Recent developments in Open Science policies

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Open Science Cafe

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Why do we need Open Science?

> ***Open science:*** sharing knowledge, data and tools as early as possible in the research process in open collaboration with all relevant knowledge actors

- Open science has the potential to increase:

  - **Quality & efficiency of R&I**, if all the produced results are shared, made reusable, and if their reproducibility is improved

  - **Creativity**, through collective intelligence and cross-disciplinary research that does not require laborious data wrangling

  - **Trust** in the science system, by engaging both researchers & citizens

Main challenges and priorities for Open Science

Improve the practice of research and innovation

- Openly accessible scholarly publications
- Early sharing of all research outputs
- All data FAIR, RDM
- Reproducible results
- Societal engagement and responsibility

Develop proper enablers

- Rewards and incentives to adopt Open Science practices, with appropriate metrics
- Appropriate skills and education, including for research integrity
- Open Research Infrastructures including the European Open Science Cloud (EOSC)
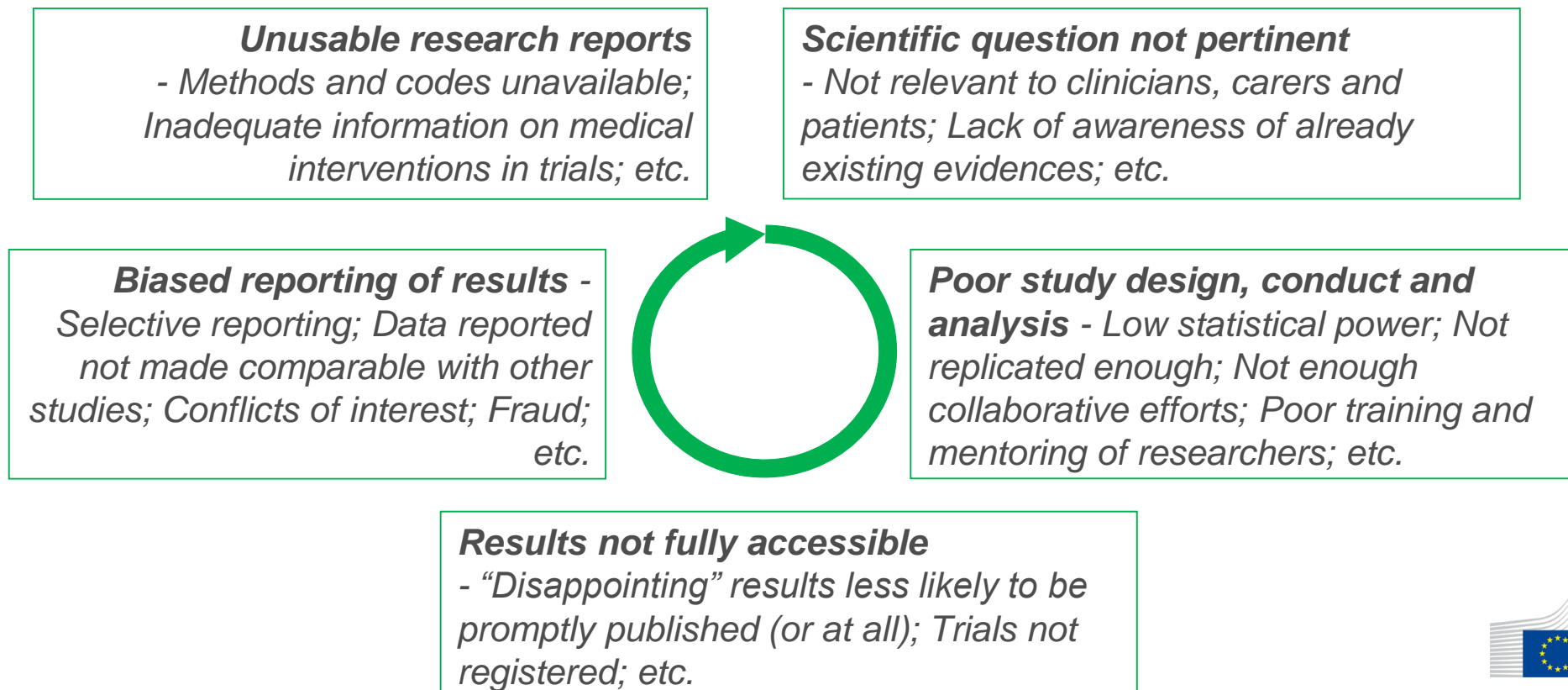
Involving all the actors   *Engaging internationally*

