

Different dimensions of openness in open science practices. The importance of collaboration for societal goals

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¿What is Open Science?

To improve opportunities for sharing scientific knowledge



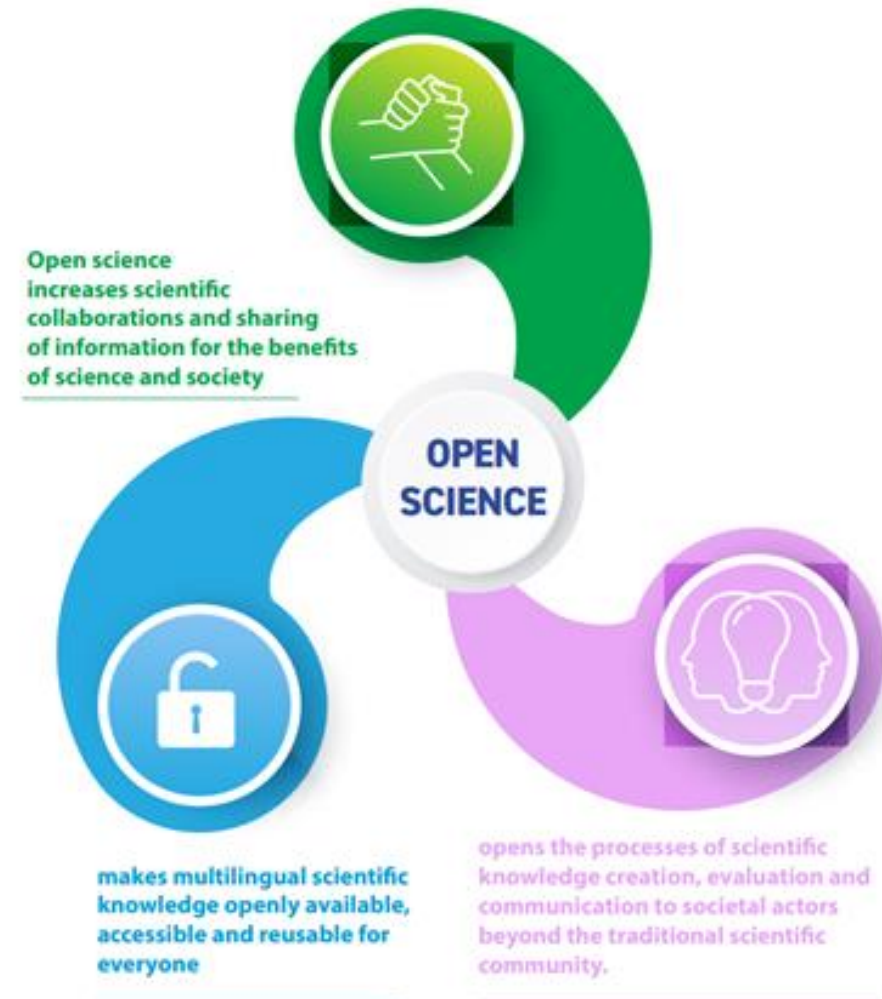
- **Access:** public and **accessible** goods
- **Collaboration:** **diversity** of actors who produce scientific K

