



OSI POLICY PERSPECTIVES

CONSIDERING EVIDENCE-BASED

OPEN ACCESS POLICIES

OSI POLICY PERSPECTIVE 6
FEBRUARY 2023 EDITION
OPEN SCHOLARSHIP INITIATIVE

ABOUT OSI POLICY PERSPECTIVES

The OSI Policy Perspectives series offers broad, common ground perspectives on key issues in scholarly communication. Each report summarizes the current state of a particular issue and what we know about it, and also attempts to articulate the perspectives and lessons of experience from all stakeholder groups in scholarly communication on this issue (particularly but not exclusively as expressed in OSI conversations) and identify what common ground might exist for building broadly acceptable policy.

OSI is not a democratic body that speaks with one voice on any particular issue. Trying to reconcile the views, intentions, and motivations of all the different actors, communities and groups in the scholarly communication space—which are very rarely entirely aligned—is challenging. We acknowledge, therefore, that these reports may be (and in fact, probably are) an imperfect reflection of the many perspectives and ideas in this group. The fact that these reports sometimes need to be published in a rush, in response to policy commenting deadlines and other pressures only makes this imperfection more likely.

We also acknowledge, however, that OSI often considers a wider range of perspectives than established policymaking bodies in scholarly communication, and that our relative strength is showcasing this range of perspectives and noting how they differ, and importantly, how they share common ground. To this end, we hope it is valuable to produce these reports, however imperfect, and share them with the scholarly communication community and beyond.

© 2023 OSI. Except where otherwise noted, this report is free to use and reuse under a CC-BY-NC-ND license. Cover image CC-0 by Arek Socha. Most of the section titled ‘Summary of OSI’s 2022 Researcher Surveys’ is copied with permission from OSI’S official report on this subject (see Hampson 2023).

ACKNOWLEDGMENTS: Thank you to all the researchers who participated in OSI’s 2022 surveys, and to the organizations that helped circulate these surveys. Thank you as well to QuillBot AI for editorial assistance with several paragraphs (all edits are carefully reviewed and approved by the author) and to George Mason University Press.

AUTHOR CONFLICT STATEMENT: The author of this report, Glenn Hampson, is the program director and principal investigator for OSI, which receives funding from foundations, UNESCO, commercial publishers, and individual participants by way of conference fees. Funders, however, have no privileged input into OSI policy deliberations apart from being equal members of the OSI community. OSI has many voices contributing to documents such as this, and endeavors to maintain an inclusive and balanced perspective on scholarly communication issues.

DISCLAIMER: In this report, the authors have attempted to accurately represent the perspective and ideas of the broad open solutions community, and in particular UNESCO and OSI participants, alumni and observers. However, it is possible that this attempt is incomplete and/or inaccurate. Any responsibility for errors, omissions and/or misrepresentations rests solely with the lead author. Also, the findings and recommendations expressed herein also do not necessarily reflect the opinions of all co-authors, contributors, individual OSI participants, alumni, or observers, or any of the institutions, trustees, officers, or staff affiliated with these individuals.

PRIOR AND OTHER VERSIONS: There are no prior public versions of this document.

CITATION: Hampson, G. 2023 (Jan). OSI Policy Perspective 6: Considering evidence-based open access policies. Open Scholarship Initiative. doi forthcoming

CONSIDERING EVIDENCE-BASED OPEN ACCESS POLICIES

Acronyms & Definitions.....i

Executive Summary 1

Introduction 2

How We Got Here..... 4

OSI 8

Summary of Policy Options..... 18

Summary of OSI’s 2022 Researcher Surveys 27

Broader Still..... 32

Humpty Dumpty 35

What Now? 36

References..... 39

Annex 1: A Synthesis of Key 20th & 21st Century
Research Communication Doctrines 44

Annex 2: OSI’s Open Solutions Proclamation 47

Annex 3: OSI’s Plan A..... 51

Annex 4: OSI Infographic 3.1: Who Does Research? 75

Annex 5: List of OSI Reports, Briefs and Presentations 77

ACRONYMNS & DEFINITIONS

AAAS: American Association for the Advancement of Science

Acadia: UK-based nonprofit charity

APC: Article Publishing Charge

arXiv: Preprint repository used primarily by physics and astronomy

BOAI: Budapest Open Access Initiative

CC-BY: A Creative Commons content license that "allows re-users to distribute, remix, adapt, and build upon the material in any medium or format, so long as attribution is given to the creator."

CC-BY-NC-ND: A Creative Commons content license that for content to be reused with attribution. No modified content can be distributed without permission though, and no commercial reuse is permitted

CERN: The European Organization for Nuclear Research

CODATA: Committee on Data of the International Science Council

CONSORT: Consolidated Standards of Reporting Trials

DARTS: A description of the open spectrum invented by OSI participants, wherein the five attributes of a given information artifact's openness are defined by its discoverability, accessibility, reusability, transparency, and sustainability

DataSpace: The leading data sharing and discovery tool for HIV vaccine research, run by SCARP (the Statistical Center for HIV/AIDS Research and Prevention) of the Fred Hutchinson Cancer Researcher Center

DataSphere: A not-for-profit international data repository network

DORA: Declaration on Research Assessment

FAIR: Findable, Accessible, Interoperable, Reusable

Gates: The Bill & Melinda Gates Foundation

GenBank: An open access, annotated collection of all publicly available nucleotide sequences and their protein translations, produced and maintained by the US NCBI (National Center for Biotechnology Information).

Leiden Manifesto: suggests ten principles for the appropriate use of metrics in research evaluation

Lindau Guidelines: aim for an open, cooperative science community where data and knowledge are freely shared

Mellon: The Andrew W. Mellon Foundation

National Academies: The US National Academies for Sciences, Engineering, and Medicine

Nelson Memo: The August 2022 OSTP memo authored by OSTP acting director Alondra Nelson

OA: Open access

OASPA: Open Access Scholarly Publishers Association

OER: Open Educational Resources

Open access: Very widely defined. The base attribute is an information artifact which is free to read. Additional attributes (depending on the definition) can include free to reuse with permission, immediately accessible on publication, and more.

ORFG: The Open Research Funders Group

OSF: Open Science Framework

OSI: Open Scholarship Initiative

OSTP: US White House Office of Science and Technology Policy

Plan A: OSI's 2020 policy proposal for what a new global open access policy might look like

Plan S: The EU-based plan creating a one-size-fits-all solution for global scholarly publishing. Although nominally intended to apply to EU-based researchers, the plan has become the de facto global standard since publishers have modified their business plans and offerings to align with the plan.

PLOS: A leading nonprofit publisher of open articles in science, technology, and medicine and other scientific literature

PubMedCentral: The central information repository for published research used by the US government.

RDA: Research Data Alliance

Sage Bionetworks: A nonprofit data sharing network that supports research collaborations by overseeing data coordination, visualization, and analytics across distributed teams.

SciELO: South America's leading cooperative electronic publishing network for open access journals, and a global pioneer in open access development.

SDSS: The Sloan Digital Sky Survey

SPARC: Scholarly Publishing and Academic Resource Coalition

UNESCO: United Nations Educational, Scientific and Cultural Organisation

Vivli: A leading global platform for sharing clinical trials data



CONSIDERING EVIDENCE-BASED OPEN ACCESS POLICIES

According to the world's most influential open access policies, only certain types of information outputs are genuinely open. In practice, however, there are actually many types of open access outcomes and solutions. A more flexible, evidence-based approach to creating open access policy will better meet researchers' requirements and also reduce the unintended consequences of our current policies.

ABOUT OSI

The Open Scholarship Initiative (OSI) is a diverse, inclusive, global network of high-level experts and stakeholder representatives working together in partnership with UNESCO to develop broadly accepted, comprehensive, sustainable solutions to the future of open scholarship that work for everyone everywhere. This document reflects the input of the individuals listed here as well as contributions from other OSI participants who are not listed. The findings and recommendations expressed do not necessarily reflect the opinions of these individuals, OSI participants, OSI participant institutions, or the agencies, trustees, officers, or staff of these institutions.

OSI is managed by the Science Communication Institute (SCI), a US-based 501c3 nonprofit charity. OSI serves as part of the Network for Open Access to Scientific Information and Research (NOASIR) for the United Nations Educational, Scientific and Cultural Organization (UNESCO). For more information about OSI, please visit osiglobal.org.

EXECUTIVE SUMMARY

The most influential open access policies in the world today are founded on the belief from the early 2000s that only specific types of information outputs are truly open. In this ideology, all other types of outputs (such as free to read but still copyrighted) are unacceptable, particularly for academic journals.

After seven years of global, multi-stakeholder engagement and research—during which our understanding of the global information landscape has evolved a thousand-fold from the early 2000s—the Open Scholarship Initiative (OSI), in collaboration with the United Nations Educational, Scientific, and Cultural Organization (UNESCO), has reached the opposite conclusion: that open has multiple definitions and outcomes, and that many different open solutions are working well in modern research communication. In fact, some of today's most robust and promising open solutions would not even be considered open by the ideology of the early 2000s.

As policymakers around the globe move forward with the challenge of making research more accessible, it is crucial that these efforts be based on solid, democratic, fact-based foundations. Particularly, policymakers should pay close attention to what researchers need, what information sharing solutions are already working in the research world (including solutions that do not fit common definitions of open), and the negative unintended consequences of our current open policies.



UNESCO has long argued that equity should be a pillar of this next-generation open policy framework. OSI has proposed that doing something with open should be a second pillar, treating open as a tool to help research succeed rather than as an end in itself. OSI's 2022 research communication surveys indicate that the majority of researchers agree with this perspective and methodology.

Reconsidering our open policies does not necessarily mean abandoning Plan S, the Nelson Memo, the UNESCO open science policy, or major transformative agreements. In any case, these policies are all evolving gradually in response to feedback and market pressures. Rather, it suggests that in the future, we should also develop broad, inclusive, flexible, evidence-based policies as part of a tapestry of open options and approaches. Doing so will benefit researchers and societies worldwide and prevent the open access policy space from fracturing along regional and ideological lines, which could be detrimental to global research and research communication.

INTRODUCTION

The Open Scholarship Initiative (OSI) is an international group of leaders and experts in scholarly communication; approximately 450 individuals have participated in group discussions since 2015, representing over 250 research institutions from 32 countries and 18 stakeholder groups. UNESCO, non-profit foundations such as Sloan, commercial publishers and publishing industry groups, scholarly societies, universities, scholarly communication experts, and participants themselves (by way of conference fees) have supported OSI's work.¹

OSI has served as an open policy observatory, facilitating direct communication between high-level leaders in scholarly communication, and synthesizing policy recommendations for UNESCO based on our group's extensive knowledge. Our policy recommendations have always been more a collection of perspectives than a consensus opinion, given that we represent so many diverse global regions and differing points of view. For example, when we issued a generally negative critique of Plan S in 2019 due to how it would widen the gap between rich and poor nations by replacing paywalls with "playwalls" (i.e., by eliminating subscription access to published research and replacing it with a system where researchers are charged for publishing their findings), roughly a third of OSI participants still supported Plan S with minor or major modifications, while another third did not (Hampson 2019).

These honest differences of opinion exist not only within OSI but within the broader scholarly communication community as well, where some are cheering the current state of open access policies like Plan S, others are urging a more thoughtful and restrained approach, and still others are resigned to the fact that rapid change is happening and are just trying their best to adapt. On social media, these differences of opinion frequently manifest as a battle between good and evil, between those who support rapid reform for the greater good and those who support a status quo characterized by entrenched dysfunction and profiteering.

On social media...[this community's] differences of opinion frequently manifest as a battle between good and evil, between those who support rapid reform for the greater good and those who support a status quo characterized by entrenched dysfunction and profiteering. In reality, though, we are all working toward the same goal: A future where we can do more with research because more research is open and accessible.

1. OSI has received funding from and worked directly with UNESCO as part of the agency's Network for Open Access to Scientific Information and Research (NOASIR). OSI is a unique voice in this group, focused solely on delivering a fact-based assessment of open solutions, rather than advocating for a particular region, industry, agency, or outcome.



In reality, though, we are all working toward the same goal: A future where we can do more with research because more research is open and accessible. There are some who want to act now, and others who are committed to finding solutions that truly work for researchers everywhere, not just in the United States and the European Union. Our commitment to working for more inclusiveness and equity is what best defines OSI's work. Generally speaking, this challenge has appealed to scholarly communication analysts (many of the world's leading scholarly communication experts have contributed to OSI's work) but frustrated those on the right and left. Open critics have not engaged much with OSI over the years, fearing (justifiably) potential reputational damage to their careers and institutions, while those who demonize publishers have not engaged much due to frustration: When publisher profits are seen as being immoral, the solution space appears black and white. Thank you to everyone in OSI who has thoughtfully and patiently worked for many years trying to better understand this issue.

We believe the observations and recommendations in this report have withstood scrutiny and can serve as the foundation for a new generation of open research policies that are more effective and sustainable... [Many of our current policies], particularly those of global significance, are not based on evidence and vetted through democratic policymaking processes, as we would expect for sound public policy. A weak foundation is only part of the problem; failing to understand the needs and perspectives of researchers is also a major flaw.

To-date, OSI's authors have published six policy perspectives (including this one) that detail the group's findings and recommendations. Our first policy perspective, published in March 2019, analyzed the pros and cons of Plan S and suggested that the organizers (cOAlition S) modify their plan to prevent the kinds of unintended consequences we're currently witnessing with regard to growing inequity between researchers with large publishing budgets and those without. The second policy report from OSI, which was published in April 2020, examined the common ground for policymaking in this space. OSI argued, based on our internal discussions, conference proceedings, and original research, that there are numerous areas of common ground in this community, and that working together on these areas was the most rational approach to policymaking. OSI's third report, published in June 2020, served as an introduction to OSI's participation in UNESCO's open science policy initiative. In this document, OSI provided UNESCO with extensive research on how open science is variously defined and what global open science policies should look like (OSI later participated in UNESCO's regional consultative meetings and served as an official observer during the final passage of this policy). The fourth policy perspective of the OSI, published in February 2021, was commissioned by UNESCO to investigate the technical and policy overlap between all open solutions, including open access, open data, open code, open government, open educational resources, open science, and open methods. This original research led us

to the conclusion that the most effective framework for inclusive open solutions policies will be built on a foundation of achieving common goals, such as working together to cure cancer by creating open policies and resources that enable more information of all types to flow between cancer researchers, as opposed to thinking of open as a way to collect information in text, data, or code format. OSI's fifth report, published concurrently with this report, summarizes the results of its 2022 researcher surveys.

This sixth OSI policy perspective is, in a sense, the culmination of our five previous OSI reports, bringing together their observations and recommendations. In this document, we will reiterate that APCs are harmful and that ideologically-based policies limit the potential of open (OSI Policy Perspective 1); that common ground is abundant and should be our primary policy focus (Policy Perspective 2); that open science policies are an obvious vector for change, but these policies must be grounded in



evidence and make sense to researchers (Policy Perspective 3); and that developing broad, flexible, long-term, goal-oriented strategies is essential (Policy Perspectives 4 and 5). In building our case, we will also summarize the key recommendations of OSI participants since 2015 and note how the results of our global surveys of researchers in 2022 support these recommendations.

We believe the observations and recommendations in this report have withstood scrutiny and can serve as the foundation for a new generation of open research policies that are more effective and sustainable than current policies. This claim may appear overly confident. After all, current open access policymaking efforts are continuing unabated, and countries have an abundance of existing policies to choose from without considering new policy frameworks from OSI. As we will discuss in the introduction of this report, however, many of these policies, particularly those of global significance, are not based on evidence or vetted through democratic policymaking processes, as we would expect for sound public policy. A weak foundation is only part of the problem; failing to understand the needs and perspectives of researchers is also a major flaw.

The recommendations in this report describe a range of global open access policies that can be used as templates by researchers, institutions and countries around the world. If you have any questions or would like to provide feedback on this report, please send me an email at ghampson@nationalscience.org by June 30, 2023.