Changing research culture

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Reproducibility: The 'crisis' (zoom in *health R&I)*

- Close to €300 billion/year for Health R&I (worldwide)
- A large share of the research investment may be wasted: potentially as much as 85%, according to Chalmers & Glasziou 2009, Lancet; Macleod 2014, Lancet

Unusable research reports
- Methods and codes unavailable; Inadequate information on medical interventions in trials; etc.

Scientific question not pertinent
- Not relevant to clinicians, carers and patients; Lack of awareness of already existing evidences; etc.

Biased reporting of results -
Selective reporting; Data reported not made comparable with other studies; Conflicts of interest; Fraud; etc.

Poor study design, conduct and analysis *- Low statistical power; Not replicated enough; Not enough collaborative efforts; Poor training and mentoring of researchers; etc.*

Results not fully accessible
- "Disappointing" results less likely to be promptly published (or at all); Trials not registered; etc.

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# Is COVID-19 accelerating a long-term shift?

Some positive trends:

- Early and fast share of results through increased use of preprints

- Publishers temporarily opening up some of their publications (although not permanently)

But challenges remain, such as:

- Most open access papers (even COVID-19 ones) do not make their underlying data available without restrictions

- Research data are not fully interoperable and reusable

Annual number of preprints/all-papers rate growth
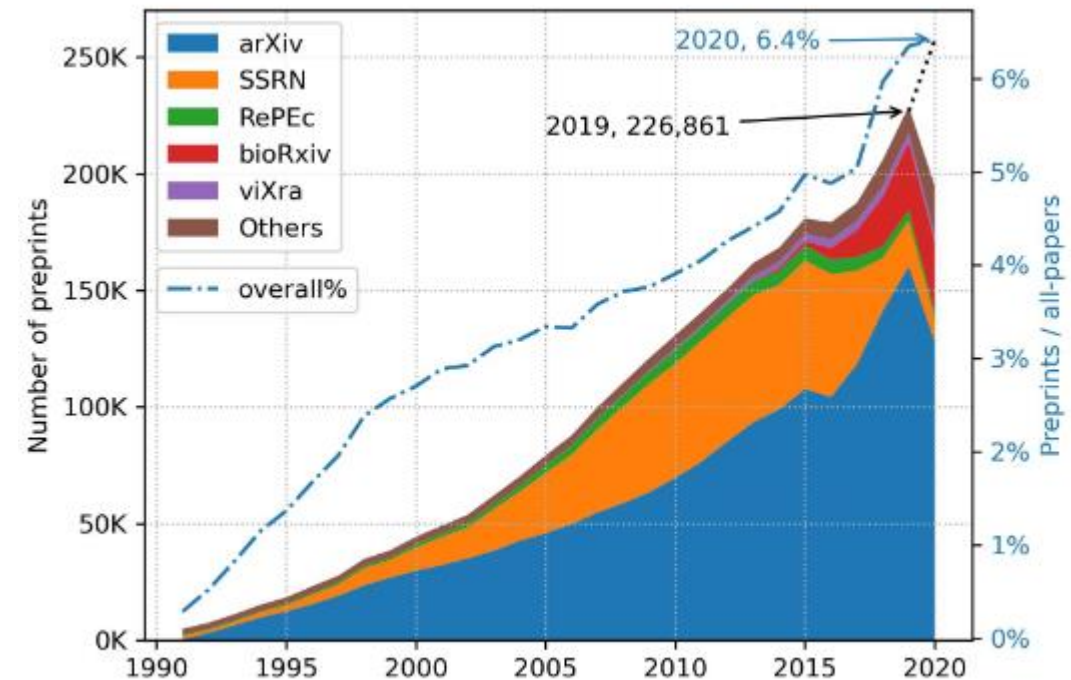
Source: arXiv:2102.09066v1

