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# Launch of the UNESCO Open Science Outlook



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## Open Science Outlook 1

Status and trends around the world



**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.

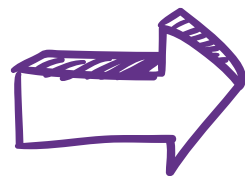
**Collective, collaborative and coordinated action and investment are needed to accelerate the transition to a truly global, equitable open science.**

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.*

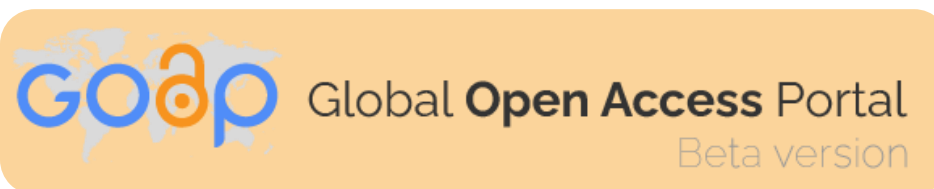
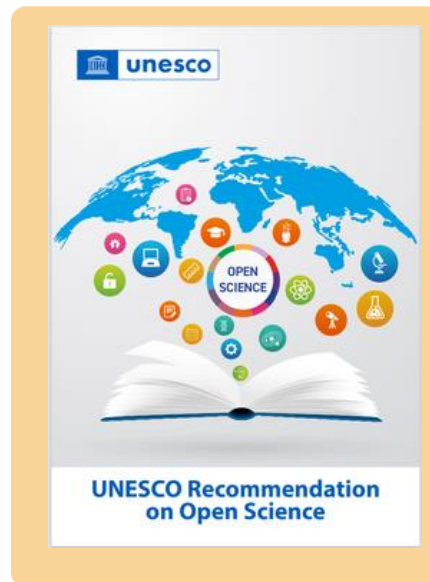
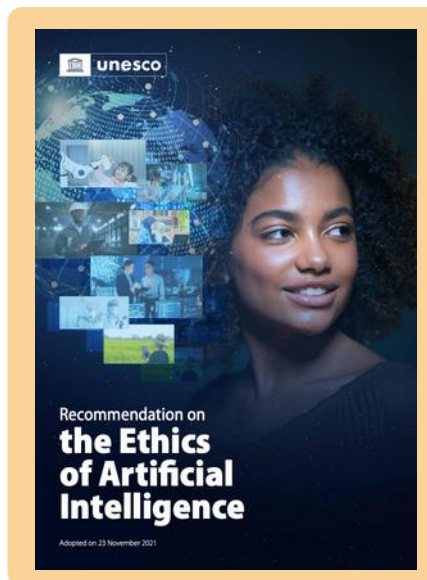


# Creating global and equitable open science

Where are we now?

Where are we headed?

