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POLICY REPORT

ON OPPORTUNITIES AND CHALLENGES
OF CITIZEN SOCIAL SCIENCE

Supplementary document to Deliverable 2.5 Policy Brief

CITIZEN SOCIAL SCIENCE: A PROMISING APPROACH FOR MORE PARTICIPATION IN KNOWLEDGE PRODUCTION AND DECISION MAKING

Experiences from three years of Co-designing
Citizen Social Science for Collective Action (CoAct)

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List of Abbreviations

CSO: Civil Society Organisation

CSS: Citizen Social Science

KC: Knowledge Coalition

NGO: Non-Governmental Organisation

R&I: Research and Innovation

STI: Science, Technology and Innovation

1. Executive Summary

This policy report provides policymakers, civil society organisations and research performing institutions with recommendations on how to use Citizen Social Science to support and shape social change. It offers an introduction to the approach and lays out the benefits and challenges experienced. It is based on the outcomes of an international research project funded by the European Union that implements and reflects participatory research methods and their impacts in different settings and regions. This report is intended as a supplemental document to Deliverable 2.5 Policy Brief (Mayer & Schuerz 2022).

CoAct: Co-Designing Citizen Social Science for Collective Action

In times of multiple crises and dwindling trust in both politics and science as problem-solving instances, new research approaches are needed that operate close to - or directly with people affected to enable sustainable social change. Therefore, European Science and Innovation policy is increasingly pushing for more citizen participation to develop workable as well as accepted solutions to tackle societal challenges (European Commission 2018). Expectations towards more involvement of civil society in the agenda setting and decision making of policy bodies are high, yet the methods for effective participation are often missing. Citizen Social Science (CSS) provides methods and instruments to organise this involvement while resting on scientific ethics and quality control (Albert et al. 2022).

Citizen Social Science (CSS) is participatory research co-designed and directly driven by citizen groups sharing a social concern. CoAct - an international research project funded by the European Commission from 2020-2022 - has brought together and further developed methods to give citizen groups an equal 'seat at the table' through active participation in research, from the design to the interpretation of the results and their transformation into concrete actions. Citizens act as Co-Researchers and are recognised as local experts, while multi-stakeholder collaborations support this process through Knowledge Coalitions, to enable the provision of socially robust scientific knowledge to promote social change.

From Co-Creation to Actionable Knowledge

The CoAct project demonstrates that such a co-creative connection of social communities and policy makers enables multiple forms of interaction between knowledge production and social action. Citizen Social Science successfully contributes to social and scientific innovation by creating actionable knowledge for research, civil society organisations, and policy makers. Benefits of CSS include the empowerment of local expertise and marginalised perspectives, the increase in scientific literacy among participants, the building of communities of practice, and the rich evidence from inclusive knowledge production for decision making.

At the same time, for Citizen Social Science to realise this potential, certain challenges have to be overcome, because collaboration of diverse groups with distinct interests that aims to achieve social change, or even more fundamental social transformation requires not only robust methodology, but also strong commitment, flexibility and trust building.

In CoAct, more than 1000 citizen scientists engaged in the research process and participated in a multitude of events, like co-design, co-analysis and evaluation workshops, hackathons, roundtables, public assemblies, and many more. More than 240 members of public bodies and CSOs effectively participated in the project's Knowledge Coalitions. More than 160 Co-Researchers were trained in topics like research methods and data literacy.

<u>In turn, Citizen Social Science provides us with the opportunity</u>
- **to support the making of important decisions with inclusively produced knowledge,**
- **to give affected people tools for social empowerment, and**
- **to anchor social participation in the production of knowledge in line with a reform of research assessment.**

Citizen Social Science has the means to make policy more attentive and responsive to people's concerns and expertise, therefore increasing citizen empowerment as well as policy uptake of social scientific knowledge for evidence-based decision making. Moreover, CSS creates the potential to scale knowledge production from local to global and vice versa.

Citizen Social Science supports the bridging of impacts across social worlds and geo-political dimensions, and therefore is suited to accompany and inform local and international social change.

Measures to Foster Citizen Social Science in Knowledge Production and Decision Making

With its potential to improve policy responsiveness and accountability, CSS has a lot to offer to policy makers and society. Based on the multiple experiences of CoAct and its participants, the project team developed a set of recommendations that are primarily addressed to research organisations, and research and innovation policy. Adopting the recommendations can pave the way so that bottom-up CSS contributions can guide top-down policy processes towards action based on social scientific evidence of social needs. Here is a list of the topics addressed in the recommendations.

Democratising of knowledge production and access to knowledge:
The institutions and administrations involved need to be committed to supporting participatory and deliberative approaches and Open Science, based on the principles of trust and respect, open science, co-ownership, empowerment, and reflexivity. They take on the challenge to design and evaluate governance structures regarding openness for participation in decision-making and communication.

Reforming of scientific incentive and evaluation cultures:
Researchers, funders, policy makers and administrators need to work on local policies in line with international efforts to reform evaluation of scientific performance based on open and participatory methods. More attention and merit should be given to teaching and social impact. Funders must also learn to adequately integrate this new way of producing knowledge into their assessment processes.

Supporting infrastructures and establishing qualitative standards:
To secure CSS activities and their knowledge production in the long term and to make them accessible, certain infrastructures are necessary: funding tracks, staff, spaces, international conferences, publications, databases, and more that need to be further incorporated in scientific research (e.g. observatories, assemblies, exhibitions, hackathons, citizen councils...). The development and evaluation of guiding principles and quality standards for participatory knowledge production are another challenge and need to be continually negotiated.

Expanding teaching and training activities:
CSS adds many skills to the list of requirements that are not taught in academic training, such as managing expectations and communities, broad social communication, and iterative, feedback-driven planning and implementation, or ethical principals' driven research management. Transdisciplinary approaches are needed to face flexibility and adaptability to participants' needs and concerns. Training should not be limited to professional researchers, but also be expanded to CSOs and policy makers.

Understanding and improving legal and ethical frameworks:
CSS connects social domains and complex contexts based on scientific integrity. The challenge is to productively connect the scientific set of values with the relevant cultural, ethical, and legal norms. Legal policy has to provide a just working environment for researchers and citizens, who wish to engage in participatory knowledge production.

Providing effective communication channels for contact, feedback, systematic monitoring, and verification of compliance with political mandate: motivation for participation increases when it becomes clear that social change is possible through CSS. Therefore, it is necessary to design research in such a way that knowledge can make its way into policy. Policy makers in turn need to create formal mechanisms for citizen participation in decision-making and the co-creation of policies. This is possible through already existing mandates for citizen participation, as well as the involvement of political actors already in the planning and design of the projects.
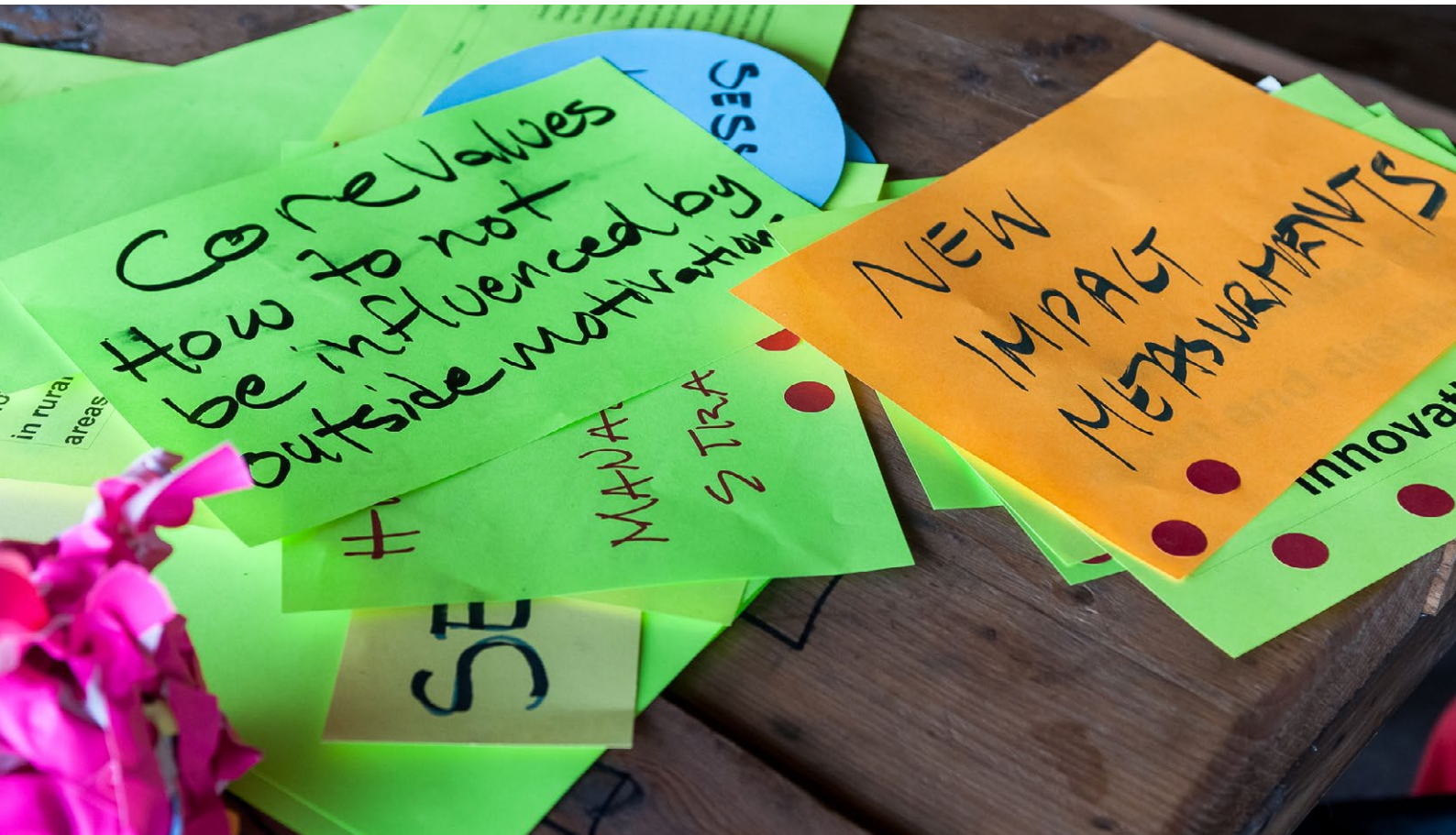
2. Introduction to Citizen Social Science

In times of multiple crises and dwindling trust in both politics and science as problem-solving instances, new research approaches are needed that operate close to or directly with people affected to enable social change or even more fundamental social transformation. Internationally, there are many calls and initiatives to enable more participation in knowledge building and politics, most notably the current mission-oriented research and innovation approach of the EU (European Commission 2018). Beyond Europe, the UN issued the RIO Declaration on Environment and Development already in 1992 (United Nations 1992).