A new ERA for R&I

ERA Communication: A New ERA for R&I

Communication on a new European Research Area for Research and Innovation (September 2020)

Deepening the ERA

The Commission will: (Action 9)

- Launch, via the Horizon Europe Programme, a **platform of peer-reviewed open access publishing**;

- **analyse authors' rights** to enable sharing of publicly funded peer-reviewed articles without restriction;

- ensure a **European Open Science Cloud** that is offering findable, accessible, interoperable and reusable research data and services (Web of FAIR); and

- incentivise open science practices by improving the **research assessment system**.

Citizen Engagement

The Commission will: (Action 13)

- Organise with Member States and stakeholders Europe-wide **citizen science campaigns** to raise awareness and networking, crowdsourcing platforms and pan-European hackathons, in particular in the context of Horizon Europe Missions. The Commission will develop with Member States best practices to open up science and innovation to citizens and youth.

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Open Research Europe (ORE)

The open access publishing platform for Horizon 2020 and Horizon Europe beneficiaries

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Why Open Research Europe?

- **Support our open access policy** and beneficiary capacity to adhere to it and also enables **publishing post-grant**

  - ✓ Comply to our policy by publishing in the platform

- Leading by example in operationalising **open science principles** within scientific publishing and **enabling the European Research Area**

  - ✓ E.g. open access publishing, open peer-review, early sharing of research through pre-prints, broad range of indicators etc.

- Contribute to **transparency** and **cost-effectiveness** and explore **sustainable** open access publishing business models

  - ✓ Transparent procurement procedure and article costs, institutional publishing, collaborative publishing with other funders in the future etc.

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What is Open Research Europe?

High-quality, reliable and efficient publishing venue for EU-funded research

High scientific **standards**, and **swift** and **transparent** processes

Expert Scientific Advisory Board

No cost to **authors/beneficiaries** i.e. non-APC platform (publication fees are directly paid by the Commission)

Venue where grantees respect their **open access** obligations and can also **publish post-grant** the results of their work

Fully **optional** – there is absolutely **no obligation** to use it.

Powered by F1000 Research

Open Research Europe – a growing interest

Submitted articles	Published articles	Passed peer review
125	46	5

Polish researchers involved in the first article having passed peer review

RESEARCH ARTICLE

'Baltic catacombs.' Translating *corpisanti* catacomb relic-sculptures between Rome, Polish Livonia, and the Lithuanian Grand Duchy circa 1750-1800 [version 1; peer review: 3 approved]

Radosław Budzyński ⓘD, Dzianis Filipchyk, Melchior Jakubowski, Dzmitry Marozau, Ruth Sargent Noyes ✉ ⓘD, Vika Veličkaitė

This article is included in Excellent Science gateway

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Research Assessment

ERA Roadmap

European Open Science Cloud

- 2021: Set up a European Partnership under Horizon Europe, signing an MoU with the EOSC Association including a Strategic R&I Agenda. Set up an EOSC Steering Board

- Later: Implement the EOSC Strategic R&I Agenda, including federating and on-boarding thematic communities into EOSC

Research assessment system

- 2021: Launch a wide debate among policy makers (EU, MS levels), research funders, research performers, scientific publishers and other stakeholders

- Later: Reach an agreement/MoU between funders, research organisations and policy makers

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Policy context for changes to research assessment

- **Commission Recommendation** of 25 April 2018 on "Access to and preservation of scientific information"
  - ➤ Recommends that Member States and research institutions adjust the assessment of research, researchers and institutions to reward a culture of sharing of knowledge and data

- **Open Science Policy Platform** final report submitted to the Competitiveness Council in 2020
  - ➤ Identifies the reform of the system used for assessing research, researchers and institutions towards a system that incentivises the practice of open science, as a priority

- **Commission Communication** of 30 September 2020 on "A new ERA for R&I"
  - ➤ Includes action 9 to "(…) incentivise open science practices by improving the research assessment system"

