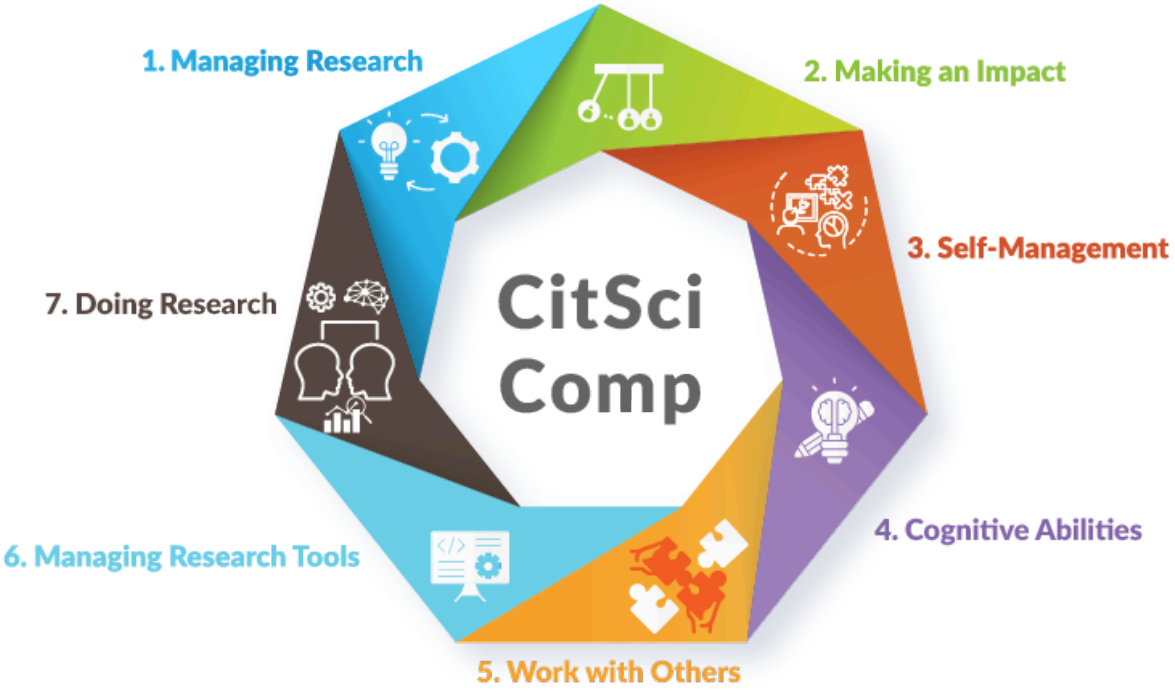

Citizen Science Competency framework

A competency framework for citizen science researchers and practitioners

Version 0

15.05.2026

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Glossary

Participatory research/citizen science (PR/CS)	We used the term participatory research/citizen science in order to capture the range of activities where the set of competencies and skills that are listed here are relevant. This includes the activities that fall under participatory research in the humanities, social science and engineering, to community science, citizen science, and participatory science in the natural and formal sciences.
Participants	Participants are the people that take part in the activity. They are usually not part of the organisation, and voluntarily decided to join the activity
Organisation	By organisation, we address research institutions, universities, hospitals, governmental organisations such as environment protection agencies, non-governmental organisations, and companies. Citizen science can be found in all these types of organisations and researchers and practitioners who run these projects can be found in them.
Competence	Holistic and integrated capacity to combine what you know, what you can do and how you apply both in real situations (Mulder, 2017). European frameworks often use "competence" (German '*Kompetenz*', French '*compétence*', Spanish '*competencia*') to emphasize that professional ability is more than a list of skills but an integrated capacity that develops over time (Erpenbeck & Rosenstiel, 2003). Competences are composed of competencies (see below).
Competency	Demonstrable ability to *perform* specific tasks, fulfill particular roles or meet defined standards within a professional or educational context (McClelland, 1973; Tigelaar et al., 2004). A *competency* represents a *granular element* of overall professional competence (see Competence), specifying observable behaviours and assessable learning outcomes (Mulder, 2017).

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	In brief, a *competency* refers to a specific ability you can teach, learn and assess: • If you're a practitioner: competencies are the specific things you learn and apply at your job. • If you are an educator: competencies provide specific and clear learning paths that could be integrated into professional competence. • If you are a policy maker: competency frameworks provide structure and competence development is "the goal". • If you are a researcher: the competence-competency distinction reflects deeper contrasts between holistic and analytical, developmental and standardized as well as humanistic and instrumental approaches to education.
Competency area	A collection of competencies that relate to an activity area
Competencies level	In this framework, we used four levels of competencies - foundational, intermediate, advanced, and expert - that reflect learning and experience.
sub-competencies	Specific knowledge, skills, attitudes and values within competencies
Skills (preliminary definition - in consensus process)	Capacity to do and apply. Whether one can act effectively, not how one learned. Four sub-dimensions: applied action, co-creation/facilitation, communication, capacity-building.
Knowledge (preliminary definition - in consensus process)	Recognise, mobilise and critically evaluate multiple forms of knowing (academic, experiential, citizen). Structured as Know What / Know How / Know Why.
Attitudes (preliminary definition - in consensus process)	Affective orientations that shape the relational quality of engagement (not what is done but how). Four clusters: emotional capacity, empathy, intercultural sensitivity, uncertainty tolerance.
Values (preliminary definition - in consensus process)	Normative commitments expressed through practice decisions: relational accountability (volunteer

	ethics), epistemic co-ownership (co-production), civic/epistemic justice (who benefits, who knows).
Researcher	A researcher is a person who works within a formal research organisation (such as university, research institute, or governmental body) that carries out research activities. This includes students for post-graduate degrees (Master and PhD), and post-doctoral researchers.
Practitioner	A practitioner is a person who works in organisations that have an applied function (such as environmental non-governmental organisation) and carries out participatory research/citizen science activities to progress the goals of the organisation. Practitioners of PR/CS are involved in initiating, coordinating, and running activities, as well as analysing and using the resulting data and information.
Transdisciplinary	Transdisciplinary research is a research that brings together researchers from different disciplines but also includes actors from public, private and civil society bodies, and includes the wider public in the research. The research aims to address problems through the engagement of all relevant actors.
Interdisciplinarity	Interdisciplinary research brings together research from multiple disciplines in order to gain new insights that are going beyond specific disciplinary knowledge

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Introduction/context setting to the competency framework

What is the citizen science competency framework?

A competency framework highlights skills, attitudes, knowledge and values that can describe, characterize, a certain profession, role or training. It also describes the different levels of progression within its specific context: either educational or professional. The Citizen Science Competency framework (CitSci Comp) is a competency framework designed to characterise skills, attitudes, knowledge and values of researchers and practitioners in participatory research and citizen science.

There are currently at least 33 definitions of citizen science. For the purpose of this endeavour, because the competency framework is building and contextualised by European competency frameworks, we will situate **citizen science by using definitions from European Union (EU) documentation: "**Citizen science can be described as the voluntary participation of non-professional scientists in research and innovation at different stages of the process and at different levels of engagement, from shaping research agendas and policies, to gathering, processing and analysing data, and assessing the outcomes of research. " (EU fact sheet 2020)

Also **we recognise that citizen science is not used by all** to denote participatory form of research. In this context, we are deciding to use both terms participatory research and citizen science - to denote that different fields will have their preferred terminology. Since there are interpretations that view citizen science in a restrictive way (frequently as environmental data collection done by a large group of volunteers), we opted to use participatory research/citizen science (PR/CS) throughout this competency framework.

Researchers in participatory research and citizen science are defined as: researchers that are engaging with non-researchers in the scope of their research. They will be working in a research institution or a university (known as Research Performing Organisations or Research and Technology Organisations - RPOs, RTOs).

Practitioners in participatory research and citizen science are defined as: someone that works in a civil society organisation, such as an environmental non-governmental organisation (eNGOs) or within a body that belongs to local, regional, or national government and is designing and running PR/CS activities. For example, a practitioner can work in a national park or in the meteorological service, and guide PR/CS programmes.

Why and how the citizen science competency framework was developed

Background to competency frameworks

Competency frameworks have been shown as one of the key reforms in higher education for the last 20 years. Early frameworks experienced expert-led, top-down development. For instance the European Qualifications Frameworks (EQF, 2008), DigComp 1.0 (2013) and national competency reforms in Chile, Colombia, Spain and France took place during the first part of 2000. Still, these frameworks prioritized standardization, comparability and labor market alignment through expert committee design (Braslavsky, 2006; Mulder, 2017).

However, these expert-led frameworks encountered systematic failures, such as context mismatch where universal standards fit practice poorly (Draganidis and Mentzas, 2006), legitimacy deficits as stakeholders questioned imposed standards (Campion et al., 2011) and power reproduction wherein expert panels replicated existing hierarchies while leaving practitioners knowledge aside (Vaughn et al., 2017).

In response, a "participatory turn" emerged. Frameworks like ResearchComp (2021), GreenComp (2022) or DigComp 2.2 (2022) and 3.0 (2026) employed collaborative development with practitioner working groups. As a result, literature increasingly documented participatory processes as superior to expert-only approaches (Elsawah et al., 2023; Vallès-Peris et al., 2024).

Still, critical pedagogues identify fundamental paradigmatic limitations in Competency Based Education (CBE). Del Rey (2010) critiques the neoliberal "fabrique de l'élève performant" (manufacture of the performing student), wherein competency frameworks subordinate education to market demands, reducing knowledge to instrumental skills. Vega Cantor (2015) exposes CBE as "commercial deception", serving employer needs while neglecting human development and democratic citizenship.

The CitSci Comp is a collective effort bringing practitioners, researchers and direct beneficiaries in which practitioners bring contextual expertise, researchers contribute with knowledge and target beneficiaries understand implementation realities. As part of this process, competency definitions emerge from dialogue across these knowledge domains and a modified Delphi methodology that operationalizes this through iterative rounds where participants contribute by:

(1) Review the list provided and propose competencies from their expertise (round 1: zone of interdependent capability)
(2) Review others' proposals (round 2: encounter alternative perspectives)
(3) Negotiate consensus through controlled feedback (round 3: collaborative achievement beyond individual capacity)

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Beyond the "traditional competency frameworks" perspective that define "functionings", focused on what researchers and practitioners should be able to *do* (i.e.: analyze data, facilitate workshops, communicate findings), we would like to bring a *capability-oriented* layer where emphasis is put on why, how and what researchers and practitioners should be able to *become* as part of their own choices (critically reflective practitioners, ethical scientists, democratically engaged citizens).

