



# PARTICIPATORY EVALUATION PRACTICES IN CITIZEN SOCIAL SCIENCE: INSIGHTS FROM THREE USE CASES

BARBARA KIESLINGER, STEFANIE SCHÜRZ, KATJA MAYER AND TERESA SCHAEFER

DOI: 10.22163/fteval.2022.567

## 1. ABSTRACT

In citizen social science, citizens actively engage in research to investigate and solve challenges from their lifeworlds. As these interests are guiding the research process, we suggest employing a co-evaluation approach as a form of participatory evaluation that initiates the conversation on expectations and impact with the diverse actors involved from the onset. In the European funded research project CoAct, global social concerns such as youth employment, mental healthcare and environmental justice are addressed by three local research teams consisting of affected citizen groups, thematic and political stakeholders, and multidisciplinary academic researchers. The teams investigate and implement concrete actions and strategies to tackle these social challenges. In this contribution we reflect on first insights of co-evaluation from the three cases by applying a qualitative content analysis across different content formats, focusing primarily on the specific challenges and outcomes of citizen social science and co-evaluation. While the nature of the social issues at stake and the distinct socio-cultural contexts in which they are embedded clearly mark the boundaries of comparability, overall, a shift in roles and ownership across involved actors is observable. Identifiable intermediate outcomes are e.g. an increase in awareness, knowledge, and skills amongst stakeholders, which are in the long-term expected to increase empowerment, self-determination and the quality of life of the concerned participants, and lead to the implementation of new measures and regulations at policy level. With this work we want to contribute to the canonical development of citizen social science and generate productive feedback for the research process.

## 2. INTRODUCTION

Citizen science and participatory research processes have gained attention across disciplines in recent years. Academic publications with reference to citizen science have notably increased in the last two decades (Pelacho et al., 2021). According to bibliometric analysis, the dominating disciplines of citizen science belong to the natural sciences, which embrace a wide number of participatory practices, such as nature observations, data collections, classifications and analysis, or biohacking.

Citizen science activities within the social sciences appear less prominently in current scientometric literature, although they are starting to gain traction. Their lower visibility is mainly attributed to two reasons.

First, social sciences often work in inter- and multidisciplinary settings and thus their activities may be either labelled as such or hidden behind other fields of science (Pelacho & Sanz, 2021). Second, participatory research practices in social sciences are often not labelled as citizen science, including for example more activist-driven science (Kullenberg & Kasperowski, 2016).

Clearly, social sciences have been highly influential in the current understanding of citizen science as defined by Alan Irwin (1995), who stresses its democratic potential by addressing the needs and concerns of people who develop and enact scientific practice themselves. In social science, participatory practices have a long tradition, e.g. in community-based participatory research (CBPR) or participatory action research (PAR). PAR (Alderson, 2008; Fals-Borda & Rahman, 1991) paved the way for our contemporary understanding of participation in citizen science. It consists of a set of approaches that emphasise the involvement of the research subjects as co-researchers on equal footing in the research process (Whyte, 1990), who act as “joint contributors and investigators” (Given, 2008: 599). Combined with a turn to social epistemology (Fuller, 2012; Harding, 2004) in order to both study and evaluate the social dimensions of knowledge production and innovation, it is possible to focus on the manifold similarities and differences of the epistemic and normative understandings of the world that stakeholders/participants bring into a process.

One of the challenges in citizen social science is to find appropriate ways to deal with the “double hermeneutic” (Giddens, 1987) in a participatory and inclusive way: social phenomena, even before they are professionally analysed by social scientists, are already meaningfully constituted. This raises the question how this exchange between the two (or more) frames of meaning is organised so that interests are considered both from science and society. This concern is particularly pertinent for the research design of citizen social science, where citizens act as co-researchers themselves, and needs to be considered in the assessment of project activities and outcomes. Thus, in citizen social science we are faced with challenges from the lifeworlds of co-researchers, whose frame of reference is not academic and who instead expect changes in their personal lives and socio-economic contexts from their participation in citizen social science endeavours (Albert et al., 2021).

In this paper we reflect on the first insights of evaluating three cases of citizen social science that are part of the ongoing European funded project CoAct. We elaborate our approach of co-evaluation facing challenges of deploying a participatory evaluation design during a global pandemic.

### 3. PARTICIPATORY EVALUATION

Participatory research requires a participatory view on evaluation. Approaches towards evaluation in research activities tend to be understood as a systematic assessment of the operation and/or the outcomes of an activity or program, against a set of explicit or implicit standards and criteria (Weiss, 1998). While such approaches tend to be pre-structured and top-down, they benefit from being complemented with a more bottom-up and participatory view, especially when dealing with social issues at the core of the scientific question. Since participatory paradigms have become central to orchestrating the (co-)production of knowledge aligned with different social needs, the question remains: How useful is this generated knowledge? How are co-production, co-creation and participation practices valued by the participants and other involved stakeholders? Valuation in this regard subsumes “any social practice where the value or values of something is established, assessed, negotiated, provoked, maintained, constructed and/or contested” (Doganova et al., 2014: 87) and can be regarded as critical sites of social (trans-)formation (Lamont, 2012). Following this, we consider evaluation in citizen science as such critical site of social transformation. It provides the time and space to reflect on results and to negotiate the processes for further action, especially in the context of evolving interests and flexible project management (Shirk et al., 2012). Furthermore, evaluation is needed to assess the “promise to the public” (Eleta et al., 2019) that is inherent in any citizen social science project, as well as to balance stakeholder expectations.

