

Global Openness: Making Science a Public Good to Tackle Global Challenges

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IFLA Division D Midterm Meeting, June 5-7, 2024, Koç University, İstanbul

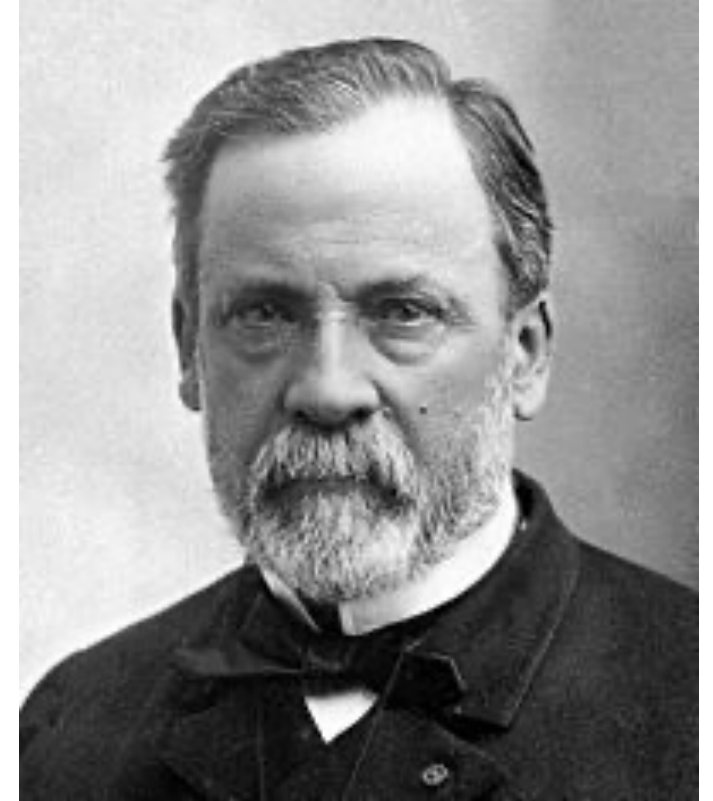
Note: This keynote is based on one of my earlier presentations and shares some slides (#3 thru #9) therefrom. See Tonta, Y. (2022). Open Access: The key driver to address grand challenges. *11th Eurasian Academic Libraries Conference, October 27-28, 2022, Nazarbayev University, Astana, Kazakhstan*. <https://yunus.hacettepe.edu.tr/~tonta/Yayinlar/tonta-ealc-2022-open-access-kazakhstan-v4.pdf>

Plan

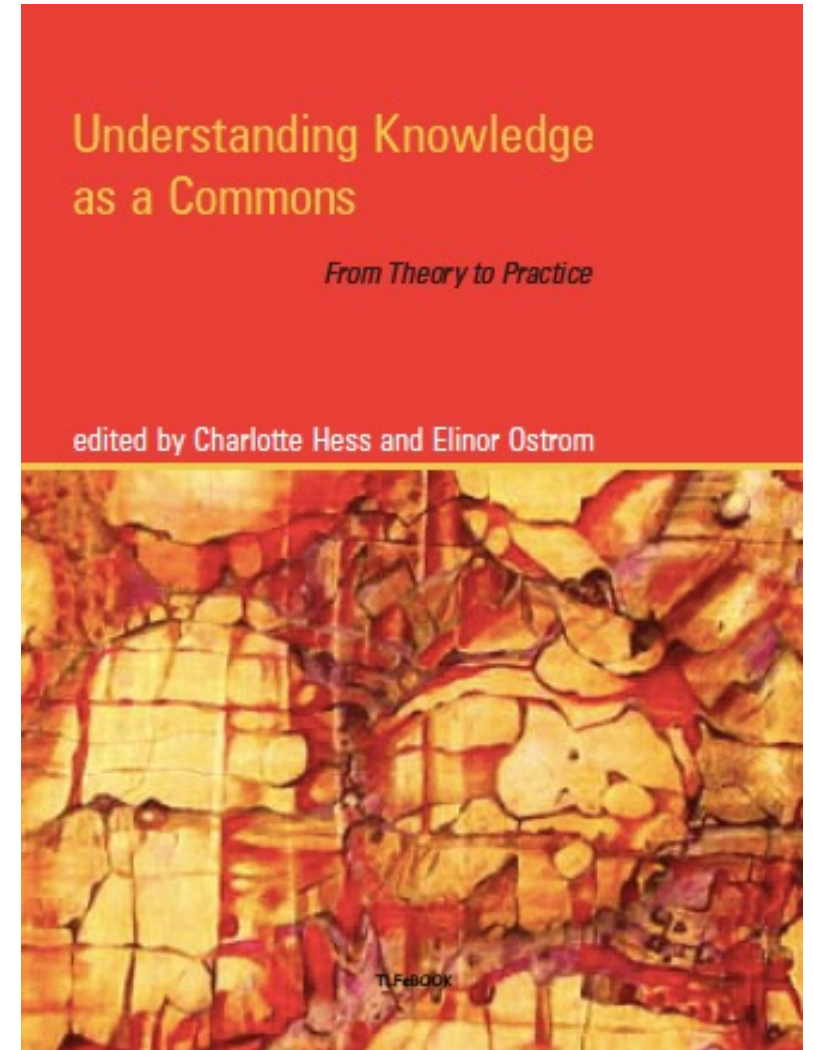
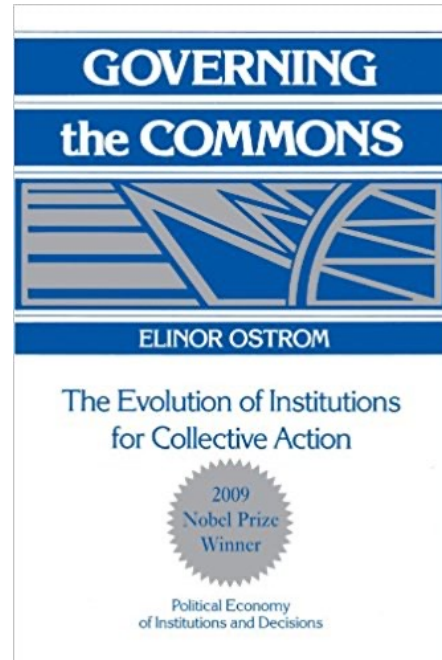
- Knowledge / Science as a “Public Good”
- Relationship between Science and Property
- Vicious Circle of Affordability, Functionality, and Replication
- Open Science and Innovation
- Open Science Challenges
- Open Science in Turkey
- The Way Forward