Increased socio-political responsiveness to local demands and concerns and anticipative preparedness require cooperation and partnerships of communities and institutions. Deliberate social change – including changes in human interactions and relationships that transform cultural and social institutions – requires more adaptive and systemic problem solving based on the acknowledgement of diverse expertise and engagement of relevant actors in society (Richardson 2016). The social sciences, as well as citizen science offer a huge methodological and theoretical repertoire to handle diverse and even heterogeneous forms of social knowing and cultures, social values, and norms.

How can individuals, activists, civil society organisations, public services and policy makers make better use of social science knowledge and draw on it for decision making? How can the social sciences produce more relevant knowledge on complex societal problems to support informed policy making?

The answer is: through more participation and new formats of knowledge production and transfer. Participation means the involvement and engagement of relevant social actors in the production of robust social scientific knowledge. This knowledge should be collaboratively acquired, tested and used in the context of its application. Such an approach further entails an opening of the scientific process to local knowledge and a democratisation of expertise. Thus, it facilitates a broader understanding of complex issues and subsequent action for social change. European Science and Innovation policy is increasingly pushing for more citizen participation to develop workable as well as accepted solutions to tackle societal challenges (European Commission 2018). Expectations towards more involvement of civil society in the agenda setting and decision making of policy bodies are high, yet the methods for effective participation are often missing. Citizen Social Science (CSS) – sometimes called Social Citizen Science or Citizen science in the social sciences and humanities – provides methods and instruments to organise this involvement while resting on scientific ethics and quality control (Albert et al. 2022). Citizens here are not treated as "policy passive objects for research" or actors in pre-defined public engagement exercises that are institutionally entrenched in "top down power dynamics and pre-conceived state ideas and traditional governance structures" (Kythreotis et al. 2019). Instead, they are made Co-Researchers and co-producers of social change. The term citizen can hereby be understood very broadly and refers to all involved participants whose expertise is integrated in the project who are not professional (social science) researchers (Eitzel et al. 2017).

CSS builds on a long tradition of participatory social research, and it is seen as a way to enhance to social dimensions in the still young Citizen Science movement (Albert et al. 2021). Citizen Science is defined as "scientific work undertaken by members of the general public, often in collaboration with or under the direction of professional scientists and scientific institutions" (Eitzel et al. 2017). Participatory research enables the systematic exploration of and intervention in social realities in partnership between science and society. Its orientation toward action deepens our understanding of how knowledge about the social is generated in practice. Types of participation can vary along the research process: contributive research projects are the responsibility of scientists, while Co-Researchers participate primarily as data collectors and are rarely involved in the analysis or further use of the results. In collaborative projects, the research design is mainly formulated by professional scientists, but Co-Researchers are involved in the specification of the research design and are entrusted with data analysis and evaluation procedures. In contrast, Co-Researchers in co-creative projects can be involved in almost all steps of the research process.

PARTICIPATION IN CITIZEN SOCIAL SCIENCE

COLLABORATIVE

feedback
discuss
review
monitor

CONTRIBUTIVE

listen
inform
consult
crowdsource

CO-CREATIVE

co-design
co-interpret
co-decide
build
communities

FIGURE 1

Types of participation and policy making in Citizen Social Science. CoAct represents the co-creative approach. (Adapted from Göbel et al. 2022, Fischer et al. 2021).

Participation further varies in terms of policy engagement. The levels in which scientists and citizens can participate in the policy decision environment are similar: contributive engagement means delivering data and knowledge at policy request, such as in typical deliberation formats like citizen conferences, expert advisory groups, and many more. The objectives of this type of engagement are among others general information, data generation and increasing transparency. Collaborative policy engagement increases the interaction among participants from all domains in terms of scope and time and includes citizen juries, councils, and policy monitoring bodies. This type of engagement typically aims to improve issues, to intervene in agenda setting and prioritisation, and to create and monitor compliance. Finally, in co-creative policy engagement all actors work together on issues, often driven by civil society, and citizens and scientists can become initiators, catalysts, and drivers of policy transformation. Therefore, these formats of engagement aim for empowerment, community building, cooperation, and the implementation of decisions based on CSS results. Permanent deliberative bodies like Citizen Observatories, protocols for participatory regulation or budgeting, but also temporary but deeply community-embedded Citizen Social Science projects like CoAct would be examples for this level of participation in policy making.

Citizen Social Science – as performed in CoAct – is participatory research co-created and directly driven by citizen groups sharing a social concern. Our research focuses on issues like social cohesion and justice, public health and wellbeing, environmental justice, and many more, while applying a broad range of quantitative and qualitative methods to make empirical realities accessible to scientific understanding. CSS thus denotes both social science in the interest of citizens and social science performed by citizens (Irwin 1995). The political agenda of Citizen Social Science is to make policy more responsive to people's concerns and expertise, therefore increasing citizen empowerment, rather than exploitation or extraction of knowledge.

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3. The CoAct Project

CoAct (Co-Designing Citizen Social Science for Collective Action) was an international research project funded by the European Commission. Employing participatory research approaches, it addressed four societal challenges: Mental health, youth employment, environmental justice, and gender and equality.

COACT RESEARCH AND INNOVATION ACTIONS

Mental Health Care
SPAIN

Co-designed digital conversations, based on the Co-Researchers' personal experiences, let us understand how social support networks in mental health work. We proposed actions to promote, expand and strengthen them.

In Spain, our community consisted of adults with an experience of mental disorders and their families. They formed a research team jointly with representatives from care institutions and scientists to co-define measures for strengthening social support networks of persons with mental disorders. The pilot sought 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 disorders and their families.

Youth Employment
AUSTRIA

Participatory research with young people who are currently in educational and training measures let us identify topics that are important to enhance accessibility and improve measures. We developed recommendations to policy makers.

In Austria, young people mainly aged 15-18 who are not in regular employment, education, or training, critically examined social policy measures currently in place to enable young people to continue their education after compulsory school. The research team further included educators, social welfare agencies, and policymakers. The aim was to restructure these measures to better address the needs of the young people mandated to take part in them.

Environmental Justice
ARGENTINA

We collectively mapped and identified the social and environmental problems that people living in the contaminated Matanza Riachuelo basin are exposed to and built a public access digital platform to document the findings.

In Argentina, social activists, residents, and multidisciplinary researchers co-created a community platform to counteract socio-environmental risks in a highly polluted residential area. The citizen community was composed of inhabitants and workers in the area who as socially disadvantaged citizen groups carry the main burden of pollution. The aim of the research process was to identify socio-environmental problems and social practices to tackle them using Citizen Social Science tools.

ACTIONS ON GENDER EQUALITY:

Single Step
BULGARIA

Single Step's project "Better Visibility of Trans and Non-Binary People in Research Work and on the Labour Market" strived to find out about the wellbeing of LGBTQ people in Bulgaria and make visible their challenges in labour markets, to improve access to both the labour market and the health care system – especially surrounding the transition phase.

Founderland
GERMANY

Founderland's project on "Gender Equality, Decent Work, and Economic Growth" focused on supporting women of colour (WoC) entrepreneurs in the larger Berlin area to impact funding streams and heighten diversity in the German start-up scene.

Women on Top
GREECE

Women On Top's mission is the economic empowerment of women. In their project "Digital Effects: The Impact of the Accelerated Digitization of Work During the COVID-19 Pandemic on the Professional Lives of Women in Greece & Cyprus," they co-created a study to gain insights into how women in Greece were impacted by remote work and the digitalisation of their professional lives during the pandemic.

TABLE 1
Overview of CoAct R&I Actions

The CoAct consortium consisted of higher education institutions, research performing organisations, civil society organisations and global networks of international cooperation, open science and data activism – all pivotal actors in the development of evidence-based decision-making in social policy fields (Mayer et al. 2018). From 2020 to 2022, the project explored how participation of affected people leads to knowledge about, but also strategies and solutions for the respective social issues. In the project, Citizen Social Science was also further developed to stimulate change and create better understanding of the benefits and challenges for scientists, citizens, civil society organisations and policy makers. Participants became Co-Researchers in processes commonly reserved for academic research.

> *"Citizen Social Science gave us totally new perspectives and causal insights, which were blind spots before. It ignited new conversations and sparked new potential, as it helped us also to make visible the capacities that were already there, but not made productive."*
> (Stephanie von Behr, director of CSO Founderland)

CoAct Spain: Co-Research Process 2021
© Salut Mental Catalunya.

Austrian Citizen Science Conference 2022. Workshop Participatory Research between Expectations, Demands and Structural Constraints.
© Sven Beham.

4. CoAct Objectives and Methodologies

> *"The social is not a part of reality that can be separated off in any meaningful way; instead, it is a principle of connection, association and relationship."* (Gross 2010)

Citizen Social Science entails equal collaboration between citizens sharing a social concern and academic researchers, enabling these groups to address pressing social issues from the perspective of their own contexts while drawing on robust research methodologies. The premise of the CoAct case studies was to work together with communities or groups that had already existed for a long time and were in part organised to address a complex of issues with a high degree of urgency in the everyday lives of those affected. In this cooperation with local expertise, we brought together different interests while productively maintaining differences and multiple perspectives and evaluated the scientific and societal impact in close coordination with local Co-Researchers and Knowledge Coalitions.

