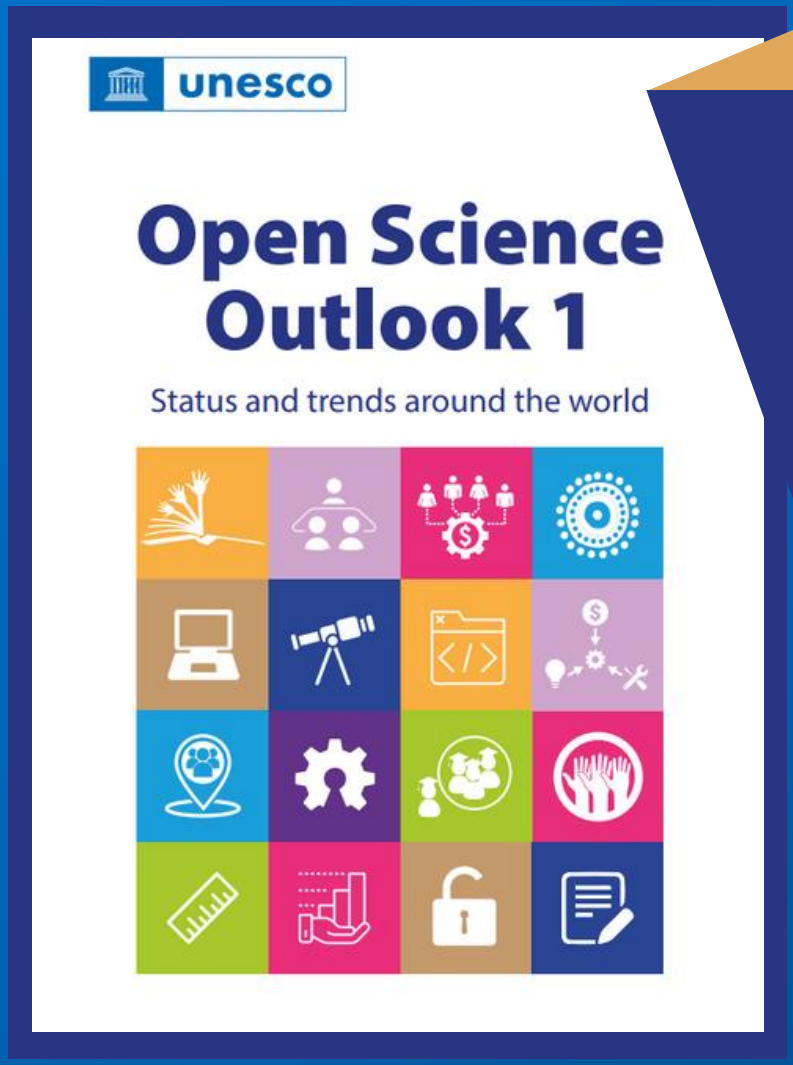
Launch of the UNESCO Open Science Outlook



UNESCO Open Science Outlook: Key messages and findings

Key messages and next steps

For open science to reach its full potential, it must be a truly global, equitable phenomenon.

Inequities in STI systems exist. Context affects experience and prioritization of open science. Who sets norms and practices? Who creates and has access to systems?

Open science is growing—but unevenly.

Obstacles remain, linked to existing inequities. There are:
-differences among pillars of open science.
-differences among disciplines.
-differences across contexts.

The transition to open science requires a shift in the culture of science.

The Recommendation's 7 areas of action provide structure.

Collective, collaborative and coordinated action and investment are needed to accelerate the transition to a truly global, equitable open science.

The shared values and principles provide a framework.

Creating a global Open Science Outlook

Five Working Groups

- Policy
- Capacity
- Infrastructures
- Incentives and financing
- Monitoring

Over 700 participants from all regions

Shared expertise and exploration is essential as open science evolves.