In line with Cousins & Whitmore (1998), Brisolara (1998) suggests differentiating along a continuum of types of participatory evaluation, from status-quo-oriented evaluation to more action-oriented, ideological, transformative evaluation. In our understanding, citizen social science projects require more of the latter type of evaluation. These projects typically include non-traditional stakeholders, such as civil society organisations, schools, and individuals, and might even be initiated or led by private initiatives without any formal affiliation. The main interests and motivations of these stakeholders are action-oriented such as social change or learning and capacity building. Thus, objectives, methods, and actors involved in such projects are as diverse as the topics and social concerns covered. This calls for tailored forms of evaluation that consider the expectations, benefits and challenges raised and experienced by all involved actors, as well as more general social impacts. The joint definition of expected outcomes – by all actors – and the selection of

methods on how to provide evidence for these constitutes a participatory approach to evaluation, which Mayer et al. (2020) labelled *co-evaluation*. It is defined as a process that involves all relevant actors in a project in an iterative evaluation practice and adapts methods of participatory action research for evaluation purposes. Project goals and objectives, understandings of success, challenges, and unintended effects are collectively discussed and documented at the beginning of a project and regularly re-visited during the research design and execution, ideally beyond the project’s end. Assessment and intended impacts hence become transparent entities in the project design.

Co-evaluation clearly takes a transformative stance, as it includes co-creation methods that aim not only at learning about a situation but also at overcoming hindrances and finding solutions to problems, such as how to measure the success of a research project in terms of stakeholder benefits. The combination of experiential learning (e.g. about power, difference, inequality) and critical reflection of socio-political and cultural relations as well as assumptions deeply embedded in processes of social change, provides a robust basis for inclusive evaluation procedures. Furthermore, in transdisciplinary research it is considered crucial that co-creation processes require coordination, expectation management, and attention to the community building processes, in other words “some a priori conceptualization of which internal and external people need to work together, what they want to do together, and what value they will create as a new community” (Gouillart, 2012, p. 2). In such processes, different normative regimes need to be aligned or configured so that benefits for all participants are considered in a balanced way. Evaluation procedures therefore must consider not only the expectations towards the results and benefits, but also the expectations towards the ways knowledge is produced, adding another layer of complexity.

A comprehensive approach to citizen science evaluation and impact assessment has been provided by Kieslinger et al. (2018). Their framework (Fig. 1) suggests indicators for three dimensions of participatory scientific processes: 1) scientific aspects, 2) participants, and 3) socio-ecological/economic systems. For each of these dimensions the framework suggests process-based and outcome-based evaluations. “Process & feasibility” collects formative input for an adaptive project design and management, while “outcome & impact” brings evidence of a project’s benefits to its participants and the contexts in which the project is embedded. It also shows how much an intervention’s impact contributes to the project’s expected and possibly unintended goals.

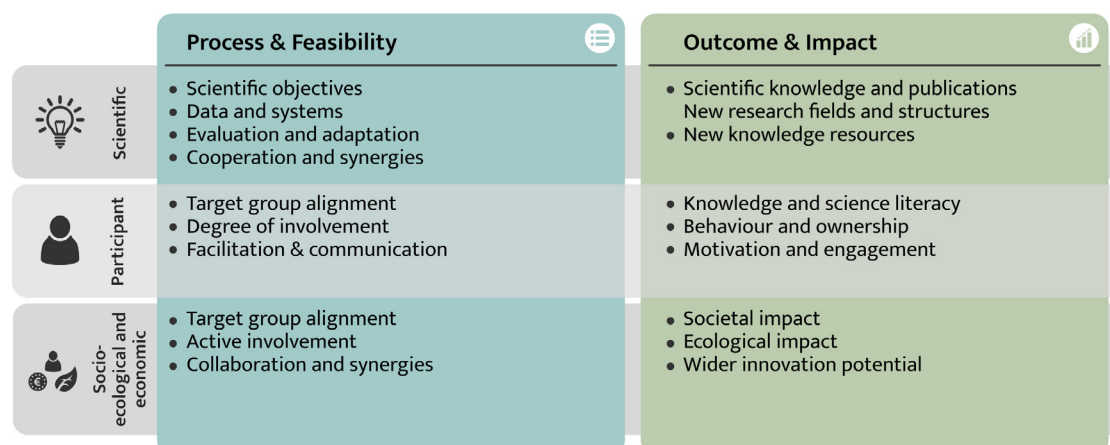


Figure 1: Citizen Science Evaluation Framework by Kieslinger et al., 2018

According to the authors, some of whom are co-authors here, evaluation should be understood as a learning process that supports self-reflection and adaptive management, while on the other hand helping to understand which effects citizen science initiatives have on science, involved citizens and socio-ecological systems. This understanding of evaluation as a learning process aligns well with the understanding of “participation in the making” (Chilvers et al., 2016) and issues at stake in citizen social science. Thus, the above framework fits well for our analytical purpose and serves as a first structure for the qualitative analysis of the three citizen social science cases presented in the following section. We will then elaborate further on the methodological approach in Section 5.

## 4. CONTEXTUAL SETTING: THREE CASES OF CITIZEN SOCIAL SCIENCE

The work presented is part of the European funded collaborative research project CoAct. The overarching objective of the project is to advance citizen social science as a transdisciplinary research approach and enhance its methodological repertoire. Our data is based on three concrete case actions which are carried out under the umbrella of CoAct:

In Austria, young people mainly aged 15-18 who are not in employment, education, or training, critically examine social policy measures currently in place to support young people out of school enter the first job market. The research team further includes educators, social welfare agencies, and policymakers. The aim is to restructure these measures to better address the needs of the young people mandated to take part in them. They are involved as co-researchers, gather interests and needs of their peers, and work on the conceptualisation and improvement of the measures. Insights from the research process are disseminated and discussed with representatives of welfare agencies and social policy makers, aiming for the implementation of the new measures in practice.

In Spain, the involved citizen community is constituted by adults with an experience of mental disorders and their families, living mostly in Catalonia. They form a research team with representatives from care institutions and scientists to co-define measures for strengthening social support networks of persons with mental disorders. As scientific research on the role of the family and other social support networks in the recovery process is still scarce and lacking evidence, the pilot seeks to make visible the broad community of people and institutions involved in the field of mental health, and to place at the centre of the research the voices and knowledge of individuals with an experience of mental health and their families.