Arza & Fressoli, 2018

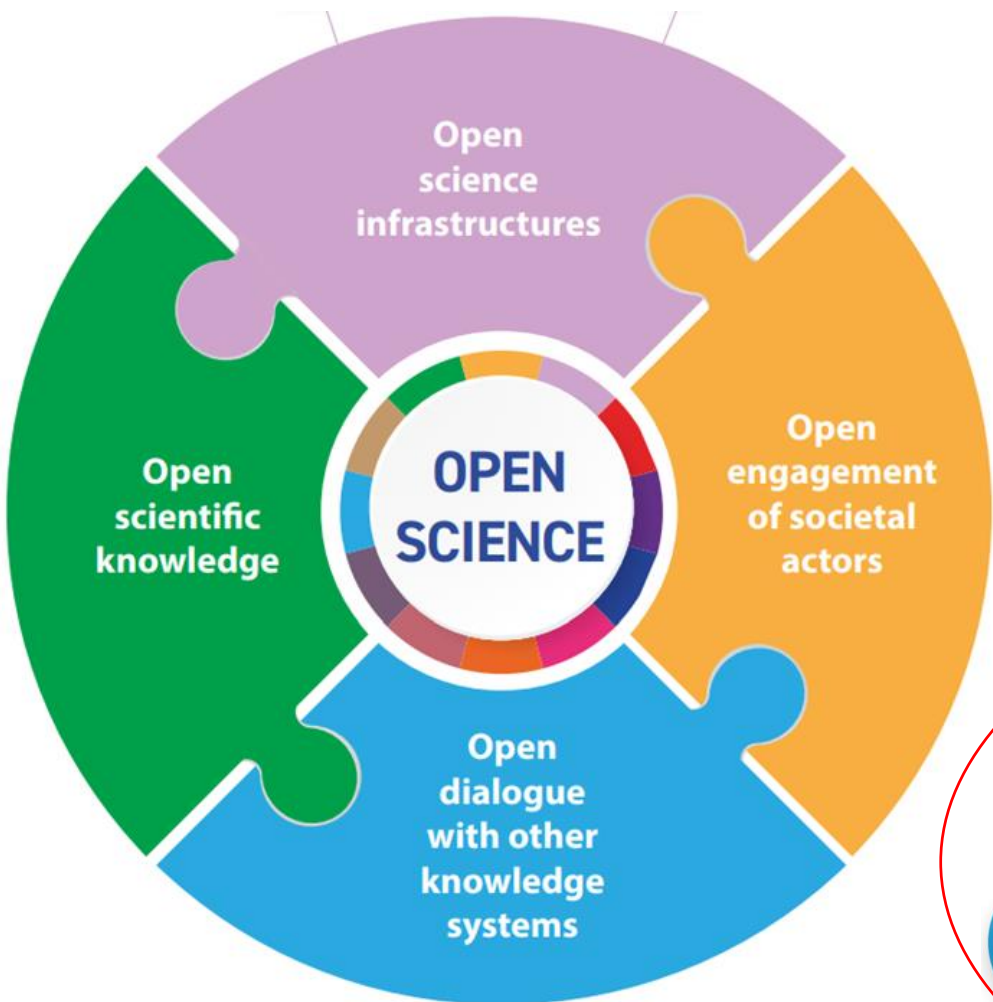
¿What is Open Science? - UNESCO



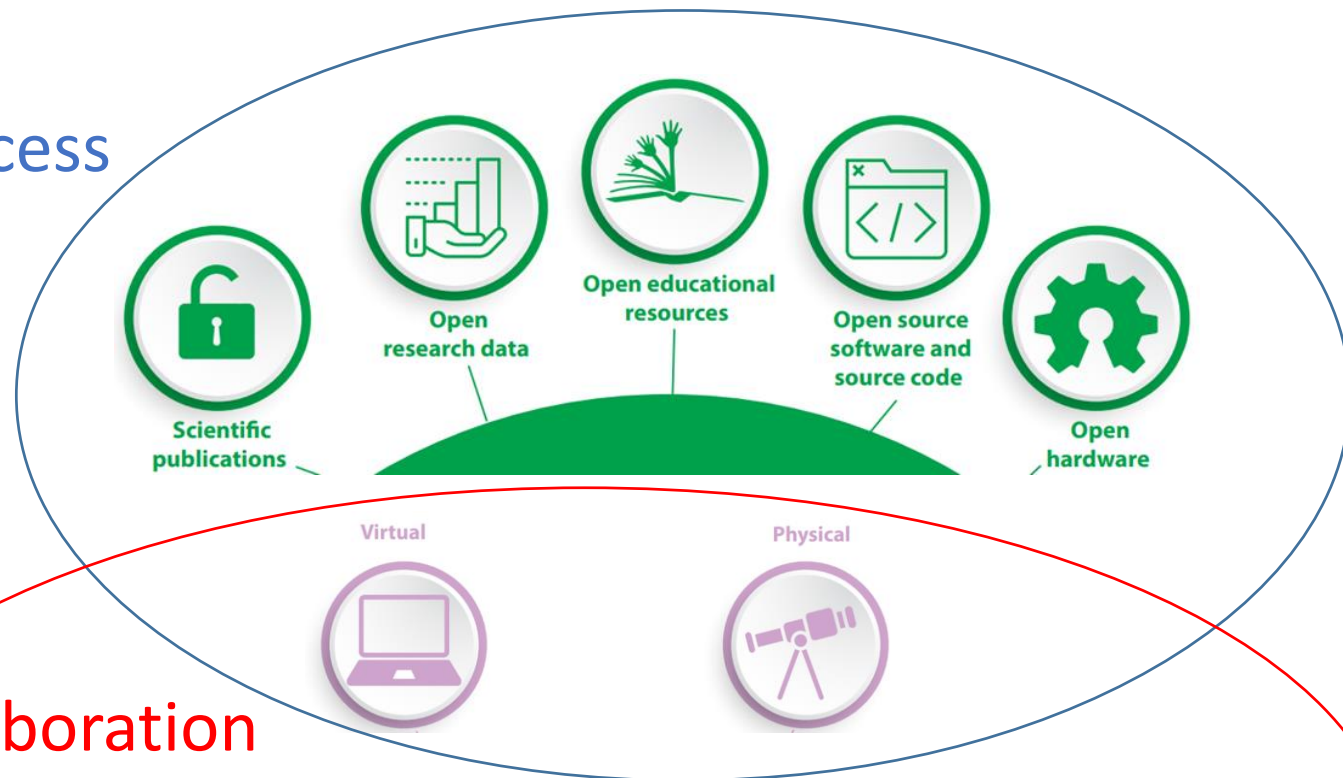