Here knowledge, skills, attitudes and values as well as a first set of concrete examples is being identified to provide a better view on what these competencies mean in practice. In its final version, we expect to finalize this work and allow embeddings.

Why the CitSci Comp was created

This CitSci Comp was designed as part of the endeavour of the European Citizen Science (ECS) project[1] to develop a European Citizen Science Academy (ECS Academy)[2], and more specifically its task to create learning paths for newcomers to citizen science[3] in relation to high policy goals such as the Green Deal and or the Sustainable Development Goals. The ECS Academy wanted to understand and outline what are relevant competencies for researchers and practitioners in the field of PR/CS to guide the development of these learning paths. The CitSci Comp in relation to this task, would constitute the foundational path to newcomers in PR/CS towards these high policy goals.

In addition the development of the CitSci Comp contributed to the following objectives of the ECS Academy : guide the learning of PR/CS researchers and practitioners (with a focus on researchers and practitioners within the European Research Area), inform the delivery of training for PR/CS researchers and practitioners, and guide certification.

How the CitSci Comp was created

The CitSci Comp was inspired from from the UK National C-Ordinating Centre for Public Engagement (NCCPE) framework called "*Public engagement lens on the Vitae Researcher Development Framework*", which provided a public engagement lens, with additional competencies and skills, to an existing framework for researchers (the Vitae RDF). With the publication of ResearchComp in 2023[4], the European Competence Framework for Researchers developed by the European Commission, there was an opportunity to do something similar. From January to June 2025, 160 individuals were engaged in a consensus based approach called the Delphi Method to work

[1] The European Citizen Science project is funded as part of the European Union funding programme for research and innovation (Horizon Europe). The project is running from August 2022 to July 2026. Links about the ECS project: https://cordis.europa.eu/project/id/101058509 ; https://citizenscience.eu/ecs_project/
[2] European Citizen Science Academy (ECS Academy) : https://moodle.citizenscience.eu/
[3] Note in the scope of the ECS project, the term citizen science is used to denote participatory forms of research.
[4] Link to ResearchComp: https://research-and-innovation.ec.europa.eu/jobs-research/researchcomp-european-competence-framework-researchers_en

on creating a competency framework for PR/CS researchers and practitioners, building on existing competency frameworks, such as ResearchComp, EntreComp, DigComp, and the JRC Competence frameworks for policymakers and researchers.

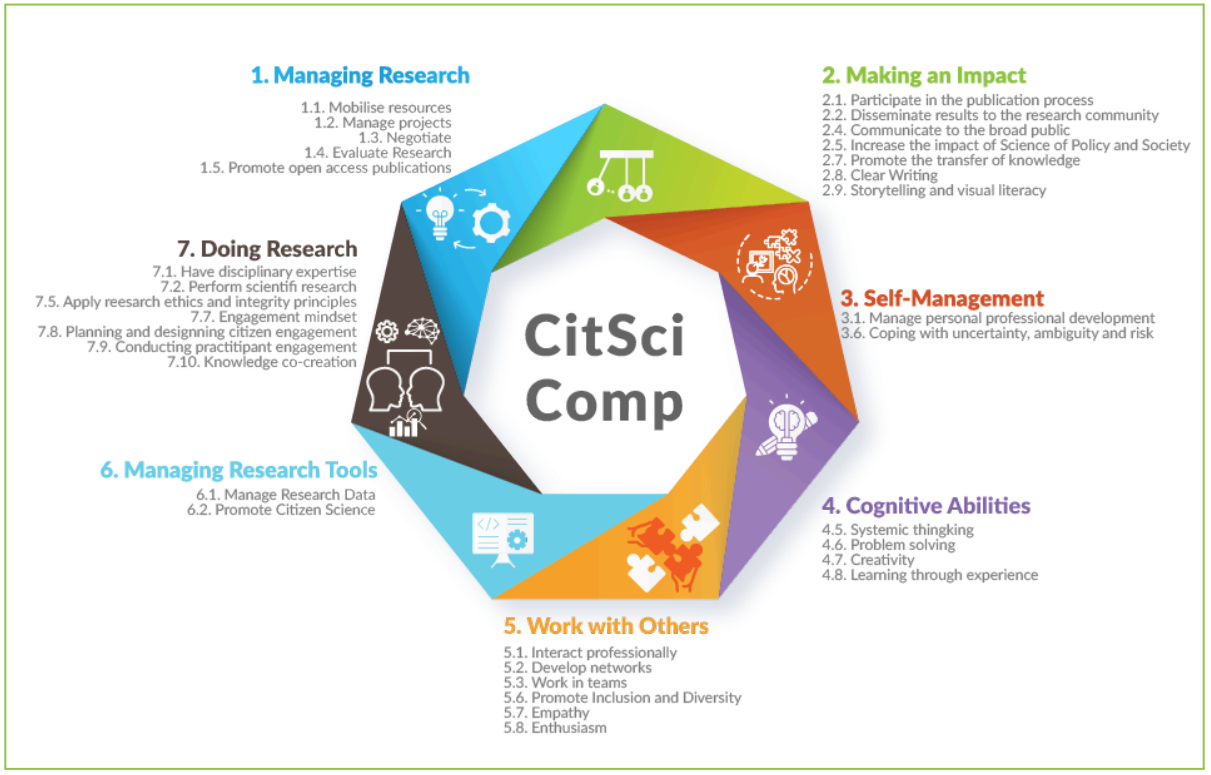
PR/CS practitioners and researchers that met the following criteria "*Panel members have experience in citizen science and in any of the following domains: science communication, public engagement, scientific research, citizen science, research project management, technology and data management, raise and manage funding, engaging in policy processes, impact evaluation and monitoring. You are working within the European Research Area (ERA). And have the following time availability, participate in two three-hour workshops. You will contribute to the selection of competencies and defining the expected level – from foundational to expert of the competency framework* " were engaged in four workshops between January- June 2024 to work on adapting existing competency frameworks to a PR/CS researchers and practitioner context. Individuals that fit the following criteria "*Reviewers, you are a potential or experienced citizen science researcher or practitioner. You represent the target group of the competency framework. You are working within the European Research Area (ERA), and have about 20 minutes available between 1) February-March, 2) March-April, 3) in the month of April to answer a survey and provide feedback. An estimated time of 1 hour in total. As a reviewer you review the results that come out of each panellist workshop, and give feedback via a survey, on whether the competencies highlighted by the panellists resonate with your role as a novice or experienced citizen science researcher/practitioner. You are a potential or experienced citizen science researcher or practitioner*" reviewed the results that ensued from the workshops, to offer feedback on the suggestions.

Individuals that were outside the ERA regions were also invited to participate as *observers*. As this competency framework was built in the scope of a European project, we focused on developing a competency framework relevant to ERA regions - but wanted for the process to be open if anyone else from the PR/CS community wanted to engage and learn of the process. Contributions from observers were kept at the end- therefore this CitSci Comp may also be relevant for other regions, but perhaps not totally.

To know more about how the process was developed here is a FAQ document developed to inform members of the process:
https://docs.google.com/document/d/1aUvZjCpHn0v9VXKhqhu1I1SCodzbbZ2YrXnwVua9SB8/edit?usp=sharing

How to read and use CitSciComp

The CitSci Comp currently has **seven competency areas** in which there are **competencies that are broken down into levels with a set of sub-competencies**. The levels are: foundational, intermediate, advanced, and expert (see below for their definitions). **The seven competency areas are** : managing research, making an impact, self-management, cognitive abilities/capacities, work with others, managing research tools, and doing research. Therefore, in each competency area there are competencies that have many sub-competencies within each level.



The competency levels are:

- **Foundational** level is having some understanding of the issue to the level that the person can take part in activities under the supervision and guidance of more experienced people.
- **Intermediate** is the stage of developing independence and abilities to run activities competently.
- **Advanced** is developing specialists skills and can run complex and or multiple projects.
- **Expert** is someone who is particularly specialising in a specific sub-domain and has high level expertise that can shape and progress the domain. Importantly, it is expected that only few people will be experts in any given domain. Moreover, due to natural limitations, it is expected that an expert in a given area of PR/CS will have only foundational knowledge in other domains. For example, an expert in PR/CS data management, might have only foundational knowledge in public engagement.

The list of competencies are organized under each competency area. The competencies consist of competency names (titles) and descriptors (short descriptions of what each competency consists of). Under each competency there are different proficiency levels (foundational - intermediate - advanced - “expert”*) establishing both the learning and experience levels, based on the complexity of the task, level of autonomy and level of experience.

For each competency level, we provide a set of existing examples (learning outcomes or scenarios) that provide a more *granular* view of each level. Each of the learning outcomes have been developed to enable individuals to identify concrete examples and provide consistency in the interpretation of what each learner is supposed to know at each level. This is a way to translate abstract descriptions into more practical examples of knowledge, skills, attitudes and values.

One competency that warrants a special attention is 6.2 (promote citizen science). In ResearchComp, this competency is the only one that explicitly addresses citizen science, and therefore it was valuable to keep it. In our version, it goes beyond only the promotion of citizen science, and practically all the other competencies were reoriented towards contribution to PR/CS. Yet, in 6.2 we kept a set of general competencies that are relevant for PR/CS and do not fit within other competencies.

Uses of CitSci Comp

Competency frameworks can be used by individuals for different and varied reasons. Individuals may be interested to use it, to understand what competencies they have, and at which levels they are in a given competency. It can guide individuals to know what they could learn to develop a competency. It can be used by recruiters to develop job descriptions and identify competencies required for a job position. It can be used by educators and trainers, to identify which sets of competencies they want their training or course to develop in their participants.

This CitSci Comp - can have multiple applications:

- Guide teachers and educators in creating a syllabus and designing training. The training can be a general introduction to PR/CS or for a specific domain/sub-domain for example.
- Assist people who want to become practitioners or researchers in PR/CS to identify the skills that they would like to develop, and plan a career development.
- Assist people in organisations who want to start PR/CS activities to identify the competencies that they already have in the organisation, or in developing a job description for a researcher or practitioner that they would like to hire
- Provide organisations and individuals with guidance on competencies and skills progression throughout a career of professional in the area of PR/CS
- Assist in labeling and sharing open educational resources in PR/CS by identifying the domain and level or competency for which it is intended.

The reader has to keep in mind that it is **not expected to be an expert in all competencies to qualify as a researcher or practitioner in PR/CS** but that different sets of competencies with varying levels, characterise researcher or practitioner in PR/CS. The different set of competencies highlight the different set of competencies that can characterise a researcher or practitioner in PR/CS. The varying levels within a competency highlights that there are different levels within a competency - which again may be needed for different tasks and/or roles.

