Open Science at the Research Council of Finland

Research Council of Finland

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Capacity Building Workshop (CBW1): “Collaborative, Responsible and Open Science infrastructure development”

15 April 2024

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Agenda

1. Introduction to the Research Council of Finland
2. Background for the Council's open science policies
3. Research funder's open science policies
   - A joint initiative Plan S
   - Open science under Horizon Europe
   - Open science at the Research Council of Finland
4. Empirical studies on Open Science policy implementation
   - The impact of the regulative pressure of the research funders
   - Hybridities in implementing open science policies
   - Researchers' responses to open science policies

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What the Research Council of Finland does

WE PROMOTE

- high-quality and ethically sustainable scientific research
- research impact and scientific renewal
- application of research results and research knowledge

WE SUPPORT

- international opportunities for research cooperation
- multidisciplinary and novel research approaches

WE STRENGTHEN

- internationalisation and appeal of research environments
- national and international research infrastructure activities

THE CORE VALUES GUIDING OUR ACTIVITIES ARE OPENNESS, TRANSPARENCY, RELIABILITY, EQUALITY AND NONDISCRIMINATION.

Year 2023 in figures

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Applications*
1,630

Review reports
8,430

15%
of applicants were granted funding**

Research funding granted
€511 million

Funding processing costs of total funding allocated
2.2%

Ongoing in 2024

14 Finnish Flagships

6 Academy Programmes

23 Finnish Centres of Excellence

approx. **1,000** Academy Projects

13 Strategic Research Council (SRC) Programmes

Each year, our funding contributes to some **3,500** people's work (FTEs) at different research organisations.

In 2023, the Strategic Research Council (SRC) provided **€56 million** in funding for research.

strategicRESEARCH

*The figure is lower than in previous years because the autumn call was replaced by the winter call, and applications were submitted in January 2024.
** Average for autumn 2022 call, including applications for Academy Project, Academy Research Fellow, Postdoctoral Researcher and Clinical Researcher funding

Research Council of Finland

Who we fund

About 20–25% of research carried out **at Finnish universities** is funded by the Research Council of Finland.

The funding is granted for a fixed term, usually for 4–5 years.

Our funding for **research projects** is paid to the 'site of research', that is, the university or research institute where the researcher or research team works.

The **research organisation** (university or research institute) uses the funding to cover the salaries and research costs of the team. The research organisation invoices us annually based on the actual costs.

On average, our funding for a four-year project comes to 500,000 euros. Of this sum, 35–40% goes to the research organisation as overheads, to cover rents, information system costs and administrative expenses.

The researchers are employed by the university or research institute that hosts the project.

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Vision 2030

Bold research for Finland and the world

In the workplace we are inspired, and we grow and develop collectively

Better and higher-impact skills and competence

Capacity of research for renewal and reform

Mission
To open up new avenues for excellent, responsible and high-impact research

Values
- Openness
- Transparency
- Reliability
- Equality
- Nondiscrimination

Our organisation is modern and up-to-date

New scientific breakthroughs and solutions for the benefit of whole society

We will continue to develop our practices and procedures

Research Council of Finland

Science policy background 1/3

- Mission-based and solution-centered approaches are necessary to address grand challenges like climate change, inequality, and global issues such as COVID-19. These approaches require **a departure from traditional research practices**. **Open Science** holds the promise of providing a solution through its **emphasis on the free exchange of research ideas, results, data, and other research outputs**.
- Europe has shown the greatest adoption of Open Science
  - The formal endorsement of open science by the G8 Science Ministers in 2013
  - In 2016, the EU Competitiveness Council released **a mission statement promoting Open Access (OA) scholarly publications**, and the European Commission embraced Open Science for EU research and innovation programmes, leading to **a vision of 'Open Innovation and Open Science' for Europe**.

Science policy background 2/3

- Currently, at the national level of EU member countries, Open science policies are increasingly being integrated **under the guidance of the European Commission**, solidifying their institutionalization.
- Open science was introduced comprehensively in Finnish research policy, when the Ministry of Education and Culture (MEC) initiated **an Open Science and Research (ATT) Initiative in 2014**, although the MEC had promoted the openness of research datasets already from 2011. The main objectives:
  - **To promote open scholarship and accessibility of knowledge** based on the co-operation of many actors in order to make scholarship, science and research more reliable, to support the endorsement of open research practices and to increase the social impact of research by improving the management and use of scientific knowledge production.
  - **To make Finland the leading country for openness in science and research by 2017**.

Science policy background 3/3

- According to the MEC, it was essential to have parallel principles throughout the research and innovation system >>> Open science governance in Finland also involves **intermediary organizations that exercise control on behalf of the MEC**:
  - **Finnish research organizations** were urged to introduce and mobilize a policy of openness in routine activities.
  - **Universities Finland** (Unifi) is a co-operational organization for Finnish universities that aims to influence the Finnish higher education and research policy. With special funding granted by the MEC, Unifi produced an Open Science and Data Operational Programme (2018).
  - **Federation of Finnish Learned Societies** (FFLS), based on the Operational Programme, established a national coordination model in 2019 (presentation by the FFLS earlier today).
  - **Research Council of Finland**

Regulative pressure of research funders' open science policies

- **Regulative pressure** arises from the regulations imposed by authoritative organizations or actors, which mandate preferred actions for other organizations or their members.
- Research funders' regulations **provide binding constraints and may involve legal sanctions for non-compliance** with the established regulations and rules.
- Today, many European funding agencies **require researchers to publish openly, develop data management plans, and facilitate research data sharing**.

cOAlition S: Building an Alliance of Funders and Stakeholders

- **Plan S initiative** states the fundamental principles for future Open Access publishing.
- Science Europe, research funders, the European Research Council and the European Commission will work together to clarify and publish implementation details.
- Research funders initiated the alliance cOAlition S to take action towards the implementation of Plan S.
- Other funding agencies, research councils, and stakeholders were invited to join to contribute to the realization of **the vision of science without publication paywalls**.

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PLAN S – the vision

"Universality is a fundamental principle of science (the term "science" as used here includes the humanities): only results that can be discussed, challenged, and, where appropriate, tested and reproduced by others qualify as scientific. **Science, as an institution of organised criticism, can** therefore **only function properly if research results are made openly available to the community** so that they can be submitted to the test and scrutiny of other researchers. Furthermore, new research builds on established results from previous research. **The chain, whereby new scientific discoveries are built on previously established results, can only work optimally if all research results are made openly available to the scientific community**."

Why Plan S | Plan S (coalition-s.org)

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PLAN S – the vision

"**Publication paywalls are withholding a substantial amount of research results from a large fraction of the scientific community and from society as a whole**. This constitutes an absolute anomaly, which hinders the scientific enterprise in its very foundations and hampers its uptake by society. Monetising the access to new and existing research results is profoundly at odds with the ethos of science (Merton, 1973). **There is no longer any justification for this state of affairs to prevail** and the subscription-based model of scientific publishing, including its so-called 'hybrid' variants, should therefore be terminated. In the 21st century, science publishers should provide a service to help researchers disseminate their results. They may be paid fair value for the services they are providing, but **no science should be locked behind paywalls!**"

Why Plan S | Plan S (coalition-s.org)

Part I: The Plan S Principles

"With effect from 2021*, all scholarly publications on the results from research funded by public or private grants provided by national, regional and international research councils and funding bodies, must be published in Open Access Journals, on Open Access Platforms, or made immediately available through Open Access Repositories without embargo."

** For funders agreeing after January 2020 to implement Plan S in their policies, the start date will be one year from that agreement*

In addition:

01 Authors or their institutions retain copyright to their publications. All publications must be published under an open licence, preferably the Creative Commons Attribution licence (CC BY), in order to fulfil the requirements defined by the Berlin Declaration;

02 The Funders will develop robust criteria and requirements for the services that high-quality Open Access journals, Open Access platforms, and Open Access repositories must provide;

03 In cases where high-quality Open Access journals or platforms do not yet exist, the Funders will, in a coordinated way, provide incentives to establish and support them when appropriate; support will also be provided for Open Access infrastructures where necessary;

04 Where applicable, Open Access publication fees are covered by the Funders or research institutions, not by individual researchers; it is acknowledged that all researchers should be able to publish their work Open Access;

05 The Funders support the diversity of business models for Open Access journals and platforms. When Open Access publication fees are applied, they must be commensurate with the publication services delivered and the structure of such fees must be transparent to inform the market and facilitate the potential standardisation and capping of payments of fees;

06 The Funders encourage governments, universities, research organisations, libraries, academies, and learned societies to align their strategies, policies, and practices, notably to ensure transparency.

07 The above principles shall apply to all types of scholarly publications, but it is understood that the timeline to achieve Open Access for monographs and book chapters will be longer and requires a separate and due process;

08 The Funders do not support the 'hybrid' model of publishing. However, as a transitional pathway towards full Open Access within a clearly defined timeframe, and only as part of transformative arrangements, Funders may contribute to financially supporting such arrangements;

09 The Funders will monitor compliance and sanction non-compliant beneficiaries/grantees;

10 The Funders commit that when assessing research outputs during funding decisions they will value the intrinsic merit of the work and not consider the publication channel, its impact factor (or other journal metrics), or the publisher.

