Greenet

The Horizon Europe network of National Contact Points for **Climate**, **Energy** and **Mobility**

OPEN SCIENCE GUIDE

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For more details and information see our website https://horizoneuropencpportal.eu/cluster-5

OPEN SCIENCE GUIDE

OPEN SCIENCE

This is a fairly complex concept but, take note, Open Science is a mandatory requirement under Horizon Europe. It operates on the principle of being ‘as open as possible, as closed as necessary’.

Open Science has been covered by numerous agencies, EU funded projects and platforms. This guide will not duplicate those efforts. We will cover the topic as briefly and precisely as possible. We will provide you with numerous links so you can further dissect the concept and know what is expected of you during the proposal stage and project period.

WHAT IS IT ABOUT?

Open Science is at the centre of the EU research policy. It is an approach or set of practices that promotes transparency, collaboration, and accessibility of scientific research. The main emphasis is on sharing knowledge, results and tools as early and widely as possible. It increases resource efficiency and eliminates wasted efforts. Sharing all results, whether negative or positive, will minimize redundant studies.

Information should not be held behind paywalls for only the fortunate few. Science depends on us building on previous knowledge. Therefore, increasing the use of Open Science practices will make scientific practice better and accelerate the rate of science discovery. There’s a paradigm shift, Internet and modern technology can accelerate the dissemination of knowledge.

WHERE SHOULD I ADDRESS OPEN SCIENCE IN THE PROPOSAL?

We highly recommend visiting OpenAIRE. Here you will find specific chapters of the Horizon Europe Proposal where applicants are expected to address their Open Science Practices. Furthermore, OpenAIRE provides text examples, useful tips and a wide range of tools.

Here’s a snippet from OpenAIRE:

Part B: Project proposal – Technical description

1. **Under 'Excellence'– '1.2 Methodology'**

    a. **Open science [e.g. 1 page]**
    b. **Research Data Management and management of other research outputs [1 page]**

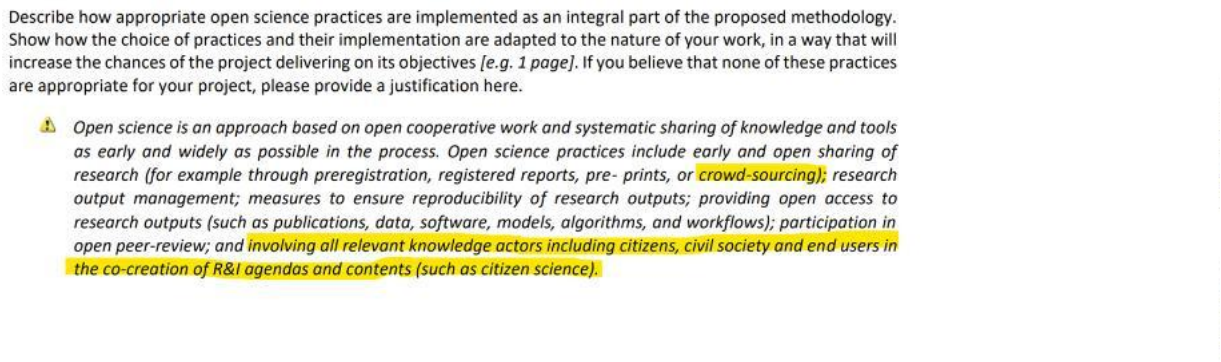
2. Under 'Impact'

    a. '2.2 Measures to maximise impact. Dissemination, exploitation and communication'

3. Under 'Quality and efficiency of the implementation'

    a. '3.1 Work plan and resources' and
    b. '3.2 Capacity of participants and consortium as a whole'

Applicants are expected to write around 2 pages describing their Open Science Practices and Management. 2 pages, this is a good indicator of its importance.



Describe how appropriate open science practices are implemented as an integral part of the proposed methodology. Show how the choice of practices and their implementation are adapted to the nature of your work, in a way that will increase the chances of the project delivering on its objectives *[e.g. 1 page]*. If you believe that none of these practices are appropriate for your project, please provide a justification here.

Open science is an approach based on open cooperative work and systematic sharing of knowledge and tools as early and widely as possible in the process. Open science practices include early and open sharing of research (for example through preregistration, registered reports, pre- prints, or crowd-sourcing); research output management; measures to ensure reproducibility of research outputs; providing open access to research outputs (such as publications, data, software, models, algorithms, and workflows); participation in open peer-review; and involving all relevant knowledge actors including citizens, civil society and end users in the co-creation of R&I agendas and contents (such as citizen science).

This image is a screenshot from the Proposal Template.

Open Science is not applicable for all projects proposals. Some projects might be better suited for **Open Innovation and Crowdsourcing.** Others might be ideal with some Co-Creation activities and engagement with end users while some are ideal for Citizen Science.

How do experts evaluate Open Science in Horizon Proposals? This is a 10 minute video. Made by the European Commission for evaluators. Take note: There are Mandatory Obligations and Recommended Activities.

"It is recommended to address how open science practices will be integrated into the project methodology and workflow, as this **will result in a higher evaluation score**" (Open science, REA EC, n.d.).