Glenn Hampson
OSI program director
Seattle, 2023

HOW WE GOT HERE

Walt Whitman, the American bard of democracy, noted 150 years ago that democracy isn't just about voting. It's also about respecting different points of view in all walks of life.

Representative democracy was a nascent and revolutionary form of government in Whitman's time. Today, about two-thirds of the world's countries are democratic. In most of these countries, when it comes to making public policy, democratic principles are the ideal: Experts convene to study an issue, they invite broad public comment to inform their deliberations, and they draft thoughtful recommendations for policymakers and elected politicians to consider. Some policies get codified into law; other policies are amended or disappear entirely over time.

The reality, of course, is that policymakers aren't robots. Rather, they are individuals who enter the arena of public policy with their own opinions, biases, and motivations. In addition, policymakers are not independent of political leaders. Even though one of the most important characteristics of the modern administrative state is that public servants strive to be impartial and objective, politicians sometimes task administrators with "color by number" policymaking rather than building policy from the ground up, using supplied "facts," or implementing predetermined partisan solutions. Even when expert policymaking processes are adhered to, political judgment frequently trumps expert recommendations, and interest groups focus more on demonizing opposing viewpoints and misrepresenting facts than on finding common ground and workable solutions.

**“Did you, too, O friend, suppose Democracy was only for elections, for politics, and for a party name? I say Democracy is only of use there that it may pass on and come to its flower and fruit in manners, in the highest forms of interaction between men and their beliefs – in Religion, Literature, Colleges and Schools – Democracy in all public and private life.”
(Walt Whitman, in *Democratic Vistas*, 1871)**



In the US, this is the history of much high-profile public policymaking, from manifest destiny to slavery, women's suffrage, civil rights, and immigration. In the area of science, public policy smear and disinformation campaigns have taken place over issues like DDT, tobacco, acid rain, the earth's ozone layer, clean air and water, climate change, and COVID vaccines (Oreskes 2011). Anti-democratic dynamics in policymaking tax our time and patience, harden our positions, deepen our distrust in facts and government, and delay solutions to important problems. They can even lead us to adopting the wrong policies altogether.

What does any of this have to do with open access? Open access (OA) is a term that has gained much attention in research communication circles over the last twenty years. Generally speaking, it means making information easier to access and share, including but not limited to research information. Countries around the world have focused on OA reforms as being essential to the future of research.

However, the evidence that OA policymakers have been relying on is inadequate, and the seriousness of our deliberations has not been commensurate with the significance of a question of global public policy like this. Our debates have instead been mired in an anti-democratic eddy for decades; during that time, we have not carefully listened to all parties involved and have instead allowed the policymaking process to be largely guided by interest groups in echo chambers. This is consistent with the policymaking pattern we have seen for many other high-profile science-related issues. As a result, some people view the open access regulations we have created today as a significant accomplishment, while others see them as a complete failure. Is there a path toward open access policymaking that is more democratic?

...some people view the open access regulations we have created today as a significant accomplishment, while others see them as a complete failure. Is there a path forward toward open access policymaking that is more democratic?

AGREEING ON DEFINITIONS

A first step might be to agree on what open access even means. Generally speaking, OA means free to read, but the exact definition involves lots of caveats, depending on who is doing the defining. Some say that information is only open access if it is free to read plus licensed in a way that permits unlimited reuse with attribution (a CC-BY license). Others say that free plus CC-BY is not sufficient, and that additional conditions are also necessary, like zero embargo (no delay between publishing and accessibility). Still others pile on even more conditions like metadata, repository requirements, and data sharing. The same caveats are true for open data, open code, open educational resources, and more, where different kinds of information have different kinds of open definitions, conventions, options and outcomes.

In this report, we will use the terms open and open access interchangeably (along with the term open solutions, which is a blanket term describing all open approaches). This overlap is intentional. The world outside the confines of scholarly communication experts has conflated these terms and used them interchangeably, so much so that trying to make a distinction between them is now more confusing than helpful. At least in the policymaking world, OA and open mean the same thing.

UNDERSTANDING HISTORY

It's also important for modern day OA policymakers to recognize that the concept of "openness" in research has been developing along at least a half dozen independent paths, in some cases for centuries. The first path is research itself. The need to share ideas and discoveries has always been a bedrock principle of scientific investigation, long before the formation of the Royal Society in 1660 (Poskett 2022). Over time, researchers have been adept at developing the networks and resources they need to communicate with each other better, from scientific societies to conferences to data sharing networks, and this evolution continues today.



A closely related second path has been publishing. By the mid-1800s, publications established to share ideas and discoveries were proliferating—over 1300 journals now existed. It was crucial for scientists to be aware of what knowledge already existed in their field, but even then, doing so was becoming increasingly difficult. This need for more openness and increased awareness led to standards and systems for what constituted clear and rapid sharing of knowledge, claims to discovery, proper citation methods and more (Csiszar 2018). These standards and systems have continued to evolve in response to the ever increasing growth of research, and to the needs of researchers, libraries, funders and governments.

A third path has been social development. Over time, the slow and steady march of the scientific method—valuing evidence, openness, transparency, accountability, and replicability—and its success at unlocking true knowledge influenced everything from philosophy to politics, law and industry, which in turn created more “norming” of this approach, particularly in the West.² For example, not long after the

Over time, the slow and steady march of the scientific method—valuing evidence, openness, transparency, accountability, and replicability—and its success at unlocking true knowledge influenced everything from philosophy to politics, law and industry, which in turn created more “norming” of this approach, particularly in the West.

start of the Scientific Revolution in Europe, when natural philosophers such as Copernicus and Galileo successfully challenged prevailing explanations for how the world worked (as defined by Aristotle and the Catholic Church), social philosophers such as Locke, Hobbes and Rousseau (among many others) were inspired to start questioning the world’s social order. This work led directly to revolutionary new political concepts, including France’s Declaration of the Rights of Man, and the US Constitution (both passed in 1789), which employed the Scientific Revolution’s spark that even man and society were tied to the natural world through natural rights.

In parallel with this growing appreciation of and need for the scientific method, science and technology became driving forces of global development through the 1800s, with breakthroughs in physics, medicine and biology igniting massive change throughout the world. The public’s thirst for knowledge and enthusiasm for learning more about the natural world became a global phenomenon. In

the aftermath of World War II, Karl Popper’s “Open Society and Its Enemies” made the case that the open knowledge ethos of science needed to spread beyond science and into the fabric of societies—that it was important now more than ever to construct societies where truth is widespread and easily accessible, lest we backslide again into a world ruled by totalitarianism and fascism. Popper’s work is generally acknowledged as the formal intellectual beginning of the open society movement.

A fourth historical path has been accountability. Before the mid-1950s, accountability in research was largely internal, focused on ensuring that research was accurate, and that systems for reporting and writing about research were broadly accepted. In the post-WWII era, as government spending on research increased dramatically, the need for greater public accountability in research also developed, both financially and in terms of public access to what we were spending money on and why. Systems of accountability have now evolved to sophisticated heights, from grant evaluation procedures to modern research impact evaluation procedures and freedom of information laws, all from different government agencies and with different objectives. For example, the world’s first nationwide open access policy for scientific research was implemented by the US National Institutes of Health in 2008

2. There are several excellent books on the history of science communication that touch on this theme, including David Wootton’s “The Invention of Science” (Wootton 2019) to Adrian Johns’ “The Nature of the Book” (Johns 1998) and James Poskett’s “Horizons” (Poskett 2022).

(Suber 2008). What we now recognize as peer review was born out of US Congressional oversight into research in the mid-1970s (Baldwin 2018). And many countries now have their own research impact evaluation systems, perhaps none more carefully designed than the UK's Research Evaluation Framework (REF 2021).

The fifth path to open started closer to modern times. On this path, we've seen technical and publishing innovations that have paved the way for more open developments, such as the world's first preprint server, arXiv (launched in 1991); South America's pioneering OA publisher SciELO (1997);

The goals [of BOAI] were simple: by making information free and easier to access and reuse, we could democratize research, dramatically lower publishing costs (by untethering publishing from publishers), and better serve the public good.

the world's first OA megajournal, PLOS (2000); the Open Source Initiative governing computer code (1998); the development of open educational resources (first by the Hewlett Foundation in 2001); the CONSORT guidelines for reporting clinical trials research (2001, although development dates back to 1993); and of course the Internet itself, whose growth and promise fundamentally changed our expectations about access to information.

A SIXTH PATH EMERGES

Amidst these centuries-long waves of change, at a 2002 conference in Budapest attended by a handful of open access advocates (the Budapest Open Access Initiative, or BOAI), the notion was put forward that open access meant only one thing: that in addition to being free, re-

search also needed to be licensed in a way that optimized the potential for its unrestricted reuse, free of its typical copyright restrictions. The goals were simple: by making information free and easier to access and reuse, we could democratize research, dramatically lower publishing costs (by untethering publishing from publishers), and better serve the public good.

The language used in the BOAI declaration was lofty and Panglossian, reflecting the utopian vision of the Internet circa 2002 that we were on the cusp of a world where information would soon flow freely across borders with little cost and enormous benefits for all mankind. Adding fuel to this declaration, several of the signatories would in the coming decade become the most prolific, eloquent and vocal opponents of high profits in commercial science publishing, including Steve Harnad, Leslie Chan, Jean Claude Guedon, Peter Suber, Michael Eisen, two representatives from the Open Society Institute, and one representative from SPARC (the Scholarly Publishing and Academic Resources Coalition; SPARC in particular would lead the anti-publisher march over the next 10-15 years).

Subsequent modifications to BOAI made at conferences in Berlin and Bethesda stipulated that research also needed to be made immediately available, with no delay allowed between publishing and free access to the public.

THE SIXTH PATH BECOMES THE ONLY POLICYMAKING PATH

Over the next decade, promoted by the effective voices who helped craft this statement, supported by the money and organizing acumen of SPARC and the Open Society Institute,³ and made timely by the spiraling cost of journals for academic libraries where, prophetically, commercial publishers played the role of the boogeyman to perfection,⁴ the BOAI approach to open access became the bedrock philo-

3. At the time, SPARC was part of the American Library Association. It became a separately funded lobbying group in 2016.

4. The number of scientific journal articles published doubles roughly every 17 years (Bornmann 2021) due to a steady increase in research spending, the emergence of new research disciplines, a splintering of existing disciplines into new specializations, and other factors. Trying to stay abreast of these changes, publishers note that their cost per article published has dropped over this doubling period, but the total costs of subscribing to all available content has still been too high for univer-



sophical foundation for most subsequent open access policies, and it continues to be so even today. All other paths to open access have been closed off.

This isn't to say that BOAI's policy recommendations were wrong. To many believers, they were exactly on target. Rather, the most vocal post-BOAI open advocates tended to portray open access as a contest between good and evil, right and wrong. Policy debates suddenly became urgent, polarized and confrontational—even personal. The policy space became a battlefield where there was no middle ground, and no willingness to understand issues from all sides. Ideology was not only trumping the expert-driven democratic policymaking ideal, it was beating it into the ground with a hammer of righteous might. As one research leader remarked on the OSI listserv in 2018, we were going about reforming science in a very unscientific manner.

Today—and despite a large, meaningful and influential array of open tools, policies and efforts, from the Panton Principles and FAIR Principles governing open data (2009 and 2016 respectively) to a thick alphabet soup of important organizations and principles (DORA, GitHub, OSF, PubMedCentral, et al)—the BOAI approach has become an article of faith for most of the world's significant open access policies,⁵ from Europe's Plan S to UNESCO's open science policy to the University of California's transformative agreement with Elsevier and the new US open access policy (the Nelson Memo). The idea that open means free, immediate and licensed for unlimited reuse is not challenged. Most major funders have also fully accepted this approach to open access.⁶

As our global open access policymaking efforts move forward, it's important to remember there are many histories and forces still influencing open practices. Understanding this will help us better understand what needs to be done and where we might want to concentrate our efforts for maximum effect. In this policy space, there is a tangle of history, actors, needs, motives, and objectives. We may want “open” to be a well defined notion with a straightforward past and an obvious future, but as we shall continue to explore in this report, it is none of these things.

Today—and despite a large, meaningful and influential array of open tools, policies and efforts...[and] a thick alphabet soup of important organizations and principles...the BOAI approach has become an article of faith for most of the world's significant open access policies...

OSI

The Open Scholarship Initiative (OSI) was founded in late 2014 to listen to all sides in this debate, lower the temperature of the discourse, broaden understanding of various perspectives, and develop fact-based approaches to open access policy. There have been many other multi-stakeholder conver-

sity libraries to bear (forcing libraries to cut costs, such as through subscription packages ten years ago, or more recently, to negotiate separate read and publish agreements with publishers). Richard Poynder's 2019 essay, “Open access: Could defeat be snatched from the jaws of victory?” gives one of the most detailed accounts of this history (Poynder 2019).

5. The 16-person 2002 Budapest meeting was followed by a 24-person meeting in Bethesda in 2003. The Bethesda group built on the Budapest group's work, adding provisions for how users will enact open access. A 2003 Berlin meeting that attracted around 100 representatives is often lumped together with the history of the Budapest meeting (due to their proximity in time), although the agenda of the Berlin conference was much broader than Budapest's agenda. The Berlin Declaration on Open Access, which is also often cited by policymakers, is built on the Budapest and Bethesda definitions of open (Max-Planck 2003).

6. Our acceptance has been so complete it has even made us blind to conflicts of interest and hyperbole. For example, it has been widely reported that the CEO of open access publisher Frontiers, Kamila Markram, was deeply involved in the development of Plan S (Schneider 2019). As for hyperbole, the new US open access policy promotes the merits of open access but lacks factual support for its recommendations (see Nelson 2022, and also an analysis of this directive at Clarke & Esposito 2022).



sations happening as well, such as FORCE11, the Research Data Alliance (RDA), the Committee on Data of the International Council for Science (CODATA), and the Open Access Scholarly Publishers Association (OASPA). OSI's unique value proposition has been to bring together high-level representatives from all key stakeholder groups and organizations and have them work directly together to find common ground on key issues in scholarly communication—not just open access, but tangential issues like impact factors, peer review and the culture of communication in academia. An important part of

...most participants in OSI agree that (1) Research and society will benefit from open done right; (2) Successful solutions will require global and inclusive collaboration, (3) Connected issues (like peer review and impact factors) need to be addressed, and (4) Open isn't a single outcome, but a spectrum of outcomes.

our mandate has also been to represent and protect the interests of all countries in this conversation, not just focus on what works for the EU and US.

Where does OSI stand on current OA policies? As noted in our 2020 Common Ground paper (Hampson 2020) it's fair to say most participants in OSI agree that (1) Research and society will benefit from open done right; (2) Successful solutions will require global and inclusive collaboration, (3) Connected issues (like peer review and impact factors) need to be addressed, and (4) Open isn't a single outcome, but a spectrum of outcomes.⁷ Beyond this, OSI participants have a wide variety of opinions, and our role isn't to speak with one voice. There are some in OSI who are thrilled with these policies, and others who aren't. It's also probably fair to say that amongst the analyst community—and this is the community which has been most active in OSI conversations over the years—there has been a considerable amount of discussion

regarding the pros and cons of various policy approaches, and a general understanding that we need to be on the lookout for unintended consequences.