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



## WHY OPEN SCIENCE?



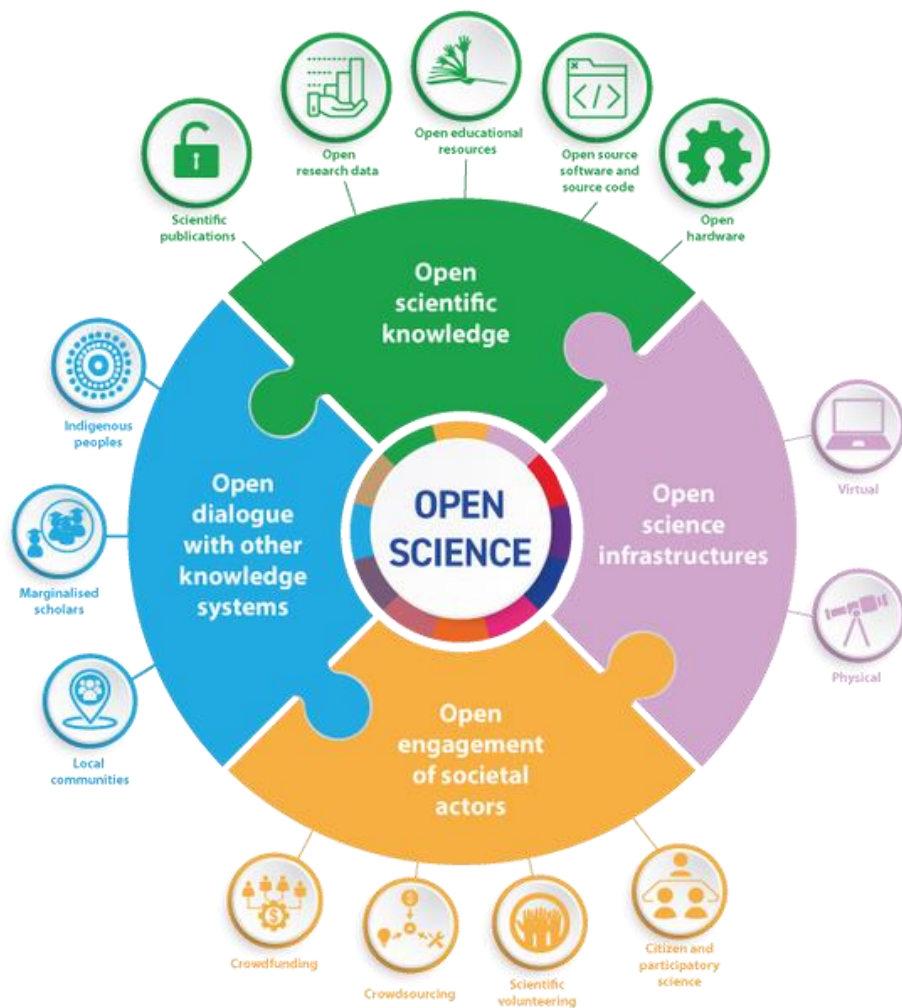
## Open Science

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, including investments in human resources, training, education, digital literacy and capacity building for open science. Innovative approaches for open science are promoted at different stages of the scientific process.	Data, software and other outputs are FAIR* and made freely available to read, in a journal or an open repository, after an embargo of no more than six months.	Platforms permit usership for all. Digital infrastructures are available to those who have existing access or commit to specified partnerships.	Capacity for societal engagement is built into processes. Few, defined, points of contact with scientific processes.	Capacity for ethical, open dialogue is integrated into planning and implementation at professional and institutional levels. 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.	All scholarly outputs are shared without clear licensing or copyright.	Open infrastructures are available to those who have existing access or commit to specified partnerships.	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.