The third case is implemented in Argentina, where social activists, residents and multidisciplinary researchers co-create a community platform to counteract socio-environmental risks in the highly polluted residential area of the Matanza Riachuelo basin in Buenos Aires Province. The citizen community is composed of inhabitants and workers in the basin who as socially disadvantaged citizens groups carry the main burden of pollution. The aim of the research process is to identify socio-environmental problems and social practices to tackle them using citizen social science tools. As an environmental justice initiative, actions are framed in the context of official sanitation policy. The case should help to

identify divergent patterns of desired and actual policy solutions and processes, and thereby advance clean-up policies and improve the situation of people regarding their health and rights. Insights from the research process are disseminated and jointly discussed with local policy agents, aiming for the implementation of the proposed measures in practice.

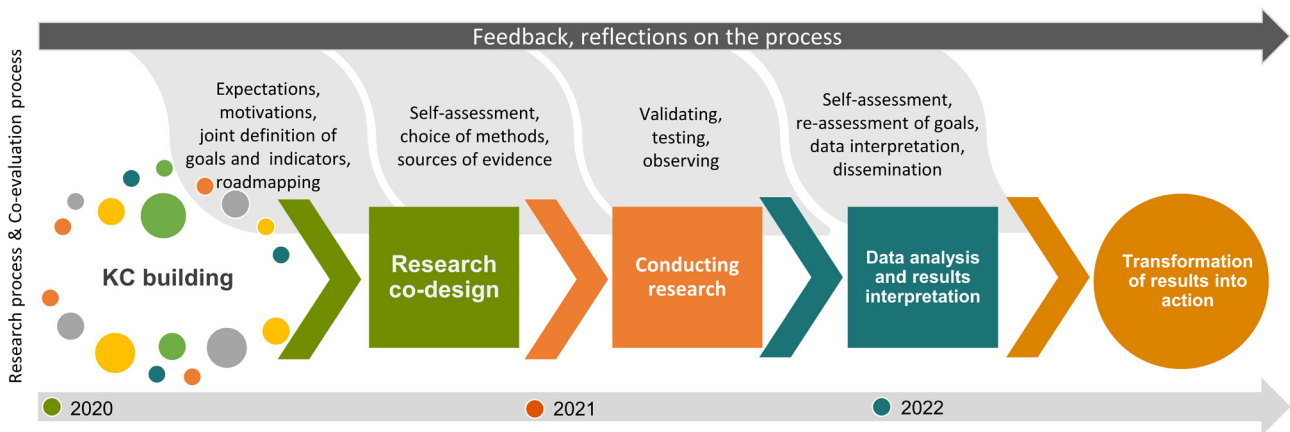
In addition, each case involved wider stakeholder groups, including political decision makers, in the form of a knowledge coalition (KC), which facilitated access to and provided expertise about the field. As such, a KC allows for affected citizen groups to address their concerns directly to relevant stakeholder organisations, experts and decision makers and develop sustainable solutions together.

Participation was designed to allow for co-researchers to involve themselves according to their preferences with regards to formats, continuity, intensity, and thematic focus. KC member participation was managed by the core research team in each case and focused on dedicated meetings. As such, it is difficult to clearly outline the number of participants, although by the end of the project’s second year we counted about 260 engaged individuals in total.

## 5. RESEARCH DESIGN, DATA, AND METHODOLOGY

Each of the three cases implemented participative evaluation activities, guided by a team of researchers who coordinate the overall evaluation and impact assessment strategy of the CoAct project. This evaluation team – consisting of the four co-authors of this paper – co-created and applied the evaluation approach together with the local research teams – both academic and lay co-researchers. The cases were assessed along predefined overall project goals, as well as according to case-specific criteria which were defined and adapted during the project through co-evaluation. In the remainder of this paper, we focus on these co-evaluation activities. During the first two project years the interactions with co-researcher and the knowledge coalitions were mostly taking place in digitally mediated settings due to the COVID-19 pandemic. Activities started with an exploration of the field and establishing first working relationships. Then, actors co-designed the research and conducted research activities related to the topic under investigation. This phase was implemented iteratively and tied closely to co-evaluation activities, which were an integral part of the process. Thus, all participants were involved in evaluation activities to a certain degree, with certain challenges encountered along the way (see Chapter 6). The next phase of data analysis and interpretation of results is still ongoing. Thus, the reflection on the participatory evaluation presented here is mostly of a formative nature. Evaluation activities included initial explorations of expectations, motivations, or goals and joint reflection exercises and self-assessment during the co-design phase of the research (Fig. 2).

The evaluation activities performed during 2020 and 2021 serve as the main data sources for this analysis. Our framework (see Fig. 1 above) allows for a symmetrical, comparative analysis across diverse types of stakeholders and engagement. To understand “participation in the making” (Chilvers et al. 2016) and issues at stake in citizen social science, we followed the positions and valuations of actors over time with a range of methods: interviews, participatory observations, group reflection exercises, self-reflection surveys, etc. Triangulation then involved combining those different types of data and data collection methods to answer the



**Figure 2:** Overall research and evaluation process of CoAct R&I Actions

research questions, namely how can we implement participatory evaluation in citizen social science projects, what are important elements and commonalities in the process, where are the limitations and what are general characteristics of citizen social science?

Our multilingual (English, German, Spanish and Catalan) data corpus consists of about 200 documents collected over 20 months. The documents range from screenshots of drawings, virtual post-it walls, interviews, photographs, transcripts of group discussions, surveys, digital message boards, to observational notes from researchers. They were

partially provided by the research partners leading the different case actions and partly collected by the coordinating evaluation team. Direct access to the various actors of the three cases has been limited for the evaluation team due to language barriers, a lack of resources and the complex conditions brought forward by the pandemic. Most of the data had been anonymised by the local research team, which added a layer of complexity for the overall analysis by the evaluation team. An overview of the various types of data sources analysed is provided in Table 1.