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Open Science at the Research Council of Finland

Research Council of Finland

Science policy objectives

- Promoting **open science** is one of the factors identified in the Research Council of Finland's strategy **contributing to the renewal, quality and societal impact of science**.
- Open science activities are implemented in **requirements to make research outputs** resulting from research projects funded by the Research Council **open access**.
- Promoting **open science** is one of the scientific policy factors identified **as a criterion for the funding decisions**.

National and internation collaboration

We implement our science policy objectives together with national and international stakeholders. The most important declarations and policies of this cooperation are:

- the **Declaration for Open Science and Research (Finland) 2020–2025**, prepared by the Open Science Coordination under the Federation of Finnish Learned Societies, and
  the policies and recommendations related to the Declaration
- the Research Council's **participation in cOAlition S**, an international initiative by research funders to make full and immediate Open Access to research publications a reality
- the Research Council's participation in the activities of **Science Europe** that advance the principles and practices of open science.

Research Council policies on open science

Our goal is to make the outputs produced and used in research and their metadata quickly and widely available for reuse through the following policies:

1) **Open access to scientific publications**
2) **Data management and openness**
3) **Openness of research methods**
4) **Research output metadata**

1) Open access to scientific publications 1/5

Open access to scientific publications is **one of the key objectives** of open science.

The Research Council of Finland has **long-established practices** for supporting open access publishing. The science policy priorities and practical measures have depended on the timely practices of the scientific community.

The basic guidelines of the currently valid funding terms aim to promote open access to scientific publications.

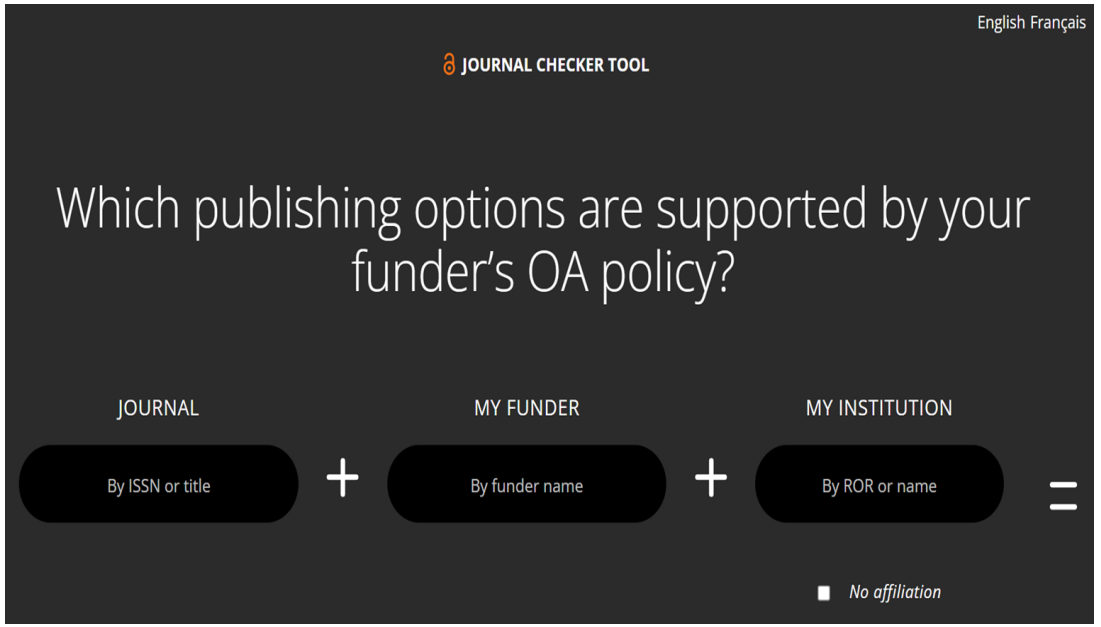
1) Open access to scientific publications 2/5

The Research Council of Finland **requires** that projects funded by us commit to ensuring **immediate open access** to their **peer-reviewed articles** in accordance with Plan S principles and Finland's national policy for open access to scholarly publications

1) By publishing the article in **a Plan-S-compliant scientific journal** based on immediate open access.
2) By **making the scientific publication openly available in a repository** (either as a Version of Record or as an Author Accepted Manuscript) that supports immediate access and is in compliance with Plan S.
3) By publishing articles in **a scientific journal supported by a transformative agreement** between a publisher committed to promoting immediate open access and a representative of the scientific community or in a scientific journal committed to promoting immediate open access. The agreements must be valid during the period 1 January 2021–31 December 2024.

1) Open access to scientific publications 3/5

- To support open access to peer-reviewed articles, cOAlition S has published **detailed technical conditions** for scientific journals, publication platforms and repositories.
- The coalition has also develop **the Journal Checker Tool** to help researchers supported by funder compliant with Plan S.
  - The tool allows researchers **to check whether a scientific journal or publishing platform complies with Plan S**.
  - In the case of non-compliant journals, the tool also provides **guidance on how to implement immediate self-archiving** as enabled by Plan S.

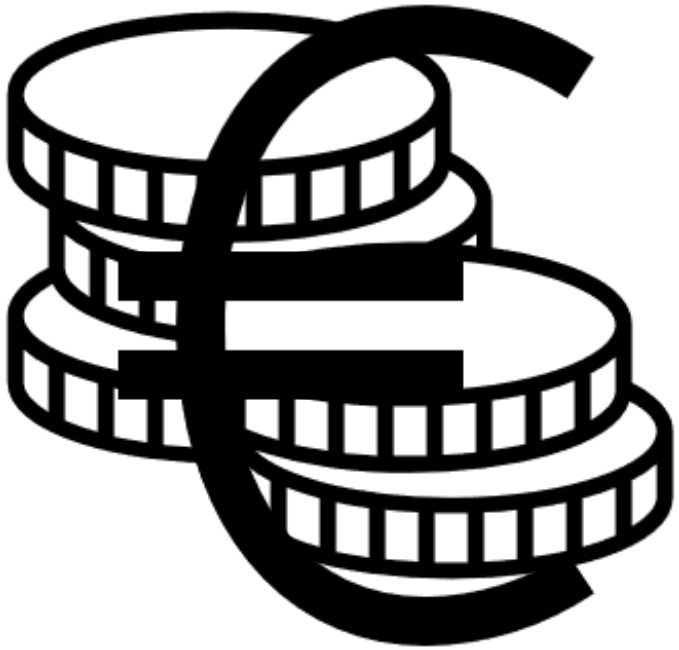


1) Open access to scientific publications 4/5

Archiving: Regardless of the chosen method of open access, the scientific publications of projects funded by the Research Council of Finland **must be archived in a repository that guarantees long-term storage for and free open access to the publication**. This can be done with either repositories maintained by research organisations or international discipline-specific repositories.

Other scientific publications: The Research Council also urges researchers to publish their conference articles and monographs with open access.

1) Open access to scientific publications 5/5



The costs of ensuring open access to scientific publications published under the Research Council's funding terms and conditions may be **included in the overheads** of sites of research (in the overheads %). These include:

- **Article processing charges** (APC) required by the Plan-S-compliant journal that supports immediate open access.
- **Maintenance and development costs** for Plan-S-compliant parallel repository maintained by the site of research.
- **Costs of articles published in accordance with Plan S within the framework of a transformative agreement**
  - **organisation's fees** resulting from participation in the FinELib consortium that concern Plan-S-compliant open access costs until 31 December 2024 in accordance with agreements concluded between FinELib and scientific publishers
  - Plan-S-compliant open access **costs incurred by** an individual research organisation until 31 December 2024 for **subscription contracts** concluded between the organisation and scientific publishers.

Research Council of Finland

2) Data management and openness 1/3

The Research Council requires that principal investigators of projects funded by us be responsible for the **responsible management and opening of research data**.

Research data must be made **freely available as soon as possible** after the research results have been published.

Sites of research must therefore provide researchers with the necessary **guidance** and ensure that they have access to suitable **storage infrastructure**.

Research data shall be managed and made available following the FAIR principles **(F = findable, A = accessible, I = interoperable and R = reusable).**

2) Data management and openness 2/3

Funded projects are requested to submit a full **data management plan** after the funding decision has been made. The plan must be submitted before the applicant and the supporting site of research can confirm receipt of funding.

The **data shall be made open access** via a national or international archive or storage service that is important for the research organisation or discipline in question.

The **degrees of data openness** may justifiably vary, ranging **from fully open to strictly confidential**.

2) Data management and openness 3/3

- The research project and the publisher of the data must ensure that **publishing the data** will not be in breach of the Finnish Act on the Openness of Government Activities, the Finnish Data Protection Act or the Finnish Copyright Act.
- If the research data cannot be made openly available, the **metadata must be stored** in a Finnish or international data finder.
- **The costs** associated with storing and sharing research data and material **are regarded as overheads** for the project's host organisation, but they may also be legitimately accepted as direct **research costs** to be covered.

