UNESCO and Open Science

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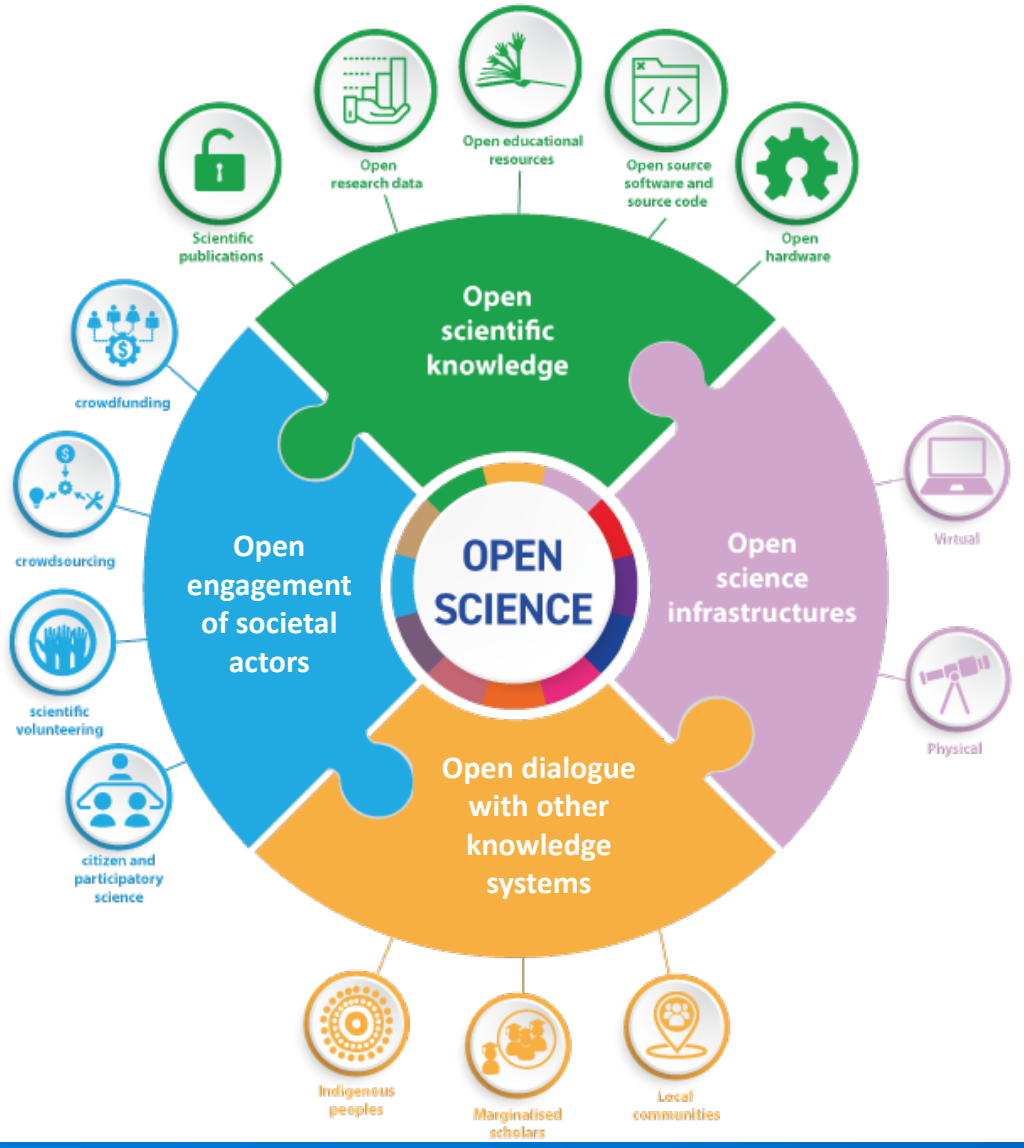
UNESCO Recommendation on Open Science

2021 UNESCO Recommendation on Open Science

- It is the first **international normative instrument** on open science;
- it contains the first **internationally agreed definition** of open science;
- it spells out the common **core values and guiding principles** of open science;
- it addresses **multiple actors and stakeholders** of open science;
- it recommends **actions on different levels** to operationalize the principles of open science;
- it proposes **innovative approaches for open science** at different stages of the **scientific cycle**;
- it calls for development of a **comprehensive open science monitoring framework**.