How to read the CitSci Comp in relation to ResearchComp and other competency frameworks used

In the ResearchComp[5], competency areas are denoted by different colours, and the competencies within the competency area are numbered. The CitSci Comp uses the same competency areas as ResearchComp. They are in the same order, however they are differentiated by numbers and not colours (numbered from 1-7). So competency areas in ResearchComp are denoted by colours, and in CitSci comp by numbers, but they follow the same order. In ResearchComp the competencies within competency areas are numbered. CitSciComp kept the same ResearchComp number for the competencies as a second number to the competency area. For example 'Mobilise resources' in Research comp is numbered as 1 under 'Managing research' competency area. In CitSci Comp, 'Mobilise resources' is the first competency in 'Managing research' that is numbered 1 and therefore 'Mobilise resources' is number 1.1.

[5] Link to ResearchComp: https://research-and-innovation.ec.europa.eu/jobs-research/researchcomp-european-competence-framework-researchers_en

Not all competencies of ResearchComp are included. Some were identified as less relevant to PR/CS, and are not included here (for example, competency 6 in ResearchComp called "making an impact"). Competencies taken from other competency frameworks are numbered in addition to the competencies from ResearchComp, the first example of this is 2.8 (i.e. there is no competency 8 in 'Making an impact', it has 7 competencies in total in ResearchComp).

In CitSci Comp we have *italicised* sub-competencies that were kept in the exact form in which they appear in ResearchComp. Therefore sub-competencies that are in we *italic* appear exactly the same in ResearchComp.

Possible Implications for the field and reflections on how to mediate it

Implications of the CitSci Comp on the field outlined during the process[6]:

Positive implication of a CitSci Comp

1. Standardisation of skills; Allowing researchers to know what skills they can develop on/refine; Consolidates expertise requirements/expectations; Comparability based on standardization
2. Formal recognition of citizen science; Professionalization (existence of quality standards); Promotes the professionalisation of citizen science - in turn pushing for more support and funding; Helps to further define the field; Raise of reputation and visibility of the citizen science
3. Harmonization of citizen science research all across Europe
4. Provides a roadmap for practising citizen science
5. Capacity building
6. Improvement of data/outcomes quality across PR/CS
7. Not having to reinvent the wheel all the time; Making a more efficient use of resources by sharing learnings/tools with other projects
8. Increased transparency for becoming a practitioner or researcher in citizen science, for example in job descriptions and job opening
9. Helps to link citizen science to other disciplines / areas of practice
10. Makes it clear we need to work collaboratively because no one person can have all skills; Appreciation for the entire professionals with various types of expertise needed to manage and develop citizen science projects; Increased visibility for the complexity of citizen science
11. Closing the gap between citizens and researchers, lead to more understanding and funding
12. Increasing awareness and responsibility in society

[6] Note that during the process, the term citizen science was used. Citizen science was used as an umbrella term to denote participatory form of research (see definition above used).

13. Inclusivity and Diversity by transparent definition of skills and competencies and in recruitment
14. Legitimises the ECS Academy

Negative implications of a CitSci Comp

15. Shift away from the original purpose of the ECS Academy towards accreditation (instead of only knowledge sharing)
16. Resistance to change by existing actors in the field, some of them have been running projects for a long time; Potential possibility of lack of innovation and out of the box thinking ; citizen science changes over time, the competence centre needs to be flexible enough; Losing flexibility and creativity if structuring things too much;
17. Inequality to access; Exclusionary implementation of the standard
18. It can be too theoretical oriented, and it's difficult to learn by doing (you need to find a real project); If it is too complicated, only the elite will use it; Creating constraints and barriers to enter citizen science (can be used); Makes it overwhelming to join; scaring off people with too many demands
19. Danger of monopolising certification by some organisations and entities
20. Different interpretations
21. Can one person actually tick all these boxes? Probably not; If not, will there be a hierarchy of skills (e.g. data management more valuable than community management?); Challenging to align everyone's needs to be able to do citizen science
22. Increased resources required (including funding and time)
23. Inclusion and diversity increases the complexity

Steps to mitigate negative implications

24. Open science principle applied : codes, data and methods shared open access
25. Highlighted in the text that **it is not expected to be an expert in all competencies to qualify as a researcher or practitioner in PR/CS**
26. Developed an introduction to contextualise the CitSci comp - highlight what it can be used for, its purpose etc. If the purpose of the CitSci Comp want/needs to change in relation to its time, it can, however keeping with with the idea that PR/CS is an approach that allows non-researchers access, benefit, consider, use the scientific approach and science as a whole

Future implications to consider

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27. Competencies of citizen science researchers and practitioners will evolve, and how will this endeavour not maintain a traditional status quo? This needs to be looked at in relation to who can contribute to develop the competency framework, but also for this competency to be useful to the generation it will serve. In this case, **the governance of this competency framework is relevant to consider.**
28. In relation to certification: This moreover relates to the **accreditation process the ECS Academy** will develop. The European Citizen Science Association (which is the official host of the ECS Academy) will need to make sure that this competency framework changes over time and responds to evolving needs. The competency framework will allow for ECSA but also other bodies to set a certificate of competence and will also need to consider the impact and the exclusionary aspect that a Competency framework might engender. It will be **important to make sure that this certificate is not exclusionary for non-academic citizen scientists** and have a way for them to demonstrate competencies and skills and be recognised as a citizen science practitioner.
29. The CitSci Competency framework will be adaptable to different levels of expertise. **A mechanism needs to be put in place** for the regular review of this framework, to ensure that this CitSci Competency framework is aligned with the evolution of citizen science researchers and practitioners. The capacity and also the method of review need to be considered when this mechanism is put in place, to make sure the mechanism supports the capacity to do such a review, and that the method considers inclusivity in its practice.

Limitations of the CitSci Comp framework

- We are basing our study on research comp which is oriented towards researchers more than practitioners; however in round 1 and round 2 (as part of the panelist we had a high representation of practitioners that also identified as researchers). It is possible that practitioners would feel that is more applied to researchers and policy makers. For this reason, during the final round (Round 3) efforts will be deployed to include and disseminate among practitioners networks.
- Done within a European citizen science context - this may mean there is a limit in its reach and applicability in different national contexts and to practitioners and researchers that do not identify with the term citizen science (as our reach was mostly but not only to communities that use the term citizen science).

1. Managing research

	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
1.1 Mobilise resources Identify key relevant funding sources (local, national, regional, and international) and prepare grants applications in order to obtain funds and grants. Write research and project proposals and pitch ideas to convince potential investors (internal or external to the organisation) of the need to fund PR/CS initiatives.	Foundational	• Is aware of funding and non-funding sources for PR/CS projects and of the related application procedures. • Is aware of in-kind resources that can be used • *Contributes to drafting research and funding proposals.* • Contributing to identifying research gaps aligned with funder priorities	• Awareness of project funding, including local (e.g. municipal), national (e.g. national research funders), international (e.g. EU), philanthropic, etc. • Aware of resources such as rooms, community centres, libraries, time, open source tools, etc. that can be accessed. • Awareness of tools such as grantfinder or CORDIS.
	Intermediate	• *Is familiar with key funding sources and can navigate application procedures.* • Autonomously applies for small grants at local and national levels, and contributes to larger applications. • Able to mobilise non-funding resources: spaces, tools that are available for PR/CS • Able to curate multi and interdisciplinary partnerships in order to apply for joint funding, and act as a partner in these actions. • Recognises the importance of funding of one's own organisation and own work. • Able to raise supplementary funding for existing projects or funding for a small scale project.	• Awareness of local, national and international funding processes, and their criterion. • Awareness of eligibility rules for funding at each level. • Experience of using open source tools, software and resources, and their attribution when required.
	Advanced	• *Informs others about relevant funding sources and advises them on application procedures.* • Can access and use equitably non-funding resources. • Mentor others in developing and accessing funding applications. • Leads consortiums in major funding applications. • Actively engages in the funding of one's own organisation. • Regularly reviews funding applications in the respective field and uses this to provide strategic advice.	• Has acted as a point of contact for their organisation for preparing funding bids. • Experience of managing large scale, multi-actor projects, including the administration of reporting, reviews, deliverables etc.
	Expert	• Influences funding policy to include PR/CS. • Leads excellent, large and multi organisation applications of international and/or interdisciplinary character. • Plays a crucial role in the funding of one's own organisation. • Advices and supports (inter)national funding bodies on priorities • Co-develops funding programs or research calls with national/international agencies to reflect	• Board member or advisory council member in organisations of strategic importance, or in local, national or international funding bodies, e.g. EC, national ministries.

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		emerging research needs • Contributing to foresight processes, expert panels shaping future funding directions	

	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
1.2 Manage projects Manage and plan various resources, such as human resources, participants, budget, space, infrastructure, deadline, results, and quality necessary for a specific project and for a portfolio of project, and monitor the progress in order to achieve a specific goal within a set time and budget using project management tools	Foundational	• Is familiar with different project management strategies and tools. • Participates in projects and delivers results according to deadlines and specific tasks within the project • Understands how project phases relate to research lifecycles, example: data collection, ethics, etc.	• Carry out specific tasks within a larger project, potentially training, or accompany participants in their research, receive and validate data, generate communications (all these can be separate tasks that one individual does).
	Intermediate	• *Effectively uses a broad project management toolkit.* • Defines and designs its own PR/CS projects. • *Identifies risks and implements proper mitigation strategies.* • Understand how to allocate funds within the project, and lead to effective and efficient results. • Coordinates deliverables and ensures compliance, including budget. • Manages a project with flexibility and openness towards multiple stakeholders. • Organises research management to follow Collective Benefit, Authority to Control, Responsibility, Ethics (CARE) principles.	• Coordinates and capable of delegating specific tasks to people who are working on the project.
	Advanced	• Manages multiple projects with flexibility and openness towards multiple stakeholders. • Familiar with strategies to address organisational hierarchies • Identifies problems and anticipates and manages conflicts within the project team and with project stakeholders. • Aligns project objectives and goals with theory of change or similar impact frameworks	
	Expert	• Creates open and accessible project culture to ensure equity for all project participants and team, with the aim to reduce organisational hierarchies. • Manages multiple projects simultaneously and identifies their synergies. • Designs the project management and reporting structure for impactful PR/CS projects. • Manages multi-stakeholder collaborations across projects, and monitors and adjusts larger strategic decisions according to impact framework.	

