

“Recruitment of Citizen Scientists and other relevant stakeholders”: Output Paper of the StepChange Mutual Learning Exercise

The consortium of Step Change presented and discussed the main lessons learned during the work on its “Citizen Science Initiatives” (CSIs) in relation to the “Recruitment of Citizen Scientists and other relevant stakeholders” together with external experts Giovanni Maccani representing [WeCount](#) project, Rosa Arias representing [D-NOSES](#) and [NEWSERA](#) projects and Alex Amo representing [COS4CLOUD](#) project. The output paper was prepared by the ZSI team (Carmen Siller, ilse Marschalek, Elke Dall, Elisabeth Unterfrauner) with inputs from all consortium partners. Below some experiences, tested solutions and results are outlined in several key lessons learned related to the following broadly identified challenges:

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While this exercise contribute to the exchange of experiences and mutual learning among the CSIs, we also hope to enable others to learn from our conclusions.





1. Using the terminology of “citizen science”

CSI experiences: New and unfamiliar terminologies are always a challenge, and it should be carefully considered in which context to use specific expressions. “Citizen science” is already a term that needs explaining. Furthermore, there are language issues, such as the German term “Bürgerwissenschaften” which feels more confusing so that the English term ‘Citizen science’ is frequently used. In some areas, there are similar approaches that describe the involvement of citizens in research (such as the “Patient and Public Involvement approach”). Those that are already familiar with a similar approach, citizens as well as participating or regulating institutions, might ask for more explanations about the respective similarities and differences between the approaches and related terminologies.

Tested solutions: Literature was consulted to highlight the novel aspects of using a “CS approach” instead of a “PPI approach”, describing CS as a step forward in comparison with PPI, where citizens would be able to contribute as another member of the research team, and not merely as advisors.

Key lessons learned: Need to stress what CS is, what it adds or how it could be embedded in existing practices (e.g. PPI, possibilities for citizens to contribute to the research cycle in social sciences, etc.)

Different approaches to address similar aspects are enriching, but stakeholders often have a better understanding of one approach and not the other. Recruitment could be facilitated by integrating CS to current approaches, to further develop and complement them.



2. Establishing and setting recruitment targets - and publishing about them

CSI experiences: The different Citizen Science Initiatives (CSIs) had to set rather different targets – from 10 to several hundred citizen scientists to be involved. There are not many examples in the literature where the Citizen Science approach is used which could help conceptually in setting the recruitment targets in specific settings and scientific disciplines. It was not as straightforward as initially considered to decide on the citizen scientist's recruitment targets. Deliberations were needed on how many citizen scientists (CSs) can and should be involved and if the targets identified in the initial planning are indeed realistic and suitable. Differences became visible between scientific disciplines and in relation to the objectives of the CSIs.

Tested solutions: One of our CSIs used an explicitly flexible approach: during the planning phase, the number of professional researchers involved was considered, the available recruitment possibilities, the potential for citizen scientists to drop out during the implementation of the study, etc. In this context, a small and focused target appeared suitable and feasible in the particular biomedical clinical research setting and so in this case, the target was set on around 10 citizen scientists. In other cases, the recruitment targets were clearer, but the partners nevertheless found the literature body less helpful than expected when it came to the suggestions on how to approach the target.

Findings: The targets set need to make recruitment and management of the citizen scientists (CSs) and potentially their replacement feasible. Depending on the research strategies, it is required to involve different numbers of CSs (e.g. few CSs but these need to contribute over a long duration or a lot of them but it is sufficient that they contribute once or twice with a specific data point). Thus, it is not adequate to expect to find general and specific guidelines. The targets need to be suitable for a particular research setting. Sometimes the best approach might be to involve “as many as possible” in order to get the required amount of data to analyze. At the same time, some diversity criteria might have to be applied in order to ensure adequate sampling of CSs.

Key lessons learned: **The quantity and quality of data recorded is key, not the number of CSs involved. It is important to share methodological approaches and experiences, not least with regard to recruitment of CSs in order to enrich the body of literature.**

Since the use of CS in some disciplines is rather new, the methodology and rationale need to be shared to allow others to learn from it. The topic and field/discipline of the project determines the CSs involvement; and general guidelines could not be provided. Nevertheless, there is a lack of contributions to the scientific debate and examples of success and/or failure should be offered for others to learn from.