Key pillars of open science



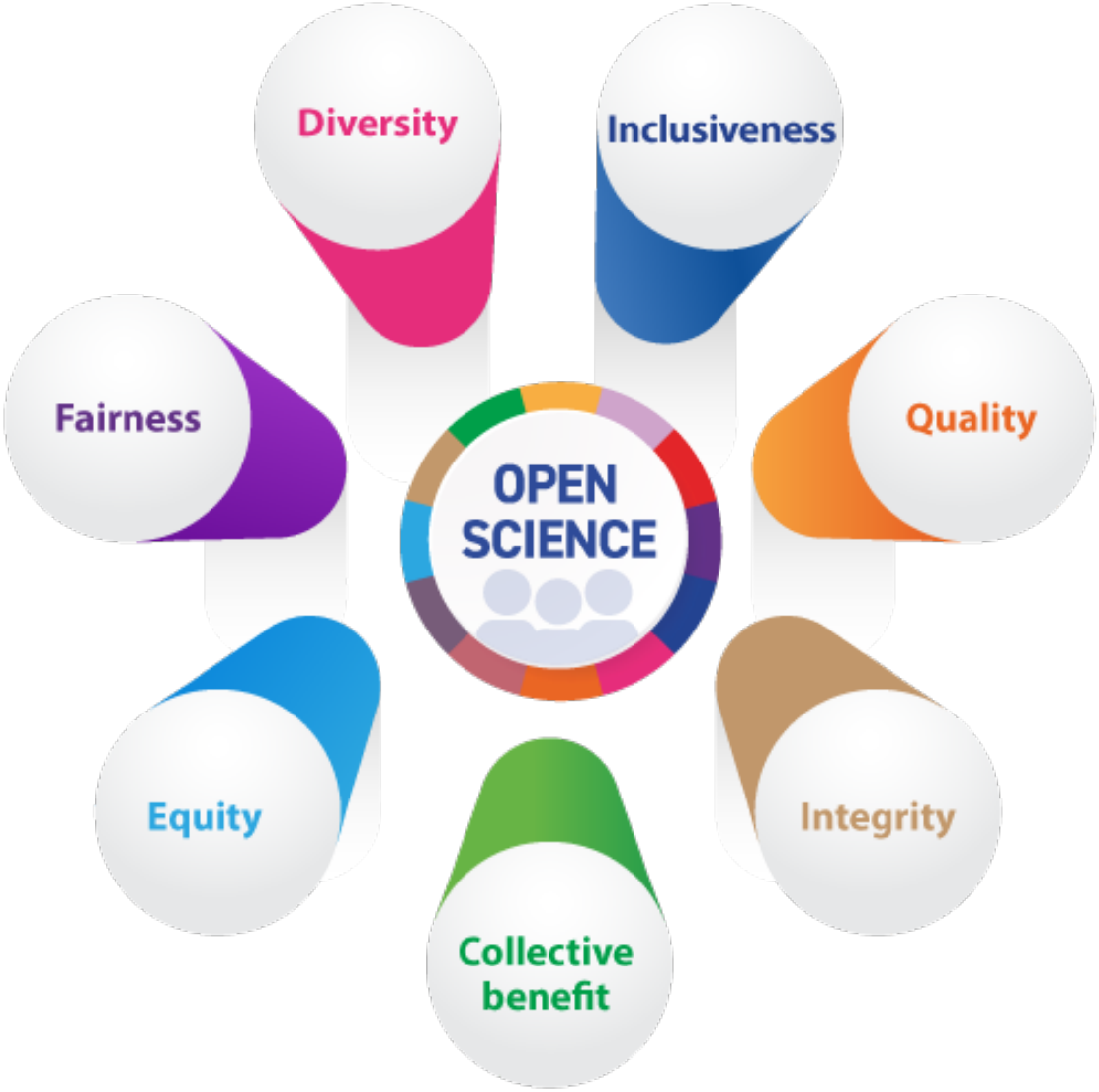
Open Scientific Knowledge: scientific publications, research data, software, source code, hardware and educational resources available in the public domain or under copyright with open license

Open Science infrastructures: scientific equipment or sets of instruments, knowledge-based resources such as collections, repositories, archives and scientific data, open computational and digital infrastructures