Whereas most participative research projects remain driven by academic initiatives, CoAct's main goal was to put social actors at the centre of systematic and policy relevant knowledge production through active participation in research, from design to interpretation and evaluation of results and their translation into concrete, collective action. Hence, the CoAct project devoted a part of its resources to explore the possibility of putting civil society organisations in the driver seat of a CSS project. To this end, opportunities were created, both structurally and methodologically, for citizens to be given both a central role in the project and to make decisions relevant to the project.

CITIZEN SOCIAL SCIENCE ACTORS

CO-RESEARCHERS

KNOWLEDGE COALITION
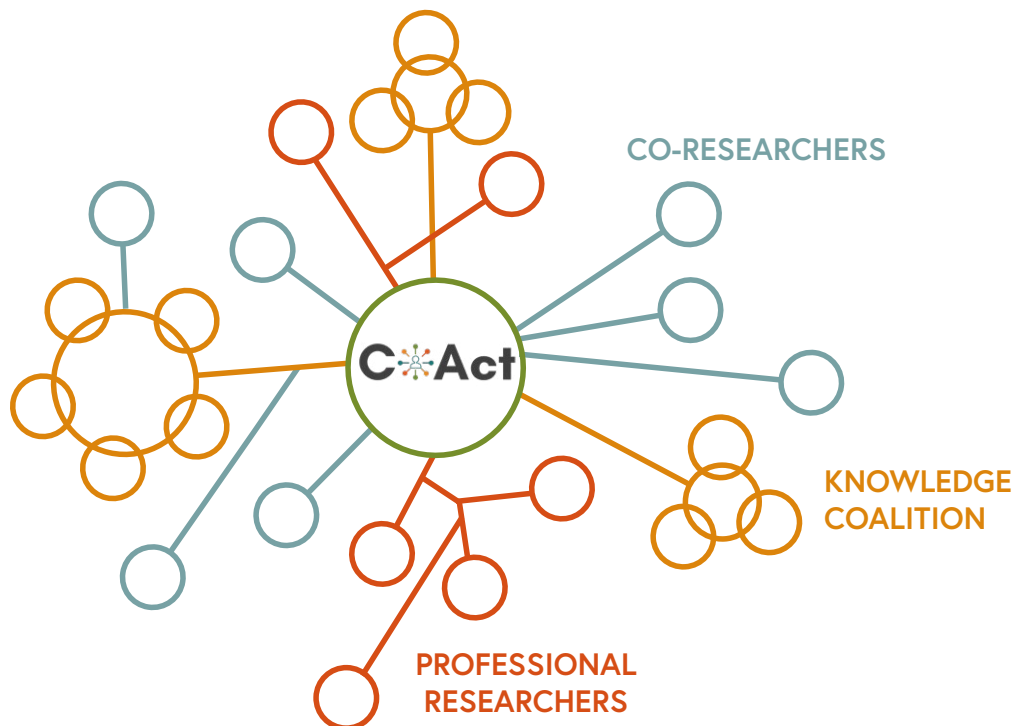
PROFESSIONAL RESEARCHERS

FIGURE 2
Types of participants involved in CoAct:
Professional researchers, Co-Researchers and Knowledge Coalition members.

CoAct was driven by Co-Researchers and Knowledge Coalitions, whose concerns and expertise were the basis for the research design. The CoAct Knowledge Coalitions were carefully created at the beginning of the project to assemble a balanced multitude of positions, to initiate cooperation and networking, and to identify Co-Researchers. The diversity of social actors – young people, patients, caregivers, residents, librarians, trainers, policy makers, and many more – guaranteed the production of socially robust knowledge. Socially robust knowledge is relevant and accepted by actors in the context of its application. Relevance and acceptance are established when knowledge is credible, salient, and produced in a legitimate manner (Nowotny et a. 2001). Co-Researchers are persons who participate in the research activities, but do not work professionally in the respective scientific field. Participation was designed to allow for Co-Researchers to involve themselves according to their preferences with regards to formats, continuity, intensity, and thematic focus.

4.1. Core Ethical Values in the Research Process

There is no "One Size Fits All" – Research Framework for Citizen Social Science. Different issues and respective projects vary too much in terms of motivations, types of knowledge, and actions that make transformation possible. Instead, a set of ethical values and the according principles that guide the scientific, participatory actions serves as a general framework for socially robust and inclusive knowledge production.

The CoAct research design was developed based on strong values that governed all activities and defined a set of ethical principles for Citizen Social Science. In addition, all research design and questions were developed closely with organisations already long active in the respective field. This means that a solid knowledge base could be drawn upon, which was also able to help reflect blind spots and normative foundations.

4.1.1 VALUES

INCLUSIVENESS considers human diversity with respect to ability, language, culture, gender, age and other forms. It is crucial in Citizen Social Science research design and processes to enable the participation of vulnerable and usually under-represented individuals and collectives.

COLLECTIVE BENEFIT AND HORIZONTALITY are carefully considered in the co-design and co-research, balancing power, and sharing responsibilities as well as benefits with the participants.

EQUITY means efforts and resources are equally distributed and acknowledged among participants. Co-Researchers and Knowledge Coalition members are supported to act as co-authors and contact points for their communities.

QUALITY AND INTEGRITY encompass much more than just the scientific standard. Quality efforts must include the participation process, communication activities, opening and re-use of knowledge, and sustainability of project outcomes.

4.1.2. PRINCIPLES

TRUST AND RESPECT are fundamental principles that are strongly promoted within the project. All participants should be able to freely express themselves in an informal and non-judgemental atmosphere.

OPEN SCIENCE principles are key in the knowledge production of the project. All materials, so not ethically or legally protected, are made openly available without reference to individuals to create transparency, reproducibility and reuse.

CO-OWNERSHIP is considered in all different outputs of the project. Participants own their materials and take certain actions and responsibilities for project activities and outcomes.

EMPOWERMENT is an important aim of CoAct. By means of the R&I Actions, participants developed more power to act and explore options for action towards desired social change.

REFLEXIVITY was organised as a co-evaluation exercise and present during the whole research process. Besides questioning actions and attitudes regarding hierarchies, reproduction of discriminatory behaviour and inclusiveness, participants were involved in the evaluation of the research process and its results.

FIGURE 3
Values and principles of Citizen Social Science.

4.2. Inclusive Research Design

"Motivational situations have to be created that generate instances of constructive participation and not merely urgency... it is important to generate actions that are not paternalistic but inclusive, so that interventions are sustained over time"
(Knowledge Coalition Member, Argentina)

The research process in CoAct was designed based on the above values and principles. Each research team provided a large transdisciplinary spectrum of methods and then jointly selected, applied, and adapted the appropriate methods during the collaborative research design, data collection, and analysis. This included traditional scientific methods such as surveys, focus groups or interviews, but also collaborative mapping processes, mobile phone-based crowd-sourced photo documentation and chatbots, as well as playful experimentation with research processes in the form of mobile app-based scavenger hunts. Whenever possible, participants were also involved in data interpretation and co-evaluation of the research process and results. This allowed for more effective and richer contextualisation of the knowledge produced, enhanced the transparency of power dynamics and the diversity of knowledge. Because participant ownership was a core tenet of the process, this also provided them with instruments for sustainable social change. By involving the various stakeholders in the Knowledge Coalitions at an early stage, the different impact paths could be followed much more efficiently at the end of the project. By integrating relevant local and political knowledge, opportunities and suitable formats for agenda setting could be seized upon more readily.
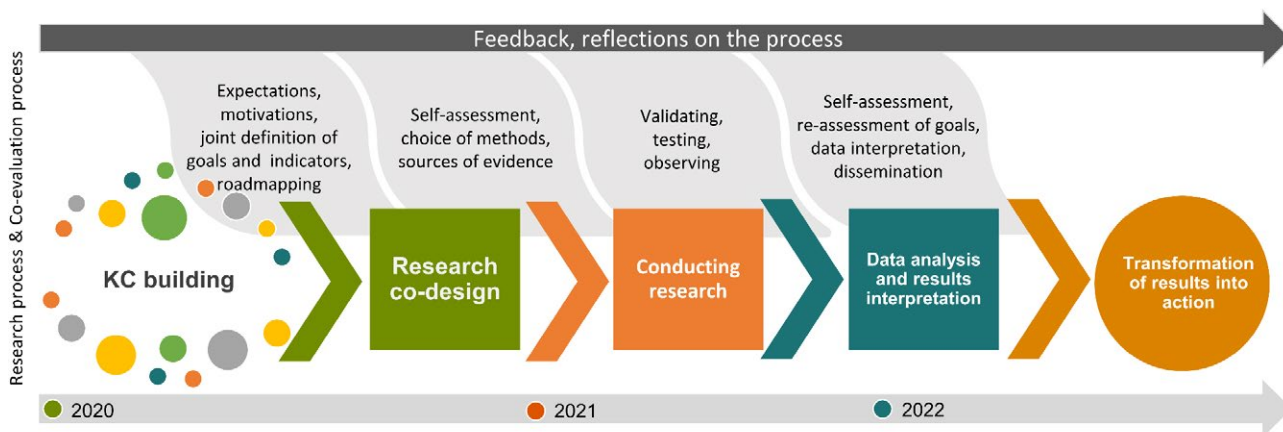
FIGURE 4
Research and co-evaluation process in CoAct

However, participatory methods of exploration, co-creation and reflection were particularly challenged by the Covid-19 pandemic, in which physical social contact became problematic. Most of the research activities had to be adapted and moved fully to digital realms. This circumstance required even more flexibility from all participants, especially from the project team around community building and the planning of joint activities, which have to be based primarily on the availability but also the interests of the participants. The changed circumstances demanded different, new formats, but also new partnerships. Among other interventions, the Knowledge Coalitions were expanded or changed during the project.

In terms of legacy and sustainability, CoAct was – by design – very much integrated into processes already underway, so for many of the CSOs involved it was a welcome effort parallel and in addition to the work they had been accomplishing for years. This ensures that the results of CoAct can feed directly into this long-standing work at the interface of civil society and politics, supporting sustainable change.