Probably the most impactful transformation happening today involves flipping the subscription model for scholarly publishing to a model where authors pay for publishing via article publishing charges (APCs). The APC model is mandated by Plan S, covering a large portion of the EU (even though this affects a small global portion of publishing, publishers have been transitioning to Plan S requirements for years now), and is strongly directed by the new Nelson Memo covering all federally-funded US research (which will give a huge new push to the transition).⁸ The general idea is that authors can simply tap their research budgets to pay for publishing, and in exchange the publisher will get paid and make the article free to read.⁹

There are many other transformations happening as well, of course, such as eliminating embargo periods, requiring a CC-BY license on all work in all disciplines, improving data availability negotiating agreements at major universities whereby access to published work and APC charges are bundled together, and more. It is unfortunately well beyond the scope of this paper to dive into each of these policy prescriptions at length. For our purposes here, many in the OSI community have expressed four general concerns about the overall nature of these reforms: (1) ignoring the unintended consequences

7. To help better understand the differences between different types of open and make sure we're all talking about the same things when it comes to analysis and policymaking, OSI constructed a model called DARTS. This model illustrates how different types of open differ with regard to their discoverability, accessibility, reusability, transparency, and sustainability. The DARTS model is described in more detail in Figure 1.

8. To the Nelson Memo's credit, it does not mandate specific actions, just specific outcomes, so it remains to be seen whether this latitude will create better outcomes for open than Plan S. The smart money at the moment says that this policy will force the widespread adoption of gold open—APC-funded journal articles where the publishing costs are paid by authors.

9. Or even better, these publishing charges will be paid by a third party like a research foundation. This ideal approach, although still rare, is called "diamond OA."



of APCs; (2) ignoring the evidence that in practice, openness exists along a broad spectrum of outcomes; (3) our tendency to overreach and design policies for which we lack the requisite expertise; and (4) forcing one-size-fits-all open solutions on researchers, even where these solutions don't match researcher needs and resources.¹⁰

THE UNINTENDED CONSEQUENCES OF APCs

The APC-funded approach to open (which is central to policies like Plan S) is not free. Indeed, APC charges have risen to stratospheric levels for premium research journals over the last few years, now topping US\$10,000 per article for publishing in top research journals. Even the average APC charge (around US\$2600 for OA mirror journals, although there is wide variation by field, publisher, and journal quality; see Smith 2022) is now far higher than most researchers around the world can afford unless they are based at a major institution in the US or EU or are well endowed by their private funder.¹¹

As noted in OSI's official critique of Plan S, many worry that our widespread use of APCs will widen the chasm between the haves and have nots in research, and substitute one equity imbalance with another: the inability to pay for access (paywalls) due to high subscription costs, with the inability to publish (paywalls) due to high APCs. Since this chasm roughly equates to a fracturing of the open access policy space along economic and regional boundaries, the US and EU will have their own rich open universe, other parts of the world will have their less endowed universe, and the gaps between these worlds may end up hurting research instead of helping it (for many reasons: technical difficulties with sharing, cost differences, protectionism, less collaboration, and more).

The APC approach to open access also doesn't reduce the power of major commercial publishers to the degree BOAI and other OA ideologies originally intended. The power of major commercial publishers is increasing instead, because the APC model is proving to be quite financially robust (Pollock 2021) and because society and university publishers need help navigating the rapidly changing regulatory landscape.¹²

This power will probably continue to grow in the coming years as publishers lock in their consolidation by offering value added tools to their customers (like advanced search and synthesis). Rich countries and institutions who can afford to climb the ladder of publisher-controlled offerings will partake in a buffet of new capabilities made possible by more open access, while poorer institutions and countries will have to make do with the bare minimum Author Accepted Manuscripts and Excel spreadsheets mandated by open policies. There is no money or incentive to make this kind of advanced access available for everyone everywhere. Rather, everyone will be required to contribute their information for free, and only the rich will be able to extract maximum value from it.

...many worry that our widespread use of APCs will widen the chasm between the haves and have nots in research, and substitute one equity imbalance with another: the inability to pay for access (paywalls) due to high subscription costs, with the inability to publish (paywalls) due to high APCs.

10. These points and more are also discussed at length in OSI's other policy perspectives (available from the OSI website at osiglobal.org). Again, these are just points raised in OSI reports, conferences and conversations, not points that everyone in OSI necessarily endorses.

11. See Scaria 2018, Kwon 2022, and Nwagwu 2018 for discussions of the cost burden on Global South researchers, who are much more likely than their Northern counterparts to pay APC costs out of their personal budgets. See also the DeltaThink website for ongoing news and analysis of the OA market (deltathink.com).

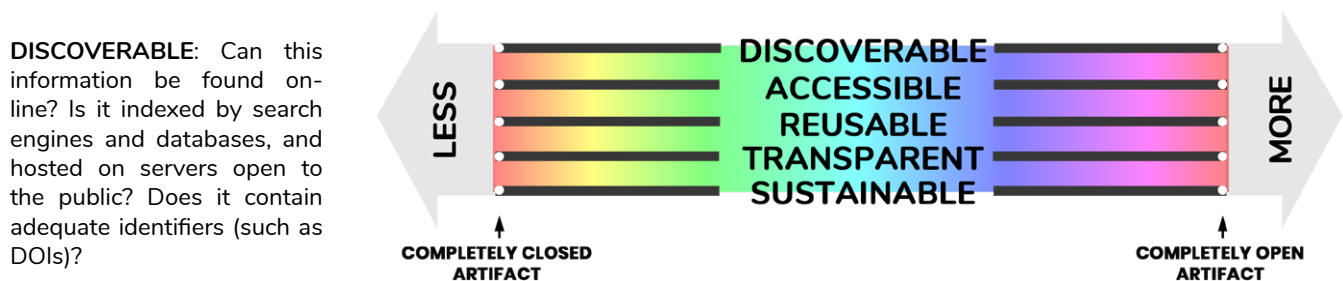
12. Plan S and other OA mandates have set timetables for doing away with the subscription model, and these smaller publishers need help navigating this change and complying with all the new and complex reporting requirements.

THE BROAD SPECTRUM OF OPEN OUTCOMES

As discussed, our most influential open access policies are not, unlike actual public policy, grounded in a wealth of evidence, nor have they been developed through the expert and impartial consultative process we expect to see in democratic societies. Instead, they are ideologically grounded. This ideological approach makes sense to those who consider the act of locking research behind subscription paywalls to be an inherently immoral act. For this group, trying to put commercial publishers out of business is a morally justified imperative. But not everyone feels this way. In practice, open access efforts are driven by a variety of motives such as the desire to improve impact, efficiency, reproducibility, accountability, transparency, and collaboration. Many researchers also readily appreciate that publishing adds value to the research record through processes like gatekeeping, peer review and preservation, and note that without a reliable process akin to quality journals, the scientific record may become unreliable.

This difference between ideology and evidence is also apparent when it comes to defining what open means. Ideology says open is, at minimum, CC-BY licensed information without embargo, but evidence clearly shows that open comes in many different forms and looks different for different users in different fields and different parts of the world. OSI participants developed an information model called “DARTS” to describe this open spectrum, where the five letters of this acronym stand for discoverability, accessibility, reusability, transparency, and

FIGURE 1: OSI'S DARTS OPEN SPECTRUM



DISCOVERABLE: Can this information be found online? Is it indexed by search engines and databases, and hosted on servers open to the public? Does it contain adequate identifiers (such as DOIs)?

ACCESSIBLE: Once discovered, can this information be read by anyone? Is it available free of charge? Is it available in a timely, complete, and easy-to-access manner (for instance, is it downloadable or machine-readable, with a dataset included)?

REUSABLE: Can this information be modified? Disseminated? What conditions (both legal and technical) prevent it from being repurposed or shared at will?

TRANSPARENT: What do we know about the provenance of this information? Is it peer reviewed? Do we know the funding source (are conflicts of interest identified)? What do we know about the study design and analysis?

SUSTAINABLE: Is the open solution for this information artifact sustainable? This may be hard to know---the sustainability of larger, more established solutions may evoke more confidence than new, small, or one-off solutions.

The DARTS framework is currently only a concept and not a measuring tool, although quantifying this tool might help make it useful to open research in other ways. For example, imagine running a scale from left to right, and then assigning a value for each DARTS attribute of a particular information article. Assigning a transparency score of zero means we know nothing about where this information came from, whereas a nine means we are very clear about this. Doing the same for each DARTS attribute, we could then assign a perfectly open object a DARTS score of 99999, and an absolutely closed object a score of 00000. Almost all information exists somewhere in between. This paper, for example, will have good discoverability and accessibility (although not as good as a commercially published report), limited reusability, acceptable transparency, and good faith sustainability (although not perfect, like commercial publishers). Therefore, its DARTS score might be 77586 or some such.

sustainability. On this spectrum, we allow for the fact that some kinds of open are free to read but still copyrighted; other kinds may be closed to the public but robustly open and interoperable within designated user groups (this solution is common in clinical research); and still other kinds are public domain licensed but not very discoverable, transparent or sustainable. So-called “green” open, which accounts for the vast majority of open resources, is exactly this: a hodge-podge of information that is free to read but whose discoverability, accessibility, reusability, transparency and sustainability vary widely. This diversity reflects the fact that different user groups have different resources, needs, incentives, motives, conventions, restrictions, and so on. It doesn’t mean they shouldn’t strive to improve their openness, but it also doesn’t presuppose that one type of open is necessarily superior for all users and circumstances. Movement toward better open solutions should continue, but this movement should be based on evidence and need, not assumptions.

...BOAI-compliant articles (for which Gold OA is a rough proxy) account for only a small fraction of the total... What researchers want and need for open information, then, isn’t necessarily always the same as what’s being prescribed. OA policy may require one outcome, but evidence shows that many different outcomes are possible, and even preferred.

Indeed, after 20 years of pushing for ideologically perfect open solutions, most of the world’s open information is still published in other formats (which isn’t to say closed, just imperfectly open). Estimating the exact distributions of open outcomes depends on which indexes are analyzed (different indexes skew toward different journal types and disciplines), which regions of the world are being measured, and the sampling methodology used, but according to a recent analysis of 8 million journal articles listed in the Web of Science between 2015 and 2019, BOAI-compliant articles (for which Gold OA is a rough proxy) account for only a small fraction of the total (Table 1 and Simard 2022). What researchers want and need for open information, then, isn’t necessarily always the same as what’s being prescribed. Open access policy may require one outcome, but evidence shows many different outcomes are possible, even preferred.

TABLE 1: PERCENTAGE OF OA PUBLICATIONS BY TYPE AND FIELDS (2015–2019)

Field	Total OA	Of which Gold*	Of which Green
Natural Sciences	45.4	19.9	36.3
Engineering and Technology	30.4	13.0	21.4
Medical and Health Sciences	50.0	20.8	40.4
Agricultural Sciences	35.9	17.1	22.0
Social Sciences	35.5	7.9	29.8
Humanities	21.2	5.9	15.8
Unknown	35.8	2.2	31.3
All Fields	42.9	18.1	33.8

Source: Simard 2022.

*Gold OA represents open access materials which have been made open through APC charges and made immediately and freely available to the public without embargo. It does not necessarily mean the materials are CC-BY licensed, however. DeltaThink estimates that of all the open materials currently being published during this same time period (2015-2019), about 55% in aggregate was CC-BY licensed, meaning that only about 10% all published materials (55% of 18.1%) are strictly BOAI-compliant. See Pollock 2022.

How can we know for sure which of these outcomes are best? We can’t—we need more research, without which our policy conversations have been stymied and our positions hardened along ideological lines. This need for more research isn’t a red herring argument like the tobacco industry used in the 1970s and 80s to slow down anti-smoking policy. In truth, as a community we have conducted almost

If we follow the evidence, we may want to focus first on the highest priority communication needs of researchers instead of on the priorities highlighted by current OA policies.

no research into fundamental questions, such as which researchers need open and why, what types of open work best in each field, how short embargo periods can go, the cost-benefit of replacing the subscription model, and more.¹³ Some scattered research has been conducted about whether open access increases citation rates, but the findings have been inconclusive to date (Lewis 2018).

What we can clearly see from a number of researcher surveys over the years¹⁴ is that at minimum, getting free and immediate access to journal articles isn't the only concern researchers have. Researchers also want lower publishing costs, improved connections with colleagues, and increased visibility and impact for their research work. This isn't to say that improving access isn't an important goal, just that it is one of many goals and we may not want to reach it by trampling on other goals and creating a world of unintended consequences which end up being harmful to research on balance. If we follow the evidence, we may want to focus first on the highest priority communication needs of researchers instead of on the priorities highlighted by current OA policies. Exactly how these priorities might rank is discussed later in this report.

OVERREACH

Open access policymakers are generally guilty of at least two kinds of overreach. The first kind involves designing policies without possessing the needed expertise. Open access, open science, open data, and other open movements all have different perspectives and priorities. An open science led effort makes no sense for humanities researchers; an open access led effort makes no sense for open data. Today, however, we see a good deal of mission creep, where open access advocates are designing policies having to do with the future of open data, and where plans for the future of journals are designed with STM disciplines in mind, not the humanities. While there is some overlap between these communities with regard to tools and basic principles, they are in fact very different. Therefore, it is ill-advised from a policymaking perspective for open access advocates alone to write such policies—as is the case with Plan S, the UNESCO open science policy, and the US Nelson Memo—since the facts and nuances of all open practice communities are not even remotely captured in policies like these. The reverse situation would never be tolerated by the open access community, where open data advocates working alone decided what the future of open access should look like..

Open access, open science, open data, and other open movements all have different perspectives and priorities. An open science led effort makes no sense for humanities researchers; an open access led effort makes no sense for open data. Today, however, we see a good deal of mission creep, where open access advocates are designing policies having to do with the future of open data, and where plans for the future of journals are designed with STM disciplines in mind, not the humanities.

To elaborate on the case of open data, all major open access policies have open data requirements (usually including provisions to make data FAIR—findable, accessible, interoperable and reusable—or to deposit data in specific repositories) but most lack any workable operational details. In truth, open access

13. OSI has tried to raise funding for this work but hasn't been successful.

14. A separate list of these surveys is included in References section of this report.

TABLE 2: COMMON DATA GOVERNANCE STRUCTURES AND THEIR ATTRIBUTES

Governance structure	Number and linkage of parties	Degree of data Availability	Degree of freedom to use data	Challenges common to the governance success	Primary governance design pattern
Pairwise	One-to-one	Medium/High	Medium/High	Uneven status of parties, value of data	Informal or closed contract
Open Source	One/some-to-many	High	High	Rights permanently granted to user	License
Federated Query	Many-to-many, via platform	High	Medium/Low	Defection of creators	Contract and club rules
Trusted Research Environment	One/some-to-many	Medium/Low	Medium/Low	Users agree to be known, surveilled	Data transfer and use agreements
Model-to-Data	One-to-many	High	Low	Not all who apply can use data	Restricted analyses, data curation
Open Citizen Science	Many-to-many	High	High	Capacity for analysis is uneven	Contract or license
Clubs, Trusts	Some-to-some	Medium/Low	High	Easy to create things governed more liberally. Trusteeship can be revoked.	Club / Trust rules
Closed	Many (to none)	Low	High	Fundamental limits to collaboration	Public laws, security protocols
Closed and Restricted	Some (to none)	Low	Low	Fundamental limits to collaboration	Public laws, security protocols

Source: Mangravite 2020

policy-makers (as distinct from the open data experts) have very little grasp of what open data actually looks like, particularly in clinical medicine where the OA community wants to see faster discovery. This data realm is awash with challenges, such as protecting patient privacy (conforming with existing data protection laws like HIPPA and GDPR), protecting proprietary data (owned by drug companies who sponsor research work), preventing the misuse and misinterpretation of data, and struggling to make the sharing of datasets complete, timely and compatible, even when this data is being generated by the same research group. OA policy-makers have not even begun to understand the complexity, diversity, and best practices of this real world sharing, yet they are designing one-size-fits all policies that mandate sharing nonetheless based on open access ideals. Table 2 describes some of this complexity, and shows how the type of data sharing envisioned by open access policies fits into this array of other data sharing models.