Louis Pasteur (1822-1895)

“Science knows no bounds,
because knowledge belongs
to humanity, and it is the torch
that illuminates the world.”



Elinor Ostrom (1933-2012)



Source: <http://www.bollier.org/category/tags/commons-theory>

Science / Knowledge as a Public Good

- The amount and value of knowledge is **not** diminished when shared (*non-subtractable, non-rivalrous*)
- Excluding a certain person or a group is **difficult and costly** (*non-excludable*)

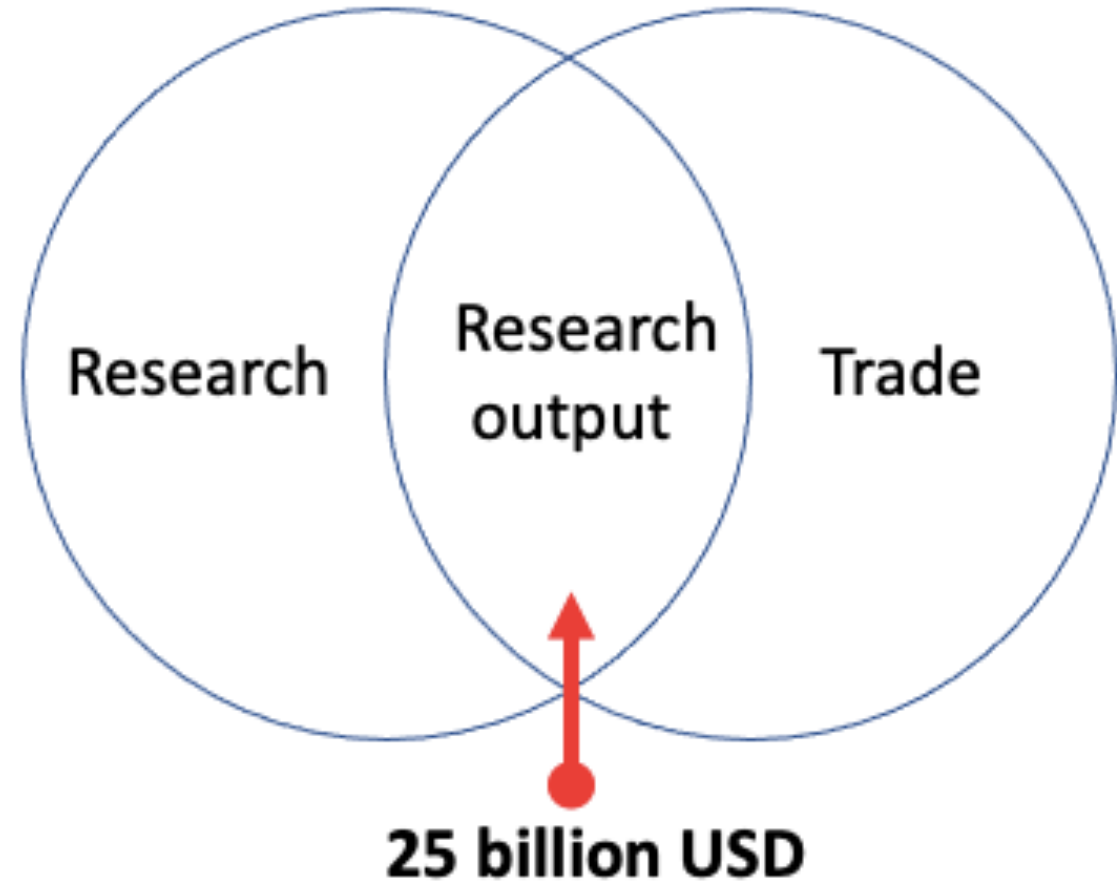
Types of Resources

		SUBTRACTABILITY	
		<i>Low</i>	<i>High</i>
EXCLUDABILITY	<i>Difficult</i>	Commons Useful knowledge	Common-pool resources Irrigation systems