3) Openness of research methods

- The Research Council requires open access to research methods where possible.
- Enabling open access to research methods depends not only on the method itself but also on the practices of the discipline in question.
- The Research Council has yet **no guidance on the implementation of open access to research methods**.

4) Research output metadata

- **All research outputs produced** with Research Council funding or by using research infrastructures the Research Council funds **must always indicate that the research has been conducted with funding from the Research Council of Finland**.
- The appropriate decision number(s) must also be mentioned.
- In connection with an electronic publication or the archiving of a publication, this information shall be added to the publication's metadata.

Application guidelines

In most Research Council funding calls applicants are requested

- to submit **a publication plan** as part of their applications. Applicants must take into account the guidelines on open access to scientific publications already at the application stage.
- to provide basic **information on the research** data to be collected and used during the research, **on data management and on the possible implementation of open access**. Applicants must take into account the policies on data management and open data already at the application stage.

The Research Council requires an actual and more **comprehensive data management plan only from projects that have been granted Research Council funding.**

Review and decision process

Open science is one of the Research Council's science policy objectives that are **taken into account when funding decisions are made**.

In the review and decision-making, the Research Council takes into account the plans for open science related to the implementation of the research project as part of the **promotion of open access to research outputs** on the one hand, and as part of the implementation of **responsible science** on the other.

Use of funding

- Each favourable Research Council funding decision is accompanied by the terms and conditions that apply to the funding.
- The activities of the funded research project should always be based on the funding terms in force at the time of the funding call.
- In the funding terms and conditions in force as of 1 January 2021 (PDF) **issues related to open science are addressed in section 6.2, 'Publishing, data and open science'.**

Reporting to the Research Council

The Research Council asks completed research projects to report on their activities and outputs.

In connection with final reporting, **information on open access to scientific publications and research data** is requested.

Projects may also report on **other achievements or challenges** related to the implementation of open science.

See more detailed guidelines on final reporting.

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Empirical studies on Open Science policy implementation experiences

Erika Lilja

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What earlier studies say?

Both bottom-up and top-down factors have been identified as driving forces behind open science, including initiatives driven by researchers themselves and mandates from funding organizations, governments, and universities (Shmagun et al. 2023; Severin et al., 2020; Liu and Li, 2018; Levin and Leonelli, 2017; Levin et al., 2016; Tennant et al., 2016; Kim and Stanton, 2016; Schöpfel, 2015; Kim and Stanton, 2012; Cronin, 2005; Foster and Gibbons, 2005; Kim, 2007).

Previous studies, such as those conducted by Tomaszewski et al. (2013), Liu and Li (2018), and Severin et al. (2020), have acknowledged **the variations in open access publishing behavior across different disciplines**, and it seems that the transition towards open access in academic publishing is **influenced by a complex combination of factors,** ranging from advocacy efforts at the grassroots level to mandates imposed by institutions and authorities.

Studies have examined **institutional factors and barriers related to data sharing** (Liu and Li, 2018; Kim and Stanton, 2016), revealing that **regulatory pressure from journals and disciplinary norms play significant roles** in shaping researchers' behaviours towards sharing data (Kim and Stanton, 2016).

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Findings from an empirical study: The Open Science – the Researchers' Perspective

Survey

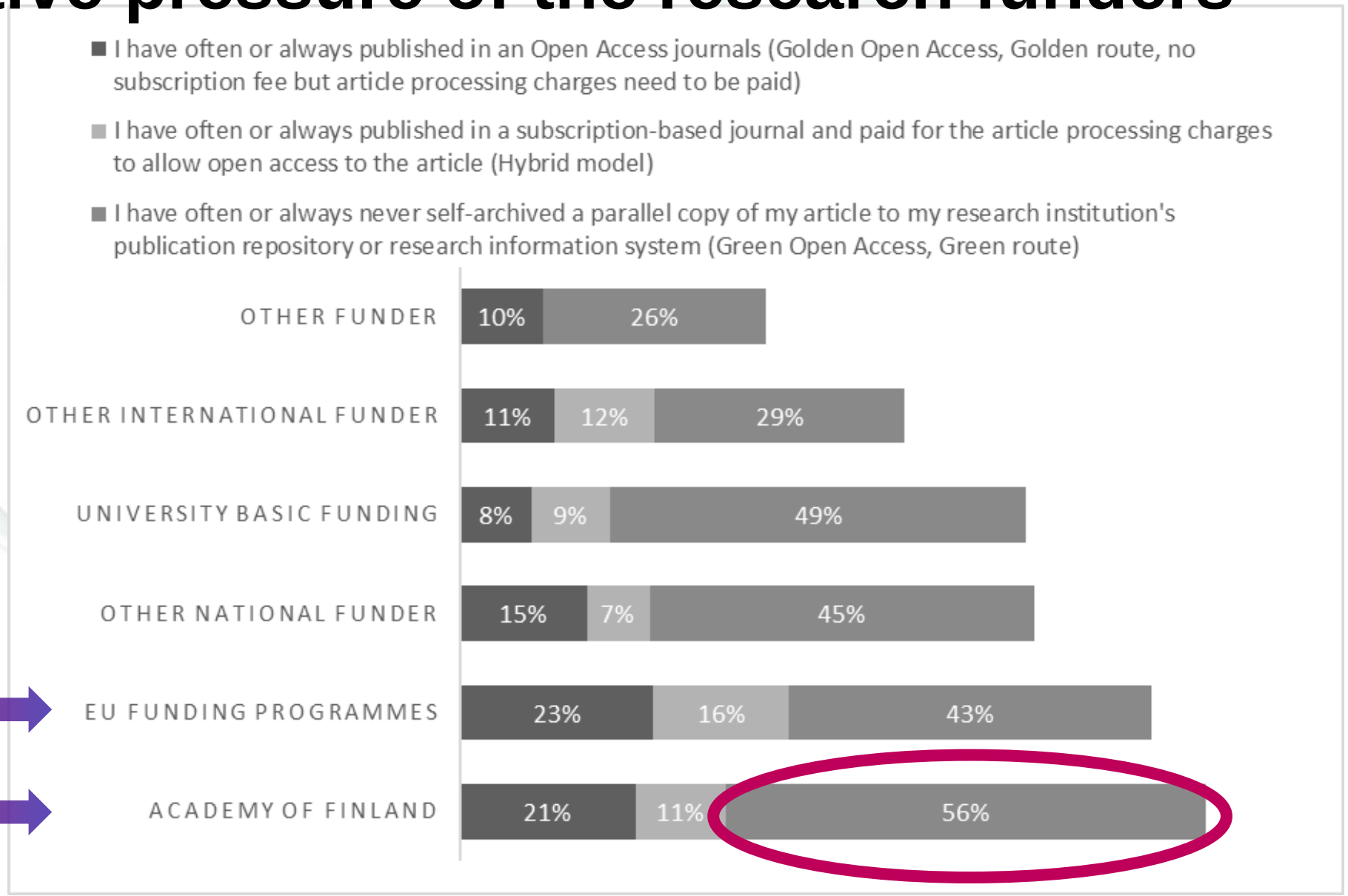
- Data was gathered from researchers at Finnish universities and state research institutes in April 2019
- 680 researchers responded to the survey. Of these, 677 responses were deemed suitable for quantitative analysis.

Interviews

- Fourteen researchers selected based on the survey responses, participated in interviews during spring 2021.
- Interviews lasted 45 to 91 minutes. Transcripts were analysed qualitatively.