In the meantime, there is a long list of promising work being done in open data and many success stories to share, but these experiences originate from efforts that have nothing whatsoever to do with global open access policies. For example, there are a number of highly successful research collaboration efforts that demonstrate what the cutting edge of open access development can accomplish (like DataSpace, Vivli, SDSS, CERN, GenBank, DataSphere, and Sage Bionetworks), and what real world data sharing and collaboration challenges exist on the road ahead. These data sharing networks are most often developed through private partnerships with strict and distinctly BOAI-unfriendly data sharing guidelines and eligibility, not through generalist OA policies and repositories. Open access policy-makers have not studied, learned from, or even cited these examples.

OA policy-makers have not even begun to understand the complexities of and lessons learned from...real world [data] sharing, yet are designing one-size-fits all policies that mandate such sharing nonetheless.

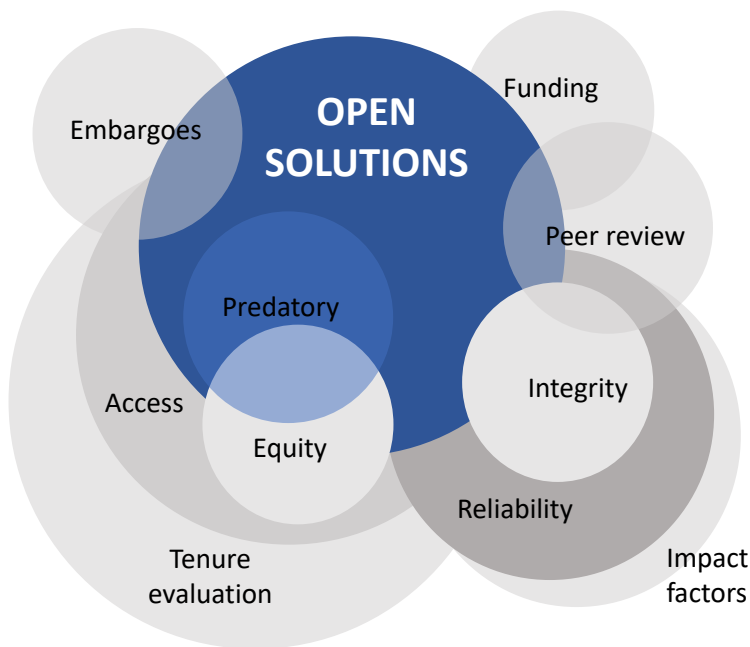
A second and equally important type of overreach is that policymakers often grant special powers to open that aren't merited. Take the 2021-22 National Academies Roundtable (NAS 2022), which has been working to define open scholarship priorities. Like the UNESCO policy before it, the budding Roundtable policy considers open science to include transparency ("scientific process and results should be visible, accessible, and understandable"), inclusiveness ("process and participants should welcome participation by and collaboration with diverse people and organizations"), accessibility ("data, tools, software, documentation and publications should be accessible to all (FAIR)"), and reproducibility ("scientific process and results should be open such that they are reproducible by members of the community"). But in fact, this policy simply describes what good science looks like and has always looked like. Transparency and reproducibility are not new ideas—as mentioned earlier, they are the fundamental building blocks of research—and research has always been global and deeply interconnected; and integrity is a function of good science, not open science.¹⁵

...open science means good science, but the reverse isn't necessarily true. Good science doesn't necessarily mean open science.

In other words, open science means good science, but the reverse isn't necessarily true. Good science doesn't necessarily mean open science. There is obviously some overlap between all these concepts, but in a Venn diagram, the "open" circle just intersects with lots of issues related to research reform, from improving access and equity to having a role in improving transparency, reproducibility and reliability, to also having a role in important issues like impact factors, tenure evaluation, and peer review

(see Figure 2). Open science policies can play a role in addressing all these issues, but it does not solve all of them. Policymakers often forget this and use the term open science when what we really mean is something else. As Jon Tennant noted in 2020 (Tennant 2020), "Rebecca Willen has ... identified that there might be two, perhaps three, different sub-movements that intersect in different ways, involving 'open science', 'replicable science', and 'justice-oriented science'.... [I]t could be the case that now, open research is diffused in such a wide variety of ways that there cannot plausibly be a single, cohesive community and set of practices that define it.... Instead, Open Scholarship, Open Research, and Open Science might best be thought of as overlapping/intersecting 'boundary objects' (Moore 2017) that represent this inherent diversity."

FIGURE 2: SETTING REALISTIC EXPECTATIONS FOR WHAT OPEN SOLUTIONS CAN ACCOMPLISH



15. The US National Institutes of Health defines "research integrity" as "the use of honest and verifiable methods in proposing, performing, and evaluating research; reporting research results with particular attention to adherence to rules, regulations, guidelines, and following commonly accepted professional codes or norms" (including espousing shared values such as honesty, accuracy, efficiency and objectivity). See NIH 2023. So, for example, high integrity research includes ensuring proper analyses and objective conclusions, while avoiding bias, conflicts of interest, plagiarism, p-hacking or fake data.

Attributing special powers to open science is nowhere more apparent than the claim that open science is why COVID vaccines were developed in record time. Both the UNESCO open science plan and the US Nelson Memo make this claim, and say this sharing represents the potential of open access (and even the victory of open access policies).¹⁶ This characterization is mostly inaccurate. While the rapid sharing of data was important with COVID research and is a key potential benefit of effective OA policies, the evidence suggests a murkier role for open data in COVID research (e.g., with lots of misinformation being published rapidly in preprint form, and none of the actual proprietary vaccine-related data being openly shared). The true hero of our quest to rapidly develop COVID vaccines were policies that allowed researchers to conduct their due diligence rapidly, with ample funding, and in parallel with manufacturing instead of in sequence.¹⁷

Open access does have the potential to speed discovery, though, and to vastly improve the value and impact of research, which is why so many people believe in open and want it to succeed. But in order to make progress toward this future, and build the right kinds of tools and policies, we need to be honest about our facts and assessments. Our efforts must be guided by clear-eyed answers to questions like why, specifically, do we need open solutions, and which solutions work the best under which circumstances? We also need to develop, as a global community working together (in concert with other global policy efforts), a clearer understanding of our goals. Open isn't that goal. It's a tool that can help us reach our goals. And if our current open policies aren't helping us reach these goals, or are even throwing sand into the gears of science, then we need to stop overreaching and either improve our knowledge of the space we're regulating, or allow for more flexibility to accommodate the expertise and experience of researchers who have a better understand of what they need.

Our efforts must be guided by clear-eyed answers to questions like why, specifically, do we need open solutions, and which solutions work the best under which circumstances? We also need to develop, as a global community working together (in concert with other global policy efforts), a clearer understanding of our goals. Open isn't that goal. It's a tool that can help us reach our goals.

16. See the three paragraphs of section 2 of the Nelson memo (Nelson 2022), for example, which describe how rapid sharing of science information led the charge against COVID: "Immediate public access to COVID-19 research is a powerful case study on the benefits of delivering research results and data rapidly to the people."

17. While it is true that genetic sequencing data was quickly shared during the early stages of the pandemic, this kind of rapid sharing normally happens in global health emergencies (such as AIDS, Zika and Ebola; the World Health Organization has well established guidelines and protocols for this). Rapid sharing happened for COVID as well, along with a surge in open access preprints (which still constituted a small fraction of the total number of articles published on COVID; see Brainard 2021). In addition, established journals were able to squeeze efficiencies out of the system and do more with less over the short term, handing higher submission rates and reviewing papers faster. But beyond all this, the number of actual datasets made publicly available to researchers and the number of peer reviewed COVID articles authored in preprint and traditional format were not exceptional, especially relative to the quality (a high percentage of these papers were junk, focusing on topics like hydrochloroquine, which misdirected both scientists and the public). Even to this day, in fact, rapid and widespread information sharing—particularly in the medical sciences and particularly in formats that are usable—is far less than open access proponents imagine due to intellectual property concerns and privacy protections for clinical trials participants. What did markedly accelerate COVID vaccine development—apart from global sharing of the sequencing of the SARS-cov-2 genome—was cutting evaluation and safety times for moving from phase 1 to phase 3 clinical trials (where phase 1 trials look at safety and efficacy in small groups, and phase 3 are widespread trials), widespread dedicated funding for this work, and the parallel production of all possible vaccine candidates so that by the time the winning candidates crossed the line, vaccine doses were available. This isn't an example open science. It's an example of science acceleration logistics (like NASA's Apollo program in the 1960s), and these logistics cut years off the normal drug development timeline. Indeed, we're really burying the lede by claiming this was a victory for open access. We should focus more on science acceleration logistics if our goal is to speed discovery, and use these same lessons and techniques to attack cancer and climate change.

ONE-SIZE-FITS-ALL

One-size-fits-all open access policies like Plan S are a bad fit for the world of research because, at the risk of sounding too obvious, this world is very large and diverse, encompassing a wide variety of research needs and resources, differing interpretations of what open means, numerous concerns about open, and copious amounts of activity from many different governments, agencies and institutions (recalling our previous discussion about the historically different paths for open policies):

- VARIETY OF NEEDS AND RESOURCES:** It is well established the researchers in different fields and regions have different needs, resources, and applications for open solutions. Please see OSI's other Policy Perspective reports for more detail and references.
- DIFFERENT INTERPRETATIONS:** Different stakeholder communities support open efforts based on very different interpretations of what we mean by "open." Working to create a world where more information is free to read has very different policy implications than a world where all publishing is paid by authors and is made immediately available for unrestricted reuse. Many researchers and institutions support open policies in a broad and generic sense, but far fewer may support the policies that prioritize strict licensing and liberal reuse (see Table 2, for example, for how our OSI2022 researcher survey participants define open). Misinterpretations also happen at the analysis level: it's often the case that policymakers and analysts misconstrue the facts about open because they are, for example, looking at only one index (typically limited to high impact STM journals), examining journal-level statistics instead of article-level statistics (there are a great many journals that produce very few articles), categorizing all green articles as open (when in fact the majority of archived green is still copyrighted material), or assuming that all open is CC-BY licensed. One needs to read the fine print on studies to make sure we're really comparing apples with apples.
- NUMEROUS CONCERNS:** It is well established that many researchers have a variety of reasons for not favoring blanket open solutions, including but not limited to affordability, reliability, sustainability, practicability, usability, privacy, and secrecy. Please see OSI's other Policy Perspective reports for more information and references. The negative impacts of these policies are also a major concern, varying by field, region, type of open, and more. Our policy solutions need to work for all researchers everywhere and not just STM research in the US and EU.

TABLE 2: WHICH OF THESE CONDITIONS ARE NECESSARY FOR RESEARCH INFORMATION TO BE CONSIDERED "OPEN"?

Condition	% saying this is OFTEN or ALWAYS important
The work is published according to best practices (e.g., such that it is properly reviewed, indexed and archived)	88%
The information must be free to read	83%
The work is transparent as necessary for all good research (e.g., with regard to methods, sources, funders, and potential conflicts of interest)	80%
Data is included	73%
The information must be available to read immediately without any delay (e.g., subscription journals often impose a 12-month embargo for non-subscribers)*	73%
Publishing costs are paid by authors (or their funders or institutions), not by subscribers	44%
The publisher discloses their profit margins to the public	44%
The protocol (if there is one) is pre-registered	44%
The publisher avoids mixing free to read content with subscription content (as is currently the case with the journals published by most scholarly societies)	34%
The information can be re-used in any way without your permission (including copying and pasting everything and selling it commercially)	27%

Source: OSI2022 Global Researcher Congress, week 2, questions 8 and 9 (Hampson 2023).

*This response is analyzed in OSI Policy Perspective 5 (Hampson 2023). Concerns other than embargoes may also be reflected here, including publishing delays and library access delays. Future surveys will try to understand this concern more precisely.

- **A WORLD OF ACTIVITY:** The open access policy reform space encompasses a diverse array of actors, definitions, methods, needs, barriers and goals, as well as an endless variety of motives, adaptations, and best practices. There is also a great deal of inspiration and innovation from all corners. No one is sitting still; everyone is listening, learning, and developing new tools and systems for the future. Some of this development is aligned with the idealism of Plan S; some is focused on national interests; some is more narrowly tailored to institutions or disciplines. This is all far more activity than any one organization can track, including OSI. Developments are everywhere and often well below our radar; debates in one corner of the open universe are often completely disconnected from and uninformed by debates in another corner; information issues of great relevance in one field are completely unheard of in another field; policy issues of great relevance in one region have no priority in another region.

...as Jon Tennant observed in 2019, our lack of common understanding in this space has “impeded the widespread adoption of the strategic direction and goals behind Open Scholarship, prevented it from becoming a true social ‘movement’, and separated researchers into disintegrated groups with differing, and often contested, definitions and levels of adoption of openness”

As an observatory, OSI hasn’t been able to keep pace with the totality of these developments and synthesize them for consideration by UNESCO. We have done what we can with our limited funding, but we are also aware of our limits and of the limits of any group making policy or advising on policy. Perhaps it is because of all this diversity and activity that policymaking bodies have seemingly given up trying to embrace it all and are instead simply buying into overly simple depictions of open that aren’t accurate or representative. Or, maybe OSI’s message about diversity just isn’t getting through to policymakers as well as open advocacy messages. Either way, as Jon Tennant observed in 2019, our lack of common understanding in this space has “impeded the widespread adoption of the strategic direction and goals behind Open Scholarship, prevented it from becoming a true social ‘movement’, and separated researchers into disintegrated groups with differing, and often contested, definitions and levels of adoption of openness” (Tennant et al. 2019).

BOAI signatory Leslie Chan agrees. Long a powerful advocate for the development of open access policies, Chan notes in his latest work that “Far from a democratizing force, open science has become a practice of complying with standards and funders’ policies and mandates, further exacerbating deep-seated structural inequalities in knowledge production. Reflecting on our many failed attempts at reclaiming the knowledge commons and co-creating open infrastructure, I call for new imaginaries and narratives of what open scholarship may look like or aspire to be.” (Chan 2023)

SUMMARY OF POLICY OPTIONS

What might Dr. Chan’s new and improved global open scholarship narratives look like? At their core, these ideas must be built on solid foundations of researcher input and support, fact-based assessments, and global equity. They must also embrace diversity. Given the many different paths, histories, ideas, perspectives, needs, methods and goals of open, layered atop a vast diversity of regional and institutional resources, global open policies cannot possibly prescribe how open is defined in all circumstances and how it must be addressed, nor should these policies aspire to do so. Rather, they should embody and empower an affirmation of our common goals and needs, and be built around flexible frameworks for addressing these goals and needs together so that no field, institution or region of the world is left behind. Research is and always has been a global enterprise. Preserving this inclusive and unifying aspect of research is essential.

There are many examples of policies that meet these requirements. Boxes 1-3 on the following pages describe nine such policy frameworks that have been mentioned at some point in OSI since 2015 (which doesn't indicate an endorsement; we're just noting that these ideas, among many others, have been noted over the years in reports or discussions). Table 3 illustrates the main differences between these frameworks (bearing in mind that hybrid policy frameworks could certainly be constructed). The most significant difference between these policy frameworks is that some are more complete and action-oriented than others. Only one (Plan A) is truly comprehensive, meaning it has all the features needed to fully reboot the global OA policy mindset. Three policies are action-oriented, meaning their main reason for being is to develop new solutions to open. The remaining five policies are passive, which isn't to say they are ineffective, but that they lead from behind by laying the groundwork for and encouraging the development of new OA solutions, but stop short of investing the time and money needed to develop and pilot these new solutions. All frameworks are flexible and general, all embrace a diversity of approaches to open, and all lead to the same end point: A world where research is being shared more freely, and in a manner that maximizes collaboration, objectivity, and equity. Being general and flexible, all these policies can interact with each other at the margins in productive ways.

