



Social Citizen Science
for Addressing Grand Challenges

Social Citizen Science in Germany

Basic Characteristics & Twenty Theses for Better Practice and Support

SoCiS Policy Paper

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Abstract

Citizen Science in the humanities and social sciences – Social Citizen Science (SCS) – is a sub-area of Citizen Science activities that did not yet receive much scholarly attention. One feature of SCS is that it deals with data that can be difficult to objectify because of its proximity to everyday life. Questions of ensuring scientific quality and the ability to participate, therefore, manifest themselves in different ways than in the natural sciences. The SoCiS project presents results on these questions for the first time. It reveals a great diversity of approaches and traditions in SCS. We show that SCS activities include those initiated and managed both within and outside academia. Thus, “invited participation” by academic institutions is not the general reference model for SCS. Activities emerging from civil society, “uninvited participation”, is equally constitutive. For this reason we conclude that it is important to enlarge the analytical perspective from one that examines how laypersons are enabled to participate in research (“ability to participate”) to a view of how cooperation can be achieved among heterogeneous actors (“cooperation capacity”). This policy paper makes key results of the SoCiS study available in English. Part A gives a brief overview of core SCS characteristics. Part B formulates twenty theses for improving the conduct and support of SCS.

The policy paper is based on the comprehensive report:

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*More information in English: <https://www.hof.uni-halle.de/project-socis/>
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A

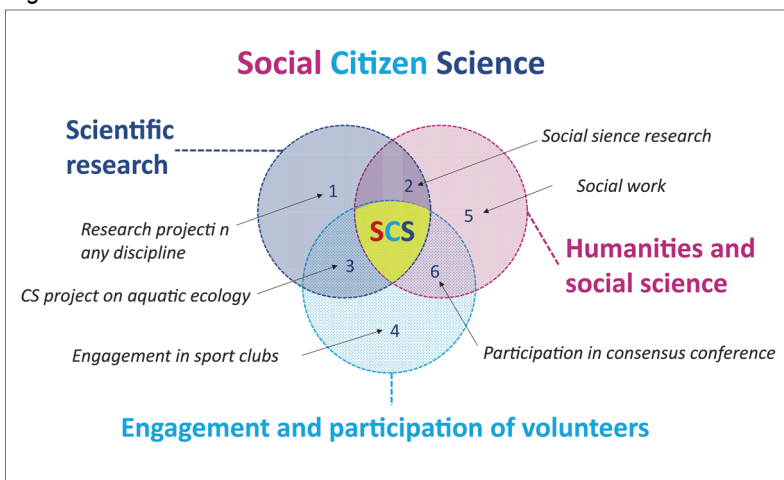
**Key characteristics of
Social Citizen Science in Germany**

1. Definition and relevance

Social Citizen Science (SCS) refers to scientific research activities in the field of humanities and social sciences that are carried out in collaboration between professional scientists and volunteers (Figure 1). For the second group, we use the term “non-professional researchers” throughout this paper.

Numerous authors emphasize the need to gather empirical evidence and build theoretical conceptions on how the **humanities and social sciences** might reposition their **role in society** through participation. In this context, Social Citizen Science represents a special form of empirical research that is very much rooted in everyday practice, offers direct access to relevant local or “lay” knowledge and is not limited to disciplinary research designs. The interdisciplinary view of the citizen experts can thereby potentially lead to a higher understanding of the complexities of both everyday life and science. At the same time, it must be taken into account that Citizen Science in the humanities and social sciences works with data that are difficult to objectify, particularly because of their **proximity to everyday life**. Thus, SCS is arguably less immune to scientifically reformulated interest politics of individual groups than the MINT area. Quality control and ethics procedures are central.

Figure 1: SoCiS Definition of Social Citizen Science



Source: SoCiS

The **socio-political dimension** of Social Citizen Science, however, needs to be considered even further. Germany and Europe, but ultimately the entire

world, face significant sustainability challenges that cannot be solved by technology alone and therefore require innovation in many spheres. In particular, new forms of social co-existence and social action must be developed in greater harmony with ecologically sustainable development, i.e. social innovation, to face these challenges. Social sustainability in terms of more inclusive societies and less inequality is another key aspect. Here, Citizen Science could become a valuable resource for the required social change. Citizens are constantly observing social developments in their social environment. This enables them to gather socially relevant knowledge continuously. In this respect, they can be understood as (critical) monitoring actors whose knowledge can be used to promote social development, for example by supporting Social Citizen Science activities.