Creating global and equitable open science

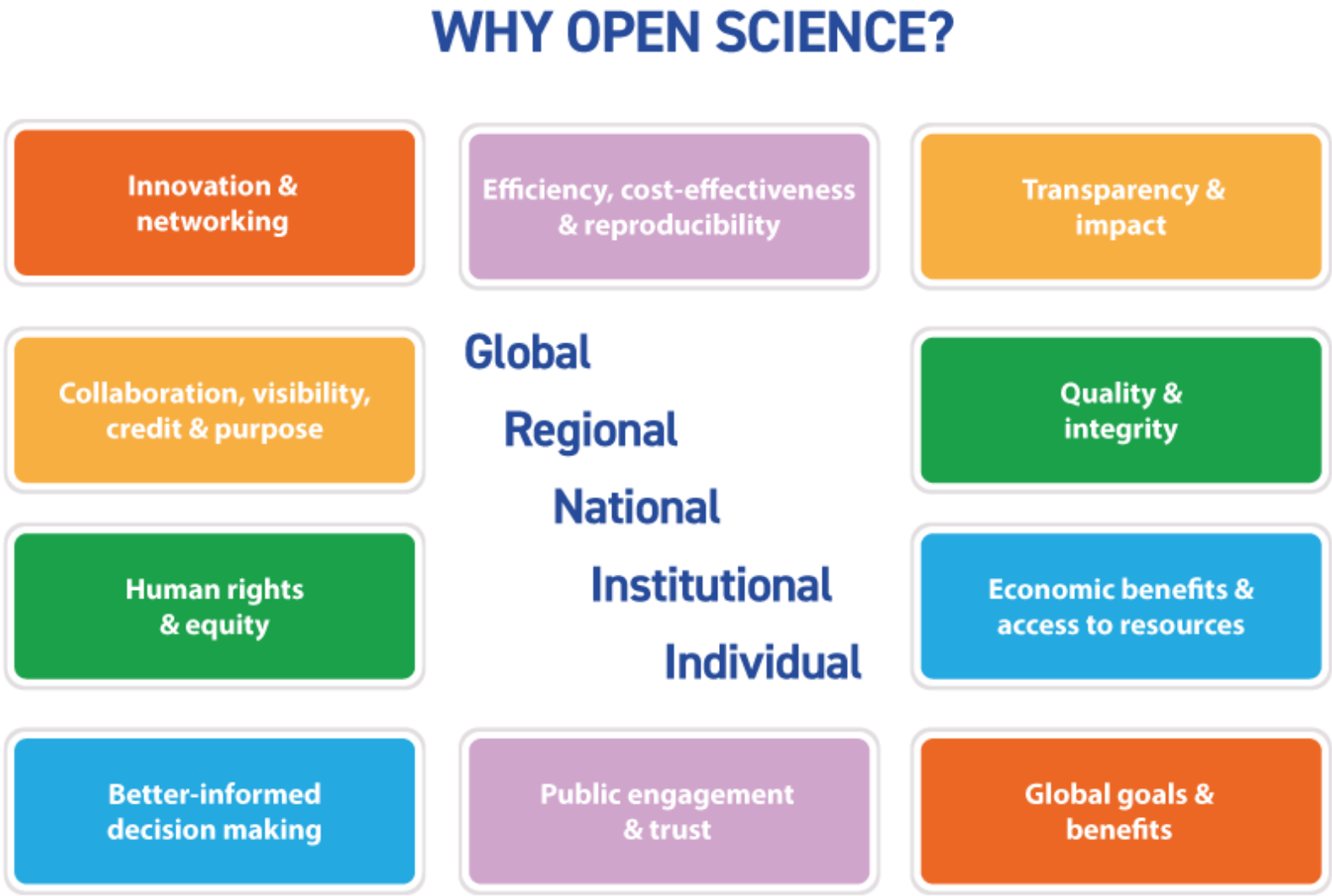
Where are we now?

Where are we headed?