IN PRAISE OF GENERALITY AND INCLUSION

None of these policy frameworks are fully developed, which is an intentional oversight. Filling in the policy particulars is best left to governments, research networks and individual research institutions after they choose the most appropriate OA policy framework for their needs. This is an important point. Laws, codes, and statutes require specificity, whereas policy guidance is often best described briefly. For instance, the UN Declaration on Human Rights contains 1772 words (UN 1948) and describes these rights only in general terms.¹⁸ The United States Declaration of Independence contains only 1337 words (not including the names of the signers). In contrast,¹⁹ UNESCO's 7400-word declaration on open science (UNESCO 2021) hits many of the right notes about open, but buries them under mountains of detail that would-be adopters are likely to miss or, worse, ignore because they agree with the declaration's overall tone but disagree with some of its specifics. Imagine if Thomas Jefferson had written an additional 5,000 words about his predictions for the future of the United States and his specific implementation requirements. Would the impact of his first 1337 words have diminished?²⁰

18. As an aside, article 27 of this declaration states that "Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author." It's possible that open access mandates conflict with this article to the extent a researcher's copyright interests are taken away unwillingly, or a researcher's data is made public before they have a chance to analyze it.

19. Not to pick on anyone here, but just by way of relevant example.

20. In the case of the US, the exact details on how to operate a democracy have been added over hundreds of years as the needs and structures have become clearer, beginning with the Articles of Confederation in 1781, followed next by the Constitution in 1788 after years of heated debate, and followed thereafter by 200-plus years of amendments, laws, regulations, and agency policies. The Declaration provided the initial vision guidance; the Constitution provided a framework for operating policy.

Given the many different paths, histories, ideas, perspectives, needs, methods and goals of open, layered atop a vast diversity of regional and institutional resources, global open policies cannot possibly prescribe how open is defined in all circumstances and how it must be addressed, nor should these policies aspire to do so. Rather, they should embody and empower an affirmation of our common goals and needs, and be built around flexible frameworks for addressing these goals and needs together so that no field, institution or region of the world is left behind.

TABLE 3: TEN POSSIBLE OA POLICY OPTIONS

		POLICY OPTION								
		Compre- hensive	Action-oriented			Passive				
		Plan A	Common ground	Research comm	Network- centric	Research- centric	4- point	Mani- festo	Procla- mation	Doc- trine
KEY FOCUS POINTS	General & flexible									
	Recognize a societal obligation for open									
	Embrace a diversity of policy approaches									
	Improve global equity									
	Value evidence over ideology									
	Work on specific solutions									
	Work on major goals (like climate change)									
	Look to the future									
KEY ACTIONS	Learn more about OA*									
	Learn more about researcher needs									
	Design & deploy new policies									
	Collaborate on common ground									
	Address connected issues (like impact)									
	Work to make more research open									
	Make most critical info open asap									
	Improve open standards & guidelines									
	Improve global re- search infrastructure									

*Develop a better understanding of how open is working (or not), how it works in various information ecosystems, its diversity and interactions with respect to different types of open and different form (code, text, data, OER, etc.), case studies of best practices, economic analyses, and more

If we truly endeavor to build a world where open research reaches its full potential, then generalities that get us on the same page and empower us to work together toward common goals are the only way forward. We can't change the world, after all, by first unilaterally deciding what the future will look like²¹ and then prescribing exactly how all of us must get there. Much like Jefferson's goals for democracy and freedom, our community's goals for scholarly communication can serve as guideposts and inspiration. To the extent our policies exclude researchers, fail to address their needs, or make research communication worse, we end up nipping the flower in the bud.

21. In this case, especially given that we haven't even begun to wrestle with how developments such as artificial intelligence, big data, blockchain, quantum computing and other technological innovations will affect research and research communication in the coming decades.

BOX 1: COMPREHENSIVE POLICIES

PLAN A

OSI has long advocated an approach to open solutions that recognizes our common ground and common interests and requires us to work together. OSI's Plan A describes one such approach (see [plan-a.world](#); also see the Annex section of this report). Plan A was launched by OSI in April of 2020 as a trial balloon to see what kind of feedback this general concept would receive. About a dozen organizations and individuals signed on to the plan, but we didn't make a concerted lobbying effort to collect signatures. In the final analysis, this approach may be too involved and too detailed for most. It makes sense as the framework for a years-long international effort to build a new open solutions policies from scratch, but the political and funding support for this kind of approach doesn't appear to exist.

Plan A recommends that the international scholarly communication community begin immediate and significant action to:

- Discover critical missing pieces of the open scholarship puzzle so we can design open reforms more effectively;
- Design, build and deploy an array of much need open infrastructure tools to help accelerate the spread and adoption of open scholarship practices;
- Work together on finding common ground solutions that address key issues and concerns (see OSI's Common Ground policy paper for more detail); and
- Redouble our collective efforts to educate and listen to the research community about open solutions, and, in doing so, design solutions that better meet the needs of research.

In pursuing these actions, our community should:

- Work and contribute together (all stakeholders, including publishers);
- Work on all pieces of the puzzle so we may forge a path for open to succeed;
- Discover missing pieces of information to ensure our efforts are evidence-based;
- Embrace diversity;
- Develop big picture agreement on the goals ahead and common ground approaches to meet these goals; and
- Help build UNESCO's global open roadmap.

Plan A recommends that the community's work in this space be:

- Common-goal oriented;
- Accountable;
- Equitable;
- Sustainable;
- Transparent;
- Understandable; and
- Responsive to the research community.

Writing in generalities can also lead to policy that is more inclusive, not only because we don't actively foreclose options, but because we invite a broader range of input, interpretation, collaboration and innovation. A famous (and probably overused²²) example from public policy history is how the world's major urban centers were struggling in the late 1800s to dispose of increasingly large piles of horse manure. Horses were still the dominant form of transportation, and city streets were piling high with millions of pounds of horse manure every day. Architects in New York began building stoops on all new buildings, elevating front entrances a half-story from street level so they could stay above the mountains of waste and all the flies and rats it attracted (Paul 2016). New York city planners predicted that at the current rate of accumulation, city dwellers would be buried several stories deep in horse manure by the 1930s. Something had to be done.

When the world's first international urban-planning conference was held in 1898, it was dominated by discussion of the manure situation. But the architects, public health officials and social workers who attended were unable to imagine cities without horses—industrialists and innovators were not invited

22. But this example is memorable so we'll use it.

BOX 2 (SECTION 1 OF 2): ACTION-ORIENTED POLICIES

COMMON GROUND FRAMEWORK

OSI's 2020 Common Ground policy paper (Hampson 2020) describes in detail what a common ground approach to open solutions policies might look like. This approach isn't quite as extreme as the total policy reboot needed in Plan A. It might appeal to governments and institutions who want a foundational framework to justify open policies, but don't want to invest the time and resources into rebuilding a framework from the ground up. The main focus of this approach is on controlling the direction of open so it makes sense for research and is producing the desired benefits. The core ideas of this approach are as follows:

- Work together to get all research materials somewhere onto the DARTS open spectrum (see Figure 1). Researchers estimate that around 70 percent of the world's research is closed and off the spectrum entirely (Piwowar 2018). We can focus on getting more research somewhere onto the DARTS by valuing all types of open outcomes and not judging which open types are superior to others. Over time, we can work together to improve these outcomes.
- Work together to immediately improve access where it's most needed. What kinds of outcomes are wanted by researchers and where? Where are improvements needed and why? Where possible, we can solve these access gaps quickly through targeted reforms instead of through slow systemic changes.
- Work together to improve and clarify standards and guidelines so researchers know exactly what is expected, why, how they will pay for open work, how they will benefit, what tools and resources are available to use, how their efforts will be evaluated, and so on.
- Develop different open policies for different users and audiences. Learn about the unique needs and perspectives involved (especially researchers) so we can work together to build the best solutions to the most pressing problems. Involve researchers in this process. They are the key stakeholders in research communication but are usually not consulted about reform efforts in any meaningful way. Help them work together on relevant challenges in ways that fit the needs and norms of their fields.
- Work together (whether this means by field, or by institution, network, government, region, or whatever makes sense) across all stakeholder groups to address urgent research needs and achieve common research goals. The community should also focus on grand research goals like climate change and cancer. These broad and ambitious goals are the most challenging to solve but they also bring the most ideas and resources into focus, and provide a vector for sustainable funding and the nurturing of large datasets (and from this focus, the development and sharing of highly effective best practices).
- Discourage ideologically hardened solutions (e.g., we must do things this way because BOAI says so) that make it difficult to work together as a community. Value diverse perspectives and follow the evidence instead to address real needs with realistic and effective solutions. Also, set realistic expectations. Be wary of claims that open solutions are a panacea for all that ails research.
- Integrate different areas of open advocacy. The open access community should not be developing open data policies for example; we need more collaboration in order to create policies that make sense and will have the desired impact.
- As they are encountered, fix existing open policies as needed to mitigate undesirable side effects, particularly those that are reducing equity. Also work to address the many issues related to open research, from impact metrics to peer review to the culture of communication in academia. Our open future will not reach its full potential without a substantial and sustained effort to reform these issues.
- Pilot useful open solutions—not just solutions that make information open, but solutions that can combine, curate and standardize data, make new connections, bridge the gaps between disciplines, see new fields, and make new discoveries—in short, do work that proves open is the future.
- Look beyond. As a community, look beyond the journal article and figure out what we really need. What tools and systems should we build? To what end (specifically)?

because urban planning at the time was mostly about architecture (Erickson 2014)—so the conference adjourned after just three days (Morris 2017). Fortunately, a technological solution to this crisis emerged soon thereafter. Electricity had just started arriving to cities in the late 1800s, and the internal combustion engine was catching on. By the early twentieth century, cars outnumbered horses and electric trolleys replaced horse drawn ones. The manure crisis was averted.

BOX 2 (SECTION 2 OF 2): ACTION-ORIENTED POLICIES

RESEARCH COMMUNICATION APPROACH

Rather than focusing only on open access, governments, funders and research institutions might instead choose to focus on improving research communication writ large. The need to improve research communication is well established and many of the aspirations for OA policy actually have more to do with research communication than OA. The ideal OA policy may therefore be a subcategory of policies designed to help address broad research communication needs and priorities. These needs and priorities will vary by field, institution and region. From a global perspective, if this approach is used, then a research communication-based OA policy framework might look something like this (from OSI's 2022 researcher surveys; these priorities are discussed in more detail later in this report):

- Improve policies and systems that help researchers stay up to-date on the latest information in their fields
- Improve research data repository and processing systems so researchers can get the most benefit from sharing their data and being able to see and use other research data
- Improve policies to help lower the costs of research publishing and access.
- Improve policies that help researchers receive equitable credit and recognition for publishing in open formats (instead of focusing primarily on the high impact journal record)
- Improve systems that help researchers communicate with each other and with policymakers and the general public

NETWORK CENTRIC

A more narrowly focused strategy is to facilitate the development of information and data sharing networks in specific fields. Doing this would leapfrog the need for getting everyone on board with specific policies. Instead, only the most motivated networks of researchers would seek support for this work and reap the benefits of more open engagement. Over time, best practices and lessons of experience will emerge from this genre of open engagement that will make future networks easier to start and more effective. These networks need:

- Commitment to a fundable goal (like sharing the data from all research in one area of study).
- Dedicated funding to support research data collection, curation, synthesis, long term maintenance, and outreach (to network members). Depending on the needs and goals involved, this could mean several million dollars annually. An overly broad goal like sharing all research from all studies is unlikely to attract a funding patron. Smaller (but still ambitious) networks centered around discrete research fields are more fundable.
- Flexibility. Every network will have unique needs and requirements regarding data architecture, data formats, data gaps, privacy restrictions, usage restrictions and so on. A centralized effort to help these networks grow and thrive can help provide funding, infrastructure and best practices so that each new network isn't tasked with reinventing the wheel.

This parable has been told many times with varying aims. Climate change deniers have used it to claim we shouldn't worry about global warming because technology will come to the rescue; anti-regulation types have used it to suggest that all government policymaking efforts are comically flawed. In this case, the lesson we're drawing out isn't denialism or blind faith, but the power of inclusion. Experts who stay in their own silos make bad predictions about big picture issues, from the architects, public health officials, and social workers who met alone in New York to discuss the future of horse waste, to the many business, military and engineering tycoons around the world who never saw a practical use for what the Wright brothers had invented, to politicians who never saw the need for social safety nets, to tech wizards who thought the computer would never amount to more than an electronic recipe box, to techno utopianists who thought the Internet and social media would only lead to global peace and understanding. For complex and interconnected challenges, one group alone cannot see the full picture.

Experts who stay in their own silos make bad predictions about big picture issues....

BOX 3 (SECTION 1 OF 3): PASSIVE POLICIES

RESEARCH CENTRIC

Similar to Plan A, a research-centric policy framework might appeal to governments and research institutions who want to do more but also want to base their policy designs on objective evidence. Unlike Plan A, however, there is no commitment with this policy approach to work together or to design and deploy new open solutions—just a focused commitment to find answers that better inform decisions about what to do next (if anything). The action items in this approach are to:

1. Develop a clearer understanding of how open ecosystems work in text, data, code, government, and OER
2. Collect case studies highlighting the variety of open approaches used in each of these open environments. Focus on examples that constitute the most common and impactful use, not necessarily all outlier solutions.
3. Evaluate the economics of each of these open approaches. Where (if anywhere) are we saving costs? Where are costs being shifted? What are the current and emerging financing impacts and sustainability concerns? (Note that most of this analysis already exists.)
4. Identify the best practices and lessons of experience across fields and types of open.

AFFIRMATIVE 4-POINT POLICY

An affirmative 4-point policy framework is a cheerleader approach, encouraging the adoption of open solutions without explaining the reasons why or specifying a course of action. This approach is good if the goal is to simply nudge research toward more openness but not necessarily toward specific solutions, and if adopters don't want to do all the fact-finding, piloting, and collaboration needed in the common ground approach. This affirmations of this policy approach are as follows:

1. Knowledge is a public good. It is vital for the continued and equitable progress of knowledge that public knowledge be made freely available for everyone everywhere to see and use. Therefore, free to read should be our default mindset for all research communication. From there, we should expand as possible (e.g., for code, data, or unrestricted reuse), or restrict as needed (e.g., to protect patient privacy, patents, government or industry secrets, etc.).
2. There are many stakeholders in the knowledge production process, and each stakeholder is part of this process, not the owner. Stakeholders must therefore work together to ensure all viewpoints are represented and that communication solutions are equitable, sustainable, and in the best interest of research.
3. Open solutions will necessarily come in a variety of forms, including forms that may not be ideally licensed or that may limit access to more finely curated or processed information. While it is important for public knowledge to be freely available for everyone everywhere to see and use, we must at the same time acknowledge the incentives and need for systems that collect, curate, publish and analyze information and whose outputs may not be publicly accessible. Research needs both: not just piles of raw, unprocessed information, but also value-added outputs that take time and resources to develop. Our focus should be on what we're trying to accomplish with open rather than what open means and the methods we employ.
4. Innovate and learn. Don't lock into ideological-driven policies that are built on scant evidence and may in fact create negative consequences for access. Flexibility and innovation are key.

Making global research more open is one such complex and interconnected challenge, and it doesn't lend itself to neat answers. If we're trying to help researchers succeed, we first need to develop as broad and accurate an understanding as possible about how the global research environment works. In this environment, researchers are the key stakeholders. It is essential to secure their input and involvement.