Our empirical results (Figure 2) demonstrate the **diversity of contexts** in which Social Citizen Science takes place throughout Germany. Examples are the excavation of a castle ruin coordinated by local associations, interview studies on more sustainable forms of nutrition conceptualised and carried out by pupils or the online mapping of living conditions in villages in Eastern Germany. The Social Citizen Science landscape is supported by both the academic and non-academic sectors and it is **multifaceted** in terms of the constellations and forms of participation. SCS is socially relevant in that it enables a broad and nuanced approach to future challenges in the context of local and overall social developments.

Figure 2: SoCiS Project

Project SoCiS “Social Citizen Science for Addressing Grand Challenges”

Main research question: What innovation potentials are associated with Social Citizen Science, and what are the prerequisites for a participation of citizens in Social Citizen Science that satisfies scientific principles?

Methods: Since there is no comprehensive survey of SCS to date, first SCS activities needed to be identified. For this purpose a conceptual thesaurus was formed. On this basis, a broad document and Internet search was conducted and the SCS activities were systematised in a database. Subsequently a survey of CSC project was conducted that was followed by 19 interviews with SCS project leaders and participants. Finally, a reflection workshop was held with interviewees and Citizen Science experts to validate results.

Outputs (in German): Report on SoCiS results (cited above), Social Citizen Science 101 - guidelines for practitioners and decision-makers (forthcoming), monography (in progress), Open Educational Resource (in progress).

2. Basic characteristics of SCS activities

Regarding **activity phases**, of the 57 projects that took part in the online survey, more than half had already been active for some time, 16 percent were in the final phase and a quarter had already been completed at the time of the survey.

Grant funding from the federal government or state ministries plays the central role in **financing SCS** activities. Crowdfunding is not that relevant and remained largely unused. In contrast, unpaid or volunteer work was of great importance for the implementation of SCS activities.

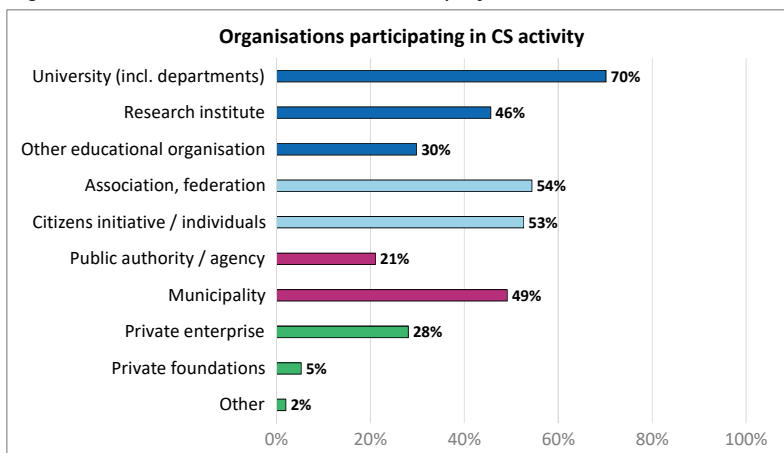
The SCS activities analysed were often limited in time, whereby **a duration** of less than four years are seen as rather counterproductive with regard to the sustainability of the research, cooperation, networks and websites. This is because, firstly, starting times for the establishment of cooperation and structures are usually not taken into account. Secondly, the question of securing the structures after the end of funding is open in most cases.

A special feature of SCS are the constellations of cooperation **partners from inside and outside academia** in project consortia. The second group comprises mostly civil society organisations (CSOs) and municipalities or other state authorities. The reports point to universities as central actors in the implementation of Social Citizen Science. At the same time, CSOs play an important role in SCS activities. In particular, they are essential to provide access to non-professional researchers and expertise. The projects are typically organised in consortia and are a joint effort of different groups. On average, four different institutions were involved in the implementation of a project (Figure 3).

The **motivations** for volunteers to participate in SCS activities as researchers were personal interests, compliance with personal values, and the joy of education, the opportunity to exert influence on local or societal developments or the experience of being part of a community. The results on **who non-professional researchers are** show that the educated, working middle class, which has a certain confidence in science, is more likely to participate in such projects. Nevertheless, there are also particular SCS activities that initiate projects to promote the participation of underrepresented social groups.

The non-professional researchers in many cases undertook **tasks** of data collection in the research process. In addition, they were often involved in the concretisation of the research question and the formulation of results. A further substantial result relates to the formulation of concrete research needs by citizens prior to the research process. In almost two-thirds of the investigated cases, inquiries from citizens did not play a significant role in advance of the project.

