Implementing Open Science – considerations and challenges

Semana del Acceso Abierto Chile 2023. Prácticas de Ciencia Abierta en instituciones de Educación Superior. 3 al 5 Octubre

PUBLISSO
ZB MED Publication Portal for Life Sciences

ZB MED
Information Centre for Life Sciences

Definition of Open Science

- **UNESCO Recommendation on Open Science**:

"[…] For the purpose of this Recommendation, Open Science is defined as an inclusive construct that combines various movements and practices aiming to make scientific knowledge openly available, accessible and reusable for everyone, to increase scientific collaborations and sharing of information for the benefits of science and society, and to open the processes of scientific knowledge creation, evaluation and communication to societal actors beyond the traditional scientific community. […]"

https://unesdoc.unesco.org/ark:/48223/pf0000379949?posInSet=3&queryId=70bbc01e-867a-40ad-8c24-e90f0b4c1ae0

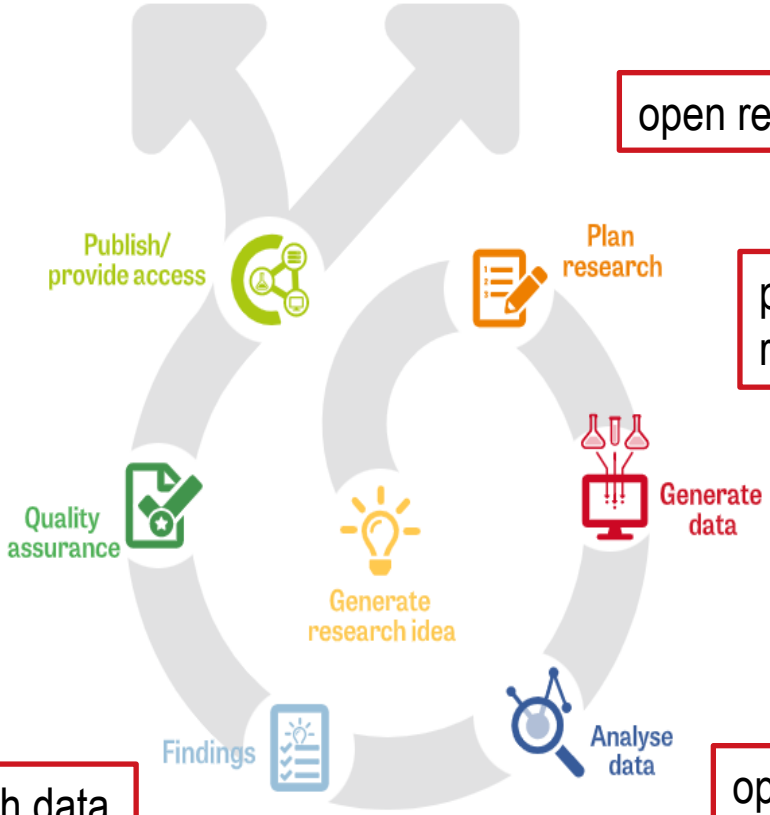
Open Science and the Research Cycle

Based on: GMS Med Bibl Inf 2020;20(3):Doc25; https://doi.org/10.3205/mbi000482 (German only)

Also discussed in this context: open educational resources, open innovation, citizen science, open citation data/ open metrics