Regulative pressure of the research funders

Academy of Finland = Research Council of Finland



Regulative pressure of the research funders

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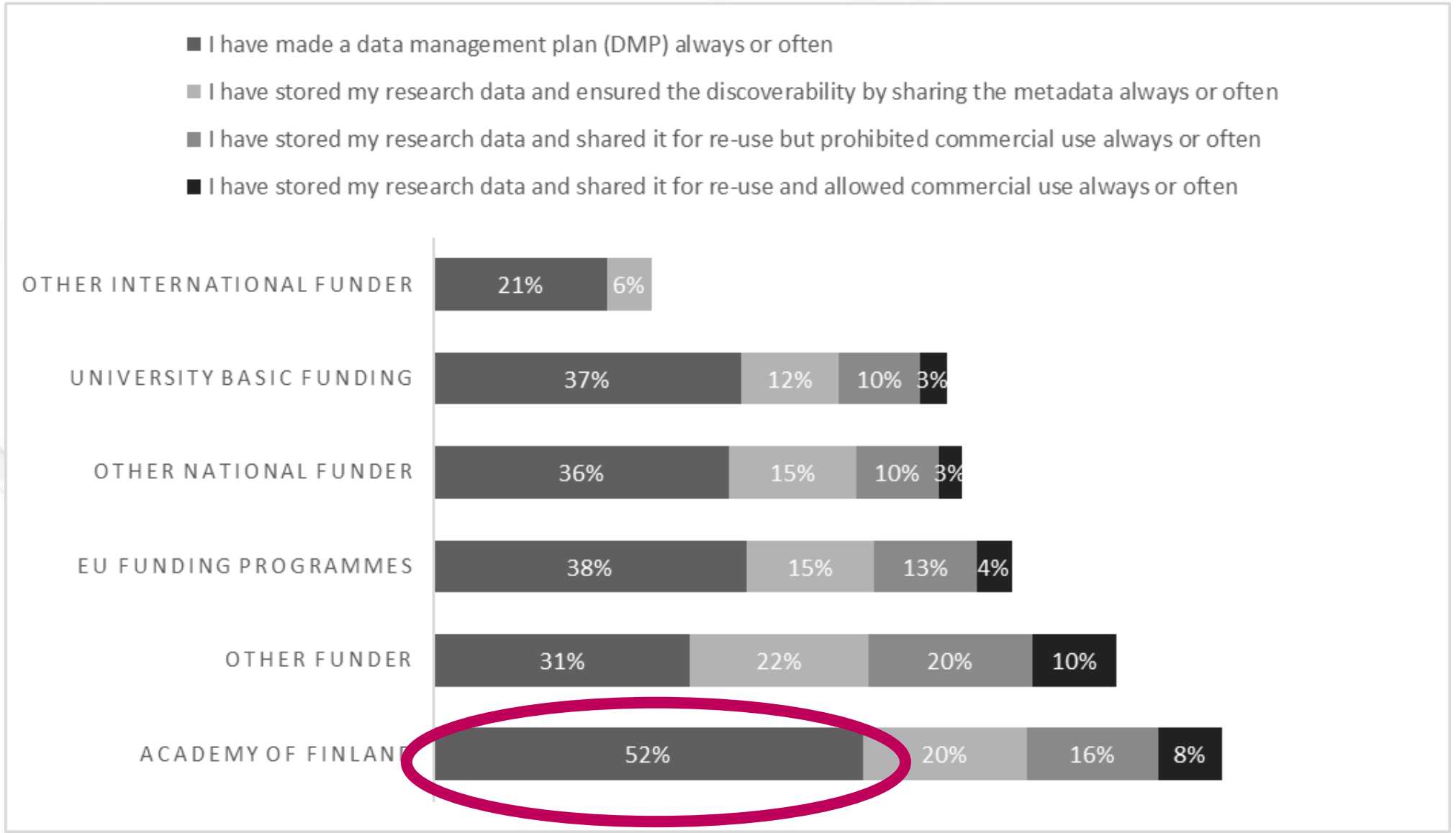

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Hybridities in implementing open science policies in everyday research practice

Hybridity refers to **the blending or combination of different elements, often from diverse cultural, social, or organizational contexts**. In various contexts, hybridity can manifest as **the integration of traditional and modern practices, the fusion of different cultural traditions, or the convergence of multiple technologies or systems**. It highlights the **dynamic nature of interactions** between different elements, resulting in new forms, structures, or identities that incorporate elements from multiple sources.

1. **Cultural hybridity**
2. **Institutional hybridity**
3. **Financial hybridity**
4. **Technological hybridity**
5. **Ethical hybridity**
6. **Social hybridity**

Variations across disciplines in open access publishing practices

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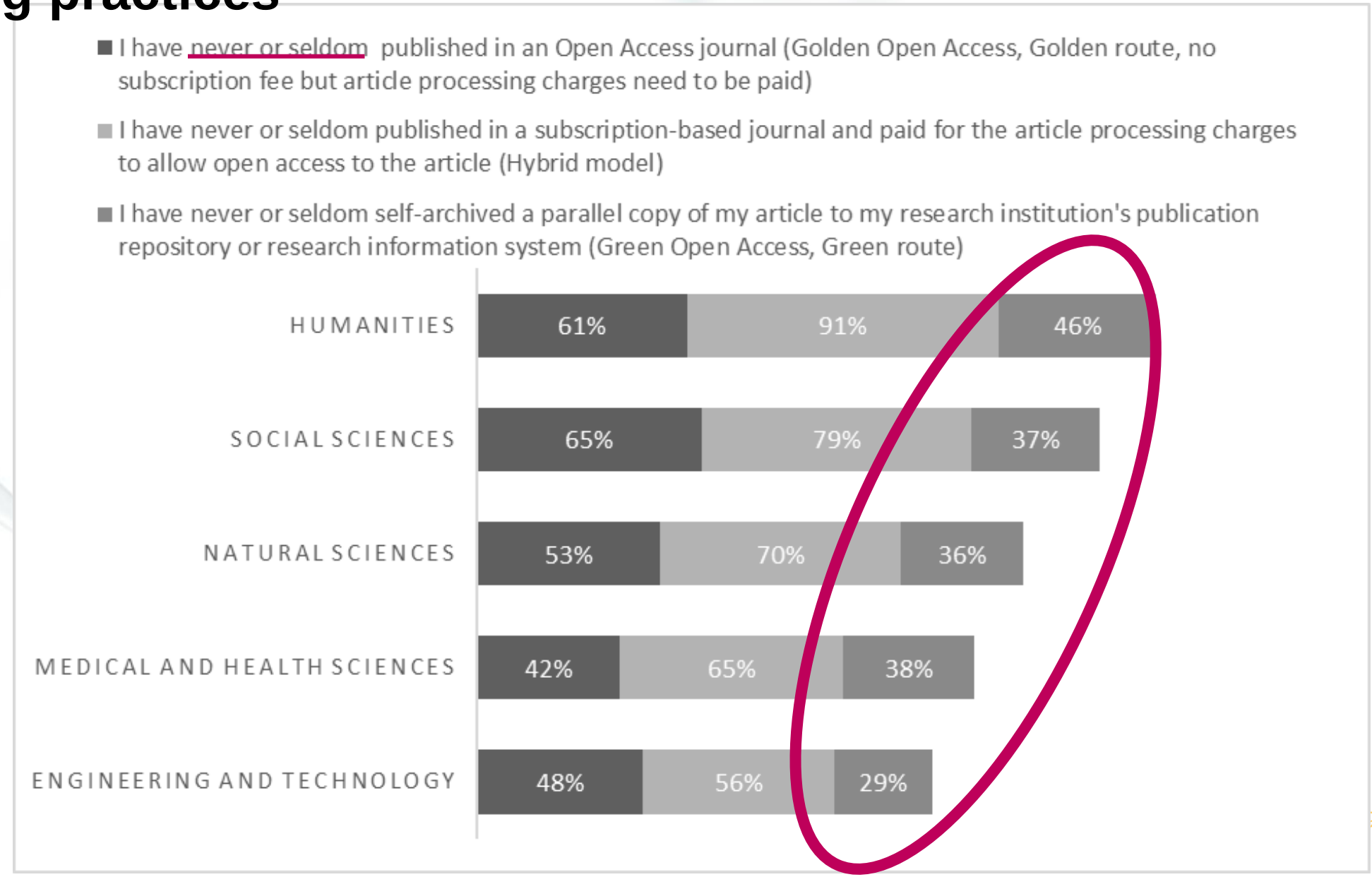

CULTURAL HYBRIDITY
Open access publishing

The variations across disciplines indicate that cultural norms, practices, and preferences influence researchers' adoption of open access publishing models. This suggests a cultural divergence in researchers' perceptions and practices regarding scholarly communication and publishing.

The findings demonstrate the process of implementing open science policies, where **the new 'open' practices are being compared to the practices, norms, and values of traditional research cultures**.

"I've mainly used these open access journals when, in some cases, they've been used purely because it's easy to get an article there. So, there's a bit of a motivational conflict there. And what they say at the library info sessions about why open access should be followed, then the truth, at least as it seems to us, is that there isn't really any benefit to using it as a publishing channel. **I don't know of any top publications in our field that are inherently open access now**. So, the thing with open access journals is, yeah, the problem maybe lies in the fact that **the quality varies so much, that reputational damage**, it affects even though there are some good ones... not top-tier journals, but decent ones."