	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
1.3 Negotiate Exchange ideas while analysing issues and interests at stake, enabling opposing sides to resolve disputes and reach an agreement, or making decisions to resolve disputes.	Foundational	• *Knows the fundamentals of negotiation.* • *Actively seeks to understand the different viewpoints and motivations of the negotiating parties.*	
	Intermediate	• Contributes to negotiation strategies with a range of stakeholders by developing scenarios and a clear vision. • *Efficiently defends contested arguments.* • *Knows how to rebut arguments not supported by evidence.*	
	Advanced	• *Leads the development and implementation of negotiating strategies.* • *Demonstrates creativity and anticipatory thinking in negotiating processes.* • *Leverages solutions in creative ways also away from the negotiating table.*	
	Expert	• *Advises others of the design and implementation of negotiating strategies.* • *Is an effective negotiator in complex and controversial areas of research and practice.* • *Under change, adapts negotiating strategy in a creative way.*	• Mediation and Facilitation Tools

	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
1.4 Evaluate research Reflect on research activities and learn from successes and failures based on personal experience, feedback from others or monitoring and evaluation. Assess proposals, progress, impact and outcomes of peer researchers.	Foundational	• Familiar with PR/CS evaluation methods • Evaluates the quality of primary, secondary research data and metadata. • Evaluate the quality of engagement. • Effectively assesses and reflects over own research process and methodologies	• This is relevant to small projects for practitioners
	Intermediate	• Assesses peers' research processes and practices • Gives specific evaluative feedback on PR/CS project proposals. • Advises peers in evaluating the quality of primary and secondary research data and the quality of engagement.	
	Advanced	• Frequently evaluates important PR/CS proposals. • Guides peers in how to evaluate their PR/CS processes and practice.	
	Expert	• Designs evaluation processes for large and/or complex PR/CS projects. • Develops and shares practice of PR/CS evaluation methodologies.	

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1.5 Promote open access publications

Develop a strategy to publish one's own project and identify appropriate publication channel(s) to implement that strategy. Use open publication strategies when possible to support the audience. Be familiar with the use of information technology to support research, and with the development and management of CRIS (current research information systems) and organisational, as well as public repositories. Provide licensing and copyright advice, use bibliometric indicators, and measure and report research impact

Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
Foundational	• *Is familiar with CRIS (current research information systems) and the pros and cons with open and closed access publication channels.* • Familiar with open licences such as Creative Commons • Is aware of open access in science communication and public outreach. • Aware of ethical aspects of publishing in PR/CS.	• Awareness of the FAIR and CARE principles, and the ethical procedures of their organisation when data handling. • Awareness of data protection law nationally and internationally. • Uses organisational or open repositories or research collections.
Intermediate	• Disseminates in a range of open access publications • *Assists peers in their use of information technology supporting research.* • Tracks the PR/CS projects research impact with appropriate tools.	• Experience in creating content for organisational publications, blogs, newsletters. • Awareness of EC impact measuring tools to evaluate impact. • Awareness of platforms (i.e. GitHub, Zenodo) for sourcing and sharing open access resources.
Advanced	• *Actively encourages peers to select open access alternatives when appropriate.* • *Advises peers on licensing and copyright issues.* • Tracks the organisation and/or projects research impact with advanced tools. • Actively encourage peers to communicate to various audiences through open tools. • Peer-reviews for Open-Access journals	
Expert	• Is a role model within the PR/CS community regarding open access publishing. • Designs guides for managing licensing and copyright issues, and the tracking of research impact. • Has in-depth knowledge of the licensing, copyright, and ethical issues of publishing in PR/CS and with participants. • Has involvement in maintaining open research landscape, for example editor of open access journal	

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2. Making an impact

	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
2.1 Participate in the publication process Submit, revise and publish PR/CS through the most appropriate dissemination means and participate in peer review processes, including open peer review.	Foundational	• *Produces publishable material and actively seeks appropriate outlets for it.* • Understands the processes of publication both in the traditional and in the Open Science paradigm, including licensing. • Publishes research results with supervision • Be aware of science communication and public outreach. • Aware of integrating participants' contributions to academic and non-academic outputs.	
	Intermediate	• Produces publishable material of high standard in academic and non-academic outlets. • Collaborates and co-authors with colleagues and participants, and acknowledging contributions by all • Produce peer reviewed publications with clear summary for general readers. • Disseminates in a range of research outlets (academic and non-academic). • Knowledge of science communication and how to do a strategic communication plan.	• Know how to ethically and transparently acknowledge participant contributors in publications. For instance, co-authorship criteria or parallel lay-accessible publications
	Advanced	• Well versed in publication practices in PR/CS. • Regularly publishes in, and is involved in the editing of, academic journals and/or non-academic outlets. • Facilitate participants to publish academic and non-academic outputs. • *Actively seeks co-authors and collaboration.* • *Is lead author on co-authored outputs.* • Supports less experienced colleagues to publish.	
	Expert	• Is well-known for involvement in editing academic journals and community resources (such as community science exchange). • Has multiple impactful publications or national and international reports • Serves on influential editorial boards, publication boards, or policy report teams. • *Has published internationally and publicly renowned articles and reports.* • Actively increases the outreach and acceptance of PR/CS in the academic and	• Experience of the full publication process, from author, reviewer to editor for a discipline-leading journal. • Experience of being part of organising committees for discipline-leading conferences and events. • Publishes the PR/CS methodology in journals and

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		non-academic literature.	publications not normally associated with the PR/CS discipline.

	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
2.2 Disseminate results to the research community Publicly disclose PR/CS project results by any appropriate means, including training, conferences, workshops, colloquia, public communication, social media, policy report and research publications.	Foundational	• *Engages in knowledge exchange.* • Understands how PR/CS projects communicate project results to researchers, the public, policy makers and other interested parties. • Presents at academic and professional conferences.	• Promotes research activities online through social media, discipline-targeted platforms etc. • Contributes to abstract submissions to relevant conferences and special issues. • Experience of presenting at conferences to colleagues and practitioners. • Uses figures or tables or presentations that are validated by experienced researchers.
	Intermediate	• Communicates results in an accessible way to a diverse research and practice community • Engages in interdisciplinary and transdisciplinary knowledge exchange.	• Experience of adapting research outputs to different disciplines and audiences. • Share research outputs beyond the academic community, for example to industry bodies, local community outlets.
	Advanced	• *Is known within the research and practice community for disseminating high quality results.* • Organises dissemination and outreach events.	• Awareness of discipline-relevant high impact journals and publications, and their criteria. • Supports colleagues and other relevant actors in preparing publications of their PR/CS action.
	Expert	• Chairs and leads scientific or professional associations and conferences. • *Actively promotes the reputation and esteem of the field.* • *Is a globally renowned authority on own topic and related interdisciplinary areas.* • Is known in the PR/CS community or in the science communication research and practice community	

2.4 Communicate to the broad public

Communicate about scientific findings and the contribution of their efforts to a non-scientific audience, including the general public. Tailor the communication of scientific concepts, debates, findings to the audience, using a variety of methods to different target groups, including visual presentations and various forms of written, spoken and digital communication.

Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
Foundational	• Understands and appreciates the value of engaging with the public - both participants in a project and the wider public. • *Listens with attention and speaks with intention.* • *Knows the basics of non-scientific argumentation and the differences between scientific and non-scientific arguments.* • Have basic science communication skills and how to do a strategic communication plan • Presents PR/CS project's results to the participants in a clear way. • Presents PR/CS projects at small-scale events. • Understand the role of science communication and engagement within PR/CS. • Communicates research findings in clear, jargon-free language for non-academic audiences	
Intermediate	• *Recognises the mutual benefit of public engagement in research.* • Contributes to promoting the public understanding of and participation in the PR/CS project. • Knows how to present PR/CS project results to a non-scientific audience and to project participants. • Sources, adapt and use images to support thinking, reasoning, conversation, and feedback from project results. • Uses Strategic Communication plans	• Share findings of projects to its participants. • Use materials (figures, interpretations, conclusions) prepared by PR/CS project leaders to share with participants and the general public.
Advanced	• *Creates a climate where public engagement activity is valued.* • Leads major public engagement and PR/CS projects. • *Contributes to shaping the public's conception of its own research area.* • *Uses different communication forms tailored for different audiences.*	
Expert	• *Gives strategic support for the setup of public engagement campaigns.* • Occupies specific public engagement post(s) in an organisation or the media. • *Is renowned for communicating scientific concepts in a clear, charismatic, and attractive manner, using appealing communication tools for the target audience.* • Publish in Science Communication research papers	

2.5. Increase the impact of Science of Policy and Society

Increases the impact and use of research process and findings in policy making by providing input to and maintaining professional relationships with policymakers and other stakeholders. Demonstrates the ability to translate research findings into actionable insights that inform and influence public policies, particularly through the lens of PR/CS approaches. Skilled in identifying policy windows, aligning research outputs with policy priorities, and engaging with decision-makers in clear, evidence-based dialogue.

Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
Foundational	• Understands the basic structure policy-making processes at local national or international level relevant for their own field - both PR/CS for policy, and policy for PR/CS at local national or international levels. • Presents the PR/CS project in a policy friendly format. • *Understands the wider contexts in which policies are situated* • Recognizes the importance of aligning research with public needs and priorities. • Demonstrates awareness of how research evidence can be used in policy debates.	
Intermediate	• *Recognises the mutual importance of policy making and research.* • Engages in dialogue with government organisations, individuals, communities, stakeholders, and other key organisations. • Is aware of different approaches to knowledge brokering and knowledge co-production • Contributes to PR/CS projects-for policy outputs • Identifies policy challenges that relate to their research and articulate how PR/CS contributes to addressing them • Understands the timing and dynamics of policy windows and advocacy cycles	
Advanced	• *Writes science-for-policy outputs cited or used by policymakers* • *Advises and supports colleagues in writing science-for-policy outputs* • Serves as a liaison or advisor to policy-oriented organizations, commissions, or advisory boards. • *Builds networks to inform policy making by evidence* • Facilitates reflection and learning from complex policy initiatives on achievements and temporary failures. • Leads or co-leads collaborative research-policy initiatives, especially those involving civil society or PR/CS networks • Strategically aligns research objectives with current policy agendas while maintaining scientific integrity • Evaluates and monitors the impact of research-based interventions on policy and practice.	
Expert	• *Informs political priorities by presenting compelling evidence of challenges, or reframing of challenges.* • *Is called upon as a knowledge broker in crisis/urgent situations.* • *Is called upon to work directly with high-level policy makers* and advises high-level policy makers, ministries, or intergovernmental organizations on research-informed policy design. • Makes key contributions to establishing and improving the policy making body capacity for collective learning and long-term memory.	

