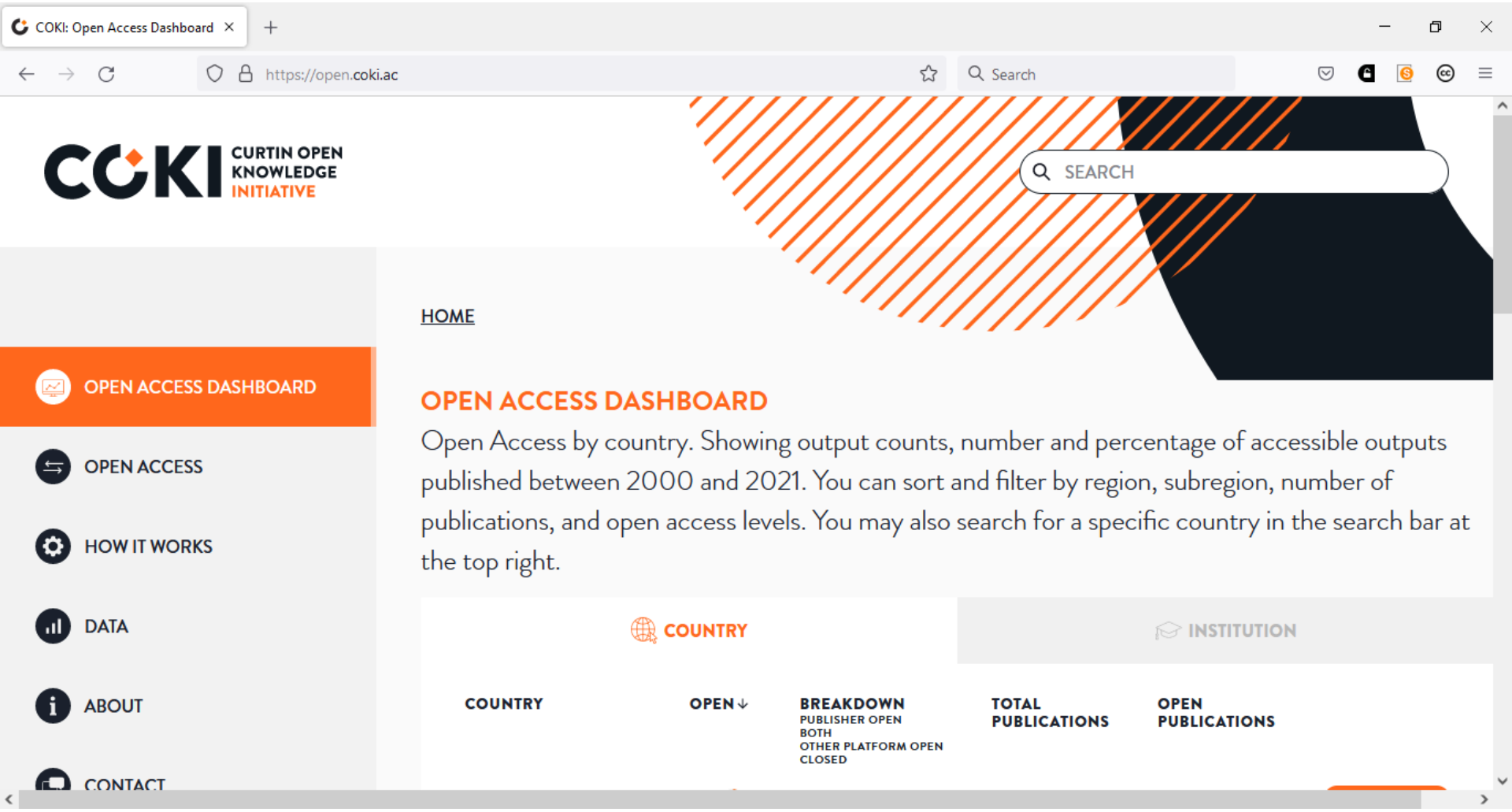
Towards Open Access and Open Science: The role of Botswana Library and Information Centres in BotsREN

Iryna Kuchma, Open Access Programme Manager

eifl KNOWLEDGE WITHOUT BOUNDARIES



https://open.coki.ac

COKI: Botswana

https://open.coki.ac/country/BWA/ 110%

Botswana, officially the Republic of Botswana, is a landlocked country in Southern Africa. Botswana is topographically flat, with up to 70 percent of its territory being the Kalahari Desert. Derived from Wikipedia licensed CC-BY-SA.

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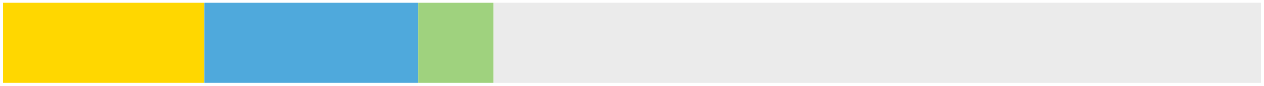
OPEN ACCESS PERCENTAGE	TOTAL PUBLICATIONS	TOTAL OPEN PUBLICATIONS	TOTAL CITATIONS
39%	6,326	2,468	74k

BREAKDOWN



PUBLISHER OPEN	BOTH	OTHER PLATFORM OPEN	CLOSED
16%	17%	6%	61%

https://open.coki.ac/country/BWA

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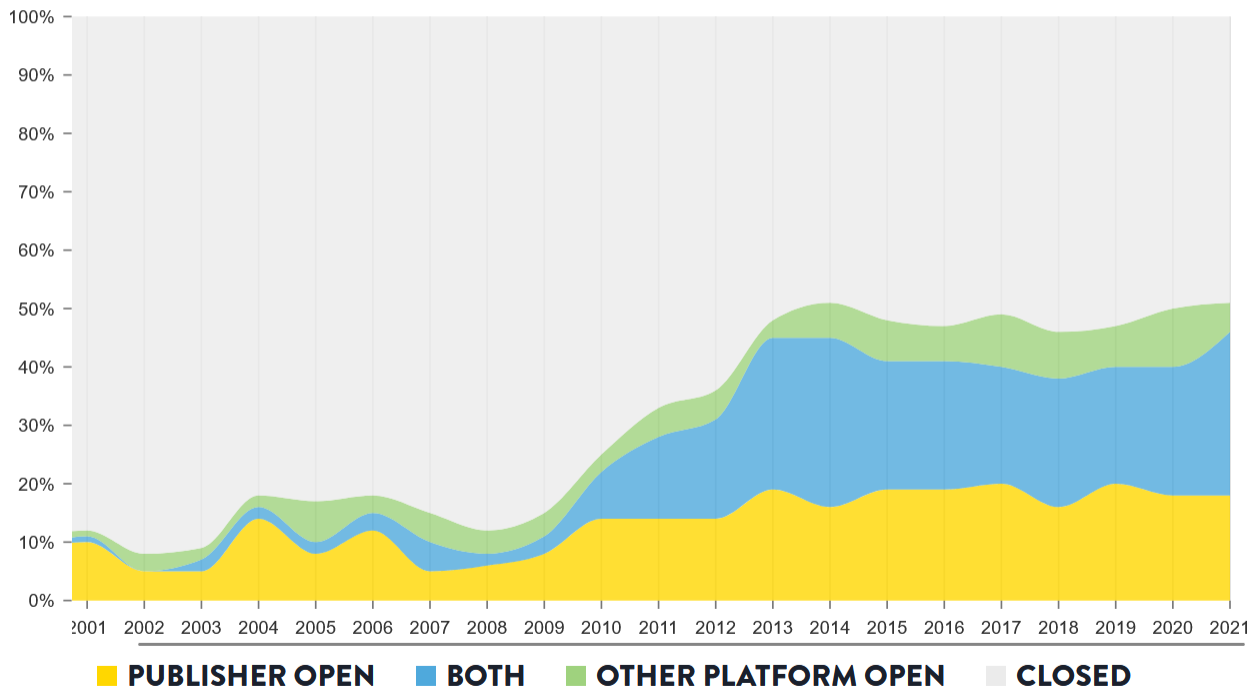
PERCENTAGE OF OPEN ACCESS OVER TIME