(Interviewed researcher)

Researchers' responses across academic disciplines regarding storing research data and sharing the metadata

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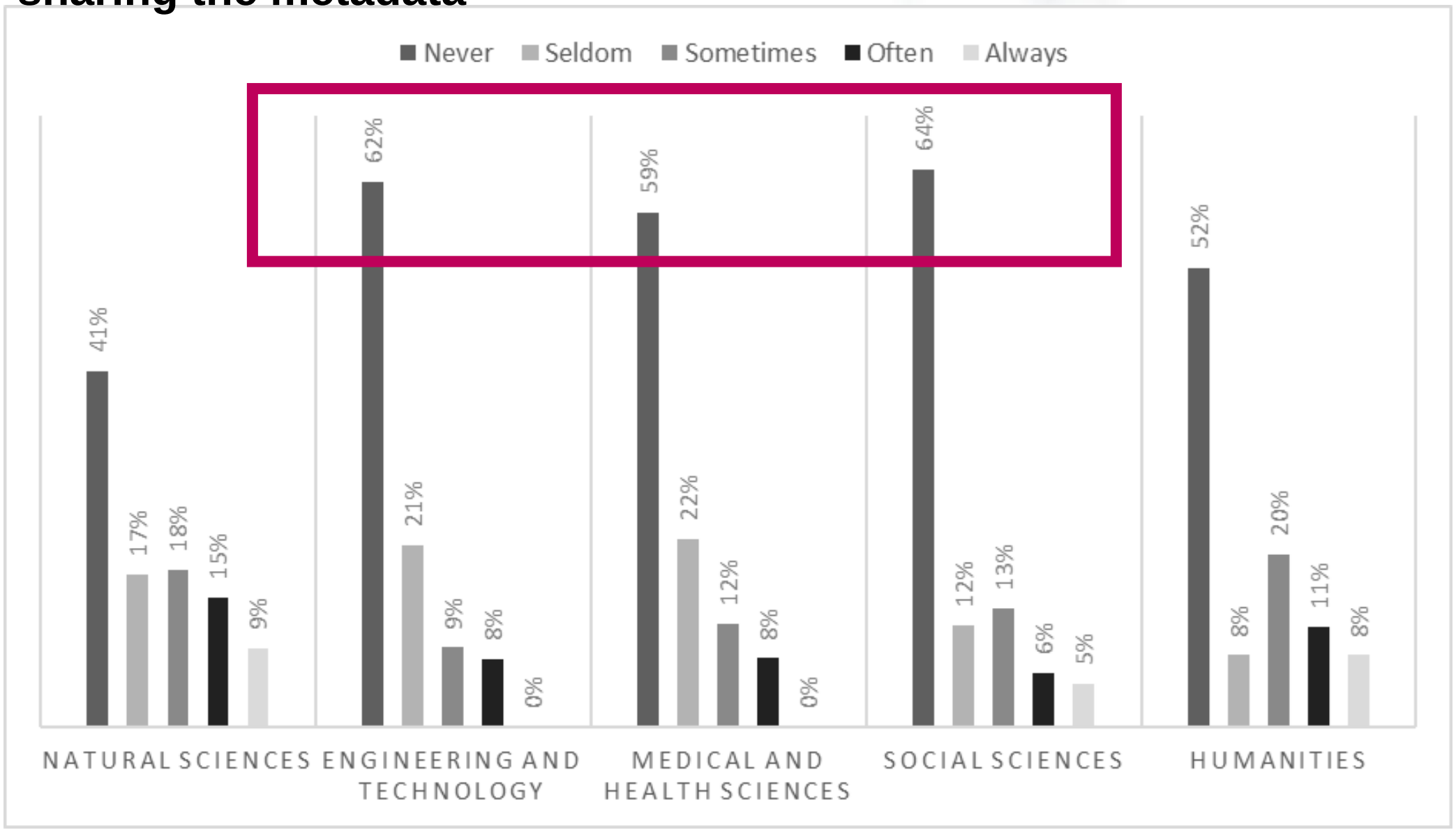

CULTURAL HYBRIDITY
Sharing data and methods

The results highlight **a gap** between traditional approaches and the evolving expectations for transparency and openness in scientific research.

Many researchers believe that although sharing data and methods with other researchers may be beneficial from a research and scientific perspective, in practice, **the different traditions in research fields make this difficult.**

"**In chemistry, we already have very detailed standards for describing data analysis**, such as chemical analysis, and they are followed quite well, at least in well-edited journals. Our practices are open in that sense. … **The main deficiency currently is that there are certain doubts that sometimes practical details are left undisclosed**. So, the practical descriptions are still limited. But then again, **open data doesn't answer the question**, that even if all the measurement data were there, there still wouldn't be information on exactly how a certain pipetting was done or whether and how the temperature was adjusted. So, there is a greater need for more detailed descriptions than for accessing the measurement data. **More precise descriptions would be much more useful to us than accessing the measurement results**."

(Interviewed researcher)

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INSTITUTIONAL HYBRIDITY

Open science policies that have aimed to influence the openness of researchers' practices have been crafted on many different levels and in different institutions.

Each level have added complexity and hybridity to the everyday open science policy landscape.

"… **this openness of data is such that the starting point is always that science produces graphs, statistical data, and things like that** … It's data that is easy to move from one place to another and then processed with some statistical software. When we look at science, the underlying assumption is that it is this kind of hidden technology, always moving in that direction, where **standards and measurement methods are developed in technical and natural sciences and in medicine**. And then these practices become innovations in ministries, and **these innovations travel to our campus, and then we ponder how to practically implement them.**"

(Interviewed researcher E).

The differences in open access publishing practices between researchers by organizational-level Open access publishing policy awareness

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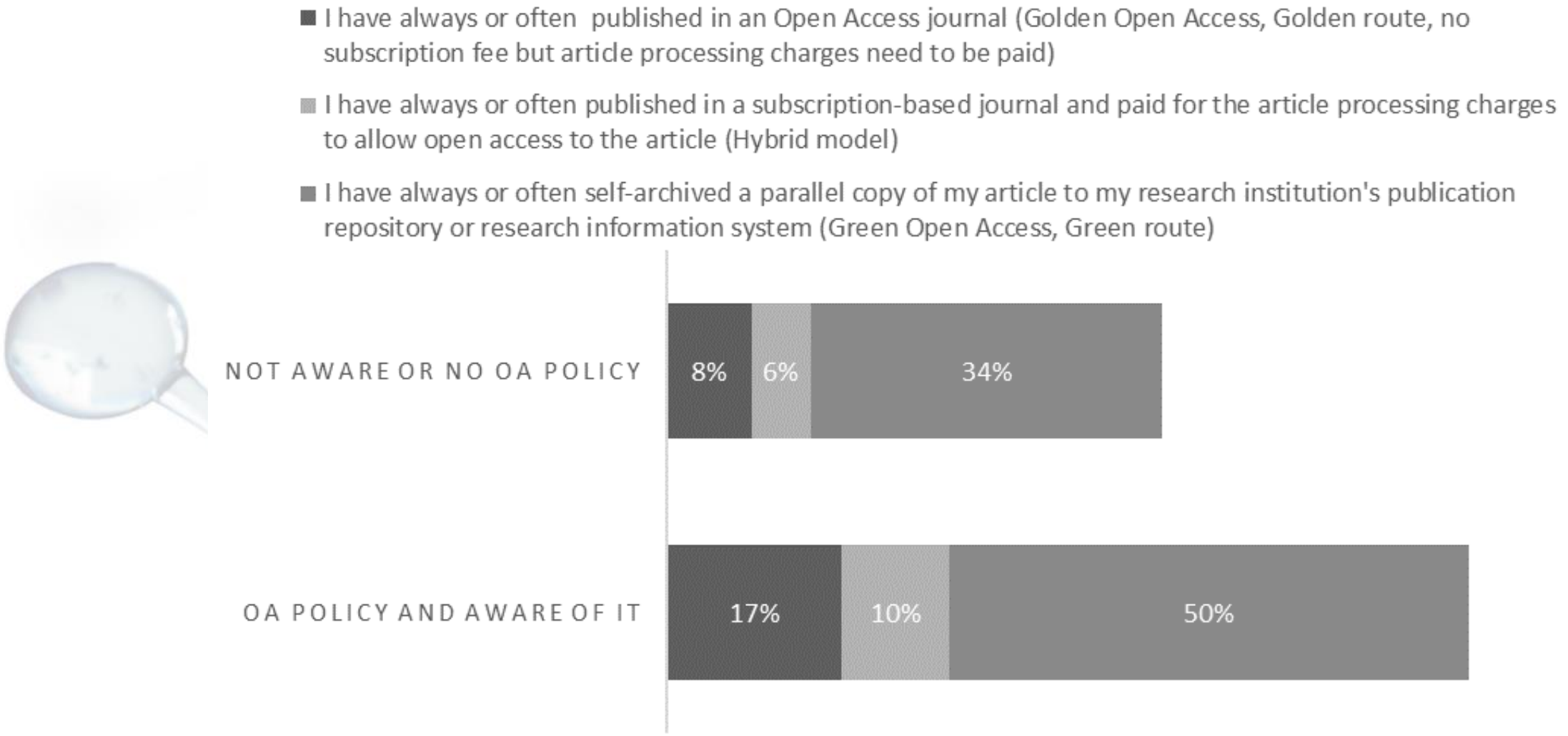

The differences in perceived barriers of open science between researchers by organizational-level Open science policy awareness