Spain	Austria	Argentina
<ul style="list-style-type: none"> <li>• 1 COVID-19 self-reflection (A)</li> <li>• 2 Self-assessments (A, Co)</li> <li>• Co-evaluation roadmap (A)</li> <li>• Researchers notes (A)</li> <li>• 1 Expectations padlet (KC)</li> <li>• 1 Expectations follow-up survey (KC)</li> <li>• 1 Expectation reflection (Co)</li> <li>• Follow-up feedback (Co)</li> <li>• 1 FrenaLaCurva Survey (O)</li> </ul>	<ul style="list-style-type: none"> <li>• 1 COVID-19 self-reflection (A)</li> <li>• 1 Self-assessment (A)</li> <li>• Co-evaluation roadmap (A)</li> <li>• Researchers notes (A)</li> <li>• Reflection meeting notes (A)</li> <li>• 1 Expectations padlet (KC)</li> <li>• Minutes and summaries of 7 meetings (KC)</li> <li>• 1 Expectations follow-up survey (KC)</li> <li>• 10 interviews (KC)</li> <li>• Project week feedback (Co)</li> <li>• Project week outputs (Co)</li> <li>• 16 Actionbound inputs (Co)</li> </ul>	<ul style="list-style-type: none"> <li>• 1 COVID-19 self-reflection (A)</li> <li>• 1 Self-assessment (A)</li> <li>• Co-evaluation roadmap (A)</li> <li>• 1 Expectations padlet (KC)</li> <li>• 2 Documents on expectations (KC)</li> <li>• 15 Interviews (KC)</li> <li>• 2 Interviews (Co)</li> </ul>

**Table 1:** Evaluation Data Sources from the CoAct R&I Actions (A=Academic Research Team, KC= Knowledge Coalition, Co=Co-Researcher, O=Other)

Each case started with a co-evaluation roadmap that has been continuously updated during the project to allow for joint planning. Shortly after the onset of the pandemic, the evaluation team guided all cases in a COVID-19 self-reflection to support their restructuring where necessary and identify the impact of the pandemic on the topics, processes, inputs, and outputs of the cases, discussing common challenges and possible solutions. All stakeholders were engaged in the definition of

expectations and goals towards the project. All three case teams (lead partners of each case) undertook a self-assessment group survey midway through their case implementation, realised as a conversation, and guided by the evaluation team. Additional data sources for evaluation specific to each case include research notes and diaries by academic researchers, various expert interviews, and interviews with members of the knowledge coalition, reflections with co-researchers and participant

surveys, with some employed methodologies generating a larger data corpus than others.

For our data analysis, we mainly used a hermeneutic approach to qualitative content analysis, a method that helps to order and structure manifest and latent content in and across transcripts and text-based data collections. We are referring mainly to Mayring (2014, 2019), who has co-developed the method since the early 1980s in the tradition of objective hermeneutics and grounded theory. At the centre of the analytical process is the systematic coding of text material. Our focus of the coding was on a qualitative interpretation of the data, even though quantifying analysis can be applied in a supportive manner, e.g. for visualisations.

In the coding process, the evaluation team assigned categories to the data material. The work was done deductively alongside the category system developed in our framework (see Fig.1 above) and inductively as the categories also emerged from the data material. Codes were described in memos to permit a constant, observable, and intersubjectively understandable procedure and let the analysis be substantiated by the material. In cycles of communicative validation, the involved researchers compared coding and codes documents, over time and by discursive agreement harmonising the individual inductive coding into a coding scheme adapted to all material in the corpus. Due to constraints on time and collaboration brought on by the pandemic, this analysis was undertaken by the evaluation team alone, although the findings were shared with the local case teams for additional input and reflection. In the following, particularly unifying and diverging aspects of the cases identified in the analysis are presented.

The researchers involved in the analysis and main authors of this manuscript – the evaluation team – are female academics at the Centre for Social Innovation in Austria, bringing in interdisciplinary perspectives, with an academic background spanning the disciplines of sociology, pedagogy, and economy. They remotely interacted with the local research teams, guiding them on how to implement the co-evaluation approach, attending relevant meetings and conducting interviews. Partners were instructed to follow a basic set of co-evaluation principles, such as a commitment to openness and reflexivity, flexibility, documentation, and transparency. For all participating actors, informed consent information and forms were provided in the local languages and administered by the local case partners (CoAct Partners, 2021).

## 6. ANALYSIS

Taking the original framework for evaluation and impact assessment in citizen science (Fig.1) as the starting point offered valuable insights into the three dimensions of 1) science, 2) participants and 3) socio-ecological/economic systems. While the original structure of the evaluation framework was very helpful in approaching the data, the combination of inductive and deductive coding led to a slightly different structure for grouping the insights gained so far. Thus, the key aspects derived from the analysis are presented along 1) the scientific process, 2) the engaged actors and their roles, and 3) the expected and already achieved impact, followed by 4) a general reflection on challenges and limitations of co-evaluation.

### SCIENTIFIC PROCESS

Citizen social science puts **societal problems in focus** and aims to offer detailed insights from and with the affected actors' point of view, contributing to potential strategies to overcome these issues. The data contained many instantiations of how strongly the case-specific objectives are rooted in the daily lives of the co-researchers, addressing personal concerns or societal disadvantages. Clearly, the specific research questions are shaped by the social issues at stake. More abstract and theoretical **scientific objectives**, such as the methodological contributions to citizen social science, are less visible in communications with co-researchers and their motivations than their specific concerns. This focus on social concerns resulted in a less clear understanding of the scientific nature of the actions. Across the cases, the core research teams confirm that they had difficulties in clearly communicating the scientific goals next to the specific societal issues, which however did not seem to concern the engaged actors. This is an indication that in citizen social science, a distinction between social and scientific goals might not be useful or needed for implementing a transdisciplinary approach. Similarly, it might not be necessary for all actors to share the same goals, but rather to agree on the plurality of aims envisioned by the different actors in the process.

