

Change – The transformative power of citizen science

## Criteria for citizen science – a source of community empowerment or a barrier?

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### Abstract

Citizen science (CS) initiatives are diverse, leading to a complex landscape of approaches and terminology. To address this complexity and foster a shared understanding, criteria were co-created with CS researchers, practitioners and citizen scientists to guide project inclusion on online CS platforms. At the ECSA2024 conference workshop, participants discussed the utility of these criteria, sharing experiences and reflections. The workshop employed a fishbowl exercise followed by a world café setup to delve into key topics such as project evaluation and progression, criteria and terminology application, and potential barriers to inclusion. Participants expressed caution regarding mandatory criteria, emphasizing the need for flexibility, particularly in the social sciences and humanities. While some criteria may enhance project communication and funding prospects, concerns were raised about the eurocentric nature and global applicability of the criteria. Despite limited familiarity and implementation of existing criteria, there is a growing understanding of their potential importance and usefulness within the CS community. Challenges remain regarding implementation processes and project exclusion concerns, but positive examples showcase the potential benefits of embracing criteria in CS networks and platforms.

**Keywords:** citizen science, criteria, ECSA2024, evaluation, inclusivity, online platforms, project repositories, terminology.

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## Introduction

Citizen science (CS) comes in many shapes and forms, and a variety of different terms are used to describe this constantly evolving practice of engaging the public in scientific research. This complexity sometimes leads to uncertainty and confusion, both among researchers, but also in the interaction with other CS stakeholders, e.g., funders, evaluators, or potential collaborators. A way to address this challenge and move towards a shared understanding, is through the use of vignettes or characteristics (e.g. Haklay et al. 2021), principles (e.g. Robinson et al. 2018) or criteria (e.g. Heigl et al. 2020) to more clearly delineate what CS is. The ECSA Working Group on Citizen Science Networks has, over the last 3 years, co-created with CS researchers, practitioners and citizen scientists transparent and impartial criteria to be used as a guide for deciding if and when a project could be listed on online CS platforms, such as Österreich Forscht ([www.citizen-science.at](http://www.citizen-science.at)) or EU-citizen.science. Such CS platforms are often run by CS networks and aim to promote CS projects, facilitate CS stakeholder networking, and advertise CS-related events and news. Criteria can be partially amended or adjusted in a truly adaptive management approach by platform owners. If implemented, criteria have the potential to facilitate a system change on how CS networks collaborate, potentially facilitating acceptance of CS project listings across platforms. The criteria could also be useful for funding bodies, researchers and other CS stakeholders to inform their choices, evaluations, and decisions.

The goal of the workshop run at the ECSA2024 conference was to familiarize participants with the criteria developed and discuss how and where CS criteria might be: 1) a source of community empowerment; 2) useful in participants' work; and 3) seen as barriers and how to overcome such barriers. Thus, community empowerment was one of the core topics discussed, here seen as 3-fold: 1) the CS community who got involved in defining the criteria in the first place; 2) the CS community overall as implemented community-sourced criteria can enhance trust in CS; and 3) the local/regional/national CS networks (also communities) using, possibly after adapting to local conditions, the criteria, as it will strengthen their projects overall and again strengthen the trust in their projects and CS generally. We invited researchers, practitioners and other CS stakeholders to share their experiences with and reflections on criteria for CS and discuss how criteria could be most beneficial for CS projects, CS communities, and other actors involved, especially when applied to create shared understandings between researchers and other stakeholders.

## Methods

After a brief introduction to the developed criteria, the 22 participants were invited to join discussions first through a “fishbowl” exercise with five chairs placed in the middle of the room and participants claiming an empty chair to join the discussion, sharing their own experiences, case studies and reflections on where and how criteria can most usefully be applied. The shared experiences and reflections were collected on a whiteboard and categorized into topics.

This was followed by a “world café” setup, where the three topics voted most important by participants were discussed, one topic per table. A facilitator was present at each table and participants could change tables at any time. A final wrap up session summarized the main results emerging from each table.