open access

open research proposal



pre-registration and registered reports

open peer review

open lab/ open notebooks

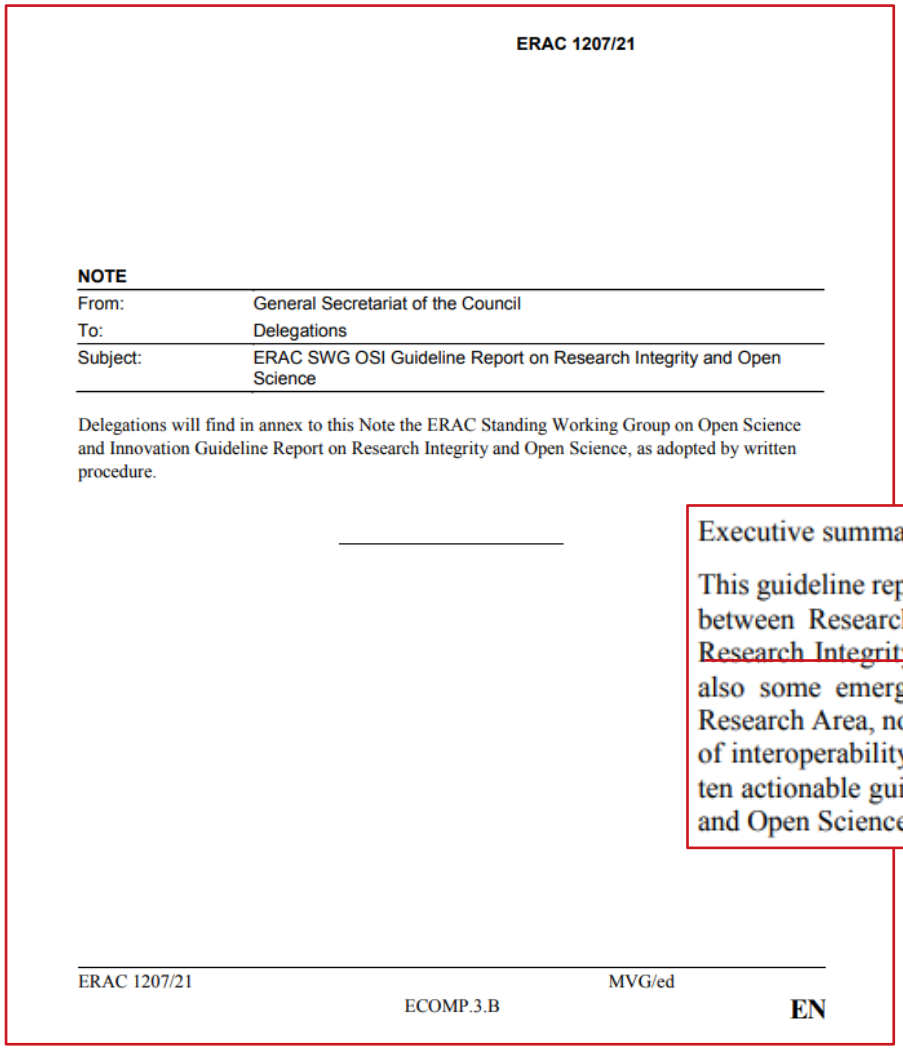
open methods

open or FAIR research data

open source code/ research software

Source figure research cycle: ZB MED https://www.zbmed.de/en/about/profile-zb-med/research-cycle

Connection between Open Science and Good Research Practices



ERAC 1207/21

NOTE

From:	General Secretariat of the Council
To:	Delegations
Subject:	ERAC SWG OSI Guideline Report on Research Integrity and Open Science

Delegations will find in annex to this Note the ERAC Standing Working Group on Open Science and Innovation Guideline Report on Research Integrity and Open Science, as adopted by written procedure.

ERAC 1207/21 MVG/ed
ECOMP.3.B **EN**

→ fostering of "Good Research Practice" with Open Science

Executive summary

This guideline report presents the most striking issues that currently relate to the interactions between Research Integrity and Open Science in research policies and practice. While Research Integrity and Open Science are strongly and positively interconnected, there are also some emerging challenges that need to be properly tackled within the European Research Area, notably relating to the public dissemination of preprints and the actual levels of interoperability and reusability of research data. The report thus concludes with a set of ten actionable guidelines to promote further the mutual reinforcement of Research Integrity and Open Science, for the benefit of science and society.

Source screenshots: ERAC SWG OSI (2021), ERAC Standing Working Group on Open Science & Innovation Guideline Report on Research Integrity and Open Science, p. 8

Connection between Open Science and Research Assessment

UNESCO Recommendation on Open Science

UNESCO (2021): UNESCO Recommendation on Open Science: https://unesdoc.unesco.org/ark:/48223/pf0000379949.locale=en , p.20-22

IV. AREAS OF ACTION

[…]

(ii) Developing an enabling policy environment for open science

17. Member States, according to their specific conditions, governing structures and constitutional provisions, should develop or encourage policy environments […] including policies to incentivize open science practices among researchers. Through a transparent participatory, multi-stakeholder process that includes dialogue with the scientific community, especially early-career researchers, and other open science actors, Member States are encouraged to consider the following:

[…]

h. Encouraging responsible research and researcher evaluation and assessment practices, which incentivize quality science, recognizing the diversity of research outputs, activities and missions.

→ acknowledging/ incentivising open science practices is key

Challenges regarding opening up the whole research cycle

- open science leads to extra work for researchers (O'Carroll et al: Providing researchers with the skills and competencies they need to practise Open Science: https://doi.org/10.2777/121253; O'Caroll et al, 2017: Evaluation of Research Careers fully acknowledging Open Science Practices: doi: 10.2777/75255; Morais et al, 2021: From principles to practices: Open Science at Europe's universities 2020-2021 EUA Open Science Survey results: https://www.eua.eu/downloads/publications/2021%20os%20survey%20report.pdf) N.N., 2022: Agreement on Reforming Research Assessment: https://coara.eu/app/uploads/2022/09/2022_07_19_rra_agreement_final.pdf)
- need for incentives (O'Carroll et al: Providing researchers with the skills and competencies they need to practise Open Science: https://doi.org/10.2777/121253; O'Caroll et al, 2017: Evaluation of Research Careers fully acknowledging Open Science Practices: https://doi.org/10.2777/75255; Morais et al, 2021: From principles to practices: Open Science at Europe's universities 2020-2021 EUA Open Science Survey results: https://www.eua.eu/downloads/publications/2021%20os%20survey%20report.pdf)
- "classical way to build up reputation" vs. call for open science (Ali-Khan et al, 2017: Motivating participation in open science by examining researcher incentives: https://doi.org/10.7554/eLife.29319)
- requirements of various stakeholders are contradictory → need for policies/ guidelines which consider different interests and clarify expectations (Ali-Khan et al, 2017: Motivating participation in open science by examining researcher incentives: https://doi.org/10.7554/eLife.29319)
- need for infrastructure, education and consultation/ advice (O'Carroll et al, 2017: Providing researchers with the skills and competencies they need to practise Open Science: https://doi.org/10.2777/121253, Morais et al, 2021: From principles to practices: Open Science at Europe's universities 2020-2021 EUA Open Science Survey results: https://www.eua.eu/downloads/publications/2021%20os%20survey%20report.pdf; Gownariset al., 2022. Barriers to Full Participation in the Open Science Life Cycle among Early Career Researchers: http://doi.org/10.5334/dsj-2022-002) Read et al., 2022. INTEGRATING OPEN SCIENCE EDUCATION INTO AN UNDERGRADUATE HEALTH PROFESSIONAL RESEARCH PROGRAM: https://doi.org/10.5195/jmla.2022.1457; Kohrs, 2023. Eleven Strategies for Making Reproducible Research and Open Science Training the Norm at Research Institutions. https://doi.org/10.31219/osf.io/kcvra)
- established infrastructures need a sustainable financial basis (https://scoss.org/)