When looking at aspects that shape **successful engagement** of the different stakeholders, the data showed considerable variety across the cases. **COVID-19** restrictions have been a major challenge, as they entailed a mandate to conduct physical activities with less participants, and a more general move from physical to digital engagement options. Digital engagement, however, is very much dependent on access to technology, which makes engaging certain populations much harder, while also limiting the available tools to be employed. This was tangible in all cases, but especially in Argentina, where poverty is an immediate problem for the citizen community. For any sort of active engagement, the analysis reveals the importance of creating an atmosphere of **trust**, which is especially important when participants share difficult personal experiences and are affected by pandemic restrictions. Also, showing **empathy** for individuals and their personal contexts strongly influences the engagement process. In addition, co-researchers appreciated the recognition of their expert knowledge, their abilities, and their different perspectives. Recognition of the power differentials between the actors has been perceived beneficial for the process in terms of the explicit acknowledgement of the complementary skills in the team, e.g. presentation skills of co-researcher, or the delegation of tasks like moderation to external facilitators.

The analysis showed that the cooperation with non-governmental (NGOs) and civil society organisations (CSOs) was highly beneficial and a strong success factor for the engagement process. These organisations are often rooted in the communities and play an important role in the recruitment of the participants and the reflection and dissemination of research results with a wider stakeholder group. While cooperation activities of local research teams were largely problem-focused and scientific collaborations less pursued, communication and outreach are expected to intensify in more advanced project phases when more tangible outputs are available, to allow for a sustainable exploitation of project activities. A relevant finding for the scientific process implementation is also the support and commitment towards **open science practices**. Actors across the cases stress the importance of sharing data and results, such as environmental observations or aggregated information of

support networks in mental health, as openly as possible, while protecting privacy of personal data. Especially when the development of digital tools is involved, the importance of simple and easy to use interfaces (e.g. data collection tools for mobile phones with low bandwidth or for offline use) and data sharing beyond the core research group and beneficiaries is emphasised. This goes hand in hand with high expectations in terms of impact for more visibility and community building, which will be discussed further on.

## ACTORS AND THEIR ROLES

In participatory research and evaluation, participation means the active involvement of participants. In the CoAct cases three groups of actors – professional researchers, co-researchers, and knowledge coalition members – inhabit the participatory research process. The degree of engagement of these actors varies greatly and is closely connected to the identification with the social issues at stake and to feelings of **ownership**, i.e. taking initiative and responsibility for a process. The analysis shows that motivation to participate is closely entwined with the identification with the social problem. In the case of co-researchers, engagement is also strongly tied to the available engagement options as well as the temporalities of their participation. The different degrees and facets of ownership are e.g. illustrated by contrasting the Austrian case, where co-researcher ownership is highly situative and limited to the short instances of direct engagement, with the Spanish case, where co-researchers are engaged along the whole research process. These longer engaged actors show not just ownership for the topic but even take on an active part in shaping the research process on a higher level. Ownership has thus been encountered across most engaged actors, but it is clearly limited by the engagement options they are offered. Regarding motivations and expectations, the data confirm an overall strong link to the problem situation, which is either relevant to their personal life, work, or both.

Professional researchers are important actors and the main drivers of the whole process across the three cases, often working closely with a CSO or NGO, to design the participatory activities and oversee the entire research process. As the initiators of the project, they are responsible for administering project funds, which causes a built-in structural power differential that is hard to overcome. Simultaneously, the data shows some **shifts in the roles** the professional researchers take on. Citizen social science requires specific skills and competencies to facilitate the participatory process, to communicate in adequate ways with the target groups, and to manage expectations. While some researchers take on these additional roles of facilitator and communicator, others decide to invite new actors to the process to take on these roles. It can unburden the academic researchers from acting both as joint researchers on equal terms with the co-researchers while also taking on the responsibility of facilitating the process on a meta-level. Managing the different expectations and interests in a “disinterested” way brings about a potential role conflict for academic researchers. External facilitators may also address hierarchical structures more directly and help establish equal power relations. In the context of CoAct, the professional researchers’ role is complicated by the fact that their main aim is to further develop citizen social

science and its methodologies, next to working solution oriented. Thus, they need to manage different and sometimes contradictory responsibilities as part of the “triple hermeneutic” of citizen social science<sup>1</sup>.

In CoAct shifting roles across all participating actors can be observed. While starting from three rather clearly defined groups of actors, the roles are changing for many of these actors during the participation process as new relationships emerge. In the case of Austria and Argentina knowledge coalition members increased their participation and ownership; they gradually engaged more and more in the research process and might even become a new category of co-researcher. In Spain, a strong community is emerging from the interaction of the co-researchers, who also show a growing level of ownership for the whole research process and take on ever more tasks and responsibilities. Some of the co-researchers even become core researchers as they take ownership of the research process, including research data analysis or participating in academic dissemination activities. This process seems to be at least partly based on an emergent, potentially sustainable community in the making that we observe from the Spanish case.

## SOCIO-POLITICAL DIMENSION

As the three case actions are still in progress, the collected data provides more evidence about the process implementation than of concrete impact. Overall, strong expectations emerged to achieve societal impact, in terms of empowerment and social change, by increasing visibility and awareness, fostering capacity building and inclusion, personal gains for co-researcher, and creating communities of interest and networks. However, the degree of empowerment that can possibly be achieved in these specific actions varies greatly and is dependent e.g. on the degree, temporalities, and structural possibilities of involvement of the various stakeholders, their motivation for participation, and the organisational options provided by the involved NGOs and other actors for follow-up activities.

**Impact levels** vary across the cases. While in the Argentina case on environmental justice the community gains are clearly in focus (community level), the data from the Barcelona case on mental health support networks holds more reference to the personal gains and a destigmatisation of the affected population (individual level). Similarly, in the Austrian case on youth employment, references towards personal gains dominate, although there is also some reference to sustainable institutional change to positively affect actors on all levels. Interestingly, in this case the improvements for the citizen community of young people are tied closely to improvements in the working conditions of trainers and social workers, who make up a large part of the knowledge coalition.

Personal impacts may entail learning and, more generally speaking, the educational goals that project activities pursue. There are clear indications in all cases that increased **knowledge and skills** on the side of all actors are envisioned, and the analysis reveals some evidence that learning has taken place on an individual level. As some of the topics of the cases touch on highly personal and emotional subject matters, a previously unforeseen personal impact was described both in Spain and Austria as the “**therapeutic effect**” that the community interactions within project activities had on some participants, brought forth by an open and sympathetic exchange on personal struggles and experiences.