Figure 3: Institutions involved in the SCS projects



Source: SoCiS online survey 2019. N=57

Ensuring **scientific quality** is of central importance for Citizen Science activities in the humanities and social sciences in order to link results to science and politics (Figure 4). Therefore, it was important for most of the projects to implement methods to ensure quality. Examples for these methods are qualification by further training, involvement of external experts, publication of data and sources, the preparation and consideration of the state of knowledge as well as data management for the empirical surveys. Training was mainly addressed to non-professional researchers since a lot of effort is required to establish the necessary knowledge on science among them. However, the results also show that the production of scientific quality in SCS activities is not only a question of the qualification of non-professional researchers, but also of **the design of the research and cooperation process** as a whole.

The participatory approach was assessed as very important and **useful** for research as well as for local and societal development by non-professional researchers and project leaders from science and civil society. With regard to the topics of the activities, the results confirm that Social Citizen Science can contribute both to solve local problems and to face current **societal sustainability challenges**.

The available research results also show that SCS is characterised by a **wide variety of methods** for generating or collecting data. From the perspective of academic research projects, quite unconventional methods were used, such

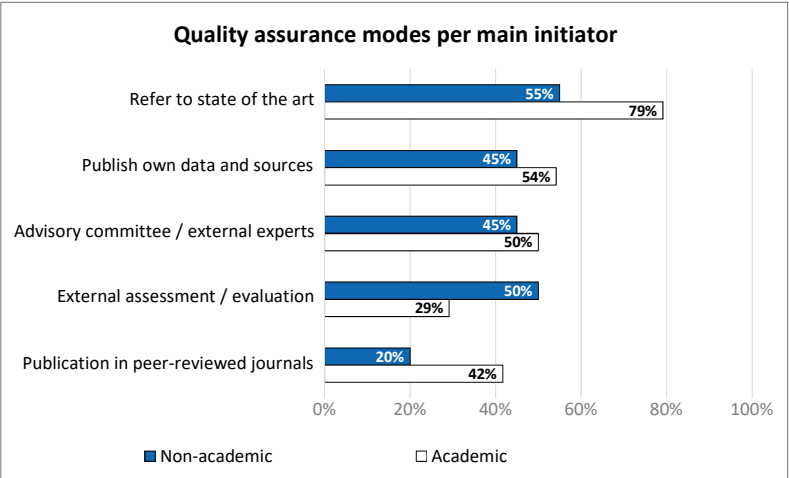
as video surveys in the pedestrian zone or self-made collages. Overall, however, classic forms of data collection dominate, i.e. open and standardised surveys.

All activities also reported on the **high added value** created by the joint research. Especially the transdisciplinarity and heterogeneity of non-professional researchers, the improved access to the field, the work on hitherto little covered topics and the creation of new types of data and knowledge provided particular added value. Despite the enrichment of the research work, almost all researchers reported **low scientific recognition** and difficulties in placing SCS research projects in the scientific community. The recognition by non-scientific publics was instead higher.

3. Conclusion

The biggest differences between SCS projects organised inside and outside academic institutions were found in the results concerning duration and funding, objectives, participation of non-professional researchers in the research process, data collection and publication of results as well as quality assurance.

Figure 4: Quality assurance in SCS activities



Source: SoCiS online survey 2019. Note: Multiple answers possible. Non-academic N=20, Academic N=24

Most **academically initiated activities** were limited to a maximum of five years and frequently received financial support from federal and EU funds. The pursuit of science and the gain of knowledge were much more important aims for academically initiated activities. Compliance with methods and standards of scientific work in generating results played a greater role; publications in peer-reviewed journals were also used or could be used more frequently. Overall, publications produced in the context of these activities were often not available free of charge. With regard to the research process, non-professional researchers were more involved in the research design and data collection, while at the same time open or standardised surveys were used more frequently for data collection.

Activities initiated outside of scientific institutions often had durations of over five years or were not limited in time. Municipal and local authorities played a greater role in the financing. The participation of non-professional researchers was also more often the case when formulating or publishing results and concrete needs of citizens were more often taken into account in advance of activities. Digital applications, contributions and discussions on the web and social media were more frequently used for the purpose of data collection, processing and evaluation as well as project organisation. To ensure scientific quality, external reviews and evaluations were used more frequently. Linking the results to practical needs was more relevant for the non-academically initiated activities, and the practice-oriented results were more often available openly.