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		• Transforms the policy making body's culture towards continuous, ritualised learning and unlearning. • Provides thought leadership in integrating science into governance systems, including through frameworks like Planetary Health, One Health, or Sustainable Development Goals. • Develops systemic strategies for science-policy integration, including ethical and equity considerations. • Trains or mentors other researchers in policy engagement and transdisciplinary collaboration.	

	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
2.7 Promote the transfer of knowledge Deploy broad awareness and knowledge of processes of knowledge valorisation aimed to maximise the two–way flow of tools, content material, technology, intellectual property, expertise and capability between the research base and relevant stakeholders within the research field and wider society.	Foundational	• Understands the process of commercial and social application of research results and knowledge valorisation. • Recognises the value of embedding academia in innovation communities - both commercial and social. • Understand co-benefits to project participants in valorisation of research projects. • *Appreciates the importance of knowledge exchange within society.*	
	Intermediate	• *Contributes to knowledge exchange within society.* • Identify research ideas that can be commercialized or socially utilised. • Is aware of different methods to commercialise or sustain PR/CS.	
	Advanced	• Turns research into social or commercial ventures. • *Advocates for increased engagement with the innovation community.* • *Builds networks to influence change through knowledge exchange.* • *Recognises research projects' potential for new products and novel applications.*	
	Expert	• Provides strategic leadership and support to others' commercialisation projects and co-production of socially useful knowledge and ventures. • *Has a reputation for successful engagement with innovation stakeholders.* • Stimulates, creates and builds extensive relationships in entrepreneurial/business/commercial/charity/social enterprise context. • *Has a track record of successful adoptions of new technologies and/or new ideas.* • Contributes to organisational networks or training programs for knowledge transfer	

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2.8 Clear Writing

Can effectively communicate in writing, both online and offline and develop strategies for outreach and engagement with different audiences. Knows which tools and methods to use popularity, spread and engagement with messages, and familiar with relevant social media platforms. Prioritise communication with those that are engaged in the process.

Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
Foundational	• Knows how to write and tailor messages for different audiences and has a basic understanding of effective style to use depending on audience, media channel, and format. • Knows how to write PR/CS project's results to the participants in a clear way. • Avoids jargon where possible and is aware of organisation style guide • Pays attention to the implications that language and culture have on communication.	
Intermediate	• Reliably draft effective messages. • Identifies the most relevant target audience. Able to consult with local and relevant communities for advice on suitable communication channels and formats. • Communicates project results clearly to those that contributed to the project. • Can write useful contribution to reporting outputs	
Advanced	• Is aware of how search engines and the online media environment impacts online content. • Aware of online users behaviour and the implication on written content. • Can write engaging contributions to opinion pieces and editorials for online and offline publications in the the relevant domain	
Expert	• Consistently write good content for written and audio-visual media. Capable of high level reader engagement. • Uses written skills to influence organisations outside of network	

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2.9 Storytelling and visual literacy

Sources, adapt and use images to support thinking, reasoning and conversation. Use language to tell stories to explain the relevance of policy and research in an effective and accurate way. Can identify and leverage the narrative power for communication purposes. Knows the principles, techniques and methods of visual presentations and narrative.

Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
Foundational	• Can construct meaning from visual images • Can use basic metaphors to explain concepts in relation to routine work. • Can create concept maps, simple charts and graphs. • Can explain to a graphic designer the data visualisation desired.	
Intermediate	• Use metaphors to convey complex issues and express abstract ideas to create a shared mental image. • Can use sequences of images to create meaning. • Can interpret pictures, graphs, and charts well and recognises patterns easily. • Can identify the most suitable types of visualisation and decide what to include and exclude. • Demonstrates storytelling skills that enhance the clarity and emotional impact of visual communication • Develops accessible research outputs (e.g. policy briefs, infographics, recommendations) tailored to decision-makers	
Advanced	• Break down complex concepts and succinctly communicate these with images and narrative. • Provide visual evidence to back up their decisions, interpretation and opinions. • Develops an understanding of the social impact of visual and metaphoric images in different cultural contexts. • Crafts compelling narratives to connect data, visuals, and human experiences • Adapts storytelling techniques to suit different audiences and cultural contexts	
Expert	• Synthesises and visualises concepts and relationships in real time (during a meeting) • Help groups come to consensus and see the bigger picture through a shared visual representation. • Uses narrative structures such as setup, conflict, and resolution • Demonstrates and has been recognised for actively engaging an audience using evocative, emphatic storytelling.	

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3. Self-Management

3.1 Manage personal professional development	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
Take responsibility for lifelong learning and continuous professional development. Engage in learning to support and update professional competence and develop personal skills. Identify priority areas for professional development based on reflection about own practice and through contact with peers and stakeholders. Pursue a cycle of self-improvement and develop credible career plans.	Foundational	• *Actively seeks mentoring for career progression and employability development.* • *Maintains own records of achievements and experiences.* • *Develops personal skills and skills aligned with employers' requirements*	
	Intermediate	• Initiates personal networks and relationships important to career development in research and other organisations that carry out PR/CS. • Actively pursues self and career improvement, and seeks others' advice on this. • Strategically develops both personal and career-oriented skills • Aware of the importance and needs of lifelong learning for participants in PR/CS projects.	
	Advanced	• Mentors others in academic and professional career development, and lifelong learning. • *Uses networks to further the career of others.* • *Purposefully develops professional and personal skills for self and others.*	
	Expert	• Creates mentoring networks in support of the professional development of less experienced researchers across organisations • *Paves the road for successors and the continuation of research in priority areas.* • *Is a known reference point in relation to expanding lifelong learning and continuous professional development.*	

3.6 Coping with uncertainty, ambiguity and risk

Make decisions when the result of that decision is uncertain, when the information available is partial or ambiguous, or when there is a risk of unintended outcomes. Communicate these decisions to participants and colleagues. Include structured ways of testing ideas and prototypes from the early stages, to reduce risks of failing. Handle fast moving situations promptly and flexibly.

Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
Foundational	• Not afraid of making mistakes while trying new things • Explores ways to achieve things • Identifies examples of risk in its surrounding • Can describe risks related to simple activities in which takes part • Handles unfamiliar and uncomfortable situations with limited support and supervision. • Adapts to new cultural contexts. • Actively exposes oneself to unfamiliar co-creation situations.	
Intermediate	• Can manage challenges and make decisions under uncertainty. • Can discuss the role that information plays in reducing uncertainty, ambiguity and risk. • Can tell the difference between acceptable and unacceptable risks. • Can critically evaluate the risks associated with a project idea, taking into account a variety of factors. • Can actively look for, compare and contrast different sources of information that help reduce ambiguity, uncertainty, and risks in making decisions. • Can critically evaluate the risks related to the formal setup of a project in ones' area. • Be able to handle complex co-creation situations.	
Advanced	• Can find ways of making decisions when the information is incomplete. • Can pull together different viewpoints to take informed decisions when the degree of uncertainty is high • Can compare activities based on a risk assessment • Can demonstrate to be able to make decisions by weighing up both the risks and the expected benefits • Can outline a risk management plan for guiding personal and team choices. • Assists others in challenging and adverse situations. • Can make decisions based on limited information when necessary.	
Expert	• Can make decisions evaluating the different elements in situations that are uncertain and ambiguous. • Can set up appropriate strategies for collecting and monitoring data, which help to make decisions based on sound evidence. • Can assess the risks the project is exposed to as conditions change, and come up with mitigation measures. • Can evaluate high-risk long term activities using a structured approach. • Can manage and advise teams of those who are operating in uncertain situations and adverse contexts.	• Examples include contexts with missing and uncertain data which may create additional uncertain contexts for PR/CS projects.

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4. Cognitive Abilities (/Capacities)

4.5 Systemic thinking	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
Understand the role of the organisations within the system. Situate PR/CS activities. Take into account the characteristics of (inter)national research and practice systems, where researchers and practitioners interact with all relevant stakeholders. Take into account the position of individual researchers and practitioners and their own position in the wider context, to improve the understanding of complex issues and identify linkages with related issues.	Foundational	• *Differentiates between complicated and complex research, challenges and knows why this distinction matters.* • *Understands the national and international research landscape of own discipline* • Recognizes that environmental or social phenomena studied in PR/CS are embedded in interdependent systems—biological, climatic, political, and cultural.	
	Intermediate	• *Actively engages in collaborative interactions within the research system.* • Understands the PR/CS landscape, and the complex interaction between its actors, beyond own discipline • Has a conceptual understanding about the "weight of evidence" and has contributed to integrating evidence from a diversity of sources as foresight, modelling or design thinking.	
	Advanced	• *Enables others to appreciate and engage with complex research challenges.* • *Masters the main components of a specific research system and identifies properties of components and key interactions.*	
	Expert	• *Establishes relationships with all relevant stakeholders inside and outside academia to develop their own research area.* • *Changes and improves the complex interconnections between research and other sectors.*	• Working as part of the interdisciplinary projects

	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
4.6 Problem solving *Develop and implement solutions to practical, operational or conceptual problems which arise in the execution of work in a wide range of contexts.*	Foundational	• *Inquires about basic themes of own research.* • *Elaborates simple research hypotheses.* • Know of common problems in PR/CS projects. • Aware of practical and applied solutions to problems in tools and techniques	
	Intermediate	• *Assesses the effectiveness of one's own and others' solutions to research and practice problems.* • *Formulates and verifies hypotheses addressing a broad range of research and practice problems.* • Capable of addressing unexpected problems throughout the life cycle of a project.	
	Advanced	• *Tackles new, complex, and transdisciplinary problems.* • *Challenges existing hypotheses and proposes new ones based on evidence.*	
	Expert	• Tackles new, complex, and transdisciplinary problems. • Challenges existing hypotheses and proposes new ones based on evidence. • Translate and link transdisciplinary problems with PR/CS methods.	