UNESCO Recommendation on Open Science



Open Science's practices - UNESCO



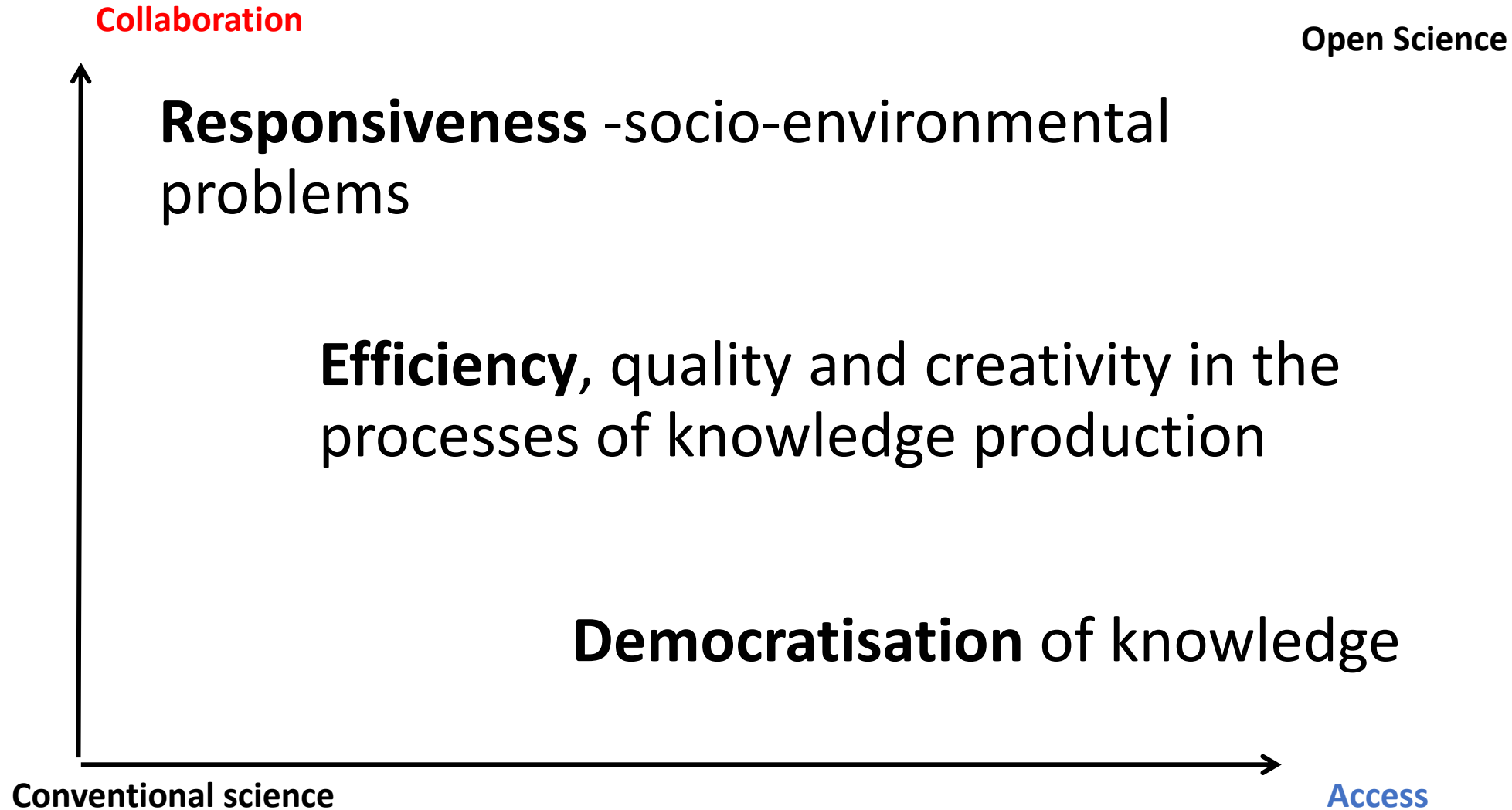
Access



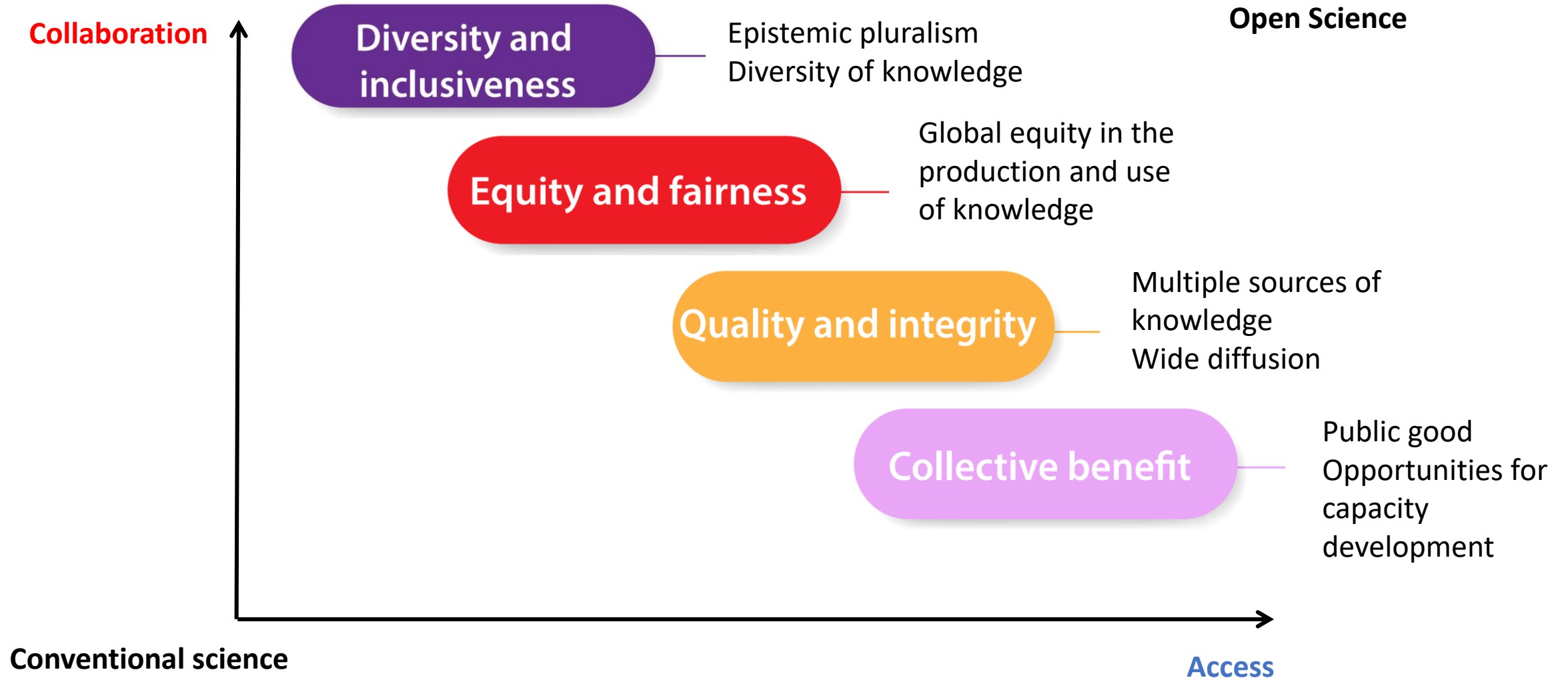