Challenges regarding opening up the whole research cycle

- OS infrastructure is partly in hands of commercial providers (Mirowski, 2018: The future(s) of open science: https://doi.org/10.1177/0306312718772086)
- heterogeneity of research disciplines: no „one size fits all" (Levin et al, 2018: How do Scientists Define Openness? Exploring the Relationship Between Open Science Policies and Research Practice: https://doi.org/10.1177/0270467616668760; Huma, B., & Joyce, J. B., 2022. 'One size doesn't fit all': Lessons from interaction analysis on tailoring Open Science practices to qualitative research. British Journal of Social Psychology, 00, 1–15. https://doi.org/10.1111/bjso.12568)
- implementation of OS as a whole at universities and other academic institutions (LERU, 2018: Open Science and its role in universities: A roadmap for cultural change: https://www.leru.org/files/LERU-AP24-Open-Science-full-paper.pdf; Morais et al, 2021: From principles to practices: Open Science at Europe's universities 2020-2021 EUA Open Science Survey results: https://www.eua.eu/downloads/publications/2021%20os%20survey%20report.pdf; Cobey et al., 2023: Community consensus on core open science practices to monitor in biomedicine: https://doi.org/10.1371/journal.pbio.3001949; Kohrs et al., 2023. Eleven Strategies for Making Reproducible Research and Open Science Training the Norm at Research Institutions.": doi:10.31219/osf.io/kcvra)
- measuring "openness" (Blümel, 2019: Open Science und Open Innovation. Discussion Paper: https://www.stifterverband.org/medien/open-science-und-open-innovation (German only); Lampert et al., 2017: NEW INDICATORS FOR OPEN SCIENCE: https://doi.org/10.22163/fteval.2017.276)
- existing inequalities can be reinforced (Ross-Hellauer et al., 2022: Dynamics of Cumulative Advantage and Threats to Equity in Open Science: A Scoping Review: https://doi.org/10.1098/rsos.211032)
- lack of cooperation between different areas, esp. research and innovation (Leimüller et al, 2021: Openness in internationaler Wissenschafts- und Innovationspolitik: https://innosci.de/wp-content/uploads/210617_innOsci_Studie_Openness_international.pdf - German only)

Recommendations from EUA: From principles to practices

Morais et al, 2021: From principles to practices: Open Science at Europe's universities 2020-2021 EUA Open Science Survey results: https://www.eua.eu/downloads/publications/2021%20os%20survey%20report.pdf

The following **recommendations** are proposed:

- **Create the conditions to mainstream Open Science.** If Open Science is to become the standard way of producing and sharing scientific knowledge, the continued involvement of all stakeholders is crucial. The active involvement of institutional leaders, in addition to national and European guidelines and regulatory frameworks, is also instrumental to creating a favourable context for the transition to Open Science.
- **Continue to invest in embedding Open Science in institutional policies and practices.** Institutions should continue to develop internal Open Science policies that are aligned with national and European policies (whenever possible). They need to continue to create incentives and opportunities for researchers and staff to increase their involvement in both established (e.g. Open Access to research publications, RDM and FAIR data) and emerging areas of Open Science (e.g. citizen science, open education). Institutions should also expand training in the key skills needed for the transition towards Open Science (e.g. data skills) for researchers and staff.
- **Fully integrate Open Science in reward and incentive practices.** For Open Science to become the norm, it must become an integral part of academic assessments. Research funders and institutions play a key role in making this transition possible, by increasingly incorporating Open Science contributions in assessment and restructuring current award and recognition systems.

Open Science friendly environment: EU Open Science Policy as an example

The EU's open science policy

Open science is a policy priority for the European Commission and the standard method of working under its research and innovation funding programmes as it improves the quality, efficiency and responsiveness of research.

When researchers share knowledge and data as early as possible in the research process with all relevant actors it helps diffuse the latest knowledge.

And when partners from across academia, industry, public authorities and citizen groups are invited to participate in the research and innovation process, creativity and trust in science increases.

