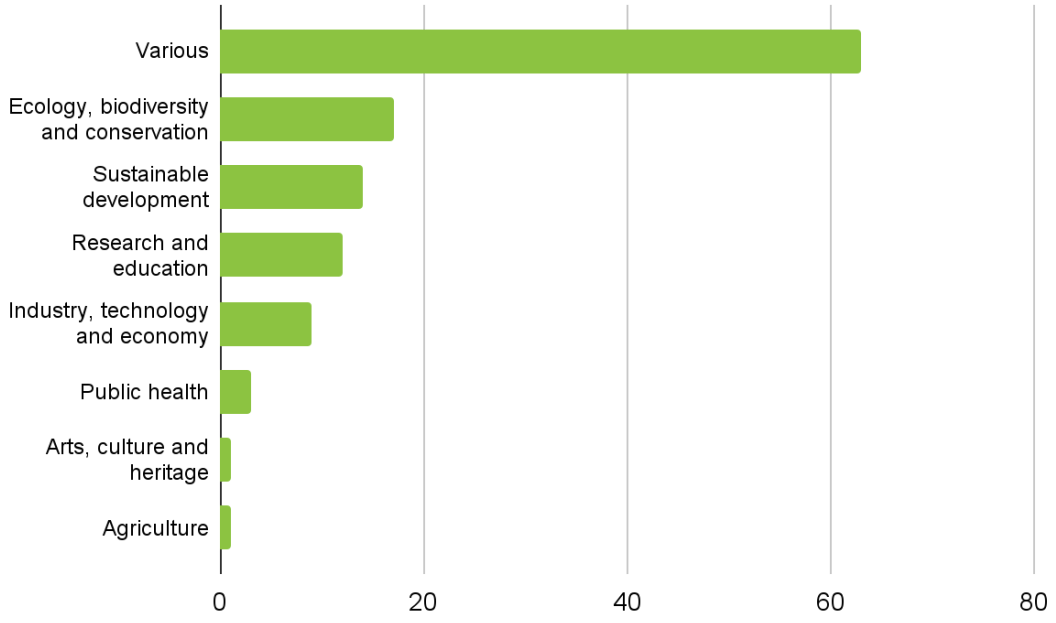

Figure 5. Policy field of mapped stakeholders, multiple answers possible.

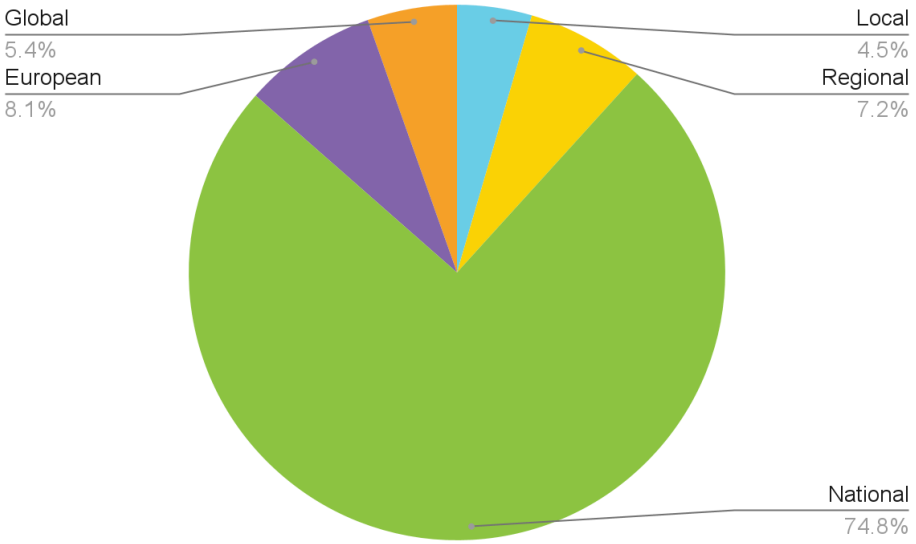

Figure 6. Sphere of activity of mapped stakeholders (n=111).

For a table listing all policy-makers and policy professionals identified so far, please refer to Annex B.

The shared stakeholder mapping spreadsheet, created collaboratively by all consortium members, will remain a dynamic document throughout the project, continually updated and expanded. It will serve as a vital foundation for further stakeholder mapping exercises, capitalizing on the collective knowledge and experience of the ECS consortium.

Based on the information provided in the spreadsheet and input from consortium members, the WP7 team will employ various criteria such as stakeholder sector, policy area, estimated influence on policy decisions, interest in CS, accessibility, responsiveness, as well as the type and level of engagement suitable for each objective. This comprehensive approach will help in identifying and prioritizing key stakeholders for each policy priority and specific WP7 task.

The resulting stakeholder lists, tailored to each task and priority, will serve as a valuable reference document for all parties involved in ECS policy activities. This strategic resource will enhance and inform ECS policy engagement efforts, ensuring effective and targeted engagement with key stakeholders throughout the project.

3.2 Mapping of relevant projects and initiatives

As per the GA, one element of task T7.1 was to "map key EU stakeholders and initiatives". In addition to the EU-level stakeholder mapping described in the previous section, the WP7 team, in collaboration with SD and MCAA, therefore identified CS projects and initiatives that meet one (or several) of the following three criteria:

1) They can serve as best-practice or lighthouse examples of CS initiatives that have successfully engaged with policy-makers (on the local, regional, national, European or global level) and had a concrete impact on the development, implementation, monitoring, or evaluation of public policies. This collection of projects and initiatives that can help showcase the benefits of integrating CS into policy processes draws on both input received from the ECS consortium during the second co-design workshop in May 2023, and on desktop research carried out by MfN, SD and MCAA. With a view to T7.4, which is dedicated to promoting CS contributions to the SDGs, we have included some non-European initiatives that are already contributing to official SDG monitoring.

2) They have received EU funding through Horizon 2020, Horizon Europe and its Missions, the European Green Deal or the New European Bauhaus, and produced policy briefs or similar documents (green papers, white papers etc.) that contain policy recommendations related to policy support for CS (e.g. in terms of funding, institutional infrastructure, legal and political frameworks) and/or the use of CS in policy-making.