Collaboration



Benefits to Open Science



Values of Open Science



Regulations and policy measures focus on access

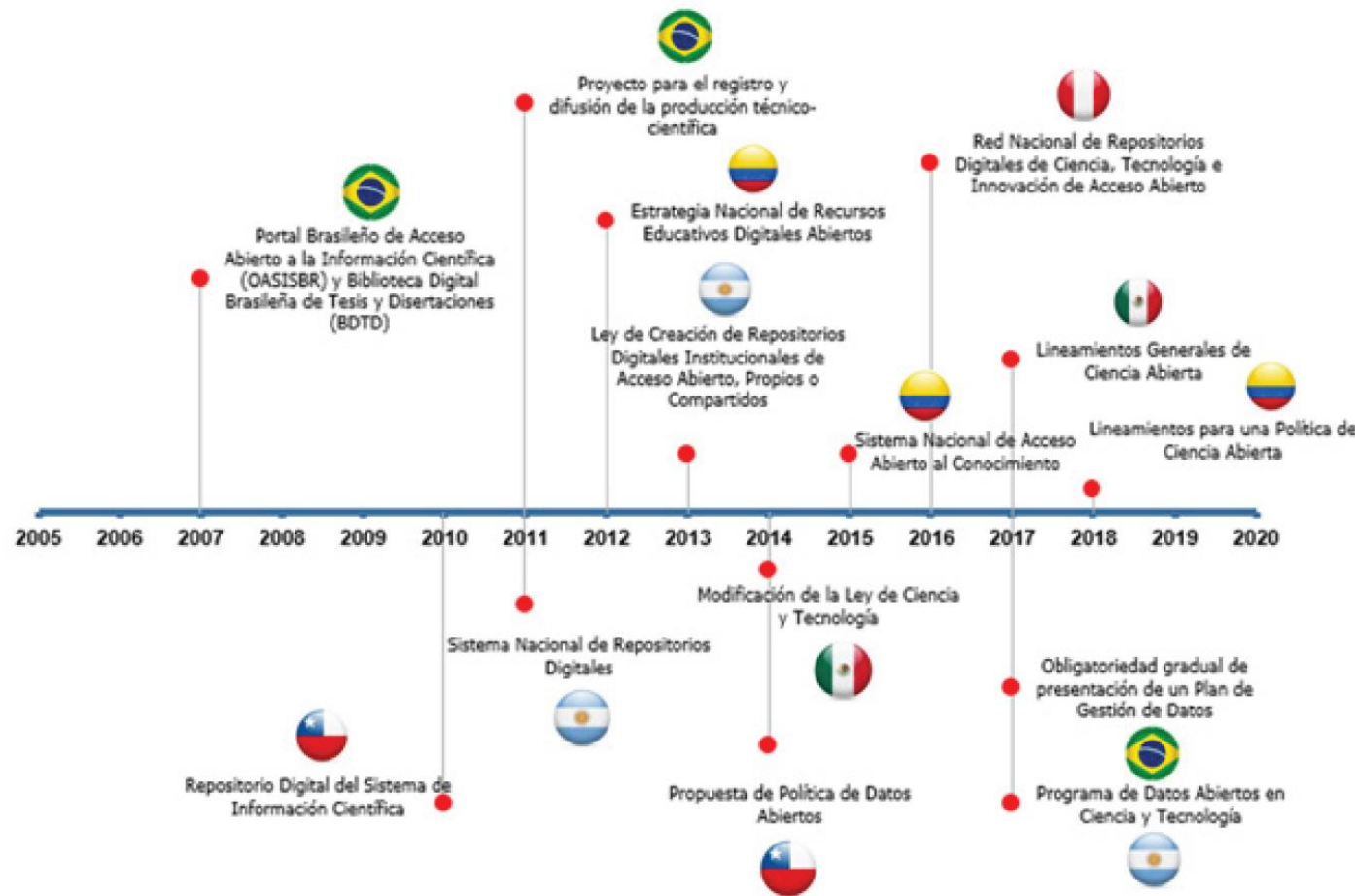


