

The role of Citizen Science in Open Science

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Co-Chair Citizen Science & Open Science CoP (CSGP)

Citizen Science with Application to Nuclear, Seismic and Air Quality Monitoring: Introduction


8 March 2021



Content

- Background
- Citizen Science
- Open Science
- The role of Citizen Science in Open Science
- Towards a global consensus on Open Science

Background


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UTA WEHN


Associate Professor of Water Innovation Studies

 **BIOGRAPHY**

Dr. Uta Wehn is Associate Professor of Water Innovation Studies and head of the Knowledge & Innovation Studies Development group at IHE Delft. She is a social scientist from the field of science, technology & innovation studies, with a background in ICTs, drawing on more than 20 years of combined industrial, research and international development experience. Her work at the intersection of data and knowledge co-creation, digital innovations and water and environment focuses on the social dynamics of innovation and how to harness digital transformations for participatory environmental governance and sustainable development.

She leads the acquisition and implementation of large interdisciplinary research and capacity development projects. Her current **Citizen Science** projects include case studies in Europe, the Middle East and Africa, using LivingLabs principles and tailoring user-centred and multi-stakeholder co-design methods to Citizen Science. She has extensive experience with

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 **groundtruth2.0**
Environmental knowledge discovery of human sensed data

 **afrialliance**
Africa-EU Innovation Alliance for Water and Climate

 **MICS**
Measuring Impact of Citizen Science

 **CSEOL**
CITIZEN SCIENCE EARTH OBSERVATION LAB

 **Women & Water**
for Change in Communities
www.cc.wellandsforum.net

 **We observe**

Citizen Science communities

There is not one global Citizen Science community,
nor one view to represent,
nor one representative body



dedicated forum emerging at the global level

Citizen Science Community of Practice (CS & OS CoP) under the CSGP

Interim CoP Chairs:

- Uta Wehn
- Claudia Goebel
- Libby Hepburn

Citizen Science

Citizen Science

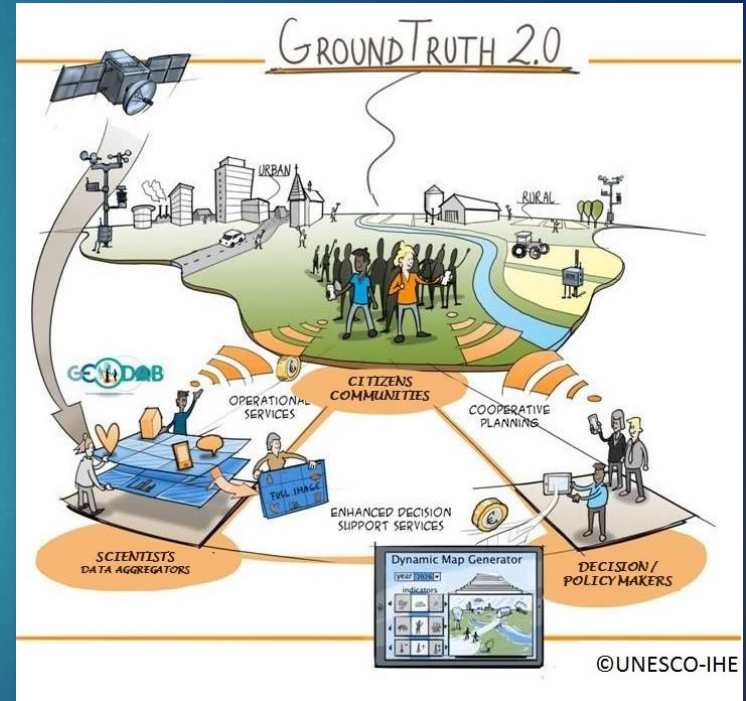
- Volunteered geographic information
- Crowdsourcing geospatial data
- Public Participatory GIS
- People-centric sensing
- Participatory sensing
- eParticipation
- Environmental Virtual Observatories
- Citizen Observatories
- Community-based Monitoring & Information Systems
- Community Science
- Participatory Action Research
- ...



