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The Platform for Sharing, Initiating and Learning Citizen Science in Europe

Deliverable 7.1. Evaluation & Impact Framework

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Abstract	The Evaluation and impact framework defines the indicators, instruments and time plan for the internal evaluation of the project objectives and an assessment of the achieved impact during the project period. In addition, we will define indicators to show the potential impact beyond the project period.
Keywords	EU-Citizen.Science, Citizen Science, Data Management

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Definitions and Acronyms

CA	Consortium Agreement
CC	Creative Commons
CSA	Coordination and Support Action
DOA	Description of Action
EC	European Commission
ECSA	European Citizen Science Association
H2020	Horizon 2020
IPR	Intellectual Property Rights
KPI	Key Performance Indicator
LFA	Logic Framework Approach
MoRRI	Monitoring the evolution and benefits of responsible research and innovation
RRI	Responsible Research and Innovation
SDGs	Sustainable Development Goals
SNA	Social Network Analysis
WP	Work package

Evaluation & Impact Framework

1. Executive Summary

The main aim of the EU-Citizen.Science evaluation & impact assessment is to ensure that the project provides evidence for the envisioned impact, according to a defined set of objectives, and to clearly demonstrate how the project contributes, amongst other aspects, to the community and identity building of the European Citizen Science community.

With this aim, we investigate on the one hand the usefulness and user-acceptance of the project activities, such as the provided trainings in WP5, the community building actions in WP2, and the interaction on the EU-Citizen.Science platform, to allow an iterative improvement of the specific actions and instruments. On the other hand, impact assessment addresses the measurement of the overall performance of the project and its impact on the involved actors and communities, as defined in D2.1.

In order to effectively perform this assessment, a proper evaluation and impact assessment framework is required. In this framework, project objectives are broken down into specific, observable and measurable indicators and a set of evaluation instruments are elaborated on to capture the information we need.

In order to develop this evaluation framework, we followed a participatory approach taking the objectives set out by the contract as the starting point. During the project kick-off meeting we organised a working session with the whole consortium and depicted what success would look like for each of the core objectives. Our second step was to organise remote discussions with each work package, aiming to break down the work package objectives into concrete outputs and outcomes, and reflect upon adequate evaluation instruments. Together with the work package leaders a description of the planned activities and outputs, possible measures, means of data gathering and possible risks was drafted. To focus and guide this exercise a template was provided and the work package teams were encouraged to critically review the outlines of their activities and intended outcomes within the constraints of the overall work programme.

Based on these collaborative activities we elaborated a set of indicators that are presented in the indicator framework (Chapter 5). This framework structures indicators along three levels: outputs, intermediate outcomes and long-term outcomes. Output indicators are a source of continually growing quantifiable numbers that show the main activities offered by our project to the citizen science community and the community's interaction with the project (e.g. number of unique visitors to the platform, of contributors to the platform, of training participants, of ratings to our resources, or of dissemination activities). Outputs are a prerequisite for outcomes to take place. Short-term outcomes cover two main aspects: an increased awareness for and

knowledge of citizen science - and EU-Citizen.Science - amongst our stakeholders. Long-term outcomes are a consequence of the short-term outcomes and also cover two main aspects: an increased engagement in citizen science and the sustainability of the project activities. In addition, a concrete link between this indicator framework and the MoRRI indicators and SDGs is presented. We support RRI indicators such as science literacy, science education and public engagement in science, in addition to SDGs such as Quality Education (Goal 4) and Inclusive Institutions (Goal 16).

To collect the defined indicators, a set of quantitative and qualitative evaluation instruments are defined in Chapter 7. A main source of information is the consortium itself that will report their activities, experiences and outcomes to the WP7 evaluation team via reporting sheets, regular working sessions,annual interviews and other means. The platform usage statistics will provide interesting insights into the main interests of the citizen science community. The stakeholders themselves will be involved in the data collection via instruments like feedback cards, questionnaires, interviews, and a social network analysis. The development of some of these instruments is still in progress, as concrete questions can only be defined in detail once other project steps are successfully completed. For example, we will conduct user acceptance testing of the developed platform via walk-throughs (Wharton, Rieman et al. 1994) and think aloud protocols, but can only elaborate the specific tasks of these walk-throughs once our platform structure is completed and ready for the first user trials.

The time plan (Chapter 9) shows how we continuously collect data about the project performance and sets time points for internal reflections on the evaluation outcomes as a collaborative exercise between all project partners. This self-reflection within the consortium is an important part of the evaluation process.

With this document we have prepared the main corner stones of the evaluation and impact assessment in EU-Citizen.Science. It is the basis for the collection and analysis of formative feedback and the project impacts. But we will also critically reflect and amend the indicators and applied instruments during the project, continually adapt and improve our evaluation activities according to the lessons learned and finally come up with an evaluation package that can be handed over to ECSA to continue a sustainable evaluation once the project is over.

2. Introduction

This document presents the evaluation and impact assessment framework. It is the basis for the project's evaluation activities and contains the following chapters.

Chapter 1: Executive Summary

Chapter 2: Introduction

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Chapter 3: Overarching success criteria

Presents the results from the working session at the kick-off meeting, where the whole consortium was invited to reconsider the main project objectives and define for each of the objectives' success criteria.

Chapter 4: work package success criteria

Introduces the results from the working sessions with the work package leaders. These sessions focused on the work package specific activities and how evidence for successful achievement and impact can be collected for each of the activities.

Chapter 5: Indicator framework

Structures the success criteria from the project and the work packages in the form of an indicator matrix and shows the main indicators that we aim to collect over the runtime of the project in a condensed form. This includes formative feedback as well as evidence for initial impacts in the community.

Chapter 6: Relation to MoRRI and SDG indicators

Links the indicator framework to concrete MoRRI indicators and SDGs.

Chapter 7: Evaluation instruments

Presents the main quantitative and qualitative evaluation instruments we aim to apply to collect the data required to fill the indicator framework.

Chapter 8: Project self-assessment & reflection

Introduced the methodology of reflecting evaluation results with the whole consortium at two time points of the project.

Chapter 9: Time plan

Shows when we want to apply the different evaluation instruments throughout the project.

Chapter 10: Ethics

Links our evaluation work to the ethical basis of the project described in the deliverables of work package 8.

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3. The vision: Overarching success criteria

During the kick-off meeting in Berlin in February 2019, all members of the EU-Citizen Science project were actively involved in the discussion of our project objectives and related success indicators. This exercise was a very visionary one - we started imagining the success of our project without any limitations in terms of time and resources. Starting with a large vision and then narrowing it down to what is feasible is a common approach to not immediately limit one's thinking. Thus the results presented in the following chapter are from this ambitious thinking session and are then steadily honed and fine-tuned in chapters 4 and 5 of this document.

Objective 1: ESTABLISH EU-Citizen.Science as the community hub for high-quality citizen science exchange and learning in Europe

We are successful if we:

- Provide a good, user-friendly and appealing platform with:
    - Steadily increasing numbers of visitors
    - From all European countries
    - Regular new and returning visitors
    - High numbers of exchanged experiences, interactions, downloads …
    - Extended time spent by users and interesting user journeys
- Establish EU-Citizen.Science as the main community hub, and
- Get commitment from ECSA and other sponsors who are motivated to sustain the platform

Objective 2: CONSOLIDATE the citizen science knowledge base and celebrate outstanding practices and state of the art in citizen science in Europe

We are successful if we:

- Create a better understanding of citizen science (what it is and what it should not be; that it is not identical with science communication)
- Strengthen the appearance of citizen science in popular media (regular citizen science articles for the general public, a well-referenced report that describes the citizen science knowledge base, outstanding practices highlighted regularly in the media)

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- Provide good practice, case studies and resources on citizen science (high quality, increasing per year, showing a geographical coverage, summarize "positive" and "negative" knowledge)
- Become the main portal to provide access to citizen science projects all over Europe
- Engage the citizen science community in sharing their resources and knowledge

Objective 3: EMPOWER diverse stakeholders to become citizen scientists, launch citizen science initiatives, and adopt citizen science approaches professionally

We are successful if we:

- Extend the citizen science community, involving additional researchers and citizens, that have diverse socio-economic backgrounds (particularly under-represented, marginalised, and hard to reach groups), into new research areas, also in European countries that put less focus on citizen science,
- Generate strong interest in how to start a project
- Generate active engagement of the SwafS projects on our platform
- Support the greater usage of citizen science data (by external companies or in academic papers).