	<i>Easy</i>	Paid resources Licensed journals	Private resources Personal computers

Relationship between Science and Trade



paywallthemovie.com

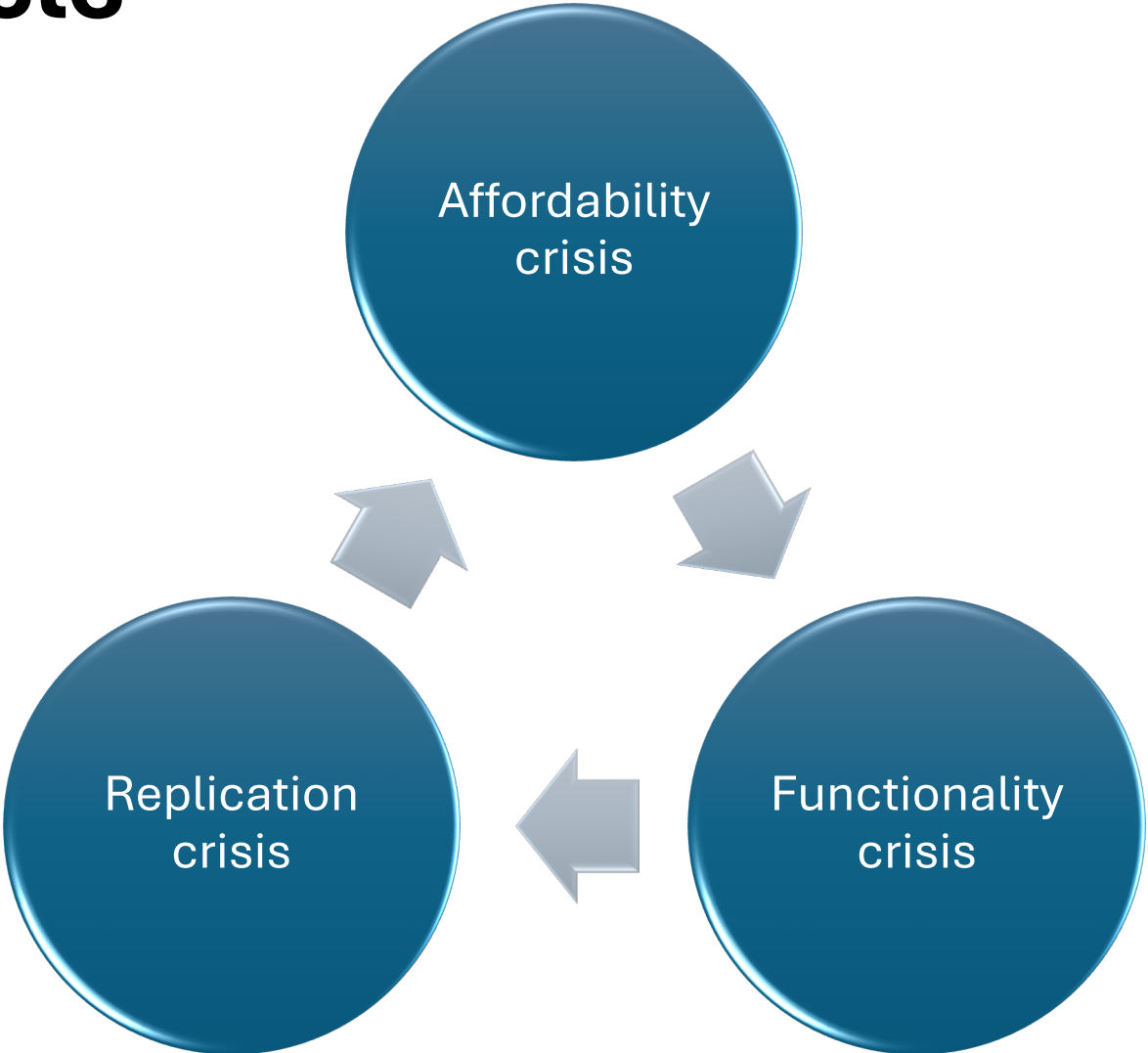


Source: Adapted from: Regazzi, J.J. (2015). *Scholarly communications: A history from content as king to content as kingmaker*. Rowman & Littlefield. p. 1

Relationship between Science and Property

- Intellectual property rights (IPR):
 - decrease scientific research and product development as much as 30%; and
 - curtail the knowledge use and innovation creation.
- Copying as a traditional IPR hinders the use of digital information
- How should we make IPR work for digital public goods based on copying then?