4.3. Examples of CoAct Approaches to Policy Interventions

The most effective approach to plan and implement interfaces between Citizen Social Science and Policy Making was in the Knowledge Coalition meetings. Here, the people, who knew how agenda setting works and what needs, and priorities could best be served, were represented. In addition, other formats were applied or developed that further promoted constructive dialogue with policymakers. Listed below are some examples of such formats.

4.3.1. COACT FOR MENTAL HEALTH, SPAIN: ASSEMBLY

At the end of the project, the Spain team organised a public assembly open to anyone, who participated in the chatbot or with interest in mental health. There the recommendations on social support networks and calls for action developed in the project were discussed and delivered to the commissioner for the National Mental Health Pact from Catalonia and the Councillor for Health, Aging and Care of Barcelona City Council. The assembly was structured like a parliamentary committee with officials and a facilitator who moderated positions and request for changes to the text. The final joint proposal that was submitted to the Parliament of Catalonia by the Co-Researchers' representative. The assembly is intended to be transformed into an observatory consisting of a scientific, institutional and citizen community that can monitor compliance by the Government of Catalonia and Barcelona City Council with the agreements reached.

4.3.2. AUSTRIA: ROUNDTABLE

"We were lucky that the University of Vienna [team] contacted us because CoAct is an extremely interesting and useful project to us. It gives us evidence for the issues and topics the young people are interested in and struggle with, which we can build on in our future offers and when developing our policy implementation guidelines."
(Kai Hartig, Ministry of Labour and Economy, Austria)

The Austria team organised 3 roundtables where 18 young people presented the results of the research weeks and discussed the results along with their calls for action with 6 representatives of public administration responsible for the implementation of training and employment measures: the ministry of labour, the ministry of social affairs and the public employment agency for young people. Topics of the roundtables were: expectations of young people when looking for an apprenticeship, discrimination, and health, including mental health. The focus of the roundtables was on the collaborative development of ideas on how to improve the situation for young people in the search for training and in the workplace. After the roundtables, the policy makers and administrators present were very positive about the process and what they had learned and wanted to advocate for more systematic attention to the issue of discrimination, for example, to provide targeted training for counsellors on this issue.
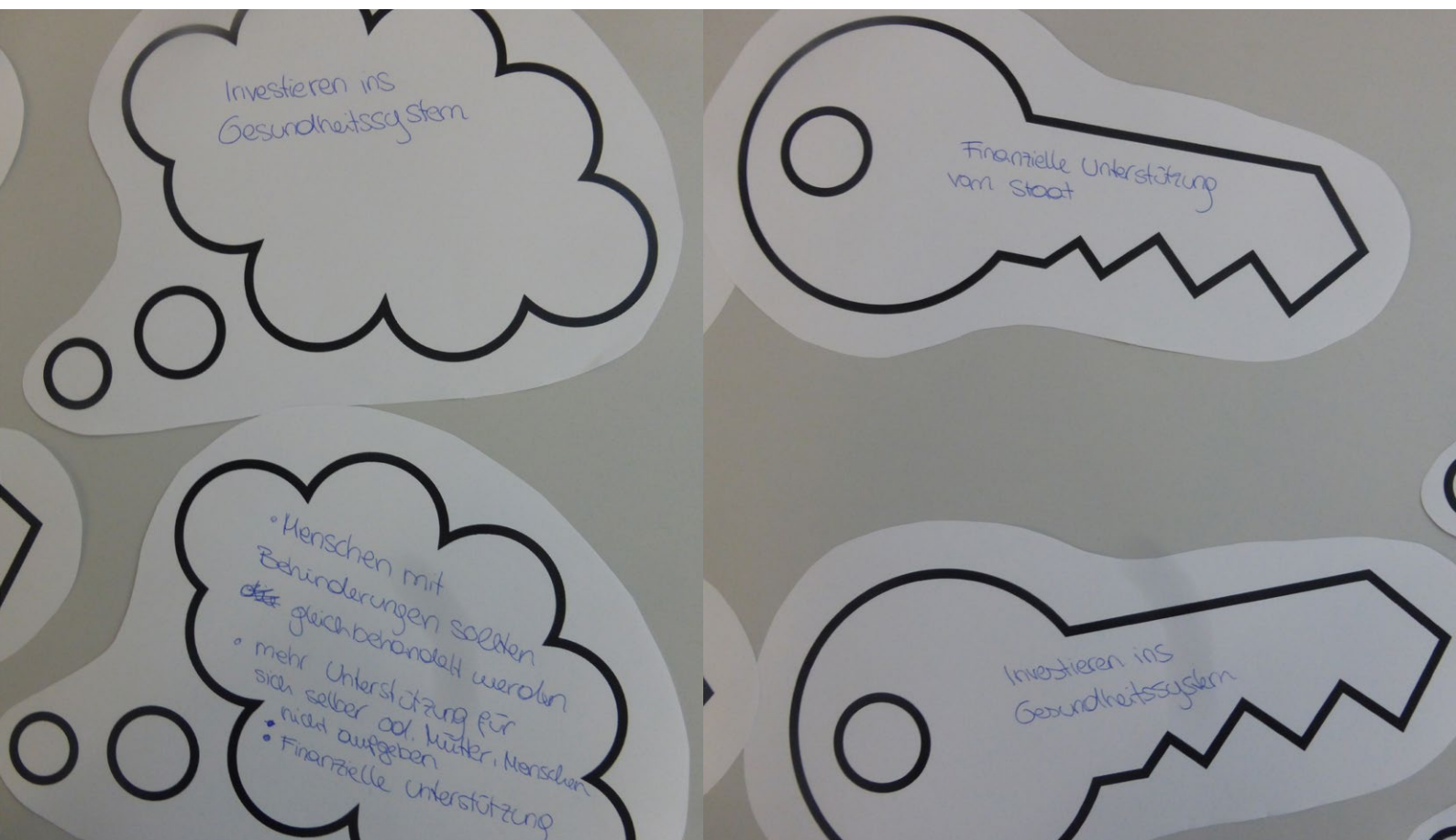
FIGURE 6
CoAct Austria, roundtable preparation, 2022

4.3.3. ARGENTINA: POLICY WORKSHOP

The Argentina team organised a Policy Workshop in alliance with the Ministry of Science, Technology and Innovation of Argentina and the Argentinean Acceleration Lab of United Nations Development Program. There were two participatory exercises in which 21 policy makers participated. The first exercise covered discussing the narratives on experiences of socio-environmental issues resulting from the co-research process with the objective to introduce policy makers to the communities' visions and needs. The second exercise included a foresight tool to develop ideal scenarios for linking sanitation policy with CSS projects. Based on the outcomes the group identified current opportunities in public policy making that could facilitate this link. Moreover, the group reflected what innovations are needed in practices and tools of policy formulation to make the most of the CSS-policy connection. The results of this workshop were summarised in a policy brief.

FIGURE 7
CoAct Argentina: Policy workshop in Buenos Aires, 2022

5. CoAct Results

The CoAct project enabled a rich set of outcomes spanning scientific, social, and political impacts.

5.1. Overview of Results

	CO-RESEARCHERS & CITIZEN SCIENTISTS	COACT PROFESSIONAL RESEARCHERS	KNOWLEDGE COALITION
OUTPUT	More than 1000 citizen scientists engaged in CoAct More than 160 Co-Researchers trained on (open) data literacy Multitude of interactive events organised, e.g. co-design, co-analysis and evaluation workshops, hackathons, roundtables.	3 new and inclusive tools created for Citizen Social Science practices, open access in GitHub/Zenodo and CoAct website	More than 240 members of public bodies and institutions effectively engaged in R&I Actions 2 new open source digital platforms for collaborative Citizen Social Science created
OUTCOMES	Co-Researchers interested in further participating to R&I processes Co-Researchers felt that they really contributed to the research and innovation process 7 public and/or scientific conference presentations of results made by Co-Researchers 24 public and/or scientific conference presentations of results co-created by Co-Researchers (open access)	15+ open access papers in scientific journals 40+ presentations at international scientific conferences (available open access) Several Open Data sets in preparation (in collaboration with Co-Researchers)	2 white papers: CSS for Gender Equality, Co-Evaluation 4 action plans or policy recommendations
IMPACT	Creation or fostering of self-sustained communities of practice. Establishment of contact points for affected individuals. Empowerment through access to tools of systematic observation and documentation and community building	Improved approaches to handling informed consent procedures and project evaluation Improved understanding and approaches for project planning considering flexibility issues Open Educational Materials for further training in CSS Successor CSS projects	New policy measures based on insights from citizen participation New exchange platforms/initiatives for stakeholders Better understanding for the potential of using CSS in science-policy-society interactions

TABLE 2

Overview of CoAct Results (summarised for better overview based on Kieslinger et al. (2022) CoAct Del 7.4 Final Impact Assessment Report)

5.2. Discussion of Results

CoAct produced a wide range of results. They are discussed along the project objectives below.

5.2.1. SCIENTIFIC INNOVATION BY CITIZEN SOCIAL SCIENCE

CoAct applied diverse Citizen Social Science methodologies to engage distinct citizen communities on vastly different but highly relevant societal issues. In each of these areas of interest, new scientific insights could be gained, elevated by the active involvement of people or collectives whose daily lives are directly impacted by said issues. By means of participatory research, the produced knowledge became more inclusive and diverse, and social scientific insights became richer, thus creating increased scientific and social impact. Methodological innovation includes strategies for the inclusion of "easy to ignore" Co-Researchers, participatory evaluation in citizen science, and improved informed consent procedures, among others. Methods and data were shared openly, when ethically and legally possible, such as the source code for the environmental justice platform, the chatbot, the Actionbound protocols, and many more.