In order to find policy briefs and similar documents published by projects funded through the Horizon programs, three actions were undertaken: First, the CORDIS repository was searched for relevant projects by entering the keyword "citizen science" and filtering by funding program (Horizon 2020 and Horizon Europe). This search yielded 284 project profiles, which were then manually searched for mentions of the terms 'policy brief', 'green paper', 'white paper', and 'policy recommendations' in the results tab. In cases where none of these terms appeared in the CORDIS profile of the respective project, the project website (if available) was consulted. Finally, as both CORDIS profiles and project websites are not always up to date, the respective project's Zenodo repository (if available) was checked. Documents that only mention CS in passing – for instance as a data source or as one example of public engagement or open science – were excluded from our sample.

Using this approach, we were able to locate 76 relevant policy briefs and similar documents produced by 34 projects. A content analysis of these documents will be performed by MfN, SD and MCAA over the coming months. Its results will allow us to identify recurring policy issues and recommendations, which in turn could help to inform the policy recommendations to be developed in Task T7.2. As a next step, MfN, SD and MCAA aim to investigate the extent to which the identified policy briefs are actually read and used by policy professionals in EU institutions.

3) They receive EU funding, are ongoing or yet to start, and are likely to produce relevant outputs and outcomes (policy briefs or similar documents, examples of successful policy engagement and policy impact) in the future. These projects were identified using an approach similar to the one described above. In addition to entering the keyword "citizen science" and filtering by funding program (Horizon 2020 and Horizon Europe), we excluded all projects with an end date before 1 August 2023. In order to further narrow down the resulting list, we scanned each project's 'fact sheet' and selected only those in which CS appeared to play a prominent role. MfN, SD and MCAA will regularly check whether new policy briefs or other outputs relevant to WP7 have been published. Furthermore, the projects in this category could also potentially be contacted for the purpose of knowledge-sharing or collaboration – for example in the context of the ECS Collaboration Group Monthly Meetings.

4. Setting policy priorities

4.1. National-level policy priorities

As the results of our short survey illustrate, citizen science is not yet equally well-known or established throughout Europe. In some countries, citizen science activities are few and far between, while elsewhere citizen science is promoted through dedicated funding programs and national citizen science platforms. Accordingly, the GA stresses the importance of "ensur[ing] that everyone's national policy priorities regarding CS are addressed". As several consortium members pointed out during the WP7 kick-off meeting, policy support, funding and institutional frameworks for CS can even vary from region to region – as can conditions and opportunities for policy engagement. During the first T7.1 co-design session, we thus asked the participants to name three policy priorities concerning CS in their country, region, or city. The following table (Table 1) lists some examples of country-specific policy priorities identified:

Table 1: Selected national policy priorities identified during the first co-design session on 24 April 2023.

Country	Policy priority
Austria	• Establishing access to data sources for CS (e.g. Austrian Micro Data Centre) • Creating clear ethics rules and procedures regarding the funding and implementation of CS • Strengthening institutional backing for CS in (elite) academia
Czech Republic	• Promoting the institutionalization of CS • Creating funding opportunities (specifically long-term funding) • Establishing rules and best-practice guidelines for the collection, management, and use of CS-generated data
Denmark	• Strengthening democracy by providing opportunities for citizens to participate in decision-making processes and contribute to policy development • Lobbying for a Danish CS strategy
France	• Creating more funding opportunities • Promoting integration of CS in research institutions • Upskilling researchers to give them the capacity to use CS • Creating a coherent national strategy for CS
Greece	• Promoting CS for biodiversity protection and preservation • Enhancing knowledge and understanding of citizen science within the wider public • Supporting research that integrates citizen science as a methodology
Netherlands	• Adapting existing funding opportunities to include CS initiatives, especially grassroots initiatives • Developing frameworks to stimulate the uptake of CS-generated data in policy processes and official data platforms • Promoting societal participation in policy formation and research agenda setting

Funded by the European Union

Spain	• Promoting the institutionalization of CS by creating additional funding opportunities • Launching open calls for the sustainability of CS projects • Creating and strengthening Knowledge Transfer Units to help projects in their policy impact
UK	• Creating funding opportunities at national level • Increasing recognition and support for CS across multiple policy areas (beyond environment and public health) • Creating a national network and CS strategy

4.2. Overarching policy priorities

During the first co-design session in April, we also invited the consortium members to formulate more general, overarching policy goals. Building on their contributions, we have identified the following five objectives that will be prioritized in ECS policy engagement activities at all levels, encompassing the regional, local, and national level within the EU:

1. **The use of data and insights generated through citizen science in official statistics and data repositories, as well as in policy-making processes**

Numerous CS projects and initiatives have demonstrated that citizen science can significantly expand the scope, scale, and resolution of data collection and thus feed valuable information into the policy cycle - particularly on a local level and in the context of environmental protection and biodiversity (Fraisl et al. 2020; *Commission Staff Working Document: Best Practices in Citizen for Environmental Monitoring*, 2020; Owen et al. 2018; Van Brussel & Huyse, 2019; for a selection of lighthouse projects, please refer to Annex C). Yet, concerns over data quality still often hamper the uptake of CS-generated information in policy-relevant contexts. In order to proactively address and mitigate these concerns and increase trust in CS data, the ECS policy engagement activities will draw on both research literature and lighthouse projects to exemplify how challenges related to data standardization, sampling biases and data validity can be overcome – for instance with the help of established metadata standards, dedicated training modules for participants, and expert or AI-based data validation. In the context of this policy priority, the ECS policy engagement activities will benefit from synergies with WP3 ("Enhancing digital skills for FAIR and open science communities"), one of whose aims is to connect citizen science initiatives with existing e-infrastructures through the collaborative development of data and metadata services.

In doing so, the WP7 team is committed to addressing not only the challenges associated with quantitative data, but also to exploring how qualitative research findings can be effectively shared and used as evidence in the policy cycle. To this end, we will advocate for the establishment of clear guidelines or frameworks that ensure the credibility, trustworthiness, and rigor of the methods used by citizens to collect qualitative data. Similarly, we believe that the validation of citizen-generated data is of paramount importance to ensure its accuracy and suitability for informing policy decisions. By validating the methods used by citizens to collect data, we can ensure that the data meets specific requirements and produces reliable and accurate results. ECS is committed to supporting the development and communication of standards and validation methodologies for

both qualitative and quantitative data to ensure the robustness and reliability of evidence generated by citizen science. In doing so, we can strengthen the impact of citizen science in informing evidence-based policy and empowering communities and decision-makers, thus allowing them to be leveraged as evidence in the policy cycle.