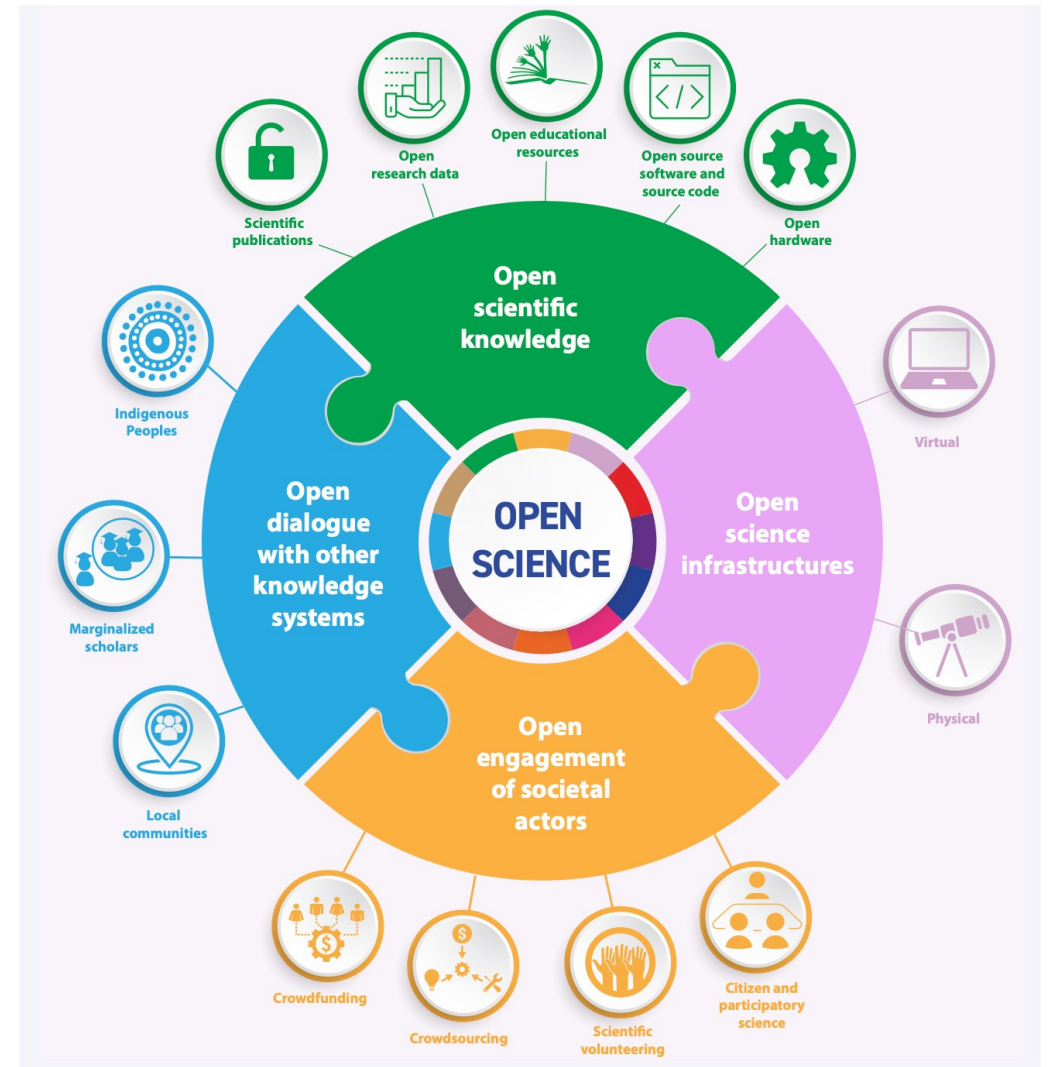
Vicious Circle



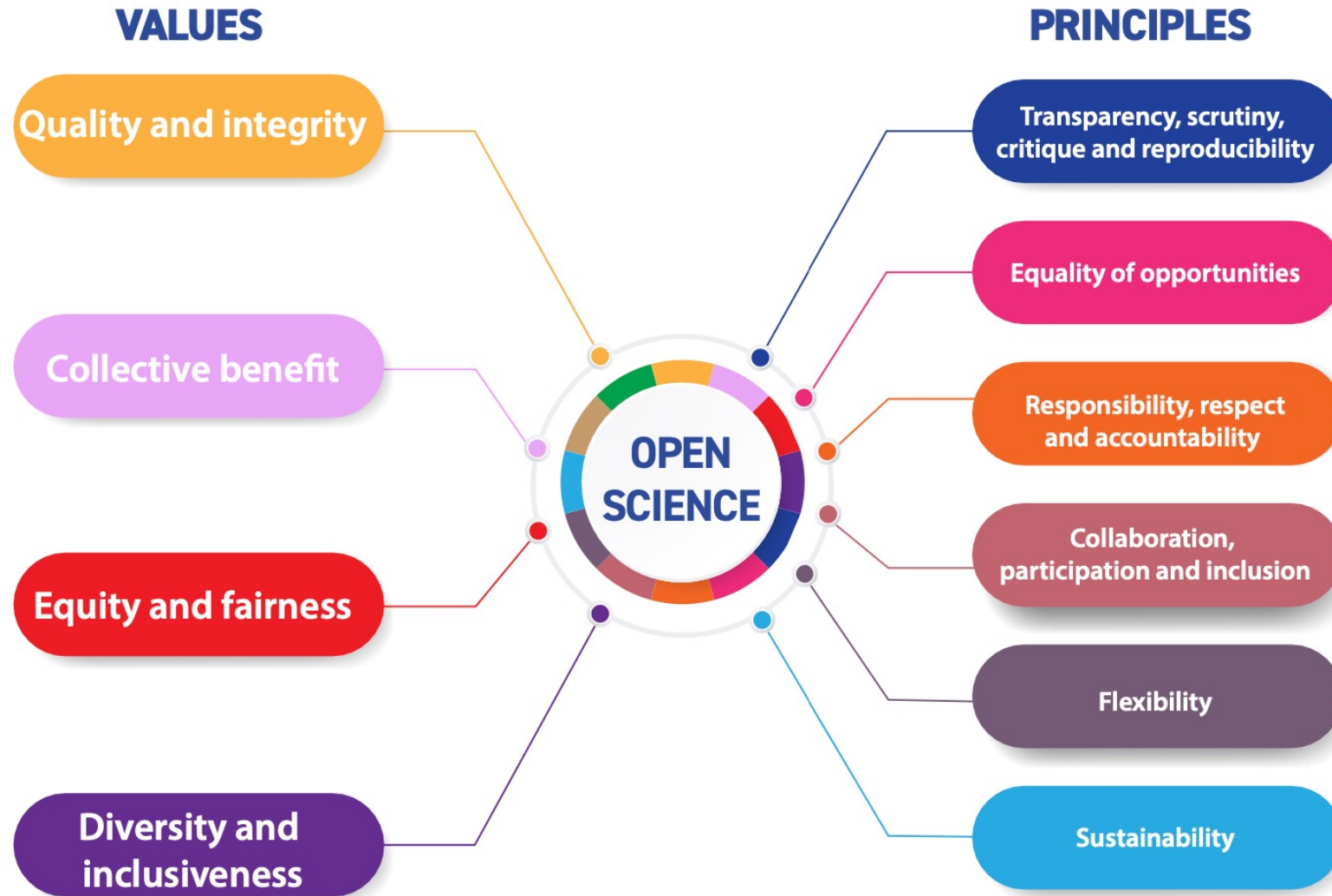
Source: Brembs, B. et al. (2022). Replacing academic journals. <https://zenodo.org/record/5793611>

Open Science: Definition and Elements

- makes multilingual scientific knowledge available, accessible and reusable for everyone;
- increases scientific collaborations and sharing of information for the benefits of science and society;
- opens the processes of scientific knowledge creation, evaluation and communication to societal actors beyond the conventional scientific community.