- *Global commitment*
- *Regional priorities*
- *Relation to emerging tech and intellectual property*
- *Benefits of transformation*

GOAP Global **Open Access** Portal
Beta version

Benefits of open science



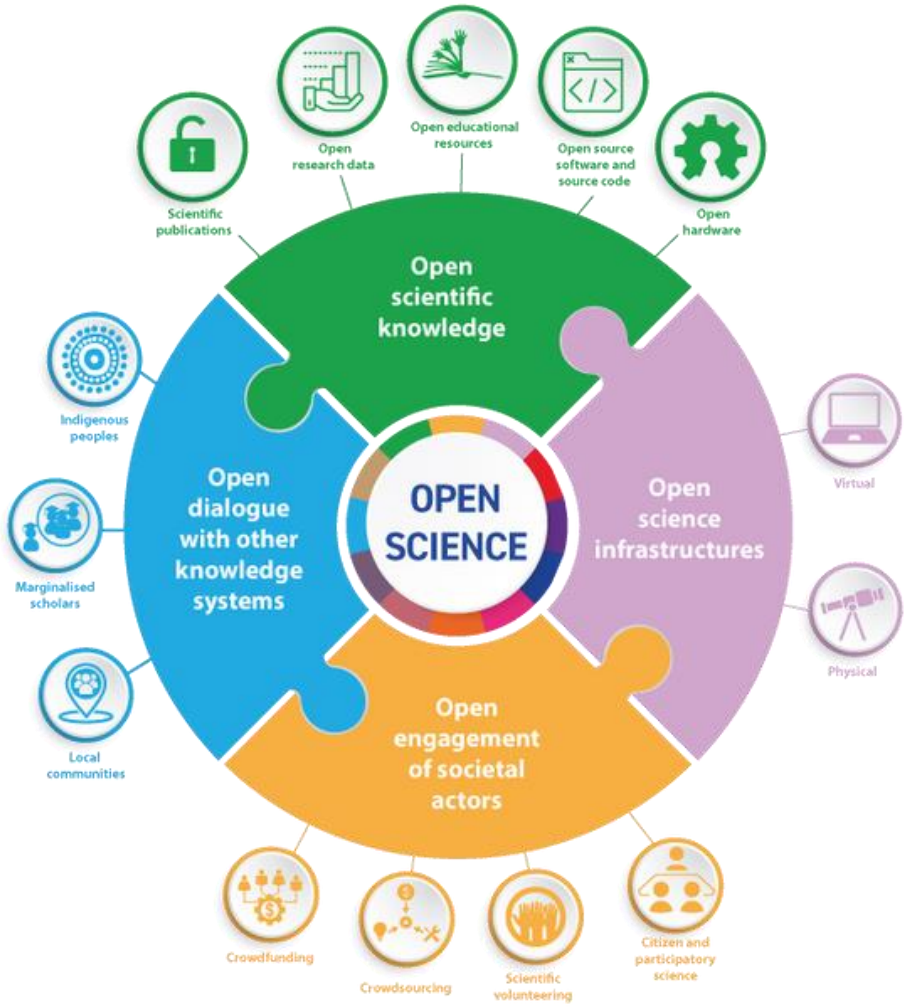
Open Science

Open and equitable global science system	Open access to scientific knowledge	Open science infrastructures	Open engagement of societal actors	Open dialogue with other knowledge systems
An open science culture in an enabling policy environment with sustained resource commitments increases collaboration for the benefit of science and global society.	All scholarly outputs are published in a fully open access outlet or posted in an open repository, with free, immediate readership/ usership rights.	Sustainable community-led open infrastructures, both physical and digital, are available to all, regardless of location, language or ability.	Multiple entry points permit engagement. External actors contribute/initiate design, creation and application of scientific knowledge.	Diverse knowledge bases spark innovation and equitable decision-making.
A culture of open science is fostered with effort to align incentives, science investments, human resources, training, education, digital literacy and capacity building for open science.	Data, software and other outputs are FAIR* and openly shared digitally with	Platforms permit usership for all. Digital architecture [illegible] different languages and accessibility needs.	Capacity for societal engagement is integrated into project plans.	Capacity for ethical, open dialogue is integrated into planning and evaluation at project and institutional levels.
Innovative approaches for open science are promoted at different stages of the scientific process.	All scholarly outputs are made freely available to read, in a journal or an open repository, after an embargo of no more than six months.	Open infrastructures are available to those who have existing access or commit to specified partnerships.	Societal actors have a few, defined, points of contact with scientific processes.	Dialogue is built into policies, creating time, opportunities and incentives for dialogue.
International and multi-stakeholder cooperation is initiated without a view to reducing digital, technological and knowledge gaps.	Scholarly outputs are shared without clear licensing or copyright.	Infrastructure sharing is opportunistic.	Stakeholder engagement is opportunistic.	Dialogue is facilitated in one-off events, with uneven expertise.
There is no common understanding of open science and its benefits.	Scholarly outputs are not published or are published under restrictive copyright.	Digital gaps and subscription costs hinder the use of scientific infrastructures.	Science is separate from "outreach". Science communication is one-way, outwards.	Science is separate from "outreach". Other topics or communities are research subjects.