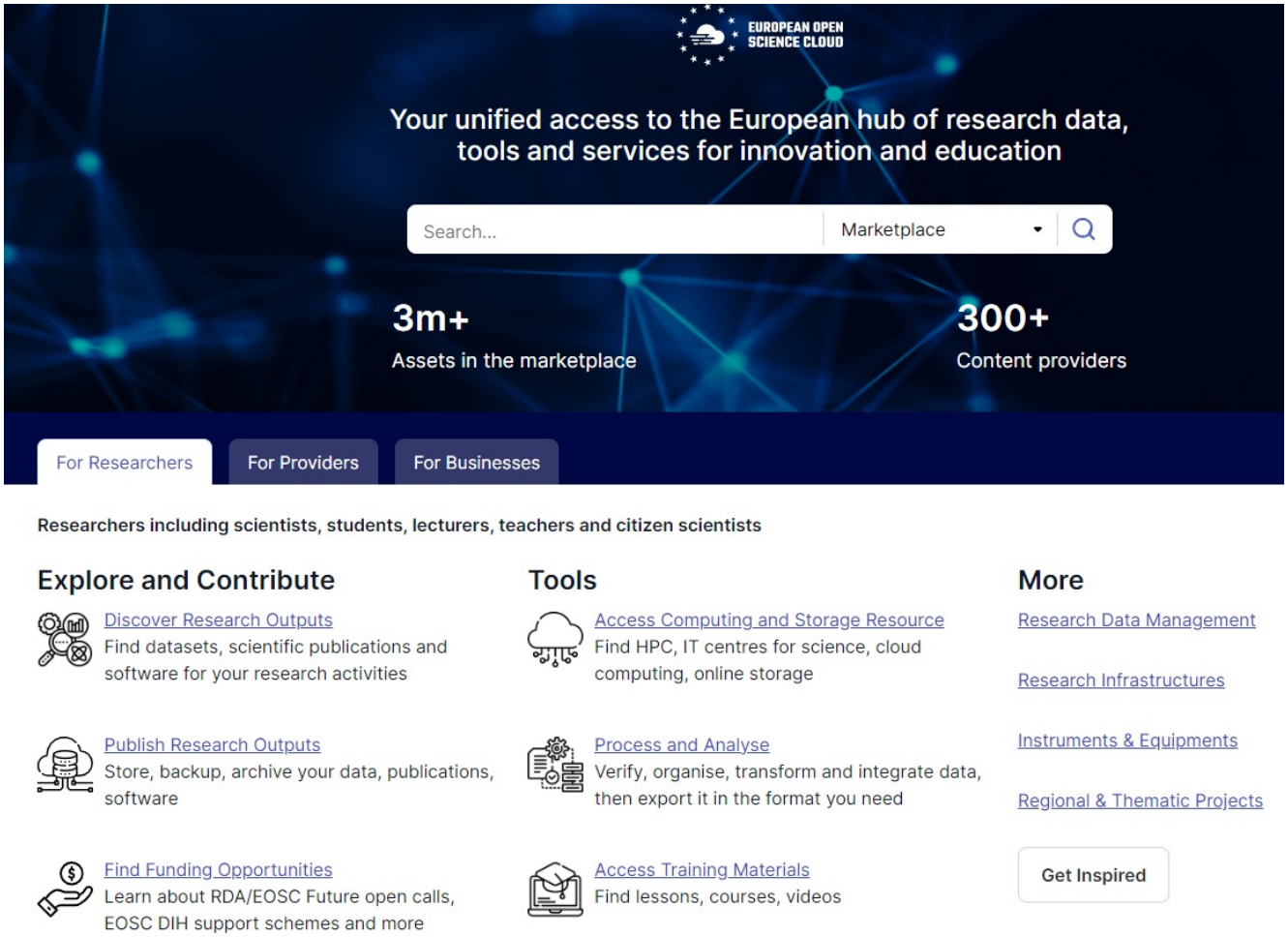
That is why the Commission requires beneficiaries of research and innovation funding to make their publications available in open access and make their data as open as possible and as closed as necessary. It recognises and rewards the participation of citizens and end users.

Furthermore, the European Open Science Cloud EN ••• will enable researchers across disciplines and countries to store, curate and share data.

The effective linking of open science practices to innovation and business models requires careful consideration of issues such as Intellectual Property Rights (IPR), licensing agreements, interoperability and reuse of data.

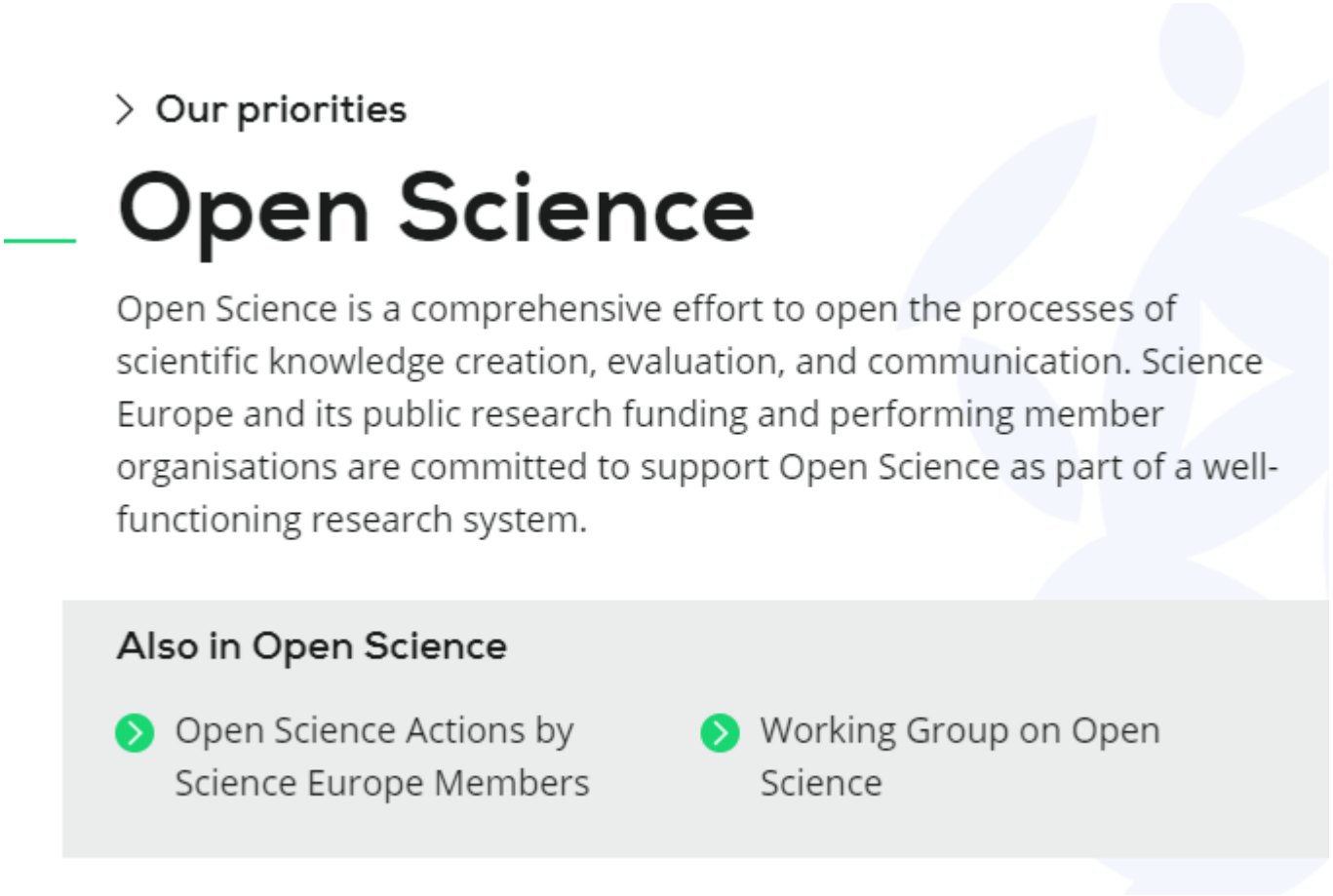
https://research-and-innovation.ec.europa.eu/strategy/strategy-2020-2024/our-digital-future/open-science_en