**The spectrum of openness is within reach of all.**

## 'Closed' Conventional Science

# Assessment of open science



# Assessment of open science



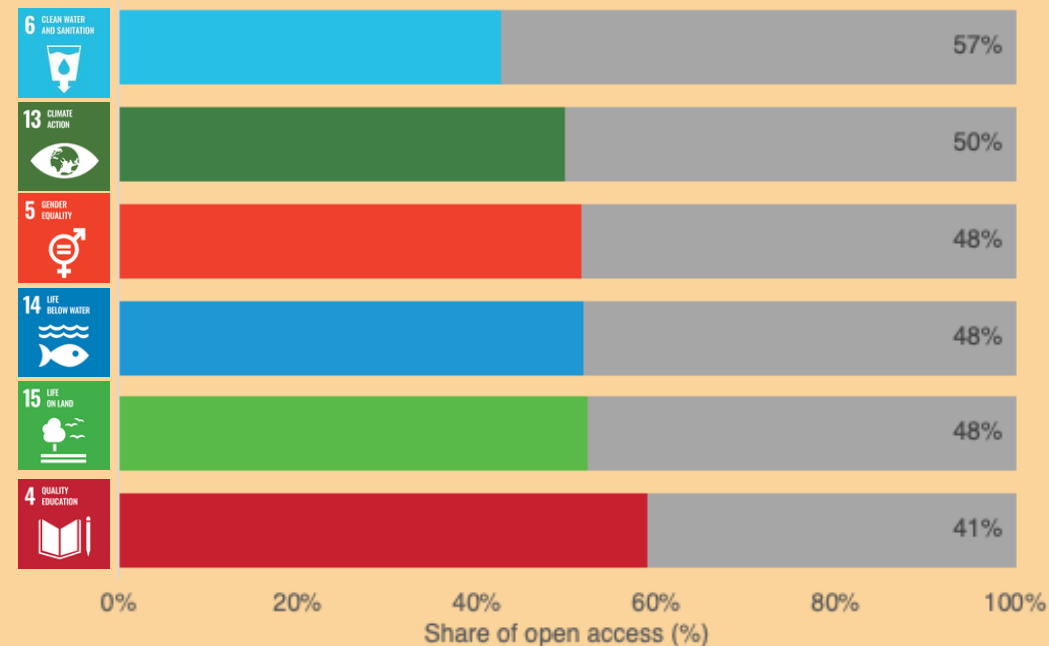
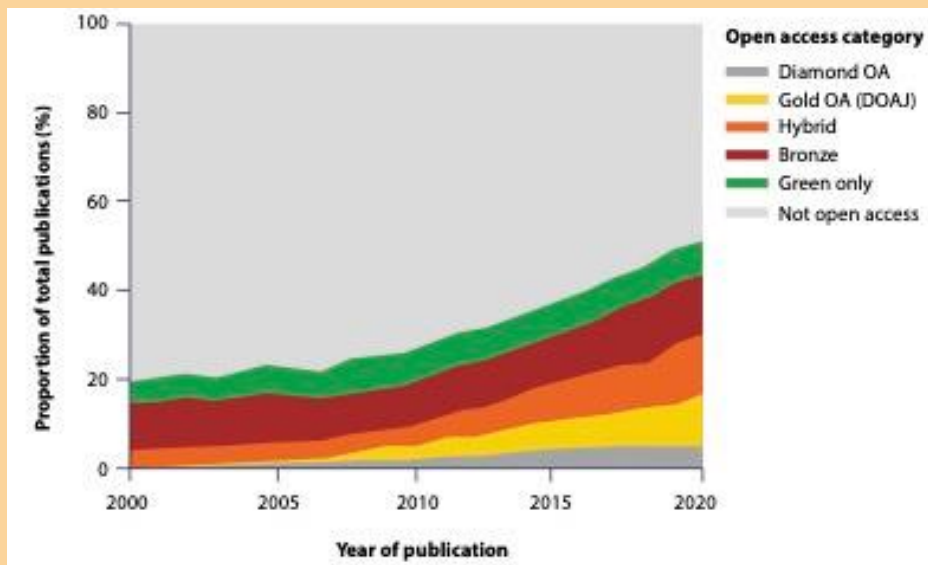
*Strengthening the focus on people, not just products*