Objective 4: EXPLORE new pathways for participatory governance, by strengthening links between citizen science and policy making

We are successful if we:

- Engage a steadily rising number of representatives of science & technology ministries in EU countries involved; e.g. in local events, networks, etc.
- Offer specific training to policy makers and have growing access rates to the "for policy makers" section on our platform
- Establish citizen science as a tool for evidence-based policy making, mentioned in local/regional/national/EU level policy documents and strategies, and citizen science data acknowledged or cited in the policy documents
- Promote the usage of citizen science data in political decision making (e.g. municipalities)

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- Increase public funding for citizen science

Objective 5: ADVANCE citizen science into the mainstream of public engagement, science communication and education

We are successful if we:

- Can help to raise participation in citizen science across the EU
- Increase the number of school-based citizen science projects, and encourage the integration of citizen science in school curricula (co-created with teachers and school heads)
- Establish new access points to citizen science (citizen science associations, science centres and museums)
- Help to establish citizen science as a regular tool in research projects
- Deepen the knowledge transfer between science communication and citizen science

Figure 1 structures the above-mentioned indicators according to the concerned stakeholder groups.
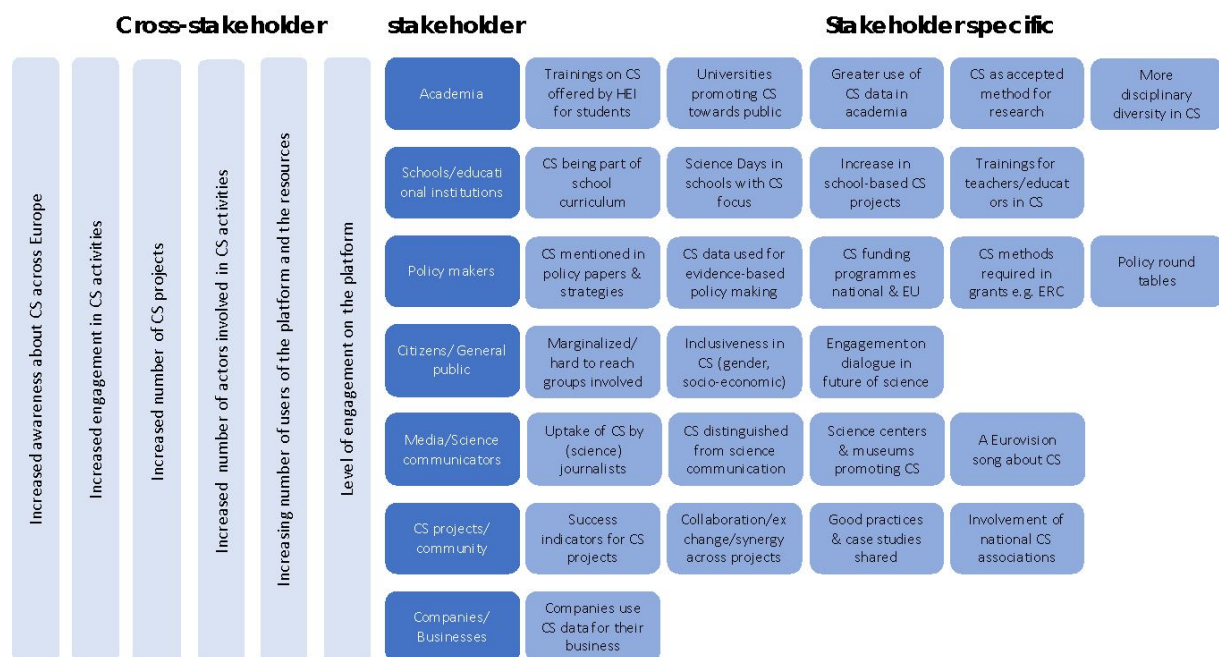

Figure 1: Project success criteria and their relation to our stakeholder groups

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4. Work package success criteria

The collection of visionary overarching success criteria defined in the previous chapter was then followed by a fine-tuned and detailed discussion of success criteria for each work package, where we looked at each work package's tasks and resources and how they can be aligned to our visions as closely as possible. Inspired by the Logic Framework Approach (LFA) a structured process was applied to assess the effectiveness of the activities planned in each of the work packages to achieve an intended change. Although coming mainly from developmental programme design and evaluation, LFA has been widely adopted and used for evaluating scientific programmes and technology deployment programmes. It is mainly an instrument for objective-oriented planning of (large-scale) projects. However, LFA can also be applied for systematic analysis, implementation, monitoring and evaluation of development and intervention projects of various kinds (Örtengren, 2004). It is thus an approach that can be used throughout the project management cycle.

The ZSI, leading partner in the evaluation of EU-Citizen.Science, has previously adapted the LFA for a European network of excellence (Stellar) and developed an adapted matrix for that purpose (Fiedler, et al. 2009). It has proven to be a useful instrument to structure and support the dialogue and exchange between all parties involved. It can help to identify problems early on and adapt them accordingly, it can clarify the project's objectives and make them more concrete, specify and adapt the activities, create a joint approach to the project, and make implementation more efficient.

For the purpose of work package reflections in EU-Citizen.Science, a matrix (see Table 1) was adapted that combines the output and impact in one field. Later, as we will see in the indicator framework, we come back to the original distinction between output, outcome and impact, which we renamed into output, short term outcome and long-term outcome (see Section 5).

Table 1: Work package evaluation matrix

activities	project assumptions	outputs/impact	measures	means of data gathering	risks

This template was used to guide the review, discussion, and explication of all applicable components within the individual work packages. The template was initially filled with content based on the Description of Work by the ZSI evaluation team and then collaboratively discussed and amended with the work package leaders. In addition to the matrix itself, the sessions with the work package leaders also reflected on the most important expected impact that each of the work packages aims to achieve. The results are presented in Tables 2-6.

4.1. WP2: Platform, Community and Network Building (ECSA)

Table 2: Work package 2 evaluation matrix

activities	assumptions	outputs/impact	measures	means of data gathering	risks
Stakeholder, networks & community mapping	Wide range of data is available to search for players in citizen science; e.g. existing studies, databases and meta portals; global, EU-wide & national	A completed report on stakeholders, key networks and target community members 6 core stakeholder groups defined A community building strategy and taxonomy of relevant stakeholders developed	Number of identified stakeholders in different subgroups (general, not at a level of concrete organisations and people involved)	Literature review, discussions with project partners, interviews with key stakeholders. Feedback from consortium if the map is understandable and includes all the required groups	Too many data sources The literature is oriented towards individual projects, not stakeholders in the platform. Some national communities might dominate while others are ignored
Co-design of platform requirements	All key stakeholder groups (based on stakeholder map) are represented in the co-design activities	A clearly defined set of requirements for the EU-Citizen.Science platform that meets the needs of all stakeholders	Satisfaction of different stakeholders with the requirements list (or features) of the platform Feedback from all relevant stakeholder groups and subgroups	Requirements gathering interviews with representatives from all stakeholder groups. Requirements gathering workshops with consortium, and related networks.	Expectations and interests of the stakeholder groups differs widely Challenge to structure, merge diversified feedback High efforts to collect requirements every 6 months

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				Oral or written feedback on the requirements list	Too broad a scope and list of requirements makes it much harder to do a few core things well.
				Requirements collected during workshops	
				Documented outcomes from workshops	
Identify opportunities to connect with other networks and platforms	Other relevant platforms exist that are willing to link to the EU-Citizen.Science Platform	List of relevant networks and platforms and their APIs	Number of platforms and networks identified and agreement to connect	Desktop research Discussions within consortia. Count platforms and networks	Too many small initiatives want to connect and it gets difficult to select;
Survey existing knowledge sharing platforms	Access to existing platforms	Overview of platforms with similar features and evaluation data of these platforms for potential fit	Match of platform features with requirements from different stakeholders	Qualitative stakeholder feedback collected during co-design	Too many platforms with similar features; difficult for decision making Different levels of financing and resources make examples difficult to replicate
Building the EU-Citizen.Science Platform	Requirements clearly defined	EU-Citizen.Science platform is up and running	Feedback from users representing the different stakeholder groups	User survey and user testing Usability evaluation with gender balance and W3C accessibility in mind	Users do not find useful content/features on the platform Too many functions or resources make the platform hard to navigate
Community and platform management	Platform is up and running and has a growing user base	Communication in social media, newsletter and platform discussion forums	Feedback from users representing the different stakeholder groups Activities on the platform	Access statistics, analysis of forum contributions Social media statistics	Users do not find useful content/features on the platform Platform can not compete with other platforms in the area (e.g.

