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Finland's Statement on the Draft Recommendation on Open Science

Introduction

Finland strongly supports the process of elaborating the UNESCO Recommendation on Open Science.

The Covid-19 pandemic has highlighted the value of global scientific collaboration, and the ability to share data and results quickly and openly, without borders or paywalls. The crisis also demonstrates how important it is to define science and its outcomes as global public goods. Open science is also an important tool in pursuing the objectives of Agenda 2030, as well as in being able to respond to current and emerging global crises and challenges, from climate change to clean water and food security. We see open science as instrumental in bridging global gaps and addressing inequalities.

Unesco's Recommendation is a pivotal tool that will accelerate and give direction for the ongoing, international transition towards open science. In our view, the end goal is to make all science operate according to the principles of openness, and to make unnecessary the separate epithet "open", as all "normal" science will also be "open". This transition is necessary and inevitable, as openness improves the quality and impact of all scientific research. We are glad to see the Recommendation sharing this high level of ambition: the global academic community, including many publishers and funding agencies, has worked towards open science for long, and with the support of member states, coordinated by Unesco, the transformation can finally be achieved.

We thank the Open Science Advisory Committee and the secretariat for the deliberations and extensive global consultations that lead to the first draft of the recommendation. A global consensus on Open Science is needed to ensure equitable and inclusive Open Science. To transform science policy and practice, Open Science provides principles and tools to improve our world and address global challenges.

In our statement, we will first provide a few general remarks on the draft, followed by more detailed comments and suggestions for amendments to the text. Our statement is based on comments received from the Finnish academic community. The Federation of Finnish Learned Societies, which supports the coordination of open scholarship in Finland, coordinated an open consultation that included an online questionnaire and a webinar.

General remarks

The draft recommendation for Open Science provides the research community with a comprehensive and useful definition of Open Science and the reasons for working towards set Open Science goals. The role of research-based knowledge is increasingly important in both finding solutions to global problems and tackling the power of misinformation.

The vision for Open Science proposed in this recommendation is ambitious. Achieving the vision will take time and concerted effort. The draft recommendation also has the challenging task of balancing value of diversity and still providing enough standardisation to allow for shared aims,

vision and collaboration. We wish that **Unesco will take an active role** in coordinating the global efforts to meet these challenges.

One of the key challenges with Open Science development is developing **inclusive infrastructures**. The Draft Recommendation commendably underlines the importance and role of shared infrastructures and resources in order to achieve **equitable opportunity for researchers to adopt Open Science practices**. The role of Member States is to support the full circle of knowledge production, dissemination and use to maximize the overall performance, relevance and impact of science in society.

In Finland, the academic community has made good progress in developing infrastructures, recommendations and practices for Open Science. We have experienced that changing the culture can be slow, and the change requires that the **incentives** for individual researchers, research groups and institutions are correctly aligned, and the **assessment** of research and researchers supports Open Science. Recently the Finnish Open Science community published "Good Practices for Research and Researcher Assessment"[1]. **We think the theme of assessments and incentives should be one of the first priorities for Unesco, when promoting and disseminating this recommendation after its adoption**.

We think **science communication** has an important role to play in advancing open science. Popularizing science and science communication are important for facilitating interdisciplinary collaboration, promoting the use of research in policy-making, as well as informing the public at large about scientific process and progress. Therefore, we think science communication deserves as larger part also in the recommendation. The **science-policy interface would benefit from Open Science immensely**, and would deserve a separate section in the Recommendation. Current para 19 discusses policy-for-science, but science-for-policy dimension is missing. Open Science could facilitate this two-way interaction and make it more organic and **strengthen the communities** engaged in this important work.

We welcome the emphasis on **diversity** in the draft recommendation. Especially, it is important to safeguard **scientific publishing in smaller languages**, and in diverse disciplines. When discussing diversity of practitioners of science, the recommendation currently mentions gender and ethnicity. We propose that the text also explicitly mentions **religion, language, age, and nationality**.

Even though forms of scientific publishing are changing, **peer review** will remain an important factor in ensuring scientific integrity and quality. Innovative, agile and more open practices of peer review are needed, and this could be emphasized in the recommendation, e.g., in section IV (vi).