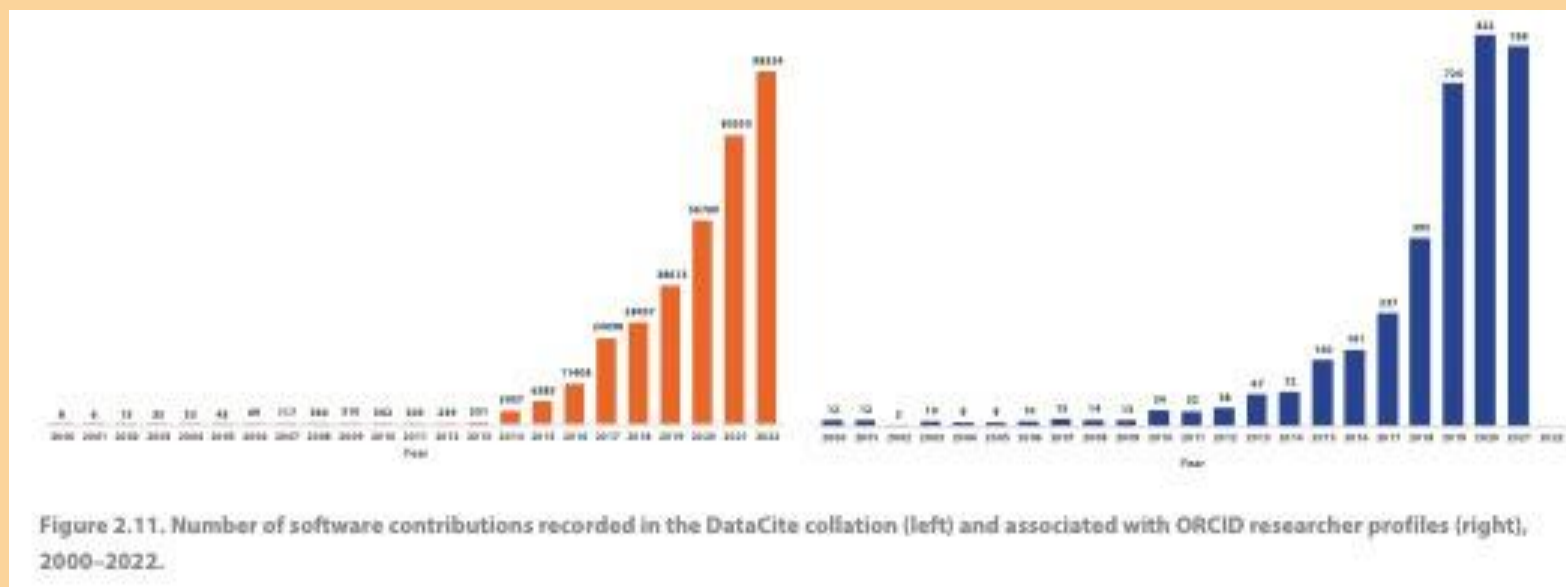
# Trends: Open scientific knowledge

- % 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*.



# 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]

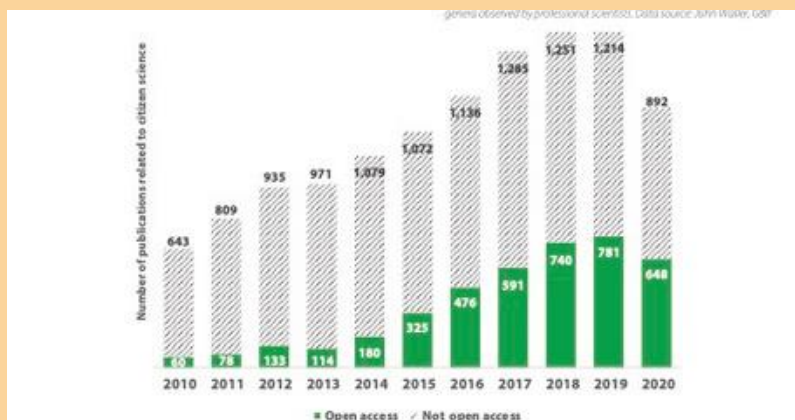


Figure 2.3. Number of publications related to citizen science overall and in open access, 2010–2020. In 2019, 39.1% of citizen science publications were open access. Data derived from the Scopus database. Data source: Alvarez (2020)