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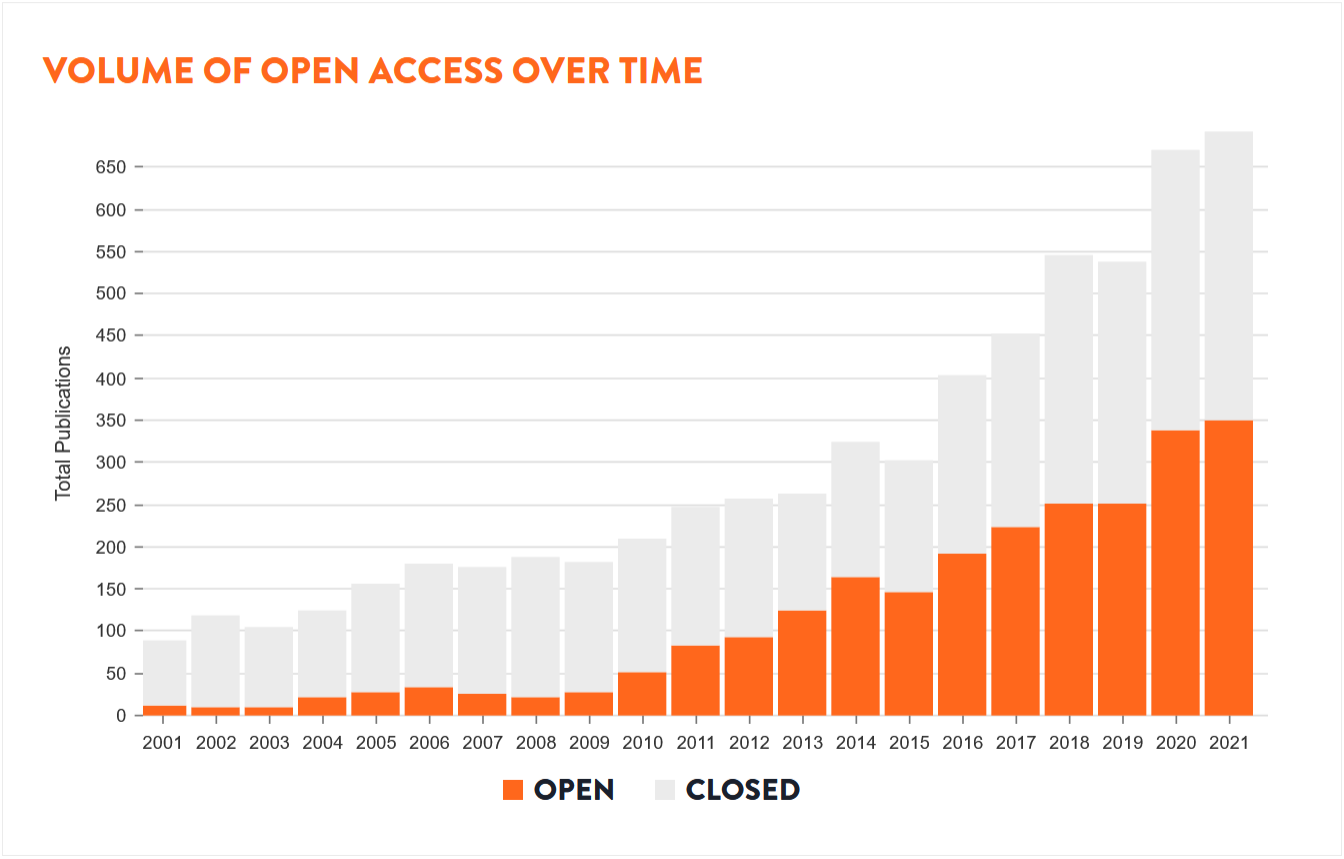

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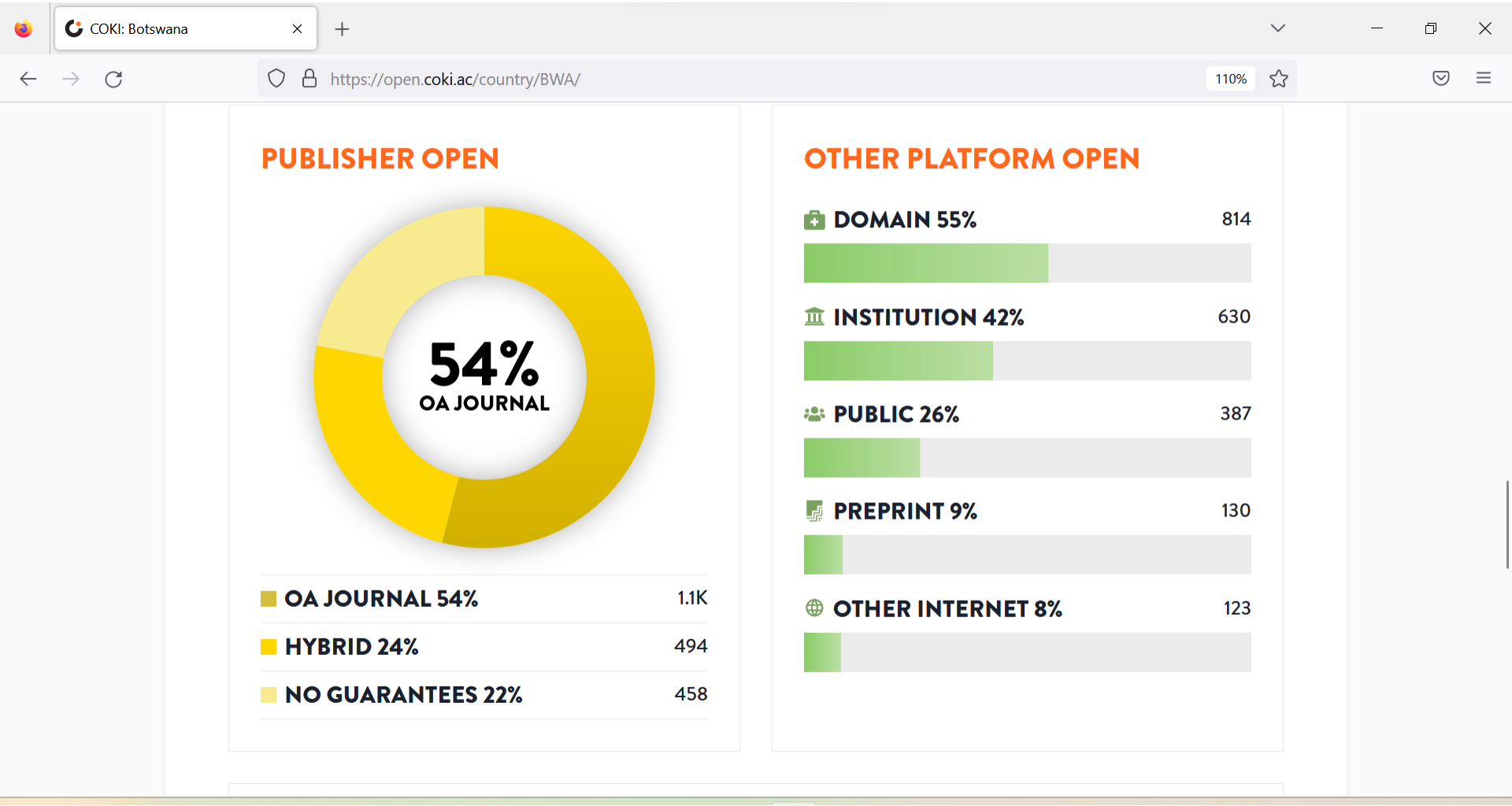