Many forms of Citizen Science

Practitioners emphasize that **Citizen Science**...

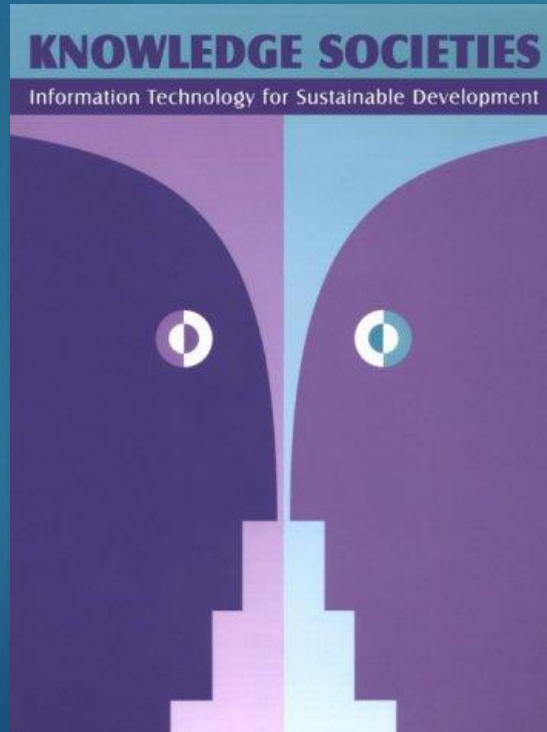
- Works across **all areas of research and knowledge production**, including monitoring of environmental or health conditions;
- Is applicable across **all scientific disciplines**, alongside a variety of disciplinary traditions and research methods;
- Involves participants in **one or more steps** of the scientific research process;
- Follows **protocols and principles** of the discipline within which the research is framed; and,
- Varies in terms of the **roles, responsibilities, and leadership** opportunities for citizens, scientists and other stakeholders.



Open Science

Open Science

Open Science to Society



Mansell, R. and Wehn, U. (eds) (1998) *Knowledge Societies – Information Technology for Sustainable Development*, Oxford: Oxford University Press [also published in Chinese].

Open Science to **Society**

The scientific process

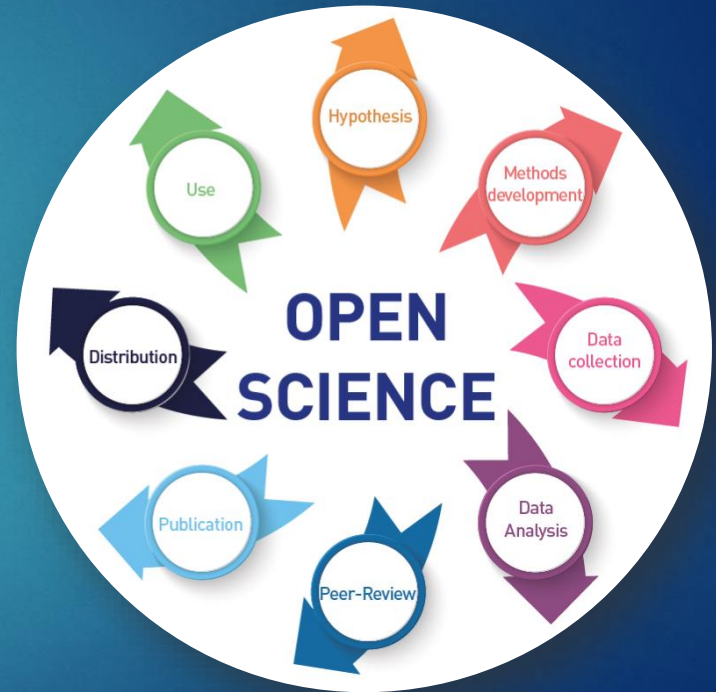


Source: UNESCO (2020)
https://en.unesco.org/sites/default/files/open_science_brochure_en.pdf