The diversity of approaches and traditions of SCS, which include the initiation and management of SCS activities both within and outside academic institutions, underlines that such activities need to be understood in a bi-directional way. That means that it is not only a matter of successfully establishing the **“ability to participate”** of laypersons in research processes. Rather, all participating actors need to establish a **“capacity for cooperation”**, whereby both the level of individual professional and non-professional researchers is important as well as the collective level of scientific and other organisations.

B

Twenty Theses on Social Citizen Science

1. Cooperation

Establishing the capacity to cooperate is central to the success of SCS activities. A first important dimension is the cooperation between professional and non-professional researchers, which is one of the defining features of SCS. Furthermore, cooperation in heterogeneous alliances, such as research projects, education initiatives or data gathering campaigns, plays an important role.

Thesis 1: Explicit communication of the practical benefits and social relevance increases the participation and motivation of non-professional researchers.

The motivation for participating in SCS projects on the part of non-professional researchers is largely based on their interest in the topic and the opportunity to learn and contribute to a tangible change. In cases where this was experienced, participation in the projects was accompanied by an increase in self-efficacy and empowerment. In order to promote the involvement of non-professional researchers in SCS projects, the project and participation in it need to have practical benefits and social relevance. Both along with the tangible impacts of participation in the project should be made clear and continuously communicated.

Thesis 2: Successful and sustainable cooperation between professional and non-professional researchers is achieved when a sense of unity is created among volunteers.

Social Citizen Science projects were considered successful if a sense of unity or “team spirit” developed among the non-professional researchers during the project. This was particularly important for the success of self-organised projects and for increasing self-efficacy and empowerment. The bond with the group also contributes significantly to the success of the project in that the individual sense of commitment is strengthened and non-professional researchers do not leave the project prematurely. In order to promote team building, frequent meetings can be initiated, especially at the beginning of the project. As the project progresses, it is recommended that non-professional researchers work in a more self-organised way.

Thesis 3: The social relevance of projects and the motivation of laypersons is strengthened if non-professional researchers are involved at various stages of the research process.

Projects initiated outside academia are more successful in involving non-professional researchers in all stages of the research process than those under professional scientific management. In particular, participation and the ability to decide together in the process of identifying topics as well as the exploitation and communication of results should be further developed. On the one hand, this increases the benefit and self-efficacy for non-professional researchers. On the other hand, this offers opportunities for the humanities and social sciences, in particular to reach beyond the “ivory tower” and bring in topics and expertise.

Thesis 4: A broad participation of non-professional researchers can be achieved if projects offer various intensities of participation.

The realisation of research work in the social sciences and humanities places high demands on flexibility, time resources, communication and cooperation. In order to broaden the opportunities for participation, it seems sensible to design projects in such a way that different levels of participation are offered. People can thus decide to what extent and at what points they want to or can participate in the project. This could also reduce barriers to entry and encourage participation by previously under-represented social groups.

Thesis 5: In order to reach certain groups of non-professional researchers, especially underrepresented ones, targeted incentives and appropriate communication strategies are key.

The results show that it is rather higher or scientifically qualified people who took part in SCS projects. The development of target group-specific incentives, such as certificates, expense allowances, etc. has been effective in broadening the range of previously underrepresented social groups. At the same time, cooperation with governmental or civil society organisations can make it easier to reach certain groups. In the project work, it was particularly important to overcome group-specific language barriers through suitable communication strategies. Such considerations are therefore fundamental to the planning of SCS projects.

Thesis 6: Pupils are a target group with high mobilisation potential for SCS, but their involvement poses particular challenges.

Young people are underrepresented as participants in (Social) Citizen Science, although they are often highly motivated to participate in such activities. In addition, SCS offers science education in schools the opportunity to broaden the technical focus on science through insights into qualitative research in the humanities and social sciences that are otherwise difficult to obtain. Hurdles for involving pupils in SCS activities are manifold, e.g. need of for formal permissions to leave the school building or difficulties in project coordination due to the heavy workload of pupils. Finally yet importantly, the research must also have relevance for pupils and possibly fit in with curricula, e.g. through its relevance to sustainability.

Thesis 7: The ability to cooperate in SCS activities is also dependent on specific social and local contexts.