> *"With Citizen Social Science we were able to foster trust between the interviewee and interviewer as they share a similar background and experience, illuminate the voices of those whose views are historically excluded, and provide rich descriptive data and insights into complex phenomena."* (Janine Heinrich, researcher at CSO Founderland)

5.2.2. CITIZENS AT THE CENTRE OF THE R&I CYCLE

Whereas most participative research projects remain driven by academic initiatives, CoAct's main goal was to give societal actors an equal 'seat at the table' of systematic and policy relevant knowledge production through active participation in research, from design to interpretation and evaluation of results and their translation into concrete, collective action. Hence, the CoAct project devoted a part of its resources to explore the possibility of putting organisations or collectives working with marginalised or at-risk communities in the driver seat of a CSS project. Since many civil society organisations do not have experience in making use of research methods in a rigorous manner, and the resources and focus of academics are often very different from advocacy-focused organisations, a lot of preparatory efforts dealt with the management of expectations and agenda setting. To meet specific needs and test a variety of potential solutions, a number of distinct Citizen Social Science formats and methodologies were employed: co-developed and illustrated micro stories on mental health realities; a chatbot co-designed in the context of a hackathon and workshops with Co-Researchers; participatory action research with several groups of young people in employment measures; collective data gathering for environmental justice with local public libraries; roundtables with Co-Researchers and policy makers; and many more. Thus, both quantitative and qualitative engagement formats and data gathering approaches were tested, and consequently very distinct datasets generated, often by collaborative data analysis exercises. The involved citizen communities and civil society groups actively shaped these research processes, and their expertise and lived experiences formed the basis for all generated outputs of the project.

5.2.3. EVIDENCE BASED POLICY

From the very beginning, CoAct laid the foundation for translating co-developed scientific findings into policy action, by involving relevant policy stakeholders and civil society organisations. As each R&I Action of the CoAct project developed its findings into a variety of policy relevant documents or events, the scientific evidence created through the co-research process directly informed decision makers. The structural effort to establish Knowledge Coalitions was worthwhile. To illustrate the diversity of actors in such a Knowledge Coalition, the Austria group involved trainers and educators, representatives from

ministries, government agencies and social welfare agencies, and policy makers, who provided important contextual information, supported our access to the citizen community, and co-developed questions and concerns about the needs and challenges impacting young people. The KC was continuously included in the R&I process and subsequently voiced high motivation to implement the calls for action developed by the young Co-Researchers at various levels: within organisations working directly with young people both at trainer and manager level, but also at policy level, regarding the implementation rules outlined by the responsible ministry. It is this continuous involvement of stakeholders that makes such an impact at the policy level possible. Decision-makers report valuable experiences through this exchange that they have not yet had.

> *"Policy makers highly value these types of inclusive knowledge of social issues, because they do not have the means to generate these insights themselves."*
> *(Júlia Miralles de Imperial, Delegate for Science and University Policy at the Barcelona City Council)*

5.2.4. REUSABLE TOOLS

CoAct offers a comprehensive toolbox of the methods employed in the course of the project. These innovative tools for engagement are made openly accessible. One such digital tool was developed by the University of Vienna-led team as part of the Actionbound app, which enables individuals and communities to undertake a small social research cycles related to training, education and the job market on their own mobile phones. The Actionbound also includes short trainings on data protection, anonymisation and informed consent. Furthermore, the Austria team developed an analogue board game aimed at conveying the basic tenets of social scientific research, where players categorise data, collect information, and interview one another. The team at University of Barcelona developed a chatbot that shares micro stories written by Co-Researchers and asks questions about an individual's own experience to subscribers of the chatbot (citizen scientists), thus prompting introspection and reflection on part of its users, while collecting research data on support networks. The team in Argentina created an open-source platform, providing publicly sourced and citizen-driven data on water quality, conservation of natural areas, resettlement, and urbanisation, shared in different formats such as texts, images and quizzes co-designed between community actors and researchers. All these tools are now available to other Citizen Social Science initiatives via the project website and other online repositories.

> *"Through the continuous support of the CoAct partners we have not only acquired new tools and methodologies that we are now going to use in a host of other projects of ours, but we have also realised how much of our work over the last 10 years has been based on those same principles, even without us fully knowing it."*
> *(Stella Kasdagli, co-founder of CSO Women on Top)*

5.2.5. OPEN SCIENCE AND SCIENTIFIC RESEARCH INTEGRITY

For CoAct, the openness and integrity of research are closely linked. Whenever ethically and legally possible, we published data and source code from the project. All these activities are in line with the FAIR principles (findable, accessible, interoperable, and reusable) and are documented in the project's data management plan. They also take into account the CARE principles (collective benefit, authority to control, responsibility, and ethics). Especially in the field of Citizen Social Science, which deals often with marginalised or even discriminated social groups, the protection of participants is a top priority. To this end, we not only made extensive efforts to anonymise and secure the knowledge shared, but we also paid special attention to the informed consent process. The consent process is the most important legal interface between researchers and participants. All must be informed of their rights and obligations. It must also be ensured that individuals could withdraw from the project at any time without experiencing any disadvantages now or in the future. The project's inherent reflexivity also allowed for continuous

feedback loops that kept values and principles such as inclusivity or equality relevant for social research integrity under constant consideration. Furthermore, all relevant outputs resulting from the project, such as workshop slides and publications, are publicly accessible via green open access online.

5.2.6. CO-EVALUATION

How does participatory research have an impact, and how can we know our objectives have been achieved? Whenever people engage in research that affects their lifeworld, they should be able to reflect collectively on how the fulfilment of their motivations, aims and expectations could be tracked and measured. With the approach of co-evaluation, we developed a set of principles to integrate Co-Researchers into the evaluation of the project from the beginning. Building on an impact assessment framework flexible enough to be tailored to each Citizen Social Science project, we focused both on the research process and on the outcomes. To evaluate the project progress and results together with the participants, responsible planning is needed, which also allows sufficient time for facilitation of interactions, feedback and negotiation. It also requires the distribution of responsibilities, attention to inclusivity, flexibility to adapt to unforeseen changes, maximum transparency in communication, and a focus on tangible social change. Our whitepaper on co-evaluation elaborates on this guidance, while concrete methods are published in our online toolbox. We furthermore initiated an academic conversation on new approaches to participatory evaluation in citizen science with several workshops, lectures and an open access special issue on the topic.

> *"Co-evaluation activities with the involved stakeholders revealed the need to reframe our perspective on citizen science actions towards a more collective focus, both in the co-design and implementation stages, involving community organisations and networks – rather than individuals – and looking for synergies with their activities. In addition, interactions with stakeholders made us realise the potential of combining Citizen Social Science with environmental education to promote transformation towards Environmental Justice."*
> (Valeria Arza, CoAct researcher at UNSAM)

5.2.7. AWARENESS AND CAPACITY BUILDING

CoAct brought a lot of attention to local problems and necessary social change, while also enabling sustainable capacity building on several levels. Affected citizens gained situated insight into scientific tools and approaches they may use for producing relevant, systematic knowledge. All citizen communities involved in the CoAct project received an introduction to the basic scientific research cycle as well as the scientific methodologies employed in each respective activity. Researchers employed new methods of participation for science, making knowledge useful to relevant local stakeholders beyond the scientific channels as well. Important aspects of this joint learning experience were reflexivity and mentoring. CoAct partners have been in close communication with individual or organisational Co-Researchers to mentor them, support their fine-tuning of methodology and approach, and plan with them their respective co-evaluation. NGOs and policy makers learned to appreciate the value of such inclusively produced knowledge. Some even argued that the CoAct experience enabled them to understand their own organisation better, to set their goals more precisely, and thus to better represent the people and issues at stake. Citizen Social Science – if done with prudence – can bring more empowerment to knowledge production. The CoAct summer school on Citizen Social Science gathered all these experiences and produced a set of open education resources.

5.2.8. CITIZEN SOCIAL SCIENCE COMMUNITY OF PRACTICE

An important goal of CoAct was to create a community of practice for Citizen Social Science. Such a practice-based community of individuals and organisations facing similar tasks and challenges enables mutual learning, including about the limits of the method, while also strengthening the case for more

participatory research at the interface of society, science and politics. In support of this, we diversified our efforts to many different communication channels with different audiences. We attended scientific conferences, published in prestigious scientific journals, conducted workshops and webinars on topics such as participatory youth research or gender equality, and produced open educational resources. Through policy briefs and workshops, roundtables and similar formats, we brought together Co-Researchers with administrators and policymakers. Depending on the target group, we appeared in news media, television, but also used appropriate social media platforms to disseminate events and results. Based on the global networks of GIG and Open Knowledge Foundation, we organised online hangouts on important topics such as the management of transdisciplinary research teams, decolonisation and integrity of knowledge production, and possibilities of inclusive representation in participatory research. The online publication "Global Perspectives" (Wissenbach 2022) assembles the critical reflection of a global group of makers and innovators on the Citizen Social Science concept. Special mention must also be made of the monthly European "Science with and for Society" Citizen Science Working Group exchange meetings organised by the EU-Citizen.Science project, which served as a great resource for dissemination, exchange, and to gather feedback from experienced members of the citizen science community. Since all CoAct partners will remain committed to the topics addressed in the project and to the methods in the future, we are confident that we have been able to make our contribution here to creating a sustainable community of practice.

5.3. Challenges and Limitations

"Having to adapt our ideas, plans and visions when receiving feedback from the Co-Researchers was sometimes challenging and time-consuming but ultimately necessary since we knew that [the Co-Researchers] are the experts on certain topics and not us."
(Momchil Baev, founder of CSO SingleStep)

As is always the case, the implementation of CoAct also confronted us with the limits facing participatory research processes. In participatory projects, planning should be flexible to cope with unforeseen difficulties. There needs to be plenty of time and safe spaces for feedback and critical reflection, and care should be taken not to overload professional and citizen participants in the process. While we understand that results and other outcomes should always be made accessible to all relevant actors, this needs quite an effort of translation, often with the help of visualisation. It is also often challenging to encourage and facilitate that Co-Researchers also become co-authors, both of academic papers as well as other types of reports.