Open Science to Society

***What do we need to do or have
in place in order to open
Science to Society?***

*Please choose your **top 3 priorities**
menti.com
92130420*



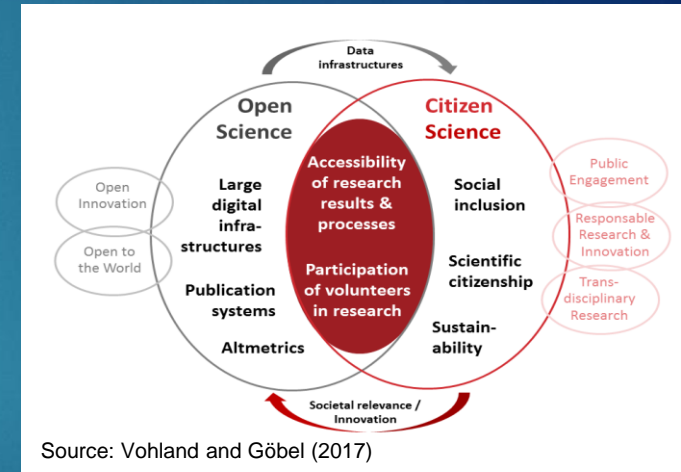
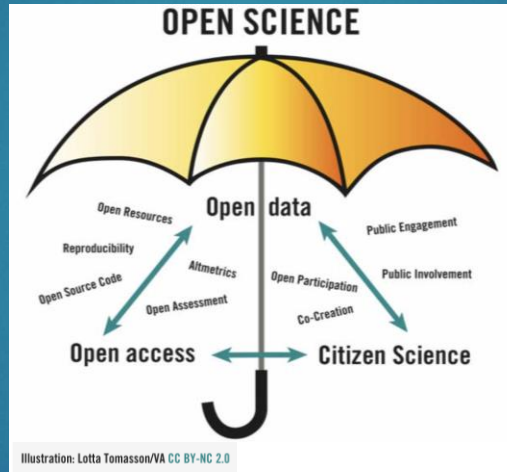
Components of Open Science



The role of Citizen Science in Open Science

Citizen Science & Open Science

- Both Citizen Science and Open Science are **emerging movements**
- Becoming more significant and layered with more sophisticated **understanding** of the themes, dynamics and shared characteristics.



The role of Citizen Science in Open Science

“While Open Science opens the door of academia to the world, Citizen Science invites the world in to experience science.”

(survey respondent, CS & OS CoP short paper)

Citizen Science can be understood as providing *meaning* to Open Science in a **process dimension**



Opening up access to data, publications, and other research products is **necessary but not sufficient** to transition science fully towards Open Science

Citizen Science presents the means for **open, holistic and participatory processes of knowledge generation**, therefore an important pillar of Open Science to enable it to add this significant value

Guiding principles for Open Science implementation

Implementing “good” Citizen Science

- **Scientific expertise** is no longer regarded per se as superior to other forms of expertise
- **Pluralities of knowledge frameworks**
- **Global dimensions**

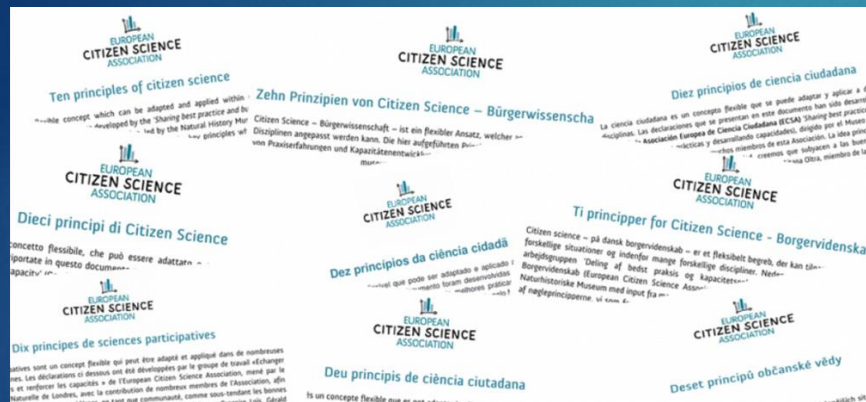
***Open Science** for whom, and to what end?*

Who benefits, and to what degree?