Figura 1. Principales hitos en el desarrollo de acciones de Ciencia Abierta en los países de Latinoamérica. Elaboración propia.

De Filippo & D'Onofrio (2019)

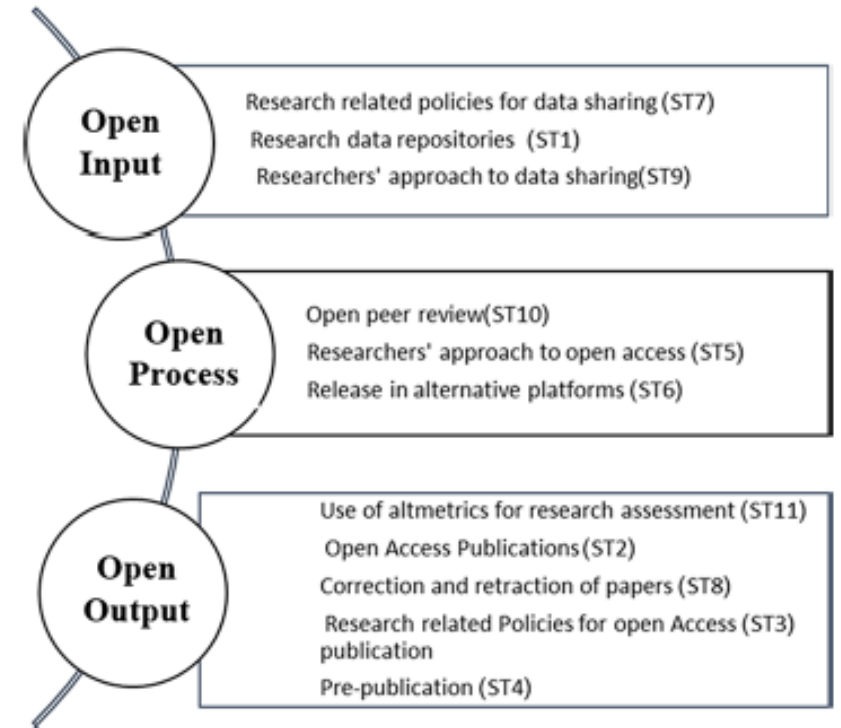


Figure 2. Subject areas of OS policy documents in the countries under study.

