

***The Turing Way* response to UNESCO global call for best practices in open science**

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UNESCO is aiming to collect best practices in open science at individual, institutional, national, regional and international levels with a particular focus on the [seven priority areas of action highlighted in the Recommendation](#). The resulting compendium of best practices will be a useful tool to better understand the current landscape of open science, share lessons learned, identify and connect open science actors around the world, and further develop innovative solutions for open science in a collaborative, inclusive and transparent manner. Further to the adoption of the UNESCO Recommendation on Open Science in November 2021, UNESCO launched a Global Call for Best Practices in Open Science.

Website with more information:

<https://www.unesco.org/en/articles/unesco-launches-global-call-best-practices-open-science>

The Turing Way team (email: theturingway@gmail.com) led a workshop to facilitate discussion and put together a community solicited recommendations on the 2-3 (out of seven) selected priority areas.

- Workshop date: 15 June 2022
- This session will be facilitated during [The Turing Way Collaboration Cafe](#).
- Session facilitators: Malvika Sharan, Anne Lee Steele, Esther Plomp, Arielle Bennett.

The Turing Way (<https://the-turing-way.netlify.app/welcome>) is an open source, open collaboration and community driven guide to best practices in data science and research. *The Turing Way* is hosted and supported by the Tools, Practices and Systems of The Alan Turing Institute.

Draft for submission

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Broadening the definition and implementation of accessibility, inclusion and incentivisation in open science

Submission Detail

Part II: Description of Best Practice in Open Science

1. Title of the best practice: [Broadening the definition and implementation of accessibility, inclusion and incentivisation in open science](#)
2. Language(s) of the best practice: [English](#)
3. Scope of the best practice:
 - Individual
 - Institutional
 - National
 - Regional
 - International
 - Other... ← [Shared through collaborative system](#)
4. Responsible institution:
 - Academia
 - Research Institute
 - University

- Scientific Organization
- Data Organization/Repository
- Publisher
- Civil society organization
- Library
- Funding agency
- United Nations entity
- Government
- Private institution
- Other... ← [Shared responsibility](#)

5. Area(s) of action covered by the best practice as per the UNESCO Recommendation on Open Science:

(Multiple choices are possible. to guide your answer, please refer to section IV of the UNESCO Recommendation on Open Science (p. 20) available [here](#))

- [Promoting a common understanding of open science, associated benefits and challenges, as well as diverse paths to open science](#) ←
- Developing an enabling policy environment for open science
- Investing in open science infrastructures and services
- [Investing in human resources, training, education, digital literacy and capacity building for open science](#) ←
- [Fostering a culture of open science and aligning incentives for open science](#) ←
- Promoting innovative approaches for open science at different stages of the scientific process
- Promoting international and multi-stakeholder cooperation in the context of open science and with a view to reducing digital, technological and knowledge gaps

6. Which element (s) of open science does the best practice include:

Scientific Knowledge - (multiple choices are possible)

- [Open Scientific Knowledge](#) ←
- Open Scientific Publications (Open Access)
- Open Research Data
- [Open Educational Resources](#) ←
- Open Source Software and Source Code
- Open Hardware

Open Science Infrastructures - (multiple choices are possible)

- [Virtual Open Science Infrastructures](#) ←
- Physical Open Science Infrastructures

Open Engagement of Societal Actors - (multiple choices are possible)

- Crowdfunding
- Crowdsourcing
- Scientific Volunteering ←
- Citizen and Participatory Science ←

Open dialogue with other knowledge system - (multiple choices are possible)

- Indigenous Peoples
- Marginalized Scholars ←
- Local Communities ←

7. Open science actor(s) implementing the best practice

8. Open science actor(s) benefiting from the best practice

- Researchers
- Scientists and Scholars
- Leaders at Research Institutions
- Educators
- Academia
- Students and Young Researchers Organizations
- Information Specialists
- Librarians
- Communities
- Technical Staff
- Research Funders
- Philanthropists
- Policymakers
- Learned Societies
- Practitioners from Professional Fields
- Representative of the Science, Technology and Innovation-related Private Sector

9. Types of collaboration(s) promoted by the best practice:

- Multidisciplinary
- Multistakeholder
- International

10. Description of the best practice: (300 words)

Provide a description of the open science best practice, addressing, as much as possible, the following questions: What are the key activities/components of the practice? What problems/issues/challenges

does it address? What are the changes that resulted from the practice? How does the practice benefit the research community and/or broader society?