1 Referring to Giddens’ (1987, p.30) “double hermeneutic”, a “triple hermeneutic” stance illustrates the further layers of interpretation added by reflexive evaluative practices to the meaningful worlds of co-researchers or research participants.

Finally, awareness-raising beyond the cases, for the specific topics as well as for the method of citizen social science, has been identified as an important impact that actors aim to achieve. This is closely connected to the wish of establishing connections and networks with other organisations that deal with similar issues beyond national borders.

### CHALLENGES AND LIMITATIONS OF CO-EVALUATION

Many of the aspects identified during the analysis are familiar from participatory social research and citizen science (Cousins & Whitmore, 1998; Wehn et al., 2021). The difference here, however, is that these aspects can now be further developed collaboratively as evaluation criteria in the project, and that the findings from the evaluative monitoring are regularly fed back into the research process. Thus, the co-evaluation approach aims to qualitatively enrich the catalogue of evaluation criteria, which are usually pre-defined and established along the project objectives before the project start. The participatory-interventionist approach of co-evaluation aims to contribute to achieving the project goals and initiating social change.

In CoAct, the evaluation team has seen both very promising and challenging aspects of implementing co-evaluation principles. Promising observations include the establishing of trustful, empathetic relationships across actors and the flexibility in adapting evaluation methods to the needs of engaged stakeholders as well as to the challenges caused by the COVID-19 pandemic. However, participants have also experienced some difficulties with co-evaluation, although to different degrees and for different reasons. In citizen social science the social issues are dominating over scientific goals, which makes it sometimes difficult to assess the scientific objectives. This can present a challenge when evaluation must respond to pre-defined scientific criteria defined by research funders, such as co-published high impact publications. Resources for evaluation are limited and co-evaluation, which is a flexible learning process, often requires more engagement than originally foreseen, especially during a pandemic. The three cases have not always been able to implement the “co” in co-evaluation to the extent planned. As most

activities in CoAct take place in virtual settings, there has been a need to integrate co-evaluation activities into the online interactions with the project stakeholders. Since online sessions should be very structured and take less time than physical encounters, trust is less easily established and thus, the evaluation team is sometimes – quite rightly – deliberately excluded to simplify the activities for the co-researchers. Not all partners in CoAct can share the same details with the evaluation team due to privacy protection, and the level of access to the various project actors differs widely across the cases, roles, and levels of engagement. Fully anonymised data make it hard or impossible to follow up for further co-evaluation activities. To organise the evaluation, many pre- and post-evaluation meetings are needed. Given the additional challenge of language barriers, it is important for all to rely on well-established collaboration structures and continuous reflections and adaptations between the core-research teams and the evaluation team.

Overall, the **evaluation** concepts and how to implement them in a participatory process were not always clear for all engaged actors, including the professional researchers. The local teams were struggling with defining clear scientific project evaluation strategies, which might be due to the fact that they are driven by social issues and less by scientific objectives. An even greater challenge was the implementation of the concept of co-evaluation. Although the defined principles of co-evaluation are widely appreciated, the difficulties arise mostly in how to apply them in concrete settings. It requires a very flexible and responsive process and a strong commitment from the (co-)researchers, not only for the research process but specifically for the evaluation process. This was further exacerbated by the externality of the evaluation team, which had to be actively included in case activities throughout planning and implementation, making for sometimes muddled responsibilities. While evaluation aims were sometimes hard to communicate to and elicit from the various core actors, it was also challenging to disentangle “evaluating” from “being evaluated”.

In summary, the participatory approach to evaluation, adapting the original framework (Fig. 1), further defined and clarified the following (selected) evaluation criteria and challenges:

	Process and Feasibility	Outcome and Impact	Challenges
Scientific Process	<ul style="list-style-type: none"> <li>Participant commitment to scientific objectives</li> <li>Engagement options in times of a global pandemic</li> <li>Transdisciplinary cooperation</li> </ul>	<ul style="list-style-type: none"> <li>Knowledge production and sharing (incl. publications, conferences, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Blurred lines of different objectives</li> <li>Science offers methods more than topics</li> <li>Scientific questions need to be secondary to social issues</li> </ul>
Actors and their roles	<ul style="list-style-type: none"> <li>Ownership of problem and process</li> <li>Flexible roles and functions of actors in the research process</li> </ul>	<ul style="list-style-type: none"> <li>Ownership of results and dissemination</li> <li>Self-experience in different roles</li> <li>Experience of personal effects</li> </ul>	<ul style="list-style-type: none"> <li>Resources, temporalities and situated participation</li> <li>Institutional role pressures</li> <li>Dynamics and complexity of the process through shifting roles</li> <li>Feelings of “being evaluated”</li> <li>Interest and expectation management</li> </ul>
Socio-political	<ul style="list-style-type: none"> <li>Capacity building and inclusion</li> </ul>	<ul style="list-style-type: none"> <li>Empowerment by increasing visibility and awareness, also for policy makers</li> <li>Community building and networking</li> </ul>	<ul style="list-style-type: none"> <li>Connecting to policy makers</li> <li>Evaluation of diverse communication and visibility activities</li> <li>Translatory capacity</li> </ul>

**Table 2:** Co-evaluation criteria of citizen social science case actions

These criteria influence the further co-evaluation of the CoAct project, as it already provides indications about aspects that appear to be particularly important for the project. At the time of writing, evaluation has been mainly formative/process-based, which allows for flexibility and adaptation of the process to highly fluid and often challenging context conditions.

## 7. CONCLUSIONS AND OUTLOOK

Citizen social sciences provides the opportunity to study and evaluate the social dimensions of knowledge production, focusing on different understandings that stakeholders bring to the process – and deducing actions that address the social problems under investigation, bringing some concrete benefits to the lives of participants. The challenge in this process is to organise and understand the different meanings and interests of scientists, co-researchers and other relevant stakeholders and manage expectations of participants who bring their non-academic frames of understanding into a scientific process while expecting concrete and positive changes to their lifeworlds. This challenge becomes even more complex when the collaborative processes are shifted primarily online in response to a pandemic. To embrace the dynamics of this process considerable flexibility and adaptation is needed when setting up and implementing citizen social science initiatives.