In general, the **section on monitoring is currently underdeveloped**. We believe that Unesco should continue to have a role in awareness-raising and capacity-building globally, helping member states to achieve the aims set in the recommendation. To this end, Unesco should also monitor the member states' progress towards these goals. The monitoring mechanism and the indicators to be used should be described in this section of the recommendation. This section should also include **plans for publicizing and disseminating the recommendation** after its adoption.

Detailed remarks

In the cases where we have a concrete proposal for an amendment, we indicate additions with red colour and omissions with ~~strike-through font~~. Most proposed amendments are accompanied by a brief explanation about the motivation.

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[1] https://avointiede.fi/fi/linjaukset-ja-aineistot/kotimaiset-suositukset/tutkijanarvioinnin-hyvat-kaytannot

Preamble

Even though the global pandemic has indeed shown the power of open science, scientific knowledge, data sharing and co-operation in fact-based decision-making should not be limited to crises situations, and therefore mentions to COVID-19 should be removed. Removing mentions to this current crisis would also ensure the text stays relevant also in the future.

Paragraph "Considering that, produced in an open…" should be rephrased. Openness improves the efficacy and impact of scientific research, which should be stated here more clearly.

Paragraph "Considering that Open Science should not only foster…" Here the term "non-Anglophone" should be replaced with a term that refers to smaller languages more generally.

I. Aims and objectives

Para 1: Universal access to scientific knowledge, regardless of geography, gender, religion, language, nationality, age, political boundaries, ethnicity or economic or technological barriers is an essential prerequisite for human development and progress towards planetary sustainability.

Reasoning: Without explicit recognition of different dimensions of diversity, it is difficult to ensure all important dimensions are taken into account in the process.

II. Definition of Open Science

Para 8: The term 'Open Science' refers to an umbrella concept that combines various movements and practices aiming to make scientific knowledge, methods, data and evidence freely available and accessible for everyone, increase scientific collaborations and sharing of information for the benefits of science and society, and open the processes of scientific knowledge creation, self-correction (e.g. peer review and replication), and circulation to societal actors beyond the institutionalized scientific community.

Reasoning: Being self-correcting is one of the main features of scientific endeavour, and the key processes underlying this feature should be explicitly mentioned in the definition.

Para 9 (iv): […] Some repositories and infrastructure provide 'science ready' data products, sometimes using high-level analytic and artificial intelligence procedures, to support analysis and research in the community they serve. Open Science infrastructures also include research information systems that store data on research activities, such as outputs, inputs, impacts, and interactions. Many of these infrastructures are community-owned. Open Science infrastructures should be non-profit and they should guarantee permanent and unrestricted access to all public.

Reasoning: Research information systems provide data for strategic decision-making and research evaluation, thereby enabling the support and monitoring of Open Science.

(v): Open Evaluation: organized assessment of research with highly transparent and participatory peer review process, including possible disclosure of the identity of the reviewers, publicly available reviews, analyses and data supporting assessment, and the possibility for a broader community to provide comments and participate in the assessment process. Open evaluation practices must respect the need for diversity and be implemented with responsibility to ensure fair treatment of all parties taking part in the evaluation process.

Reasoning: Open availability of information supporting evaluation increases transparency and fairness of the evaluation process. Open evaluation also requires a significant change in the current research culture. Diversity of the evaluation processes must be respected.

(NEW) (vi): Open research process and methodology To further transparency of the scientific enterprise, the whole research process and methods can be made open using Open Notebooks include the opening of the whole research process and insights in every stage. Entire research projects are made openly available from the beginning, granting others access to virtual research workspaces.

Reasoning: Open access to the methods and process of science facilitates other aspects of openness, particularly making open data more effective and supporting open engagement; therefore, this merits its own paragraph.

(viii): Openness to Diversity of Knowledge

Remove this point, apart from the section on "Openness to Indigenous Knowledge Systems". We consider the rest not focused on Open Science. The CARE data principles and other rights of indigenous peoples are very important, and can be included here.