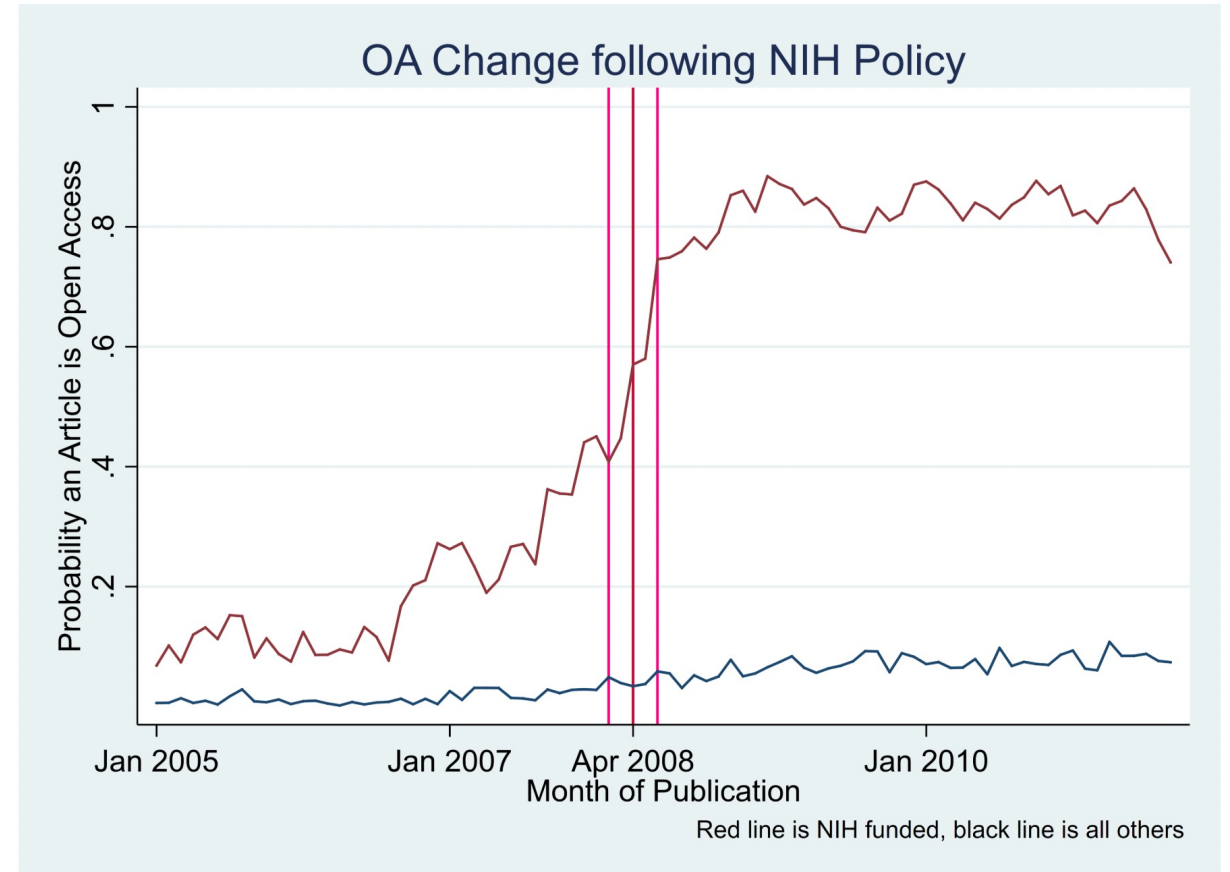
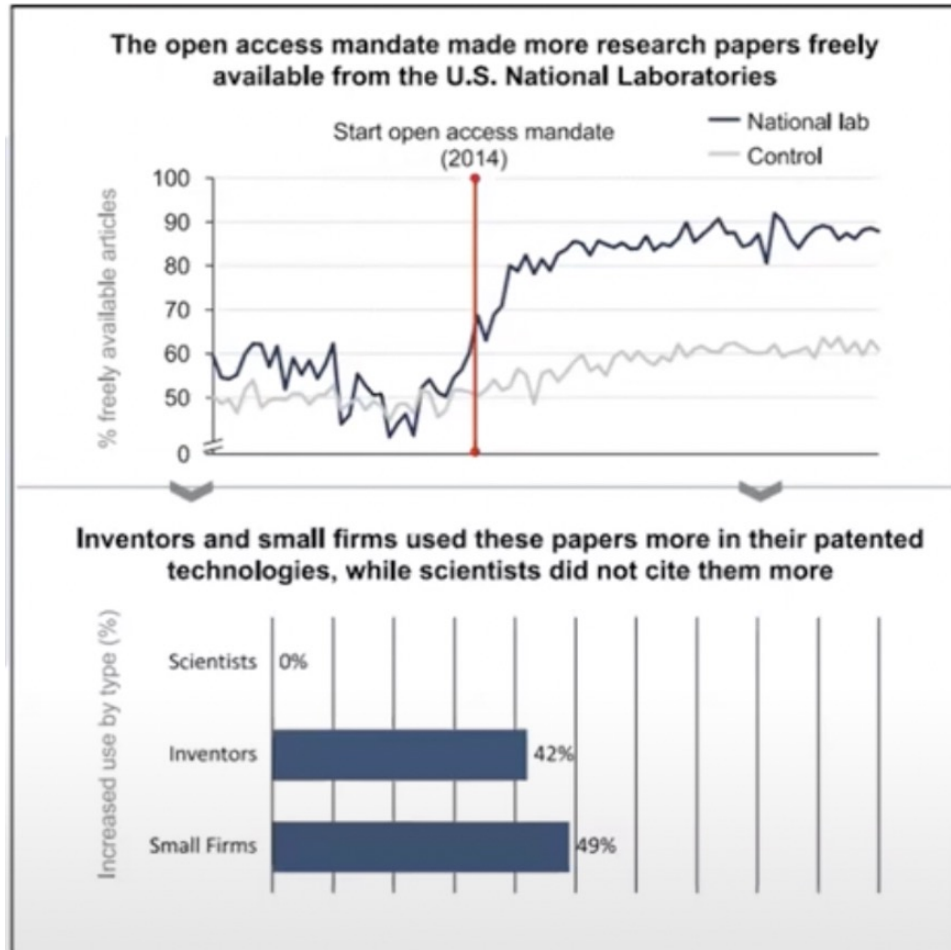
Shared Values and Principles of Open Science