Although SCS appears as a supposedly universal research approach, successful activities are strongly adapted to the specific constellations of participating actors and local context. The challenges of dealing with heterogeneity for successful research work are great and diverse. For example, SCS activities must also deal with conditions outside the projects, such as criticism of elites, science scepticism or bad experiences of participation in research in the past by potential non-professional researchers. Therefore, it is productive to orient the SCS activities strategically to the target groups and local conditions. This can be achieved, for example, by using soft governance and participatory design for project processes and infrastructure.

2. Research

In addition to the topic of cooperation, SCS activities pose specific challenges for the completion of research work. Here, for example, the integration of different types of knowledge, further education and quality assurance are addressed.

Thesis 8: Projects led by academic institutions benefit from partners in civil society who contribute their specific field expertise and translate between the two spheres.

Civil society organisations such as associations, federations or citizens' initiatives are often involved in or initiate SCS projects. They represent a central pillar of SCS and fulfil important functions in the projects. CSOs have specific field knowledge such as thematic expertise, access to non-professional researchers or knowledge of management practices. Furthermore, CSOs can act as intermediaries between non-professional researchers, academic scientists and politicians and be able to provide the necessary translation between the parties involved.

Thesis 9: Since SCS often aims to work with specific groups, it is less suitable for promoting universal engagement with science and more for context-specific participatory research.

In contrast to common Citizen Science projects in the natural science, SCS activities are often less focused on the participation of “everyone”. They typically aim at the analysis of phenomena of social co-existence, culture and intellectual life, the promotion of social and humanities science education and empowerment as well as regional development. Here, non-professional researchers are usually involved as knowledge carriers or affected persons, as mediators of access to the field and as political subjects – and thus as members of specific groups of people. This points to the potential of SCS to promote participation in science for specific target groups and their possible contributions to addressing societal challenges.

Thesis 10: Non-professional researchers should have the opportunity to get training not only on methodology but also on dealing with role and loyalty conflicts.

Training for non-professional researchers involved in SCS projects serves primarily to acquire specialist and methodological knowledge. However, the high scientific benefit generated by the field access of non-professional researchers also entails the risk of role conflicts. Conflicts with the role as a researcher working on one's own life and environment can cause, for instance, that information reported in confidence are not documented properly. In order to ensure scientific quality, it is therefore recommendable to offer additional training opportunities to reflect on and deal with conflicts of roles and loyalties.

Thesis 11: Academic researchers, in particular, should take care of the scientific soundness of the results.

Publications in scientific journals, which are an important instrument of scientific quality assurance, are particularly relevant for scientists. For participating associations or citizen initiatives, the scientific aspect of the project is important above all with regard to practical usability. Also for the motivation of non-professional researchers, scientific usability plays a rather subordinate role. The responsibility for quality assurance in the sense of adherence to scientific standards, establishing the acceptance of participatory research designs and introducing them into the scientific community is thus in particular up to academic researchers. This also includes communicating scientific standards and their significance, for example through training, to partners and non-professional researchers in an appropriate manner as required.

Thesis 12: Challenges for quality assurance in SCS activities go beyond scientific requirements.

For SCS activities, fulfilling the requirements for scientific quality usually involves additional effort. At the same time, other quality dimensions are relevant for the stakeholders and must be taken into account. This means that a wide range of quality requirements, such as local authority standards for the usability of research results, need to be combined. At the same time, however, it must be ensured that this is done within a framework that is perceived as valuable, legitimate and pleasant enough for a leisure activity by non-professional researchers. Quality assurance in SCS therefore means producing scientific, practical and cooperation-related quality. The design of such activities must take appropriate account of these various aspects in their implementation.

Thesis 13: Social Citizen Science offers diverse potentials for expanding science communication through previously marginalised perspectives, objects and role models.

Science communication is important for SCS activities in many aspects, e.g. for establishing ties to the project or as a quality assurance tool. In return, SCS activities enrich current practices of science communication by providing perspectives on research beyond the mainstream. First, this includes rare insights on research in the humanities and social sciences. Second, SCS projects can facilitate science communication from perspectives of non-professional researchers and CSOs. If the latter also take active communication roles in

the activities they carry out or initiate, this even makes potentially emancipatory role models available for dealing with science and technology.

3. Framework conditions

In addition to cooperation and the specific characteristics of research activities, various structural, political, financial, cultural, legal and ethical frameworks are also relevant to the success of SCS activities.

Thesis 14: To strengthen SCS, it should be an integral part of the portfolio of universities, e.g. Third Mission activities and measures for practical relevance of teaching and research.