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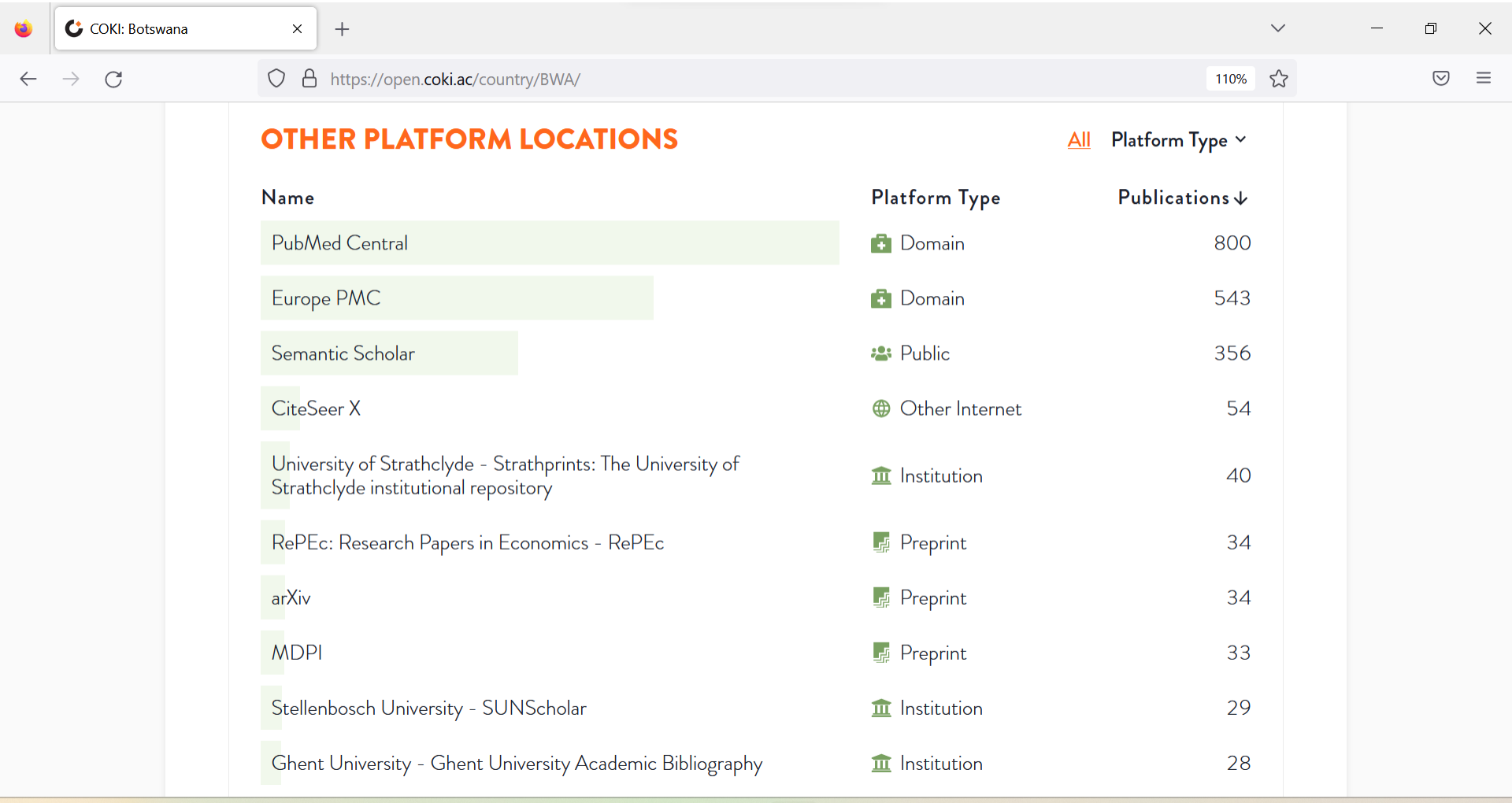

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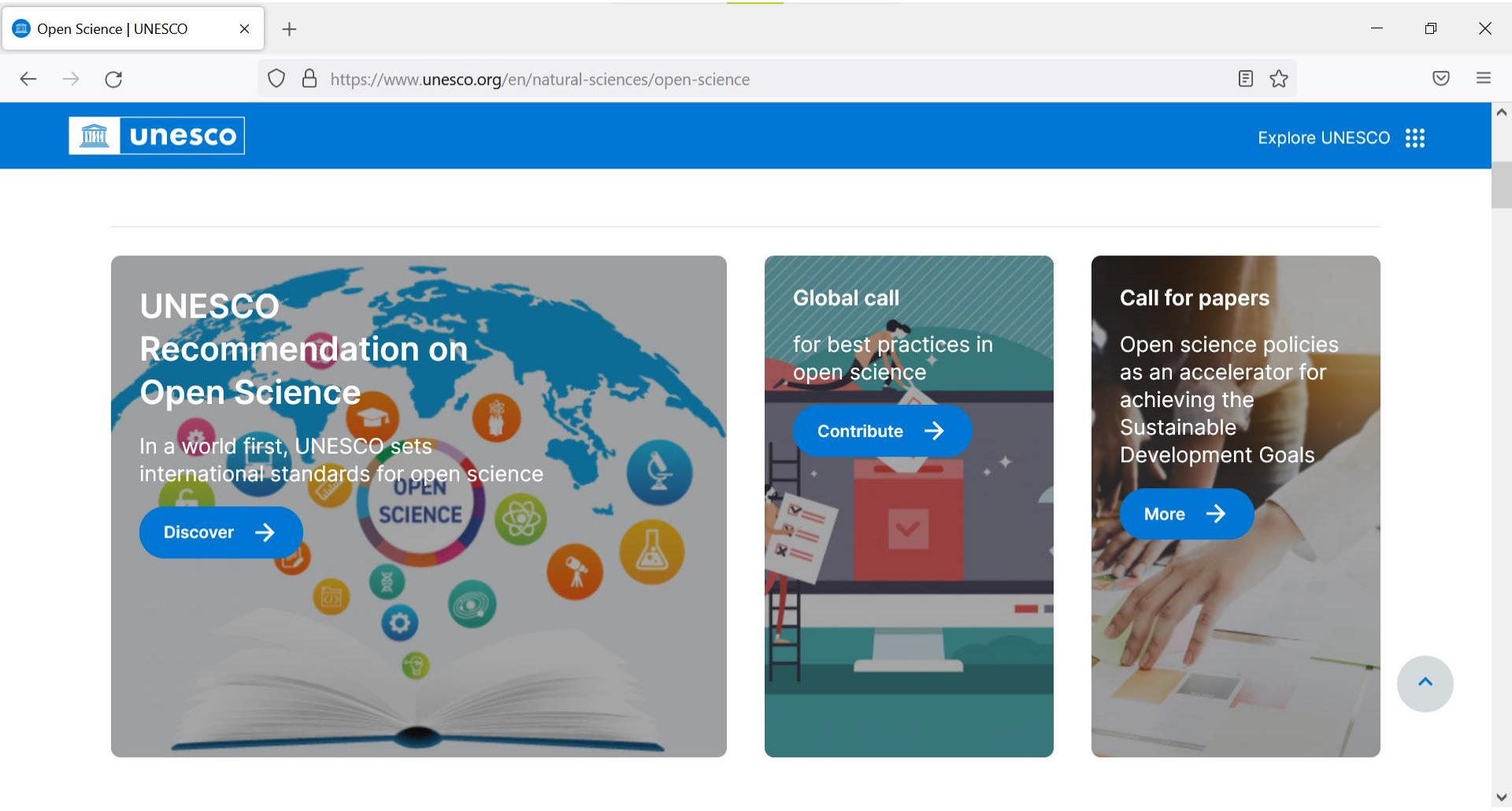