'Closed' Conventional Science

The spectrum of openness is within reach of all.

Assessment of open science

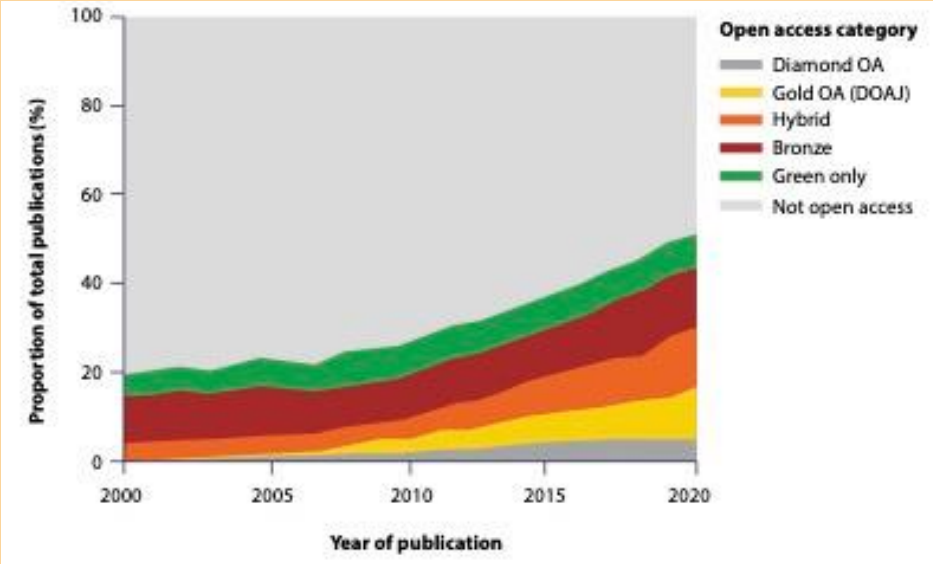


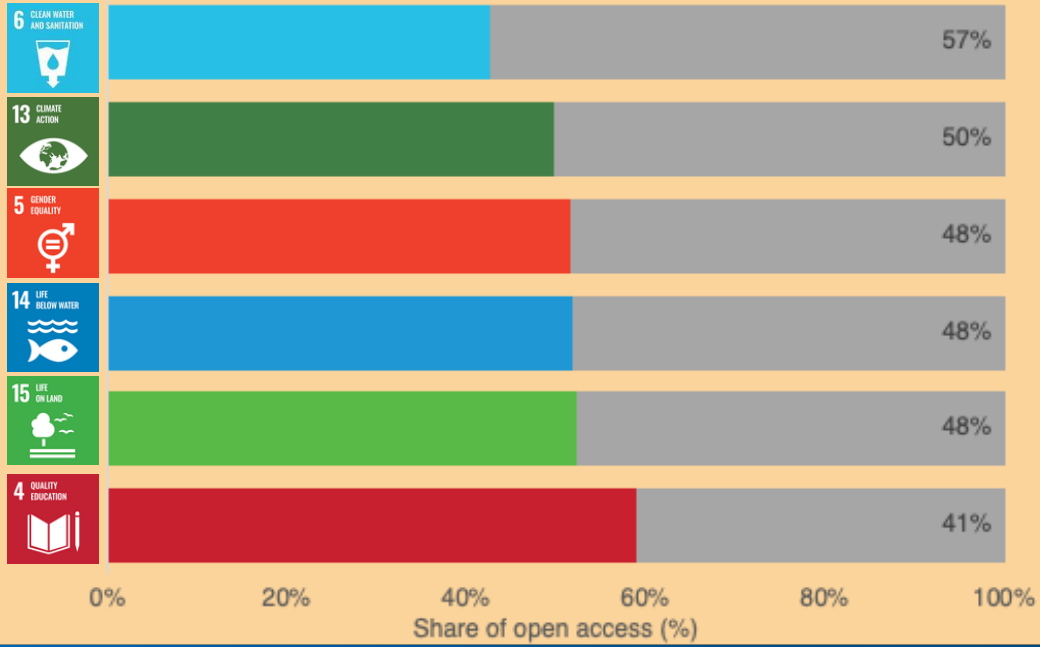
Assessment of open science

Strengthening the focus on people, not just products

Trends: Open scientific knowledge

- % of scientific publications in open access rapidly growing, **yet only 1/3 of all scholarly literature (since 2000) is currently under open access**.
- A **growing number** of **countries** and **institutions** are ***adopting*** or ***facilitating*** **open access policies and workflows**.
- A range of **mechanisms** are used to **provide open access**, with different consequences in diverse local contexts.
- **Different subject areas** are differently **represented** in open access publications.





Assessment will require more than counting

- **Monitoring** of open research data sharing is in its **early stages**.
- **Open hardware licensing** is **growing**, with an unknown proportion used for scientific research.
- The body of **openly shared software and source code used for scientific research purposes** is largely **unknown**.
  - Sharing and monitoring both rely on ***available systems*** and ***infrastructures***.