The global Covid-19 pandemic further exacerbated many of these limitations. Not only our research process, but the citizen communities themselves would have benefited from the initially planned local face-to-face exchanges. When project activities had to migrate to online spaces, this made it difficult for many to participate, while some could not participate at all. However, the move to online also brought interesting shifts and access to new actors, who would otherwise not have been able to participate. Inhabitants of rural areas for example, or people with mental health, who are generally more isolated could meet and share experiences.

All actors had to learn to navigate online settings carefully, to maintain the personal integrity but also safety of the participants, and to deal with the different levels of experience. Here it became clear how important the role of moderation and facilitation is. It sometimes became necessary to call in professional facilitators and devote more time to managing expectations in such complex social assemblages.

Another important learning from CoAct is that while it is imperative to transfer responsibility to and jointly build ownership in the research process with the Co-Researchers, it cannot lead to passing the burden

from authorities to the public. If, for example, there is a political mandate to solve a problem collectively integrating local knowledge, then politics cannot withdraw from responsibility; on the contrary, policy makers must participate all the more actively and transparently in such participatory processes. Another obstacle for sharing responsibilities in Citizen Social Science is the close tie between financial and decision-making power, that is currently mostly concentrated with academic stakeholders. In CoAct, civil society organisations, such as Salut Mental Catalunya or La Fundación Ambiente y Recursos Naturales Argentina, were active partners of the project and the cascading funding scheme helped to further leverage this situation. The innovative format of funding and accountability present in the open calls made it possible for smaller CSOs to apply.

Finally, the CoAct project has made us rethink the role of social science in the political arena. Science is not a neutral mediator, neither does it always fully represent the population, especially when it comes to the concerns of marginalised groups. But social science has the tools to bring together many divergent positions in the co-production of knowledge and to create better understanding for all sides. It is a big challenge for science to exist in this new role of facilitating participatory knowledge production, and it will need a lot of training and research to do so effectively.

> *"With our strong engagement with Citizen Social Science we were able to open up transversal communication spaces not common to people usually bound to rather hierarchical fields. They valued this opportunity of coming together for discussion at all or at least in less formal ways."* (Veronika Wöhrer, CoAct researcher University of Vienna)

5.4. Sustainability and Legacy

CoAct has produced and continues to create a broad range of outputs and received a lot of positive feedback so far:

- Peer reviewed, scientific publications, all available open access
- Papers and reports co-authored with Co-Reseachers
- Education, training and knowledge transfer events, such as workshops and a summer school, packaged with open educational materials
- Public events with CSOs and policy makers, outreach activities and (cross-) media appearances
- Policy briefs and white papers
- Open source tools and infrastructure, like a chatbot, or a citizen-driven data platform, both to collect data

CoAct's deliverables and other outputs listed above are publicly available on the project website and via the open access platform Zenodo or via the open source platform Github. These resources will be curated until 2027 and will be syndicated with other platforms such as EU-citizen.science to provide for long-term preservation. CoAct's open educational resources address researchers and research administrators, in academia and beyond. Tools and infrastructures, as well as policy briefs and whitepapers are targeted to public administration, social enterprises and civil society organisations. They are easily transferable and adaptable for the study of other social phenomena and use in other social domains.

The feedback from the Knowledge Coalitions, external collaborators, as well as the results of the project evaluation, show that CoAct has been successful in contributing to:

- Creating or fostering self-sustained communities of practice
- Broadening and fostering networking and visibility activities for follow-up research and exploitation activities
- Developing and maintaining new exchange opportunities for stakeholders
- Initiating new policy measures based on insights from citizen participation
- Embedding CSS into successor research projects and educational activities, e.g. for working with children in schools and public libraries on problems of environmental justice

CoAct team members have been in close conversation with other Citizen Science projects from the EU-SwafS programme of Horizon 2020 and managed to initiate a broader conversation among European-level Citizen Science research stakeholders. Representatives from the community expressed deep interest to continue further developing Citizen Social Science in future collaborations.

5.5. CoAct Impact Highlights

5.5.1. COACT FOR MENTAL HEALTH, SPAIN

On November 18th 2022, more than 80 people gathered at the Royal Academy of Medicine of Catalonia (Spain) in the first Mental Health Community Assembly of the CoAct for Mental Health project, in which the results of this 3-years collaborative process were presented. For the UB Principal Investigator, Josep Perelló, this initiative emphasizes a more participatory way of doing science.

"In this journey that we are taking together in the framework of citizen science, we wanted to transform our scientific knowledge, that is to say, to do science that can be transformed into initiatives to improve the well-being of society."

FIGURE 8

Mental health community assembly, 18 November 2022: Co-Researcher, Imma Fornaguera, presenting a policy recommendation during the CoAct for Mental Health final assembly
© Salut Mental Catalunya

5.5.2. COACT FOR YOUTH EMPLOYMENT, AUSTRIA

The CoAct Youth Employment team achieved impact i.e. by engaging policy stakeholders in moderated discussions together with young people about the demands developed in the co-research regarding identified challenges and barriers when looking for education or employment.

> *"The roundtables provided a rare opportunity for affected young people to work together with those in charge of problem-solving strategies. The network meetings not only created a cross-hierarchical space of exchange by bringing together responsible persons from all levels of the 'Education and Training up to 18' structure, but also encouraged the responsible parties to address the demands of the young people in terms of their potential for implementation. There was high motivation for improving target-group oriented communication and expanding offers related to mental health. We witnessed the willingness to expand participation activities and foster the right of young people to have a say in the design of measures."*
> (Teresa Wintersteller, researcher CoAct University of Vienna)
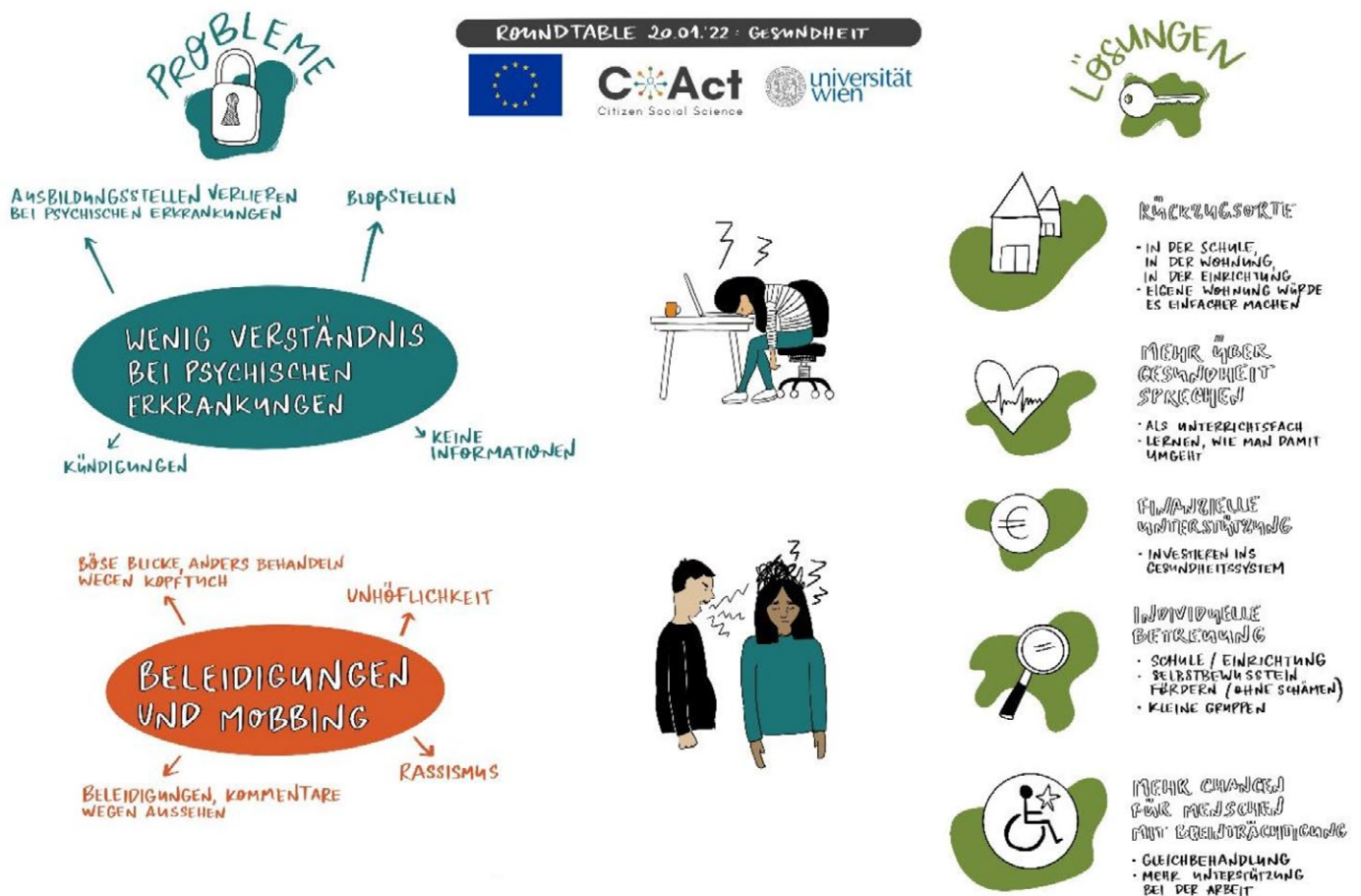
FIGURE 9

Excerpt from the graphical report of the roundtable with the topic "health," showing problems and solutions. 20 January 2022, Vienna, thinkvisual

5.5.3. COACT FOR ENVIRONMENTAL JUSTICE, ARGENTINA

" *"In October 2022 the first National Programme to promote Citizen Science was launched by the Minister of Science, Technology and Innovation (STI) of Argentina. CoAct Environmental Justice was chosen to showcase the potential of citizen social science for transformation during this event, where researchers from three citizen science initiatives participated in live interviews. We have been advocating for this uptake of citizen social science in the milieu of (STI) policies since the very beginning of our action; so we are happy to have been invited to reveal the social aspects of citizen science in this launch event."*
(Guillermina Actis, CoAct Argentina)

6. Citizen Social Science for Policy Making

"*It is so important to recognise that we need to build on knowledge generated by communities.*" (Gilberto Vieira, co-founder of CSO data_labe)

The CoAct project demonstrates the potential of CSS in approaching societal challenges and embedding social knowledge in policymaking processes. With the help of CSS, valuable, socially robust and inclusive knowledge can be created. The focus is on the role of social science in co-shaping fields of action and knowledge spaces between politics and social groups or communities. New opportunities arise both in the respective domain and in the field of science, technology and innovation policy as well as education policy.