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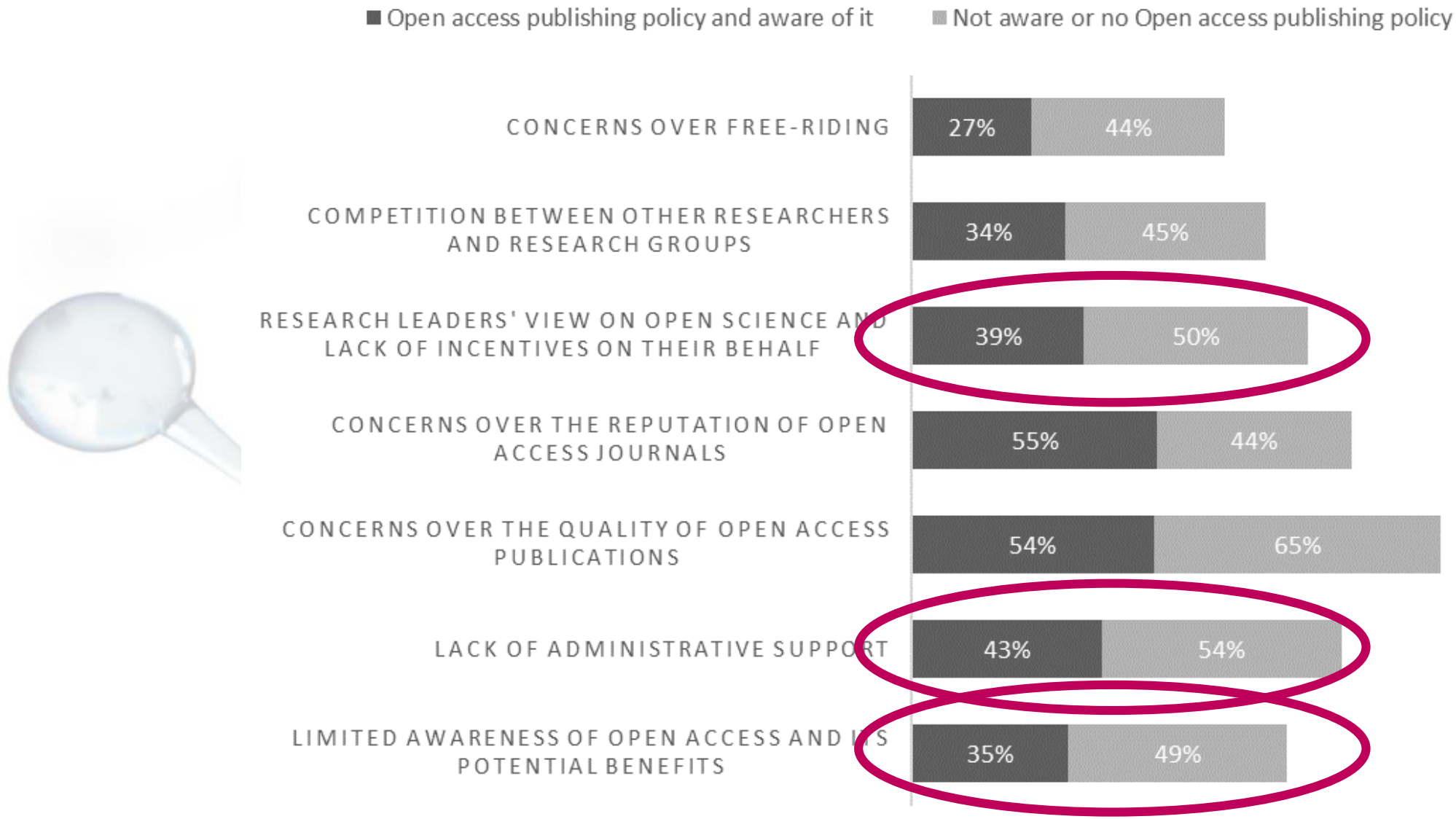

The differences in data sharing practices between researchers by organizational-level Open data policy awareness

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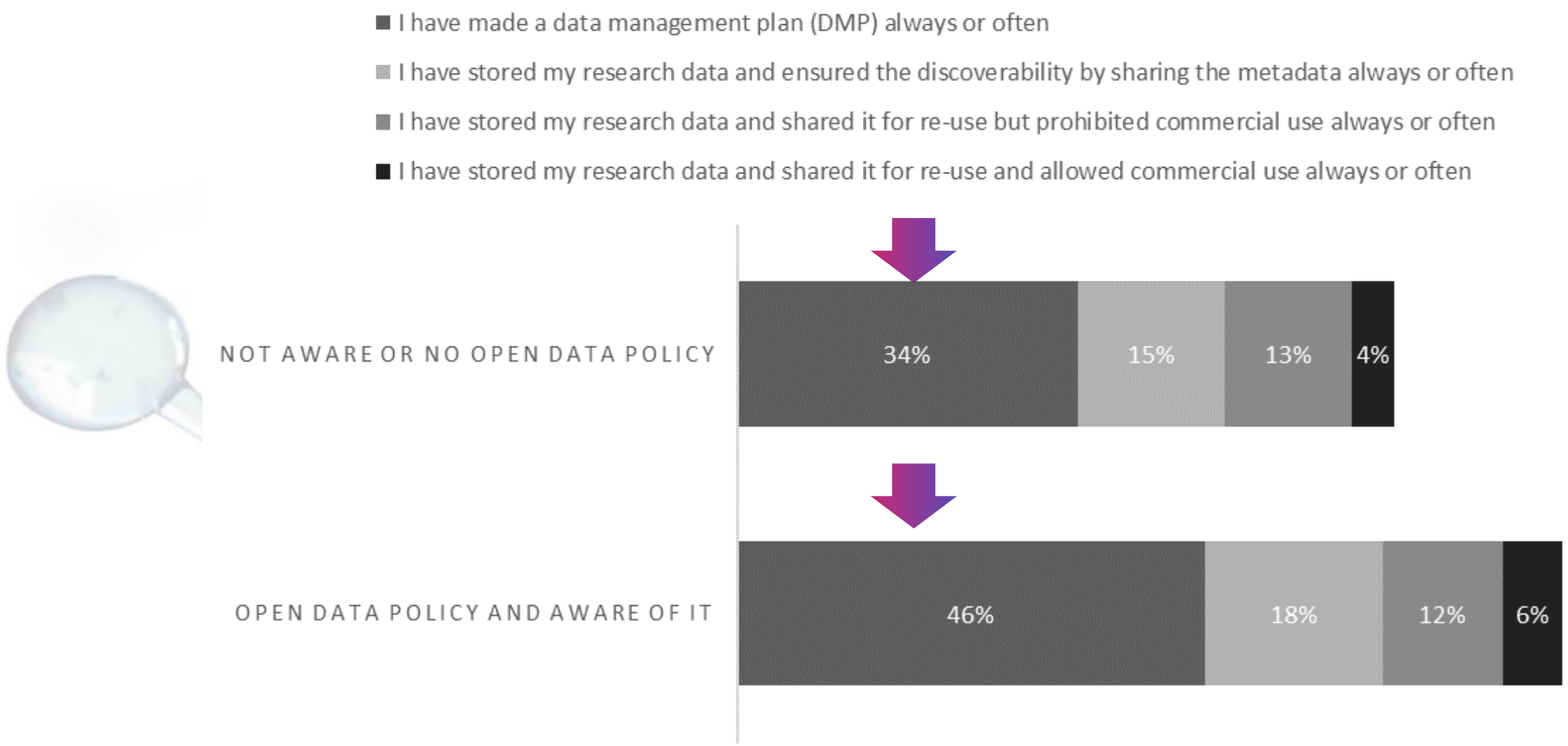

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Institutional hybridity: Case Finland

"In a way, **if the directive comes from too high up, then it doesn't necessarily trickle down to the operational level as it should**. … at the level of research groups and even at the level of individual research questions, somehow there should be motivation to think about how something is done all the time. ... if there were, for example, a field-specific, like, own guideline, then it could be more approachable, perhaps easier to put into practice. It could also be that, when you sort of easily think that this only applies to those fields which have traditionally collected data and which many use, then one doesn't feel that their own data is somehow usable data at all, so in that sense, it kind of concerns those and **that if there were such a field-specific guidance, then maybe it could be taken more seriously**. (Interviewed researcher)

1. Supranational level policies
2. Government policies
3. Research funders' policies
4. Organisational-level policies
5. National "community-based" policies
6. "Everyday" community-based policies

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FINANCIAL HYBRIDITY

Financial hybridity in open science policy implementation refers to the **coexistence of different financial situations and funding sources and their influence on openness** of research practices.

"Lately, in my opinion, there has been some money, or something has been reserved anyway, and yet, as far as I understand, the policies of funders have clearly stated that everything should be published openly, so it's done like that. And as far as I know, **universities also have their own grants nowadays, which can then be used if there wouldn't otherwise be money available**."