https://www.unesco.org/en/natural-sciences/open-science

UNESCO Recommendation on Open Science

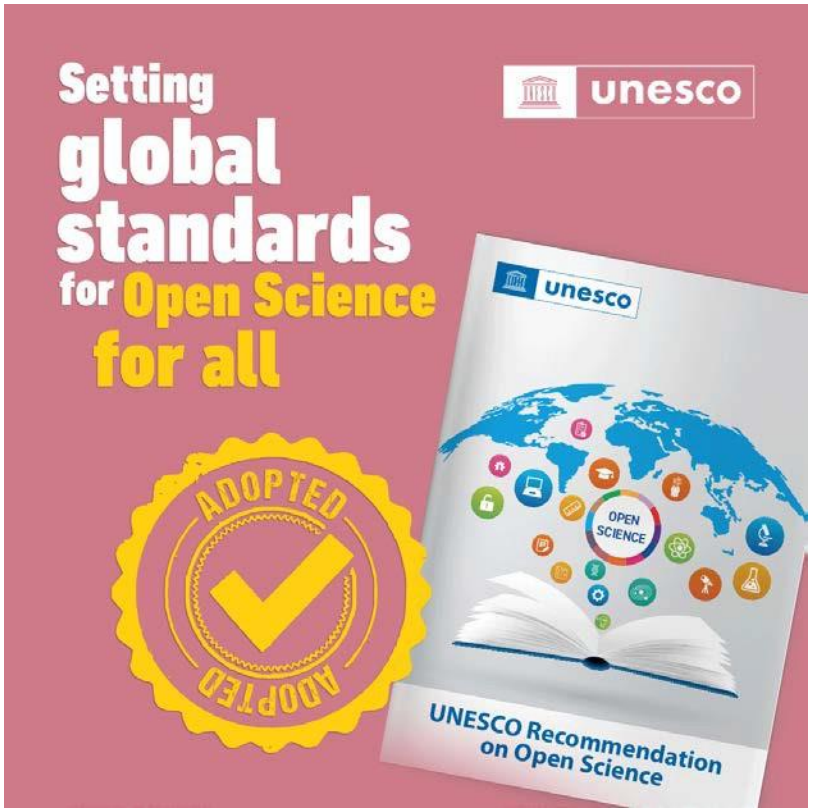
In 2021, at the UNESCO 41st General Conference, 193 Members States adopted the first international standard-setting instrument on Open Science in the form of a UNESCO Recommendation on Open Science.

UNESCO Recommendations

Legal instruments in which “the General Conference formulates principles and norms for the international regulation of any particular question and invites Member States to take whatever legislative or other steps may be required in conformity with the constitutional practice of each State and the nature of the question under consideration to apply the principles and norms aforesaid within their respective territories”.

Highlights of the Recommendation

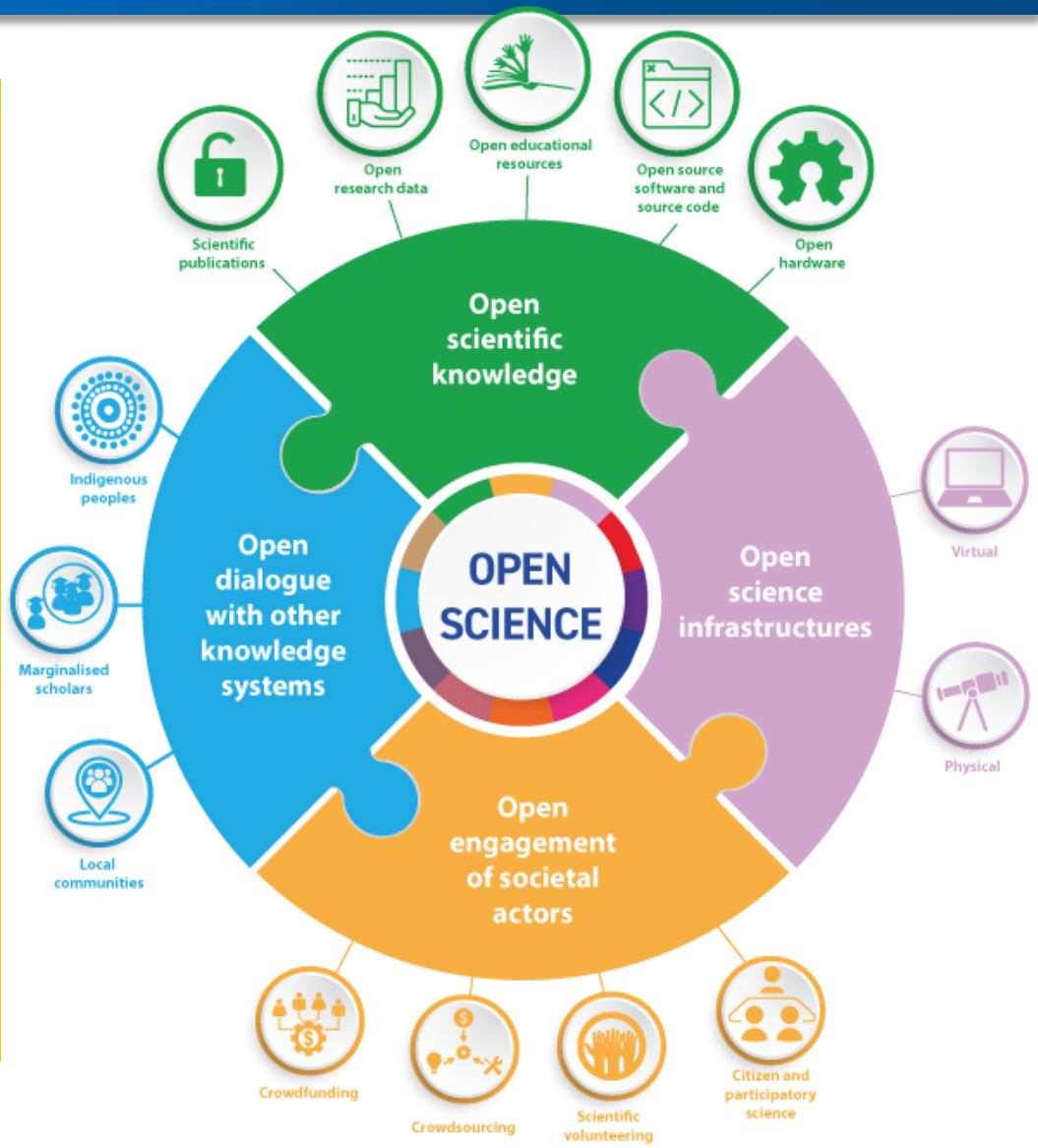
- It is the first **international normative instrument** on Open Science;
- it contains the first **internationally agreed definition** of Open Science;
- it spells out the consensus **core values and guiding principles** of Open Science;
- it addresses **multiple actors and stakeholders** of Open Science;
- 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**.