## Results

### *Fishbowl*

Participants initially shared their experiences on setting up or interacting with CS platforms, criteria, and decisions on projects to list, or their reflections on this. They reported using or considering using a variety of approaches, concepts and criteria (e.g., ECSA 10 principles, CS platform criteria), but it was difficult to decide which ones to use. Also, the timing of platform criteria implementation was discussed. Should criteria be implemented at the beginning of the platform setup process, or later when the platform is established, especially as some platforms have already been set up? Another topic was the time it takes for project coordinators to submit responses to criteria and platform coordinators to evaluate such submissions. Due to limited time available, criteria could be a barrier for submission of criteria responses by project coordinators. Likewise, further guidance from platform coordinators must be planned for and resourced, so this is available if needed by projects, and the evaluations of submissions must be resourced as well. Both of these time issues pose potential barriers to inclusion of some projects on platforms.

Concerns were also raised that strictly adhering to criteria could hinder consideration of future developments in the dynamic field of CS. Furthermore, the timing of project assessment was reflected upon. Should projects be evaluated at the beginning, during the project or after the project ends, if indeed it is time-limited? Should this evaluation be once or continuous?

After the fishbowl, participants voted to further discuss the topics of a) evaluation and progression of projects, b) which criteria and terminology to use, and 3) if criteria are a barrier and/or limitation to inclusion, at the three world café tables.

### *World Café: Evaluation and progression of projects*

Participants felt that criteria should not be mandatory and that their application should be cautious. Participants mentioned that some good projects may be excluded from platforms, particularly those in the social

sciences and humanities, where it is often more difficult to define what a CS project is. Also, some remarked that the criteria are very Eurocentric and cannot be applied worldwide. Participants considered that some criteria should be mandatory and others optional, i.e. that some criteria might be more important than others. Criteria could help projects be clearer in their communication about their CS approach. Use of criteria for evaluation purposes can be useful when it comes to funding projects. The discussion was very lively and participants felt that it should be continued as circumstances can vary depending on how, when and where criteria are implemented.

### ***World Café: Criteria and terminology***

Participants agreed that deciding on an appropriate terminology for “criteria” can be difficult and depending on the term chosen, it could cause barriers to inclusion, thus overlapping with the discussion in the third World Café. Potential terms discussed included “criteria”, where some saw that term as too restrictive; “principles”, where some saw that term as too high-level; and “guidelines”, where some participants saw this term as too open. It was suggested to adhere and point to the ECSA ten principles as the foundation, though more in-depth “criteria” could be useful in setting standards and conduct evaluations, e.g. for policymakers and funders. There was general agreement that one term cannot cover all needs and a call to focus on “good practice” rather than strict rules.

### ***World Café: Criteria as barrier or limitation to inclusion***

Participants were critical of the use of strictly defined criteria, as such rigidity could deter people from even wanting to engage with CS platforms to get their projects listed. The wide variety of CS projects could also be a challenge for criteria, as relevance of criteria would depend on project goals. The criteria were seen as very academic and too Eurocentric, again possibly limiting their potential usefulness. However, some criteria, e.g. the ones on active involvement and mutual benefit, were suggested as useful for projects and thus being able to strengthen the implementation of projects. Criteria were also suggested to be beneficial for CS platforms as a sign of platform quality that projects had been vetted before being included for promotion on the CS platform.

## **Discussion**

Very few participants in the room were familiar with the criteria developed by the ECSA CS Networks WG, and even fewer had applied them in practice. Apart from the Austrian platform experience using almost three times the number of criteria discussed at the workshop and from which the initial idea of using criteria originated, little experience has been gathered in this field. Conversely, most participants were not directly engaged in the management of platforms and, consequently, in the process of project selection, thus often the discussion revolved around the need for criteria, their usefulness or otherwise for particular projects, and on

the “hard-to-define” concept of “citizen science”. The variety of experiences and backgrounds among participants was surely a source of inspiration and enrichment, but at the same time added some complexity to the discussion, bringing a trade-off between the original aims of the workshop and the perceived uncertainty on the right way to approach the basic questions regarding use of criteria for CS platforms.

## Conclusion

Many networks and platforms in Europe (with platform organisers participating in the WG) are hesitant to implement criteria or principles into their workflows, as there are still some open questions about implementation process and concerns over excluding some projects. Concerns mostly related to the time required on both the project and platform coordinators’ sides, as well as the continuously evolving aspects of CS projects. Also, the criteria discussed were developed with a European perspective, possibly limiting their usefulness in other regions. These concerns highlight the need for CS platform organisers to carefully consider their national context and engage in dialogue with their national stakeholders, limiting barriers for inclusion, and ensuring opportunities are there to bring in voices that might otherwise not be heard. However, positive examples exist, e.g. Österreich Forscht, and the understanding for implementing criteria is increasing in the CS community.

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