The world is naturally diverse and should be fairly reflected in the research culture through the participation of individuals, groups and communities, who collaborate to build an infrastructure that advances social good and justice and incentivises collaboration and community care. Such research infrastructure must be intentionally designed to involve people from multiple backgrounds, especially from outside the research team to participate in research as contributors, consultants, experts, users, advocates and beneficiaries of research. Open science enables us to collaboratively build that system in a way that benefits everyone, through broader measures for accessibility and inclusion, as well as incentivising work that benefits everyone.

This submission has been collaboratively developed by the members of The Turing Way. The Turing Way is an open source, open collaboration and community-developed guide for best practices in data science and research. We involve and support a diverse community to create, share, exchange and advance open, reproducible, ethical and collaborative research. Practices described here are shared as an open education resource – chapters written across five guides and a community handbook capturing the open science participatory process we practise and teach.

The most important recommendation from our work is to ensure that open science practices actively facilitate the involvement of researchers and others who can make research contributions in various roles, as well as are given proper credit for their work. Using open science as a framework, we need to reexamine the way that we define accessibility and research assessment so that a wider spectrum of backgrounds, identities, expertise and domain knowledge can participate in research. Furthermore, we urge decision-making entities to align the reward and incentive systems to acknowledge high-quality reproducible and sustainable research/practices that benefit society over vaguely defined innovative work that benefits only a small group.

11. Replicability/scaling up of the best practice:

(Is it possible that this practice can be used and/or scaled up in other institutions, countries, regions?)

- Yes
- If yes, please provide brief details (100 words)

Ensuring that publicly funded research work prioritises accessibility, participation and incentivisation of open science will require collective work towards culture change. Ideally, policies and mandates will be applied as interventions, particularly from governments, research funders, and policymakers across different counties and regions to contextualise open research, its benefits and rewards for local actors. Additionally, open science practices should be

discussed and reinforced with training, upskilling where needed, and also shared through guidelines and recommendations where everyone understands their responsibility.

12. Cost of the best practice: (50 words)

Culture change is slow and incremental, and hence cost for best practices and intervention described here will vary due to the current state of open science based on location, stage of research, enforcement process and infrastructure access. It is highly recommended to keep the investment and funding long term to make a meaningful impact and build a sustainable path for their continuation.

13. Evaluation/Assessment/Measure of the impact of the best practice: (200 words)

*What is the preliminary impact of this open science best practice? How was the practice evaluated?
What indicators were used to evaluate the impact of the practice?*

Sustainable funding with mandates and recommendations for enhancing collaboration, the inclusion of diverse research roles and incentivisation of open science, especially for under-resourced projects as well as widely necessary research infrastructure will ensure that everyone understands their roles and plays a part in research and development. Meaningful investment towards existing open science communities, technical infrastructure, training activities and open education resources through funding, collaboration and recognition will strengthen the capacity building in open science. If broadly recognised scientific associations, research entities, funding bodies as well as governments in different countries and levels can model the behaviour they want to promote in open science, they will be able to provide a blueprint for the adoption of open science on different scales.

14. Website/Link to more information about the practice:

The Turing Way guides: <https://the-turing-way.netlify.app/welcome>, This document is shared under a CC-BY 4.0 licence. DOI: 10.5281/zenodo.6841867. Zenodo: <https://doi.org/10.5281/zenodo.6841867>. Attributed to the Open Life Science community and individual contributors.

Summary of notes that did not end up in the submission

In our recommendation, we assume that the open science we practice embodies interdisciplinary perspectives and feminist principles in research practices, culture and infrastructure, as well as centres on inclusion, equity and collaboration with members from marginalised communities to influence decision-making, especially when they are impacted by the processes and outcomes of research.