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			Activities in social media		national platforms)
Platform maintenance (during and beyond the project funding period)	Platform is up and running	Sustainability and maintenance plan for the platform	Commitment from ECSA; the platform becomes the main ECSA website/platform Ongoing development of the platform, beyond pure maintenance	Maintenance agreement signed	Lack of resource funding within ECSA Lack of required skills within ECSA team

Expected Impact

WP2 aims to establish a community platform that connects existing networks and communities in citizen science and is used by a wide number of stakeholders across Europe and beyond. This will be achieved through mutual sign-posting and content sharing relationships with other Citizen Science related platforms, such as national platforms. They are also making use of the open source version of the platform and come forward with new developments based on it. The platform is easy to use and navigate, we experience a number of repeat visits, and community members actively contribute to both the resources and the forums.

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4.2. WP3: Content - Framework, Quality Assurance and Curation (IIASA)

Table 3: Work package 3 evaluation matrix

activities	assumptions	outputs/impact	measures	means of data gathering	risks
Criteria definition for collecting and sharing tools, guidelines and materials (best practices in citizen science)	Including RRI and Open Science principles; and SDG; informed by stakeholder analysis in WP2; involving RIAs and other Swafs projects	A clearly defined set of quality criteria for best practice tools, guidelines and materials in citizen science	Stakeholder feedback on the usefulness of quality criteria Applicability of quality criteria for selection of TGMs	Number of selected good practice using the quality criteria Feedback from those selecting the TGMs on basis of the quality criteria	quality expectation differ amongst experts; different understanding of what quality means in different contexts; SDG relatedness might be difficult;
Collating state of the art in citizen science: tools, guidelines and materials	A wide range of best practice tools, guidelines, materials available	A collection of tools, guidelines and materials compliant with the quality criteria	Number of resources on platform; their findability, and applicability; range of topics and engagement/participation structures covered; Number of downloads or time spent on the resource page.	Resources count on platform; Comments and ratings of TGMs on the platform; Access statistics	Language barriers
Gap analysis and opportunity identification Connected to WP5 (Training)	Not enough tools, guidelines and material available	A list of required tools, guidelines and materials that are not covered in the existing collection	Stakeholder feedback on needs for specific tools, guidelines and materials	Survey, Comments on the platform	
Mobilising other RIA and Swafs projects and the wider community to contribute tools,	Willingness of others to contribute their resources	Contribution of wider citizen science community and other projects to tools, guidelines and materials	Number of contributions from initiatives (outside the consortium)	Resources count on platform Comments and ratings on the platform; Access statistics	

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guidelines and materials					

Expected impact

In the future, the Citizen Science community will share and use high quality tools, guidelines and materials at European scale, and worldwide. The quality of the tools, guidelines and materials will be supported by positive feedback from different stakeholders in the citizen science community. Everyone looking for guiding materials, templates, etc. for Citizen Science activities will know that the resources provided by EU-Citzen.Science follow quality standards and have been applied in practice.

4.3. WP4: Awareness and Engagement - Public and Policy Makers (Earthwatch)

Table 4: Work package 4 evaluation matrix

activities	assumptions	outputs/impact	measures	means of data gathering	risks
Develop a set of guidelines on how to achieve citizen engagement in science (including a business plan for engaging local entrepreneurs)	There are clearly identifiable success criteria for citizens' engagement in all types of citizen science projects and topic areas.	Practical guidelines applied by all project partners and beyond Different guidelines for different project types Business plan incl. for sustainability	Guidelines are useful and applicable depending on context Guidelines are easy to find and well described so that users grasp their purpose and applicability.	Feedback from consortium partners (incl. third parties); feedback in the report from partners and in consortium meetings Comments and ratings online;	National and cultural contexts are not sufficiently reflected in the guidelines
Identifying existing national initiatives and events to raise awareness for citizen science	There is a clear definition of what kind of activities should be aimed for	Catalogue of existing national events and initiatives across Europe Up-to-date list of initiatives and a calendar online	Number and geographical coverage of identified initiatives and events	Number counts in reports	Highly unbalanced number of events across different countries;

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Perform engagement and awareness-raising activities within existing events; Awareness raising of specific topics, e.g. environmental issues, societal aspects,...	Sufficient engagement material and resources are available for the partners	National engagement documentation	Number of engagement and awareness raising activities; number of people involved; increased awareness on citizen science;	Number counts in reports; formative feedback collected during events; feedback collected certain period after events on long-term effects.	Impact of the EU-Citizen.Science activity hard to assess as it is part of an existing event;
Develop "train the trainer" methodology	Provided to WP5 as part of the training material	"Train the trainer" methodology applied in WP5	Methodology perceived as useful	Pre-test with selected number of users.	
Provide general policy recommendations for citizen science	Science and research policy makers want to promote citizen science	Science and research policy recommendations (at national and EU level) For specific countries and EU	Applicability and usefulness of the recommendation	Interviews with policy makers;	Level of implementation is not defined (e.g. national, EU-wide, regional,..); risk that it is too high level or too detailed;
Conducting a case study on implementing citizen science policy recommendations in Spain	Policy recommendations defined	Policy recommendation implemented and feedback from involved national stakeholders analysed	Usefulness and effects of the implemented policies; barriers and drivers for implementation	Case study report	Political changes in the country and citizen science not on agenda anymore

Expected Impact

With the activities in WP4 we expect to have achieved an increased awareness of Citizen Science amongst the general public and science policy makers across Europe. Citizen Science methods will be included in an increased number of national science and research policies in Europe.

4.4. WP5: Training Needs Assessment, Creation and Delivery (UCL lead)

Table 5: Work package 5 evaluation matrix

activities	project assumptions	outputs/impact	measures	means of data gathering	risks
Assessment of training needs and desired formats	Experiences in learning and training in citizen science available and accessible	Typology of training needs Groups of learners defined	Typology is used to prioritize training needs and create training Consortium and ECSA community approve the typology	Peer-review of the typology by the consortium, collection of comments and suggestions	One stakeholder group dominant in terms of needs;
Collection of existing teaching resources.	Teaching resources from other projects exist and are freely available for re-usage	Collation of training resources from other projects	Number of resources available; Proper fit of existing resources with the developed typology Number and breadth of projects/ programmes from which the training resources is coming	Number counting; Feedback on typology usage	Organisation of disparate formats / approaches / ontologies
Design of tools and resources to curate and host training material and modules	Insights from WP2, 3, and 4 provided	Training resources, classified and in a catalogue, linked and organised on the platform	Number of resources available in a training catalogue on the platform; Resources are findable and properly described: Feedback on applicability of the resources;	Number counting Feedback provided by learners (comments, ratings) or implementers of the training (on the portal)	Scarce time and resources, big differences in requirements from different typologies, difficult to cover all requirements entirely
Production of specific training modules	Gaps of missing training material have been identified;	Training modules providing each 1-2 hours of training	Number of modules.	Number counting Access statistics Feedback provided by	registration process, modules are just downloaded,

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Moodle platform or similar for the training		Training modules aimed at citizen scientists, practitioners, policy makers and civil servants, and journalists.	Feedback on the usefulness of modules; Long-term impact on training participants,	learners (via feedback questionnaires/ comments) or implementers of the training Post Feedback from some participants	It is very hard to collect feedback from learners
Develop and conduct 2 train-the-trainer workshops		Train-the-trainer guidelines and supporting material; teacher material for some of the modules	Feedback usefulness of the train-the-trainer event and material	Feedback questionnaire from selected participants Follow-up interviews with selected participants	
Implementation and testing of training		Improved training material based on evaluation feedback from test implementations	Qualitative feedback from the test learners	User acceptance feedback Evaluation forms	Background knowledge of the testing participants may vary a lot

Expected Impact

WP5 assures the availability of high-quality training material for different Citizen Science stakeholders. Everyone will be able to access the training material they need for their Citizen Science interest. This includes the availability of material that is not currently available and would fill this gap.

4.5. WP6: Dissemination, Exploitation, and Strategic Communication (ECSITE)

Table 6: Work package 6 evaluation matrix

activities	assumptions	outputs/impact	measures	means of data gathering	risks
Develop a dissemination and communication plan	All partners will disseminate and communicate	Definition of specific actions to address each target audience	Appropriateness of defined actions and tools for each target group	Feedback from ECSA and consortium leader	Not all partners implement the plan
Create a visual identity, online presence and communication activities	All partners will use the visual identity	Media guidelines for communication to the outside	Quality of media guidelines	Feedback from the consortium incl. third parties	Lack of information to communicate online
Engage with science journalists and media	Local, national communication with journalists by all partners	Articles in social media, press, mass media;	Number of articles, news mentions, blog entries, social media feeds & followers etc.	(Social) media monitoring;	Lack of interest from journalists
Develop a training module for engagement with media (on- and offline)	Training will help consortium partners to engage with the media	Training module on how to engage with media	Feedback on the usefulness of the training module	Feedback questionnaire, comments, ratings	Difficult to engage with media
Disseminate EU-Citizen.Science activities and outcomes Workshop at ECSITE Conference, Communication via Spokes magazine, final project event	40 participants to the Ecsite Conference workshop	Increased awareness for EU-Citizen.Science and citizen science; Dissemination, communication, outreach activities	Number of activities, participants, target groups; Feedback on the quality of events	Events feedback Number of participants	Difficulty in attracting participants

Expected Impact

WP6 activities will achieve high visibility of EU-Citizen-Science and its engagement with all stakeholders, including researchers, practitioners, educators, policy makers, the general public, etc. Awareness of the potential of Citizen Science for all stakeholders will thus also be raised.