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

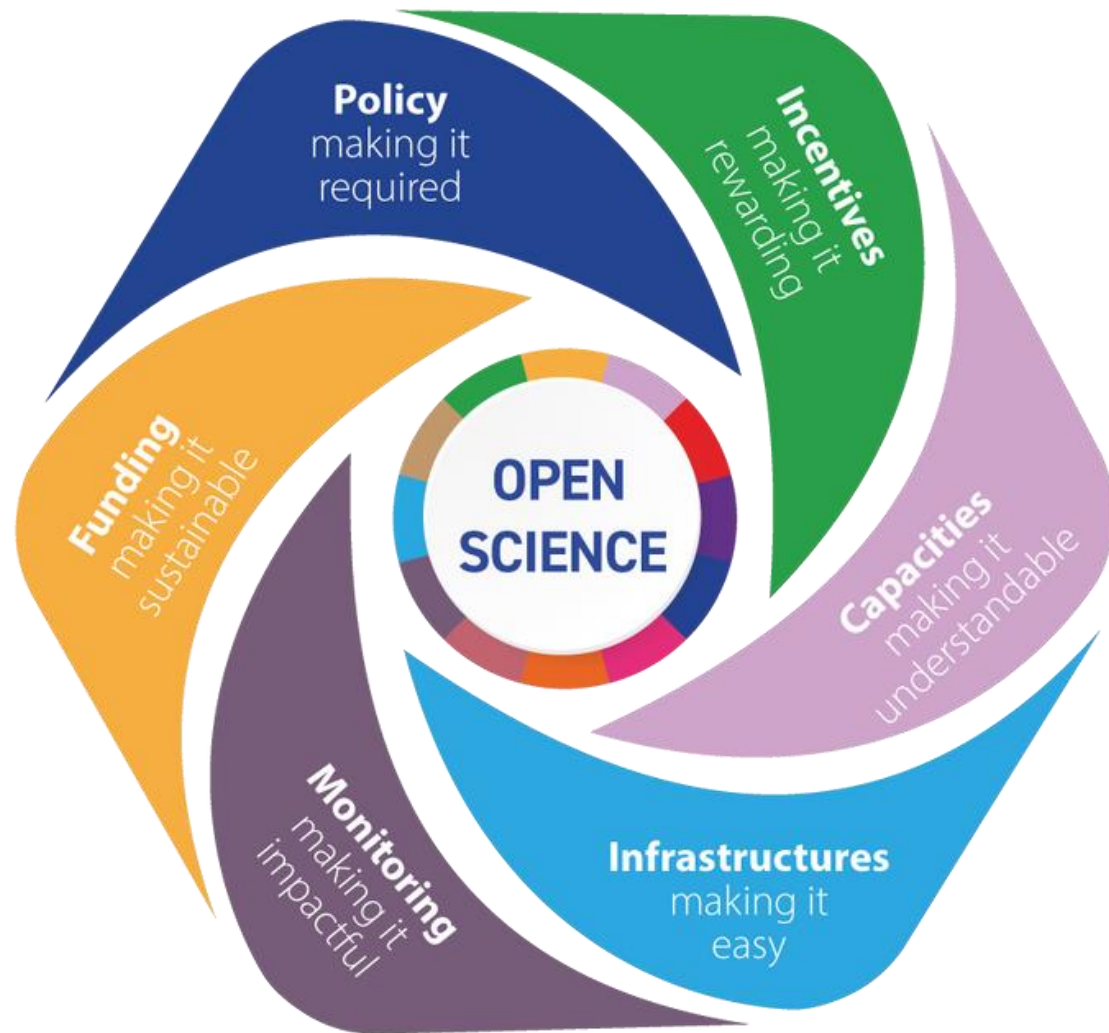
- Increase in funding
- Increase in recorded numbers of citizens engaging in science or producing data products
- Increase in number of scientific publications related to citizen science