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(NEW) (ix): Open science communication. To support the dissemination of results of scientific research to scholars in other research fields, decision-makers, and the public at large, open access to research publications need to be accompanied by a range of science communication activities. This can be achieved through dissemination of scientific information in books or online, popularising science, open lectures, and various social media activities.

Reasoning: Scholarly communication enables efficient dissemination of research results within the academic community, and science communication enables the flow of information and interaction between information producers and users. It serves science and researchers, and lays the foundation for societal discourse. Science communication increases trust in scientific information and enables the results of science to be used in support of societal decision-making.

Para 10: Some research results, data or code that is not opened may nonetheless be made accessible to specific users according to defined access criteria made by local, national or regional pertinent governing instances. It is important to develop tools and protocols for pseudonymising and anonymizing data, as well as systems for mediated access, so that as much data as possible can be made accessible, ensuring protection of privacy.

Reasoning: Sensitive (e.g., medical) data can and should be shared, as long as sufficient protections are in place. Developing tools that minimize the amount and range of data that needs to be closed, is very important.

Para 12 (iv): Information scientists, including librarians and computer scientists, who play a role in developing tools for Open Science practices, training and supporting in their use, and for ensuring that the products of research are appropriately stewarded and preserved for future use;

Reasoning: Support and training function in the use of Open Science infrastructure is essential for the Open Science practices. This is also a significant ongoing effort and investment required from research organisations.

Para 12 (x): Policy makers, societal actors, learned societies, science-policy interfaces and communities that provide the policy foundation and political support for changes in the practice of science and for ensuring the public benefit, and who provide scientific advice for policy-makers;

Reasoning: Throughout the world, learned societies are amongst the main facilitators and beneficiaries of Open Science. The science advisory mechanisms would also greatly benefit from Open Science, and as these mechanisms more and more often operate as co-creating communities, they should be counted as key actors here.

III Open Science core values and guiding principles

Para 15 (ii): Open Science should play a significant role in ensuring equity among researchers from developed and developing countries, enabling fair and reciprocal sharing of scientific inputs and outputs and equal access to scientific knowledge to both producers and consumers of knowledge regardless of geography, gender, religion, age, language, nationality, ethnicity or socio-economic circumstances;

(NEW) (vi): Effectiveness and Impact: Openness helps improve the effectiveness of the research process, as well as maximize the potential for scientific knowledge to impact and influence the society.

Reasoning: Open Science is needed for improving the scientific process as well as the use of researched knowledge in tackling societal challenges.

Para 16: The following guiding principles for Open Science provide a framework for enabling conditions and practices within which the above values are upheld, and the ideals of Open Science are made a reality. The guiding principles create an environment of democratic inclusion and trust for science to prosper.

Reasoning: Democratic inclusion and trust are essential foundations for open research and science.

Para 16 (b): Equal opportunities and access: all researchers and societal actors regardless of country of origin, gender, religion, age, language, nationality, field of research, funding basis, or career stage have an equal opportunity to contribute to and benefit from Open Science.

Para 16 (c): Integrity, respect, responsibility and accountability: with greater openness comes greater responsibility for all Open Science actors, which, together with accountability and respect forms the basis for good governance of Open Science.

Reasoning: Integrity is key to responsible conduct of research.

IV Areas of action

Para 18 (d): Update ~~Incorporating Open Science into~~ national science technology and innovation policies and strategies and other national and regional policy frameworks for the public advancement of science to promote and be compatible with Open Science;

Reasoning: There should be only one science, Open Science, and therefore instead of including it to these policies, the policies themselves, and the incentives in these systems should be adjusted to promote and support openness.

(NEW) (e): Encouraging science communication activities on research process and results, and promote citizen science projects. These activities build public trust in science in general, as well as increasing awareness and engagement with Open Science.

Reasoning: Diverse scholarly and science communication is an essential activity to increase access to researched knowledge globally.

Para 19

(NEW) (e): Encourage responsible research and researcher evaluation and assessment practices, which incentivize and reward quality science and recognize the diversity of research outputs, activities and missions.

Reasoning: Without changes to the reward and incentive practices, Open Science impact on the quality of science will remain peripheral.