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5. Indicator framework

The overarching visionary success criteria, which have been defined for the project overall, have framed our work with the individual work packages. The aim of this chapter is to provide an overarching structure for the different indicators that were collected throughout the process and map them into a joint indicator framework. This framework is theoretically embedded in the tradition of programme evaluation, such as the Logic Framework Approach, which Chapter 4 briefly explained, and related indicator frameworks that consider cause and effect relationships.

The indicators that we present in the following section are based on the experiences of ZSI in previous evaluation and impact assessment processes and on the theoretical input as mentioned above. Most indicator frameworks include the dimensions of input, output, intermediate outcome and longer impact or outcome. To minimise the complexity, but still be able to draw some conclusions on effect chains, we decided to focus on three indicator levels:

1. "output",

2. "intermediate outcome"

3. "longer term outcome"

Output indicators are directly measurable, typically quantitative measures (no. participants, intensity of participation etc.) and considered a pre-condition to reach intermediate and long-term outcomes. In this category we also find user acceptance factors of our platform and learning modules, like perceived ease of use and usability, as these factors are also a pre-condition to generate outcomes.

Outcome indicators provide information about participants' benefits, whether learning takes effect, interest increases ect. It shows how much an intervention's impact contributes to the project goals.

Longer-term outcomes are similar to final outcomes but emphasize the time dimension because the limited duration of the project is a crucial fact concerning our work on impact assessment. It is clear that within the time frame of the project, and with the restricted amount of available data and external factors we are not able to control, we will not be able to obtain reliable measures of long-term impact at all levels of expectations. In particular, the high-level goals and long-term impacts of having political support for Citizen Science across Europe after the project ends will

be difficult to assess, as the political landscape and science-funding policies are constantly changing, and depend highly on many socio-political conditions that we cannot control. For this reason, the following indicator framework (Table 7) also includes cause-and-effect chain elements, which have been successfully applied in previous projects and are based on relevant research literature on different types of effect chains, such as the Balanced Scorecard (BSC). The BSC can be considered one of the most popular management frameworks, and have cause-and-effect chains at their core (Hoque et al. 2012). Cause-and-effect chains assume relationships between certain perspectives, indicator types and even concrete indicators. For instance: we assume that the output indicators of an increasing number of regular visitors to our platform result in the intermediate outcome of an increased awareness and knowledge in citizen science, which then will in some cases lead to an increased engagement in citizen science activities.

Table 7: Indicator Framework – indicators collected during the runtime of the project

	Platform	Training	Resources	Dissemination
Output	# visitors (returning/new) # countries of visitors # page visits # comments # average time spent on site - most visited pages User acceptance: - Usefulness of the platform - Usability of the platform	# training modules # topic areas covered # target groups covered # participants/ module - Time spent # page visits, interactions (e.g. via quizzes, downloads) User acceptance: - Usefulness of training modules - Usability of training modules	# resources # topic areas covered # target groups covered # downloads # uploads # comments - Ratings User acceptance: - Usefulness of resources	# events # visitors # target groups covered # tweets # followers # newsletter subscribers # press releases # publications # presentations User acceptance: - Usefulness of events - Formative feedback
Inter-mediate Outcome	*1. Visibility* Citizen science and EU-Citizen.Science present in: • Public & social media (press, TV, twitter…) • Scientific events and on-/off-line publications • Science communication initiatives and publications • Policy events & documents			

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	2. Knowledge & awareness • General public: what citizen science is, and what it not is; how to participate; where to find information etc. • Scientists: how to get involved and conduct citizen science; how to increase data quality; how to evaluate the outcomes; how to finance etc. • Policy makers: the impacts of citizen science; ways to use it as a policy tool; ways to support it etc. • Organisations: how to participate in citizen science; how to benefit from the participation etc. • Formal/informal education: how to participate in citizen science; concrete educational benefits; access points etc.
Long-term Outcome	*1. Engagement & uptake* *Scientists/scientific institutions:* ● A steadily increasing number of scientists/scientific institutions involved in citizen science ● Wider diversification of (new) research areas and countries *Organisations/institutions:* ● A steadily increasing number of organizations involved ● An increasing diversity (SMEs, Non-profit, public …) and geographic coverage ● New access-points to Citizen Science established *Citizens:* ● A steadily increasing number of EU citizens participate ● Higher socio-demographic and geographic diversity *Policy makers:* ● A steadily increasing number of political decision makers use citizen science to support decision-making ● Higher geographic coverage *Formal/informal education* ● Higher number of school-based citizen science projects ● Universities have access points to citizen science *General* ● Greater exchange and collaboration between actors ● New ECSA members **2. Sustainability** ● Sustainability of the EU-Citizen.Science platform (e.g. by ECSA, donors) ● More grant funding from EU member states for citizen science projects

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Looking at the indicator matrix (Table 7), we will collect evidence for the output of EU-Citizen.Science (output) and the impact on its visibility in the on- and offline world (short-term outcome), such as number of visitors, number of followers on social media, etc. We can also collect insights into increased knowledge and awareness amongst those participating in our events and training modules and those interacting with our platform (intermediate outcome) through qualitative and quantitative feedback.

For the long-term outcomes, such as levels of engagement of platform stakeholders and an increased sustainability for citizen science, it becomes more complex to separate the effects of EU-Citizen.Science from other initiatives that foster citizen science in Europe. Nevertheless we think that there are cause-and-effect chains between an increased visibility, awareness and knowledge as primary stage, towards higher engagement and sustainability in a second stage, and will try to bring evidence for these logic chains for selected EU-Citizen.Science cases.

5.1. First indicators that we aim to reach in EU-Citizen.Science

With the aim of setting ourselves performance indicators that we want to reach over the course of the project, we elaborated together with all work packages the following target output numbers for our key activities (Table 8).

Table 8: Target output numbers

PLATFORM	TRAINING	RESOURCES	DISSEMINATION
10,000 unique visitors	20 training modules	150 resources	150 attendees at final event in Brussels
4,000 returning unique visitors	4 target groups covered	500 downloads	1.500 attendees at local and EU-wide events
>30 countries	User testing with 20 test persons, representing different target groups		200 Followers Facebook
20,000 page visits			2300 Followers Twitter
>2 minutes average time spent on site			520 Followers Instagram
User testing in 2 locations, 10 people each			400 subscribers to newsletter

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			10 publications in journals and sector-specific magazines
			35 presentations in external workshops/conferences/events

6. Relation to MoRRI and SDG indicators

During the proposal phase of EU-Citizen.Science a first draft selection of indicators stemming from the MoRRI project has already been conducted and matched with the indicators defined from the Citizen Science evaluation framework co-developed by the authors of this deliverable (Kieslinger et al. 2017). It should be noted that the data collection process as performed by the MoRRI project cannot be replicated as such in the context of this project, but a certain mapping of the data collected in this framework with the MoRRI indicators can be achieved.