In this specific context the establishment of trustful relationships is key to openly share and analyse the knowledge and experiences related to each social problem. In turn, professional scientists are challenged with acquiring new skills sets that include designing methods for collaboration in digital environments (often among stakeholder groups that have reduced access to new technological devices) and empathically moderating/facilitating these online collaboration processes when sensitive topics like mental health and environmental justice are discussed. Thus, scientists must switch roles between research and facilitation, between technology design and community management, or create new roles and onboard them, such as facilitators, who help to moderate or document the research process. Similarly, co-researchers take on new responsibilities: not only bringing in the experiences and meanings of their lifeworlds but taking an even more active part in the knowledge production by stepping into the worlds of professional scientists and building new communities. Knowledge coalition members on their part are strongly involved, to the point of acting as co-researchers. This dynamic research process contributes to highly valuable knowledge gains (both on the topic under investigation and the scientific process) of all those directly involved, while for some participants first improvements of their lives are noted through the “therapeutic effect” of these interactions. The flexibility in taking up non-traditional roles not only enriches the collaborative research at hand but drives valuation practices as defined by Doganova et al. (2014) and confirms the reconfiguration of roles and responsibilities in citizen social science (Albert, 2021). In the complexity of a citizen social science project, it is thus particularly important to observe the flexibility of the roles and functions of both researchers and co-researchers.

Co-evaluation is expected to trigger a collaborative discussion of goals, understandings of success, and challenges of citizen social science activities. Even though not all the original co-evaluation plans could be implemented in the CoAct project, it can be clearly determined that the participatory evaluation approach has been worthwhile. It supports

formulating and tending to expectations and their evolution from the beginning of the project, and thus also observing the important contributions of such projects to social transformation. In many reflexive moments of the evaluation process participants discuss or negotiate the value of their participation and researchers elaborate on their experiences in the project. The co-evaluation process also triggers the continuous control of the research process and collaborative reflection on how to overcome project hindrances (Shirk et al., 2012), deepening the understanding of how knowledge is created in different citizen social science cases.

Evidence shows that in addition to the already difficult handling of the question of proximity and distance between researchers and co-researchers, a meta-level of reflection has been added, which requires great care for evaluation activities not to get lost in a kind of “triple hermeneutics” by creating too many meta-layers of reflection and interpretation. Many of the participants are working with social science and co-design for the first time, so evaluation – if done too intensively – may cause confusion and distress. This is true both for the collaboration with co-researchers and professional researchers. To this end, it will be primarily a matter of further developing appropriate and preferably unintrusive methods that also work in online settings that are even better integrated into project activities. While there are clear indications of participants taking ownership of the research, a similar shift in ownership of the evaluation process is not observable yet. This raises the question of how to create ownership of the evaluation process across all actors, or whether to continue a separation of respondents and researcher roles in citizen social science as suggested by Richardson (2014).

With the end of the project approaching, the evaluation focus shifts from a formative/process-based approach towards a summative/outcome-based one. Turning to the project results may then shed light on further aspects, such as the question of “digital literacy”, the handling of data and technologies in co-design and use, the formation of new networks or building of communities, the adoption and further development of the results by the communities and stakeholders involved, but also the socio-political innovations that could be stimulated by the project as well as new methodological insights into citizen social science practices. Based on the CoAct experiences and input from participatory research experts we will publish a Whitepaper on co-evaluation principles at the end of 2022 with concrete recommendations for implementation.

## 8. REFERENCES

- Albert, A., Balázs, B., Butkevičienė, E., Mayer, K., & Perelló, J.** (2021). Citizen Social Science: New and Established Approaches to Participation in Social Research. In K. Vohland, A. Land-Zandstra, L. Ceccaroni, R. Lemmens, J. Perelló, M. Ponti, R. Samson, & K. Wagenknecht (Eds.), *The Science of Citizen Science* (pp. 119–138). Springer International Publishing. [https://doi.org/10.1007/978-3-030-58278-4\\_7](https://doi.org/10.1007/978-3-030-58278-4_7)
- Albert, A.** (2021). Citizen social science in practice: the case of the Empty Houses Project. *Humanit Soc Sci Commun* 8, 70. <https://doi.org/10.1057/s41599-021-00755-4>
- Alderson, P.** (2008). Children as Researchers: Participation Rights and Research Methods. In: Christensen, P and James, A, (eds.) *Research with Children: Perspectives and Practices*. (pp. 276-290). Routledge: London, UK