FOSS vs open science

- The Free/Open Source Software (FOSS) movement is a widely known stream of open science that has transformed how we collaborate across borders in digital spaces. FOSS are often the basis for technological innovation (both in open science and private sectors), allowing participation from researchers from both the Global North and South in the global platform meaningfully.
- However, FOSS has historically also relied on free and often extractive practices, particularly of people's labour, time, emotional capacity, and knowledge. Many of those contributors have not been rewarded for their work or given acknowledgement fairly. Many popular FOSS communities have also excluded the marginalised community from the conversation and development process, and often not provided resources that members from underrepresented groups need to participate. Although the argument can be made that the final product is made publicly available, without the meaningful participation of users throughout the process, those products are not always beneficial and many times have proven to be harmful.
- Another well-known stream is open access which is popular due to the academic need to publish research findings. Theoretically, open access allows access to everyone, but in reality, open access infrastructure has often been exclusionary of researchers from low-income communities and researchers from the Global South. First, due to the high cost of Article Publication Fee that is unaffordable for them and second, by popularising journals that operate by private sectors and are governed under laws and policies created in the Global North that regulate who gets to produce, circulate, access, build on and get recognition for their work.
- There is an urgent need to consider these streams of practices not in isolation but in the context of open science.

Rewards and benefits of open science

- Documentation of processes to onboard all willing contributors and fair attribution are two key ways in which participatory work is facilitated and labour in open science is acknowledged. Feedback loops have to be built into the planning process to ensure that knowledge isn't simply extracted for research purposes but directed to create something mutually beneficial.
- Open science collaborations should occur in an agile manner, allowing modular development for reproducibility and reuse, as well as incremental progress that captures benefit for larger user groups through their involvement as developers of products they need. Through their involvement, open science practices allow creating a sense of shared agency that embed maintenance and sustainability in the research process from the start. Open practices when combined with FAIR principles' Findability, Accessibility, Interoperability and Reusability, allow different stakeholders in research to

think more intentionally about how we can help avoid reinventing the wheel and incentivise reuse and maintenance of research outcomes.

- The Turing Way, models the open science culture by showing the benefits of working openly, reproducibly and collaboratively as well as acknowledging people transparently in a way that they find meaningful.
- Through inclusive practices, we should contextualise how different research groups can work openly in a way that benefits their work as well as positively impacts their communities.
 - a. Some immediate benefits to demonstrate if global access
 - b. Early surveillance and review for disaster avoidance and fraud monitoring
 - c. Allowing people to build on published work and make science faster
 - d. The positive social impact of their work and their reuse across different communities
- Meta research can help demonstrate/produce evidence for these benefits! Two examples of institutes/projects doing this- [Research on Research Institute \(RoRI\)](#) and [Projet MiRoR | An innovative and ambitious joint doctoral training programme \(miror-ejd.eu\)](#)

Training

- Open science should be introduced early on in the education system so that practices are reinforced and normalised, as well as researchers have sufficient time to invest time in learning about open science. Introducing open science in the late-PhD stage or even later is often too late due to lack of time and intent. If we can introduce PhD students to open science concepts early on, they can incorporate these lessons learned throughout the lifecycle of their research.
- Having the principles embedded from the start of the process makes the adoption and practice of open science easier. Open science should be taught to allow building good habits with small steps rather than doing everything at once, or one big challenging task such as getting their data ready and archived in the right place at the end of their research project.
- Training should emphasise the importance of community-driven work as it usually addresses a concrete need and might thus be easier to integrate into high-level policy intervention that can have immediate benefits to society.
- To avoid some mistakes of earlier FOSS that were designed for optimised systems and resources-rich environments, researchers need to build system-agnostic tools and practices that collectively contribute to creating an interconnected web of research infrastructure as a public good.
- Creating a compliance process without culture change creates resistance, and also requires a lot of resources to ensure that open practices have been applied. Open science should be participatory where everyone understands their roles and plays a part in sustainable development.

To be shared with Invest in Infrastructure (IOI): *How can Open science partnerships enable broad and effective engagement and participation in the innovation process as well as the discovery and development of a business model for effective commercialization of new knowledge?*