(Interviewed researcher)

The percentage of researchers who perceived the barrier measured important or very important

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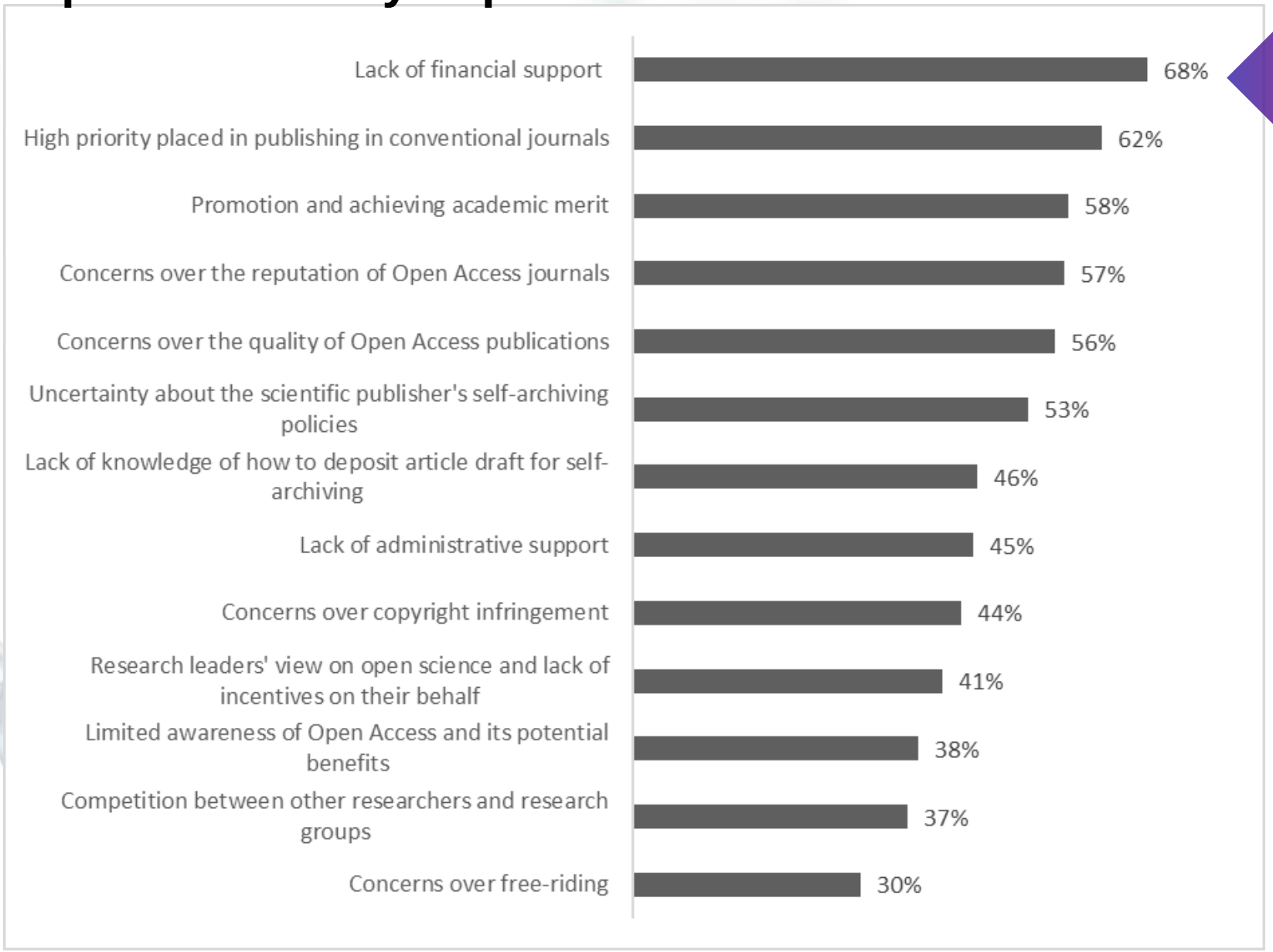

The APC paywalls are here, now we'r looking for a way out – an overview of the current stat of open publishing

2024-03-14 KIRJOITTANUT JUUSO P ALA-KYYNY

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Plan S funders' proposal: power to the research community

Although the fostering of the diamond open access publishing infrastructure is still in its early stages, the Plan S group of major research funders (CoAlition S) published a proposal in October 2023 that goes beyond the original Plan S in its ambition and, if implemented, would be a revolution in scientific publishing. Of course, the research funded by CoAlition S covers only 3.6% of the world's research articles, which puts a limit on the revolution.

The proposal, *Towards responsible publishing: a proposal from cOAlition S*, outlines an ecosystem for scientific communication that would open up the publishing process very widely: beyond just research results and the data backing them, it would include opening up non-peer-reviewed preprint publications and peer-reviewed reports.

The proposal seeks to address four problems in scientific publishing: (1) the inequality created by the subscription fees or APC paywall; (2) the unnecessary delay in publication; (3) the untapped potential of peer review; (4) the problems created by the gatekeeper role of journals.

The proposal calls for a scholar-led communication ecosystem. In practice, this would mean a shift of publishing power from publishers to researchers, whether the publications are non-

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TECHNOLOGICAL HYBRIDITY

Open science in practice relies heavily on technological infrastructures for open access publishing, sharing data and codes, and collaborative platforms. However, **technological capabilities, skills and expertise vary widely** between researchers from different research fields and based on their research interests.

"… And **then it's possible that the results are also skewed due to the method**, in terms of usage or as a consequence, let's say. So, there are many such things that are also open in science, and I also associate things like source code and openness and others as well. So, it's like, **in my opinion, a really good and beautiful principle that this is done**. They are in use**, but if you think in a way that someone, who may not have programming experience, gets program code in front of them, so they don't have any prerequisites to ensure that the program works as they think**. They trust it basically a hundred percent. They know how to use that tool. They know how to use that software for which it's developed, but the point is, how do they ensure that it does what they think it's doing, and still their data, so that's. That's the problem here."

(Interviewed researcher)

ETHICAL HYBRIDITY

Ethical hybridity recognizes the complexity of ethical decision-making and acknowledges the **diversity of ethical perspectives that may influence researchers' behaviors or actions in open science policy implementation**.

"Well, **the main guiding principle is to have the power to not harm the individuals who are the subjects of the research**. In that sense, we adhere closely to the principles of the Finnish National Board on Research Integrity (TENK) as far as possible in such a challenging subject. … I don't want to cause any problems for anyone. ... These are people with different lifestyles, and as researchers, **I feel that we also need to protect and sometimes even support this situation**. … This is precisely the kind of aspect that **is discussed far too little in research ethics**."

(Interviewed researcher B)

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Implementing open science policies: The responsibility puzzle in Open Science

"This study delved into **researchers' responsibility framings while implementing Open Science policies**. These framings, discursive in nature, guide researchers in fulfilling their responsibilities within openness. With a performative aspect, they define responsible open research perceptions and impact legitimacy within scientific communities. Though not the sole drivers of change, these framings profoundly **influence OS policy implementation in research practice**." (Lilja, submitted in 2023)

1. **Responsibility as the core of performative openness**
2. **Socially responsible science as an individual ethical framework**
3. **Responsibility in open science as a collective assembly**

The framings underscore nuanced, context-aware OS policy approaches and the collective responsibility needed for a science ecosystem that promotes openness, ethics, and social and societal well-being.

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SOCIAL HYBRIDITY

Open science is a social endeavor that involves collaboration, trust-building, and community engagement. **Social dynamics within research groups and networks influence researchers' attitudes and behaviors towards openness.**

"I don't support them [Open access publishing policies] so much because … it artificially sustains a sick system, **and I have been shocked by how uncritically researchers approach them** as if it's just a matter of getting it done and receiving 1000 euros for it as if it's only a funding issue. … It's a shocking attitude in my view, and I don't accept or support it at all. **They simply artificially sustain a sick system**."

(Interviewed researcher H)

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Implementing open science policies: Researchers responses

"The discussions and sharing of information take place in their own bubble of Open Science ..." (Respondent 305, Social sciences)

"So, we have pretty much concluded, and probably many other researchers have also decided, that we just don't care about how this works. We have decided not to care, that for the time being at least, nobody cares." (Interviewed researcher G)

Conflicting expectations 3. – 4.

1. **Advocacy**
2. **Adaptation and complying**
3. **Negotiation and compromise**
4. **Misbehaving**
5. **Policy alienation**

ADVOCACY

Researchers play **a crucial role in advancing open science policies and fostering a culture of openness**. Researchers for instance lead by example by publishing their own work openly, educate peers, and collaborate with policymakers, funding agencies, and academic institutions to develop and implement open science policies and initiatives.

"… if we open up this data, we will discover something entirely new that we, as researchers, would never have been able to see otherwise. A perfect example of this is … a young researcher who got the opportunity to access our data. … this new research is producing extremely valuable insights for society and these companies. We, as two middle-aged men, would have never been able to uncover these inclusivity factors from that data. So, this has been an incredibly positive experience for us, showing that there is something much deeper in there that can bring about real change in industries and perhaps even in society. …"

(Interviewed researcher A)

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ADAPTATION & COMPLYING

Many researchers adapt to open science policies in various ways, aligning their practices with the principles of openness. The findings, however, show that **despite researchers welcome Open Science activities, gaps between OS policy and research practice exist** and researchers have difficulties in coping with OS policy implementation.

One must be so, kind of ideologically in favour of open data, that those EU recommendations are practically implemented. … if you want to protect something, it's still **relatively easy to implement it rather trivially, even though certain openness is required**. You can then define the level at which it's opened or published**, so you can publish it at a level that ultimately doesn't benefit anything**. Or that the research cannot be repeated based on what is disclosed. ... **So, it's not at all the same thing as the research being reproducible by someone else**.

(Interviewed researcher B)

NEGOTIATION & COMPROMISE

Most researchers engage in negotiation and compromise when navigating open science policies, **balancing considerations** such as motivational conflicts, benefits, recognition of variations in quality, and reputation in their decisions.