It may be surprising to note, then, that suitably large numbers of researchers have never been consulted in any meaningful way on any of the major OA policies currently in use. The need for open has been pushed by governments and funders, and the solutions in place have been designed by governments, funders, open activists, libraries, and publishers.²³ Researchers haven't even been consulted after the

23. Of course, libraries and funders serve researchers, so they endeavor to craft policies in the best interest of the individual

BOX 3 (SECTION 2 OF 3): PASSIVE POLICIES

MANIFESTO

Manifestos like DORA aren't policies per se, but they can read a lot like a 4-point policy or a common ground policy in that they help raise awareness and steer thinking. An open manifesto OSI proposed in 2018 reads as follows:

Recognizing the importance of research to the future of humankind,

Considering there are a wide variety of research fields in the world today, each with unique needs and perspectives,

Acknowledging that researchers, research institutions and global regions everywhere are not equal with regard to their ability to participate in or reap the benefits from research,

Committed to ensuring that that future of research communication is both effective and more equitable, and,

Building on the work of the Open Scholarship Initiative (OSI), which has been engaged in partnership with UNESCO since 2015 to build such an effective and equitable framework for the future of global research communication, and building as well on the numerous efforts with related goals, such as DORA, FAIR, BOAI, the Leiden Manifesto, and the Lindau Guidelines,

Together resolve that research should adopt these 10 policy goals for research communication—that researchers everywhere should:

1. Follow and help improve established best practices regarding the ethical conduct of research (as outlined in existing legal frameworks, institutional guidance, and more). This is relevant to research communication insofar as faulty research that gets published and publicized, that uses forged data or fake analysis, or that plagiarizes other research poses a threat to the research ecosystem.
2. Avoid publishing in fake and predatory journals, which lack adequate safeguards to ensure the work they publish is of sufficient integrity.
3. Make research work readily available and discoverable to research peers worldwide to the extent possible (taking into account concerns such as competition, misuse). This goal is achievable through a variety of means, from publishing work in some type of “open” format (of which many varieties exist), to ensuring that data is included with work, to ensuring that old work doesn't sit in file cabinets and null-hypothesis outcomes get published.
4. Support efforts to improve equity in research through improved access, through the recognition and reduction of funding and evaluation biases, and other means. As part of this effort, be aware that “one-size-fits-all” solutions crafted in the Global North (such as the author pays publishing charge) may harm equity and access for researchers in most parts of the world.
5. Support efforts to make research work more accessible to policymakers and the public through journalism, outreach, plain language abstracts, and other means.
6. Follow established best practices with regard to archiving and preserving the published research record.
7. Participate in reviewing and critiquing the work of peers worldwide (however these processes continue to evolve).
8. Evaluate research based on merit, not on its “impact”, or the “impact factor” of the journal in which research is published.
9. Support continuous efforts to improve research replicability, reliability and transparency.
10. Support efforts to improve the usability and reusability of research and research data (by means that include but are not limited to using more open licenses, sharing data through research networks and repositories, supporting data standards work, and more).

BOX 3 (SECTION 3 OF 3): PASSIVE POLICIES

PROCLAMATION

A longer version of the manifesto is the proclamation. OSI proposed an open solutions proclamation for UNESCO in 2021 (Hampson 2021). The full version is reprinted in the Annex section of this report. The principle of the proclamation is the same as the manifesto, but it has more trappings of diplomatic language. Our 2021 proclamation closely follows the logic and rationale for Plan A and is modeled after the opening language of the 2021 UNESCO Recommendation on Open Science.

DOCTRINE

Doctrines like FAIR and the Panton Principles also effective way of encouraging policy development (to the extent these doctrines form the basis for policies but aren't complete policies by themselves). For this report, historian Jason Steinhauer reviewed the key research information doctrines developed over the last several decades (see Annex). We can convert Jason's synthesis into a new doctrine for open communication in research—we'll name it the Tennant Doctrine in honor of our late colleague Jon Tennant—built on our historical need for sharing research information and grounded in the reality of how sharing takes place today:

1. All actors in the researcher ecosystem have a responsibility to engage, communicate, and distribute information widely and equitably across the world. No actors within this ecosystem are shielded from that responsibility, regardless of how well they benefit from the current models.
2. More must be done to meet researchers where they currently are, recognizing that they will not abandon current models and systems overnight if there are not proper incentives and rewards for them to do so.
3. New investments in infrastructure and culture must be made to make the transition to open access smoother and more sustainable.
4. Global conversations must be held that are diverse and multi-stakeholder, to ensure the inequities of the past are not repeated in the future.

fact; it sometimes seems the only time the OA community hears from researchers is when they sign petitions complaining about the OA policies that have suddenly intruded on their academic freedom (see, for example, Kamerlin 2018).

In everyone's defense, researchers are not a monolithic group. From art historians to virologists, astronomers to sociologists, postdocs to emeritus professors, academicians to private industry experts, there is no typical profile of a researcher and no single group of researchers whose opinions can serve as a proxy for all researchers everywhere. Researchers are also busy, not just with their research work but in many cases also with grant-writing, teaching, mentoring, attending conferences, writing papers, and more. All this diversity and scarcity makes it difficult to truly understand the perspectives of all researchers everywhere when it comes to designing policy.

Still, given how important it is to include researchers in conversations about the future of research communication, this oversight is significant. OSI has tried to include as much input as possible from researchers in its deliberations over the years. A number of prominent researchers have participated in our conferences and online discussions, and we have made every effort to incorporate their viewpoints into our analyses and recommendations. Several large surveys have also been conducted in recent years that attempt to measure various facets of researcher opinions about open access. We have reviewed all this work, and also attempted to fill some remaining gaps in our understanding by conducting our own global surveys of researchers in early 2022.

researchers they serve (as well as students, administrators, and others). However, in any large scale and representative sense, researchers are not now nor have they ever been directly involved in the global OA policymaking process. As a group, they are not driving the conversations about need, or creating OA tools and processes. Researchers are also likely to be working on open solutions on a parallel path separate from official open access policy efforts. For example, they may primarily rely on a wide array of open data tools and processes (such as data sharing networks) which are not typically included in open data policy conversations and are typically well outside the realm of library and funder expertise and involvement.

SUMMARY OF OSI'S 2022 RESEARCHER SURVEYS

Box 4, below, contains a summary of key findings from the major researcher surveys conducted over the last five years. These surveys give a consistent portrayal of researcher perspectives across many fields, institutions and countries, where researchers generally dislike APCs, have concerns about sharing and reuse, and value academic freedom, journal quality, and impact. Researchers aren't necessarily happy with current OA policies, but they aren't particularly aware of the OA policy agencies or details.

BOX 4: SUMMARY OF KEY FINDINGS FROM MAJOR RESEARCHER SURVEYS

Researcher attitudes about communication practices have been measured through a number of quality surveys in recent years. The surveys cited below are listed separately in the Annex section of this report. An overview of all these non-OSI surveys reveals a pattern consistent with the findings from OSI's 2022 researcher surveys (see Box 5):

- Most researchers believe there is value in anyone being able to access their research (Taylor & Francis 2019, Wiley 2019a).
- Most who publish in open format are motivated by the desire to increase the impact of their work. Only about a third are motivated by the desire to increase transparency and reuse (Wiley 2019a). In open data, the reuse motivation is higher—maybe around a half (Wiley 2019b).
- Most researchers know relatively little about the details of ongoing research communication reform efforts and policies (Taylor & Francis 2019).
- Only a fraction (maybe as low as 1 in 5) believe funders have a right to control where to publish. For 84% of researchers, the single most important factor in research communication is allowing scholars the freedom to publish where they choose (Taylor & Francis 2019)
- There are a host of concerns about data sharing and reuse. The most commonly cited problems are a lack of suitable infrastructure for data sharing, and a lack of incentives. There are also concerns about misuse and scooping, concerns about copyright and licensing, and the time and effort needed to make research data openly available (Perrier 2020, Davies 2019, Stuart 2018). Other concerns also include fairness (where better resourced researchers with superior computing facilities mine open data), science deniers (where “requests for information are motivated by the desire to discredit their work and professional reputations”), a lack of oversight regarding compliance, and difficulty adapting FAIR requirements to datasets that are also constrained by sensitivity and privacy considerations (Hrynaskiewicz 2021).
- Designing new data sharing philosophies and systems that allow data and research to make more of an impact is preferable to doubling down on our current approach that simply enables more sharing and reuse. Our current systems which are filled with bad and incomplete data and fraught with peril—relying on bad datasets, getting scooped, an imbalance between risk and reward, etc. (Hrynaskiewicz 2021, NASEM 2020, Faniel 2020).
- The top priorities for researchers when picking a journal are roughly as follows (with response percentages starting at around 90% and dropping to 65%): the journal has a good reputation in field, it is well read, it focuses on the researcher's specific area of research, it has high impact factor, it is free to publish in, it belongs to a scholarly society in the researcher's field, and it has short turnaround times. Whether the journal is fully open access ranks dead last at 30 percent (Taylor & Francis 2019).
- CC-BY has historically been the least preferred type of license. About a third of researchers dislike this type of license the most, while only 10% like it the most. Conversely, CC-BY-NC-ND has been the most preferred type (Taylor & Francis 2019).
- Opinions about APC vary by wealth, region, career stage and field of study (Segado-Boj 2022). Time period is also a factor since the negative affects of APCs are only now coming to light. In 2019, most researchers (particularly in the Global South) reported not having the funds to publish in open access (Wiley 2019a, Scaria 2018). Also in 2019, most researchers reported that if everything was published in APC format it would have a large negative effect on their ability to publish, with AAAS survey respondents reporting the need to make tradeoffs between research and publishing (Taylor & Francis 2019, AAAS 2022).
- Overall, the top problems in academic publishing may rank something like this for many researchers: Pressure to publish in high-impact journals, publication delays, paywalls, lack of accurate measures of journal/paper quality, insufficient publishing-related resource, inadequate benefit of peer review in improving quality, irreproducibility, tedious journal processes (Editage 2018).

These findings largely align with what we found from OSI's 2022 researcher surveys, summarized in Box 5.²⁴ From these surveys, we learned that most researchers want new communication solutions and are ready to embrace the ones that address their key needs. These needs are most urgently to lower the costs of journals for authors and institutions, and also to improve research infrastructure, narrow the global access equity gap, make more journal articles (plus accompanying data) free to read and quickly accessible, find the right research papers to read and stay up-to-date on the latest research, ensure free classroom for journal articles use while limiting misuse and commercial reuse, ensure the continuation of a high quality publishing environment, retain the freedom to decide where to publish avoid one-size-fits-all solutions, ensure proper credit and recognition (especially as it relates to advancement), make more of an impact on society, improve collaboration and communication with colleagues in the same field, and reduce administrative workload and improve funding sustainability.

Overall, this group recognizes that developing successful OA policies will require broad collaboration, and that researchers are a key stakeholder in this conversation. They also believe science and society will benefit from the right policies. However, these policies cannot be one-size-fit-all approaches anchored in a limited understanding of the broad spectrum of global research communication needs and perspectives, or in the idea that open is a narrow construct since there are in fact many different kinds of open.

BOX 5: SUMMARY OF KEY CONCLUSIONS FROM OSI RESEARCHER SURVEYS

OSI's 2022 researcher surveys returned findings that are consistent with the other major surveys of researchers conducted over the last several years. The main conclusions from OSI's surveys are as follows:

- The overwhelming majority of researchers think there are better ways of doing research communication, and would like to hear about and explore new ideas and policies. Indeed, most say there is an urgent need for many reforms in scholarly communication, led by lowering costs. However, only a few think these reforms should involve reinventing the wheel or creating one-size-fits-all policies for all researchers everywhere. In addition, most researchers want to retain the freedom to publish wherever they see fit.
- Communication plays a significant role in research, particularly journals. However, the communication priorities of researchers are general in nature when it comes to OA (like being able to access research for free and being able to communicate effectively with colleagues). More granular communication concepts like reusability are a much lower priority.
- The overwhelming majority of researchers recommend creating a system that makes sure the research world doesn't divide into those with means and those without. Top reform ideas include improving repositories, simplifying licensing, and building new infrastructure capabilities.
- Relatively few researchers say that current OA policies have helped their research. Others haven't noticed any changes so far, or have noticed changes but to these haven't mattered, or these changes have hurt their work.
- Most researchers are familiar with key OA concepts but are not aware of OA agencies and their policies
- Most researchers define open as being free to read material that is high quality and transparent and has data included. Most do not believe that copyright license or the format of journals (hybrid, gold, etc.) are important components of open.
- When it comes to licensing, most researchers are interested in free classroom use and are wary about poor quality reuse and commercialization
- Most researchers dislike APCs, and say that publishing has become too expensive for them
- Adoption and uptake issues include a mismatch between needs and solutions, and a lack of viable options, quality concerns, academic freedom, doubts about the effectiveness of OA policies, and high costs
- There is near unanimous support amongst researchers for OSI's conclusions: There are no one-size-fits-all solutions in OA, OA exists on a spectrum of outcomes, researchers are a key stakeholder in scholcomm, real solutions will require broad consultation and cooperation, and more.

As noted in the last bullet point of Box 5, not only do the findings from these different surveys align
24. See Hampson 2023 for a detailed description and analysis of these survey findings.

with each other, they also align with the general points of agreement among OSI participants (as mentioned earlier in the “OSI” section of this report) that there are no one-size-fits-all solutions in OA, OA exists on a spectrum of outcomes, researchers are a key stakeholder in scholcomm, and real solutions will require broad consultation and cooperation. There is also strong overlap between the concerns researchers have about OA policies and the concerns many in OSI have noted about the overall nature of global OA reforms (also as described earlier in the “OSI” section)—to wit, how policymakers are: (1) ignoring the unintended consequences of APCs; (2) ignoring the evidence that in practice, openness exists along a broad spectrum of outcomes; (3) overreaching and designing policies for which we lack the requisite expertise; and (4) forcing one-size-fits-all open solutions on researchers, even where these solutions don’t match researcher needs and resources

...the findings from these different surveys align with each other...[and] they also align with the general points of agreement among OSI participants...that there are no one-size-fits-all solutions in OA, OA exists on a spectrum of outcomes, researchers are a key stakeholder in scholcomm, and real solutions will require broad consultation and cooperation.

Going forward, then, and based on what we can tell from our analyses about what researchers want and what research communication experts think should happen, open access policymakers should turn their focus to the following:

- 1. GIVE RESEARCHERS THE SOLUTIONS THEY WANT AND NEED.** Researchers are looking for ways to lower costs, improve collaboration, improve impact, ensure quality, and generally make their research lives better. These needs are not the focus of our current global OA policies. At best, these policies focus primarily on much lower priority concerns like reusability and embargoes (see Table 4).²⁵ At worst, they have been sold as a magic elixir that will cure all that ails research, but they can’t and won’t. Some researchers will benefit from these policies, others

25. Our focus on the CC-BY license is an important subset of this concern. All major global OA policies specify a CC-BY license for publishing because this is what aligns best with the BOAI definition of OA on which these policies are based. There are three problems with this approach. The first is that there are many different needs, motives, and methods for creating open information. As a result, there are many different outcomes for open, all of which have merit. The second is popularity. We know from previous researcher surveys that CC-BY is one of the least popular copyright licenses made available to researchers, as mentioned earlier (this said, Pollock 2022 shows that CC-BY accounts for about 55% of all open licenses as counted in Crossref). CC-BY-NC-ND is the most popular, allowing unlimited reuse with attribution but also preventing commercial and derivative use. We know from these surveys that researchers are concerned about commercial and derivative use, so the fact they prefer a CC-BY-NC-ND license is not surprising. The third problem is utility. Is CC-BY even the right tool for the job? Researchers want to be able to cite and excerpt work and use papers for classroom instruction. CC-BY grants these rights, but so do existing Fair Use and Fair Dealing copyright laws (in the US and UK respectively). CC-BY also provides an easy path to free access, but it isn’t the only path (as noted, more restrictive variations of CC-BY also work, as does regular copyright). The unique benefit of CC-BY envisioned by BOAI is a world where researchers can reuse and remix journal articles at will, but do they even need or want this capability? We learned from our surveys that very few researchers are looking for the ability to copy and paste large chunks of text (others may be interested in this ability but not researchers). Indeed, most simply seem interested in the free to read nature of open (apart from open data and code, which are governed by CC-0 and not CC-BY). Added to this, the prospect of having work misused is an outcome no one wants but is very real using CC-BY. Given all this, what compelling reason exists for sticking with CC-BY as the default license type for OA? Coming at this question from a different angle, what features do researchers actually want and need in a copyright license for their work? Such a license should, at minimum (based on what we learned in our surveys) include rights like free classroom use, and the right to immediately share finished products within a peer community. It might also include a prohibition on commercial and derivative reuse without permission from the author. Maybe this new kind of license (let’s call it CC-EDU) should be the new standard? Taking this approach would show respect for researcher concerns and might also open the floodgates to a much broader, faster, and productive transition to open content.