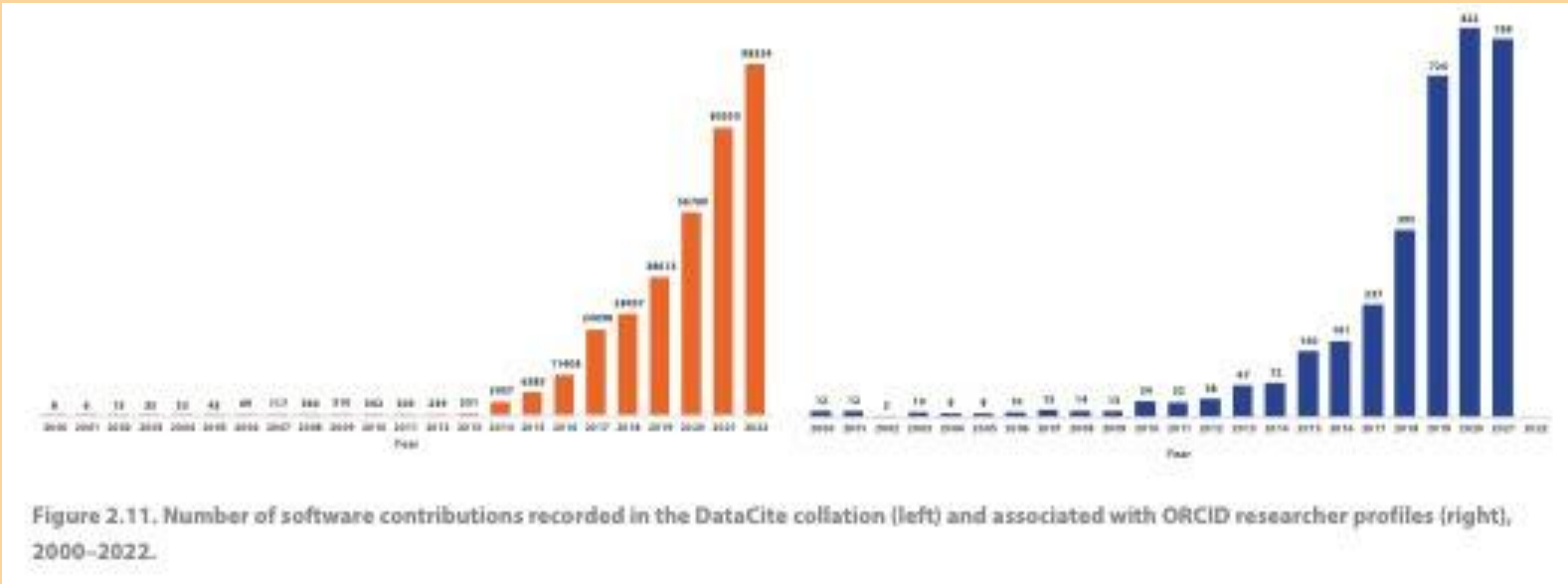


Figure 2.11. Number of software contributions recorded in the DataCite collation (left) and associated with ORCID researcher profiles (right), 2000–2022.

Assessing engagement and dialogue

Engagement and **dialogue** are ***not*** yet among **mainstream factors** considered in monitoring of open science practices.

Citizen scientist Beth Reille takes a water clarity reading on the Hutt River. [Photo: Dave Allen, NIWA]

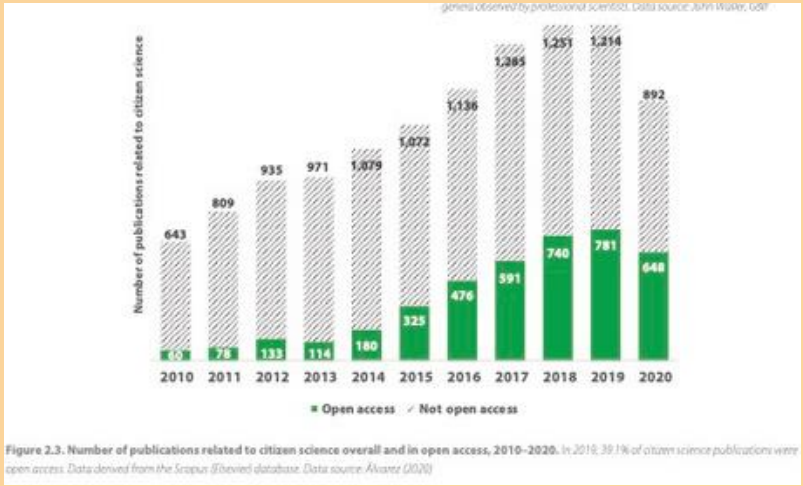


Figure 2.3. Number of publications related to citizen science overall and in open access, 2010–2020.