Similarly, this applies to the SDGs as defined by the United Nations. A first matching exercise between Citizen Science and SDGs was performed but remained on a macro level. Within the context of EU-Citizen.Science, we plan to explore specific relationships in more detail. A first attempt to identify how selected aspects of this project may relate to these indicators is given in Figure 2, as presented in the proposal.
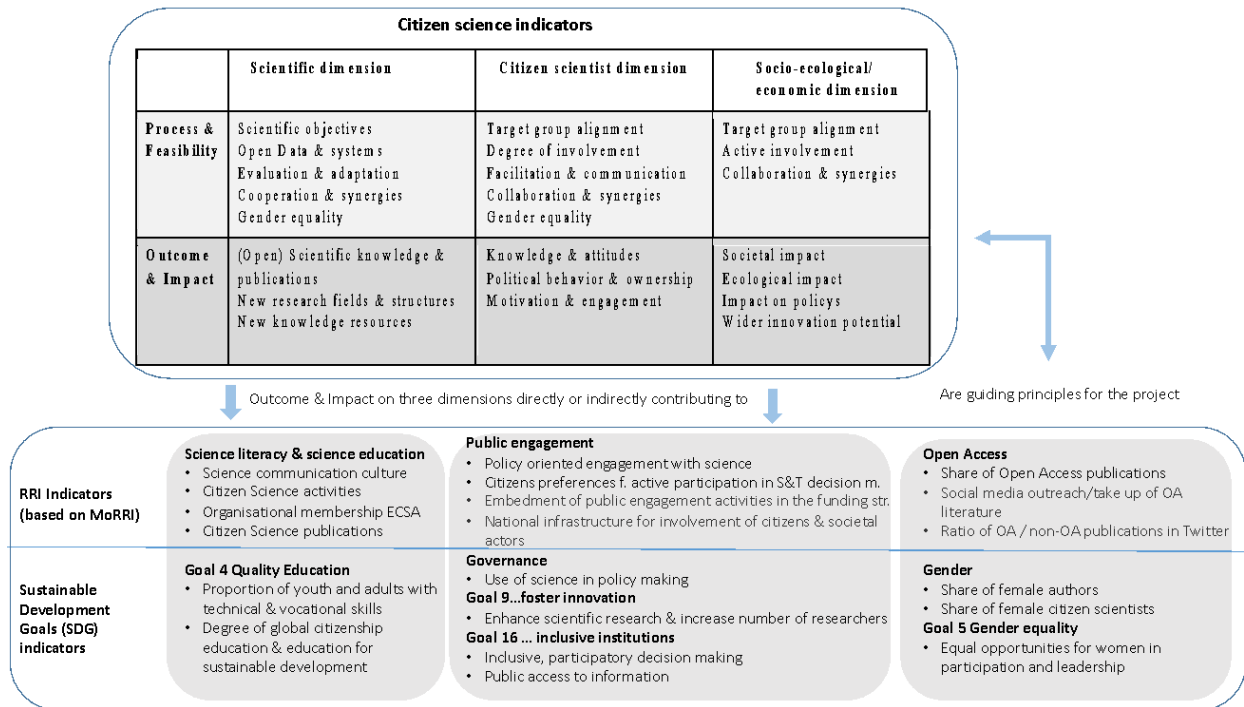
Citizen science indicators

	Scientific dimension	Citizen scientist dimension	Socio-ecological/ economic dimension
Process & Feasibility	Scientific objectives Open Data & systems Evaluation & adaptation Cooperation & synergies Gender equality	Target group alignment Degree of involvement Facilitation & communication Collaboration & synergies Gender equality	Target group alignment Active involvement Collaboration & synergies
Outcome & Impact	(Open) Scientific knowledge & publications New research fields & structures New knowledge resources	Knowledge & attitudes Political behavior & ownership Motivation & engagement	Societal impact Ecological impact Impact on policys Wider innovation potential

Outcome & Impact on three dimensions directly or indirectly contributing to   Are guiding principles for the project

RRI Indicators (based on MoRRI)

Science literacy & science education
- Science communication culture
- Citizen Science activities
- Organisational membership ECSA
- Citizen Science publications

Public engagement
- Policy oriented engagement with science
- Citizens preferences f. active participation in S&T decision m.
- Embedment of public engagement activities in the funding str.
- National infrastructure for involvement of citizens & societal actors

Open Access
- Share of Open Access publications
- Social media outreach/take up of OA literature
- Ratio of OA / non-OA publications in Twitter

Sustainable Development Goals (SDG) indicators

Goal 4 Quality Education
- Proportion of youth and adults with technical & vocational skills
- Degree of global citizenship education & education for sustainable development

Governance
- Use of science in policy making

Goal 9...foster innovation
- Enhance scientific research & increase number of researchers

Goal 16 ... inclusive institutions
- Inclusive, participatory decision making
- Public access to information

Gender
- Share of female authors
- Share of female citizen scientists

Goal 5 Gender equality
- Equal opportunities for women in participation and leadership

Figure 2: Citizen Science indicators in relation to MoRRI & SDG indicators

If we now map the indicators from the EU-Citizen.Science as presented above with the identified MoRRI and SDG indicators in Figure 1 we have to adapt the matching. Some of the expected contributions can still be followed up, especially in the RRI dimensions of science literacy and public engagement. However, other indicators that may be relevant for some Citizen Science projects cannot be measured by data that we expect to obtain in this project, such as gender aspects. In Figure 3 below we indicate the mid and long-term outcomes of the project and highlight which MoRRI and SDG indicators these expected outcomes might mostly contribute to.

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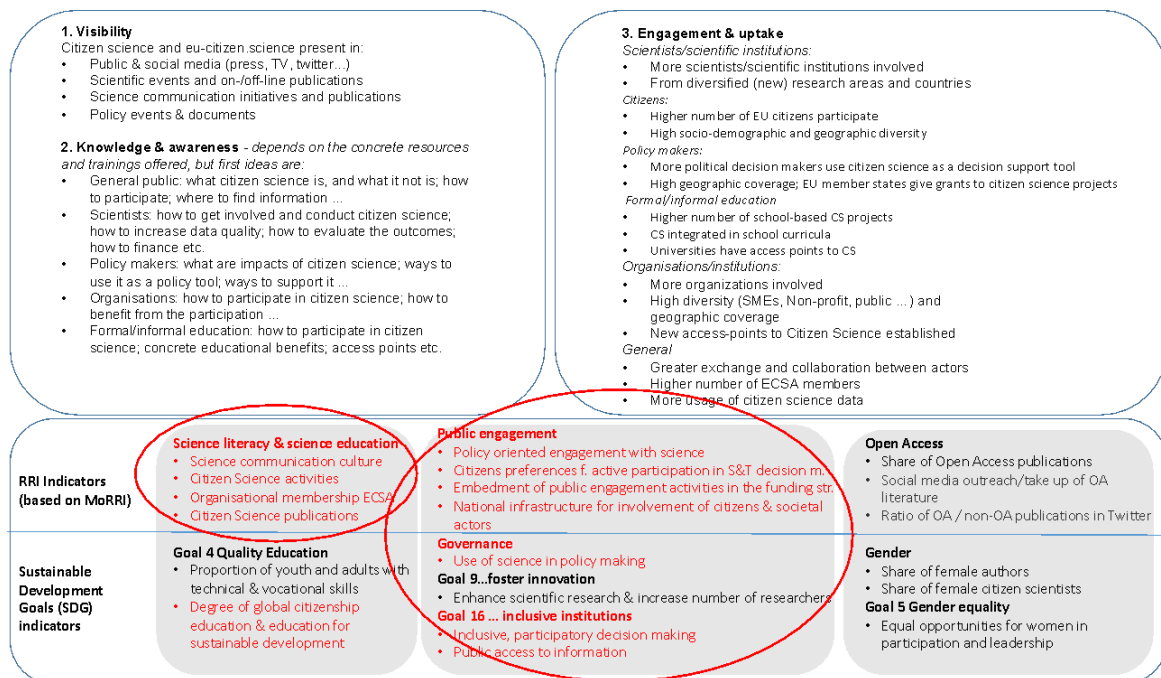
Figure 3: Citizen Science indicators in relation to MoRRI & SDG indicators II

7. Evaluation instruments

The following chapter introduces a set of evaluation instruments that we will apply to collect the indicators introduced above. All of them feed their data into the evaluation framework described above. The specific fields of the matrix that feed into each instrument are listed at the beginning of the relevant subchapter.

7.1. Internal reporting

Feeds: Output (numbers and formative feedback for our key activities), Intermediate Outcome (visibility, awareness, knowledge)
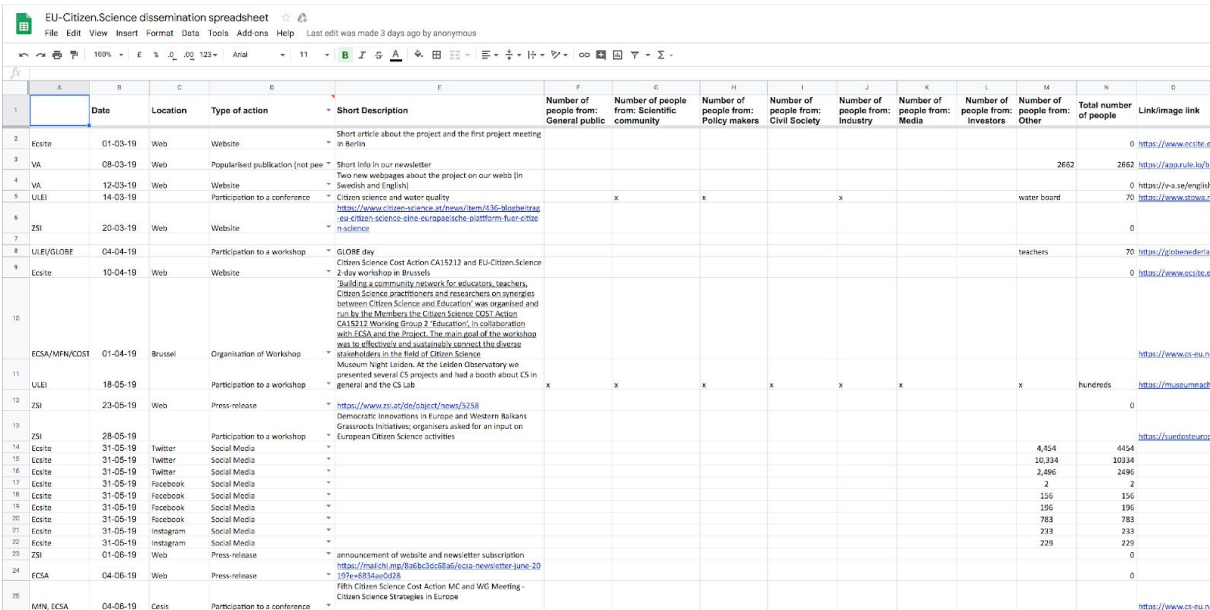
The internal reporting is a key source of information. It is linked to all key activities in our work packages and helps to:

1) keep track of the output indicators for all our key activities, e.g. number of platform users, number of twitter followers, number of resources etc. and

2) collect the experiences of the 21 partners involved in the project activities. This can be formative feedback on training and events (what worked and what not) as well as input on the perceived benefits (what was the key impact for the project and for participants).

With these aims, we foresee the following activities:

a) a **spreadsheet for the internal reporting** (Figure 4) on dissemination and outreach was elaborated (by WP6 in coordination with WP7), and

b) **regular online sessions** will be organised by the evaluation team with all work package leaders to keep track of their activities and outcomes during the project.

c) Annual **interviews** will be organised either by EU-Citizen.Science consortium members without a leading work package role or our associated third-party partners. These interviews will collect evidence for any change in either their institutional commitment to citizen science or any other regional or national impact of the activities driven by their EU-Citizen.Science participation.

Figure 4: The internal reporting sheet on dissemination activities

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7.2. Usage statistics, and analysis of comments shared on the platform

Feeds: Output (numbers for our key activities)

The interaction patterns of users with the platform and the training modules, coming from the usage statistics, will be one of the main tools to evaluate the platform, the resources shared and the trainings offered. It is an important tool to understand the users' interest in and acceptance of our services without any additional effort required from our target groups.

In addition to the usage statistics, the comments of learners shared online as part of their journey through our platform or as part of the learning, are a rich source of data for a deeper analysis.

Examples are:

- Number of visitors to the platform (returning/new)
- Visitors' countries' of origin
- Pages most visited and those less visited
- User journeys through our platform
- Time spent on the platform
- Number of downloads of resources
- Number of comments shared in a forum
- Number of uploads of resources
- Ratings for resources

The basic usage data will be collected with Google analytics, transferred to a matrix in Excel, structured, continually collected and amended and then processed in order to come up with meaningful indicators about the platform usage.

7.3. Participants' Feedback cards

Feeds: Output (formative feedback for our events), Intermediate Outcome (visibility, knowledge, awareness)

Feedback cards (Figures 5 and 6) are dedicated to evaluate events in a very "light-weight" way. They are designed for the visitors of events, which are supported by EU-Citizen.Science, but do not demand a lot of time and effort by event participants to be completed. The cards aim to collect participants' feedback on citizen science in general and the potential impacts of their event participation.

These cards have been pre-tested with a range of different users, from newcomers to citizen science to experts in citizen science. As the questions are kept on a general level, the aim is to use

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this tool across the large diversity of events at which EU-Citizen.Science will be present, and allow for larger numbers of feedback cards to be distributed and collected by the project partners.
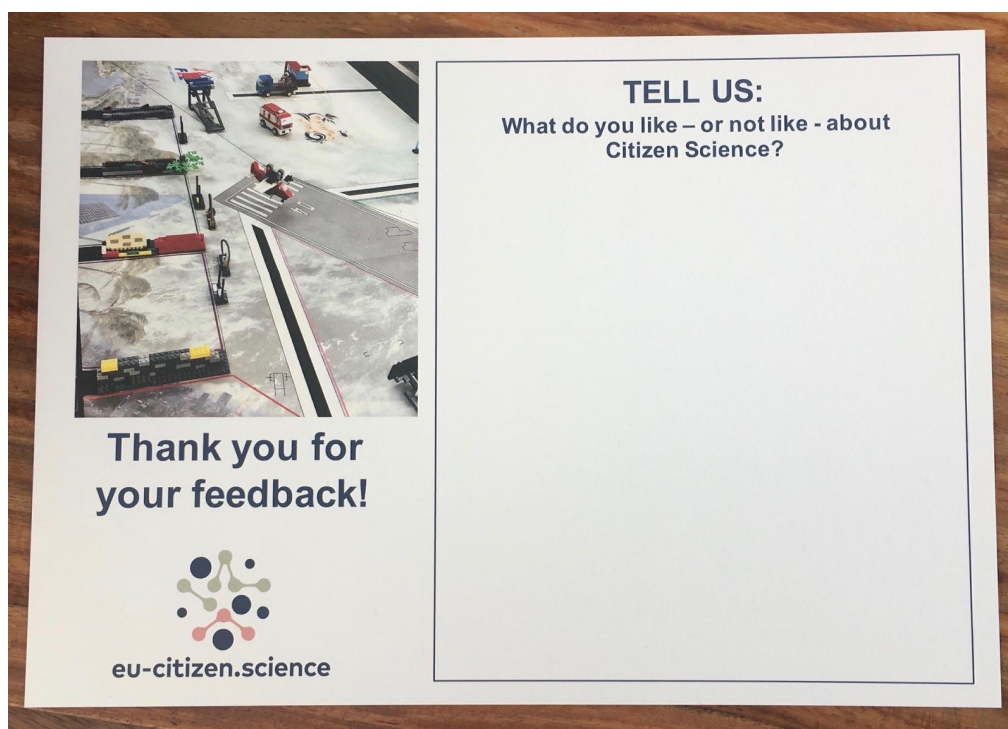

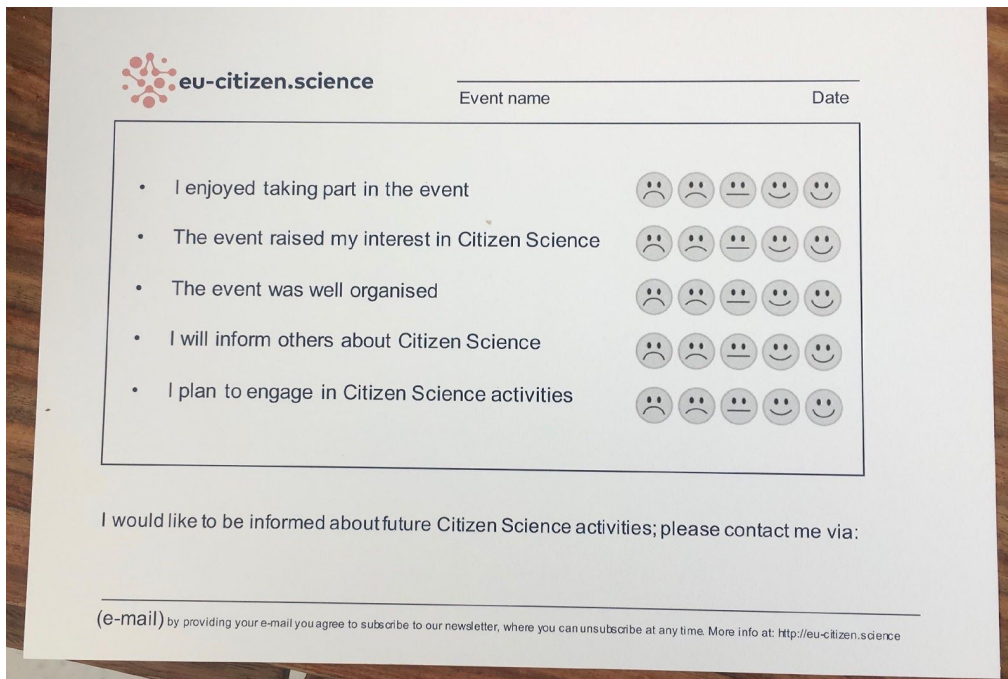*Figure 5: Participants' feedback card, front page*

Figure 6: Participants' feedback card, back side

7.4. Participants' Questionnaire:

Feeds: Output (formative feedback for our trainings), Intermediate Outcome (visibility, awareness, knowledge)

These questionnaires aim to collect more detailed feedback from event participants, including formative feedback and the benefits experienced by Citizen Science events. As these two-pagers require 2-3 minutes of the respondents' time, they are designed for events where we have the opportunity to distribute them to participants and collect them again. The questionnaire contains questions that can be applied for different events to allow for comparison of data between events. It can also be adapted to online trainings, where more specific questions on the respective learning outcomes would be added.