- Governments, institutions and the Member States should help identify and establish regional and international funding mechanisms for promoting and strengthening open science infrastructure, especially in low-resource communities. These systems/environments will need sustainable approaches from a business-model perspective from open science. It is far from ideal but might be needed to balance the cost in a low-resources environment and communities to help them build sustainability in their work.
- Fixing science on one side of the World isn't enough as we have seen in the pandemic. Some government funding may not be invested towards infrastructure that is optimised for other countries, or may not be open source or public good which leaves out these low-resources environments from participating in research. It is important to make stronger recommendations for how we can share infrastructure globally. Little documentation exists about how these infrastructures can be optimised/reproduced in other countries/environments. The landscape for funding is different across national contexts (largely optimised for US + Europe). IOI can make a recommendation on that.
- Public-funded research output should be made available and seen as public good and funding should be made available for the community initiatives providing maintenance and sustainability-related support to the outputs/tools for longer terms beyond the project lifecycle. Like road/physical infrastructure maintenance: it is possible to long-term maintain infrastructure in digital space with attention from the right stakeholders.
- The idea that open science / open source software cannot be effectively commercialised is a myth but it should also be an opportunity for us to move away from a model that prioritises profit maximisation. However, open science should not fully advocate the adoption of a commercial business model, but build responsibility for creating public good in which the government, private sector and civil society collectively build and invest in infrastructure, capacity building, and inclusion of populations marginalised by traditional science. If we leave open science (or any kind of science) at the hands of for-profit companies they will always optimise for profit - probably an unsolvable conundrum. Commercialisation with viability for the public good is possible, as proven by HuggingFacel.
- That kind of translation is already happening, for instance, with the covid vaccines. Their development would not be possible without the open, rapid sharing of the viral genome. A lot of corporations globally are using openly shared data, and open source software as part of their research. There is already a clear recognition of the benefits of opening, but their profit-driven business models don't allow/incentivize them to contribute back.

It is important to establish frameworks for open governance for open work done by commercial companies, which can otherwise be challenging. This will require aligning incentives for research, technology and economy that research institutions, industries and government can provide through socially responsible business or alternative business models where companies keep part of their work open, but monetize other parts. For instance, keeping the code base open-source, but charging for services, and using some of the revenue to contribute back to/sustain the open-source community.

- Stakeholders from non-profit and private sectors should be involved, as well as investment from the private and government/public sector in research should be encouraged as they are all beneficiaries of research. Examples from the 2i2c working model show that commercial support is vital for improving accessibility and operationalising technical infrastructure. We should consider building pathways for middle grounds: [B-Corp](#) could be an interesting example in combination with the right licence types, for instance, CC-BY. Dual licensing systems can help develop service models by charging lower rates for academics, and higher rates for companies.
- In exploring funding, sustainability and business models, we should provide clear explanations for what gaps exist, how different stakeholders fill through their involvement, what harm can they cause and how can we avoid that and what guidance has been provided to establish mutually beneficial collaborations. Innovative approaches for funding in open science for sustainable development, working with LMICs, environmental impact and economical benefit should be prioritised.
- Some questions to explore: how can more governments fund international open infrastructure? Is government funding the right/only way to fund open science as a public good? Should private companies fund open science directly, or feed that funding into a public agency?
 - Public agencies regulating resources should be monitored by the civil society and non-profit sectors, raising concerns and interests from the community.
 - Government funding is good but in some cases, they may seek profits and will have different values/priorities for funding, such as reallocating potential funds from open science projects to political agendas of other importance.
 - It is extremely important to diversify and decentralise funding sources. Funders should have direct contact with the open projects & communities.
- The ultimate goal of global open science should be to connect distributed infrastructure into a global infrastructure. Funding often comes intending to see a change, for instance, the government funds initiatives and efforts that feed back into the national priorities. Strategy for creating publicly funded infrastructure should align with making them available to wider communities beyond geographical boundaries. Compliance can be better taken care of if national bodies align their work best of funding, income, and level of technical maturity. We already see international standards integrated into the local level and LMIC projects.

Details and notes from the workshop

Goals

- The Turing Way's submission to UNESCO global call for best practices in Open Science. The key areas of the inquiry we will be making a recommendation on:
 - 1. Promoting a common understanding of open science, associated benefits and challenges, as well as diverse paths to open science
 - **6. Promoting innovative approaches for open science at different stages of the scientific process**
- Collect evidence of best practices in The Turing Way, or how we address the adoption of open science in our work and across the selected priority areas.
- Read more about the listed action areas:

<https://unesdoc.unesco.org/ark:/48223/pf0000379949/PDF/379949eng.pdf.multi.page=20>

Roll call (contributors + co-authors)

Name / affiliation below / Social media (please note that it is a public document. Although we need your contact details, you can send it to The Turing Way team by emailing theturingway@gmail.com)

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Text below this will not be submitted - they are full notes from the workshop

- During the call you can use chat or directly edit this document to share your thoughts, notes and references.
- We will create a final report at the end for circulation to the contributors and final sign off.
- The intention is to publish this report on Zenodo after the submission has been received by the UNESCO team.

