ARPHA Proceedings

Proceedings ECSA-ÖCSK-2024, 0241-0245
doi: 10.3897/ap.e125540

Change – The transformative power of citizen science

Rethinking impact assessment in citizen science

Barbara Kieslinger* (a), Stefanie Schuerz (a), Teresa Schaefer (a), Antonella Passani (b)

(a) Centre for Social Innovation, Vienna, Austria

(b) T6 Ecosystems, Rome, Italy

Abstract

Why are people still struggling with effectively demonstrating the wide and diverse impact of their citizen science activities? After many years of developing impact assessment frameworks, models, and guidelines it seems that capturing the manifold effects of citizen science on individuals, communities and our society at large is still a challenge. Considering the richness and diversity of participatory research in citizen science that often spans across disciplines and offers engagement at various levels it is obvious that there is no one-model-fits-all approach for impact assessment. However, it is important to provide evidence for the achievements, also in the longer term, from the project actors perspectives and from the funders view. The focus session during the ECSA2024 conference aimed to have a close look at the current challenges citizen science actors are facing when planning and conducting their impact assessment. To dive deep into the problem and discuss user-oriented solutions we applied a design thinking method. The full day session revealed several challenges that were clustered around 5 topics, namely: timing, methodology, stakeholders, planning, and ethics. The 5 personas created around those challenges gave deeper insights into the issues and creative solutions, including platforms, prizes and spaces for more exchange on impact assessment were prototyped. Many participants expressed their interest in joining an ECSA working group on impact assessment in citizen science to keep working on the topic.

Keywords: impact assessment, evaluation, design thinking.

Published by NHM, BOKU and ECSA and peer-reviewed under responsibility of ECSA-ÖCSK-2024 (Change – The transformative power of citizen science)

* Corresponding author. E-mail address: kieslinger@zsi.at

Introduction

Over the years, considerable effort has been dedicated to illustrating the multifaceted nature of citizen science and its potential impact on individuals, communities, and society. Various endeavours have been made to conceptualize the process through frameworks and to furnish guidelines and tools, exemplified by those employed in European-funded projects like MICS (https://mics.tools), ACTION (https://actionproject.eu), IMPETUS (https://impetus4cs.eu), or ECS (https://eu-citizen.science/ecs_project/). The implementation of these impact assessment methods has yielded some success in showcasing the influence of citizen science across domains and thematic areas. Consequently, citizen engagement has garnered recognition as a valuable approach in Research and Innovation (R&I) policies, spanning from the UNESCO Recommendations on Open Science (UNESCO 2021) to the OECD's guidelines on transdisciplinary research (OECD 2020) and the mission-oriented approach adopted in Horizon Europe (European Commission 2023).

Practically, the community has developed both qualitative and quantitative metrics to furnish evidence of impact across different levels and stakeholder groups. However, numerous initiatives still encounter difficulties in impact assessment due to a disconnect between the intended measurements of our models and the practical implementation within project contexts. Challenges include the temporal aspect of impacts often extending beyond project lifetimes, as well as the complexity of collecting evaluation data from diverse stakeholder groups, constrained by time, resources, and engagement.

These challenges resonate across all stakeholders, encompassing project owners and implementers, academic researchers, citizen scientists, funding agencies, and administrators alike. Our collaborative working session at the ECSA2024 conference aimed to critically assess the current methodologies and their challenges for bringing evidence for the societal impact of citizen science and to explore avenues for transcending the mere collection of key performance indicators (KPIs), storytelling, and the crafting of policy briefs that often go unread.

Methods

The focus session format was suggested by the conference organisers as an experimental 4.5-hour format (divided by 2 breaks after 1.5 hours each) dedicated to a specific topic proposed by the focus session conveners. This specific focus session was designed for participants to work in a highly collaborative manner, applying design thinking methodologies. According to some guidelines, in design thinking almost 80% of the whole process is spent on analysing the problem (Pferzinger et al. 2020).

Thus, the focus session began by exploring the problem of impact assessment in citizen science in detail and developed a set of Point of Views (PoVs), which would go deeper into understanding the issues. Personas were co-designed for a detailed problem analysis and to exemplify the PoVs. In a final step the participants were brainstorming and prototyping new ideas and solutions.

To ensure a truly multi-stakeholder perspective, statements from conference participants were also collected during breaks and networking opportunities. The structure of the focus session was guided along three parts (Fig.1).