Key Open Science Achievements

- Number of Open Access papers increased
- Open Science policy developments accelerated
- OS infrastructures (repositories, standards, etc.) strengthened
- Level of OS awareness increased
- OS accelerated innovation to tackle global challenges

Relationship between Open Science and Innovation



Source: Ongoing Activities to Advance Open Science at US Federal Agencies.
https://www.youtube.com/watch?v=GUIbO1J2Kls&list=PLChfyH8TVDGnB_zDCm8d9oonMomfk8v9X&index=4

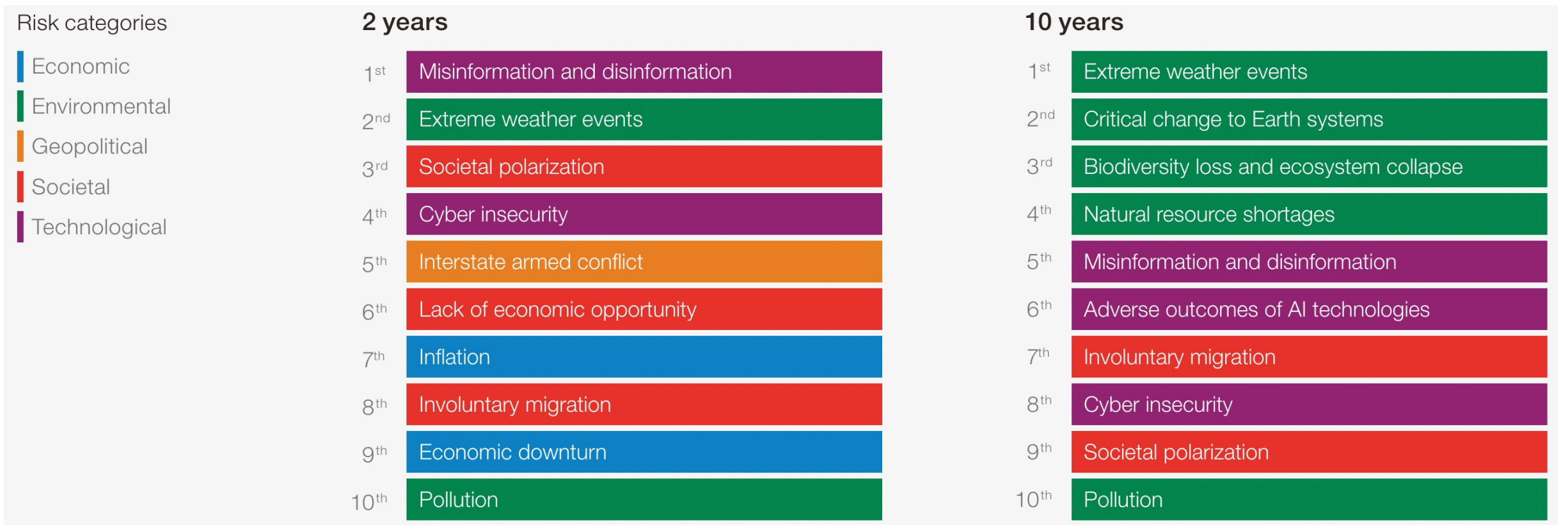
Source: Bryan, K.A. & Ozcan, Y. (2021). The impact of open access mandates on invention. *The Review of Economics and Statistics*, 103(5): 954-967.

Time it Took to Develop Vaccines for Diseases

Disease agent	Year identified	Year licensed (FDA)	Time to develop vaccine in year(s)
Smallpox	300 AD	1796	c . 2100
Haemophilus influenza	1933	1985	52
Influenza	1933	1945	12
Hepatitis A virus	1973	1992	19
Rotavirus	1973	1998	25
Ebola virus	1976	2019	43
HPV	1983	2006	23
COVID-19	2019	2020	<1

Global Risks Ranked by Severity over the Short and Long Term

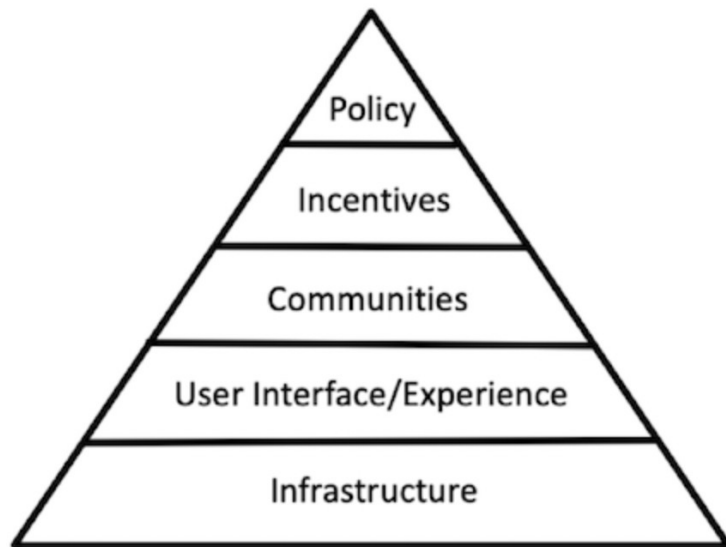
"Please estimate the likely impact (severity) of the following risks over a 2-year and 10-year period."