Structure of Workshop

For this workshop, we are using [1-2-4-all format by Liberating Structure](#), which was successfully applied by Arielle Bennett and Malvika Sharan for the "Turing Response to Reproducibility of Research Government Inquiry" in 2021 ([see the report](#)).

Time	Activity	Duration
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00:00	Icebreaker	10 mins
00:10	Welcome & Scope	15 mins
00:25	Individual reflection	10 mins
00:35	Small group feedback	15 mins
00:50	Comfort break	10 mins
00:00	Larger group discussion	25 min
00:25	Whole group discussion	20 min
00:45	Wrap up & next steps	15 mins
00:00	Close	-

Introduction and Icebreaker (breakout rooms of 4, 5 mins)

- Who are you? What do you work on?
- What has been your experience with approaches for open science in the research process? Is there a specific stage of research where you consider open science most important?
- What specific open science approach has been most crucial for your work?

Scope of this meeting (all together, 15 mins)

- 5 minutes pitch by the facilitators
- 5 minutes on tech & structure of the workshop by the facilitators
- Notetakers: *please add your name if you would like to help take notes*

1-2-4-all structure

1: quiet reflection (all together, 10 mins)

Prompts to guide your reflections

- **How can open science have reciprocal benefits:** not involving unfair and/or inequitable extraction of data and knowledge?
- What are the ways to ensure that **publicly funded research work integrates** open principles?
- How can we **enhance diversity** in terms of communities, research outputs, and languages, and practise respectful co-creation and inclusion while maintaining rights to knowledge (such as in the case of indigenous communities)?

- How can we **encourage knowledge dissemination and discussion** about the ways in which the scope of open science principles and priorities can be enlarged and mutually shared with researchers, public, private sectors?
 - a. Please consider challenges, for example, competition, extraction and exploitation of data by more advanced technologies, links to property rights, privacy, security and inequalities between publicly and privately funded research.
- **Reflecting on the importance of Open Science in different stages of research**, what are your reflections on community-driven approaches for open principles, open peer review/evaluation, negative result publication, citizen science approaches, data archiving and preservation, etc.?
 - a. (This point should build strongly on The Turing Way handbook)
- What are some best practices as well as barriers for sharing, promoting interoperability, and enhancing **open access of large-scale research infrastructures**?
- **What are some innovative translational aspects of open science?** How can Open science partnerships enable broad and effective engagement and participation in the innovation process as well as the discovery and development of a business model for effective commercialization of new knowledge?
- What are some **successful practices for international, multi-stakeholder engagement, collaboration and further maintenance** of the outcome generated through that in a way that contributes to exchanging knowledge, recognising merits, closing knowledge gaps and supporting enhanced visibility for the marginalised communities.

☑ **Notes: insights from reflections [We will reuse these for the breakout]**

- What are the ways to ensure that **publicly funded research work integrates** open principles?
 - PH: Ideally requires culture change; checking on compliance creates resistance and no one wants to police openness. Also requires a lot of resource to do the checking and it's unclear who should pay for that; if you achieve culture change, it's clearer that everyone just plays their part
- **Reflecting on the importance of Open Science in different stages of research**, what are your reflections on community-driven approaches for open principles, open peer review/evaluation, negative result publication, citizen science approaches, data archiving and preservation, etc.? (This point should build strongly on The Turing Way handbook)
 - VH: With open science I think the earlier the better. If we can introduce PhD students to open science concepts early on (e.g through things like the Turing Way) then they can incorporate these throughout their career. From my experience people often panicked and tried to publish negative results just as they were leaving a lab to get an extra paper (which is obviously fine!) but it would be great to have this throughout the research lifecycle
 - PH: Having the principles embedded from the start of the process just makes it so much easier, it's building good habits with small steps and not asking people

to do one big challenging task such as getting their data ready and archived in the right place with a few days of a research project to go. Community driven is always good as it usually addresses a concrete need and might thus be easier to “sell” than some kind of high-level policy that doesn’t seem to have immediate benefits