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	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
4.7 Creativity Develop several ideas and opportunities to create value, including better solutions to existing and new challenges. Explore and experiment with innovative approaches. Combine knowledge and resources to achieve valuable effects.	Foundational	• *Is inquisitive, curious, and open-minded.* • *Seeks different perspectives.*	
	Intermediate	• *Generates, expresses, and tests new ideas and solutions.* • *Explores ideas also from different areas.* • Willing to experiment, fail, and learn from mistakes. • Brings creativity and innovative thinking to the design and implementation of PR/CS, developing novel approaches to engage participants, solve problems, and communicate scientific ideas. • Capable of adapting methods and tools to suit diverse contexts and audiences, while fostering inclusive and imaginative spaces for collaboration.	
	Advanced	• *Creates novel and valuable ideas.* • *Inspires and develops others' inquiry style.* • Encourages experimentation and co-creation, recognizing that creative strategies can enhance data quality, participant motivation, and the overall impact of participant-driven research	
	Expert	• *Expands existing solutions, or proposes new ones, for relevant scientific problems.* • *Challenges the status quo in a visionary way.*	

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	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
4.8 Learning through experience Learn by doing and Learn by Living (Roberto Carneiro, 2013). Use any initiative for value creation as a learning opportunity. Learn with others, including peers and mentors. Reflect and learn from both success and failure (one's own and other people's). Recognize that learning is a lifelong process including learning from mistakes, believe that learning and unlearning should be part of organization structure and capable of learning and unlearning.	Foundational	• Finds examples, scans and keeps track failures that have created learning or led to valuable achievements. • Provides examples that demonstrate how experiences increased abilities and competence. • Anticipates that abilities and competence will grow with experience, through both successes and failures. • Approaches challenges as self-improvement, growth and learning opportunity. • Recognises what was learnt from taking part in participatory activities. • Reflects one's own experience in taking part in a project's activities and learns from it. • Seeks to learn through experience, takes advantage of capacity building offers.	• Inquiry based learning programme by University of Vienna CTL's mentoring programme.
	Intermediate	• Reflects on failures (one's own and other people's), identifies the cause of failures and learns from them. • Judges if and how to achieve goals, so that performance can be evaluated and learned from. • Reflects on the relevance of learning pathways for future opportunities and choices. • Looks for opportunities to improve strengths and reduce or compensate for weaknesses. • Reflects on interaction with others (including peers and mentors) and learn from it. • Filters feedback provided by others and keep the good from it. • Is willing to learn and unlearn from experience via safe-to-fair experiments, prototyping, peer-to-peer learning and other experiential learning. • Reflects on failures, analysing the suitability of the approaches adopted and one's capacity to respond . • Judges if and how one has achieved goals to evaluate performance and learn from it.	
	Advanced	• Can reflect on achievements and temporary failures as the project develops so as to learn and improve one's own ability. • Can find and choose opportunities to overcome weaknesses and to develop strengths. • Can help others develop their strengths and reduce or compensate for their weaknesses. • Can integrate lifelong learning into personal development strategy and career progress. • Can help others reflect on their interaction with other people and help them learn from this interaction. • Be able to mentor others through learning through experience	

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	Expert	• Design learning by experience situations for others • Can take a team or the organisation to a higher level of performance, based on the feedback collected and by learniGuide junior colleagues ng lessons from achievements and failures. • Going from competency (self-directed) to capability (self-determined) development. For instance, knowing how to learn and reflect on the learning process, communication and teamwork, creativity applying competences to new and unfamiliar situations, values • to understand how they learn (process) and for what (impact) • Can learn lessons from monitoring and evaluation processes and establish them into organisation's learning processes.	• Monitoring, Evaluation and Learning methods

5. Work with others

	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
5.1 Interact professionally Show consideration to others and demonstrate professional collegial behaviour (including toward project's participants). Listen, give and receive feedback and respond perceptively to others. Engage effectively and in a goal-directed manner with other people in a professional setting, also involving staff supervision and leadership.	Foundational	• *Listen to other people's ideas with no prejudice.* • *Understands the value of collegial behaviour and works professionally and collaboratively.*	• Use the Wheel of privilege (https://ukrio.org/ukrio-resources/equality-diversity-and-inclusion/academic-wheel-of-privilege/)
	Intermediate	• *Asks colleagues for feedback, advice, and critical appraisal of one' s own work.* • Embraces behaviours that foster effective and positive interactions with colleagues and project's participants in a goal-oriented manner. • Stay up to date with the latest development in the field. • Aware of the impact of hierarchical structures on projects and one's own stance, to address issues coming from power imbalances.	
	Advanced	• Professionally interacts in a goal-oriented/productive way with colleagues both in their own and other disciplinary areas. • *Supervises and supports the development of less experienced colleagues.*	
	Expert	• Communicates to colleagues of any rank as equal. • Has own effective leadership style.	

		• Champions career development of colleagues.	

5.2 Develop networks	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
Develop alliances, contacts or partnerships, and exchange information between science, civil society, and government, and of communicating the societal relevance of research in ways that support informed policy development and long-term systemic change.. *Foster integrated and open collaborations where different stakeholders co-create shared value research and innovations. Develop your personal profile or brand and make yourself visible and accessible in face-to-face and online networking environments.*	Foundational	• *Understands the value of collaborative work.* • *Builds and fosters working relationships with colleagues.* • *Promotes ownself as collaborative and accessible to colleagues and project participants alike.* • Is familiar with key stakeholders (e.g. NGOs, government agencies, advocacy groups) relevant to their research topic.	
	Intermediate	• *Contributes to multi- or cross-disciplinary collaborative teams.* • *Develops collaborative networks, and actively includes colleagues in these.* • *Makes use of face-to-face and online networking environments for promotion of own profile, projects, and research.* • Participates in stakeholder consultations, roundtables or public hearings. • Demonstrates ability to build relationships with key policy actors and organizations	
	Advanced	• Engages with stakeholders external to their own organisation. • Establishes strategic collaborations and partnerships to develop one's own research and practice area. • *Encourages own organisation to foster collaborative networks with other organisations and with wider society.* • Acts as a catalyst of synergies, competence networks and peer learning. • Trusted adviser helping others reflect by providing honest and constructive feedback.	
	Expert	• Builds and leads collaboration partnerships within and outside their own organisation. • *Is an influential leader of large national/international consortia with academic and non-academic partners.*	

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	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
5.3 Work in teams *Work confidently within a group with each doing their part in the service of the whole.*	Foundational	• Works within teams under supervision to produce (research outputs or a PR/CS project). • *Appreciate the impact of your own behaviour on teamwork.* • Understand the complexity of working with teams that include volunteering members.	
	Intermediate	• *Recognises the importance of team leadership behaviours.* • *Understands own priorities and those of own coworkers, creates a cooperative work environment, and thus optimizes the output of teamwork.* • Capable of developing teams with project participants.	• Learn from team science and management literature.
	Advanced	• *Understands team dynamics and how to manage conflict and appraisal of team members.* • *Leverages the strengths of different team members to achieve outstanding results.* • *Is able to modulate own leadership for the best interest of the team.* • Takes the team to a higher level of performance, by creating space, opportunities and processes for reflection and collective learning and unlearning.	
	Expert	• *Enhances the transformative capacity of the organisation by recruiting, training, and building teams.* • *Builds and leads successful and diverse teams*	

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5.6 Promote Inclusion & Diversity

Promote and ensure equality and diversity management, in words as well as in actions and conduct. Both within the team and within the project participants. Guide and advise colleagues about how to work in diverse teams and contexts. Sensitive and can identify and integrate differing values and views, in particular of excluded and vulnerable groups.

Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
Foundational	• Understands that one's culture is one among many others and accepts cultural, values, class, and other differences while not necessarily agreeing with them. • Appreciates the importance of diversity and how it benefits PR/CS projects. • Is open-minded about diverging perspectives, and sensible and respectful to individual differences. • Understands diversity and equality requirements of organisations and communities.	
Intermediate	• Has an expanded worldview and expressed empathy towards others' cultures and value orientation. • Actively work on projects that promote diversity. • Keeps up to date on research and findings about the benefits and challenges of working with diversity within the team and with project participants. • Seeks to work in teams and collaboration partnerships that respect inclusiveness and diversity.	
Advanced	• Demonstrates an integration of different cultural worldviews • Advises and mentors less experienced colleagues about working with diversity. • Actively promotes equality and diversity standards in communities and organisations.	
Expert	• Increases the effectiveness, acceptance and legitimacy of decisions in research by acting upon their intercultural sensitivity and evidence about value orientation. • Influences policy on diversity and equality standards. • Manages diversity and equality in an exemplary way in projects and organisations.	

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	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
5.7 Empathy Engagement projects develop skills of empathy, listening, communication and respect for others.	Foundational	• Is sensitive to the needs of audiences • Considers the audience's motivation for engagement • Respects difference in understanding and differences in attitudes • Appreciates how partnerships can enhance public engagement activity • Responds positively to the expertise and insights of other professionals and non-experts • Is aware of requirements or sensitivities regarding discussion of sensitive topics with different audiences	
	Intermediate	• Responds to questioning positively and fully without being judgmental • relates well to different groups e.g. students, teachers, general public, other academics • Identifies social, political and ethical issues of relevance for particular audiences • Can provide effective facilitation of discussions • Understands the difference between empathy (understanding & hearing another's feelings) and sympathy (feeling sorry for someone) or emotional contagion (taking on another's feelings).	
	Advanced	• Understands the implications of the dialogue exercise for the audience • Can broker effective relationships and partnerships • Identifies key stakeholders and ensures their inclusion • Identifies appropriate partners for particular roles • Ensures transparency throughout the process • Keeps channels of communication open with all participants at all times	
	Expert	• Can adopt an oppositional or critical stance as required • Can manage conflict and achieve resolution • Coaches and mentors others in developing their own empathetic capabilities, serving as a role model and thought leader in human-centered approaches • Demonstrates resilience in the face of emotional demands (managing personal boundaries effectively to prevent burnout while remaining deeply engaged).	

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	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
5.8 Enthusiasm Exhibits genuine enthusiasm and motivation for PR/CS, visibly conveying a strong personal commitment to collaborative inquiry. Demonstrates perseverance in the face of obstacles and challenges, serving as a source of encouragement and inspiration for others to remain engaged and resilient in their efforts.	Foundational	• Actively listens and shows interest to new information, tasks, ideas and opinions from PR/CS actors • Expresses eagerness to try new methods, take on responsibilities or new skills in relation to PR/CS. • Takes part in two-way communication with PR/CS actors. • Contributes to discussions in group activities, showing a desire to be involved. • Accepts feedback in a positive and receptive manner from PR/CS actors • Displays a positive attitude that encourages a more optimistic and productive atmosphere during PR/CS activities	
	Intermediate	• Shows visible interest in their assigned tasks and organisational objectives, even when facing challenges • Takes the initiative in seeking out opportunities for skills development, and shows a proactive desire to improve • Communicates their excitement, in order to subtly motivate and influence other PR/CS actors	
	Advanced	• Communicates PR/CS project vision and goals with energy and conviction, clearly demonstrating the 'why' part of the action • Acts as an advocate of the PR/CS methodology, sharing success stories and championing the discipline. • Actively seeks opportunities to spread enthusiasm for PR/CS beyond the traditional disciplines that have embraced it	
	Expert	• Acts as an inspirational leader of the field, that intrinsically motivates colleagues and external audiences • Strategically deploys their enthusiasm to overcome resistance to PR/CS methodology, understanding when and how to do this in an appropriate way • Uses their enthusiasm not to dominate, but to empower others, fostering a shared purpose and agency • Cultivates and shapes an organisational culture where, innovation is celebrated, becoming a cornerstone of their identity	

6. Managing Research Tools

6.1 Manage Research Data

Produce and analyse good-quality research data originating from validated qualitative and quantitative PR/CS methods. Store and maintain the data in research databases. Support the re-use of research data and be familiar with data management principles, including FAIR (Findable, Accessible, Interoperable, and Reusable) and CARE (Collective Benefit, Authority to Control, Responsibility, Ethics) principles. Make data as open as possible, and as closed as necessary through collaboration and agreement with participants.

Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
Foundational	• Understands basic scientific principles and the terminology in one's own area of specialisation. • Knows the basic concepts of data literacy: the data preprocessing, data storing, metadata • Makes accurate distinctions between sources of scientific evidence and other types of knowledge and information, including non-traditional sources of evidence and citizen knowledge. • Familiar with basic statistical concepts and can distinguish correlation and causation. • Identifies reliable sources of information and knows how to assess PR/CS data quality with its specificities (e.g., variability in collection methods, participant training). • Understands that data created by participants are co-created and adheres to principles of data management that ensure community benefit, such as equitable access, recognition, and capacity building. • Knows how to store and organise data in an accessible, structured, and sustainable way using digital tools and platforms. • Uses, transforms, and analyses non-sensitive research data transparently and in accordance with legal, ethical, and privacy requirements. • Understands the legal and ethical issues specific to the use of PR/CS data, including intellectual property, informed consent, data sovereignty, and the prevention of harm to participants and communities.	• Analysis of data (knowing which type of analysis is suited for which type of data). Specific data analysis for PR/CS data. • Curation and management of data. • Data quality control & verification. • Design project protocol/technology for data quality. • Precautions measures in data storage. • Data quality is linked to the epistemology and ontology of the specific field in which PR/CS is implemented - e.g. social science or humanities or environmental sciences.
Intermediate	• Ensure data quality, engagement, and participants' feedback through the use of digital tools, user experience, and data management tools • Knows how to design and implement data quality measures for PR/CS projects. • Know how to implement open as possible, closed as necessary principle with PR/CS data, with the agreement of participants. • Manages co-created data to ensure equity in access to participants, researchers and practitioners. Where appropriate, data should be co-managed. • *Organises data sets to be findable, accessible, interoperable, and reusable (FAIR), and to be easily stored and retrieved in a structured environment.* • Manages research data to follow Collective Benefit, Authority to Control, Responsibility, Ethics (CARE) principles. • *Trains and empowers other team members to work with data in a structured, transparent, and accessible*	

		way. • Aware of archiving, protecting, and managing for long term use of PR/CS data.	
	Advanced	• Applies PR/CS data analysis tools, and its appropriate data management plans. • Transforms, organises, and manages PR/CS data in a research context, and applies metrics to evaluate the success of data initiatives. • Promotes participants as co-creators of data, and champions equal access to data. • Promotes FAIR and CARE principles within one's own academic community. • Promotes understanding of PR/CS data.	
	Expert	• Creates relevant PR/CS data sets from different sources, and develops effective methods making data more comprehensible. • Anticipate data quality issues and propose new design solutions to ensure data quality, including complex quality assessment approaches in PR/CS data. • Proposes new processes and practices in managing PR/CS data, information, and digital content in a structured digital environment. • Is known as an influential advocate of FAIR and CARE principles for PR/CS data. • Influences organisations to include participants as co-creators in the identified relevant PR/CS data management processes.	

	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
6.2 Promote Citizen Science [7] Partner with participants in scientific and research activities and respect their contribution in terms of knowledge, time or resources invested.	Foundational	• *Understands that Individuals and communities are knowledge-holders with the ability to contribute to the research process in some areas of research.* • Knows the main types of PR/CS and their applications. • Knows the pros and cons of engaging or not engaging with participants in research endeavours as a practitioner or researcher. • Is aware of advantages and disadvantages in integrating a PR/CS approach: e.g.community engagement; scale & data collection; data quality; costs; diverse perspectives; innovation; emotional labour; timescale.	
	Intermediate	• *Is inclusive and transparent in the research process and understands how best to engage with individuals and communities in each specific context.* • Knows how to design a basic PR/CS project. • Capable of implementing a basic PR/CS project. • Communicate and promote PR/CS to peers and others in the organisation.	• Contribute to the science of PR/CS.
	Advanced	• Engages a wide range of participants from different backgrounds and knowledge in the research process and integrates them at specific stages of the research cycle. • Knows how to run medium to large PR/CS projects.	• Significantly advance the science of PR/CS through studies and publication.
	Expert	• Knows how to design and run complex and novel PR/CS projects. • *Is recognised for engaging with individuals and communities in an inclusive, transparent and effective manner.* • Develops novel, reliable, and trustworthy protocols in their own area to include participants in the research process. • Promotes PR/CS projects and principles in their own organisation and with other stakeholders. • Promote PR/CS methods and results to the public, policy, and experts	

[7] Please note that "promote citizen science" is a competency in ResearchComp. It was kept in CitSciComp in order to have a reference competency that refers to the general aspects of citizen science. We have kept the same title of the competency for comparability purposes.

7. Doing Research

	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
7.1 Have disciplinary expertise Demonstrate deep knowledge and complex understanding of the disciplinary areas in which PR/CS can be applied, including responsible research, research ethics and integrity principles, privacy and GDPR requirements.	Foundational	• *Understands key concepts and relevant knowledge of your own research area.* • *Keeps track of the latest advances within related fields, such as digital technologies.* • *Is familiar with RRI (Responsible Research and Innovation) and ethical requisites to develop research in their own discipline.* • Implements GDPR and privacy requirements, with guidance. • Knows aspects of their discipline where PR/CS can contribute.	
	Intermediate	• Makes original contributions to one's own research area in terms of PR/CS, ensuring these contributions are contextualized within relevant policy, practice, and scientific landscapes, and address identified gaps in knowledge. • Supports awareness of societal, political, ethical, and integrity-related aspects of knowledge creation in their own research area, critically informed by the ability to infer main arguments, assumptions, and conclusions from research literature and to articulate the levels of scientific certainty and uncertainty inherent in evidence. • Includes GDPR and privacy requirements in their own research activity, establishing a secure and compliant foundation for data integration and analysis. • Acknowledges and integrates different forms of knowledge in one's own research area, demonstrated through the specific capacity to accurately incorporate participant knowledge, expertise, and co-created data into robust, informed scientific statements and outputs.	
	Advanced	• *Brings new knowledge to own and related disciplines and is aware of its impact on society.* • *Influences national and international policies related to ethics and integrity in their own research area.* • Influence the acceptance of PR/CS in their own research area. • Contributes to the science of PR/CS. • Can build in depth, cross-disciplinary expertise on the most relevant research and can identify gaps, contradictions, and controversies in and between disciplines that mostly go unnoticed.	
	Expert	• Contributes with, and has a deep understanding of, novel developments in own and related research areas, pursuing an interdisciplinary and transdisciplinary approach(es).	

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		• Drives the disciplinary field forward with insights from PR/CS and vice versa and further develops the field of PR/CS through disciplinary insight. • Advises policy makers on policies and procedures for PR/CS within their own research/academic/professional sector and within their organisation.	

	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
7.2 Perform scientific research Gain, correct or improve knowledge about phenomena through a PR/CS approach by selecting or developing the appropriate scientific approach and by using scientific methods and research techniques based on empirical or measurable observations and wider points of views and approaches that are contributed by project participants.	Foundational	• Learns from senior researchers and peers in their own organisation. • Takes part in collaborative research projects.	• Teaching methods and tools.
	Intermediate	• *Knows how to create, organise, validate, share, store, and curate information and is aware of the risks therein.* • Begins to manage a small research group. • *Engages in research collaborations outside of own organisation.* • Utilise PR/CS approaches.	
	Advanced	• Introduces the use of new PR/CS tools and methods in their own area. • Manages an independent research group. • Coordinates specific thematic research collaboration networks. • Mentors less experienced colleagues on research approaches in their own discipline	
	Expert	• *Sets the research agenda in their own research area.* • Leads a transdisciplinary cross-organisation group in which excellence in PR/CS is championed. • Designs guidelines and educational material for performing and supporting contributory, collaborative and co-created PR/CS projects.	

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	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
7.5 Apply research ethics and integrity principles Apply fundamental ethical principles and legislation to PR/CS, including issues of research integrity and duty of care towards participants. Perform, review, or report research avoiding misconducts such as fabrication, falsification, and plagiarism.	Foundational	• *Has a basic understanding of ethical conduct of research and of integrity principles.* • *Asks for expert advice when in doubt about ethical decisions.* • Is aware of ethical and legal aspects of PR/CS. • Knows platforms and reference organisations in their own country/continent for ethical issues. • Is able to prepare documentation and material for ethical conduct of research (e.g. information sheets).	
	Intermediate	• *Is well versed in the ethical conduct of research.* • Is able to apply for ethical approval of PR/CS projects. • Provides advice about ethical issues of PR/CS to peers. • *Is alert and attentive to falsification and plagiarism.* • Is capable of implementing appropriate ethical and legal practices in PR/CS projects.	
	Advanced	• Engages actively in the works of various ethical committees and contributes with insights on PR/CS. • Promotes public understanding of the ethical issues raised by PR/CS. • Mentors less experienced colleagues and project participants in the ethical conduct of research	
	Expert	• Actively contributes to develop ethical guidelines and systems to ensure ethical conduct of PR/CS in their organisation. • Advises policy makers on policies and procedures of ethical and research integrity in PR/CS in their own research/academic/professional sector and within their organisation.	