Who stands to lose and how, and who is excluded?

Guiding principles

ECSC 10 Principles of Citizen Science (Robinson et al., 2018) – available in >25 languages



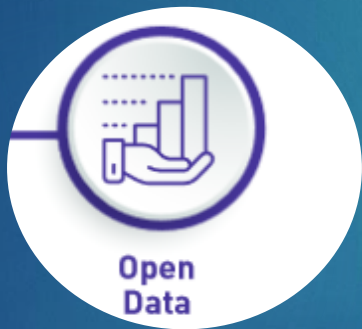
Platforms for sharing training, resources & information about citizen science (e.g. EU-Citizen.Science, CSGP)

7 principles of Open and Collaborative Science by [OCSDnet](#)



Citizen Science & Open Data

*“...contrary to what many people assume, data sets from volunteers are among the **most restrictive** in how they can be used.”*
(Groom et al., 2017)

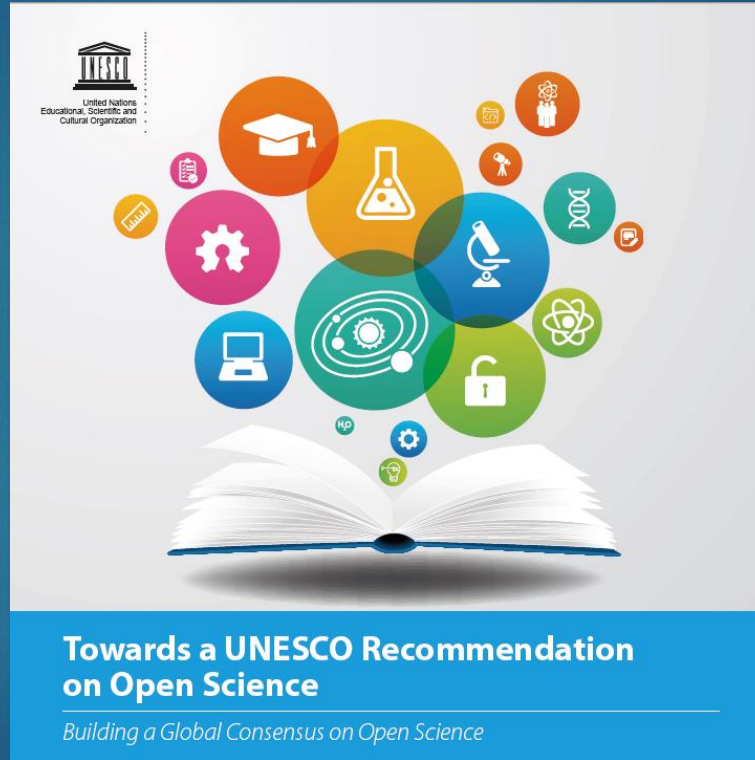


Challenges

- Avoid **misuse** of the data (e.g. revealing the location of observed endangered species)
- **Ethical** challenges (privacy of observer)
- **Data policy** can be difficult to agree on
- Lack of common nascent data and metadata **standards**, and limitations to **data management** including licensing remain, alongside a lack of **awareness, capacity or access** to infrastructure