Rise of interest in scientific projects incorporating **societal engagement:**

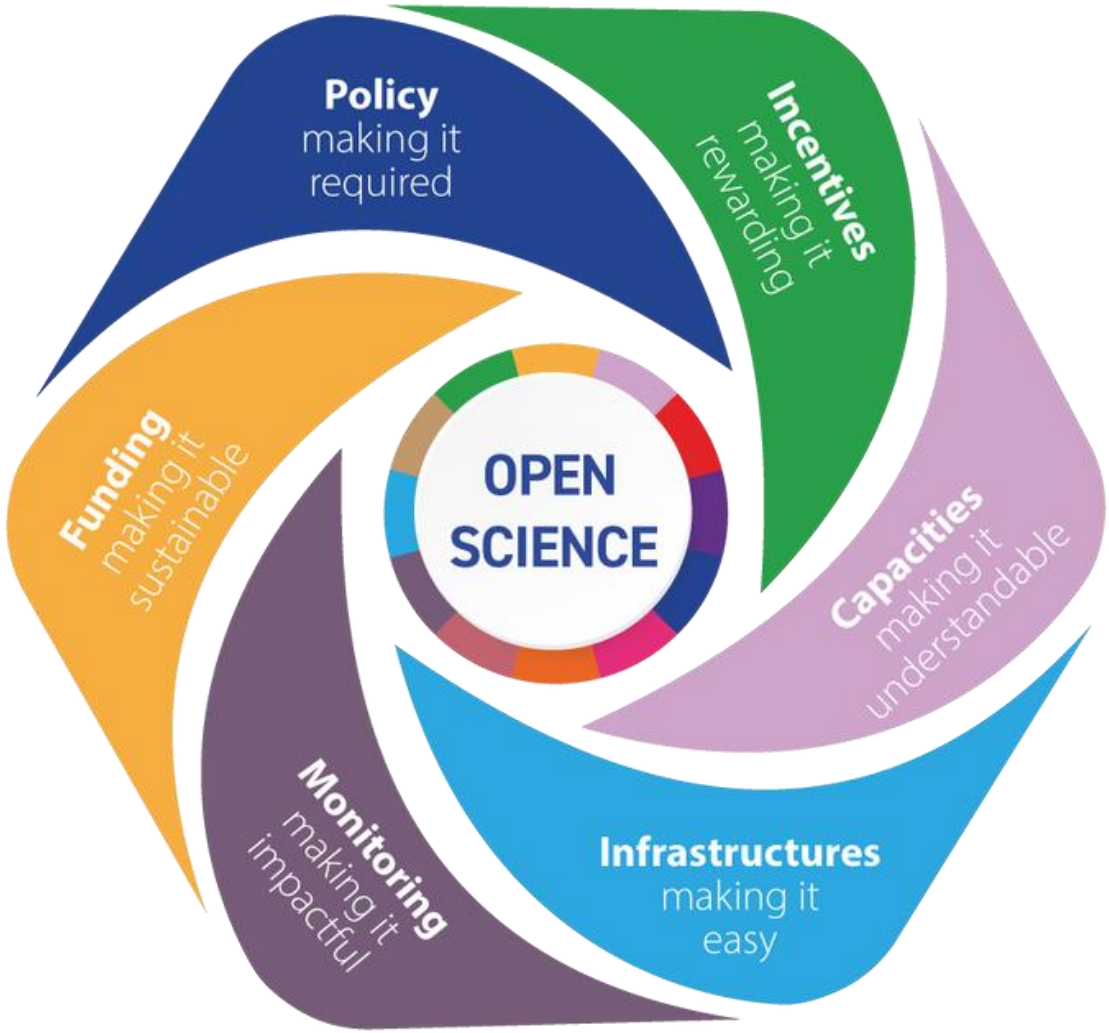
- Increase in funding
- Increase in recorded numbers of citizens engaging in science or producing data products
- Increase in number of scientific publications related to citizen science