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Towards a new *modus operandi* for Science

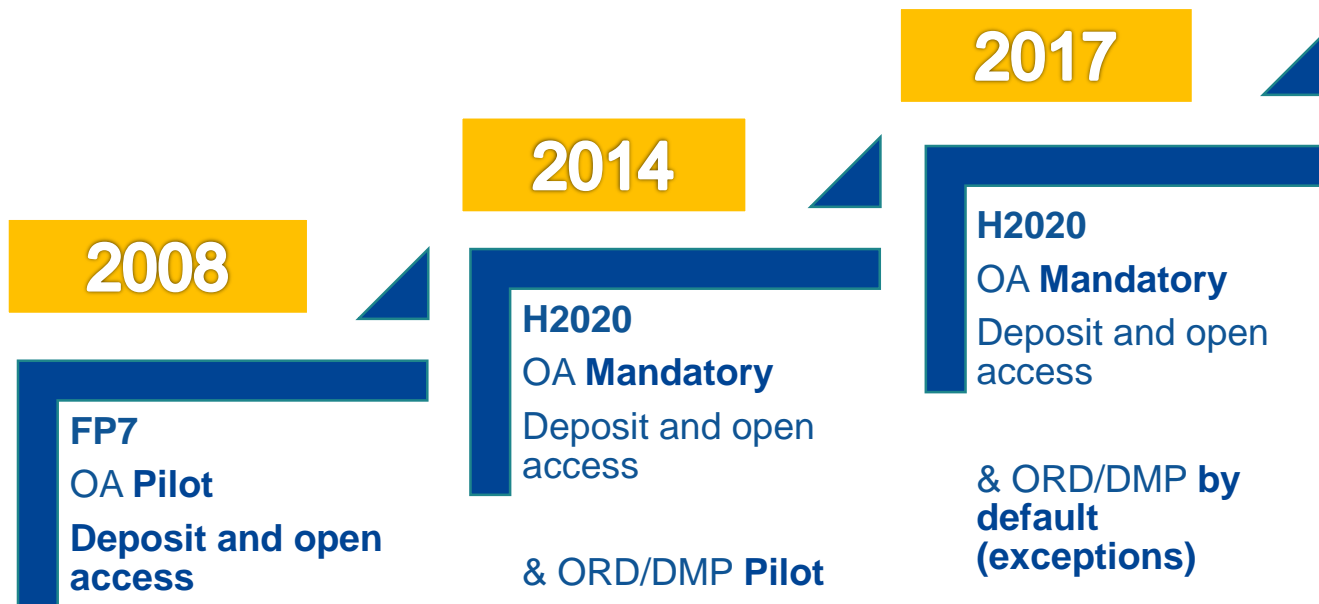| Current System (dominant)		Open Science	
Excellence defined largely on the basis of *where* scientists publish		Composite definition of excellence	
Incentivises researchers to produce specific outputs (*mainly publications*) and to publish as much and as fast as possible (*publish or perish!*)	Use of quantitative metrics	Incentivises researchers to share knowledge/data early and openly, to collaborate, and to increase quality and impact; While considering diversity of outputs and research cultures	Use of qualitative and quantitative metrics
Rewarding individual competing scientists - gaining scientific prestige		Rewarding team work, collaboration and sharing to achieve societal impact (e.g. Covid-19)	

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Changing the research assessment system

- The Commission **is currently consulting** research funders, research performers, policy makers, and other stakeholders, **on how to advance with reforming the research assessment system**.

- A proposed way forward is to **reach an agreement by 2022** (such as an MoU) **between those willing to reform the current research assessment system**, which would be signed by an increasing number of funders and research performing organisations.

  ➤ Agreement setting ambitions, specifying broad lines of action, and committing signatories to act;

  ➤ For a more qualitative assessment of research, researchers and institutions, that considers the value and impact of a diversity of outputs and research cultures, and that incentivizes open collaboration and knowledge and data sharing.