3. Identifying, getting access to and meeting citizens willing to get involved

CSI experiences: Although a clear definition of the target group and its size is a prerequisite, the next challenge just around the corner, in order to recruit the CS, is the way they need to be reached. Experience shows that relevant groups are indeed accessible (e.g. via intermediaries - more on that later, or through a pool of citizens interested in and already contributing to different other research processes. While some citizens are actually regularly approached with updates and new ways and projects to get involved in research, additional outreach might be needed, some paperwork is required, and certain timeframes need to be respected. In other cases, completely new groups need to be accessed who are not part of an association but have to be identified based on certain characteristics, e.g. wildlife enthusiasts living in a specific geographical area. Furthermore, diversity issues need to be considered and some citizen scientists might be limited by certain conditions, be it the required access to technology or requested availability, resulting in the fact that they can only participate up to a certain level. As far as possible, "personal contact" is of high importance when recruiting. The CSI experiences were challenged by the fact that the recruiting phase fell during the time of COVID-19 restrictions.

Tested solutions: Attending local events, advertising, promoting and implementing dedicated outreach events and presentations to relevant existing groups that meet anyways have been part of the process to allow citizens to get engaged. Established associations (e.g. student associations, mountaineer associations etc.) have been used as multipliers to disseminate information. Sometimes priorities need to be set and decisions to be taken which result in excluding some groups (e.g. due to the necessity to be able to access a smartphone to work with specific data collection tools).

Findings: Decisions that might lead to the inclusion or exclusion of certain citizens or groups had to be carefully evaluated and assessed, recorded and made transparent. When identifying the target group, the careful formulation of the interest is important. For example a call for "people who are interested in nature observation" is likely not specific enough as being interested in plants does not mean one is also interested in animals. In fact, maybe people are only specifically interested in specific species.

When it comes to the means to reach citizens, social media is a powerful tool but also needs good understanding and training on how to use it. Associations (such as professional or sport associations, non-government and non-profit organizations, who bring together volunteers or support specific topics) are often interested and available to contribute, if the interests of their members overlap with the CSI. Nevertheless, it is important to consider lead times need. It is



expected that if the access is more direct, and less mediated via intermediaries, citizens could contribute to the study faster.

Key lessons learned: Plan enough resources for staff dedicated to outreach and public relations. Dedicated staff with training in communication and with a good understanding of the local communities is beneficial to the implementation of the CSI.

Use social media and different channels to recruit citizens at the earliest opportunity. Use social media as soon as possible after receiving ethical approval and in parallel to other recruitment strategies planned, instead of using one strategy after the other. Options with local media, radio etc. should be considered.



4. Reaching out to CSs via intermediaries

CSI experiences: Several CSIs used a recruitment strategy via intermediaries. Working with established cooperation partners e.g. from civil society is a promising route to recruit citizen scientists. Cooperatives, associations, and existing networks could help in sharing calls for participation with their members, but this approach also has clear challenges. First of all, it needs to be considered “what is in it for them?”. If an intermediary is acting only as a mediator and needs to share contacts, which is their “network capital”, their responsibilities towards the contacts and their benefits have to be considered by creating real win-win relationships. The intermediary needs to see the opportunity to become a citizen scientist as a “good offer” for its members and network partners. Ideally, they feel proud to present this possibility.

During the recruiting phase and starting to present the plans also brings new ideas and contacts to additional intermediaries. Contacts are established to additional organizations and creativity to look out for the right ones is needed. The CSIs also identified networks of volunteers ("Freiwilligenagenturen" in Germany are quite well networked and open to support the citizen scientist recruitment). Beyond recruiting, intermediaries can be involved in the problem definition and the co-design of the research questions. Representing citizens and members at this phase will give them more ownership in the process and also more successful input to the recruiting.

Furthermore, intermediaries bring in important expertise in relation to public relations, communication and contact management with the final target group. They are probably able to anticipate reactions and potential conflicts.

Recruitment of some groups, such as high school students require prior contact to the school management and teachers to find a didactic placement in the school programme and to consider reduced school teaching time through the involvement in the CS project. In addition, more time might be needed in preparation, due to system characteristics.

Tested solutions: When recruitment challenges via intermediaries arose, the geographical scope was broadened, more and different stakeholders beyond the ones originally foreseen were involved using additional network effects. In the case of the approach to schools, a CSI participated in a specific programme focusing on transversal skills and orientation of high school students and teachers.

Findings: Additional intermediaries and lots of work lead to an expansion of the potential citizen scientists and their recruitment. Engagement through “community champions” and a train-the-trainer approach can be used. The first recruited CS can become multipliers. By piloting different recruitment strategies and running brief intensive tests (like “sprints”) help in understanding what works better.