7 European countries
 Analysis of 49 national documents +
 32 from institutions

Moradi, S., & Abdi, S. (2023).

Aspects of collaboration

Scale

Diversity

Disciplinary background

- Intra-disciplinary; Inter-disciplinary; trans-disciplinary

Contextual background

- International north-south global collaboration
- Multi-cultural

Frequency of interaction

Governance / power

Phases of interaction in the research cycle

Etc..

Importance of and challenges of promoting collaborative dimension of open science.

Three case-studies

- **Collaboration**, the key dimensión, **diversity**, a key aspect
 - Societal impact
 - Important policy challenges
1. Participatory knowledge production in conflict: Campamentos Sanitarios (Arancibia et al 2022)
 2. Strings project: open science in Chagas research (Arza and Colonna, 2021, Ciarli, 2022)
 3. CoAct project: citizen social science for environmental justice (Actis et al 2022, Arza et al 2021, Arza et al 2022)

Participatory knowledge production in conflict

Context: intensive use of pesticides, socio-environmental health impacts

Campamentos sanitarios:

- Actors: Medical School (Rosario, Argentina), initially with *Sprayed Villages* activists
- 5-day field study trips to collect socio-environmental health data in rural areas
- building from community experience + health workshops to discuss preliminary results
- 40 camps, running from 2010-2019
- Dismantled at the peak of international recognition
- Data was discredited: lack of approval for ethical committee, representativeness, quality



Participatory knowledge production in conflict

- **Societal impact**

- Access to epidemiological data
 - Democratization: 40 impacted communities representing more than 100,000 people, all of whom lacked prior access to epidemiological and environmental health data
- Policy impact:
 - Epidemiological data pressed municipal and provincial governments to make and enforce new rulings curbing pesticide use
 - Epidemiological data presented to the International Monsanto Tribunal (IMT) convened in The Hague

- **Policy challenges**

- Conflict of interest – participation (in science) is a political process
- Governance of data and tools of CS, open data in the context of conflict
- Participatory data issues
 - Biases / lack of representativeness
 - Fragmentation, not comparable with other sources
 - Sensitive data



Strings project: open science in Chagas research

Chagas, multidimensional problem

Societal impact:

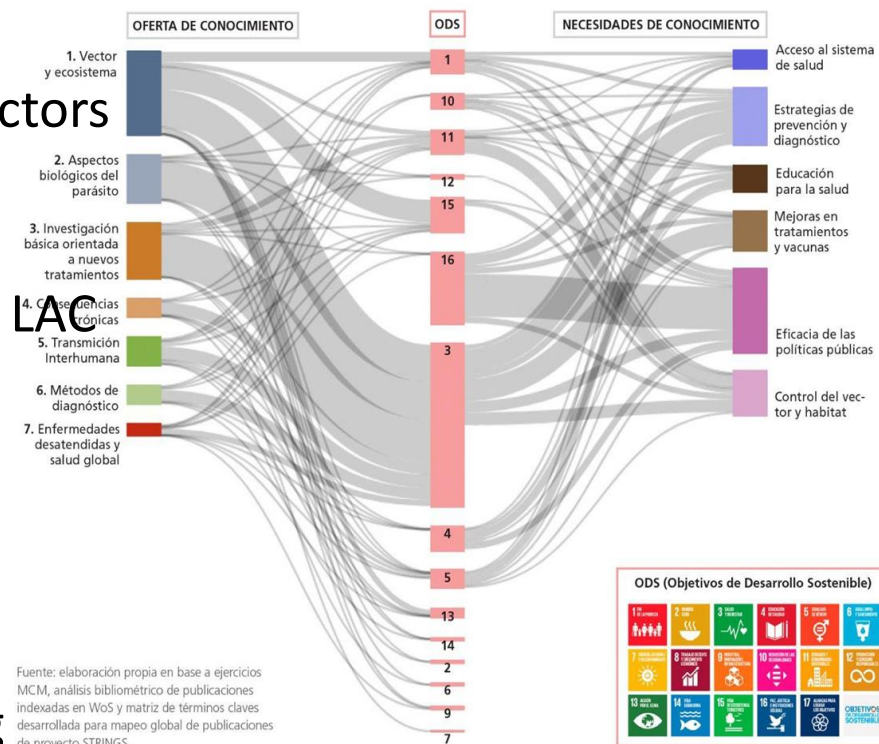
Collaboration is one of the most important factors contributing factors to align science with SDGs in Chagas