Questionnaires are distributed directly at the end of an event or training to collect immediate feedback from participants.

The questionnaire can be found in the Annex of this document (p. 46).

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7.5. Participants' Interviews

Feeds: Output (formative feedback for our key activities), Long-term Outcome (engagement, sustainability)

We have designed interviews to collect data on the long-term impact of participating in an EU-Citizen.Science event, training or workshop. They are only organised with a smaller number of people engaged with us, and are conducted 4-6 months after participating in one of our activities.

Depending on the type of activity, interviewees can be researchers, citizens, political decision makers, NGO representatives etc.

The aim is to capture the extent to which participants' engagement with EU-Citizen.Science has impacted on their lives, e.g.

- Has knowledge from training been applied in practice?

- Has participation at one of our associated events led to an active involvement in a citizen science project?

- Has the event sustainably influenced the participants' network, for example through a new collaborator?

- Has it had an impact on a decision in the policy field?

In addition to these questions on long-term impact, the interviews will explore additional measures that could have deepened the project's impact and/or the factors that inhibited the realisation of long-term impacts.

All interviews will collect basic socio-demographic data of interviewees and ask the interviewee about their interaction with EU-Citizen.Science since their participation in one of our activities, such as using the platform.

Interviews will be conducted either face-to-face or via telephone/skype. They will be tape-recorded, transcribed and coded according to Mayring (2010).

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7.6. Social Network Analysis

Feeds: Long-term Outcome (engagement)

The social network analysis (SNA) aims to investigate in how far the European citizen science community changes over the run time of the project.

SNA is considered to be a distinct research perspective within the social and behavioural sciences. Its main focus lies on the relations between actors in a defined network (Jansen, 2006). SNAs can be used to examine a number of topics within networks including structural characteristics, linkage of actors and groups, social power of actors (centrality), collaboration, diffusion of innovations, and transformation of network structures in parts and as a whole (Wasserman & Faust, 2008).

SNA is an established method to create socio-grams derived from person to person relations in a linked community (ibid). A socio-gram is a visualisation of especially large communities, like the EU-Citizen.Science network, which makes it possible to identify areas of expertise, collaboration between partners, and weaknesses in the network such as segregated groups or overlapping tasks. An SNA can further make it possible to create higher professional awareness about changes in the field of citizen science over time, such as changing research topics or scientists active in certain fields (Newmann, 2001).

Several topics of interest are to be examined within the SNAs:

Structural characteristics: The evaluation should provide a graphical representation of the structure of the Citizen Science network throughout the course of the EU-Citzen.Science project funding period. It reveals how the network with its actors changes over time. With SNA we can analyse if the network has increased or decreased, how actors have shifted in the network in terms of centrality, what ties were established or were lost, how the dissemination of topics took place, and what role the EU-Citizen.Science network played in these processes.

Awareness: The SNA will look into the field of Citizen Science in Europe and evaluate how aware researchers are of other efforts in fields related to their work. This concerns the European as well as the North American, the Eurasian, as well as the Pacific realm with a main focus on collaboration partners and projects.

The methodological approach is based on self-reporting by the extended network of EU-Citizen.Science and ECSA. Data will be gathered at several points in time throughout the project: at the beginning of the project and then on an annual basis via questionnaires.

The self-reporting questionnaire (Figure 7) was pre-tested in two steps:

- First, the first version of the English questionnaire was subject to a *cognitive pre-test*.

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Cognitive pre-testing aims to increase the comprehension, validity and reliability of a questionnaire. It allows for identifying and evaluating sources of response error in survey questionnaires. The aim is, for example, to check if the questions are understood by respondents in the way they are intended to be, the response scales fit the question format, there are questions that are somehow critical and thus answered in a "dishonest" way etc. (Prüfer & Rexroth 2000)

- Second, the adapted questionnaire was sent out to members of the Executive Board. They were asked to fill in the questionnaire, without being informed that this was still an *internal pre-test*. The responses allowed us to take a closer look at the data quality that we get back from our questionnaire, identify areas where data are not as we expected and adapt the questionnaire accordingly.

The questionnaire can be accessed at https://survey.zsi.at/index.php/116373?lang=en

Code	Frage
Q1	Please give the full name of your institution/organisation and add the name of a specific department/working unit (if any)
Q2	Please enter the abbreviation of your institution/organisation
Q5	Please name the type of your institution/organisation
Q6	Please concrete the disciplinary background of your specific department/working unit
Q3	Please state the country/countries in which your organisation/institution is located
Q4	Please state the regions in which your organisation/institution is performing citizen science activities
Q8	Please state your institution's 5 most important projects (national and international) related to citizen science. You may list current as well completed projects no matter when they took place.
Q10	Please name your key partners (max. 5) for your citizen science activities.
Q9	Which models of citizen engagement (as defined in the White paper on Citizen Science for Europe) do you mostly apply in your citizen science projects?
Q7	In order to improve our services, please state the interactions which you have had with the platform EU-Citizen.Science so far.

Figure 7: SNA questionnaire

7.7. Online poll

Feeds: Intermediate (visibility, knowledge, awareness), Long-term Outcome (sustainability, engagement)

An online poll is an additional, optional tool. At the time of writing this deliverable its feasibility is still being evaluated. The aim of an online poll-of-the-month would be to collect broad feedback from the citizen science community visiting our platform on important aspects of citizen science, and also to see if, and to what extent, this feedback changes over time.

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Figure 8 shows an example of an online poll-of-the-month related to Nanotechnologies. A poll-of-the-month related to citizen science could have the same look and feel, but address important aspects of citizen science.

Examples are

- "Do you think that the field needs a better definition of what citizen science is and what it is not?"

- "Thinking of your neighbourhood, what percentage of people - do you think - know that there is something like citizen science?

This poll-of-the-month makes a "snapshot" of the community's opinion at a certain time point in the project. Asking the same question again each year would allow us to track if there are certain changes in the community's feedback.

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POLL OF THE MONTH

Are you interested in current information on new nanoproducts on the market?

Totally agree | Tend to agree | Tend to disagree | Totally disagree | Don't know

What do people think?

Totally agree

"Yes, I believe that citizens should have a say on what developments should be made with nanotechnologies, regardless of what applications these will lead to."

Tend to agree

"Yes, I believe that citizens should have a say, but not for all products as I think that in general technology will be developed for the good of people and the environment, and precautionary actions will be taken when necessary."

Tend to disagree

"I think citizens must be consulted but I also think it is important to avoid slowing nanotechnology development with too many restrictions and precautionary decisions."

Totally disagree

"No, I think that there are already mechanisms in place to ensure the safety of products launched on the market, so I guess that those would be enough and therefore public consultations would not be necessary."

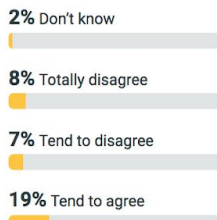**Don't know**

Don't know

Poll results

91 Participants

2% Don't know

8% Totally disagree

7% Tend to disagree

19% Tend to agree

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Figure 8: Poll of the month from the NanOpinion project

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7.8. User acceptance testing (Walkthrough & Think aloud)

Feeds: Output (formative feedback for platform and trainings)
This instrument investigates user acceptance and perceived usefulness of the EU-Citizen.Science platform and its content before they are launched. User testing will be undertaken more than once over the agile development cycle of the platform, as key new features are released, to provide us with tangible feedback on a range of usability factors, to be defined in the test plan.

The first such user-testing will be applied to the first version of the platform pre-launch using a Walkthrough technique derived from the Cognitive Walkthrough method (Wharton, Rieman et al. 1994), which focuses on evaluating by exploration. The focus of this technique is motivated by the observation that many users prefer to learn software by exploration, instead of investing time for comprehensive formal training. In a Cognitive Walkthrough, a group of designers or software experts tries to take the viewpoint of their target user population and evaluates a proposed interface in the context of one or more specific user tasks.

This procedure uncovers implicit or explicit assumptions made by developers about users' knowledge of the task and the interface conventions. It helps to find mismatches between users' and designers' conceptualization of a task, as well as poor choices of wording for menu titles and button labels, and inadequate feedback about the consequences of an action (Wharton, Rieman et al. 1994). In order to challenge any underlying incorrect assumptions that we might make about the end-users' behaviour and knowledge, we will pre-define tasks that cover the main functions of the platform, and allow the testers to fulfill these tasks freely. The Walkthroughs will aim to flag any usability or structural issues early, and to gather input from key users about the perceived usefulness of the platform based on their expectations.