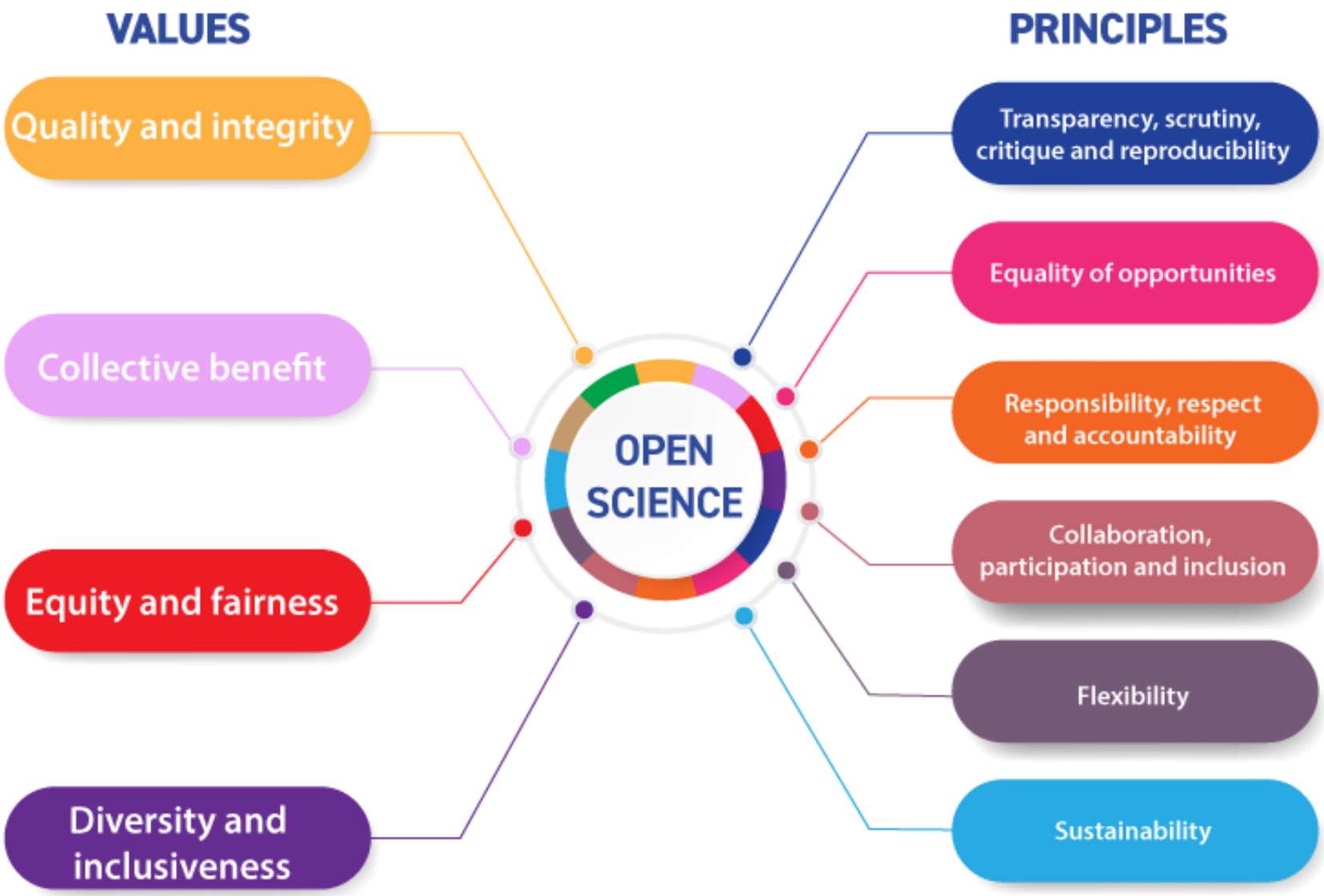


Definition of Open Science

Open Science:

- makes multilingual scientific knowledge openly 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 traditional scientific community.

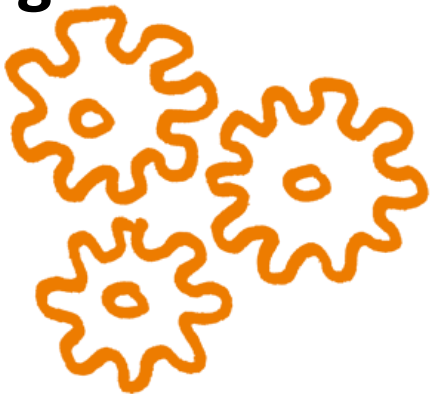



VALUES
Quality and integrity
Collective benefit
Equity and fairness
Diversity and inclusiveness
OPEN SCIENCE
PRINCIPLES
Transparency, scrutiny, critique and reproducibility
Equality of opportunities
Responsibility, respect and accountability
Collaboration, participation and inclusion
Flexibility
Sustainability


OPEN SCIENCE
Promoting a common understanding
Developing an Enabling policy environment
Fostering a culture of Open Science
Investing in human resources
Promoting innovative approaches
Promoting cooperation
Investing in infrastructures and services
AREAS OF ACTION

Open access journals & repositories

Scientific publications may be **disseminated by publishers on open access online publishing platforms and/or deposited and made immediately accessible in open online repositories upon publication, that are supported and maintained by an academic institution, scholarly society, government agency or other well established not-for-profit organization devoted to common good** that enables open access, unrestricted distribution, **interoperability and long-term digital preservation and archiving**



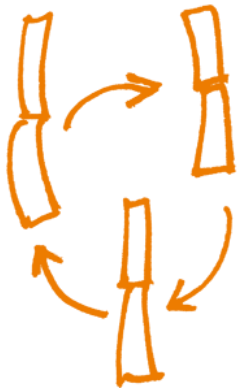
Thinking beyond publications

Scientific outputs related to publications (e.g. original scientific research results, research data, software, source code, source materials, workflows and protocols, digital representations of pictorial and graphical materials and scholarly multimedia material) **that are openly licensed or dedicated to the public domain should be deposited in a suitable open repository, following appropriate technical standards that allow them to be properly linked to publications**.

Sustainability

To be as efficient and impactful as possible, **open science should build on long-term practices, services, infrastructures and funding models that ensure the equal participation of scientific producers from less privileged institutions and countries**. **Open science infrastructures should be organized and financed upon an essentially not-for-profit and long-term vision**, which enhance open science practices and guarantee permanent and unrestricted access to all, to the largest extent possible.

Promoting a common understanding of open science, its associated benefits and challenges, as well as diverse paths to open science

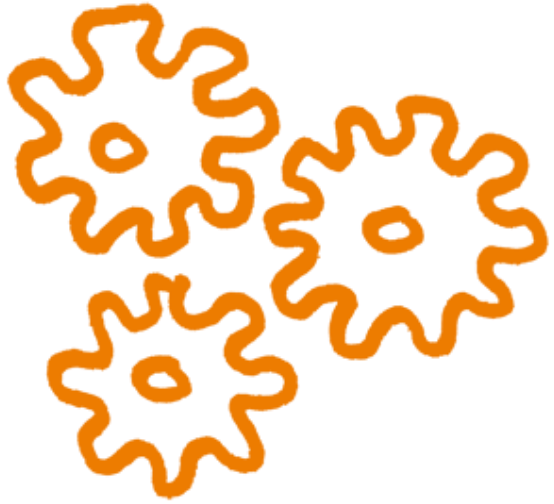


Encouraging bibliodiversity and multilingualism

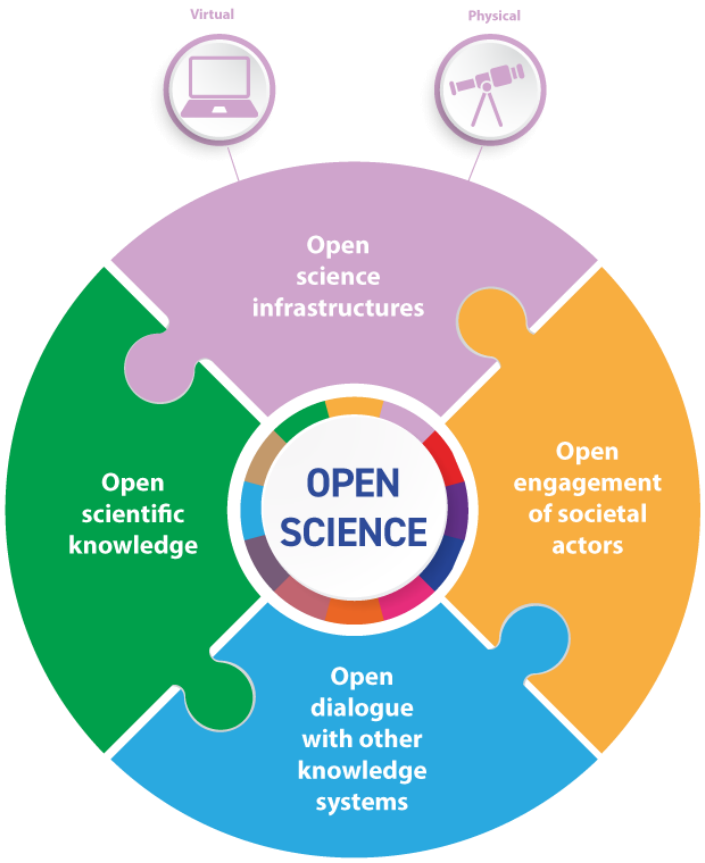
Encouraging bibliodiversity through the **diversity of formats and means of publications**, including those produced by the humanities and social sciences, and **diversity of business models, by supporting not-for-profit, academic and scientific community-driven publishing models as a common good.**

