UK Research and Innovation

Feedback on the first draft of the UNESCO Recommendation on Open Science

Coordinated and submitted by UKRI, on behalf of UK Government

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Open Science in the UK

Open access and open research data – two key aspects of open science - are central to the UK Government's ambitions for research and innovation, and this commitment was reiterated recently in the Government's R&D roadmap. Sharing research outputs openly benefits researchers, businesses and wider society.

The UK, however, also recognises the importance of open and transparent research more widely than open access and open research data. Openness applies across the whole lifecycle of research and is important for reasons of public value, research integrity, re-use and innovation. Open science helps to drive and support collaboration within disciplines and in multidisciplinary collaboration, including with citizens.

The Governments R&D roadmap recognised the need to embrace open science practices through open access and sharing as well as rewarding modern and diverse research outputs, along with the need to support infrastructures to enable the benefits of open science to be realised. The UK is pleased to see the recommendation highlights the need to transform scientific culture and align incentives for open science. Recently as part of the Global Research Council activity the UK collaborated in hosting an international event dedicated to responsible research assessment that relates to this aim.

Research is a global endeavour and it is important to achieve international consensus on open science. UK Government is keen to collaborate and align with national and international partners to support the adoption of open science, and would welcome further opportunity to work with UNESCO. Should UNESCO wish to discuss this submission further, please contact openresearch@ukri.org.

Introduction

The aim of the Recommendation is to provide an international framework for Open Science policy and practice that recognises regional differences in Open Science perspectives, considers, in particular, the specific challenges of scientists and other Open Science actors in developing countries, and contributes to reducing the digital, technological and knowledge divides existing between and within countries. The Recommendation outlines a common definition, shared values, principles and standards for Open Science at the international level and proposes a set of actions conducive to a fair and equitable Open Science.

The Recommendation is welcome, it is constructive and practical, while reflecting some of the complexities and outlining forward looking challenges that need to be addressed. However, the UK believe some areas require further work / clarification. This is outlined in the below feedback which is separated into (i) general comments and (ii) feedback on specific points. In the UK's first submission in July 2020, we outlined the following areas UNESCO could add most value, and some of these are also discussed in the below feedback:

- How to support open science in low- and middle-income countries
- Adding value to, participating or complementing existing initiatives
- How the diversity of stakeholders can develop shared goals
- Principles to govern scholarly information and systems
- The wider research and innovation environment and culture

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General comments

- The definition of open science in the Recommendation, as well as the core values and guiding principles, align with the UK's vision. The definition used is comprehensive and sets out a helpful scope to be recognised internationally. A global view is helpful since misunderstandings around open science can cause issues, particularly around international collaboration, and impede progress to an open science system.

- The recommendation could more strongly acknowledge the importance in adopting open science practices as rapidly as possible to ensure the ability for the world to collaborate, predict and solve emergencies and challenges. It is also important to monitor and evaluate the benefits and impacts of open science. Whilst the Recommendation does include monitoring, this seems to be about open science adoption and progress, but not about the benefits.

- The set of actions described in the Recommendation describe a long-term vision which is forward looking and different to the current paradigm. Further clarification about how we might transition from the current situation is required, for example through a roadmap. What actions need to be taken in the short-medium term? Further clarification about how the actions relate to each other and how they should be prioritised would also be helpful, and we would welcome working with UNESCO to do this.

- It would also be beneficial to present the actions in more practical terms. As outlined in our first submission to UNESCO, our experience is that, whilst the diversity of stakeholders share the same broad goals around open science, they can hold different views about *how* this should be achieved. How does UNESCO envisage stakeholders working in concert, and what practical steps need to be taken?

- Related to the above, open science affects a diversity of stakeholders including commercial suppliers. Achieving a sustainable and affordable open science system is one of the most challenging and contentious areas, and further guidance about how to work with commercial suppliers would be welcome. For example, should open standards and practices be promoted, and governance structures? In addition, the Recommendation states that open science infrastructures should be non-profit; this is understood to be necessary in some instances and welcome for the openness, transparency and sharing of knowledge, but it would be helpful if there was further detail as to when this applies and why, and in addition further clarification on how that relates to commercial suppliers. Finally, the Recommendation should recognise that commercial suppliers operate globally, and so international cooperation is often required to influence fairness and openness in market operation; this is not under the control of individual member states. We note that NRENs are referred to in the recommendation and they may have a helpful role in this regard.

- In terms of how to support open science in low- and middle-income countries (LMICs), further guidance about what actions are needed in the short to medium term would be helpful. For example, to address the following issues:

    - For the foreseeable future, researchers in LMICs want to publish in commercial journals and platforms where affordability of APCs and BPCs is an issue. Evidence has shown that waivers are a source of frustration for researchers; they are poorly advertised and understood, and the process for applying is confusing and time consuming. In addition, the power to provide or deny a waiver can create ethical issues. There are initiatives with publishers to explore linking the APC to the purchasing power parity of the country, as well exploring transformative agreements in LMICs.

  - The Recommendation includes establishing international funding mechanisms; it should recognise that some already exist e.g. official development assistance (ODA) funding. ODA funding presents opportunities to put in place initiatives or to be delivered in such a way as to support open science in LMICs in the short to medium term, however it is currently unclear how this can be most effectively achieved.

- We wholeheartedly agree with the importance of the action around international cooperation and recommend that as part of promoting this the recommendation should recognise existing global initiatives for open science (some examples were set out in our previous submission), and how UNESCO can add value, participate or complement these, and avoid duplication. Additionally, it would be helpful if the recommendation more strongly recognised that member states are at different stages in their transition to open science, and so there are opportunities for sharing knowledge, experience and best practice between and across them.

- The Recommendation states that it is mindful of the associated risks with open science, however, there is little detail on how these should be managed. Monitoring in section V should play an important role in understanding risks and unintended consequences, which could include, for example:
  - Open science may contribute to current perversities in the system in terms of the north-south power imbalance through increasing the relative visibility of global north research.
  - Misuse of open science, as mentioned in action vii b of the Recommendation.
  - The benefits of open science initiatives against the costs, for example, where adequate infrastructure is not in place open science can create additional burden.

- Finally, in several areas of the Recommendation it would be helpful to expand further, including:
  - How researchers decide to take open or closed routes to knowledge exploitation.
  - The link between open science and research ethics, this should be made more explicitly.
  - Sets of actions around citizen science, including actions for funders.

Feedback on specific points

- 16(c) and (f): The basis for good governance is not explained sufficiently in this section. Words such as respect, responsibility, accountability and governance appear to be mixed together without adequate clarification or definition in the Open Science context. A key aspect of sustainability is good governance.

- 19(e): Open science implies effective communication to achieve common understanding and common accessibility to knowledge, information and ideas. This paragraph is not clear; how might translation services fit in?
- 22c – It is also about the inappropriate use of metrics, not just their narrow use.

- The definition of the “science” that is in scope of the Recommendation, and who “science users” relates to.