Key lessons learned: Involve outreach partners/multipliers in early stages. Involvement of different participants helps in the design of the research questions and in more user-friendly applications e.g. to collect data. By considering how to support each other and create win-win relationships, real solutions can be created.

See the real situation and adapt. Be persistent.

Being persistent and contacting more stakeholders does have results. Pilot and test, but when it does not work, reconsider your recruitment method before investing too much time. Recruitment is a marathon, not a 100-meter sprint. One must make the assumptions clear, reconsider them constantly and adapt the strategies. We see the recruiting as a dynamic process, changing also during the implementation, including through snowballing from one intermediary to others or suggestions of the CS and their networks. Discussing and co-creating with stakeholders and being open to new ways does actually yield results.



5. Time planning and dealing with delays

CSI experiences: Several aspects in relation to time came up during the recruitment efforts. For example, CSs were not attracted and interested in participating in research lasting half a year or more without any compensation. Although recruitment and engagement are important aspects of dealing with CSs, the concerns about the long duration, availability and engagement during the project need to be addressed.

External factors influence the planning of the recruitment phase as well. For example, the ethical approval process needs to be concluded before the actual recruitment of citizen scientists can start, so in case of delays, all timeframes shift. Typically, in research processes, not all aspects can be implemented as originally planned. The Covid-19 pandemic further slowed down activities.

Tested solutions: Clear and explicit expectations and careful programming of the citizen scientists' time commitment is necessary. For example, the clear definition how often and when (morning, afternoon, evening, weekends) they need to be available and for how long or at very specific times (e.g. when the seasons of the year play an important role in the nature observations). CSs as well as other stakeholders need to learn and understand what is expected from their side. Concerns of citizen scientists about the duration of the research and their commitment must be addressed. For example, by planning and clarifying the research in phases. During specific workshops such as "sensitization seminars" as one of the StepChange CSIs called them, the research work plan was explained. In particular, distinct stages of the process were explained to the potential CSs.

Proactive communication with different fora also has to be established well in advance. For example to get as much information as possible early on so to be ready once all approvals are in place. The approach to recruitment, possible venues, different panels and established groups, as well as the practicalities when asking for adequate support with recruitment need to be defined.

Findings: In order to determine their availability, citizen scientists need transparency with regard to time frames and commitments. Presentations should be set as early as possible to collect interest from potential CSs, giving them opportunities to participate in different phases or parts of the research individually. The timing and planning of these events should be co-developed with potential CSs to take into account their needs.

Key lessons learned: **Allow time. Plan with contingencies for all activities.** Co-development of approaches and the openness of the design phase requires flexibility; but differences between planning and execution should be expected. In particular, consideration of uncertainties of the COVID-19 pandemic and careful and flexible time planning is crucial during the citizen scientists' recruitment as well as when planning the subsequent phases.



Do not underestimate the efforts required to recruit even a relatively small number of citizen scientists. Be clear and transparent about the time requirements. Particularly when citizen scientists' involvement goes beyond data collection, which might have been presented to them as entertaining activities. In order to persevere and also to contribute to analysis and write up, a higher involvement or motivation might be required.



6. Tailoring communication to different target groups

CSI experiences: Different target groups (e.g. core team of professionals, high school students, and clinical professionals) have diverse needs and have to be reached in different ways, the engagement can be complex, and there are long lead times. When the proposed involvement is not directly related to main activities, it is difficult to commit the different stakeholders necessary. Due to online teaching and COVID-19, it was difficult to involve some types of citizen scientists such as students. The experiences clearly show that outreach is a demanding task that requires time and the knowledge on how to proficiently interact with different groups and stakeholders. Furthermore, there are differences between the ways to interact during the recruitment phase, in the first communication and the follow-up interactions.

Tested solutions: The CSIs used different approaches and identified the face-to-face approach typically as the most successful. During bilateral meetings or in seminars and workshops, it was particularly important to be able to address concerns in a flexible way. Meetings allow to present the project and its approach in a tailored way with immediate feedback and clarifications. Being aware of the heterogeneity of CSs, different roles and levels of engagement are helpful for participants. In an analysis of the interests, using e.g. the definition of so-called “persona” or by describing different communities of practices or groups with different interests and skills can be identified. For those groups one can foresee potentially different tasks that require different messaging. Specific solutions need to be found when dealing with target groups with low literacy levels.