# Shifting the culture of science

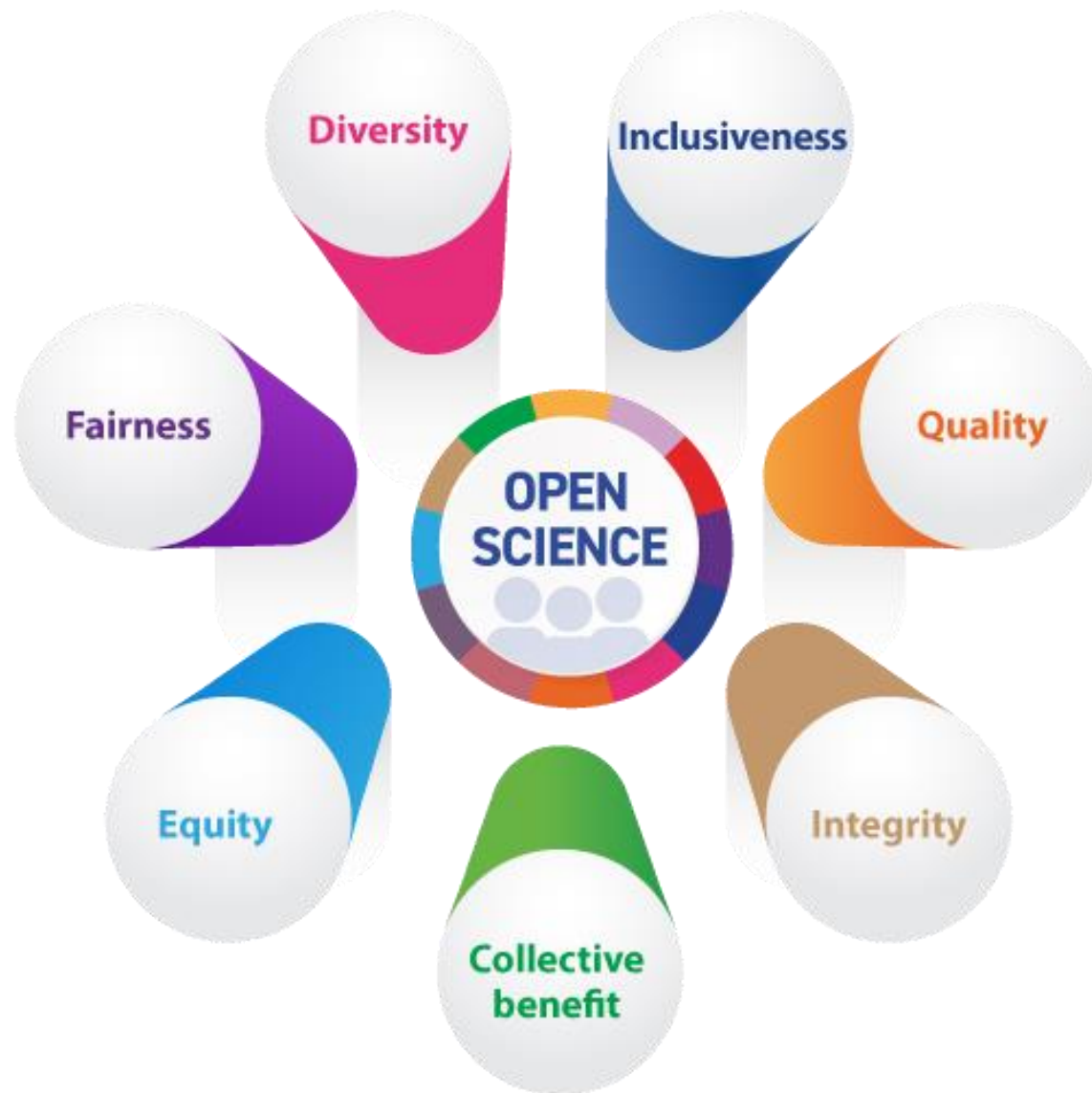
**Need practical actions  
*and* cultural shifts**

**Equitable  
collaboration**

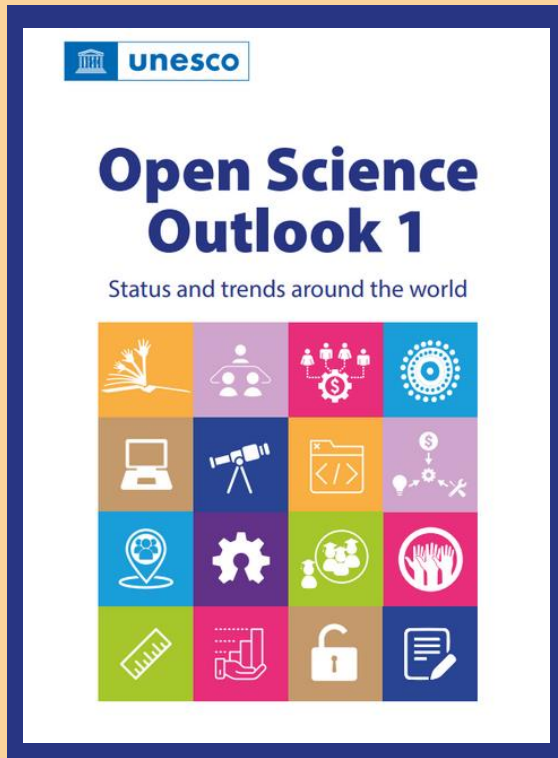
**Actions are underway  
around the world:  
Cases from all regions  
demonstrate opportunities**



# 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](mailto:openscience@unesco.org)



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# Thank you



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Educational, Scientific  
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