Financial support for SCS is currently provided primarily on a project-related basis through federal programmes, in which universities are almost always involved. In this respect, universities in particular are an important motor for the realisation of such projects and the structural stabilisation of SCS. At the same time, many of the funded projects have helped to promote the Third Mission at universities and to increase the practical relevance of research. The main fields of activity in higher education – research, teaching and Third Mission – should therefore be understood as a platform where participatory research can be institutionally linked to institutions.

Thesis 15: For successful cooperation, municipalities should be strengthened in terms of personnel and responsibilities should be clarified early on.

Challenges in the cooperation with local authorities exist above all in terms of time and communication. Funding bodies assume a high self-interest on the part of local authorities for participating in SCS projects, which is why the latter cannot claim funding for staff positions. SCS projects, however, represent an additional workload for the municipalities, which is very often spread over several areas of responsibility. In many cases, there is no fixed contact person and complicated coordination processes must be managed. In addition to the necessary strengthening of personnel, it is therefore necessary for the projects to clarify responsibilities and procedures in a binding manner with municipal partners and to develop a time and work plan that is manageable for all sides.

Thesis 16: The promotion of SCS should be strengthened with regard to the participation of non-academic actors in order to put their important contributions on a broader basis.

The current research funding for SCS activities, which is mainly project-based, creates obstacles for non-academic project partners, i.e. mostly civil society organisations and municipalities. Those partners provide critical contributions project successes by mobilising knowledge assets and volunteers as well as by implementing results. In order to enable or extend this further, the eligibility of non-academic partners as cooperating entities and their admission as project leaders should be ensured. Other sources of core funding for SCS staff and alternative financing models, such as the viability of crowdfunding approaches, require further exploration. Moreover, in order to involve civil society better, the application and tendering processes should not be bureaucratically overburdened and support for applying should be extended.

Thesis 17: Measures are needed to promote the recognition of projects that involve qualitative research approaches.

Municipal partners and the general public often expect research results to contain quantitative evaluations, for example as basis for political decision-making. Qualitative approaches are less known and accepted. This can impair or discriminate against primarily qualitatively oriented SCS activities in their effectiveness. Supporting measures should therefore be applied at different levels. Local politicians and other public authorities should give more recognition to qualitative results. Projects are advised to sensitise their partners to the relevance and credibility of qualitative results – and in particular their practical benefit – at an early stage. They can also consider pragmatic mixed-method approaches, i.e. to generate knowledge for action on both qualitative and quantitative results.

Thesis 18: National Citizen Science networks are not yet relevant enough for SCS.

For the SCS projects examined, national Citizen Science networks were of little relevance. Related online portals often played a subordinate role or were unknown to project managers. Recommendations issued by national networks were not taken into account or were felt to be of little help. At the same time, (S)CS represents a new field of activity and for many problems, solutions still need to be developed. For this reason, there is certainly a need

for networking and exchange between those practicing SCS activities, especially regarding training opportunities, good practice materials and support for the free availability of project results.

Thesis 19: The expansion of voluntary contributions to science through SCS is ambivalent and requires a change in reputation cultures and critical discussions.

The success of SCS multiplies volunteer contributions to scientific research. This applies to non-professional researchers as well as to actors involved in a professional role, such as professional scientists, students, employees of CSOs and municipalities. On the one hand, this voluntary work should be more strongly recognised, encouraged, compensated and made more visible. This is particularly relevant to broad inclusion claims and the transformative potential of research with marginalised or vulnerable groups for social challenges. On the other hand, critical debates are needed on the fundamental desirability, design, consequences and alternatives of expanding unpaid work in and for science. At the same time, the contributions to research generated from SCS must be measured not only by their practical relevance but also by their scientific quality. Criticism of Citizen Science formulated by the scientific community can only be refuted based on transparency regarding the methodological standards and high quality requirements.

Thesis 20: The relevance of SCS activities to sustainability exists, but requires better communication, supporting infrastructures and further research.

With their focus on topics such as politics, society, history, culture, education and sustainability, SCS activities cover many research topics that play a central role in addressing future challenges. However, this sustainability relevance is not often explicitly communicated. There is this potential for the external communication of the humanities and social sciences that more clearly identifies possible and actual contributions. There is also a need for better recognition and visibility of SCS practice research in the field as a building block of transformative science. In this context, suitable networks and platforms could be an important communicative building block for attracting new, sustainability-aware target groups. Further research needs to determine which sustainability issues have high potential for attracting participants to SCS approaches – both inside and outside academic research.