(j): Designing and implementing funding and investment policies and strategies ~~for Open Science~~ based on the core values and principles of Open Science. The costs associated with the transition to Open Science relate to the necessary cultural change in research ~~settings~~ practices and scholarly publishing to support Open Science practices, the development and adoption of Open Science infrastructures and services; capacity building of all actors and innovative, highly collaborative and participatory approaches to the scientific enterprise. Where ~~Open~~ Science receives public funds, it is vital to consider how such funds are disbursed most effectively for public benefit and maximum return on investment.

Reasoning: There should be only one science, and Open Science adopted as the normal practice. Policies and practices should just be updated so that the incentives are aligned and processes compatible with Open Science. Publishing should be mentioned explicitly as opening it requires profound cultural change.

Para 20: […]Considering ~~Open~~ Science as a global public good, Open Science services should be viewed as essential research infrastructures, governed and owned by the community, and funded collectively by governments, funders and institutions reflecting the diverse interests and needs of the research community and society.

Reasoning: Only one science.

Para 21 (b): Investing in and promoting advanced education and the professionalization of roles in data science and data stewardship. To take advantage of the opportunities offered by Open Science, research projects, research institutions and civil society initiatives need to call on advanced data science skills including analysis, statistics, ~~machine learning (ML) /~~ artificial intelligence (AI), visualization and the ability to write code and use algorithms with scientific and ethical responsibility.

Reasoning: clarity

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Para 22: […] Attention should also be given to preventing and mitigating the unintended negative consequences of the transition to Open Science, such as increased costs for scientists; exorbitant open access fees; predatory publisher activities; migration, exploitation and privatization of data from the global South by the global North, loss of intellectual propriety and knowledge, and premature sharing of research results.

Reasoning: Mentioning predatory publishers and the high APC:s explicitly is in order here. We do not consider premature sharing of research results as a significant risk; instead, many journals are adopting policies of encouraging researchers to publish pre-prints of their work before or at the same time as the paper is submitted to the journal for peer review. This encourages the wider scientific community to start assessing the new work immediately, alongside the "official" peer review process. The risk is mainly in premature discussion of the results in popular press by people not aware of the pre-print mechanism and its relationship with peer review. This is better fixed by increased science communication efforts about how scientific process works, and should not be seen as a major risk in open science.

(c): – follow the principles in the San Francisco Declaration on Research Assessment (DORA). Assessment should focus on quality of research outputs, not their quantity. Indicators need to be chosen well, and indicators with known deficiencies, such as Journal Impact Factors should be avoided. ~~use indicators more wide-ranging than journal-based metrics and that go beyond the Journal Impact Factor;~~

(NEW bullet point) - recognise multilingual scholarly communication and science communication.

Reasoning: DORA should be mentioned as it is a widely supported instrument for improving researcher assessment. Journal Impact Factor is not only unsuitable for assessing the actual quality of the researcher, but also a major obstacle on the road to Open Science. Many high-IF journals are either completely closed, or only allow open access via extortionate APC:s, but as long as researchers are incentivized to publish in these journals, this bad practices are perpetuated.

Multilingual scholarly and science communication advances access to researched knowledge and advocates for Open Science. Efforts and achievements in multilingual science communication should be duly recognised in assessment and rewards.

Para 23 (a): Promote Open Science from the outset of the research process and extending the principles of openness in all stages of the scientific process including the encouragement of preprints with agile peer review processes in order to accelerate dissemination and encourage rapid growth in scientific knowledge.

Reasoning: Peer review remains the cornerstone of scientific quality and developing the peer review system is an essential part of the changing publishing culture.

V Monitoring

This section appears underdeveloped in comparison to other parts of the recommendation. Appropriate monitoring is a key to understanding, supporting and motivating the changes required for Open Science practices to become an integral part of research. This section should:

- outline principles and values for monitoring
- list aspects of Open Science to be monitored, for example: open access publications, multilingual publications and science communication, producing FAIR data, producing open educational resources, performing as a data steward.
- outline the monitoring mechanism
- detail the activities in awareness-raising and capacity-building in Open Science that member states could engage in, and that Unesco could coordinate
- list steps for Unesco and member states to take in promoting and publicizing this recommendation.