- Interdisciplinarity
- International collaboration involving research institutions of LAC

Policy challenges

- Research evaluation system
- Disciplinary specialisation
- Global distribution of resources and capabilities
- Global/European funding schemes selection and monitoring procedures

Figura 3: Oferta y necesidades de conocimientos científicos y los ODS.



CoAct project: citizen social science for environmental justice

Matanza-Riachuelo Basin

- Highly polluted area
- Social vulnerability
- Inter-jurisdictional problem
- Lack of participation in sanitation policy



Goal: To promote citizen social science tools to advance transformative actions for environmental justice

Co-design of



¿Qué pasa, Riachuelo?

A citizen-driven data platform about socio-environmental issues affecting the basin

Co-design started in 2020

- General disappointment
- The basin has been heavily contaminated for a long time,
- New authority was created in 2007 as a response of social mobilization → new public data → sanitation has not advanced significantly



The CoAct project has received funding from the European Union's Horizon 2020 Research and Innovation programme under grant agreement No. 873048



CoAct: societal impact

We noticed community changes in

- Attitudes towards scientific data
- Perceptions about engaging in transformative actions



Every time I pass by, every time I look at it, I observe all details, which I didn't before ... Since (CoAct) I live watching the river



To feel that one is part of something much bigger



To make them understand that each of us is important



It gives us the opportunity to articulate and scale up the work we've been doing

Research goals re-oriented to link citizen science with environmental education (Enacted Law 2021) for Environmental Justice



Guide to use QPR for Environmental Education, co-authored with researchers on environmental education and one co-researcher.

CoAct: policy challenges

- **Participation of diverse stakeholders**
 - To motivate and manage commitment and participation
 - To guarantee equal opportunities for participation (e.g. digital gaps)
 - Ethical issues: managing expectations, conflict of interests, IC procedures, etc.
 - No guidelines to manage participatory governance of citizen science tools and data.
- **Tensions with the traditional scientific system**
 - Capacities e.g. there is no training to manage participation, ethical considerations
 - Time, resources and efforts which do not fit in evaluation grids for promotion and funding



Collaboration dimension of open science, diversity

Claimed benefits

- Resource mobilisation: contribution with new knowledge, difficult to get other ways
 - Dimensions: spatial, temporal, thematic
- Bridge the gap between science and society
 - Democratisation
 - Capability development
- Transformation
 - It guides research towards societal needs
 - Social mobilization and legitimation of claims

Quality and integrity

Collective benefit

Equity and fairness

Diversity and inclusiveness

Policy challenges

- Participation of diverse stakeholders
 - Motivation
 - Equal opportunities
 - Ethical issues
 - Politics & governance
- Data
 - Biases
 - Fragmentation
 - Sensitive data
- Tensions with the traditional scientific system
 - Capacities
 - Resources
 - Evaluation

Recommendations and action lines (Argentina)

- **Participation of diverse stakeholders**
 - Ethic committees – dynamic procedures for informed consent
 - Support community outreach and link to scientific vocation activities
 - Promote culture of participation
 - Articulation with instances of linking (e.g. extension)
 - Visibility of citizen science projects
- **Data**
 - Instances of experimentation with citizen science data
 - Support in the implementation of open data policies
 - Digital tools to automate data validation and personal data protection
 - Guidelines and recommendation for governance of citizen science's tools and data
- **Tensions with the traditional scientific system**
 - To value collaboration
 - To define institutional priorities according to missions of higher education institutions
 - Define flexible set of impact indicators, consistent with defined priorities

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