Open Science friendly environment: Infrastructure/ resources – European Open Science Cloud as an example



https://eosc-portal.eu/

Open Science friendly environment: Role of the Funders – Science Europe as an example



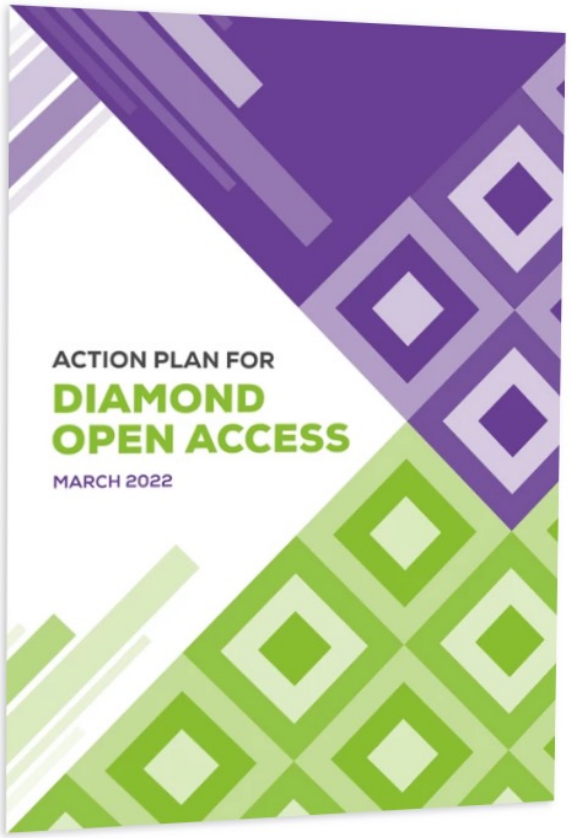
https://www.scienceeurope.org/our-priorities/open-science/

SCIENCE EUROPE

"Science Europe is the organisation representing major public organisations that fund or perform excellent, ground-breaking research in Europe".

https://www.scienceeurope.org/about-us/

Open Science friendly environment: Support for Diamond Open Access



> Our resources

02.03.2022

Action Plan for Diamond Open Access

AUTHOR(S): ZOÉ ANCION (ANR), LIDIA BORRELL-DAMIÁN (SE), PIERRE MOUNIER (OPERAS), JOHAN ROORYCK (COALITION S), BREGT SAENEN (SE)

DOI: 10.5281/ZENODO.6282402

Science Europe, cOAlition S, OPERAS, and the French National Research Agency (ANR) present this Action Plan to further develop and expand a sustainable, community-driven Diamond OA scholarly communication ecosystem.

It proposes to align and develop common resources for the entire Diamond OA ecosystem, including journals and platforms, while respecting the cultural, multilingual, and disciplinary diversity that constitutes the strength of the sector.

DOWNLOAD RESOURCE

https://www.scienceeurope.org/our-resources/action-plan-for-diamond-open-access/

Open Science friendly environment: Transformative Agreements

ABOUT NEWS EVENTS MARKET WATCH TRANSFORMATIVE AGREEMENTS DATA ANALYTICS WORKFLOWS MORE

TRANSFORMATIVE AGREEMENTS

What are transformative agreements?

"Transformative agreement" is an umbrella term describing those agreements negotiated between institutions (libraries, national and regional consortia) and publishers in which former subscription expenditures are repurposed to support open access publishing of the negotiating institutions' authors, thus transforming the business model underlying scholarly journal publishing, gradually and definitively shifting from one based on toll access (subscription) to one in which publishers are remunerated a fair price for their open access publishing services.

https://esac-initiative.org/about/transformative-agreements/

ESAC Transformative Agreement Registry

Register your transformative agreements!

The registry is available for download here.

Search: germany

Publisher	Country	Organization	Annual publications	Start date	End date	Details/ ID
AIP Publishing	Germany	Max Planck Digital Library	120	01/01/2020	12/31/2022	aip2020mpdl
AIP Publishing	Germany	TIB Consortium	550	01/01/2021	12/31/2023	aip2021tib
AIP Publishing	Germany	Max Planck Digital Library	115	01/01/2023	12/31/2025	aip2023mpdl
American Chemical Society	Germany	Helmholtz	250	01/01/2023	12/31/2025	acs2023helmholtz
American Chemical Society	Germany	Max Planck Digital Library	250	01/01/2019	12/31/2022	acs2019mpdl

https://esac-initiative.org/about/transformative-agreements/agreement-registry/

Recommendations from EUA: From principles to practices

Morais et al, 2021: From principles to practices: Open Science at Europe's universities 2020-2021 EUA Open Science Survey results: https://www.eua.eu/downloads/publications/2021%20os%20survey%20report.pdf., p. 8

The following **recommendations** are proposed:

- **Create the conditions to mainstream Open Science.** If Open Science is to become the standard way of producing and sharing scientific knowledge, the continued involvement of all stakeholders is crucial. The active involvement of institutional leaders, in addition to national and European guidelines and regulatory frameworks, is also instrumental to creating a favourable context for the transition to Open Science.
- **Continue to invest in embedding Open Science in institutional policies and practices.** Institutions should continue to develop internal Open Science policies that are aligned with national and European policies (whenever possible). They need to continue to create incentives and opportunities for researchers and staff to increase their involvement in both established (e.g. Open Access to research publications, RDM and FAIR data) and emerging areas of Open Science (e.g. citizen science, open education). Institutions should also expand training in the key skills needed for the transition towards Open Science (e.g. data skills) for researchers and staff.
- **Fully integrate Open Science in reward and incentive practices.** For Open Science to become the norm, it must become an integral part of academic assessments. Research funders and institutions play a key role in making this transition possible, by increasingly incorporating Open Science contributions in assessment and restructuring current award and recognition systems.