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Open Science in Horizon Europe

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5. Open Science under Horizon Europe

Evolution of OS policies across FPs

2008

FP7
OA **Pilot**
Deposit and open access

2014

H2020
OA **Mandatory**
Deposit and open access

& ORD/DMP **Pilot**

2017

H2020
OA **Mandatory**
Deposit and open access

& ORD/DMP **by default (exceptions)**

Horizon Europe

Under **Horizon Europe (2021)**

- Open Science (OA, RDM, Citizen Engagement, etc.) embedded across the FP

  - **Evaluation** of proposals (excellence –methodology-, quality & efficiency of implementation)

  - **Grant Agreement, guidelines**

  - **Reporting**—during the project's lifetime

  - **Work programmes**

- Strengthening of the obligations with respect to open access and focus on responsible RDM in line with FAIR

OA to peer-reviewed publications under Horizon Europe

- Obligation to **ensure deposition** at the time of publication in a **trusted repository** and **immediate open access through repository**

- Beneficiaries/authors must **retain sufficient IPR** (to comply with OA requirements) and ensure open access under **open licences** [**CC BY** (or equivalent) for journal articles, **CC BY NC/ND** (or equivalent) allowed for long-text formats]

- Beneficiaries **publish in venues of their choosing**. Any **publication fees** (**APCs/BPCs) only refundable** if publishing venue is **full open access** (costs non-eligible if publishing venue is hybrid)

- **Metadata** of deposited publications/research data **open** (the latter with exceptions) **under CC0 or equivalent** in line with **FAIR principles**

Open access to publications in Poland

OA Publications in Poland over time

2019
Publications: 278,212

1990

Source: https://www.openaire.eu/os-poland

Percentage of Open Access publications in total publications, by country

Source: Consortium's own analysis - Reference date: 2009-2018

Percentage of open access publications

Gold OA   Green OA   Hybrid OA   Bronze OA   OA   Not OA
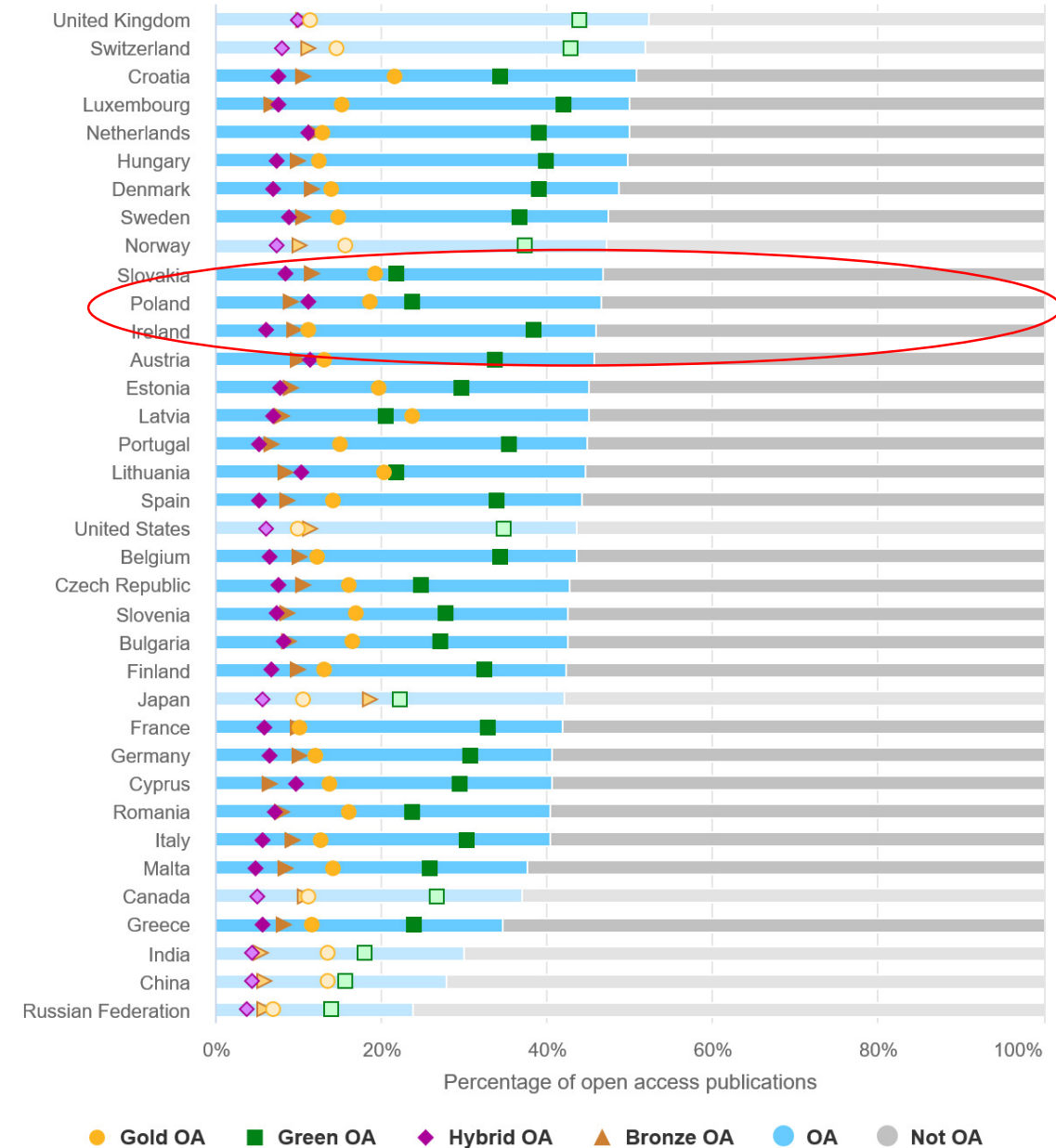
Research data under Horizon Europe