Additionally, the ECS team will compile a list of policy decisions informed by CS-generated research results in order to demonstrate how CS is already being used for policy purposes. The aim is to demonstrate that citizen science can contribute valuable data and insights and close information gaps while upholding high standards of scientific rigor and accuracy.

2. The integration of citizen science into 'elite' research activities, institutions, and funding calls

Chapter 2 of this deliverable shows that there already is a considerable amount of funding and policy support for CS in several European countries. Moreover, the number of scientific papers presenting research results produced with the help of citizen scientists has steadily grown over the past decade (Kullenberg & Kasperowski, 2016; Pelacho et al., 2021; Follett & Strezov, 2015; Bautista-Puig et al., 2019). Yet, many scientists still view CS merely as a form of science communication, rather than as a genuine research strategy that has the potential to generate high-quality data and innovative insights. To help raise the visibility and prestige of CS as a way of conducting excellent research, the ECS policy engagement team will both compile a compendium of lighthouse projects and collect testimonials from CS practitioners on the scientific value of the participatory dimension of their projects. These materials will be shared on the ECS platform and presented to relevant stakeholders in high-profile funding agencies, professional networks and RPO associations. In addition, the policy engagement activities related to this policy priority will build on and complement work done in tasks 4.3 ("Promoting citizen science within scientific excellence") and 5.4 ("Participatory activities to mainstream citizen science across all scientific fields of the ERA"). In close collaboration with WPs 4 and 5, the WP7 team will raise awareness, advocate for the adoption of CS in elite science, and promote mechanisms for career incentives to help mainstream CS across all scientific disciplines. Incentivizing engagement in citizen science will also involve advocating for a shift towards new academic performance metrics that reflect the value of science-society collaborations in research.

3. The opening and adaptation of existing research funding programs to the specific characteristics and requirements of citizen science projects

As the previous policy priority already indicated, the ECS project aims to bring CS out of its niche and establish it as a standard approach or research strategy across all scientific disciplines and fields of study. The integration of CS into existing, well-established and widely known research funding programs would be an important step towards this goal of mainstreaming CS. In order to promote such an opening of existing funding programs to CS projects and initiatives, the WP7 team will take two steps: First, we will review funding schemes that already explicitly incorporate participatory research, as well as existing resources and recommendations that address the funding-related needs of CSIs (such as the "How to fund" Guide currently being developed by the LBG OIS Center). Secondly, we will reach out to the CS community to co-design a set of guidelines on how to adapt funding programs to the specific characteristics and requirements of CS projects. This could for instance entail taking into account the crucial role of labor-intensive project coordination tasks (such as community management and intra-project science communication), addressing CS-specific legal and ethical issues (e.g. with

regard to IPR and informed consent), offering a certain degree of flexibility regarding project methodology and objectives, and providing both small-scale seed funding and long-term or follow-up funding that allows for the upscaling of successful projects. The aim is to define concrete, actionable objectives and recommendations that can be shared with relevant policy-makers and practitioners at dedicated events. This approach will ensure that we present overarching goals rather than focusing on specific changes to funding programmes. By working with the citizen science community, we aim to co-design a set of recommendations to tailor funding programmes to the specific characteristics and needs of CS projects. Rather than examining each funding programme in detail and proposing specific changes, our focus is on formulating clear objectives and recommendations, and sharing them with policy-makers for consideration and possible implementation.

4. The integration of citizen science training into the curricula of universities and other educational institutions

While interest in transdisciplinary and participatory research is growing steadily, CS training is still something that students and early-career scientists usually need to pursue in addition to their regular course and workload – at times to the detriment of their academic career prospects. At the same time, conducting high-quality, successful CS projects requires a broad set of skills and awareness of complex ethical and methodological questions. Recognizing both the multiple scientific and societal benefits of CS and the need for further professionalization and upskilling in this field, the ECS project is dedicated to breaking down this barrier and encouraging more young researchers to engage with CS. By promoting the integration of CS training into the curricula of universities and other higher education institutions (across all subjects and disciplines), we aim to equip future generations of scientists with the knowledge and skills to actively engage citizens in scientific research and address pressing societal challenges. Since the groundwork for a scientific career is often already laid in school, we will also advocate for the inclusion of CS training in study programs and professional development courses for high school teachers and other secondary education personnel. To achieve this goal, the WP7 team will harness synergies with the ECS Academy currently under development in WP4, which aims to produce resources and training for various stakeholder groups - including educational institutions. In addition, the WP7 team will work closely with key stakeholders in the higher education sector to advocate for the inclusion of CS modules or courses that provide both hands-on experience and a solid theoretical foundation in CS methods, ethics, and data analysis. Through sharing success stories and best-practice examples, the WP7 team aims to demonstrate that CS training imparts skills and competencies that will become increasingly indispensable as transdisciplinary and participatory research continues to gain traction, and thus has an added value for both individual students and educational institutions. The ultimate goal is to inspire institutions to embrace CS as a legitimate component of academic training, fostering a new generation of researchers who are not only scientifically competent, but also deeply engaged with communities and committed to addressing complex societal issues through inclusive and participatory approaches.

5. The promotion of diversity and inclusion in citizen science

As pointed out in deliverable D2.1, certain barriers have contributed to the current lack of diversity in citizen science participants. These barriers include limited language or information and communication technology (ICT) skills, mobility issues, visual impairments and financial constraints. In addition, specific project requirements, such as the use of specialized apps or access to remote sampling sites, can create additional barriers for people with different abilities or low incomes. Such limitations limit the potential for wider

community engagement and can lead to a skewed representation of scientific data, missing important insights from underrepresented demographics. It is therefore critical to recognize the difference between offering participation to all and offering truly equal opportunities for participation. The former, while well-intentioned, can still perpetuate inequalities by failing to address the underlying barriers that prevent certain people from actively contributing. Providing real opportunity, on the other hand, involves a proactive approach to removing barriers and creating an environment in which all interested individuals can participate, regardless of their background, education, or skills. To ensure that citizen science activities are truly open to anyone who wishes to participate – including those who are traditionally underrepresented in research and academia, the ECS project is committed to creating a more inclusive and representative citizen science landscape that values the contributions of diverse individuals and communities and actively seeks to address systemic biases and barriers to participation. In fact, promoting diversity and inclusion in citizen science is both a key, overarching objective of the ECS project as a whole and the topic of a dedicated WP within the project (WP5). All policy engagement activities geared towards this goal will thus be designed and implemented in close collaboration with WP5. Building on the expertise of the WP5 team, WP7 will work to raise awareness of the importance of diversity in CS projects, showcase both the scientific value and the societal benefits of incorporating a wide range of experiences and perspectives into the research process, and encourage the implementation of inclusive practices. Such practices include dedicating sufficient time and resources to the fostering of collaborations with underrepresented communities, conducting surveys and interviews with members of such underrepresented groups on how to make CS projects more attractive and accessible, and, of course, ensuring inclusivity in project design and implementation (e.g. regarding the language used in project communications, the choice of tools and equipment or location and timing of project activities). In working towards this goal, the ECS consortium will benefit from synergies with past and ongoing initiatives, such as the project CitiObs, which is currently developing a “leave no one behind” toolkit. This integration of insights gained in other contexts reflects the ECS commitment to cross-project learning and knowledge sharing, thereby increasing the impact of citizen science in the EU to achieve sustainable and equitable policy outcomes.