FIGURE 11

Citizen Social Science interactions. Adapted from Actis G., Arza V. and Cané S. (2022). D5.4 Policy Brief on Environmental Justice. P.11. Arrows represent policies – including regulations and resources – as well as political and knowledge interactions among community and policy.

6.1. Systematic Knowledge Production in and by Communities

Citizen Social Science provides the tools and spaces for citizens to systematically describe issues with data and precision that are otherwise either understudied or not known at all by policy makers. By orienting research towards the needs of communities, more and different data can be produced and analysed in a decentralised way, while direct access to community-produced data allows for an early detection of new and developing societal issues. If supported, citizens and civil society organisations can mobilise a large number of resources to produce knowledge and allow for early, evidence-based interventions. CSS knowledge reaches remote territories that would be very costly to access otherwise.

6.2. Social Knowledge for Policy Making

Social knowledge in the sense of CoAct is situated in the group sharing and contributing knowledge. It is a valuable source for scientific knowledge created with a CSS approach that could help to produce relevant insights for evidence-based policy making because it builds from the experience of affected communities. CSS knowledge could produce renewed and relevant insights for an existent policy agenda or could derive in a brand-new policy agenda. Knowledge moreover benefits STI policies in terms of new formats of social innovation and research, and education policies because of CSSs options of integration of schools and students in issue definition and knowledge creation.

6.3. From Communities to Action, from Actions to Policy

A community mobilised to generate new knowledge about something that is daily experience but only partially known, is empowered to challenge the status quo, by sharing the knowledge as well as act as agents of change. CSS can help to build and manage communities that drive social change. This is especially useful in a situation where there are conflicts of interest, as is often the case with societal challenges. Policy actors such as municipalities, responsible for the wellbeing of citizens and social change, can benefit from the inclusive knowledge produced, and even be integrated in the processes. CSS tools could be further developed for many types of participatory policy making, such as participatory regulation, budgeting, and monitoring activities to ensure sustainable social change.

6.4. From Local to Global

While the greatest strength of Citizen Social Science lies in its local embeddedness, its approaches and co-created knowledge are highly transferable, they can also scale on a much larger scope and can be replicated in other places. The methods can also be reused for the investigation of other social issues. CSS can support regional, national, and international policy making in diverse settings. It can further help to bring together and synthesise knowledge from other participatory, deliberative or citizen science activities, such as participatory evaluation exercises, citizen observatories etc. and therefore enhance multi-level governance and support measures for policy coherence.

In turn, Citizen Social Science provides us with the opportunity
- **to support the making of important decisions with inclusively produced knowledge,**
- **to give affected people tools for social empowerment, and**
- **to anchor social participation in the production of knowledge in line with a reform of research assessment.**

Citizen Social Science has the means to make policy more attentive and responsive to people's concerns and expertise, therefore increasing citizen empowerment as well as policy uptake of social scientific knowledge for evidence-based decision making.

CITIZEN SOCIAL SCIENCE SUPPORTS THE CONNECTION OF LOCAL AND GLOBAL KNOWLEDGE PRODUCTION

GLOBAL

Social Science Community,

Associations,

Governance Bodies,

International Organisations,

Human Rights NGOS,...

PARTICIPATORY KNOWLEDGE PRODUCTION

Collective Benefit Inclusiveness Quality Equity

Communities,

Governments,

Public Services,

CSOs and NGOs,

HEIs and RPOs,

Companies

LOCAL
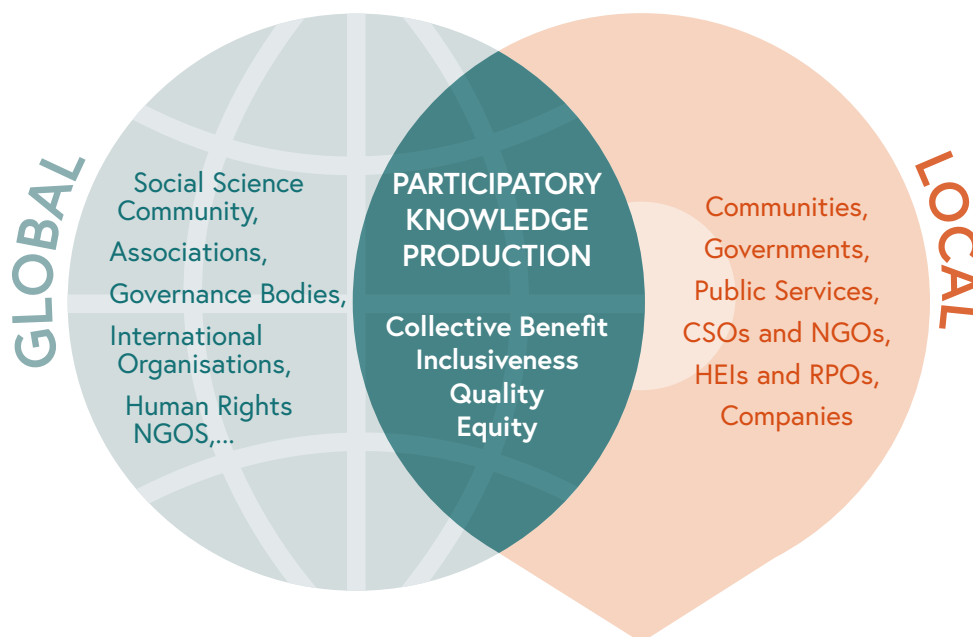
FIGURE 12

The participation of a variety of actors of social change. Participatory knowledge production is guided by ethical values striving for collective benefit, inclusiveness, quality of process and results and equity.

Citizen social science involves bringing together information and perspectives from different social groups and geo-political dimensions in order to better understand and address social issues. It has the potential to facilitate the sharing of knowledge and experiences across different levels, from local to global, for the promotion of social change.

6.5. Benefits of Citizen Social Science

Citizen Social Science

- Systematically addresses complex social problems with the involvement of local expertise and thus promotes sustainable social change.
- Builds on local knowledge and creates awareness for marginalised perspectives as well as volunteer activities and in turn supports community building.
- Increases both scientific literacy among participants and supports a greater understanding of social problems among decision makers.
- Counteracts increasing individualisation and social isolation and empowers individuals or groups by creating topical ownership and scope for participation in policy and decision making, enabling a better understanding of contexts, and allowing for positive changes.
- Broadens the scope and resources while improving the reliability of social scientific research.
- Triggers the development of new inclusive and transparent methodology and knowledge sharing instruments.
- Enriches evidence-informed actions and decision making by policy makers on the basis of inclusive knowledge production.

6.6. Challenges of Citizen Social Science

Citizen Social Science

- Must manage not to overwhelm participants and scientists despite high demands for flexibility and quality.
- Should have a strong focus on moderation and facilitation, as the management of expectations and often differing interests is of central importance (also in regard to scientific quality and assessment of research interests).
- Must preserve the rights and safety of participants.
- Should act inclusively and also guarantee safe spaces of exchange and feedback for all participants.
- Can only realise sustainability if local knowledge is appropriately taken up, while the independence of communities is strengthened.
- Must decentralise risks while transferring responsibility and ownership of the research process to the participants, without passing burden from authorities to the public.
- Should not concentrate financial and decision-making power only with academic organisations but establish new forms of funding and accountability.
- Should translate results and outcomes to all relevant actors in an appropriate and accessible format, as well as encourage co-authorship in all possible (academic and non-academic) knowledge dissemination formats.

With all benefits and challenges aligned, Citizen Social Science creates an opportunity for policy, science and society to scale knowledge production from local to regional to global and vice versa.

Citizen Social Science supports the bridging of impacts across social worlds and geo-political dimensions, and therefore is suited to accompany and inform local and international social change.

CoAct Austria: Exhibition – Participatory research with young people from "Education and Training up to 18" Vienna/Austria, November 2022 (Veronika Wöhrer, Teresa Wintersteller, Dayna-Lee Stewart)

7. Policy Recommendations

The following recommendations are based on the challenges and benefits of implementing Citizen Social Science as experienced in the project CoAct. They address both the possibilities of making CSS useful for policy making and the necessary measures that policy makers should provide for this purpose.

DECISION MAKING

KNOWLEDGE PRODUCTION

1. DEMOCRATISING OF KNOWLEDGE PRODUCTION AND ACCESS TO KNOWLEDGE: the institutions and administrations involved are committed to supporting participatory and deliberative approaches and Open Science in all its facets. The challenge here is precisely in the design of governance structures regarding openness for participation in decision-making and communication to enhance diversity and inclusion in the research process and accessibility to research results. To implement and support Citizen Social Science it is therefore recommended to

– Use CSS to make sense of complex societal challenges. Understand that more diverse types of knowledge have to be gathered towards a common goal, so that input for policy formulation can come from many different sources. CSS helps to generate this knowledge in high quality.

– Consider citizens a reliable source of information and strive for inclusive knowledge production to counter biased or partial information and to enrich perspectives on the same issues. Citizen Social Science has the right tools to address asymmetries.

– Articulate the research agenda across many different positions to help harvest diverse solutions to complex problems and facilitate their future implementation. Marginalised citizens' groups need to be specifically addressed and their participation incentivised.

– Foster inclusivity and equal representation of positions in the solution-oriented research process. Enable collaboration for decision making on the basis of social scientific evidence.

– Enable transparent project documentation, openly accessible and reusable tools and data, build on insights from participatory evaluation approaches, adhere to ethical and legal standards and principles of scientific integrity.

2. REFORMING OF SCIENTIFIC INCENTIVE AND EVALUATION CULTURES

requires work on local policies in line with international efforts to reform evaluation of scientific performance based on open and participatory methods, as well as capacity building activities in teaching and social impact. Funding structures must also adequately integrate this new way of producing knowledge.