Open Science Challenges

- Market power of academic journal publishers
- Uptake of OS transformation
- Unintended consequences of OS
- Enabling OS infrastructures (i.e., accessibility and interoperability)
- OS capacity building
- OS incentives
- Culture change

Strategy for Open Science Culture Change



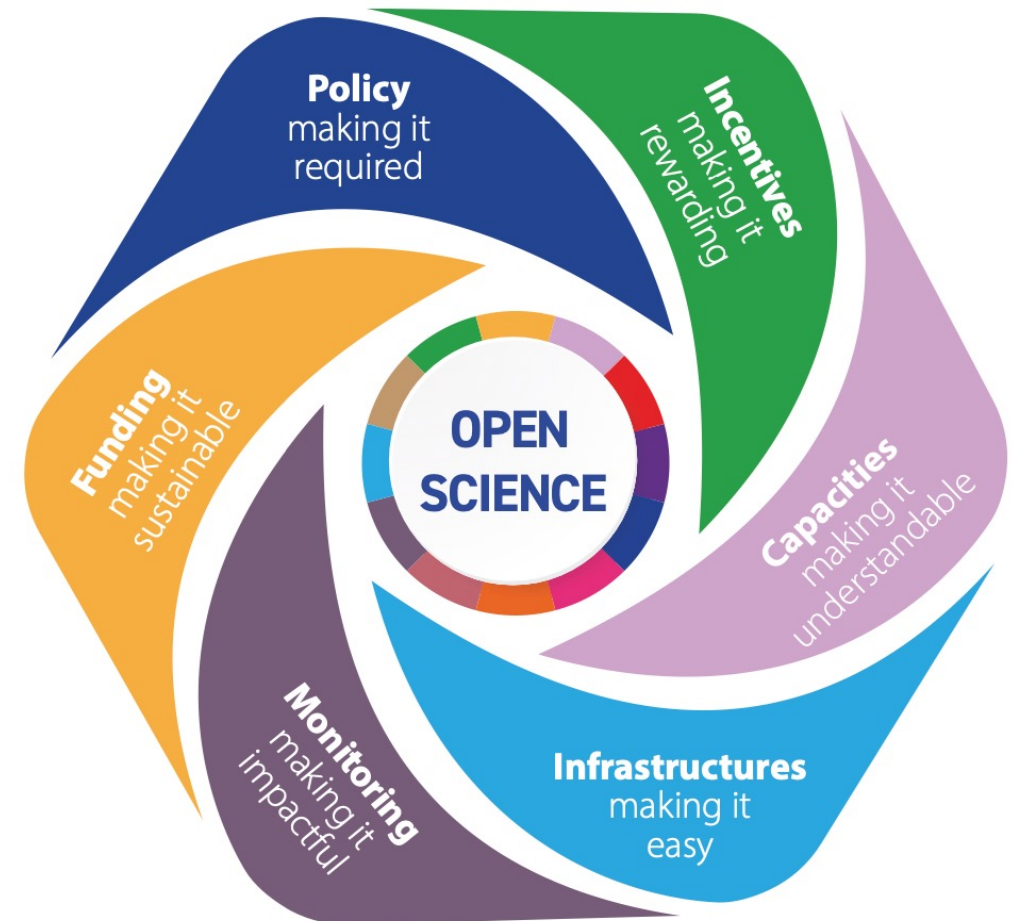
Make it required

Make it rewarding

Make it normative

Make it easy

Make it possible



Open Science Policies in Turkey

- No mention of “Open Science” in:
 - the Presidential Program of 2024;
 - 2024-2028 Strategic Plan of the Ministry of Science and Technology; and
 - in the Presidential Digital Transformation Office’s web site
- OS policies of the Turkish Higher Education Council and universities
 - “Open Science for a Better Future”
- Turkish Scientific and Technological Research Council (TÜBİTAK)
 - Open Science Policy (2019)
 - Open Science Portal (Aperta Open Data Archive, Harman, DergiPark, TR-Dizin, etc.)

The Way Forward

- “For open science to reach its full potential, it must be a **truly global, equitable phenomenon**.
- Open science is growing, but **unevenly**.
- Transition to open science requires a **shift in the culture** of science.
- Collective, collaborative and **coordinated action and investment** are needed to accelerate the transition to a truly global, equitable open science.”

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