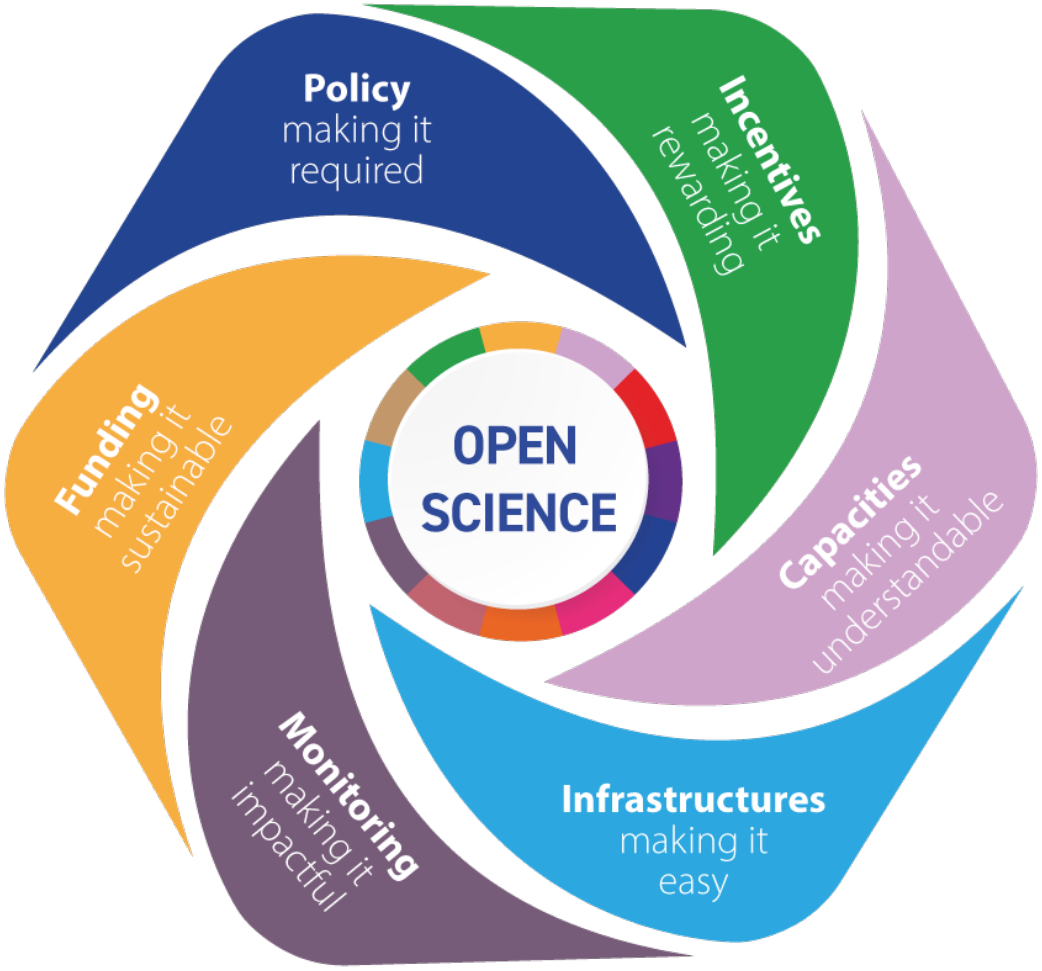
Open engagement of societal actors: collaboration between scientists and societal actors beyond the scientific community, opening up practices and tools that are part of the research cycle by making the scientific process more inclusive and accessible to the broader inquiring society

Open dialogue with other knowledge systems: recognition of richness and complementarities between diverse epistemologies, including indigenous knowledge systems