– Advocate for research assessment reform to improve recognition of all types of participatory science in the academic system and assess impact beyond scientific publications.

– Recognise CSS as a valid research approach and include it into common science and education funding programmes. Encourage funders to train reviewers to evaluate the specificities of participatory knowledge production and the importance of transdisciplinary approaches.

3. SUPPORTING INFRASTRUCTURES AND ESTABLISHING QUALITATIVE STANDARDS: To

secure CSS activities and their knowledge production in the long term and to make them accessible, certain infrastructures are necessary: funding tracks, staff, spaces, international conferences, publications, databases, and more. The development and evaluation of guiding principles and quality standards for participatory knowledge production are also a priority.

– Support participatory knowledge production and open spaces for knowledge exchange and transfer.

– Improve access to public sector information and policy relevant data by opening data sources for research purposes so that information sources can be combined with citizen generated data.

– Commit to innovation in data management and access: support open digital infrastructures, as well as collaborative data practices like knowledge platforms or hackathons to generate data for decision making.

4. EXPANDING TEACHING AND TRAINING ACTIVITIES: CSS adds many skills to the list of requirements

that are not taught in academic training, such as managing expectations, broad social communication, and iterative, feedback-driven planning and implementation.

– Highlight the educational potential of Citizen Social Science, integrating CSS into the development of curricula for secondary and higher education as well as for continuing professional training in transdisciplinary settings.

– Invest in training for co-creative project and community management, collective data generation and interpretation, as well as evaluation skills to generate high quality information for decision making.

– Create training materials for social scientists not yet familiar with Citizen Social Science, civil society organisations and policy makers.

5. UNDERSTANDING AND IMPROVING LEGAL AND ETHICAL FRAMEWORKS: CSS connects social domains and complex contexts based on research integrity practices. The challenge is to productively connect the scientific set of values with the relevant cultural, ethical, and legal norms.

– Create new forms of funding, including the possibility of disbursing research funds also to civil society organisations should they carry out research responsibilities. Funding programs for Citizen Social Science should also take appropriate account of community building and management efforts, as well as training needs of civil society organisations.

– Foster communities of practice and exchange of experiences with public participation and Citizen Social Science inside public administration and among civil society organisations.

– Use CSS to enable social learning across governance levels, from local to global scale by establishing knowledge transfer across public participation activities in different geopolitical contexts, with disparate regulatory frameworks, along different previous experiences and levels of readiness.

– Identify opportunities when policymaking processes are still flexible to intervene with CSS insights. Offer CSS based instruments to monitor compliance

6. PROVIDING CONTACT POINTS AND EFFECTIVE COMMUNICATION CHANNELS for feedback, systematic monitoring and verification of compliance with political mandate: motivation for participation increases when it becomes clear that social change is possible through CSS. Therefore, it is necessary to design research in such a way that knowledge can make its way into policy. This is possible through already existing mandates for citizen participation, as well as the involvement of political actors already in the planning of the projects.

– Support citizen driven monitoring to support not only regulatory compliance but also the alignment with the genuine needs of citizens.

– Create formal mechanisms for citizen participation in decision-making and the co-creation of policies. Use CSS in synergy with existing regulations and mandates for public participation in policy, for example in domains where citizen juries, deliberative assemblies, participatory budgeting or public forums are already established or need to be initiated.

– Create community portals with accessible information materials for all target groups.

– Bridge activities from citizen science organisations with citizen communities and civil society organisations and invest in capacity building for community creation and management.

– Join the existing CSS community of practice to share successes, reflect challenges, and exchange knowledge on a global scale.

– Create visibility and implement easy to access contact points for CSS for citizens, CSOs or policy makers who wish to initiate or reflect social change or further reaching social transformation.

– Connect to other existing initiatives advocating deliberation and citizen participation and create new formats of collaboration as well as citizen driven policy support and monitoring for sustainable social transformation.

DECISION MAKING

KNOWLEDGE PRODUCTION

POLICY RECOMMENDATIONS

8. Further reading

Actis G., Arza V. and Cané S. (2022). D5.4 Policy Brief Citizen Social Science for Sanitation Policy in Mantanza-Riachuelo Basin. Zenodo. https://doi.org/10.5281/zenodo.7249193

Albert, A., Balázs, B., Butkevičieně, 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

CARE Principles: https://www.gida-global.org/care

Eitzel, M., Cappadonna, J. L., Santos-Lang, C., Duerr, R. E., Virapongse, A., West, S. E., Kyba, C. C. M., Bowser, A., Cooper, C. B., Sforzi, A., & others. (2017). Citizen science terminology matters: Exploring key terms. Citizen Science: Theory and Practice, 2(1).

European Commission. Directorate General for Research and Innovation., Joint Institute for Innovation Policy., Joanneum Research., Tecnalia., Toegepast natuurwetenschappelijk onderzoek., VTT., Danish Technological Institute., & VVA. (2018). Mission-oriented research and innovation: Assessing the impact of a mission oriented research and innovation approach: final report. Publications Office. https://data.europa.eu/doi/10.2777/373448

FAIR Principles: https://www.go-fair.org/fair-principles/

Fischer, A., Dinnie, E., Ellis, R., Eastwood, A., Carter, A., & Welsh, G. (2021). Exploring the Potential of Citizen Social Science for Environmental and Sustainability Research: Experiences of and with Community-Based Researchers. Citizen Science: Theory and Practice, 6(1), Article 1. https://doi.org/10.5334/cstp.389

Göbel, C., Mauermeister, S., & Henke, J. (2022). Citizen Social Science in Germany—Cooperation beyond invited and uninvited participation. Humanities and Social Sciences Communications, 9(1), Article 1. https://doi.org/10.1057/s41599-022-01198-1

Göbel, C., Nold, C., Berditchevskaia, A., & Haklay, M. (2019). How Does Citizen Science "Do" Governance? Reflections from the DITOs Project. Citizen Science: Theory and Practice, 4(1), 31. https://doi.org/10.5334/cstp.204

Matthias Gross (2010). The Public Proceduralization of Contingency: Bruno Latour and the Formation of Collective Experiments, Social Epistemology, 24:1, 63–74, DOI:10.1080/02691721003632826

Henke, J. (2022). Can Citizen Science in the Humanities and Social Sciences Deliver on the Sustainability Goals? Sustainability, 14(15), Article 15. https://doi.org/10.3390/su14159012

Herzog, L., & Lepenies, R. (2022). Citizen Science in Deliberative Systems: Participation, Epistemic Injustice, and Civic Empowerment. Minerva. https://doi.org/10.1007/s11024-022-09467-8

Irwin, A. (1995). Citizen Science: A Study of People, Expertise and Sustainable Development. Routledge.

Kieslinger, B., Schuerz, S., Mayer, K. & Schaefer, T. (2022) CoAct D7.4 Final Impact Assessment Report. Zenodo. https://doi.org/10.5281/zenodo.7468546

Kythreotis, A. P., Mantyka-Pringle, C., Mercer, T. G., Whitmarsh, L. E., Corner, A., Paavola, J., Chambers, C., Miller, B. A., & Castree, N. (2019). Citizen Social Science for More Integrative and Effective Climate Action: A Science–Policy Perspective. Frontiers in Environmental Science, 7. https://www.frontiersin.org/articles/10.3389/fenvs.2019.00010

Mayer, K., Kieslinger, B., & Schäfer, T. (2018). Open and participatory citizen social science for evidence-based decision making. Austrian Citizen Science Conference, 4, 74–77.

Mayer, K. & Schuerz, S. (2022) CoAct D2.5 Citizen Social Science: a promising approach for more participation in knowledge production and decision making. Zenodo. https://doi.org/10.5281/zenodo.7433089

Nascimento, S., Rubio Iglesias, J., Owen, R., Schade, S., & Shanley, L. (2018). Citizen science for policy formulation and implementation. UCL Press.

Nowotny, H., Scott, P., & Gibbons, M. (2001). Re-thinking science: Knowledge and the public in an age of uncertainty. Cambridge: Polity.

Perelló, J. (2022). New knowledge environments: On the possibility of a citizen social science. Metode Science Studies Journal, 12, Article 12. https://doi.org/10.7203/metode.12.18136

Richardson, L. (2016). Citizen social science and policy making. In G. Stoker & M. Evans (Eds.), Evidence-Based Policy Making in the Social Sciences: Methods that Matter (pp. 207–228). Bristol University Press. https://doi.org/10.46692/9781447329381.012

Tauginienė, L., Butkevičienė, E., Vohland, K., Heinisch, B., Daskolia, M., Suškevičs, M., Portela, M., Balázs, B., & Prūse, B. (2020). Citizen science in the social sciences and humanities: The power of interdisciplinarity. Palgrave Communications, 6(1), Article 1. https://doi.org/10.1057/s41599-020-0471-y

United Nations. (1992). Rio Declaration. United Nations; United Nations. https://www.un.org/en/conferences/environment/rio1992

Wissenbach, K. (ed.) (2022) Global Perspectives on Citizen Social Science. https://coactproject.eu/css-global-perspectives/

6. CoAct Project Identity

Project Name	Co-designing Citizen Social Science for Collective Action
Coordinator	Universitat de Barcelona, Spain
Consortium	Zentrum für Soziale Innovation GmbH, Austria
	Universität Wien, Austria
	Fachhochschule Potsdam, Germany
	Universidad Nacional de General San Martín, Argentina
	Open Knowledge Foundation LBG, United Kingdom
	Global Innovation Gathering EV, Germany
	Federació Salut Mental Catalunya, Spain
	Fundación Ambiente y Recursos Naturales, Argentina
Funding Scheme	Horizon 2020: SwafS-15-2018-2019: Exploring and supporting citizen science
Duration	01/2020-12/2022
Grant agreement	873048
Budget	EU contribution: 2 047 226,25 €
For more information	Website: https://coactproject.eu/
	Twitter: https://twitter.com/CoActeu
	@CoActeu