

# 10 SWISS CITIZEN SCIENCE PRINCIPLES

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## INTRODUCTION

«Citizen Science» (CS) refers to a scientific methodology enabling citizen scientists and academic scientists to interact and produce scientific knowledge.<sup>1</sup> Citizen Science can be adapted to and applied within diverse situations, practices and scientific disciplines (i.e. Humanities and Social Sciences, Medical Sciences, Natural Sciences and Engineering Sciences). Citizen Science is part of good scientific practice and culture and adds value to research and society. It has the potential to strengthen mutual learning between all CS-stakeholders.

As part of the Citizen Science Initiative of the Swiss Academies 2021-24 (ICSA+), The Swiss Academies of Arts and Sciences, Science et Cité (Swiss Citizen Science Network «Schweiz forscht»), the Participatory Science Academy and Citizen Science Center Zurich in conjunction with the Citizen Cyberlab Geneva have developed a proposal for CS-Principles for Switzerland to provide common ground and orientation for the Swiss-CS-Community. Important feedback from the CS community was collected and integrated thanks to a national online consultation. The following principles are intended to serve as guidelines for all CS-stakeholders. Anybody interested or involved in Citizen Science projects are invited to consider these principles. The Swiss-CS-Principles may be adapted and modified according to the future needs and developments of the Swiss-CS-Community.

The Swiss-CS-Principles proposal is based on the following documents: 1. The [10 Principles of Citizen Science](#) (2015) by the European Citizen Science Association (ECSA)<sup>2</sup> 2. the [Code of conduct for scientific integrity](#) (2021) by the Swiss Academies of Art and Sciences.<sup>3</sup>

## FUNDAMENTALS

CS follows ethical scientific behavior resting on the basic principles of reliability, honesty, respect, and accountability. CS projects should be designed, undertaken, analyzed, documented, and disseminated with care and with the awareness of their responsibility to society, the environment, and nature. For more detailed information, please consult the [code of conduct for scientific integrity](#). Project leaders should proactively consider and mitigate possible harms and risks, take appropriate precautionary measures as well as consider possible uses in connection with their research work (e.g. how the data collected can be reused or leveraged for other purposes).

<sup>1</sup> **Glossary** (formulated by the Swiss-CS-Principles working group)

**Citizen Science (CS):** various definitions on CS exist, the [Swiss Citizen Science Platform Schweiz forscht](#) provides an overview of these definitions. In general, CS refers to a scientific methodology enabling citizen scientists and academic scientists to interact and produce scientific knowledge. CS can be adapted and applied within diverse situations, practices, and scientific disciplines. Based by [Swiss Science and Innovation Council \(SSIC\) 2017: Citizen Science. An Introduction](#): p.22.; [SSIC 2018: Citizen Science Expertise, Demokratie und öffentliche Partizipation](#) p.30.

**Citizen scientists:** citizen enthusiasts, interested in a scientific field and involved in a CS project.

**Academic scientists:** academic researchers involved in a CS project (n.b. an academic scientist can be a citizen scientist when joining a CS project not belonging to their original field of research).

**Citizen Science project team:** citizen scientists and academic scientists working together.

**Citizen Science stakeholders:** academic scientists, citizen scientists, funding and implementing organizations (such as local or regional authorities, concerned communities and/or NGOs).

**Citizen Science projects:** CS projects pursue a scientific question and gain scientific knowledge.

<sup>2</sup> ECSA (European Citizen Science Association). 2015. Ten Principles of Citizen Science. Berlin. <http://doi.org/10.17605/OSF.IO/XPR2N>

<sup>3</sup> Swiss Academies of Arts and Sciences (2021): Code of conduct for scientific integrity. [go.swiss-academies.ch/integrity](http://go.swiss-academies.ch/integrity). <http://doi.org/10.5281/zenodo.4707560>

# 10 SWISS CITIZEN SCIENCE PRINCIPLES

## PRINCIPLE 1

### CONDITIONS

Citizen science (CS) projects exist thanks to the initiative or active involvement of citizen scientists in scientific projects.

## PRINCIPLE 2

### GOAL

Citizen science projects generate scientific knowledge and enable exchange as well as better societal and scientific understanding among all CS stakeholders.

Citizen science projects may also address local, national, and international issues, develop research methods, set up systematic data collection and analysis, as well as provide the public and policymakers with relevant insights.

## PRINCIPLE 3

### ADDED VALUE

Citizen science projects provide an added value to both the citizen scientists and the academic scientists.

This includes mutual learning opportunities between project team members (dialogue, societal exchange, organizational skills), capacity building, personal enrichment, satisfaction through contributing to scientific evidence.

## PRINCIPLE 4

### PARTICIPATION LEVEL

Citizen scientists are encouraged to collaborate and co-create with academic scientists in all phases of the scientific process.

The participation level is explicit for all project team members before the project starts. It may include initiating and developing the research question, designing the method, gathering, analyzing, managing, interpreting, and sharing data, communicating the results, and acting in the project governance.

## PRINCIPLE 5

### COMMUNICATION

Exact expectations from and towards all project team members as well as the project workflow are clearly communicated within the project team (participation level, scientific methods, use of data, research outcomes, authorship, etc). The different interest groups are addressed accordingly.

## PRINCIPLE 6

### RESEARCH METHOD AND CONTROL

Citizen science is a scientific approach like any other with limitations and biases that should be considered and controlled for. It differentiates itself from others as all project participants have a shared responsibility for the integrity of the research.

## PRINCIPLE 7

### DATA, PUBLICATION AND SECURITY

To the extent possible, and where it does not raise privacy issues, citizen science project data and meta-data are made publicly accessible, and results are published in an open access format (Open Science<sup>4</sup> principle). Data should comply with the FAIR<sup>5</sup> principles and the Swiss legislation on data protection. All people involved in CS projects commit to objectivity and confidentiality as well as to the disclosure of any conflicts of interest. All project stakeholders are normally informed and consulted before the project starts about all the possible publication formats for the research findings (including social networks and non-traditional publication formats) as well as the procedures for submission and revision. Data sharing may occur during or after the project.

## PRINCIPLE 8

### EVALUATION

Citizen science projects are evaluated based on several interconnected aspects including scientific output, data quality, participant experience, diversity, intensity, and quality of collaboration as well as wider societal or policy impact. Evaluation aspects are determined within the project teams before and during the project. The results of the evaluation are used to improve future projects and made available to interested parties as far as possible. The evaluation may be carried out internally within the project team or with the help of outside experts. The evaluation format varies from a common debriefing to an extended survey, depending on the project capacities and funding.

## PRINCIPLE 9

### CONTRIBUTION

Any contributions (financial contributions, volunteering, providing personal infrastructure and equipment, etc) and its origin should be transparent and clearly documented.

## PRINCIPLE 10

### ACKNOWLEDGMENT

Both academic scientists and citizen scientists are acknowledged in a form appropriate to their participation in the project. This may for example take the form of co-authorship, acknowledgement in publications, certificates of achievement, financial remuneration or expenses compensation, joint design and hosting of events that are part of the project, or other forms.

<sup>4</sup>Open Science : Open Science is the practice of science in such a way that others can collaborate and contribute, where research data, lab notes and other research processes are freely available, under terms that enable reuse, redistribution and reproduction of the research and its underlying data and methods. - by Fosteropenscience.eu. 15.02.2022

<sup>5</sup>FAIR = findable, accessible, interoperable, and reusable.

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