As section 2 of this document has revealed, significant progress has been made in several areas. A review of the literature and policy briefs from previous EU-funded projects, including DITOS and WeObserve, shows that significant progress has been made in the field of citizen science (DITOs consortium, 2016; DITOs consortium, 2019; Gold, Margaret & Wehn, Uta, 2020). One notable achievement is the growth and transformation of the European Citizen Science Association (ECSA) into a resource, networking, and policy engagement hub for citizen science projects and practitioners across Europe. In addition, the emergence of l new national citizen science associations, such as Italy and the Czech Republic, highlights the growing recognition and support for citizen science at the national level.

The success of ECSA, the DITOs project and many other citizen science initiatives lies in their consistent advocacy efforts which have resulted in a marked increase in policy support and funding at both the EU and national levels in several European countries (Vohland et al., 2021). While these achievements are to be commended, it is important to recognise that some challenges remain. The policy priorities outlined in this deliverable underscore recurring issues and challenges which have been mentioned repeatedly in CS-related policy briefs and recommendations over the past 10 years and still persist today. When it comes to the use and uptake of CS-generated data and insights, the integration of citizen science in elite science and in formal education curricula, the creation of funding instruments tailored to the specific requirements of citizens science, and the promotion of diversity and inclusion in citizen science - challenges mentioned in numerous

scholarly works, strategic documents and policy briefs (UNITAR & Crowd4SDG consortium, 2022; Actis et al., 2022; DITOs consortium, 2018; Polychronakis, E.A. & Jansen, W., 2022; Igno Notermans et al., 2022; Gold et al., 2023; Sanz et al., 2014; Schade et al., 2021) - sustained efforts will be needed to achieve profound cultural and institutional change.

5. Defining the role of WP7 in ECS policy engagement

During the second T7.1 co-design session on 16 May, all attending consortium members were asked to indicate how the WP7 team at MfN can support them in their policy engagement and what kind of resources or services they would like the MfN team to provide. The suggestions and requests received in response to this question can be grouped into the following three categories:

1) **Direct policy engagement**

   In particular, the ECS consortium expects the WP7 team to engage directly with policy-makers and professionals through events organized and hosted by the WP7 team, through co-designing policy recommendations with the aforementioned two groups of policy actors (cf. section 3), and through collaboration with other CS-related EU projects and relevant ECSA working groups.

2) **Support for consortium members and CS Ambassadors**

   Secondly, the WP7 team will support consortium partners and CS Ambassadors in their policy engagement activities by:

   - producing guidelines, templates, and checklists (e.g. on communication strategies and channels for reaching out to policy-makers and policy professionals or on how to organize policy events),
   - preparing materials that can be shared with national and local stakeholders (such as the aforementioned testimonials, compendia of lighthouse projects, recommendations for funding agencies etc.), and
   - identifying links between EU and national policy processes and priorities

   During the second T7.1 co-design workshop, consortium members were tasked with identifying specific windows of opportunity for policy engagement in their respective country/region/city. These included relevant events or ongoing policy processes. They were also asked to share lighthouse projects or success stories in this area. In order to optimize ECS policy engagement activities and assist the WP7 team in creating timely, relevant and impactful resources for CS Ambassadors and Consortium members, a common spreadsheet will be implemented in the future to collect this valuable input. This streamlined approach will ensure efficient collection and use of this information.

3) **Mediating between the citizen science community and policy actors**

Last but not least, the WP7 team will serve as a mediator between CS practitioners and policy-makers by:

- collecting resources relevant to policy-makers (policy briefs, reports, project results) in a dedicated section on the eu-citizen.science platform, to establish the platform as a one-stop shop for all things related to CS for policy and policy for CS
- collaborating with WP4 to provide training, roundtables and webinars both for policy professionals interested in CS and CS practitioners looking to engage with policy actors
- providing opportunities for in-person or online meetings between CS practitioners and policy actors in the context of WP7 policy events, and
- creating cross-border networking opportunities for CS practitioners and policy actors from different countries working towards the same policy goals (such as establishing a national platform)

In summary, the role of WP7 within the ECS project can be described in three main aspects:

First, as stated in the GA, the WP7 team will proactively engage with policy-makers by advocating for CS and organizing policy events, which can be both face-to-face and online. They will also identify opportunities to strengthen the link between CS and the SDGs. In addition, in collaboration with WP2 and WP5, the team will facilitate a series of workshops to co-design policy recommendations with relevant policy-makers.

Second, in addition to direct engagement with policy-makers, WP7 will provide support to all partners, AEs and the 28 CS Ambassadors in their policy engagement efforts. This support will take the form of sharing templates, guidelines and best practice examples to strengthen their policy-related initiatives.

Finally, the WP7 team will focus on establishing the eu-citizen.science-platform as an intermediary between CS practitioners and policy-makers/policy experts. Their aim will be to bridge the gap between these two groups and facilitate effective communication and collaboration.

Overall, WP7 plays a crucial role in advocating for CS, facilitating policy events and workshops, supporting partners and ambassadors, and fostering a productive relationship between CS practitioners and policy professionals through the eu-citizen.science platform.

6. Next Steps and future WP7 tasks

The strategy outlined in this report, encompassing target audience, goals, priorities, and the role of WP7 in ECS policy engagement efforts, will serve as a fundamental guiding framework for all forthcoming WP7 activities. These activities, which are succinctly summarized in this section, will be shaped and directed by the strategy to ensure their coherence and effectiveness.