Shifting the culture of science

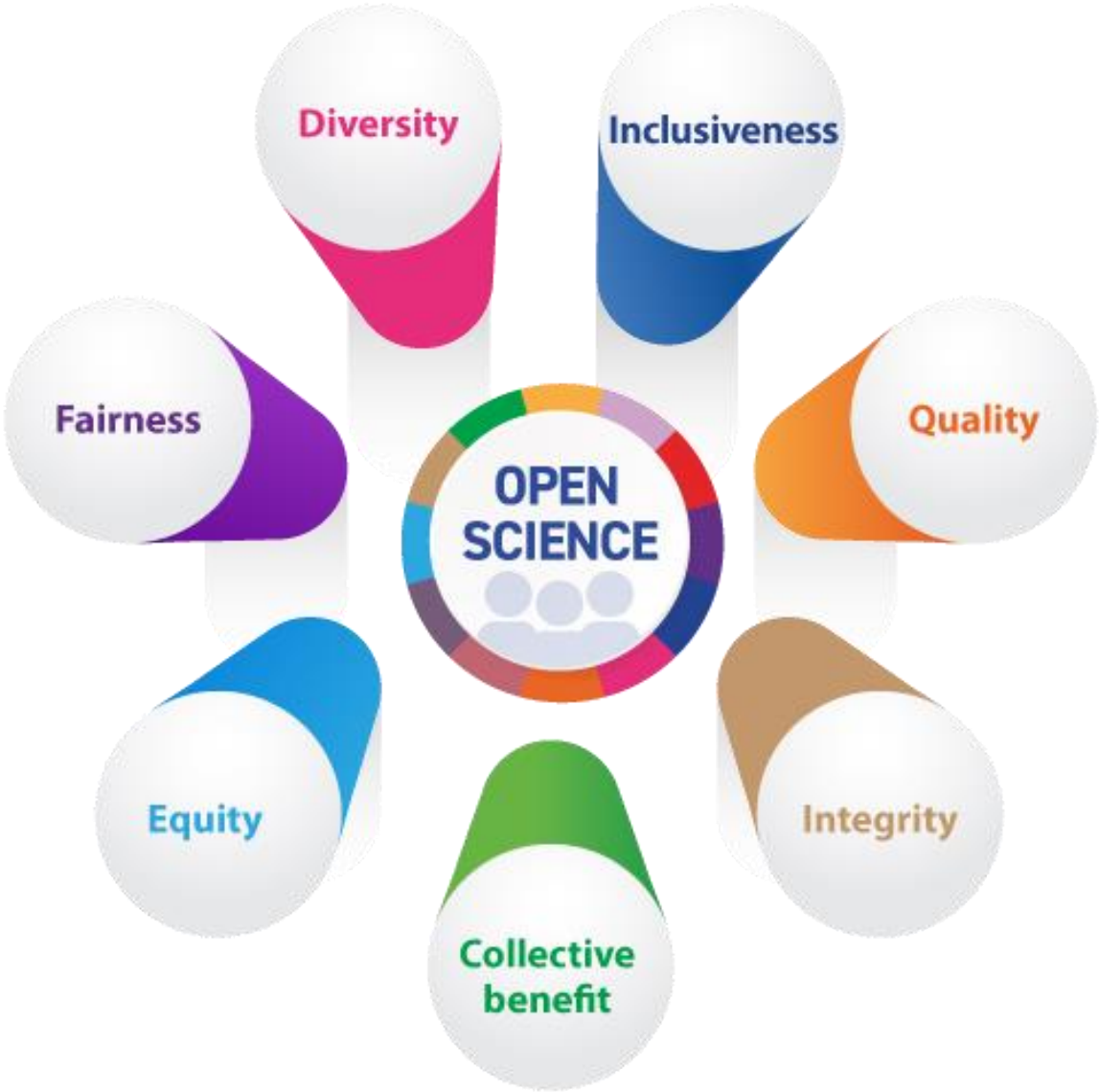
Need practical actions *and* cultural shifts

Equitable collaboration

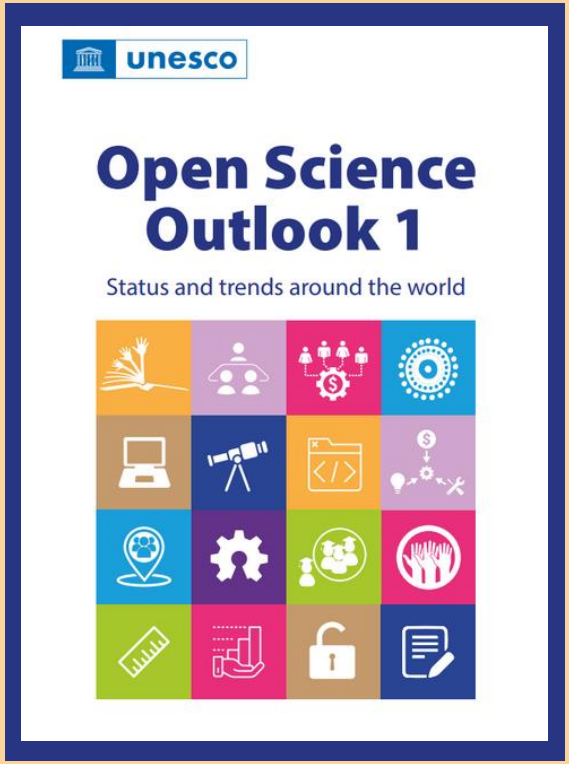
Actions are underway around the world: Cases from all regions demonstrate opportunities



Open science values provide a shared and flexible framework



Join the Global Open Science Movement



Read the Open Science Outlook:

Join the UNESCO Open Science Partnership

Contribute to global open science calls

Engage in the global discussions

Be in touch!

UNESCO Open science website:
https://www.unesco.org/open-science

Contact: openscience@unesco.org

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Thank you

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