- EZ: 4. Showing the benefits of working openly, reproducibly and collaboratively. To my knowledge, there isn’t that much work yet showing the benefits of adopting best practices for open research although some of them seem intuitive. Most of the “motivation” for engaging with open research in my field (psychology) has been disaster avoidance and fraud monitoring, which is useful but has the tinge of suspicion which puts some people off.
- EK: 1 - it is important that researchers and others that make contributions to research are properly credited for their work and this is even more important to do this when people practice open and sustainable research. We need to reexamine the way that we assess research so that we are rewarding credit for and acknowledging high quality reproducible and sustainable research/practices.
 - 2. Have policies, particularly from research funders, that are aligned with open research but these need to be reinforced firstly with training, where needed, and also enforced properly otherwise they will not work.
- EP:
 - How can we **enhance diversity** in terms of communities, research outputs, and languages, and practise respectful co-creation and inclusion while maintaining rights to knowledge (such as in the case of indigenous communities)?
 - Involving people from multiple different backgrounds. Especially communities who are impacted by the work should be directly involved in the process through for example consultation but ideally through leading the process.
 - What are the ways to ensure that **publicly funded research work integrates** open principles?
 - Providing guidelines/recommendations, training, practising what is preached, discussing open science principles with scientific associations/societies.
 - **What are some innovative translational aspects of open science?** How can Open science partnerships enable broad and effective engagement and participation in the innovation process as well as the discovery and development of a business model for effective commercialization of new knowledge?
 - Should be seen as a public good and funding should be adjusted to sustain projects for longer terms. Like road maintenance: It is possible to long term maintain infrastructure when it is physical, why not when it is digital.
- AC:

- 7 - Open science should not adopt a commercial/business model. Instead it should be seen as a public good in which the government, private sector and civil society builds and invests in infrastructure, capacity building, and inclusion of populations marginalised by traditional science.
- BA:
 - Open Science is designed for optimised systems and resources-rich environment. How to integrate it well with the reality of other systems/enviroments which won't invest in OS infrastructure as a public good? How can we find innovative approaches to long-term sustainability of funding mechanisms? We have to identify and establish regional and international funding mechanisms for promoting and strengthening open science infrastructure especially in low-resources environment. I think these systems/enviroments will need sustainable approaches from from a perspective of business-model from OS (it is not good, very controversial, should't be - way far from ideal - but might be needed to balance the cost in low-resources environment). Fixing science in one side of the World isn't enough as we have seen in the pandemic!! Some governments definitely won't fund/invest in OS infrastructure which leaves out these low-resources environment with nothing!
 - How can we also share infrastructure? Little documentation about how these infrastructure (as far as I know) can be optimised/reproduced in other countries/environments.
- ET:
 - 7- I think this translation is already happening - take the covid vaccines. Their development would not be possible without the open, rapid sharing of the viral genome. A lot of corporates globally are using openly shared data, open sources software as part of their research. So for me they clearly recognize the benefits of open, but their profit-driven business models don't allow/incentivize them to contribute back. I guess this will require figuring out e.g. whether government can step in to incentivize open sharing from businesses, or alternative business models where companies keep part of their work open, but monetize other parts (e.g. keeping the code base open-source, but charge for services, and using some of the revenue to contribute back to/sustain the open-source community). The other challenge is to ensure the open governance for open work done by commercial compay.
 - 3- Consent and empathy. I've heard someone talk about an infrastructure of care before, the idea of a system where care and love for others is incentivized. The world is naturally diverse, i think it's about appreciating individuals, groups, communities, and caring about them.
- AB: 7 the idea that open science / open source software cannot be effectively commercialised is a myth but it should also be an opportunity for us to move away from a modle that prioritises profit maximisation over h

- AS: reciprocal benefits, diversity, knowledge dissemination
 - From TTW+open source: The foundation of so much work in open science (& open source more broadly) often relies on extractive practices, particularly of people's labor, time, emotional capacity, etc. Documentation and attribution are two key ways in which this labor is acknowledged, and this knowledge is encoded... However, feedback loops have to be built into the planning process in order to ensure that knowledge isn't simply extracted for research purposes
 - Degrowth vs theory of infinite growth
 - Barrier of time
 - Anthropology (rough notes):
 - very resource-poor as a discipline
 - small scale always (at the expense of wider application vis a vie bigger funding bodies/groups)
 - debunking theory of infinite growth (degrowth/maintenance),
 - system rewards fetish of novelty + reinventing the wheel
 - On privatisation/commercialisation in research: <https://nadia.xyz/science-funding>