Open science values provide a shared framework



Shifting the culture of science

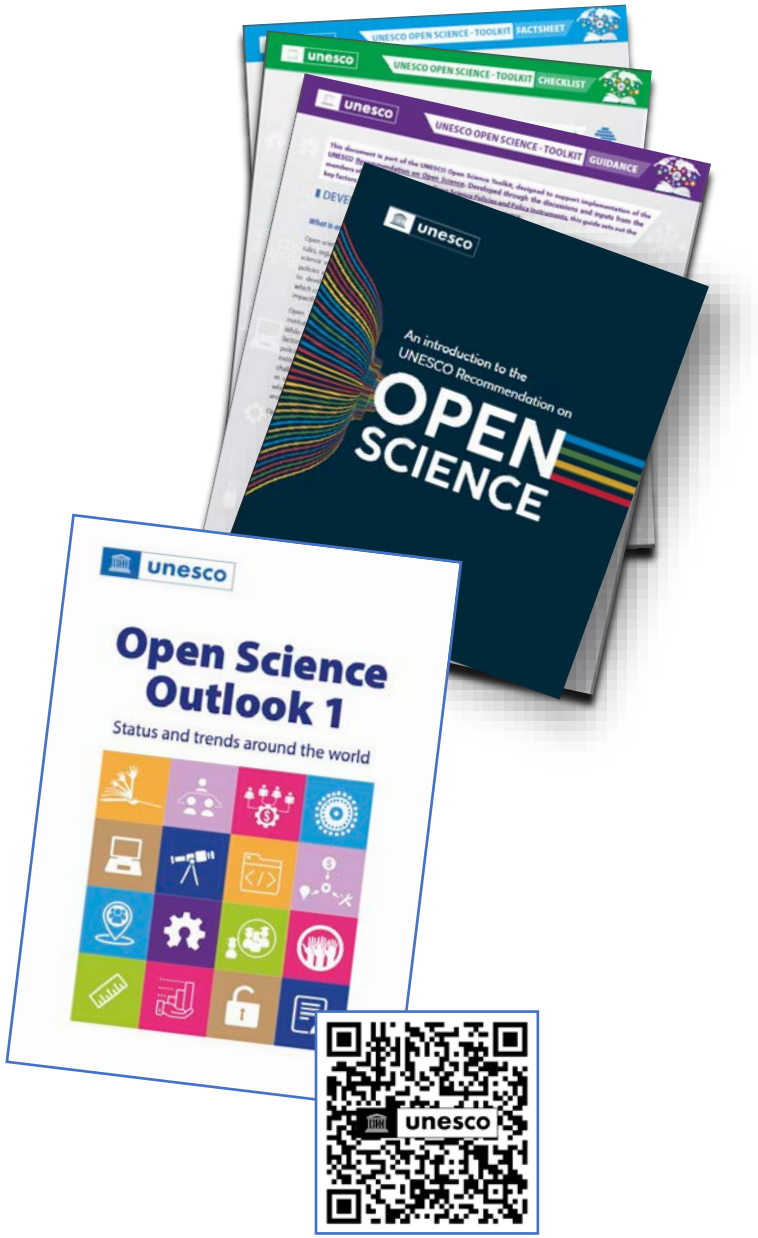


Key achievements in 2022-2023

- ✓ **Development of standards and guidance for the implementation of the Recommendation**
  - UNESCO Open Science Toolkit with guides, checklists and factsheets
  - UNESCO Open Science Outlook
  - UNESCO Open Science Capacity Building index
  - UNESCO Index of Open Science Knowledge Sharing Platforms

- ✓ **Impacts on policy development**
  - 11 countries adopted more holistic open science policies/policy instruments since
  - Development at different stages of open science policies/strategies/roadmaps in Africa
  - Integration of open science principles in STI policies
  - Development of regional open science strategies: SADC, ECOWAS, EASTCO, AESAN

- ✓ **Strengthened and expanded partnerships and networking**
  - UNESCO Open Science Partnership (over 70 members)
  - UNESCO Open Science Working Groups (over 700 experts)



Open Science in Africa

Development of National/Sub-regional Open Science Policies and Roadmaps

- Nigeria, South Africa, Lesotho, Ivory Coast, Ghana, Botswana, Uganda, Mozambique, Zambia….
- SADC, ECOWAS, EASTCO, AESAN

Development of institutional policies

- Ethiopia, Mozambique, Kenya, Tanzania….