Encouraging **multilingualism** in the practice of science, in scientific publications and in academic communications.

Investing in open science infrastructure and services

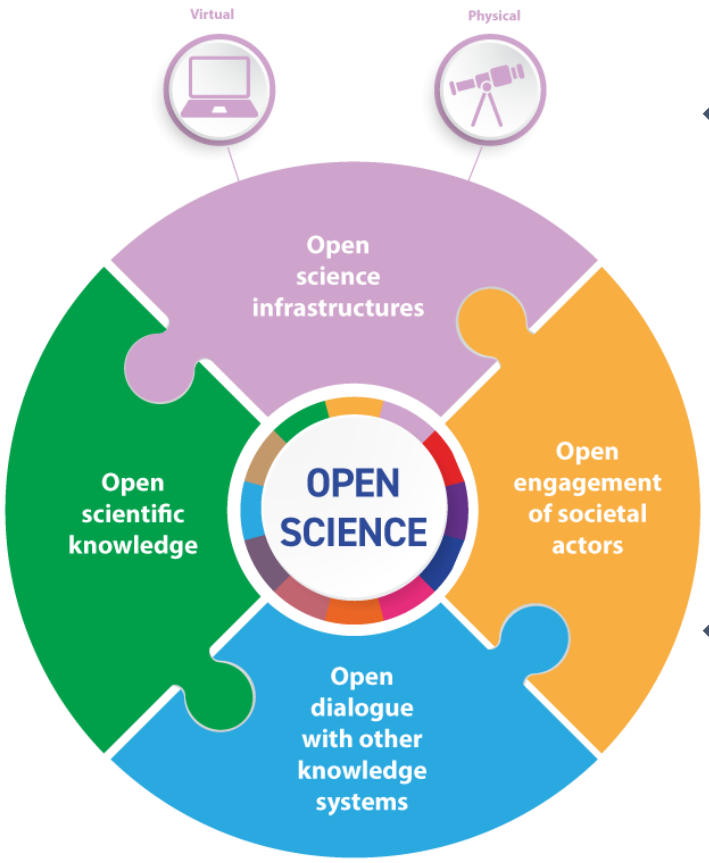


Open Science Infrastructures and services in the OSR



- **Shared research infrastructures** that are needed to support open science and **serve the needs of different communities.**
- Provide essential **open and standardized services to manage and provide access, portability, analysis and federation** of data, scientific literature, thematic science priorities or community engagement**.**
- **Major scientific equipment or sets of instruments, collections, journals and open access publication platforms, repositories, archives…, open computational and data manipulation service infrastructures that enable collaborative and multidisciplinary data analysis…**

Open Science Infrastructures and services in the OSR



- **Different repositories are** adapted to the specificity of the objects they contain (publications, data or code), to local circumstances, user needs and the requirements of research communities, yet should adopt **interoperable standards** and best practices to ensure the content in repositories is appropriately vetted, discoverable and reusable by humans and machines.

- **Community-building efforts,** which are crucial for their **long-term sustainability** and therefore should be **not-for-profit and guarantee permanent and unrestricted access to all public to the largest extent possible.**

Investing in human resources, training, education, digital literacy and capacity building for open science

Investing in human resources, training, education, digital literacy and capacity building for open science

Providing systematic and continuous capacity building on open science concepts and practices, including broad comprehension of the open science guiding principles and core values as well as technical skills and capacities in digital literacy, digital collaboration practices, data science and stewardship, curation, long-term preservation and archiving, information and data literacy, web safety, content ownership and sharing, as well as software engineering and computer science.

Investing in human resources, training, education, digital literacy and capacity building for open science (2)

Agreeing on a framework of open science competencies aligned with specific disciplines for researchers at different career stages, as well as for actors active in the private and public sectors or in civil society, who need specific competences to include the use of open science products in their professional careers; **and developing recognized skills and training programmes in support of the attainment of these competencies**.

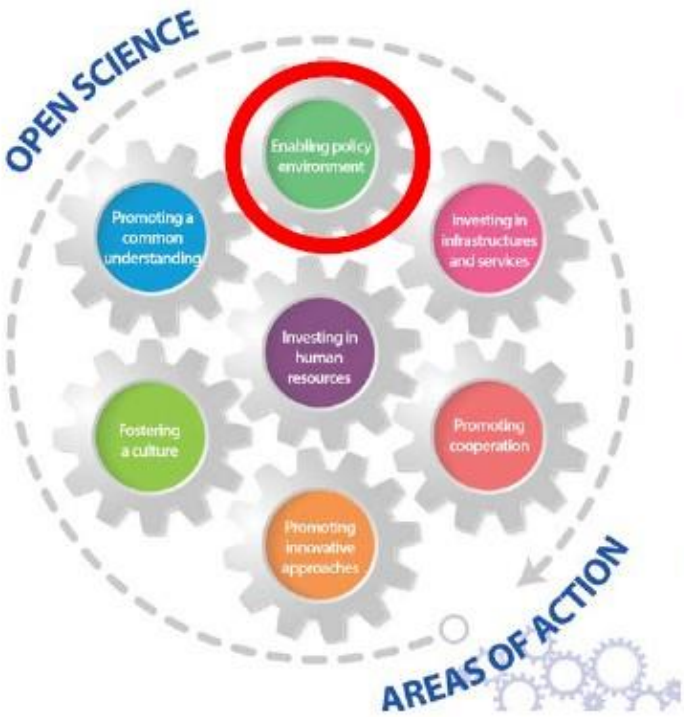
Investing in human resources, training, education, digital literacy and capacity building for open science (3)

A core set of data science and data stewardship skills, skills related to intellectual property law, as well as skills needed to ensure open access and engagement with society, as appropriate, should be regarded as part of the foundational expertise of all researchers and incorporated into higher education research skills curricula.

Investing in and promoting advanced education and the professionalization of roles in data science and data stewardship.

Fostering a culture of open science and aligning incentives for open science

Developing an enabling policy environment for open science



AREAS OF ACTION:

(ii) Developing an enabling policy environment for open science

17a. Developing effective **institutional and national open science policies and legal frameworks**..

17b. Aligning open science policies, strategies and actions from individual institutions to local and international levels..

17c. Mainstreaming gender equality aspects into open sciences policies, strategies and practices.

17.f. Enhancing the inclusion of citizen and participatory science as integral parts of open science policies and practices at the national, institutional and funder levels.