TABLE 4: TIERS OF RESEARCHER CONCERNS (NOT JUST COMMUNICATIONS-RELATED)

Concern	%*	Communi- cations related?
Tier 1 concerns (66%+ of researchers say this is ALWAYS important)		
Stay up-to-date on all the latest research in my field	76%	X
Get funding for my research work	66%	
Tier 2 concerns (33-65% of researchers say this is ALWAYS important)		
Infrastructure support from my institution (good facilities, etc.)	64%	
Find, hire and keep good staff	60%	
Design good research studies	60%	
Make an impact in my field	60%	
Find the right research papers to read	59%	X
Publish in a journal	57%	X
Collaborate with other researchers	56%	
Read research papers for free	54%	X
Get proper credit and recognition for my work	52%	X
Effectively communicate my findings to fellow researchers	50%	X
Publish in a prestigious journal	48%	X
Advance in my field	48%	
Make an impact on society	48%	
Figure out what to read—there’s so much information out there	47%	X
Job security	47%	
Publish affordably	47%	X
Freely and rapidly share my research work with other researchers around the world	41%	X
Effectively communicate my findings to the general public	41%	X
Effectively communicate my findings to policymakers	41%	X
Tier 3 concerns (0-32% of researchers say this is ALWAYS important)		
IMMEDIATELY (without waiting for embargo periods) read what other researchers have published in a subscription journal	32%	X
Publish in the right journals	32%	X
Publish enough—the pressure to “publish or perish”	28%	X
Make my data available in a format that others can see and use	28%	X
See the data generated by other researchers	25%	X
Protect my research from getting “scooped” before I can publish it	24%	X
“Register” my discovery (publish quickly so the world will recognize I was the first to discover something)	24%	X
Pay	24%	
Publish quickly	20%	X
Reuse the data generated by other researchers	18%	X
Protect my research from misuse	16%	X
Regulation	16%	
Protect my research from theft	8%	X
Copy and paste large chunks of text from other research papers or otherwise reuse these works (beyond what is already permitted by copyright under Fair Use and Fair Dealing)	6%	X
Competition	4%	
Other	4%	

Source: OSI Research Communication Survey, question 5 and OSI2022 Global Researcher Congress, week 3, question 2
 *% column is averaged across the two source questions

will not; some issues will be addressed, the highest priority issues will not; some regions of the world will be able to adopt these solutions, most will not.

As we consider designing new research communication policies, we should keep researcher needs and priorities squarely in mind. Rather than merely creating policies that satisfy the definition of BOAI, researchers and the research world would be better served if we focus on the communication solutions researchers actually want and need.

Before we can take this more considered approach to OA policy reform, it will first be necessary to better understand exactly what these need are—and these will differ greatly by region, discipline and field. In time, research will greatly benefit from solutions that are centered on meeting these specific objectives and that truly involve researchers in creating the best solutions. This strategy will also help improve the discourse around research communication reform from one where we merely prescribe blanket solutions to challenging issues to one where we search for best practices and fact-based solutions that researchers actually want and need.

In time, research will greatly benefit from solutions...that truly involve researchers..... This strategy will also help improve the discourse around research communication reform from one where we merely prescribe blanket solutions...to one where we search for best practices and fact-based solutions that researchers actually want and need.

- 2. DO SOMETHING ABOUT APCS.** The cost of publishing figures prominently in researcher concerns. It may even be accurate to say that cost is the number one concern of researchers. APCs have been touted for years as the best possible solution for publishing, even though many groups (including OSI) have warned that the widespread use of APCs will widen the gap between the haves and have nots in research, and substitute one equity imbalance with another—the inability to pay for access (paywalls) with the inability to publish (paywalls). Indeed, as costs have shifted (in different ways for authors in different fields and institutions, with some authors relying on support from grants, foundations, or libraries to pay for APCs, others less so, and still others not at all), the cost burden for many authors in an APC-based world is now much heavier than it was in the subscription world it is trying to supplant.²⁶

All this said, it's entirely possible the disruption we're witnessing today will be completely resolved over the next five to ten years as adjustments take hold: APC waivers for some regions, such as those recently announced by Springer-Nature (Makoni 2023), the increased willingness of funders and governments to cover APC costs as part of grant funding, and the eventual emergence of APC price caps and/or competition. For now, however, the subscription to APC transition in scholarly publishing is not being greeted by many (maybe even most) researchers with open arms.

- 3. RESPECT THE FACT THAT RESEARCH IS A PROFESSION.** Many individuals choose professions where making an impact is more important than earning a large salary. Research is one such profession. Nevertheless, these occupations are susceptible to the same challenges as all

26. To the extent this burden even existed before, since subscription costs were covered by libraries and publishing costs were mainly limited to page and color surcharges. Comparing overall system costs is more difficult. A proxy for this determination might be the profit margin of major publishers, and these margins have not decreased during the shift to APCs, so the system costs have probably not come down overall. Indeed, DeltaThink estimates that the OA market is currently much more financially robust than the subscription market (Pollock 2021).

others, including recognition, retention, and promotion. In our 2022 surveys, as well as surveys undertaken by other organizations (see Annex), researchers place a limited amount of value on open research. They want to be able to connect effectively with their peers, read the work of other researchers, publish economically, and have an influence. We can score a victory for open access inasmuch as these research communication goals align with open policies, but the vast majority of researchers (globally and across disciplines) are not primarily motivated by the desire to make their work accessible. This is what we should expect.

However, this incentive dichotomy researchers perceive is rarely respected in the world of policymaking. Researchers are told the quest for knowledge belongs to all humanity and that they should be entirely motivated by participating in this pursuit, disregarding incentives which better align with their career demands and objectives. This may seem a bit harsh, but the essential premise of our present OA policy environment is that open outcomes are the highest priority, and valued more than quality, reputation, and cost. In the meantime, the majority of academics face the career-driven reality that quality, prestige, and cost are more important than open. The challenge of our future OA policymaking efforts is that we must achieve both goals, collaborating with researchers to develop solutions that align with their career incentives while also meeting the needs of a more open research environment.

OSI has long maintained that researchers are key stakeholders in the OA policymaking process, or at least that they should be. Over the years, our group has closely tracked survey research in this subject to gain a deeper understanding of researcher viewpoints on open access. Numerous researchers who have participated in OSI's conferences and online discussions have also provided us with guidance, information, and perspectives.

Even after all this work, though, we cannot say for certain, of course, what all researchers everywhere think about OA policies, but we can say for certain that policymakers must do a better job of engaging with and listening to the global research community. A policymaking strategy that does a better job of listening to researchers and addressing their top priority demands is necessary because there is a great deal of unmet need and misaligned incentives, potential for harm from our current policies, and a great deal of benefit to be gained from new and better policies.

...[the] incentive dichotomy researchers perceive is rarely respected in the world of policymaking. Researchers are told the quest for knowledge belongs to all humanity and that they should be entirely motivated by participating in this pursuit, disregarding incentives which better align with their career demands and objectives.

BROADER STILL

So far, we've made the case that the many global stakeholders in research communication (researchers in particular) haven't been working together, and that they should be working together, to develop OA policies that work for all researchers everywhere. It's important to recognize for perspective that this lack of collaboration extends far beyond OA policy. Research communication is a broad incohesive field and typically doesn't work across boundaries at all.

Research communication is less a field, in fact, than a collection of unrelated activities with dissimilar goals, including specializations such as science writing and outreach intended for the public, journal editing, grant writing, research administration, project management data management, education, public relations, policy analysis, and informatics, all with philosophies, approaches, skill sets, goals, budgets

and best practices that vary by region, field, study, and institution (including industry). We talk in this report about research communication reform as though everyone in research takes this to mean open access reform, but in conversations across the entire spectrum of research communication professions, open access barely rate mention in many official reports, and even then only in the most general and generic way.²⁷ Therefore, should broad research communication reform policies be written even more broadly than proposed in this report so they give direction and unity to what more of the world considers to be research communication?

This may already be happening at some level. For example, in June 2022 the General Secretariat of the Council of the European Union issued a proclamation on “Research assessment and implementation of Open Science” touching on many of these broader issues like research assessment, innovation, education, multilingualism, public policy, and economic development. The details of Plan S don’t even rate mention in this statement. In this broad policy proclamation, EU member states are simply encouraged to develop research that is high quality, impactful and shared for the benefit of all.²⁸

We talk in this report about research communication reform as though everyone in research takes this to mean open access reform, but in conversations across the entire spectrum of research communication professions, open access barely rate mention in many official reports, and even then only in the most general and generic way.

Similarly, the US Nelson Memo sets up new open requirements for researchers but is otherwise solution agnostic. It’s likely that the net effect of this policy will be to push the US (and world) toward more gold OA solutions (that is, research published using APCs and carrying a CC-BY license), but at the same time this directive doesn’t insist on CC-BY licensing or APC funding, so in this sense it is a general policy directive pushing US research communication reform in a general direction without getting entangled in specifics (see Crotty 2022).

The open policy strategy currently being developed through a US National Academies Roundtable process is another example of an emerging generalist policy, which is a bit surprising given that the effort is being chaired

by reformers from the more ideological side of the OA policy divide (leaders of the Open Research Funders Group effort), and because the early organizing work around this effort was very activist sounding.²⁹ Now, after several rounds of input from agency and research leaders, the emerging policy is sounding general in nature, soft-pedaling to university leaders what an open future should look like (see Box 6, below).

27 This lack of visibility and focus has meant that funding for research communication reform efforts has long been hit and miss. The National Science Foundation has its own ideas of what research communication looks like and funds work that fits its thinking, for instance; the same is true with other government and nongovernment funders. There hasn’t been any big picture agreement of what this field looks like and what it needs, especially when trying to include industry research as well (see Annex for an overview of research by sector, region, field and time period). By contrast, the good versus evil approach open advocacy groups adopted years ago (stirring up anger over publisher profit margins and directing this anger into effective rallying cries for funding and action) has been a wildly effective way to increase visibility and focus. When your rallying cry is “kill all the publishers,” you’re going to have a more effective fundraising campaign than “let’s find common ground” (see Lozada 2022 for an interesting overview of the rhetoric of advocacy). This appearance of polarization masks the moderation in this space, however. There are many stakeholders in the scholarly communication reform space who don’t object to change, but at the same time would rather not blindly accept the promises of open activism without more evidence and a more solid plan of action.

28. The conclusions put forward in the 2019 14th Annual Berlin Science Communication Debate sponsored by Bosch are another example of a broad policy recommendation. See Bosch Stiftung 2019.

29. See, for example, Crow and Tananbaum 2020. Greg Tananbaum is a former SPARC consultant, the founder and director of ORFG, and the Head of Secretariat for the NAS Roundtable on Aligning Incentives for Open Scholarship.

Granted, the NAS Roundtable is not technically centered on open science or open scholarship. Rather, it is an attempt to align incentives across sectors so efforts to support more open and equitable practices in one sector are not met with counter efforts in another just because of the way policies are constructed.³⁰ Still, this policy effort could have easily steered into the weeds like Plan S, but it didn't (or at least hasn't so far), and this is significant. We see the same dynamic with Plan S itself, whose policy evolution process so far has been to set steep requirements (with regard to funding disclosure, data deposits, transition time frames and more) and then soften these over time as compliance falls short of targets.³¹

BOX 6: ORFG GUIDE TO SUPPORTING OPEN SCHOLARSHIP FOR UNIVERSITY PRESIDENTS AND PROVOSTS (EXCERPT)

Open scholarship entails a culture shift in how research is conducted in universities. It requires action on the part of university administration, working in concert with faculty, sponsors and disciplinary communities. Universities should consider steps in three areas:

- **Policies:** Language and guidance should be reviewed for alignment with open scholarship, in particular: (1) academic hiring, review, tenure and promotion (valuing diverse types of research products; metrics that incentivize the open dissemination of articles, data, and other research outputs; and valuing collaborative research); (2) intellectual property (ownership, licensing and distribution of data, software, materials and publications); (3) research data protection (for data to be stored and shared through repositories); (4) attribution (recognizing full range of contributions); and (5) privacy (insuring that privacy obligations are met).
- **Services and Training:** Researchers need support to assure that data and other research objects are managed according to FAIR Principles: findable, accessible, interoperable and reusable. While the specific solution must be tailored to the discipline and research, common standards, including Digital Object Identifiers (DOIs), must be followed.
- **Infrastructure:** Archival storage is required for data, materials, specimens and publications to permit reuse. Searchable portals are needed to register research products where they can be located and accessed. Universities can recognize efficiencies by utilizing external resources (including existing disciplinary repositories) and by developing shared resources that span the institution when external resources do not exist. Presidents and provosts are encouraged to work with their academic senates to create an open scholarship initiative that promotes institution-wide actions supporting open scholarship practices, while remaining sufficiently flexible to accommodate disciplinary differences and norms

Source: NASEM 2022a.

The underlying reasons for this policy broadening are anyone's guess. Maybe this is what common ground looks like when taking many stakeholder perspectives into account. Or maybe what we're seeing here is some middle ground between activism and market forces. It's also possible we're seeing a fall from grace—a grudging admission that overly detailed OA policies don't work, or a realization that our techno-utopian visions of 20 years ago need updating.

In this broader context, one thing is certain: We need to keep in mind that research has always been both enormously diverse and globally interconnected. The development and expansion of research has always depended on communication, sharing, and building on the work of others. As a community, we must refrain from presenting open access and open science policies as the creators and forces behind this dynamic and as the single most significant reforms required for research communication. They are

30. Quote from Dr. Susan Fitzpatrick, an OSI participant who is part of the NAS roundtable and the president of a foundation that is part of ORFG.

31. In November 2022, Plan S coordinating body Coalition S reported that 27 publishers have complied with the price transparency requirements of Plan S, covering slightly more than 2000 journals (of which Wiley journals account for about 75% of this total; see European Science Foundation 2022 and <https://journalcheckertool.org/jcs/>). There are no firm figures for how many active journals and journal publishers exist in academia, but a ballpark figure is somewhere north of 2,000 publishers and 40,000 journals (Hampson 2019b).

not. They are potentially very significant forces that, if implemented properly, might have a revolutionary influence—hence the attention and debate—but they are only one of many crucial reforms that must take place, many of which are interconnected. If we recalibrate our expectations for open solutions and at the same time refocus on solving the highest priority needs of researchers as well as addressing all these other crucial connected issues, we will be able to carve out an effective path for open solutions reforms that make sense and that fit logically within the broader needs and priorities of researchers and the broader research community.

...we must refrain from presenting open access and open science policies as...the single most significant reforms required for research communication. They are not.

HUMPTY DUMPTY

The future of global open access policy is not necessarily Plan S, the Nelson Memo, transformative agreements, or even the generalist policies we've outlined here. It is also possible that, as the world adopts different open access policies, research will fragment along regional lines. If and when this happens (and the fault lines are already apparent), the US and Europe will have their own expensive APC-based policies, China will have their internal publishing system, India will have a national subscription system (recently announced; see Niazi 2022), Japan will have a light-touch hybrid system (Salter 2022), and the remaining 40 percent of the world's researchers will need to decide whether to pay to play, or create their own more affordable system.³²

More research findings will be read across borders as a result of US and EU open access policies, but researchers from outside the EU and US will publish in other venues, likely at a lower cost, and these venues' visibility and significance, as well as the research they publish, may diminish over time as the higher priced venues become even more prestigious. Moreover, it's primarily the researchers from wealthy countries and institutions who will have access to the high-speed computing resources required to exploit global databases (to which Global South researchers are still expected to contribute).³³

What happens to the cohesion, promise, and growth that research brings to each country and the world when the rich countries co-opt the tools and benefits of research? By our own imprudent design, not only will the wealthy become wealthier, but research will cease to be a global force for collaboration and unity.