"I've mainly used these open access journals when, in some cases, they've been used purely because it's easy to get an article there. So, **there's a bit of a motivational conflict there**. And what they say at the library info sessions about why open access should be followed, then the truth, at least as it seems to us, is that there isn't really any benefit to using it as a publishing channel. I don't know of any top publications in our field that are inherently open access now. So, the thing with open access journals is, yeah, **the problem maybe lies in the fact that the quality varies so much, that reputational damage**, it affects even though there are some good ones... not top-tier journals, but decent ones.“

(Interviewed researcher)

MISBEHAVING

Ethical issues in open science policy implementation are intricate and unresolved. Researchers recognize these challenges as non-negotiable and acknowledge their lack of definite answers. Sometimes **researchers need to act as disruptors, and responsible misbehavers, questioning rosy OS policy narratives, and valuing practical ethics over abstract ideals.**

"… **researchers play a crucial role as experts of everyday responsible openness, possessing both the ability and responsibility to challenge overly optimistic, abstract, and instrumental narratives about Open Science ingrained in OS policies**. This framing explicitly and implicitly assigns specific tasks and roles to researchers and everyday research communities, **underscoring their personal responsibility to act as disruptors and responsible misbehavers in the pursuit of OS**."

(Lilja, submitted in 2023)

Erika Lilja, Threat of policy alienation: Exploring the implementation of Open Science policy in research practice, *Science and Public Policy*, Volume 47, Issue 6, December 2020, Pages 803–817, https://doi.org/10.1093/scipol/scaa044

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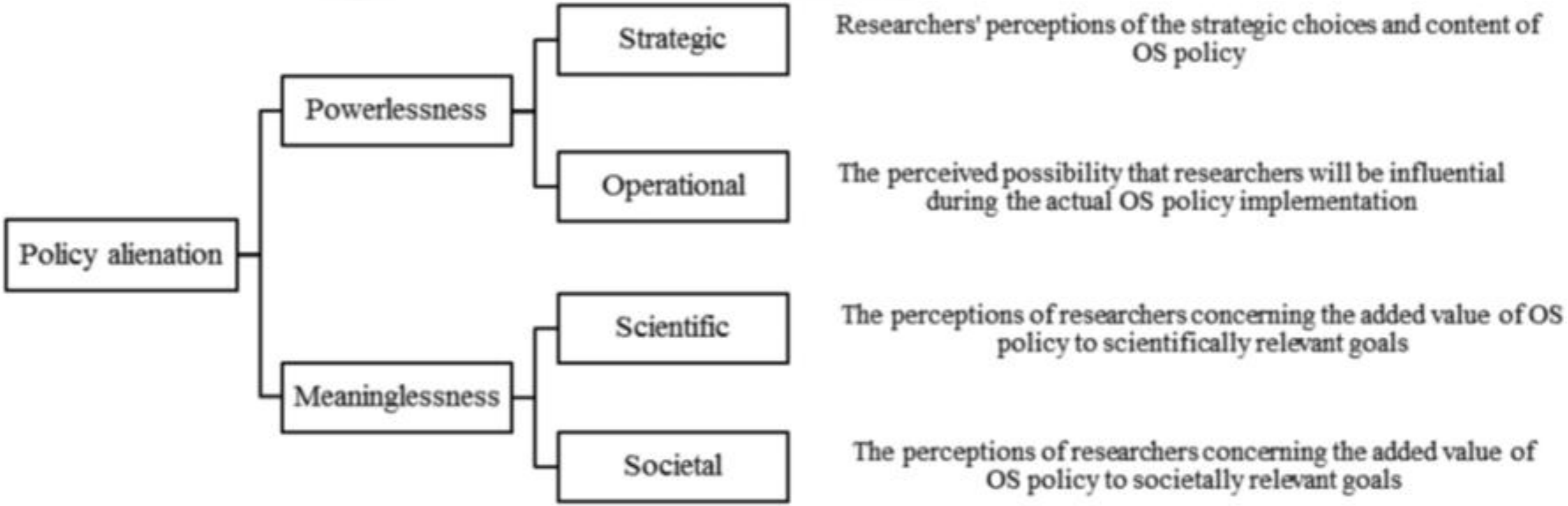

Fig.1: Policy alienation concept and dimensions drawn and modified from Tummers (2012).

POLICY ALIENATION

Researchers expressed **feelings and perceptions of ambivalence, pointlessness and disengagement when dealing with OS policy implementation.**

Since researchers are very limited or unable to influence the current research evaluation and academic merit systems, the publication metrics used in researcher evaluations and the competitive culture in funding research, **many researchers experienced operational powerlessness**.

Their perceptions of the added value of OS policy to scientifically relevant goals indicate that **researchers also feel scientific meaninglessness**.

The public policies do not motivate at all in practice. Those projects **are a big word mongering** from which I have not got any concreteness or such which would motivate me… (Respondent 15, Social sciences)

It is difficult to find context-specific information about how one could promote openness in the first place. … **The discussions and sharing of information take place in their own bubble of Open Science**… (Respondent 305, Social sciences)

Open Science is a progressive illusion… (Respondent 570, Social sciences)

Why open science policies fail?

In OS policies, certain open outputs and practices are frequently recognized as central elements of OS. **The policy-driven approach to openness not only categorizes elements as either open or closed but also assigns values**, shaping the perception of the value of research outputs (Levin and Leonelli, 2017).

The failure of OS policies seems to stem from **addressing performative openness with hybrid and complex, dynamic nature through conventional linear and reductionist approaches**, which presume a level of knowledge and control that exceeds what is realistically attainable in guiding and overseeing scientific endeavours.

Based on the empirical study, I argue that OS policies must be balanced with more agile, deliberative, and inclusive approaches that recognize openness as a performative process and embraces uncertainty and pragmatism.

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Take-aways

What will you take away from this presentation? What do you think was the most important contribution?

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Thank you!

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Open Science under Horizon Europe

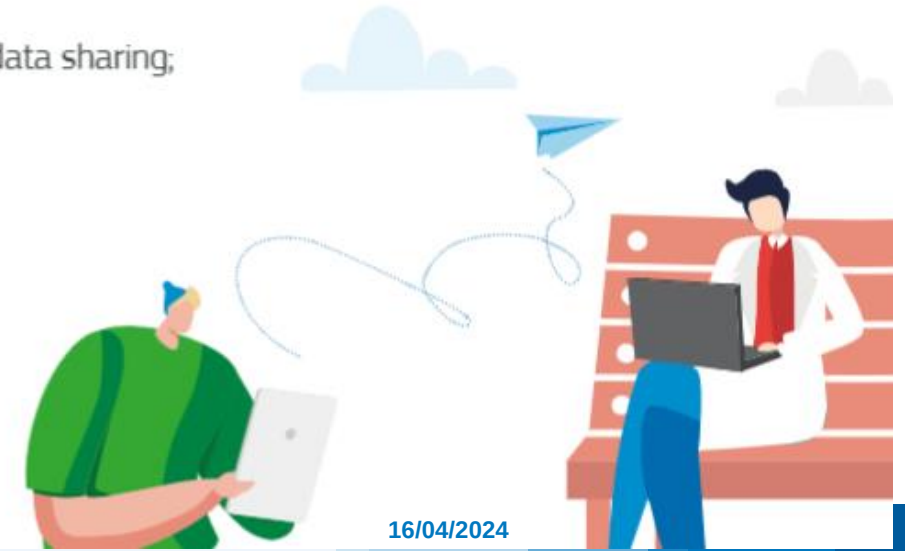
OPEN SCIENCE

EARLY KNOWLEDGE AND DATA SHARING, AND OPEN COLLABORATION

The challenge is for Europe **to embrace open science as the modus operandi for all researchers**. Open science consists in the sharing of knowledge, data and tools as early as possible in the Research and Innovation (R&I) process, in open collaboration with all relevant knowledge actors, including academia, industry, public authorities, end users, citizens and society at large. Open science has the potential to increase the quality, efficiency and impact of R&I, lead to greater responsiveness to societal challenges, and increase trust of society in the science system.

What are open science practices?

- Open access to research outputs such as publications, data, software, models, algorithms, and workflows;
- Early and open sharing of research, for example through preregistration, registered reports, pre-prints, and crowd-sourcing of solutions to a specific problem;
- Use of open research infrastructures for knowledge and data sharing;
- Participation in open peer-review;
- Measures to ensure reproducibility of results; and
- Open collaboration within science and with other knowledge actors, including involving citizens, civil society and end-users, such as in citizen science.



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Open Science under Horizon Europe

- During the implementation of the project, beneficiaries **must disseminate their results 'as soon as possible'**, following the obligations from the Annotated Grant Agreement.
- As a mandatory practice, beneficiaries must create and update two different plans: **the Data Management Plan and the Communication, Dissemination and Exploitation Plan**
- Peer-reviewed publications must be open access
- Publication fees are reimbursable only if the publishing venue is fully open access
- Metadata should be in line with **the FAIR principles** (F = findable, A = accessible, I = interoperable and R = reusable).

https://rea.ec.europa.eu/open-science_en