

Quality & Success Factors for Citizen Science

based on the ECSA 10 Principles

		Project Phase			
	Principle	Planning Phase (Project Plan)	Start of the project (recruitment)	During the project	Final phase (dissemination)
1a	Actively involve citizen scientists	The Project Plan Includes the definition and description of the project goal, target audience, media channels, and partners	Effort is being made to be inclusive to people from many different backgrounds. There is attention to training and support.	Needs and preferences of participants with regard to their involvement in the project are actively monitored and addressed during the project.	The Communication Plan includes activities to support interaction and communication between scientists and citizen scientists.
1b	Citizen scientists and scientists (in interaction) deliver a contribution to the project	There is a clear definition about roles that are expected of citizen scientists and scientists and how citizen scientists can formulate new roles.	There is clear communication to participants during recruitment about what is being expected of them and what they can expect from scientists.	Citizen scientists actively contribute to the scientific process. They play a role as co-scientist, critical friend or other.	Citizen scientists are being involved in the dissemination of the project when possible
2	Projects lead to scientific or societal outcomes	The Project Plan includes a (literature) review that shows how the project will contribute to the scientific and societal field.	The expected project outcomes will be communicated clearly during recruitment.	Protocols include clear instructions for citizen scientists and measures to ensure (scientific) quality and reliability.	Scientific and/or societal outcomes are disseminated through reporting, availability of data, and (peer-reviewed) publications.
3	Scientists as well as citizen scientists and societal organizations benefit from participating in the project	Expectations, needs, and benefits of all stakeholders and possible ways to address those are identified in the Project Plan	The benefits of the project for participants, science and society are made clear during recruitment, including clear expectations.	Organize activities, and mechanisms to ensure benefits for scientists as well as citizen scientists.	Evaluation of scientific and societal impact of the project is built into the project
4	Citizen scientists have the opportunity to join in different stages of the scientific process as much as possible	There is a clear description of the stages of the scientific process in which citizen scientists can participate, which tasks they will perform, and which roles they can play.	Ask participants about how they can and want to contribute to the project.	Monitor needs and opportunities for citizen scientists to become involved in different stages of the scientific process.	Involve citizen scientists in the dissemination phase of the project when possible (e.g. towards (local) government, local environment)
5	Citizen scientists receive and provide feedback	The Communication Plan includes a plan for how citizen scientists receive feedback and opportunities for interaction.	There is clear communication about the project during recruitment.	Discuss outcomes of the project with citizen scientists and general audience regularly during the project, also when results are unexpected (e.g. too little data, low	Project outcomes will be communicated with citizen scientists and the general public in suitable ways (public report, factsheets, popular science articles).

				reliability or usability).	
6	Citizen science is considered a research approach like any other with limitations and risks that need to be taken into consideration	Include a risk assessment and approaches to mitigate risks (reliability of scientific outcomes, recruitment, interaction with participants).	Monitor risks and application of mitigation activities.	Monitor risks and application of mitigation activities.	Evaluate the risk mitigation plan.
7	Data, metadata and other outcomes are openly accessible (FAIR)	Data protocols are available; there is a plan for open access sharing of data/outcomes with and by citizen scientists and others.	Data protocols are available.	Data is made accessible under FAIR principles, also during the project; well-thought out choices are being made between <i>"community vs public sharing"</i> .	FAIR data is available
8	Citizen scientists are being acknowledged in project results and publications	The Communication Plan includes a plan for acknowledgement of citizen scientists.	The contribution of citizen scientists is mentioned specifically in external communication.	The contribution of citizen scientists is mentioned specifically in external communication.	Publications and reports acknowledge the contribution of citizen scientists (e.g. as co-authors or in acknowledgements section).
9	Projects will be evaluated (scientific output, data quality, participant experiences, wider societal and policy impact)	The evaluation plan describes how and when the project will be evaluated with regard to scientific and societal goals.	Possibly a baseline measurement of participants or society as a basis for impact measurements have been included	Ongoing evaluation during the project; adjust the project based on intermediate evaluations; link with risk analysis (6) and feedback (5)	Evaluate the project in terms of scientific and societal impact.
10	Project teams take into consideration ethical and legal issues (copyright, intellectual property, confidentiality, attribution)	Project plans are approved by an ethical or legal committee when required.	An effort is being made to involve citizen scientists from a variety of backgrounds (gender, education level, ethnicity, social economic status).	Ethical and legal issues are monitored throughout the entire project.	Ethical and legal issues are monitored throughout the entire project.
11	<i>Added:</i> The financial plan takes sufficient funding for all factors named above into account (e.g. bringing in relevant expertise, allocating funds for community management). The plans include ideas for the sustainability of the project.	The project team has relevant expertise to deliver the above (knowledge of target audience, community management, communication, data management, evaluation, etc.) or has a plan to bring in that expertise when needed. There is a Sustainability Plan for the project.	The project team has relevant expertise or has a plan to bring in that expertise when needed.	There is a plan for the sustainability of the project beyond the initial funding.	There is a plan for the sustainability of the project beyond the initial funding.

Citation: NPOS Citizen Science Working Group (2020) "[Kennis en krachten gebundeld - citizen science in Nederland](#)". National Program for Open Science, 26 October 2020.