1. Formulating policy recommendations for CS as a key pillar of open science (T7.2)

Under the leadership of ECS partner SfC, the ECS consortium will play a crucial role in co-designing policy recommendations in collaboration with both policy professionals and key decision-makers. These recommendations are intended to apply to different thematic policies, open science initiatives, better regulation efforts and other relevant areas in the European context.

The ultimate goal of these policy recommendations is to foster widespread support for citizen science initiatives in Europe and to establish CS as an integral approach to conducting excellent research. By engaging with policy-makers and funders, the ECS Consortium aims to drive positive change by advocating for policies that recognise the value of citizen science in advancing scientific knowledge, promoting public engagement and addressing societal challenges.

The strategic collaboration between the ECS Consortium and key stakeholders aims to create an enabling environment that empowers citizen scientists and researchers alike to contribute meaningfully to policy development and decision-making processes. By aligning policy efforts with the principles of openness, inclusivity and scientific excellence, the ECS project seeks to strengthen the position of citizen science in shaping a sustainable and innovative Europe.

To ensure robust and informed recommendations, our analysis of existing policy briefs, as outlined in section 3.2, will serve as a foundation. In addition, we will engage in a co-design process with stakeholders at EU, national and regional level, identified through the comprehensive stakeholder mapping exercise described in section 3.1. The co-design process will include a series of workshops, which will be organized in close coordination with tasks T5.3 and T2.2 and will take the form of thematic online events. This collaborative approach will allow for the synthesis of different perspectives and expertise, facilitating the production of well-informed and inclusive policy recommendations. Through this task, we aim to drive positive change and enable the effective integration of CS into research practices across Europe.

2. Advocating for citizen science among key stakeholders at the national, regional, and local level (T7.3)

From July 2024, the MfN team will actively support SD, the consortium partner leading T7.3, in advocating for citizen science at national, regional and local levels. This initiative will involve concerted efforts by project partners, AEs and CS Ambassadors to engage with key stakeholders identified in T7.1 (see section 3.1 and Annex B of this deliverable). In order to capitalize on existing knowledge and expertise within the European CS community, we will take into account lessons learned in the context of other CS initiatives and CS-related EU projects (cf. for example Berti Suman et al., 2023; Göbel et al., 2019).

As part of this task, our collaborative efforts will include the presentation and dissemination of the policy recommendations developed in T7.2. We will actively organize meetings with national stakeholders in order to effectively communicate these recommendations and promote meaningful discussions.

Furthermore, in line with our commitment to support CS and Open Science, all partners will actively engage with their respective National Contact Points (NCPs). This proactive engagement will enable us to extend our support and expertise in promoting CS initiatives. We will also establish links with the NCPs of the Spreading

Excellence and Widening Participation programs within Horizon Europe, including joint initiatives such as NCP_WIDE.NET.

Through these multifaceted efforts, we aim to build strong partnerships, increase the impact of our policy recommendations and ensure the widespread adoption of CS principles across Europe.

3. Monitoring and identifying of opportunities to support and strengthen links between citizen science and the SDGs (T7.4)

Task 7.4 focuses on the critical role of monitoring and identifying opportunities to support and strengthen the links between citizen science and the Sustainable Development Goals (SDGs). This task recognizes the significant potential for CS to contribute to the achievement of the SDGs, and aims to maximize the positive impact of CS initiatives in addressing global challenges.

Under this task, a dedicated monitoring system will be established to track and assess the alignment of CS projects with specific SDGs. By monitoring ongoing CS activities, we can identify key areas where CS can make a significant difference in advancing the SDGs and promoting sustainable development.

In addition, we will actively seek opportunities to foster collaboration between CS projects and stakeholders working on SDG-related initiatives. By facilitating connections and partnerships, we aim to strengthen the integration of CS into broader sustainability agendas and leverage collective efforts to achieve the SDGs.

Through comprehensive monitoring, thorough evaluation and strategic collaboration, we will ensure that CS initiatives are aligned with and contribute to the SDGs. This mission represents our commitment to maximizing the impact of CS in addressing global challenges and promoting a more sustainable future.

4. Organizing of high-level policy events to encourage the uptake of policy recommendations developed in task T7.2 (T7.5)

Task 7.5 focuses on the organization of high-level policy events to promote the uptake of the policy recommendations developed in Task 7.2. These events will provide a platform for key stakeholders, policy-makers, researchers, and experts to come together and engage in substantive discussions on the implementation of the CS policy recommendations.

Through these high-level policy events, we aim to create an inclusive and collaborative environment that fosters dialogue, knowledge sharing and collective action. These events will serve as an opportunity to showcase the value and impact of CS in addressing societal challenges and promoting evidence-based policy-making.

The policy events will feature presentations, panel discussions, workshops and interactive sessions that facilitate the sharing of experiences, best practices and lessons learned. We will invite renowned speakers, policy-makers, and multipliers to contribute their expertise and perspectives to ensure a diverse range of insights.

By bringing together stakeholders from different sectors and levels, we aim to raise awareness, build consensus and create momentum for the adoption and implementation of the policy recommendations developed in Task

7.2. These events will serve as catalysts for policy change, fostering collaboration and ultimately advancing the role of CS in shaping effective and sustainable policies.

Through careful planning, effective communication and the involvement of key stakeholders, these high-level policy events will serve as pivotal moments to translate CS policy recommendations into action and make a tangible impact on the policies and practices that shape our society.

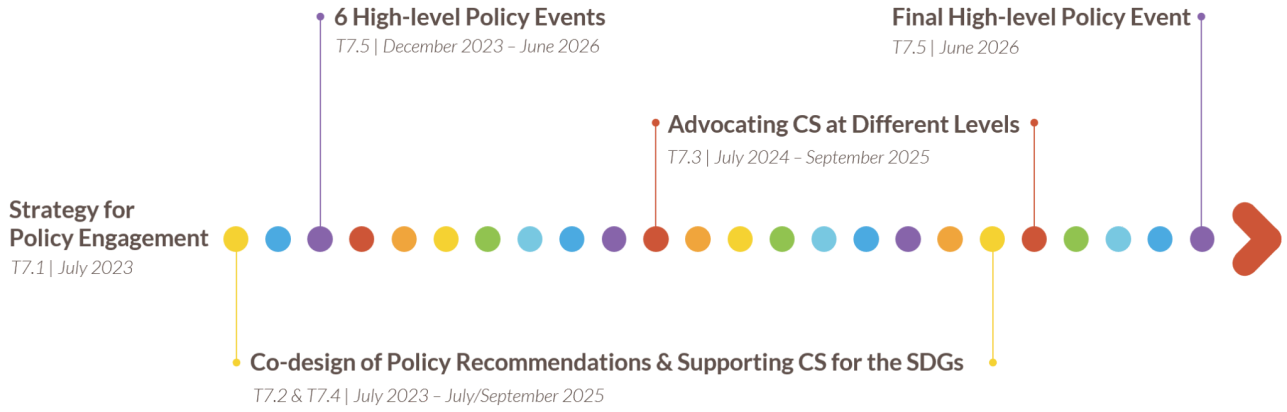

Figure 7. Timeline of tasks within Work Package 7 (WP7).