2: small group discussion (breakout rooms of 2-3 people, 10 mins+5mins for documenting feedback)

- Go back to your written reflections, share your ideas with each other & build on them
- What are the main points of similarity or differences in your views?
- Discussion points should be captured in the Google doc

Notes: *insights from reflections and discussions*

[Each breakout group will discuss and add notes for each prompt]

Group 1:

- Sustainable funding, especially for under resourced areas/groups/countries and long term projects/infrastructure.
- Landscape for funding is different across national contexts (optimised for US + Europe)

Group 2 (Emma, Patricia, Alejandro)

- 7 - Open science as a public good (all agree), but commercialisation and investment from the private sector are necessary e.g. Roche partnership.
 - All things should be open, though we recognize that it might still require significant resources to build on top
- 2 - More policies for increasing engagement and awareness e.g. training; less policing (or if so, nudges at various stages and not one central point that is trying to enforce it)
- 1 - culture change, give credits. Access to research should change.

Group 3 (Eirini, Vicky, Emmy):

- Criticism for people who don't work open deters people from practising open - we should show the benefit of open instead!
 - Meta research is really important to demonstrate / produce evidence for these benefits! Two examples of institutes/projects doing this- [Research on Research Institute \(RoRI\)](#) and [Projet MiRoR | An innovative and ambitious joint doctoral training programme \(miror-ejd.eu\)](#)
 - What kind of benefits? E.g. being able to do science faster, societal impact
 - Sometimes meta research doesn't work the way we want them to - e.g. preregistration is not useful
- Start open science early in careers so you can invest time in learning about open science when you have more time :) PhD students are so busy at the end of their PhD's so not a good time to introduce new concepts
- If you leave open science (or any kind of science) at the hands of for-profit companies they will always optimise for profit - probably an unsolvable conundrum! Middle grounds (?):
 - [B-Corps](#) could be an interesting example
 - [CC-BY-NC](#) licenses
 - Charging models to have lower rates for academics, and higher rates for companies

BREAK: 10 mins

4: larger group discussions (two of the previous breakout rooms joined to form one with 5+ people, 20 mins + 5mins for documenting feedback)

- Larger groups refine ideas, expand them, challenge them, and agree on a set to share with the whole workshop
- Points should be captured in the document under the 'notes' section

ALL: everyone joins together for the final discussion and shares the points discussed in their groups (20 mins)

- Points should be captured in the reflections document
- May want to identify a dedicated notetaker from each group for this part

Notes: *insights from reflections and discussions*

- 7. I like the open science as public good, but want more stakeholders including private firm to be involved
 - 2i2c
 - Commercial support is vital for the infrastructure

- What gap do they fill? And what harm can we avoid? - there a need to provide guidance
- Innovative approaches for funding open science sustainable development - working with LMICs
- Environmental impact
- Dual licensing system
- ET: How can we get more government funding for open infrastructure? Is government funding the right/only way to fund open science as a public good? MS's expansion: should private companies fund open science directly, or feed that funding into a public agency?
 - Public agency (half) monitored by the civil society and non-profit sector.
 - Government funding is good but might also seek profits and have different values/priorities for funding - these potential funds can be used for different approaches!
 - Diversified funding sources!
 - Funders should have direct contact with the open projects & communities
 - decentralized ways to fund, e.g. blockchains as an alternative to govt funding?
- Funding often comes with an intention to see a change
 - Funding initiatives and efforts that feeds back to the national priorities
 - Strategy is to invest on infra that is available to wider community
 - Compliance can be better taken care of if national bodies align their work best of funding, income, level of technical maturity
 - We see international standards integrated in local level and LMIC projects
- Connecting with the global infrastructure
- Commercialisation with viability for public good
 - Huggingface is a good example

Wrap up (all together, 10 mins)

Thank you! 🙏

- Notes from this discussion will be recorded in a document for submission. The DEADLINE is 15 July.
- Attendees listed in the notes document will be acknowledged and thanked for their input as contributors and authors.
- The reports will be published under CC-BY 4.0 Licence on Zenodo.

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