Aligning incentives for Open Science – Provisions from the Recommendation

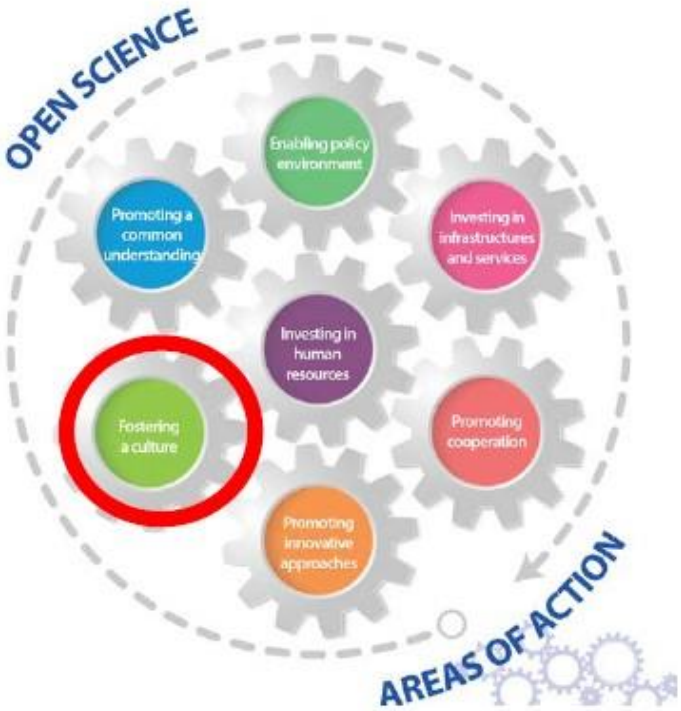
AREAS OF ACTION:

(v) Fostering a culture of open science and aligning incentives for open science

20. ...Assessment of scientific contribution and career progression rewarding good open science practices is needed for operationalization of open science.

20b. Reviewing research assessment and career evaluation systems in order to align them with the principles of open science. ...evaluation systems should take into account the wide breadth of missions within the knowledge creation environment. These missions come with different forms of knowledge creation and communication, not limited to publishing in peer reviewed international journals.

Developing an enabling policy environment for open science



20.c Promoting the development and implementation of evaluation and assessment systems that:

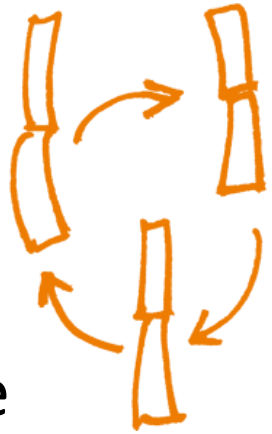
- **build on the existing efforts** to improve the ways in which the scientific outputs are evaluated, such as the **2012 San Francisco Declaration on Research Assessment,** with an increased **focus on the quality of research outputs rather than quantity**, and by fit-for-purpose use of diversified indicators and processes that forego the use of journal based metrics such as the journal impact factor;
- **give value to all relevant research activities and scientific outputs** including high-quality FAIR data and metadata, well-documented and reusable software, protocols and workflows, machine-readable summaries of findings, and teaching, outreach and engagement of societal actors;
- **take into account evidence of research impact and knowledge exchange**, such as widening participation in the research process, influence on policy and practice and engaging in open innovation with partners beyond academia...
- and the fact that **assessment of researchers against open science criteria should be fit for different stages of careers..**

Addressing inequality and preventing related predatory behaviours; promoting high-quality and responsible research

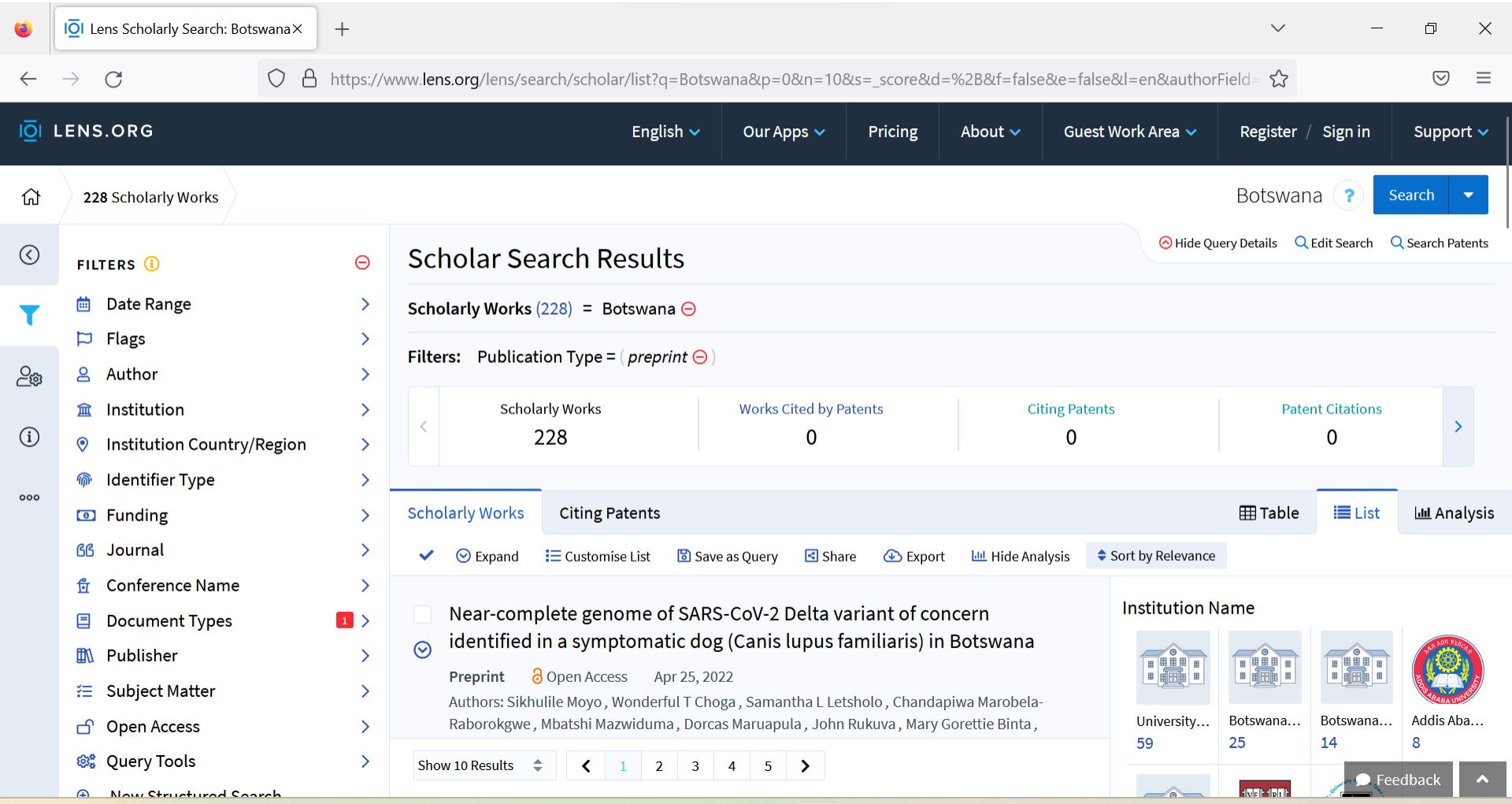
Enforcing effective governance measures and proper legislation in order to address inequality and **prevent related predatory behaviours** as well as to protect the intellectual creation of open science methods, products and data.

Promoting high-quality and responsible research in line with the 2017 UNESCO Recommendation on Science and Scientific Researchers and **exploring the potential of open science practices to reduce scientific misconduct, including the fabrication and falsification of results, violation of scientific ethical norms, and plagiarism**.