7. Roadmap for ECS policy engagement

The final section of this strategy summarizes the core findings and develops the roadmap for ECS policy engagement.

The overall aim of all policy engagement activities – to promote the recognition of CS as a powerful policy-making tool and a valuable research approach for scientific excellence and sustainable development – will be guided by policy priorities, which were developed in a co-design process with the consortium (see Setting policy priorities):

1. The **use of CS-generated data** in official statistics and data repositories, as well as in policy-making processes
2. The integration of CS into **'elite' research activities, institutions, and funding calls**
3. The **opening and adaptation of existing research funding programs** to the specific characteristics and requirements of CS projects
4. The **integration of CS training into the curricula** of universities and other educational institutions
5. The promotion of **diversity and inclusion in CS**

In order to target future policy engagement activities, a comprehensive mapping has identified relevant stakeholders across the EU (see 3.1 Stakeholder mapping and Annex B). As a next step, sub-groups of stakeholders will be identified which are of special interest for policy engagement according to the policy priorities. This will set clear priorities for important stakeholders to be engaged within the upcoming WP7 tasks.

Both aspects – the policy priorities as a guiding principle, as well as important stakeholders identified on this basis – will guide the future tasks of WP7 and the ECS project (see Next steps):

- T7.2: Formulating policy recommendations for **citizen science as key pillar of open science**
- T7.3: **Advocating for citizen science among key stakeholders** at the national, regional, and local level
- T7.4: Monitoring and identifying of opportunities to support and strengthen **links between citizen science and the SDGs**
- T7.5: Organizing of **high-level policy events** to encourage the uptake of policy recommendations developed in task T7.2

Finally, to ensure effective and efficient implementation of the roadmap, the role of the WP7 team was defined and clarified (see Defining the role of WP7 in ECS policy engagement). The core areas of activity encompass:

1. Direct policy engagement
2. Support for consortium members and CS Ambassadors
3. Mediating between CS community and policy actors

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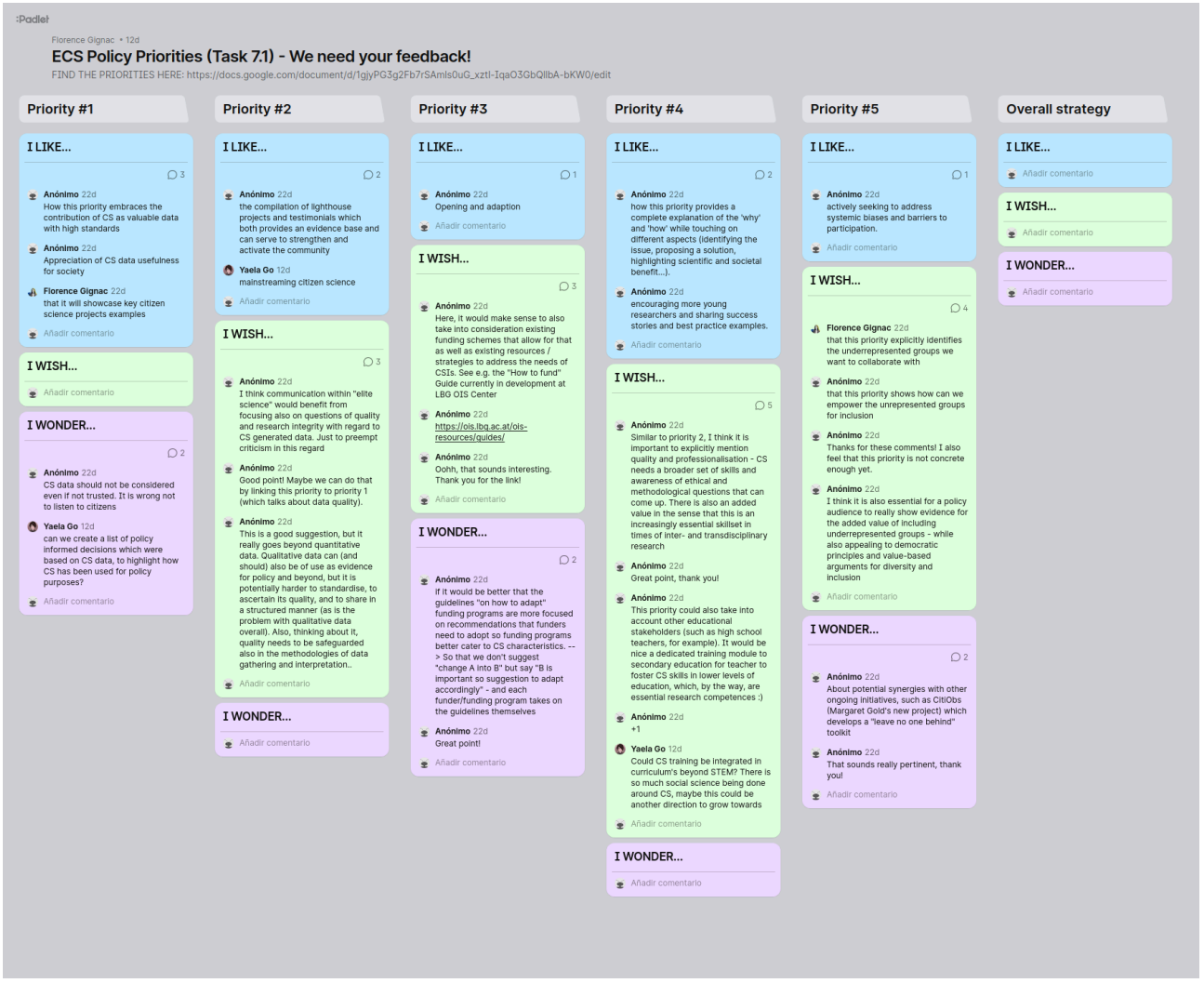
Annex A – Padlet Co-Design Workshop

Results of the third and final co-design workshop held on 29 June, during which all consortium members were invited to provide feedback on the policy priorities identified in the first draft of this deliverable using a PADLET.