	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
7.6 Leverage Artificial Intelligence Use, evaluate and responsibly integrate and develop AI technologies, tools and algorithms to support and optimize PR/CS processes, including analyse complex datasets, critically assess AI-generated outputs, manage associated ethical, privacy and intellectual property implications, foster and derive meaningful participation, and insights for informed decision-making.	Foundational	• Understands what AI is (e.g. machine learning, neural networks, natural language processing) and its basic applications in PR/CS. • Knows about basic AI tools and the benefits, risks and limitations of their use in PR/CS • Recognises ethical concerns and research integrity challenges related to AI use in PR/CS. • Demonstrates a willingness to learn about AI and its integration into PR/CS workflows. • Uses basic AI tools and systems relevant to PR/CS (ML, NLP, generative AI) for research or project implementation tasks with guidance, understanding their basic capabilities and limitations, and checking AI-generated output against primary or participant-provided sources. • Recognises that AI can be inaccurate or biased, identifying hallucination risks and the human responsibility/accountability to verify AI outputs. • Approaches AI critically informed and questioning outputs before incorporating them. • Knows that the datasets used to train AI systems affect the reliability of the outputs (i.e. species data, environmental monitoring, social annotations) (linked to 7.1. Disciplinary expertise) • Knows that generative AI systems are trained on datasets that may not represent CS communities or their local contexts • Aware of the requirement to disclose AI use in research methods and documents own AI tool use at a basic level in research logbooks or notebooks (linked to 7.5. Research ethics). • Upholds scientific and participatory research integrity when using AI-generated content • Respects and acknowledges participants contributions not allowing AI outputs displacing participant-provided data without data assessment or scrutiny	
	Intermediate	• Can assess different AI depending on the context and complexity of tasks for PR/CS technologies for research, engagement, and monitoring tasks. • Applies basic AI tools (e.g., data visualisation, predictive analytics, literature reviews) to facilitate own research, and support participants in PR/CS projects. • *Data Interpretation: Understands how to interpret AI-generated insights for decisionmaking.* • Can identify where AI can be helpful in PR/CS tasks • Can explain and discuss with participants the use of AI with their contributions to the PR/CS project. • Understands how training data quality and gaps in representation affect AI reliability in PR/CS datasets • Knows GDPR obligations when processing participant data with AI tools, including data	

		minimisation and purpose limitation • Recognises copyright implications of AI-generated research content and knows how to apply open licences appropriately • Applies privacy-by-design when configuring AI tools that process participant data • Produces clear, accessible explanations of AI tools used for participants • Is aware of the environmental cost of AI tools selected for PR/CS projects • Credits AI-generated content appropriately and discloses AI use transparently to participants Knows how to protect participants privacy in AI-mediated data processing	
	Advanced	• Can create or apply customized AI solutions for complex PR/CS challenges (e.g. advanced simulations, automated interpretation and data collection). • Critically evaluates AI solutions and providers, making informed decisions about which tools and technologies to adopt, including participant fit, privacy, reproducibility and environmental footprint. • Establishes rules for responsible AI use in PR/CS. • *Works with AI experts and teams to integrate AI effectively. Is aware of the legal and ethical frameworks applicable to AI solutions in research.* • Masters models of human-AI collaboration relevant to PR/CS: hybrid frameworks, participatory AI design, and tiered oversight models • Understands explainability limitations of AI systems (i.e. black box problem) and their implication for PR/CS reproducibility and open science compliance • Designs and applies AI output verification protocols to specific PR/CS project types (e.g. contributory, collaborative, co-created) and trains team members in verification procedures • Designs transparent human-AI workflow architectures for PR/CS projects that explicitly assign/require human decision-making authority/verification over AI outputs at each stage, preserving participant contributor agency • Models transparent and accountable AI use as a standard for own project team and wider research network	
	Expert	• Develops and enforces comprehensive protocols, policies, practical guidance and ethical guidelines for AI use, ensuring responsible and fair AI practices in PR/CS. • Identifies and facilitates innovative AI solutions that can transform PR/CS practices and drive significant advancements. • Holds a research-informed and critical understanding how AI trained data and architectures affect PR/CS data quality, contribution dynamics and knowledge co-production in specific PR/CS project types and contexts	

		• Guides and mentors advanced and intermediate practitioners and researchers in using and integrating AI in PR/CS. • Shows how AI can make a real difference in PR/CS. (Acts as a leader in the integration of AI in research, sharing knowledge through industry forums, publications, and workshops). • Holds deep and critical reflexivity about risks of AI adoption in PR/CS, including homogenisation of participants contributions, datafication of participant knowledge, reduction of participation quality to labelling tasks and displacement of non-digital or vulnerable communities knowledge. Can create and leverage balance between AI and non-AI leveraged solutions. • Develops sharable, replicable and reusable field-level frameworks and models for AI output verification and design • Actively interrogates dominant AI narratives about efficiency, objectivity and scalability offering solutions to these conflicts • Leads innovative Human-AI collaboration architectures in large-scale PR/CS projects that strengthen agency of participants and the quality of their participation. • Masters and is a reference in evolving scholarly and practitioner debate on AI in PR/CS (i.e. under which conditions AI integration strengthens or weakens participation or outputs quality; whether and how PR/CS data should be used to train AI systems; ...)	

	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
7.7 Engagement mindset Ability to recognise the value of citizen and stakeholder engagement, co-creation, and deliberative practices. Identify and integrate differing values and perspectives.	Foundational	• Recognises individuals and communities and stakeholders as knowledge-holders for their different abilities to enrich research and policy and action with diverse perspectives, ideas, concerns, and scientific and technical knowledge.	
	Intermediate	• Seeks to be inclusive and transparent and understands how best to collaborate with participants grouping in each context.	
	Advanced	• Advocate for individuals and communities engagement activities to be integrated in a research and policy cycle. • Advocates for engaging with underrepresented or marginalised groups and stakeholders. • Understand the hierarchical nature of science, and seek to flatten these hierarchies for individuals and communities to be viewed as equal contributors to knowledge, not free labour to be exploited. Engagement in a project should benefit all.	
	Expert	• Demonstrate and has been recognised for engaging with individuals and communities and categories of stakeholders in an inclusive, transparent and effective manner.	

	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
7.8 Planning and designing citizen engagement Recognise the importance and can anticipate issues that are common in public engagement processes and projects, capable of co-creating with individuals and communities.	Foundational	• Can define the scope and objectives of engagement, as well as its intended contribution to policy, scientific research etc. • Designs the criteria for recruitment in line with the objectives of the process or project. • Can distinguish between all major preparatory work phases and methodological approaches to implement engagement. • Carefully reflects on the motivations provided to individuals, communities, and stakeholders to participate in a given PR/CS activity	
	Intermediate	• Has a working knowledge of the design of engagement processes and the types of engagement that are relevant to different stages of the research, policy cycles and target audiences. • Can plan and calibrate the level of ambition of engagement activities with practical constraints, budget, feasibility and policy commitment. • Can identify and have access to the right experts and organisations that involve and engage the intended target group. • Plans and sets up engagement processes such as engagement strategy that includes organising the venue to the agenda, and online and physical events.	
	Advanced	• Can design and run sustained engagement processes. • Carefully reflects on the motivations provided to individuals, communities, and stakeholders to continue their participation in a given PR/CS activity. • Has extensive practice in planning engagement and deliberative processes at scale which have been implemented. • Can design and also advise others on complex engagement strategies • Can design and also advise others on appropriate methods to strategically integrate PR/CS activities within policy processes • Can design and also advise others on appropriate engagement approaches, combining different methods and tools to optimally suit the approach for the intended target audience.	
	Expert	• Has served as a reference point for others in the organisation and wider community for designing and implementing engagement strategies. • Capable of promoting public engagement through professional networks. • Published extensively in reports or publications on engagement.	

	Competency levels	Sub-competencies	Examples / Scenarios/Tools / Approaches
7.9 Conducting participant engagement Know the principles and methodologies of public engagement and the evaluation, reporting, criteria for the engagement methodology in use. Can manage and coordinate PR/CS engagement, and can build bridges in multi stakeholders process	Foundational	• Contribute to running engagement activity. • Seek to integrate diversity of views, and possible disagreements between participants. • Knows where to get help from, especially for politically sensitive issues. • Is willing to provide supporting information • Can answer related questions • Can elicit and answer audience questions	
	Intermediate	• Confidently manage engagement activity for policy and research initiative, including adapting methodologies to new, unexpected situations. • Clearly communicate the intent of the engagement process, its scope, stages, and how the results will be used. • Design and execute reporting from engagement processes in a clear and transparent manner. • Articulate the inputs from the engagement into knowledge for policy. • Understand the hierarchical nature of science, and seek to flatten these hierarchies seeking for individuals and communities to be viewed as equal contributors to knowledge, not free labour to be exploited. Engagement in a project should benefit all. • Has a secure knowledge and understanding of the topic they are engaging about	
	Advanced	• Supervises at different stages of implementation of engagement activities and advises others on such processes. • Translates outputs of engagement activities into change, in line with the expectations raised with participants. • Communicates credibly to the wider public, stakeholders, and media. • Can work with different publics / audiences at the same event • Can be flexible in their approach, changing tasks to meet the situation • Can speak or write on a number of given topics • Is willing to provide evidence and opinion • Embraces the open ended nature of dialogue • Facilitates participatory processes that integrate research with democratic deliberation (e.g. citizen assemblies, community-led monitoring).	

	Expert	• Has extensive practice in coordinating and managing engagement, reconciling policy objectives with participants' views and expectations. • Has piloted methodological designs leading to new ways to inform and enrich communities, stakeholders and organisations. • Has a track-record of articulating well-founded perspectives on the role of PR/CS in policy. • Conveys the implications and uncertainties of scientific finding or models in laymen's terms to non expert audience. • Co-creates long-term knowledge-policy partnerships that institutionalize PR/CS contributions • Can effectively present policy perspectives to project participants and the scientific community, informing their understanding of the policy context.	

7.10 Knowledge co-creation	**Competency levels**	**Sub-competencies**	**Examples / Scenarios/Tools / Approaches**
Engage with the public to elicit insights, knowledge and expertise from the public to inform research and better understand the relevance of research to society. Able to foster inclusive environments that support dialogue, mutual learning, and knowledge co-production. Adept at facilitating collaboration across diverse stakeholder groups, ensuring that multiple perspectives are integrated into	Foundational	• Understands the principles of co-creation and values diverse forms of knowledge • Can listen attentively to understand others' ideas, questions, and concerns • Can articulate their own thoughts, observations, or questions in a way that others can easily understand (both verbally or in writing) • Can record information or data accurately according to simple protocols	
	Intermediate	• Facilitates co-creation during selected stages of a project • Identifies and addresses minor group dynamics and issues, encourages quieter voices, and helps maintain a collaborative atmosphere • Utilises digital tools and platforms (shared documents, virtual spaces, communication apps) and in person techniques (brainstorming, sticky notes) to support co-creation • Can articulate how individual experiences or local knowledge relate to the larger problem being addressed	
	Advanced	• Integrates co-created knowledge in data analysis and reporting • Reflected use of self in shaping the co-creative group dynamics • Leverages creative tensions and antagonistic dynamics to increase the creativeness of the group	

shared research processes and outcomes.	Expert	• Institutionalises co-creation within research governance and funding frameworks.	

With the acknowledgements of all panel members, reviewers and observers that contributed to the delphi method to create this Citizen Science Competency framework. First, last names, affiliations of contributors that wish to be cited will be added.