Findings: It was difficult to recruit some participants with specific professional profiles due to the discontinuity and job uncertainty as well as the huge amount of (online) work during the COVID-19 pandemic. The pandemic required changes in recruitment strategies, slowing down other activities.

Key lessons learned: Identify the “key persons” and prioritize direct contact. The direct contact with a highly respected multiplier and group representative, “key person” or “champion” helps the involvement and collaboration and increase the interest. The direct and close contact facilitates the involvement, while online meetings can reach good results when immediate feedback and direct interaction is possible.

Anticipate key questions and provide examples. For most target groups, examples to probe the actual involvement of the stakeholder and the anticipation of problems can be helpful.

Provide solutions and not additional problems. Understand the agenda, interests and needs of your target group and find a “hook” how they can integrate your work in their agenda, how the activity can bring added value for everyone who participates.



7. Providing information material to the potential citizen scientists

CSI experiences: There is an overwhelming amount of information that citizen scientists could (and should) potentially receive, even if the messages are already very targeted and the goals, methods and benefits are tailored to the respective group. Yet, comprehensive factsheets do not attract interest. There can also be linguistic barriers when not everyone of the target groups speaks a common language. In addition, literacy levels might be needed to be considered, with some individuals needing additional support to be able to fully contribute.

Tested solutions: Factsheet might need to be re-designed and simplified with a focus on the benefits and the expected involvement, as well as stating clearly for which activities and how often availability is requested. The process to register as a CS needs to be simple. Obviously, linguistic barriers need to be addressed by bringing in additional expertise in a particular language. In fact, the CSIs also considered which mix of languages makes sense in relation to their specific outreach goals and recruitment targets (for example the use of the local language together with English or frequently-used immigrant languages in the respective territory).

Findings: More eye-catching and targeted advertising material certainly yields better recruitment results.



Key lessons learned: Describing complex issues and lot of text, even if targeted, is not suitable for recruiting citizen scientists. Material for citizen scientists' recruitment needs to be attractive and use simple terms. The focus needs to be on sparking the "desire to take part". So the focus needs to be on the direct benefits and the win-win situation rather than procedural information.



8. Providing incentives and managing expectations

CSI experiences: Participating in science and contributing to a better world are not the sole arguments to motivate citizen scientists' participation. Different stakeholders and citizens have different expectations from the research, which need to be carefully managed. In some cases, participating citizens might be used to (or expect) some kind of remuneration or compensation. In the literature, there are different experiences in relation to financial incentives discussed and experienced on the ground. However, it depends on the research objectives and how much involvement of the CSs is expected, as in some cases payment can even reduce the quality of the outcomes when people participate just because of the incentive(s). In the case of contributing without remuneration there might be less dropouts as people participate because of project goals and personal interest.

Nevertheless, during the recruitment drive it is important to inform how the citizens will be “recognized” with regard to the research output. Financial incentives could be one option, to be mentioned in publications or other type of visibility could be other options.

Tested solutions: More information about the research, its intentions, the roles and responsibilities were presented in specifically organized “sensitization meetings” with individuals and groups and the leadership of the different targeted communities to clarify questions and to manage expectations. In addition, differences between established paths of working and the citizen science approach were explained. When concrete incentives were tested (e.g. to cover expenses, provide tools), one of the experiences showed that if there are not only benefits but future costs for the participants (e.g. to continue using a device), the incentives are not attractive enough to feel a personal benefit. Thus, an alternative solution was found: a direct financial incentive (e.g. a discount or coverage of expenses) which was implemented successfully. Alternative benefits were also highlighted (e.g. be named in publications) as an attractive option for citizen scientists. Sometimes incentives can also be a simple badge or sticker, sparking a strive for recognition is important during the recruitment process.

Findings: When the incentives are set right, citizen scientists are happy to participate. It is important to provide a thorough explanation of the benefits, ideally in bilateral or small group discussions which give CS the chance to ask questions and express doubts. Honest information sharing builds trust that motivates CS to also be transparent when participating in the research.

Key lessons learned: **Do not take citizen scientists' participation for granted.** Despite having great contacts in the target sector and an interesting and relevant research topic, citizen scientists' participation might be low and dependent on many other aspects.

Set the right incentives. The citizen scientists also need to perceive their personal benefit.



Explain well, clarify expectations, educate and sensitize citizen scientists about the research.

citizen scientists need to understand clearly what the research is aimed at, its objectives and their roles for make an informed decision to participate. Clarifying expectations is vital to manage people who have different expectations and motivations. Clarifying these expectations prior to recruitment could help CS to decide whether or not to participate in the research and give explicit consent.