Encouraging community-driven collaboration and other innovative models, for example preprints



Promoting open science from the outset of the research process and **extending the principles of openness in all stages of the scientific process to improve quality and reproducibility**, including the encouragement of community-driven collaboration and other **innovative models, for example preprints**, **clearly distinguished from final peer-reviewed publications**, and respecting the diversity of scientific practices, in order to accelerate dissemination and encourage rapid growth in scientific knowledge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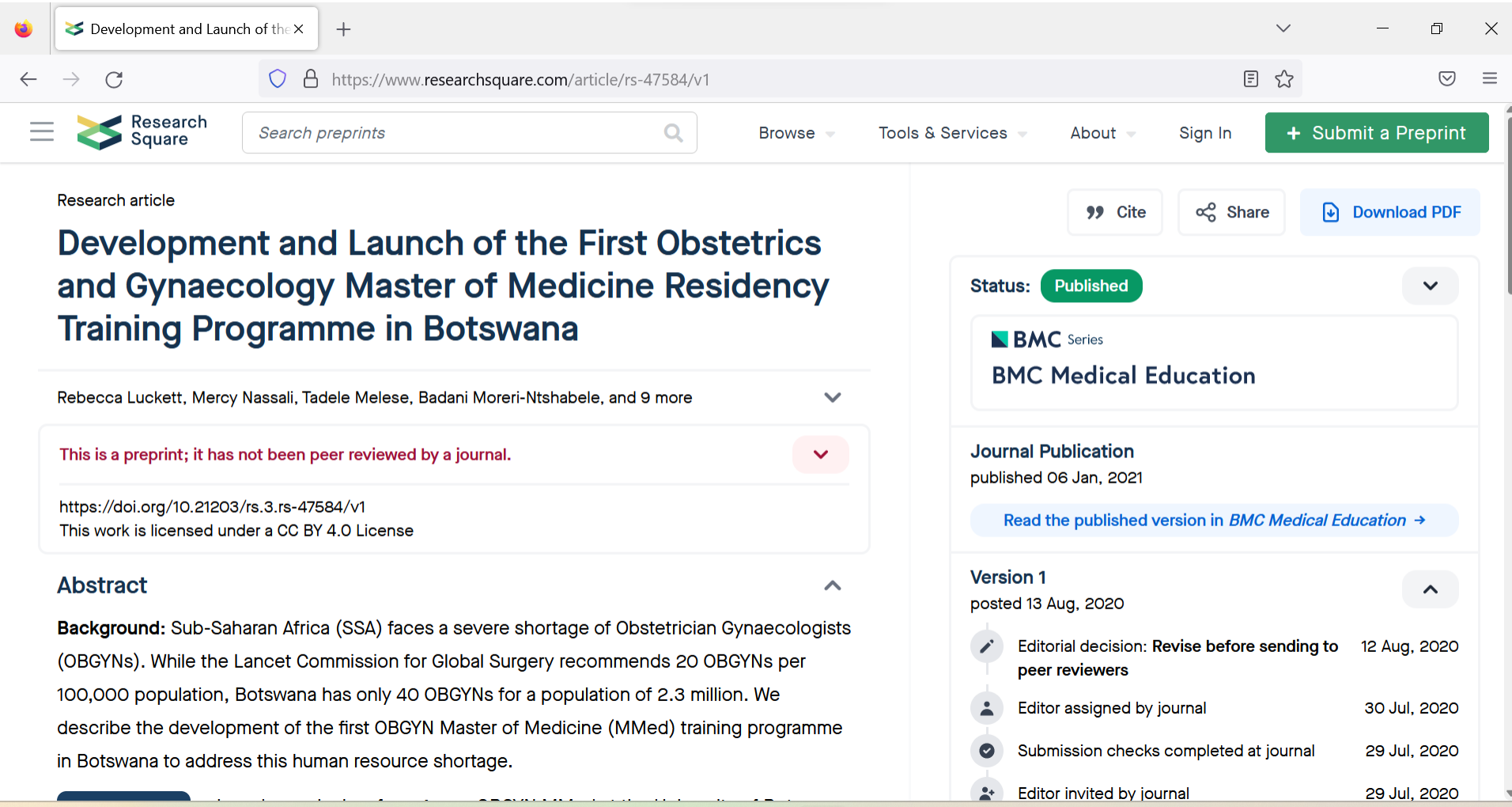

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Start your own Open Science Community

Want to start your own OSC at your university and join INOSC? Great! Please contact us and have a look at our OSC Starter Kit (www.StartYourOSC.com). A 'sneak peak' is provided below.

Kristijan Armeni, Loek Brinkman, Rickard Carlsson, Anita Eerland, Rianne Fijten, Robin Fondberg, Vera E Heininga, Stephan Heunis, Wei Qi Koh, Maurits Masselink, Niall Moran, Andrew Ó Baoill, Alexandra Sarafoglou, Antonio Schettino, Hardy Schwamm, Zsuzsika Sjoerds, Marta Teperek, Olmo R van den Akker, Anna van't Veer, Raul Zurita-Milla, Towards wide-scale adoption of open science practices: The role of open science communities, *Science and Public Policy*, Volume 48, Issue 5, October 2021, Pages 605–611, https://doi.org/10.1093/scipol/scab039

OPEN CLIMATE CAMPAIGN

A four-year campaign to make open sharing of research outputs the norm in climate science

OPEN SOCIETY FOUNDATIONS

creative commons

SPARC

eifl KNOWLEDGE WITHOUT BOUNDARIES

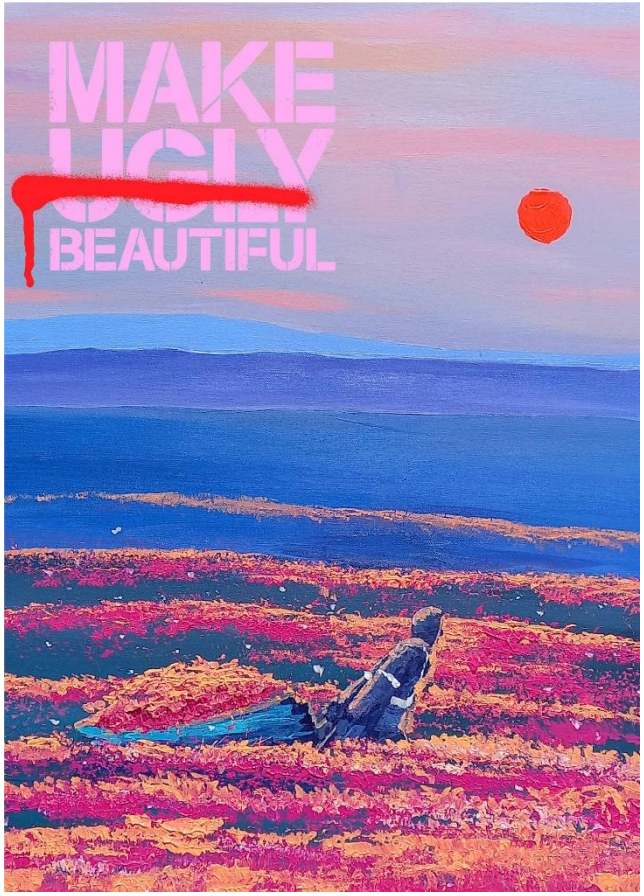
ARCADIA
A CHARITABLE FUND OF LISBET RAUSING & PETER BALDWIN

https://openclimatecampaign.org

@OpenClimateCamp

OPEN CLIMATE CAMPAIGN

- Bringing attention to the issue of access to knowledge on climate change particularly to **researchers** who are producing the knowledge and **informing them of tools that can open their research outputs**.
- Working directly with national governments, funders and environmental organizations to identify legal and policy barriers, **help governments create, adopt, implement equitable open access policies** to overcome them, and make it easier to open and share their climate change research, data and educational resources.
- Identifying, engaging, and contributing to draft **international frameworks** to include funder open access policy recommendations, and the public benefits of open access knowledge.
- Engaging with researchers, universities and policy makers from traditionally excluded groups and in geographical regions to ensure inclusive outcomes throughout.



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Thank you!
Questions?

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