Annex B – List of identified Stakeholders

Please note: for data protection reasons, we removed the column containing the names of contact persons within the listed organizations and institutions. Because this would have resulted in multiple listings of institutions, every institution is listed only once, even if several contacts within the institution were identified. For this reason, the number of identified stakeholders in this table differs from the real numbers used in the stakeholder mapping.

Stakeholder identified (name of organization)	Stakeholder sector	Policy field	Sphere of activity
Belgian Science Policy Office (Belgium)	Ministries and other government bodies	research and education	national
Berlin University Alliance (BUA; Germany)	RPOs and think tanks	various	local
BFN - Federal Agency for Nature Conservation (Germany)	Ministries and other government bodies	ecology, biodiversity and conservation	national
BMUV - Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (Germany)	Ministries and other government bodies	ecology, biodiversity and conservation	national
BSC - Barcelona Supercomputing Center (Spain)	RPOs and think tanks	industry, technology and economy	national
BUND - German Federation for the Environment and Nature Conservation (Germany)	NGOs and intergovernmental organizations	ecology, biodiversity and conservation	national
Bundesamt für die Sicherheit der nuklearen Entsorgung (BASE; Germany)	Ministries and other government bodies	industry, technology and economy	national
Büro für Technikfolgen-Abschätzung beim Deutschen Bundestag (TAB; Germany)	Ministries and other government bodies	industry, technology and economy	national
Catalan Association of Public Universities (Spain)	RPOs and think tanks	various	regional
CDTI - Centre for the Development of Technology and Innovation (Spain)	Funding provider, public	industry, technology and economy	national
Center for the Promotion of Science Serbia (CPN)	Ministries and other government bodies	various	national
Centre on Participatory and Deliberative Democracy	EU institution/unit	various	European
CREA - Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria (Italy)	RPOs and think tanks	sustainable development; agriculture	national
CSIC- Consejo Superior de Investigaciones Científicas (Spain)	RPOs and think tanks	various	national

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Department for Environment, Food and Rural Affairs (DEFRA)	Ministries and other government bodies	ecology, biodiversity and conservation	national
Deutsche Bundesstiftung Umwelt (DBU; Germany)	Funding provider, private	ecology, biodiversity and conservation	national
Deutscher Akademischer Austauschdienst (DAAD; Germany)	Funding provider, public	various	national
DFG - Deutsche Forschungsgemeinschaft (Germany)	Funding provider, public	various	national
DRIFT for transition (Netherlands)	RPOs and think tanks	sustainable development	global
Dutch Research Council (NWO)	Funding provider, public	various	national
EC Directorate A — ERA & Innovation (Horizon Europe PSF)	EU institution/unit	various	European
ENEA - Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (Italy)	RPOs and think tanks	sustainable development; industry, technology and economy	national
ESSRG - Evnironmental Social Science Research Group (Hungary)	RPOs and think tanks	public health; sustainable development; ecology, biodiversity and conservation	national
European Commission	EU institution/unit	various	European
European Research Executive Agency (REA)	EU institution/unit	various	European
European Science Foundation	NGOs and intergovernmental organizations	various	European
FECYT - Fundación Española para la Ciencia y la Tecnología (Spain)	Funding provider, public	various	national
Federal Ministry of Education and Research (Germany)	Ministries and other government bodies	various	national
Federal Office for the Environment (FOEN; Switzerland)	Ministries and other government bodies	ecology, biodiversity and conservation	national
FFG (Austrian Research Promotion Agency)	Funding provider, public	various	national
Fraunhofer-Gesellschaft (Germany)	RPOs and think tanks	various	national
Gemeinde Eichwalde (Germany)	Ministries and other government bodies	sustainable development	local
Generalitat de Catalunya (Spain)	Funding provider, public	various	regional
Global University Network for Innovation	RPOs and think tanks	research and education; sustainable development	global

Global Young Academy	RPOs and think tanks	various	global
Government of Aragón (Spain)	Ministries and other government bodies	various	regional
Hans Sauer Stiftung (Germany)	Fundling provider, private	sustainable development	national
Helmholtz Gemeinschaft (Germany)	RPOs and think tanks	various	national
HRB - THe Health Reseach Board (Ireland)	Funding provider, public	various	national
Humboldt-Stiftung (Alexander von Humboldt Foundation)	Funding provider, public	various	national
Innosuisse (Switzerland)	Funding provider, public	various; industry, technology and economy	national
Innovate UK	Funding provider, public	various; industry, technology and economy	national
Innoviris (Belgium)	Funding provider, public	various	regional
Institute for Ecology of Industrial Areas (Poland)	RPOs and think tanks	ecology, biodiversity, and conservation	national
Inter-American Development Bank	Funding provider, private	sustainable development	global
International Institute for Sustainable Development	RPOs and think tanks	sustainable development	global
Junta de Freguesia Agualva Mira Sintra (Portugal)	Other (Parish council)	various	local
Kompetenzzentrum Wissenschaftskommunikation - DLR Projektträger (Germany)	Funding provider, public	various	national
LBG OIS (Austria)	Funding provider, public	various	national
Leibniz Gemeinschaft (Germany)	RPOs and think tanks	various	national
LNEC National Civil Engeneering Labor (Portugal)	RPOs and think tanks	sustainable development	national
Ludwig Boltzmann Gesellschaft (Austria)	Funding provider, public	various	national
Max-Planck-Gesellschaft (Germany)	RPOs and think tanks	various	national
Ministry for Universities and Research (Italy)	Ministries and other government bodies	research and education	national
Ministry of Education (Slovenia)	Ministries and other government bodies	research and education	national
Ministry of Education, Culture and Science (Netherlands)	Ministries and other government bodies	various; research and education	national