- The governing principle is to manage research data **responsibly**, **in line with FAIR**

  - At proposal stage, beneficiaries will be **evaluated** on **preliminary research data and research output management considerations**

  - All projects that **generate (and/or re-use)** research data will have to establish and regularly update a **Data Management Plan** (living document)

  - Beneficiaries will have to **deposit data in a trusted repository** and link data to publications they underpin, if applicable

    - For some actions, additional obligation that the data repository is federated under EOSC.

  - Beneficiaries to ensure **open access ASAP and within the deadline set up in the DMP** under CC BY or CC0 (or equivalent), unless exceptions apply (justified in the DMP), **following the principle "as open as possible, as closed as necessary"**

Other research outputs under Horizon Europe

- Data is not the only research output that should be managed: Software, algorithms, protocols, workflows, models, etc. all need to be properly managed and should be findable, accessible, interoperable and reusable:

  - Obligation to provide **information via the repository** about any research output or any other tools and instruments needed **to validate the conclusions of the publications/re-use or validate the data**

  - When required by the call conditions, beneficiaries must provide **(digital or physical) access** to data or other results needed **for validation of the conclusions of scientific publications**, to the extent that their legitimate interests or constraints are safeguarded.

  - Together with data, it is recommended that beneficiaries describe other research outputs also **in the DMP** and that they **deposit and provide open access via a repository** to these outputs, unless legitimate interests or constraints apply.

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Open Science practices

- providing **open access** to research outputs (e.g. publications, data, software, models, algorithms, and workflows) through deposition in trusted repositories
- **early and open sharing** of research (for example through preregistration, registered reports, pre-prints, rapid publication of data sets,…)
- **research output management**
- participation in **open peer-review**
- measures to ensure **reproducibility** of research outputs
- **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)
- …

Evaluation of proposals and open science

- **Quality of open science practices** evaluated under '**Excellence**' >methodology [both mandatory and recommended practices]

  - Up to 1 page to describe OS practices + up to 1 page to describe research data/output management

- **Capacity of participant/consortium + List of achievements** evaluated under '**Quality and efficiency of the implementation**'

  - Explain expertise related to OS

  - List publications, software, data etc. relevant to project with qualitative assessment, PIDs; Publications expected to be open access; datasets are expected to be FAIR and 'as open as possible, as closed as necessary'; significance of publications to be evaluated on basis of proposers' qualitative assessment and not per JIF.

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Thank you

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