Towards global consensus on **Open Science**

Towards global consensus on Open Science



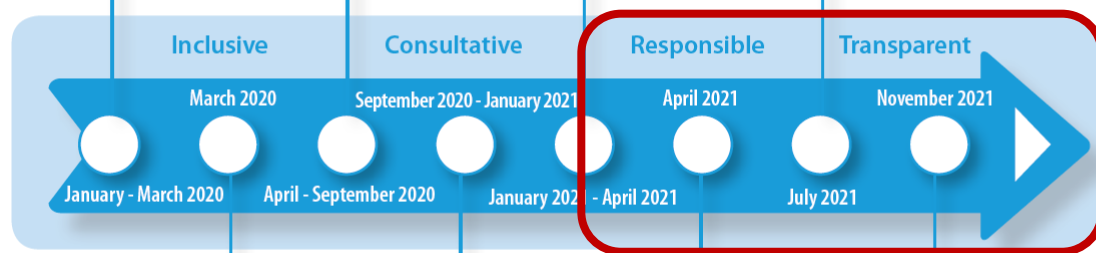
Roadmap towards the UNESCO Recommendation on Open Science

- Establishment of the **Open Science Partnership**
- Establishment of the **Open Science Steering Committee**
- **Electronic consultation** on the elements of the Recommendation

Thematic and regional consultation with stakeholders on the contents of the Recommendation

Further consultations and inputs on the final draft

Meeting of the **special committee consisting of technical and legal experts** appointed by Member States (category II meeting)



First outline of the Recommendation

First draft of the Recommendation, sent to the Member States of UNESCO for their comments

Communication of the DG's revised draft of the Recommendation to Member States

Submission of the draft Recommendation to the 41st General Conference with a view to its adoption

Roadmap to the UNESCO Recommendation on Open Science

Contact:

Section for Science Policy and Partnerships
Division of Science Policy and Capacity-Building
Natural Sciences Sector
UNESCO

openscience@unesco.org

Source: UNESCO (2020)
https://en.unesco.org/sites/default/files/open_science_brochure_en.pdf

Global perspectives of Citizen Science & Open Science

- May 2020: Call for input representing perspectives of Citizen Science communities
- Views of 63 Citizen Science practitioners from 24 countries synthesised.
- Short paper '*Global Citizen Science perspectives on Open Science*' (May 2020)
- CS&OS CoP formed, >130 members around the globe
- Statement of the CS&OS CoP on the 1st Draft UNESCO recommendation (Dec 2020)



Global Citizen Science perspectives on Open Science

Written input by the CSGP Citizen Science & Open Science Community of Practice to the UNESCO Recommendation on Open Science

31 May 2020

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The contributors to this paper included Jens Bemme, Michela Bertero, Marit Bogert, Egle Butkeviciene, Cobi Calyx, Darlene Cavalier, Luigi Ceccaroni, Ted Cheeseman, Antony Cooper, Theresa Crimmins, Melissa Demetrikopoulou, Daniel Dörfler, Shannon Dosemagen, Mohammad Gharefard, Margaret Gold, Bastian Greshake Tzovaras, Gerid Hager, Rick Hall, Florian Heigl, Pen-Yuan Hsing, Turgay Kerem Koramaz, Sonia Liñán, Jonathan Long, Seán Lynch, Metis Meloche, Andjelka Mihajlov, Alice Motion, Maina Muriaru, Tony Murphy, Ricardo Mutuberria, Michelle Neil, Eva Novakova, Marta Oliveira, Jessica L. Oliver, Emu-Felicitas Ostermann-Miyashita, Lucile Ottoloni, Thomas Palfinger, Jim Salmons, Sven Schade, Lea Shanley, Laura Smith, Karen Soacha-Godoy, Angela Tavone, Marta Teperek, Laure Turcati, Jordi Vallverdú, Katerina Zourou, Raul Zurita-Milla.

Abstract

Short Paper: <https://osf.io/6qjyg/>

Statement of the Citizen Science & Open Science Community of Practice (under the Citizen Science Global Partnership) on the [DRAFT UNESCO Recommendation on Open Science](#)

18 December 2020

Until 31 December 2020, stakeholders including the CS & OS CoP have an opportunity to provide feedback on the Draft Recommendation. Via this joint statement, members of this CS & OS CoP wish to provide consolidated feedback, not foreclosing individual responses by the CS & OS CoP members to UNESCO via the broader consultation process.