- Brisolara, S.** (1998). The history of participatory evaluation and current debates in the field. *New Directions for Evaluation*, 1998: 25-41. <https://doi.org/10.1002/ev.1115>
- Burawoy, M.** (2016). The promise of sociology: Global challenges for national disciplines. *Sociology*, 50(5), 949-959.
- Chilvers, J., Kearnes, M.** (2016). Participation in the making: rethinking public engagement in co-productionist terms. In: Chilvers, J., & Kearnes, M. (eds.). *Remaking Participation: Science, environment and emergent publics*, 31-63.
- Cousins, J. Bradley, and Elizabeth Whitmore.** (1998). Framing participatory evaluation. *New directions for evaluation* 1998.80. 5-23.
- CoAct Partners.** (2021). *CoAct\_Informed\_Consent\_Forms*. Zenodo. <https://doi.org/10.5281/zenodo.5806065>
- Cousins, J.B. and Whitmore, E.** (1998). Framing participatory evaluation. *New Directions for Evaluation*, 1998: 5-23. <https://doi.org/10.1002/ev.1114>
- Doganova, L., M. Giraudeau, C.-F. Helgesson, H. Kjellberg, F. Lee, A. Mallard, A. Mennicken, F. Muniesa, E. Sjögren, and T. Zuiderent-Jerak** (2014). Valuation Studies and the Critique of Valuation. *Valuation Studies* 2 (2): 87–96.
- Eleta, I., Galdon Clavell, G., Righi, V., & Balestrini, M.** (2019). The Promise of Participation and Decision-Making Power in Citizen Science. *Citizen Science: Theory and Practice*, 4(1), 8. DOI: <http://doi.org/10.5334/cstp.171>
- Fals-Borda, O., & Rahman, M. A.** (1991). *Action and knowledge: Breaking the monopoly with participatory action-research*. New York: Apex Press.
- Fuller, S.** (2012). Social Epistemology: A Quarter-Century Itinerary, *Social Epistemology*, 26:3-4, 267-283, DOI: 10.1080/02691728.2012.714415
- Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P., & Trow, M.** (1994). *The new production of knowledge: The dynamics of science and research in contemporary societies*. Sage.
- Giddens, A.** (1987). *Social theory and modern sociology*. Stanford University Press.
- Given, L. M.** (2008). *The SAGE Encyclopedia of Qualitative Research Methods* (Vols. 1-0). Thousand Oaks, CA: SAGE Publications, Inc. doi: 10.4135/9781412963909
- Gouillart, F.** (2012). Co-Creation: The Real Social-Media Revolution. *Harvard Business Review*.
- Harding, S. G.** (Ed.). (2004). *The feminist standpoint theory reader: Intellectual and political controversies*. Psychology Press.
- Irwin, A.** (1995). *Citizen Science: A Study of People, Expertise and Sustainable Development* (1st ed.). Routledge. <https://doi.org/10.4324/9780203202395>
- Kieslinger, B., Schaefer, T., Heigl, F., Dörler, D., Richter, A. & Bonn, A.** (2018). Evaluating Citizen Science: Towards an open framework. In: Hecker, S. et al. (eds.), *Citizen Science – Innovation in Open Science, Society and Policy*. London: UCL Press.
- Kullenberg, C., & Kasperowski, D.** (2016). What is citizen science? - A scientometric meta-analysis. *PLoS ONE*, 11(1), e0147152.
- Lamont, M.** 2012. "Toward a Comparative Sociology of Valuation and Evaluation." *Annual Review of Sociology* 38 (1): 201–221.
- Mayer, Katja, Kieslinger, Barbara, & Schäfer, Teresa.** (2020, September 9). *Co-Evaluation in Citizen (Social) Science*. Zenodo. <https://doi.org/10.5281/zenodo.4020367>
- Mayring, Philipp** (2014). *Qualitative content analysis: theoretical foundation, basic procedures and software solution*. Klagenfurt, 2014. URN: <http://nbn-resolving.de/urn:nbn:de:0168-ss0ar-395173>
- Mayring, P.** (2019): Qualitative Inhaltsanalyse. Abgrenzungen, Spielarten, Weiterentwicklungen [30 Absätze]. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 20(3), Art. 16, <http://dx.doi.org/10.17169/fqs-20.3.3343>.
- Oswald, K., & Smolarski, R.** (Eds.). (2016). *Bürger Künste Wissenschaft: Citizen Science in Kultur und Geisteswissenschaften*. Computus Druck Satz Verlag.
- Pelacho, M., Ruiz, G., Sanz, F. et al.** (2021). Analysis of the evolution and collaboration networks of citizen science scientific publications. *Scientometrics* 126, 225–257. <https://doi.org/10.1007/s11192-020-03724-x>
- Pelacho, Maite, & Sanz, Francisco.** (2021). COESO: funding entities of citizen science activities on social sciences and humanities topics [Data set]. Zenodo. <https://doi.org/10.5281/zenodo.5158365>
- Richardson L.** (2014). Engaging the public in policy research: are community researchers the answer?. *Pol Gov* 2(1):32–44
- Shirk, J. L., Ballard, H. L., Wilderman, C. C., Phillips, T., Wiggins, A., Jordan, R., ... & Bonney, R.** (2012). Public participation in scientific research: A framework for deliberate design. *Ecology and society*, 17(2). DOI: <https://doi.org/10.5751/ES-04705-170229>
- Wehn, U., Ghasesifard, M., Ceccaroni, L. et al.** (2021). Impact assessment of citizen science: state of the art and guiding principles for a consolidated approach. *Sustain Sci* 16, 1683–1699. <https://doi.org/10.1007/s11625-021-00959-2>
- Weiss, Carol H.** (1998). *Evaluation. Methods for Studying Programs and Policies*. Second Edition. Prentice Hall, New Jersey.
- Woolley, J.P., McGowan, M.L., Teare, H.J.A. et al.** (2016). Citizen science or scientific citizenship? Disentangling the uses of public engagement rhetoric in national research initiatives. *BMC Med Ethics* 17, 33. <https://doi.org/10.1186/s12910-016-0117-1>

## AUTHORS

### **BARBARA KIESLINGER**

*ZSI - Centre for Social Innovation*

Linke Wienzeile 245

1150 Vienna, Austria

E: [kieslinger@zsi.at](mailto:kieslinger@zsi.at)

ORCID 0000-0002-0671-1917

### **STEFANIE SCHÜRZ**

*ZSI - Centre for Social Innovation*

Linke Wienzeile 245

1150 Vienna, Austria

E: [schuerz@zsi.at](mailto:schuerz@zsi.at)

ORCID 0000-0002-3816-1294

### **KATJA MAYER**

*ZSI - Centre for Social Innovation*

Linke Wienzeile 245

1150 Vienna, Austria

*Elise Richter Fellow, Science and Technology Studies, University of Vienna, Austria*

Universitätsstraße 7, 1010 Wien, Austria

E: [kmayer@zsi.at](mailto:kmayer@zsi.at)

ORCID 0000-0003-1184-595X

### **TERESA SCHAEFER**

*ZSI - Centre for Social Innovation*

Linke Wienzeile 245

1150 Vienna, Austria

E: [Schaefer@zsi.at](mailto:Schaefer@zsi.at)

ORCID 0000-0002-2593-231X

### **ACKNOWLEDGEMENTS**

This research was funded by the European Horizon 2020 Research Funding Programme, grant number 873048. We would like to thank the CoAct Consortium and all involved actors for the collaboration and inspiring discussions contributing to this work.