“Setting the Scene”: Open Science Policy on Institutional Level

Model Policy on Open Science
for Research Performing Organisations (RPOs)

INTRODUCTION

The present model policy aims to assist Research Performing Organisations (RPOs) in developing policies for Open Science/ Open Access. The proposed policy aims at aligning institutional policies with the 2012 Recommendation of the European Commission on access to and preservation of scientific information and its 2018 update, the Horizon 2020 Guidelines on th research data, the Proposal for a Regulation of the Eur Europe- the framework programme for Research and dissemination (COM/2018/435 final) and the Proposa Council on establishing the specific programme imple for Research and Innovation (COM/2018/436 final) an EU-level related to Open Science/ Open Access suc transition towards an Open Science system, the “E European Open Science Cloud (EOSC) and in particula the action lines of the European Open Science Policy P and Innovation” and the 2019 EU Directive on open Report “Towards a 2030 Vision on the Future of Unive into consideration other related reports from univer European Research Area from the university sector” a Guild of European research intensive universities “L Universities” and other associations like the Science E of Research Data Management”.

The model policy has been prepared as part of a toolk in the context of the EU-funded OpenAIRE Advanc mandates in Europe. The proposed policy draws heav process and UNESCO Open Access policy developn Access, PASTEUR4OA Toolkit and Policy Guidelines, t Access policies to research data, the LEARN project Mc Europe report on Open Data and Open Science policie

MODEL OPEN SCIENCE POLICY FOR RES
(RPOS)

1. Preamble

1. The [Name of RPO] commits to the advancement o the benefit of society by adopting practices on open, reproducible and responsible research.
2. The [Name of the RPO] recognizes “openness” as one of its guiding principles and commits to promoting it by – among others – encouraging and supporting research processes and tools that encourage collaboration, enabling new working models and new social relationships, stimulating the dissemination of knowledge and the accessibility and re-usability of research outputs, encouraging open access to publications and data and building the necessary infrastructure, skills, rewards and incentives to support open science.

2. Jurisdiction and Effect of Policy

The Policy applies to all researchers active at [Name of RPO]. In cases where research is funded by a third party, any agreement with that party concerning access rights, deposit and storage takes precedence over this Policy.

The Policy has been approved by [dept./ commission/ ...] and takes effect from [dd/mm/yy]

Access or make them openly and immediately available via a repository route at the time of publishing. Encouraging and supporting new and innovative models for Open Access publishing, including Open Access publishers who do not charge Article Processing Charges (APCs).

Model Open Science Policy for Research Performing Organisations

1. Preamble
2. Jurisdiction and Effect of Policy
3. Rights, Responsibilities, and Duties
4. Open Access to Publications
5. Open Access to Research Data
6. Open Science and Citizen Science
7. Infrastructure
8. Research Assessment and Evaluation
9. Training
10. Monitoring Policy Compliance and Validity of the Policy

ANNEX: Glossary

Angelaki, Marina. (2021). Model Policy on Open Science for Research Performing Organisations (RPOs). Zenodo. https://doi.org/10.5281/zenodo.4666050

https://www.openaire.eu/model-policy-on-open-science-for-research-performing-organisations

“Setting the Scene”: Open Science Policy on National Level – example Finland

POLICIES OF OPEN SCIENCE AND RESEARCH IN FINLAND

Last updated 26.6.2023

Policies of open science and research in Finland outline in detail the strategic principles, objectives and action plans necessary to achieve the objectives set out in the Declaration for Open Science and Research. The policies will be drafted for four areas: culture for open scholarship, open access to scholarly publications, open access of research data and methods, and open education and open access to educational resources.

Policy for Open Scholarship

- Policy for Open Scholarship

Policy for Open Access to Research Data and Methods

- Open research data and methods. National policy and executive plan by the higher education and research community for 2021–2025: Policy component 1 (Open access to research data) and 2 (Open access to research methods and infrastructures)

Policy for Open Access to Scholarly Publications

- Open access to scholarly publications – National policy and executive plan by the research community in Finland for 2020–2025: Policy component for open access to journal and conference articles
- In progress: policy components on monographs and student theses (2024)

Policy for the Open Education and Educational Resources

- Open education and educational resources. National policy and executive plan by the higher education and research community for 2021-2025. Policy components 1 (Open access to educational resources) and 2 (Open educational practices)

https://avointiede.fi/en/policies-materials/policies-open-science-and-research-finland

DECLARATION FOR OPEN SCIENCE AND RESEARCH 2020-2025

Last updated 4.8.2022

The Declaration for Open Science and Research presents a common vision for the Finnish research community. This vision states that open science and research should be integrated in researchers’ everyday work and support not only the effectiveness of research outputs but also the quality of research. Furthermore, the vision sees the Finnish research community as an international forerunner in open science and research.