To deal with task variability and alternate courses of actions, tasks are modelled as a set of likely alternate paths for achieving an intended outcome, focusing on the users' experiences with the interface while carrying out tasks, and the interface's support for helping the user to fulfil the intended outcome (Pinchelle and Gutwin 2002).

To understand the users' reasoning of action we combine the Walkthrough with Think-aloud tests and embed the tasks within scenarios, which are strongly tied to practical concerns and common situations of our target group. An example for a scenario proposed to a user during a walkthrough can be seen in Figure 9.

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SCENARIO 1

Susanna is a 35-year old researcher in social sciences from Italy. As public participation in science is becoming increasingly important also in Italian universities she aims to set up the first citizen science project of her institute. With this aim, she looks for supporting material.

She heard from a colleague about the EU-Citizen.Science platform and now wants to search the platform for practical information.

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Situation 1: Look up guidelines on how to initiate a citizen science project as a research institution

Susanna visits EU-Citizen.Science to look up for practical information on how to set up a citizen science project as a research organisation.

Which information can she find on the platform? Help her to find this out, please.

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Figure 9: Scenario cards

To allow documentation of the collected experiences from the Walkthroughs we provide Feedback-Cards (see Figure 10) where, after each task, end-users evaluate the task's difficulty and attractiveness, and note suggestions for improvement for the later discussion.

Situation 1: Looking up practical information how to initiate a citizen science project

1. How did you feel while going through this situation?
(Please, mark the applicable answer)

2. How easy or difficult would you describe the solution of the situation 1.

Very easy				*Very difficult*
5	4	3	2	1

2. How content are you with the functions that the platform offered for handling the situation?

Very content				*Very discontent*
5	4	3	2	1

3. How much would you estimate that it took you to handle the described situation?

Took very little time				*Took too much time*
5	4	3	2	1

4. How useful would you find this situation in your personal context?

Very useful				*Not useful at all*
5	4	3	2	1

I liked:

I did not like:

Ideas, proposals, suggestions for improvement:

Figure 10: Scenario Feedback Card

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Ongoing user-testing of the platform post-launch will be described in more detail in deliverable *D2.3: Platform Functionality Requirements & Specification Report* within work package 2, which will be submitted in M12 of the project.

8. Project self-assessment & reflection

A self-assessment will be conducted as a critical reflection exercise of the whole consortium in online meetings twice during the project. The basis for the self-assessment is a set of questions that cover the main areas of the evaluation framework, developed by Kieslinger et al. 2017. As this framework was developed to assess citizen science projects, the detailed questions of the framework cannot be used for the self-assessment of our coordination project; instead, the key dimensions will inform the elaboration of a new self-assessment adapted to our specific project purpose.

These questions will be the starting point for reflection and discussion amongst the consortium members about the success of our project. The aim of this exercise is to agree, as a consortium, on a rating to a set number of questions that concern the process and impact of the EU-Citizen.Science project on three levels: 1) scientific, 2) individual project participants and 3) their socio-economic and socio-ecologic systems (Table 9).

Table 9: Dimensions of the Citizen Science Evaluation Framework

Dimension	Process & Feasibility	Outcome & Impact
Scientific	● Scientific objectives ● Data & systems ● Evaluation & adaptation ● Cooperation & synergies	● Scientific knowledge & publications ● New research fields & structures ● New knowledge resources
Participant	● Target group alignment ● Degree of involvement ● Facilitation & communication	● Knowledge & attitudes ● Behavior & ownership ● Motivation & engagement
Socio-ecological and economic	● Target group alignment ● Active involvement ● Collaboration & synergies	● Societal impact ● Ecological impact ● Wider innovation potential

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This self-assessment exercise will be conducted before the first review meeting and at the end of the project. It will also support the discussion of the internal evaluation outcomes and investigate the project's strengths and weaknesses.

9. Timeplan

Evaluation instruments over time

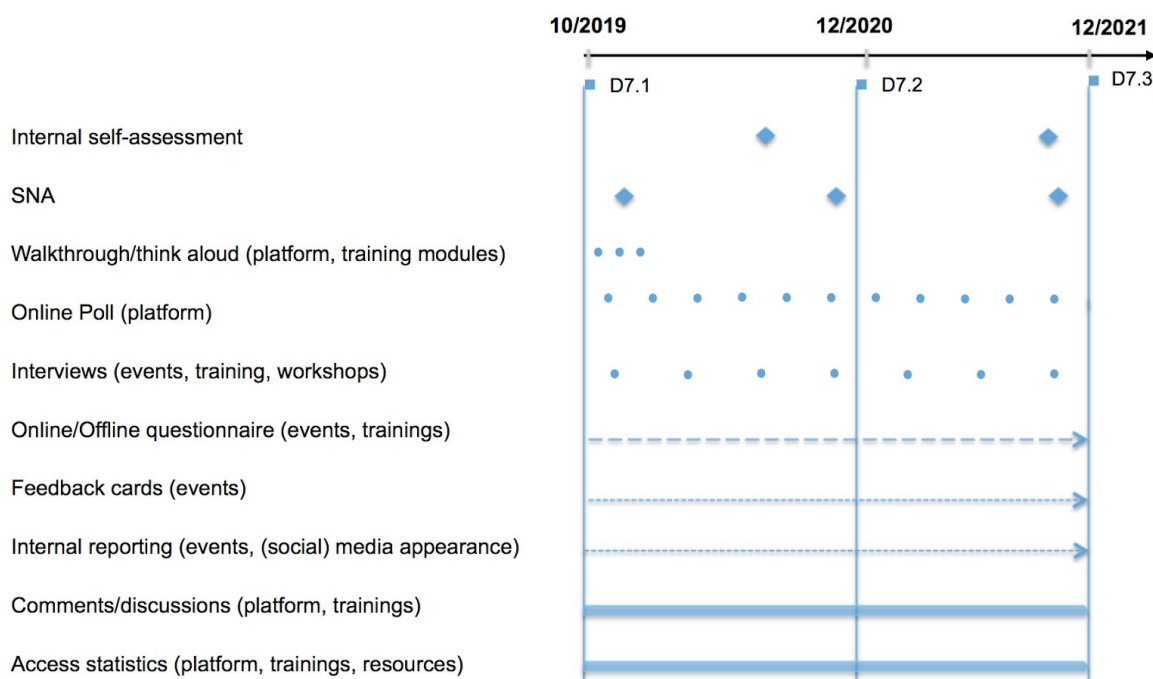*Figure 11: Timeline of evaluation activities*

10. Ethics

Personal data will be collected from participants during interviews, focus groups and discussions following the walkthroughs.

Thus, we have created informed consent protocols that will be distributed to those involved in the evaluation activities. More details on our ethical approach and instruments can be found in

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deliverables 8.1 H-POPD-Requirement No.1, Deliverable 8.2 POPD-Requirement No. 2, Deliverable 8.3 POPD-Requirements No. 3 and 8.4 POPD-Requirement No.4 as well as the data management plan D1.1.

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Annex

Participant's Questionnaire

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Perspectives of Citizen Science in Lithuania
Vilnius, 13th September 2019, MRU

Please take a few minutes to evaluate today's event. ☺ Thank you!

	Strongly disagree		Neutral			Strongly agree
The objectives were clear and comprehensible.	0 1	2	3	4	5	6
I learned something practical from the event.	0 1	2	3	4	5	6
A good understanding of the Citizen Science context was provided.	0 1	2	3	4	5	6
There was enough room for my questions and concerns.	0 1	2	3	4	5	6
The time allotted was utilized/filled in an optimal way.	0 1	2	3	4	5	6
There was enough time for reflection and experience exchange with others.	0 1	2	3	4	5	6
Altogether this event was worth taking part in for me.	0 1	2	3	4	5	6

My personal benefits from this event are (several choices possible):

- o   Increased knowledge
- o   Interesting contacts
- o   Visibility for my own projects and ideas
- o   New visions, ideas etc.
- o   Other: _____

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What did you like best?

What could be improved?

Any other comments?

What is your profile?

○ academia/student   ○ media   ○ business/industry   ○ teacher

○ policy maker   ○ interested citizen ○ civic society (NGOs, trade union, etc.)

○ other: _

Highest level of education attained?
○ basic education   ○ bachelor or equivalent   ○ master, PhD or equivalent

Gender

○ male   ○ female   ○ other   ○ prefer not to say

Age group

○ under 16   ○ 16-25   ○ 26-35   ○ 36-45   ○ 46-55   ○ 56-65
○ 66-75   ○ 76+

2

Figure 12: Participants' questionnaire

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