Background on the CS & OS CoP

The Citizen Science & Open Science Community of Practice (CoP) was formed in early 2020 under the Citizen Science Global Partnership as a response to the UNESCO process of formulating a [Recommendation on Open Science](#). The CS & OS CoP intends to seize the opportunity to advocate for and support Citizen Science as an essential element of a global perspective of Open Science. This represents a key occasion for international exchange and cooperation that should extend beyond the UNESCO process. At UNESCO's invitation, the CoP produced an input [paper providing global perspectives on Citizen Science and Open Science](#), based on inputs from >60 Citizen Science researchers and practitioners around the globe. In addition, the CoP supported three regional consultations of UNESCO, and will continue to contribute to the UNESCO Recommendation on Open Science as the process unfolds.

Statement of CS&OS CoP
<https://osf.io/9v67u/>

Summary – role of Citizen Science in Open Science

Many forms of Citizen Science

Citizen Science is NOT only about data collection

- it presents the means for ***open, holistic and participatory processes of knowledge generation***

Citizen Science can be understood as **providing meaning to Open Science in a process dimension**

Focus on implementing “good” Citizen Science

Thank you!

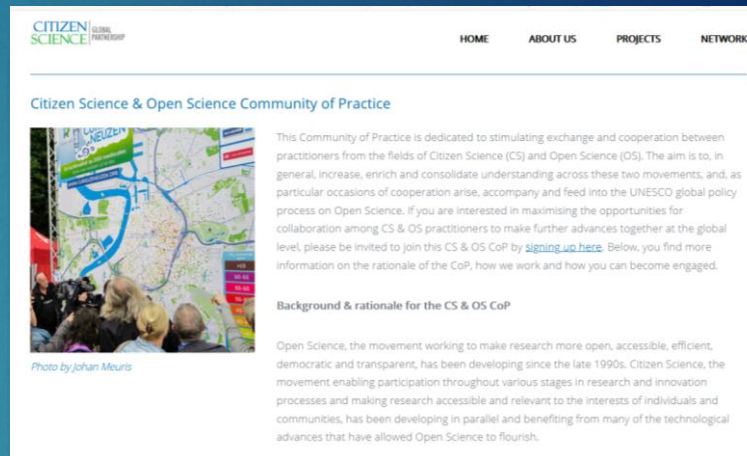
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Join the Citizen Science & Open Science CoP!



The screenshot shows the website for the Citizen Science & Open Science Community of Practice (CoP). The header includes the 'CITIZEN SCIENCE GLOBAL PARTNERSHIP' logo and navigation links for HOME, ABOUT US, PROJECTS, and NETWORK. The main heading is 'Citizen Science & Open Science Community of Practice'. Below this is a photograph of a group of people gathered around a large map. To the right of the photo, a paragraph describes the CoP's mission: 'This Community of Practice is dedicated to stimulating exchange and cooperation between practitioners from the fields of Citizen Science (CS) and Open Science (OS). The aim is to, in general, increase, enrich and consolidate understanding across these two movements, and, as particular occasions of cooperation arise, accompany and feed into the UNESCO global policy process on Open Science. If you are interested in maximising the opportunities for collaboration among CS & OS practitioners to make further advances together at the global level, please be invited to join this CS & OS CoP by [signing up here](#). Below, you find more information on the rationale of the CoP, how we work and how you can become engaged.' Below the photo, a caption reads 'Photo by Johan Meuris'. Further down, a section titled 'Background & rationale for the CS & OS CoP' contains a paragraph about Open Science: 'Open Science, the movement working to make research more open, accessible, efficient, democratic and transparent, has been developing since the late 1990s. Citizen Science, the movement enabling participation throughout various stages in research and innovation processes and making research accessible and relevant to the interests of individuals and communities, has been developing in parallel and benefiting from many of the technological advances that have allowed Open Science to flourish.'

citizenscienceglobal.org/projects.html#csos