Capacity Building

- PLOS-TTC-UNESCO sub-regional workshops…

Platforms and Infrastructures

- African Open Science Platform, AfricArXiv…

Different Actors

- AAU, AAS, TCC, LIBSENSE, NRENs, UbuntuNet Alliance, Africa Open Science Hardware….
- AU, Regional and subregional bodies…

UNESCO OPEN SCIENCE · TOOLKIT

GUIDES

- **Developing policies** for open science
- **Building capacity** for open science
- **Funding** open science
- Bolstering open science **infrastructures** for all
- **Engaging society in open science**
- Supporting **open source hardware for open science**

CHECKLISTS

- Checklist for **universities** on implementing the UNESCO Recommendation on Open Science
- Checklist for **open access publishers** on implementing the UNESCO Recommendation on Open Science

FACTSHEETS

- **Understanding open science**
- Identifying predatory academic journals and conferences

OPEN INDEXES OF OPEN SCIENCE RESOURCES

- UNESCO Open Science **Capacity Building index**
- UNESCO Index of Open Science **Knowledge Sharing Platforms**

OPEN SCIENCE OUTLOOK

https://www.unesco.org/en/open-science/toolkit

Bolstering open science infrastructures for all

In the Recommendation, Member States are encouraged to promote non-commercial open science infrastructures and to ensure adequate investment in:

Open approaches

- Non-commercial
- Community based
- International collaboration

Core infrastructures

- Reliable Internet
- Federated IT infrastructure
- Community managed infrastructures, protocols and standards

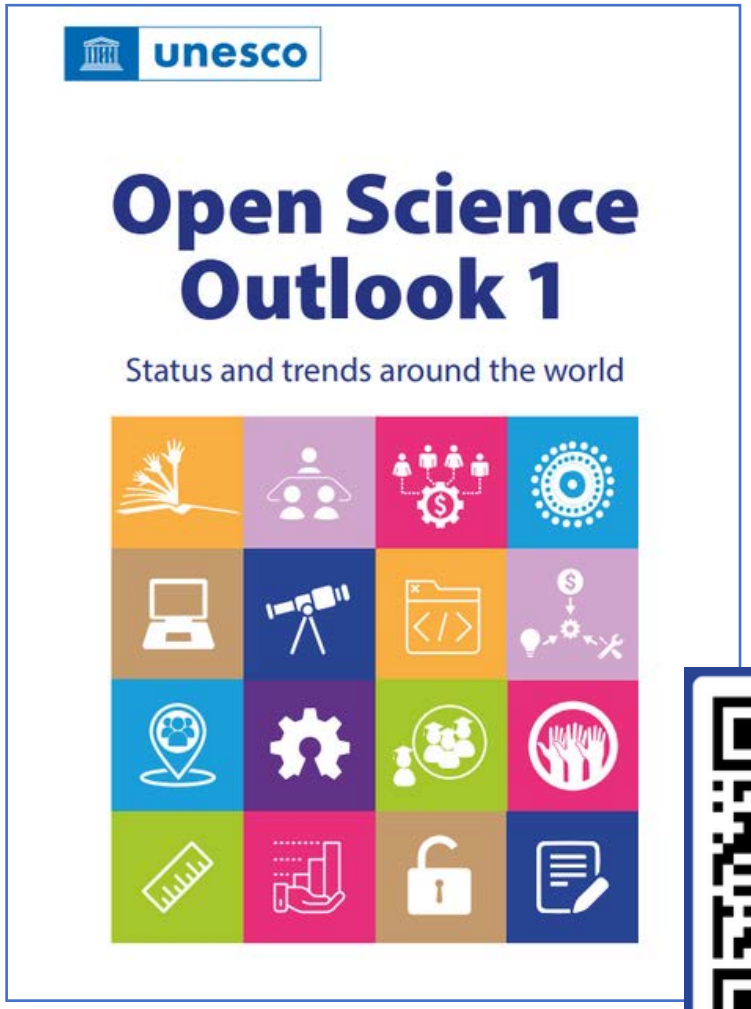
Innovation

- Automated processes for finding and using information
- Infrastructure for non-digital materials (such as chemical reagents)
- Exchange and co-creation of knowledge between scientists and society

Key factors to consider when developing, funding and using open science infrastructures:

- **Transparency** of costs and benefits
- **Interoperability** to enhance re-use
- Cooperative **co-creation**
- **Shared attention and benefits**
- **Harmonization** with open science policy and monitoring

Open Science Outlook



Counting is not enough

Current system of rankings do not promote inclusion, equity and openness

- standard approaches & **existing indicators are insufficient** to monitor openness across the scientific cycle & all pillars of open science
- innovation needed in **open qualitative & quantitative assessments** to monitor change & align with the values & principles of open science
- **overall need to monitor a comprehensive transformation** to open science & its impacts on STI systems and on society

Thank you!

Join the UNESCO Open Science Working Groups

Contribute to global open science calls

Be in touch openscience@unesco.org

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