The path toward the vision is described in a mission for Open Science and Research. The mission is:

1. to promote openness as a fundamental value throughout the research community and its activities
2. to strengthen societal knowledge base and innovation and
3. to improve the quality of scientific and artistic research outputs and the educational resources based on them, and the fluid mobility and impact of research outputs throughout society between researchers and research teams, between fields of science and research, between research and education, between researchers and the private sector, the public sector and the third sector, and between researchers and society’s decision makers and citizens.

- Declaration for Open Science and Research 2020–2025
- Sign the Declaration
- View the signatories

https://avointiede.fi/en/policies/declaration-open-science-and-research-2020-2025

Recommendations from EUA: From principles to practices

Morais et al, 2021: From principles to practices: Open Science at Europe's universities 2020-2021 EUA Open Science Survey results: https://www.eua.eu/downloads/publications/2021%20os%20survey%20report.pdf

The following **recommendations** are proposed:

- **Create the conditions to mainstream Open Science.** If Open Science is to become the standard way of producing and sharing scientific knowledge, the continued involvement of all stakeholders is crucial. The active involvement of institutional leaders, in addition to national and European guidelines and regulatory frameworks, is also instrumental to creating a favourable context for the transition to Open Science.
- **Continue to invest in embedding Open Science in institutional policies and practices.** Institutions should continue to develop internal Open Science policies that are aligned with national and European policies (whenever possible). They need to continue to create incentives and opportunities for researchers and staff to increase their involvement in both established (e.g. Open Access to research publications, RDM and FAIR data) and emerging areas of Open Science (e.g. citizen science, open education). Institutions should also expand training in the key skills needed for the transition towards Open Science (e.g. data skills) for researchers and staff.
- **Fully integrate Open Science in reward and incentive practices.** For Open Science to become the norm, it must become an integral part of academic assessments. Research funders and institutions play a key role in making this transition possible, by increasingly incorporating Open Science contributions in assessment and restructuring current award and recognition systems.

Assessment as influence on research culture and quality of research

European Commission, Directorate-General for Research and Innovation, Towards a reform of the research assessment system : scoping report, Publications Office, 2021, https://data.europa.eu/doi/10.2777/707440, p. 3-5

The proposed way forward consists of a European agreement that would be signed by individual research funding organisations, research performing organisations and national/regional assessment authorities and agencies, as well as by their associations, all willing to reform the current research assessment system. The aim is for research and researchers to be evaluated based on their intrinsic merits and performance rather than on the number of publications and where these are published, promoting qualitative judgement with peer-review, supported by a more responsible use of quantitative indicators. The way in which the system is reformed should be appropriate for each type of assessment: research projects, researchers, research units, and research institutions. A reformed system should also be sufficiently flexible to accommodate the diversity of countries, disciplines, research cultures, research maturity levels, the specific missions of institutions, and career paths.

- focus on no. of publications and citations
- striving for JIF journals
- publish-or-perish-culture

→ hamper quality; integrity; and trust in science

Changes through digitisation, e.g.:

- multiple kinds of output
- openness/ accessibility as keys to reliability and reproducibility

→ are not well represented in current research assessment practices

Responsible Research Assessment as incentive: CoARA – Coalition for Advancing Research Assessment

"As of 29 September 2023, there are 546 CoARA member organisations from across the world".
https://coara.eu/coalition/membership/

"As signatories of this Agreement, we agree on the **need to reform research assessment practices**. Our vision is that the **assessment of research**, researchers and research organisations **recognises the diverse outputs, practices and activities that maximise the quality and impact of research**. This requires basing assessment **primarily** on **qualitative judgement**, for which peer review is central, **supported by responsible use of quantitative indicators**. Among other purposes, this is fundamental for: deciding which researchers to recruit, promote or reward, selecting which research proposals to fund, and identifying which research units and organisations to support**".**

Agreement on Reforming Research Assessment (2022): https://coara.eu/app/uploads/2022/09/2022_07_19_rra_agreement_final.pdf; p. 2, own highlighting

Responsible Research Assessment as incentive: CoARA – Coalition for Advancing Research Assessment

Agreement on Reforming Research Assessment (2022): https://coara.eu/app/uploads/2022/09/2022_07_19_rra_agreement_final.pdf; p. 4-10, own highlighting

Core Commitments:

„[…]

1. **Recognise the diversity** of contributions to, and careers in, research in accordance with the needs and nature of the research […]
2. Base research assessment primarily on **qualitative evaluation** for which **peer review** is central, **supported by responsible use of quantitative indicators […]**
3. **Abandon inappropriate uses in research assessment of journal- and publication-based metrics**, in particular inappropriate uses of Journal Impact Factor (JIF) and h-index […]
4. **Avoid the use of rankings** of research organisations in research assessment […]
5. **Commit resources to reforming research assessment as is needed** to achieve the organisational changes committed to […]
6. **Review** and develop research assessment **criteria, tools and processes […]**
7. **Raise awareness** of research assessment reform and **provide transparent communication**, **guidance, and training** on assessment criteria and processes as well as their use […]
8. Exchange practices and experiences to enable **mutual learning** within and beyond the Coalition […]
9. **Communicate progress** made on adherence to the Principles and implementation of the Commitments […]
10. **Evaluate practices, criteria and tools** based on solid evidence and the state-of-the-art in research on research, and **make data openly available for evidence gathering and research […]**