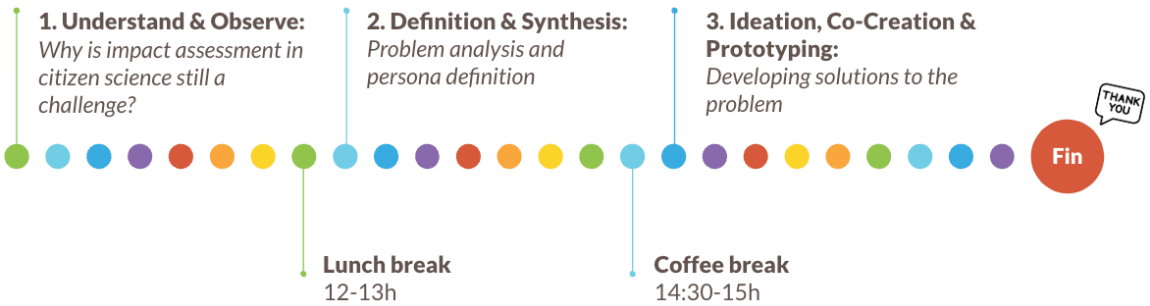

Figure 1. Focus session approach

Results

Part 1: Understanding and Observing Challenges in Impact Assessment

The inaugural segment of our focus session delved into the diverse array of problems and obstacles surrounding impact assessment. Participants contributed insights from various perspectives, culminating in the identification of five major challenge clusters:

1. Methodological Challenge: How can we develop a flexible and modular "cookbook" for evaluation and impact assessment in citizen science?
2. Ethical Challenge: What strategies can ensure inclusivity, non-invasiveness, and non-extractiveness in impact assessment practices?
3. Time Challenge: How do we address temporal constraints in impact assessment, such as capturing impacts that may occur post the conclusion of a citizen science initiative?
4. Stakeholder Challenge: Whose impacts are we assessing, and who should participate in the assessment process?
5. Planning Challenge: How can we effectively plan impact assessment within dynamic participatory processes where goals and activities may evolve over time?

Part 2: Defining Personas and Synthesizing Challenges

Building upon the challenge clusters identified in the first session, participants in the second session delved deeper into problem analysis by crafting Personas representing distinct challenges. Personas can be understood as fictional characters embodying various perspectives, which aid in understanding our community's needs, experiences, and behaviors. In the description of the Personas we elaborated each challenge into a comprehensive PoV.

Figure 2. Workshop outputs (2a: personas; 2b: prototypes)

Meet Mathilde, Charlie, Ximi, Fabio, and Hydra, who stand for the five challenges identified previously (Fig. 2a): Mathilde is a researcher struggling for her recognition and in search of creative ways of showing impact, which she wants to co-define with her research participants. Fabio the funder understands her needs but is himself bound to internal KPIs of his funding agency and needs to deliver standard quantitative success indicators from the project he is responsible for. Ximi and Charlie are citizen scientists. While Charlie is frustrated by the timeframe of the citizen science project they are very actively engaged in and wants to see change right away, Ximi has an activist attitude and feels that he his left out from the impact assessment in the environmental project he is contributing to. Finally, Hydra is an early career researcher, who co-designed an evaluation method that is not well accepted by mainstream evaluation academics but finds it important to include her stakeholders in the design of the whole evaluation process.

Part 3: Ideation, Co-creation, and Prototyping Solutions

In the final session, participants were tasked with a creatively stimulating endeavor. Working in groups, they brainstormed potential solutions to assist the Personas in addressing their challenges. To foster creativity, solutions were presented through Play-Doh prototypes (Fig. 2b), sparking imaginative thinking and collaboration among participants. The prototypes were revealing a variety of ideas: e.g. an AI-bases decision support system to select the most appropriate evaluation strategy and method; spaces for exchange and sharing of experiences in impact assessment; a citizen science impact prize and a recognition system for local champions.

Discussion

As the strong interest and good participation has shown, there are clearly many challenges related to impact assessment in citizen science. The variety of issues raised in the first part led to the five clusters that were elaborated in more detail in the following sessions. However, the collection of issues was even wider and a few more clusters could have been formed, such as capacity building or specific contextual constraints and how to deal with them.

Reflecting on the method itself, we noted that overall, the process was perceived as engaging and informal feedback from participants was very positive. However, we encountered some challenges along the way. For example, organizing a full day session in the context of a conference is demanding for the organizers and participants, as participants may not be able to dedicate a whole day to one specific topic.

Conclusion

In the end, participants collaboratively worked on current challenges and strategies for impact assessment of citizen science. The intense discussions and the interest expressed by most participants clearly revealed that there is appetite for a more intense and dedicated exchange about the topic. An ECSA working group will thus be initiated.

Acknowledgements

This workshop took place in the context of the ECS project (101058509) and the IMPETUS project (101058677), funded under Horizon Europe. We would like to thank all participants who contributed to this focus session.

References

European Commission (2023) EU Missions two years on: assessment of progress and way forward. https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52023DC0457

OECD (2020) “Addressing societal challenges using transdisciplinary research”, OECD Science, Technology and Industry Policy Papers, No. 88, OECD Publishing, Paris, https://doi.org/10.1787/0ca0ca45-en

Pferzinger M, Rammertorfer P, Hinterleitner I (2020) Human Centred Innovation. Course material; Master course: Management in Gesundheitsunternehmen (WS20/21). IMC University of Applied Sciences Krems, Austria.

United Nations Educational, Scientific and Cultural Organization (2021) UNESCO Recommendation on Open Science. https://doi.org/10.54677/MNMH8546