OPEN SCIENCE PRACTICES: Mandatory

“In the methodology section of the proposal, it is important to clearly demonstrate how the project will comply with the **Mandatory Open Science Practices**. This refers to Open Access to Publications and Open Access to FAIR data,...” (Open science, REA EC, n.d.).

How to know if a scientific journal is compliant with open access? To find out if a scientific journal complies with open access, check on the Directory of Open Access Journals or the Journal Checker tool.

Research Data Management (RDM) are a vital part of Open Science that lies at the heart of European research for it increases the quality of produced data and ensures integrity and preservation of research outputs.

Proper Research Data Management (RDM) is **Mandatory for any Horizon Europe project generating or reusing research data** and should be considered from the **proposal stage.** Be aware that in this context, ‘research data’ is a very broad concept and certainly not limited to numerical/tabular data.

ARGOS is an open platform for Data Management Planning that addresses FAIR and Open best practices and assumes no barriers for its use and adoption.

ARGOS is a service that guides researchers through the creation process of a data management plan to submit to research funders, a requirement for Horizon Europe and national funding programs. The templates are up to date on the cloud and **address specific funding requirements based on funders DMP templates**.

‘Researchers can easily and without prior knowledge, find the right template’,

start editing it by following the step-by-step guidance from ARGOS, save it, enrich, and co-edit with colleagues, and finally, share it openly with a DOI assigned to it. Your DMP will be based on standards and FAIR principles, be readable by humans and machines, making it fully interoperable. ARGOS saves you time and effort to create, craft and shape a DMP efficiently, so that you can focus on your research.

RECOMENDED VIDEO & SITES

We recommend this 90-minute webinar: Horizon Europe Open Science requirements in practice.

This webinar was organised to help project coordinators, researchers and research support staff on the European Commission’s requirements for Open Science. Requirements for Open Access to scientific publications and Research Data Management are presented, not only during and after the project but as well at the grant proposal stage.

We also recommend OpenPlato. This is your home for learning about Open Science, RDM, FAIR principles and more! OpenPlato aspires to become a central hub for training in all aspects of R**DM, open science, and the FAIR principles** in Europe and beyond.

Zenodo is an open dissemination research data repository for the preservation and making available of research, educational and informational content. Access to Zenodo's content is open to all.

Why use Zenodo?

- **Your** research is safely stored for the future in CERN's Data Centre.
- **Trusted** built & operated by CERN & OpenAIRE ensuring everyone can join in Open Science.
- **Citeable** every upload gets Digital Object Identifier (DOI) so they're citable and trackable.
- **No waiting time** Uploads are made available online as soon as you hit publish, and your DOI is registered within seconds.

DURING THE PROJECT

- Must manage the digital research data in line with the **FAIR Principles.**
- **Data Management Plan** (DMP) is required by M6; updated mid-project and at end of project.
- **Deposit (meta) data as soon as possible** after production/generation or after processing and quality controls.
- Deposit data in a **trusted repository** and make it **open as soon as possible** (deadlines set in DMP). "**As open as possible, as closed as necessary**" principle applies here.
- Data closed, if necessary, but **metadata must be FAIR and under CCO** (trusted repositories will automatically share metadata in CCO).
- Open licence, preferentially by CC-BY or CCO licence.
- Detailed information about research outputs or tools/instruments needed to re-use or validate the data (e.g. data, software, algorithms, protocols, models, workflows, electronic notebooks).

AIM/OBJECTIVE

To bring Europe to the best position to reap its benefits by **opening up** the research system between **scientists** and between **disciplines**, as well as towards **society** as a whole. Open Science facilitates sharing and collaboration, thereby accelerating the discovery process, improving research quality, and making science more impactful and central to **human and societal development**.

OPEN SCIENCE PRACTISES

Early and open sharing of research:

- pre-registration, registered reports, data deposition in shared repositories, pre-prints

- open collaboration within science and with other knowledge producers/users

Providing **immediate and unrestricted open access** to scientific publications, research data, models, algorithms, software, protocols, notebooks, workflows, and all other research outputs

Ensuring **verifiability** and **reproducibility** of research outputs

Practicing responsible research output management (publications, data, and other outputs) in line with the **FAIR (Findable, Accessible, Interoperable, and Reusable) principles**

Promoting **public engagement** in research and innovation, bolstering **citizen science** and enhancing **public trust in science**

ENABLERS OF OPEN SCIENCE

Incentives and rewards to adopt Open Science practices. Under the European Research Area Policy Agenda, the Commission has been facilitating the development of the Agreement for Reforming Research Assessment (ARRA) and the coalition of the signatories, the Coalition for Advancing Research Assessment (CoARA). The Commissionhas signed the ARRA, joined CoARA, and established an Action Plan to implement ARRA

Legislative and regulatory environment for practising Open Science:

EU data, copyright and digital legislative framework fit for research, under the European Research Area Policy Agenda.

Horizon Europe provisions on Open Science

Open Science infrastructures and skills:

- European Open Science Cloud (EOSC), recognised as one of the Common European Data Spaces, enhancing the EU's leadership in the global data economy
- Open Research Europe - An innovative Open Access publishing platform for research funded by all EU Programmes
- Support for **skills and education** for equitably practicing Open Science and FAIR research data management

CITIZEN SCIENCE

OTHER INFO FROM HERE (HE Factsheet): LINK

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