Open Science in Career Assessment

Evaluation of Research Careers fully acknowledging Open Science Practices

Rewards, incentives and/or recognition for researchers practicing Open Science

Figure 2. Research Reward Cycle

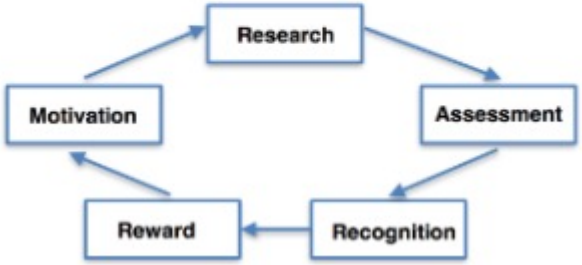
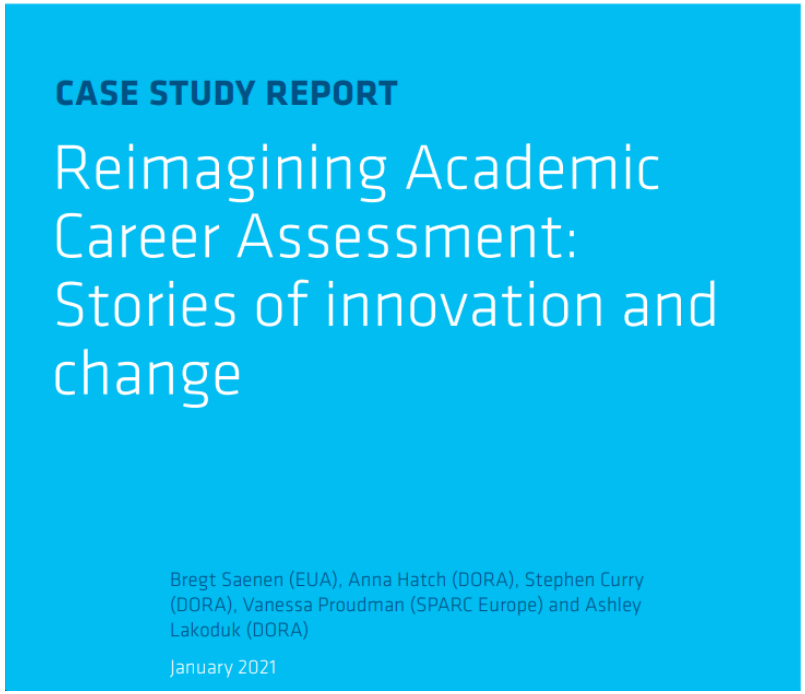


Figure 1. Open Science Career Assessment Matrix (OS-CAM) representing the range of evaluation criteria for assessing Open Science activities

Open Science Career Assessment Matrix (OS-CAM)	
Open Science activities	*Possible evaluation criteria*
RESEARCH OUTPUT	
Research activity	Pushing forward the boundaries of open science as a research topic
Publications	Publishing in open access journals Self-archiving in open access repositories
Datasets and research results	Using the FAIR data principles Adopting quality standards in open data management and open datasets Making use of open data from other researchers
Open source	Using open source software and other open tools Developing new software and tools that are open to other users
Funding	Securing funding for open science activities
RESEARCH PROCESS	
Stakeholder engagement / citizen science	Actively engaging society and research users in the research process Sharing provisional research results with stakeholders through open platforms (e.g. Arxiv, Figshare) Involving stakeholders in peer review processes
Collaboration and Interdisciplinarity	Widening participation in research through open collaborative projects Engaging in team science through diverse cross-disciplinary teams
Research integrity	Being aware of the ethical and legal issues relating to data sharing, confidentiality, attribution and environmental impact of open science activities Fully recognizing the contribution of others in research projects, including collaborators, co-authors, citizens, open data providers
Risk management	Taking account of the risks involved in open science
SERVICE AND LEADERSHIP	
Leadership	Developing a vision and strategy on how to integrate OS practices in the normal practice of doing research Driving policy and practice in open science
	Being a role model in practicing open science
Academic standing	Developing an international or national profile for open science activities Contributing as editor or advisor for open science journals or bodies
Peer review	Contributing to open peer review processes Examining or assessing open research
Networking	Participating in national and international networks relating to open science
RESEARCH IMPACT	
Communication and Dissemination	Participating in public engagement activities Sharing research results through non-academic dissemination channels Translating research into a language suitable for public understanding
IP (patents, licenses)	Being knowledgeable on the legal and ethical issues relating to IPR Transferring IP to the wider economy
Societal impact	Evidence of use of research by societal groups Recognition from societal groups or for societal activities
Knowledge exchange	Engaging in open innovation with partners beyond academia
TEACHING AND SUPERVISION	
Teaching	Training other researchers in open science principles and methods Developing curricula and programs in open science methods, including open science data management Raising awareness and understanding in open science in undergraduate and masters' programs
Mentoring	Mentoring and encouraging others in developing their open science capabilities
Supervision	Supporting early stage researchers to adopt an open science approach
PROFESSIONAL EXPERIENCE	
Continuing professional development	Investing in own professional development to build open science capabilities
Project management	Successfully delivering open science projects involving diverse research teams
Personal qualities	Demonstrating the personal qualities to engage society and research users with open science Showing the flexibility and perseverance to respond to the challenges of conducting open science

https://op.europa.eu/en/publication-detail/-/publication/47a3a330-c9cb-11e7-8e69-01aa75ed71a1/ , p.5-6; 11

Open Science in Career Assessment



https://eua.eu/downloads/publications/eua-dora-sparc_case%20study%20report.pdf

Contains case studies:

- Examples include: stronger focus on peer review / narrative CVs / application of OS-CAM /

Thank you! Any questions?

Photo credit: Ralf Rebmann - Wikimedia Deutschland e. V., CC-BY-SA 4.0

Thank you for your attention!

Dr Jasmin Schmitz

PUBLISSO Advisory Services

ZB MED – Information Centre for Life Science

Gleueler Str 60
50931 Cologne

schmitz@zbmed.de

Twitter/ X: @jasminschmitz12 (please use email to get in touch)

+49 (0) 221 478-32795

https://www.publisso.de/en/advice/