Citizens Science 2019: Teaming up for Success

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'normal science' : Scientists-communities, publishing, institutions, funders…

Citizen Science: Citizen Science is any scientific endeavour, which involves citizens **actively** (not as passive test objects, like in many clinical studies)

Is including citizens a major change? What is required to make it work?

The status of CS - a qualitative overview

Goals of the European Commission

Principles and generic rules

A simple classification of CS projects

Indicators and metrics/added value for CS

Open Science and Citizen Science

Rewards and Incentives
Indicators and Next-Generation Metrics
Future of Scholarly Communication
European Open Science Cloud
FAIR Data
Research Integrity
Skills and Education
Citizen Science

Efforts for open science in EU, many countries move ahead

Citizen Science stands out:
Genuine addition
Requires all aspects of open science
Can be introduced without long tuning proccesses

The goals of the (old) European commission

promoting Citizen Science as a European asset

Entry point, tools and connecting existing activities

Highlighting particular achievements and best practices

Providing a regular overview of the changes in activities

Open/FAIR data standards in Citizen Science projects

Citizen science that works towards broad societal goals

Fostering innovation; possibly including business

Comments and overview

Number of projects in Europe: 3000 or so, mostly local, few 100'000's people
Similar numbers in US

Degrees of participation/decisions: Citizens take part in more stages of project. Is improving

Number of Citizens participants (90-9-1): Improve management and motivation of the community. Many interested citizens. Factor of 2-3?

Number of involved (professional) scientists. Estimate 20% are aware of CS. Can be substantially improved by systematic information

Range of research Topics:

Novel IT possibilities and topics that were out of reach: Biodiversity, transcribing historic sources, large and complex data

Citizens have other interests. Quantitative analyses (Cimulact) give about 50% overlap

The Invisible Prevalence of Citizen Science in Global Research: Migratory Birds and Climate Change

Caren B. Cooper ✉, Jennifer Shirk, Benjamin Zuckerberg

The German Amateurs Who Discovered 'Insect Armageddon'

https://www.nytimes.com/2017/12/04/world/europe/krefeld-germany-insect-armageddon.html. See Plos

Projects in Medicine: Large potential of new projects; precision medicine, patient empowerment, low threshold fields (care for elderly)

Number of papers in peer-reviewed journals: Not known

Multi-actor projects: Much supported by EU, projects with scientists, citizens, private enterprise, policy makers. Projects involving societal issues (climate, biodiversity). Sustainable development goals, Responsible Research and Innovation.

EU funding: about 1.5 % of total H2020 for Citizen Science projects, many for surveys etc.

Citizen Science and Precision Medicine

How Patients Are Creating Medicine's Future: From Citizen Science to Precision Medicine

Ernesto Ramirez, Prof. Barbara Evans, Prof. Kingshuk Sinha and Prof. Jason Bobe

Tuesday, December 6, 2016 - 11:30am to 1:30pm

Coffman Union Theater

Citizen Science for Health

Decoding human proteins
https://www.proteinatlas.org

Principles

Projects follow 'good' scientific behavior

All legal/ethical rules apply

Citizens may contribute at all stages

Citizens are properly acknowledged

Project governance is transparent and open

The principles of open science are followed as much as possible

Projects should have scientific guidance (university..)

Are more and more built into projects

5 Classes of projects

Projects of 'mostly' scientific interest (in Science and Technology or Social Sciences and Humanities): Scientists and citizens. Most common at present

Project of high scientific and societal value environment, climate, (public) health: Include some level of policy maiking

Projects that involve also private sector (quadrupole helix)

D-Noses: Odour pollution

Projects related to medicine and healthcare: Include doctors, hospitals…..

Projects with focus on learning/science education (schools, etc)

Lessons, consequences

Projects:

Substantial and sustained community management, transparent communication and governance

Universities, academies:

Recognize citizen science as an evolving set of research methods and its societal and educational benefits

Single point of contact for citizen science within the institution, to advise scientists and ensure liaison with national and regional citizen science initiatives 'Citizen Science center':

Libraries, communication department of academies,…

Suitable partners (Newspapers)

Citizen Science Zurich

2 parts
6 collaborators
1 Mio/y

Indicators and metrics /added value of CS
(How to ‚measure' Citizen Science)

‚Indicator Framework'

Goal of indicator (Monitoring, learning, allocation)
Level of use (individual, group, institution..)
Class of projects

7 dimensions

Scientific dimension

Citizen/participatory dimension

Social/policy dimension/impact (Class B, C, D)

Social inclusion/employability dimension/RRI aspects (Class C)

Open science dimension (including FAIR data and AI-readiness)

Learning dimension

Legal/ethical dimension/safety

Toolkits for Citizen Science

To encourage, to standardize and to improve quality ‚toolkits' are useful (and necessary).

First toolkit about 2010 (Cornell)

Recently more extensive toolkits are being developed
Integral entry portal with examples, videos, communities
Instructions ‚what is a project'?, project responsable..

Conception, community building, actors, governance
What is needed? Funds?
Scientific quality? Ethics, privacy,..
Publishing
Monitoring, realization, sharing

Textbooks?

Citizen Science

Enlarges scope of research in all fields of science

Fosters innovation, technical advances

Enhances public education, understanding of science

Basis for long term policy decisions

Several challenges:

quality of science, ethics, participation, wider recognition

From small local (learning) activities to genuine scienctific endeavours

Working together even more important