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Ministry of Universities (Spain)	Ministries and other government bodies	research and education	national
NABU - Nature And Biodiversity Conservation Union (Germany)	NGOs and intergovernmental organizations	ecology, biodiversity and conservation	national
National Biodiversity Future Center (Italy)	RPOs and think tanks	ecology, biodiversity and conservation	national
National Institute for Public Health and the Environment (RIVM; Netherlands)	RPOs and think tanks	public health	national
National Parks and Areas of Outstanding Natural Beauty (AONB; UK)	Ministries and other government bodies	ecology, biodiversity and conservation	national
Nationales Institut für Wissenschaftskommunikation (NaWik; Germany)	RPOs and think tanks	various	national
Nationales Monitoringzentrum zur Biodiversität (NMZB; Germany)	Ministries and other government bodies	ecology, biodiversity and conservation	national
Natural England (UK)	Ministries and other government bodies	ecology, biodiversity and conservation	national
Natural Environment Research Council (NERC; UK)	RPOs and think tanks	ecology, biodiversity and conservation	national
Natural Resources Wales (NRW; UK)	Ministries and other government bodies	ecology, biodiversity and conservation	national
NCBR - The National Centre for Research and Development (Poland)	Funding provider, public	various; industry, technology and economy	national
OeAD - Agentur für Bildung und Internationalisierung (Austria)	Funding provider, public	various	national
Permanent Representation of the Republic of Latvia to the EU (Latvia)	Ministries and other government bodies	various	national
Pro Natura (Switzerland)	NGOs and intergovernmental organizations	ecology, biodiversity and conservation	national
RCL - Research Council of Lithuania (Lithuania)	Funding provider, public	various	national
RCN - Research Council of Norway (Norway)	Funding provider, public	various	national
Science Europe	Other (association of funding providers and RPOs)	various	European
Science in the Parliament Office (UK)	Ministries and other government bodies	research and education	national

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Scottish Natural Heritage (SNH; UK)	Ministries and other government bodies	ecology, biodiversity and conservation	national
SNF - Schweizerischer Nationalfonds (Switzerland)	Funding provider, public	various	national
Spanish National Research Council (Spain)	RPOs and think tanks	various	national
Stadt Chemnitz (Germany)	Ministries and other government bodies	sustainable development	local
Stadt Norderstedt (Germany)	Ministries and other government bodies	sustainable development	local
Stifterverband für die Deutsche Wissenschaft (Germany)	NGOs and intergovernmental organizations	various	national
Swiss Academy of Sciences (SCNAT; Switzerland)	RPOs and think tanks	various	national
UBA - Umweltbundesamt (Germany)	Ministries and other government bodies	ecology, biodiversity and conservation	national
UEFISCDI - Executive Agency for Higher Education, Research, Development & Innovation Funding (Romania)	Funding provider, public	various	national
UK Research and Innovation (UKRI; UK)	Funding provider, public	various	national
UNESCO Netherlands (Netherlands)	NGOs and intergovernmental organizations	arts, culture, and heritage	national
UNITAR (United Nations Institute for Training and Research)	NGOs and intergovernmental organizations	various	global
University of Luxembourg (Luxembourg)	RPOs and think tanks	sustainable development	national
Urban Planning Institute of the Republic of Slovenia (Slovenia)	RPOs and think tanks	sustainable development	national
VA (Public & Science; Sweden)	RPOs and think tanks	various	national
VDI/VDE-IT Innovation + Technik GmbH (Germany)	Funding provider, public	various	national
Vinnova (Sweden)	Funding provider, public	various; industry, technology and economy	national
Wissenschaft im Dialog (WiD; Germany)	RPOs and think tanks	various	national
ZonMW (Netherlands)	Funding provider, public	public health	national
Zukunft Umwelt Gesellschaft (ZUG; Germany)	Ministries and other government bodies	various; sustainable development	national

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Annex C – List of relevant projects and initiatives

Projects to be used as lighthouse cases

- Beachwatch (UK)
- BirdLife International
- CHERRIES
- CleanApp Ghana
- CS activities of the Marine Conservation Society (UK)
- CurieuzeNeuzen
- DITOs
- D-NOSES
- DOF-basen
- European bird indexes
- GCRF Understanding Risks & Building Enhanced Capabilities in Latin American Cities
- HushCitiy
- Important Bird and Biodiversity Area (IBA) and Key Biodiversity Area (KBA) schemes
- KRI
- Let's Talk Ghana
- Litter Intelligence
- Making Sense
- MIPP Life
- Mückenatlas
- NordicPATH
- OpenStreetMap
- Samenmeten
- SeaSearch (UK)
- TRANSFORM - endometriosis project
- URwatair
- WeCount
- The Clean Air Coalition of Western New York
- CS activities of the Scottish and Irish Environmental Protection Agencies

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Projects that have produced policy briefs

- ACTION
- AMBER
- CitieS-Health
- CLAIM
- CoAct
- COESO
- Cos4Cloud
- CROWD4SDG
- CS Track
- CSI-COP
- DITOs
- D-NOSES
- ENVRIPLUS
- EU-Citizen.Science
- FRANCIS
- INCENTIVE
- INTAROS
- iSCAPE
- ISEED
- JoinUs4Health
- MICS
- MOPEAD
- NAUTILOS
- NEWSERA
- ParCos
- ROSiE
- SEEDS
- SensJus
- Socientize
- StepChange
- TRANSFORM
- WeCount
- WeObserve
- YouCount

Ongoing or future projects likely to produce relevant outputs

- 4D PICTURE
- ACCTING
- AGORA
- ANERIS
- AntCom
- AURORA
- BENCHMARKS
- BioAgora
- BIOcean5D
- BlueMissionMed
- BOSTAN TREE
- B-SHAPES
- CIRCULAR FOAM
- CitiObs
- CLEARING HOUSE
- CLEVERFOOD
- CLIMAS
- COALESCE
- COMMONCITY
- COMPAIR
- CULTUURCAMPUS
- DivAirCity
- E4Warning
- ECF4CLIM
- ELABORATOR
- EnergyPROSPECTS
- ETAIN
- EUROPAST
- EXPANSE
- GreenScent
- I-CHANGE
- IDAlert
- ILIAD
- iMERMAID
- iMM-CARE
- IMPETUS
- INCHILDHEALTH
- IPM-Popillia
- justWATER
- LAMASUS
- MAMBO
- MOBVEC
- NATALIE
- NEXUS-MONARC
- Ocean Citizen
- OTTERS
- PATAFEST
- ProBleu
- ProLight
- RE-SAMPLE
- SOCIO-BEE
- SOLARIS
- SOLVE-H
- TIME4CS
- TwinAIR
- UNTWIST
- WET HORIZONS
- WIMBY
- YIA

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