The damage to research caused by a world with fragmented policies could also affect international relations. Suppose we continue our current path and there is no relief for high APC prices (although there may be relief in time, as mentioned earlier). In this case, there will not only be research impacts, but socioeconomic impacts as well—maybe even political. Research and development is a major economic driver in all nations, and universities are the pillars of policy consultation, education, and social progress. What happens to the cohesion, promise, and growth that research brings to each country and the world when the rich countries co-opt the tools and benefits of research? By our own imprudent design, not only will the wealthy become wealthier, but research will cease to be a global force for collaboration and unity.

32. Most EU researchers can pay their APC fees out of grants and through their institutions, but most African researchers pay for APCs out of their own pockets. See Nwagwu 2018.

33. Some have argued that is simply colonialism 2.0, where the rich appropriate resources yet again from the Global South.

There is also the economic question of whether APC prices will ever become competitive, whether funders will ever balk at current price levels, attempt to shift costs to other stakeholders (such as universities), or try to set price caps. Based on previous research, we do know that, for the time being at least, APCs are largely price inelastic, driven by journal prestige rather than price competition. But how high will prices rise before universities and governments say enough is enough and create new, less expensive publishing avenues (such as government-owned publishing houses)?

Finally, there is the possibility that external forces could derail our carefully crafted plans. It is not implausible that East-West political tensions could eventually result in information geowalls that undermine our OA policy objectives. Or that politicians in the West withdraw their support for building high-functioning global databases through which research data can flow more freely across international borders to countries whose leaders are bent on death and destruction. Or that anti-disinformation efforts lead to tighter restrictions on who can call themselves a research publisher, what can be published in journals, and what should be used by governments and the media. Or that, as mentioned in a footnote earlier in this report, developments in artificial intelligence (think ChatGPT), big data, blockchain, quantum computing and other technologies could completely alter the way we go about digesting and communicating research information. All of these developments and more have the potential to reshape the future of open policies.

WHAT NOW?

The most influential open access policies in the world today are rooted in the belief that open means one thing and that open solutions must fall within a limited range of possibilities. OSI's open access policy framework ideas, developed over years of research and global, multi-stakeholder consultations, clearly demonstrate that instead, open definitions and solutions are diverse, and the needs, perspectives, and resources of researchers from around the world cannot be captured by policies that are one-size-fits-all. As a result, OSI's policy framework ideas are adaptable, with the primary goal of assisting researchers and a deep, shared commitment to enhancing equity and ensuring that research can continue to be a good for all of humanity by helping researchers everywhere succeed.

From this foundation of equity, objectivity, and researcher success, we can and should collaborate to do something with open access, rather than viewing open as an end in and of itself. OSI's 2022 research communication surveys suggest that the majority of researchers may agree with this perspective and approach, but it is crucial to test this assumption by redoing our survey (or a similar one) with a much larger sample size.

The potential of OSI's approach to open is significantly greater than our current approach. We are currently constructing a world where everyone has free access to Author Accepted Manuscripts but not official Versions of Record, where "open data" means spreadsheets deposited on GitHub, where only researchers from wealthy countries will publish their findings in the highest quality journals, and where the incentives for openness are not aligned with the career and needs of researchers, all of which leads to a costly and cumbersome global information hodgepodge. This approach should at minimum be supple-

We are currently constructing a world where everyone has free access to Author Accepted Manuscripts but not official Versions of Record, where "open data" means spreadsheets deposited on GitHub, where only researchers from wealthy countries will publish their findings in the highest quality journals, and where the incentives for openness are not aligned with the career and needs of researchers, all of which leads to a costly and cumbersome global information hodgepodge.

...in the future, broader and more flexible policies should be woven into a tapestry of open options and approaches that will make open research more feasible for researchers everywhere. Instead of continuing to implement policies that are one-size-fits-all based on rigid criteria, we can create policies that work well for everyone and better meet the original objectives and aspirations of the open access movement.

world outside of the United States and Europe still requires viable open access policies. The concepts presented in this report can assist in laying this foundation and integrating policies from around the world. Philosophically, the world of scholarly communication is squeezing itself into a narrow approach to open access without understanding why, where this will lead, or the repercussions on the developing world. It is crucial to develop this understanding as soon as possible, before we are too far along in this shift, so we can still adjust our policies as needed. Otherwise, we risk missing out on the full potential of open access, and also fragmenting the research communication space which is so integral to research itself.

As noted early in this report, in our quest to develop a better future for research and research communication, it will surely help inform our discussions if we remember where this journey began, with so many different paths and histories. The concept of open scholarship wasn't suddenly invented with BOAI. Openness is what scholarship is and has always been about. The concept and practice of openness have evolved over centuries, influenced by politics, philosophy, research requirements, technology, and the market. Using BOAI as the cornerstone of contemporary OA policy is inaccurate and unjust, as this document is neither a democratic nor an accurate representation of open.

The correct approach to the future of open policy is to avoid getting entangled in the ideological specifics of open and instead recognize that our original hopes for open access are all the same—born from a shared vision that open methods can help improve the visibility, transparency, and accountability of research, improve public education and participation, level the knowledge playing field, reduce publishing costs, and harness the Internet's potential to truly demystify information. This is the path originally envisioned by open access, not one in which costs rise, inequity increases, and the rich get richer, but one in which barriers fall, innovation accelerates, and all researchers everywhere benefit. The narrow ideological path to open is a dead end; the true promise of open lies down a less traveled road.

mented with broad new policies that encourage innovation, generate new value for research and researchers, and contribute to achieving global equity parity between research communities. Not only will we enrich the global research dialogue, but global societies and economies as well.

Adopting these types of solutions does not necessarily mean abandoning Plan S, the Nelson Memo, the UNESCO open science policy, or university transformative agreements. Rather, it suggests that in the future, broader and more flexible policies should be woven into a tapestry of open options and approaches that will make open research more feasible for researchers everywhere. Instead of continuing to implement policies that are one-size-fits-all based on rigid criteria, we can create policies that work well for everyone and better meet the original objectives and aspirations of the open access movement.

What If the policy world has spoken, however, and APCs are the future for everyone? Is this policy approach still worthwhile? Absolutely. Practically, the majority of the

The narrow ideological path to open is a dead end; the true promise of open lies down a less traveled road.

It goes without saying that our current efforts to implement global open access policies are in no way comparable to these other global policy efforts. But in order to modify international research communication rules, one must at the very least take a more comprehensive, objective, democratic, international, and research-focused approach.

This road less traveled is, oddly enough, a six-lane highway of diversity and innovation compared to the ideological path. On this road, we know where we're going, we avoid ideological detours, we work together to make the journey rich and meaningful, and along the information highway's hubs and spokes, development sprouts everywhere. Possibly, this journey takes place without many rules or structures, without lanes or speed limits. Or perhaps at least basic rules and structures will be useful. We know that better communication and collaboration are essential to the development of new and more effective policies, so structures that facilitate this communication and collaboration would undoubtedly be beneficial—perhaps even the same types of policy structures the international community uses for trade, security, intellectual property, and environmental policy, if the UN can support this effort.

It goes without saying that our current efforts to implement global open access policies are in no way comparable to these other global policy efforts. But in order to modify international research communication rules, one must at the very least take a more comprehensive, objective, democratic, international, and research-focused approach. Adopting this new and improved strategy will create a much higher return on investment for research and society than sticking with our current strategy.

The next step in this process is for a body with global authority, such as UNESCO, to convene a large, representative, international gathering of researchers to discuss the policy recommendations presented in this report (a virtual summit would work). Based on what we know through OSI's work and through the researcher surveys that have been conducted so far, researchers are likely to support the approach put forward in this report, but we should first confirm this recommendation by consulting a larger body of researchers than we have been able to convene. UNESCO can then propose a framework that governments, universities, and research institutions everywhere can utilize to meet their open scholarship goals.

OSI's observations and recommendations are described in more detail in the many reports and presentations this group has produced since 2015. These reports and presentations are available from the OSI website at osiglobal.org and are also listed in the Annex section of this report.

...researchers are likely to support the approach put forward in this report, but we should first confirm this recommendation by consulting a larger body of researchers than we have been able to convene.....

REFERENCES

- Baldwin, M. 2018. Scientific Autonomy, Public Accountability, and the Rise of “Peer Review” in the Cold War United States. *Isis*, volume 109, number 3.
- BOAI. 2002. Budapest Open Access Initiative. <https://www.budapestopenaccessinitiative.org/>
- Bornmann, L., Haunschild, R. & Mutz, R. Growth rates of modern science: a latent piecewise growth curve approach to model publication numbers from established and new literature databases. *Humanit Soc Sci Commun* 8, 224 (2021). <https://doi.org/10.1057/s41599-021-00903-w>
- Bosch Stiftung. 2019. 14th Berlin Debate on Science and Science Policy Who Owns Science? Reshaping the Scientific Value Chain in the 21st Century. Conference report. <https://www.bosch-stiftung.de/en/project/berlin-science-debate/berlin-debate-2019>
- Brainard, J. 2021 (Sep 6). No revolution: COVID-19 boosted open access, but preprints are only a fraction of pandemic papers. *Science*. <https://www.science.org/content/article/no-revolution-covid-19-boosted-open-access-preprints-are-only-fraction-pandemic-papers>
- Chan, L. 2023. Platforms and Knowledge Production in the Age of A.I. Improving Discovery and Collaboration in Open Science - The final TRIPLE conference, Virtual presentation. Zenodo. <https://doi.org/10.5281/zenodo.7600588>
- Clarke & Esposito. 2022 (Aug). The Brief (special issue). <https://www.ce-strategy.com/the-brief/zero-embargo>.
- Crotty, D. 2022 (Oct 27). Speculation on the Most Likely OSTP Nelson Memo Implementation Scenario and the Resulting Publisher Strategies. The Scholarly Kitchen. https://scholarlykitchen.sspnet.org/2022/10/27/speculations-on-the-most-likely-ostp-nelson-memo-implementation-scenario-and-the-resulting-publisher-strategies/?informz=1&nbd=1886d5fd-d88e-4974-abe6-fdc-c37a21094&nbd_source=informz
- Crow, M, and G Tananbaum. 2020 (Dec 18). We Must Tear Down the Barriers That Impede Scientific Progress. *Scientific American*. <https://www.scientificamerican.com/article/we-must-tear-down-the-barriers-that-impede-scientific-progress/>
- Csiszar, A. 2018. *The Scientific Journal*. Chicago University Press. ISBN 978-0-226-55323-8
- Erickson, A. 2014 (Aug 24). A Brief History of the Birth of Urban Planning. Bloomberg. <https://www.bloomberg.com/news/articles/2012-08-24/a-brief-history-of-the-birth-of-urban-planning>
- European Science Foundation. 2022 (Nov). “More than 2000 journals share price and service data through Plan S’s Journal Comparison Service” (blog post). Coalition S website. <https://www.coalition-s.org/more-than-2000-journals-share-price-and-service-data-through-journal-comparison-service/>
- Hampson, G, M DeSart, J Steinhauer, EA Gadd, LJ Hinchliffe, M Vandegrift, C Erdmann, and R Johnson. 2020. OSI Policy Perspective 3: Open science roadmap recommendations to UNESCO. Open Scholarship Initiative. doi: 10.13021/osi2020.2735
- Hampson, G, M DeSart, L Kamerlin, R Johnson, H Hanahoe, A Nurnberger and C Graf. 2021. OSI Policy Perspective 4: Open Solutions: Unifying the meaning of open and designing a new global open solutions policy framework. Open Scholarship Initiative. January 2021 edition. doi: 10.13021/osi2020.2930
- Hampson, G. 2019. OSI Policy Perspective 1: Plan S & the quest for global open access. Open Scholarship Initiative. doi: 10.13021/osi2019.2450

Hampson, G. 2019b. OSI Issue Brief 2 (V. 1.1): How fast is open growing? Open Scholarship Initiative. <http://doi.org/10.13021/osi.v3i0.2368>

Hampson, G. 2020. OSI Policy Perspective 2: Common ground in the global quest for open research. Open Scholarship Initiative. doi: 10.13021/osi2020.2725

Hampson, G. 2023. OSI Policy Perspective 5: Summary of OSI 2022 Research Communication Surveys. Open Scholarship Initiative. doi forthcoming.

Johns, A. 1998. *The Nature of the Book: Print and Knowledge in the Making*. University of Chicago Press

Joi, P. 2022 (April 5). Data-sharing in a pandemic: even though scientists shared more than ever, it still wasn't enough. Blog post on GAVI website (Global Alliance for Vaccines and Immunisation). <https://www.gavi.org/vaccineswork/data-sharing-pandemic-even-though-scientists-shared-more-ever-it-still-wasnt-enough>

Kwon, D. 2022 (Feb 22). Open-access publishing fees deter researchers in the global south. *Nature* (news article). <https://www.nature.com/articles/d41586-022-00342-w>

Lewis, CL. 2018. The Open Access Citation Advantage: Does It Exist and What Does It Mean for Libraries?. *Information Technology and Libraries*, 37(3), 50-65. doi: 10.6017/ital.v37i3.1

Lozada, C. 2022 (Oct 10). How to Strangle Democracy While Pretending to Engage in It. *New York Times*. <https://www.nytimes.com/2022/10/20/opinion/albert-hirschman-political-rhetoric.html>

Lucas-Dominguez, R, A Alonso-Arroyo, A Vidal-Infer, et al. The sharing of research data facing the COVID-19 pandemic. *Scientometrics* 126, 4975–4990 (2021). DOI: 10.1007/s11192-021-03971-6

Makoni, M and W Sawahel. 2023 (Jan). Open access publishing deal for low-, middle-income countries. *University World News*. <https://www.universityworldnews.com/post.php?story=20230118190925833>

Mangravite, L., A Sen, JT Wilbanks. 2020. Mechanisms to Govern Responsible Sharing of Open Data: A Progress Report <https://sage-bionetworks.github.io/governanceGreenPaper/v/7ef288619fb46e6d-9319433c64fbc5bef6250fe7/>

Max-Planck. 2003. Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities. <https://openaccess.mpg.de/Berlin-Declaration>

Moore, Samuel A. 2017. A Genealogy of Open Access: Negotiations between Openness and Access to Research. *Revue Française Des Sciences de l'information et de La Communication*, no. 11 (August). doi: 10.4000/rfsic.3220

Morris, EA. 2007 (Spring). From Horse Power to Horsepower. *ACCESS Magazine*. <https://www.access-magazine.org/spring-2007/horse-power-horsepower/#:~:text=In%201898%2C%20delegates%20from%20across,to%20desperation%20by%20horse%20manure.>

NASEM. 2022. Roundtable on Aligning Incentives for Open Science. US National Academies of Science, Engineering and Medicine. <https://www.nationalacademies.org/our-work/roundtable-on-aligning-incentives-for-open-science>

NASEM. 2022a. Guide to Supporting Open Scholarship for University Presidents and Provosts. US National Academies of Science, Engineering and Medicine. <https://documentcloud.adobe.com/link/track?uri=urn:aaid:scds:US:cfd88eaf-1849-4e5a-b563-9dca7779364d#pageNum=1>.

- Nelson, A. 2022. MEMORANDUM FOR THE HEADS OF EXECUTIVE DEPARTMENTS AND AGENCIES. US White House Office of Science and Technology Policy (OSTP). <https://www.whitehouse.gov/wp-content/uploads/2022/08/08-2022-OSTP-Public-Access-Memo.pdf>
- Niazi, S. 2022 (Nov 25). Ministry sets ‘One Nation, One Subscription’ deal deadline. University World News. <https://www.universityworldnews.com/post.php?story=20221125055551605>
- NIH. 2023. “What is Research Integrity?” (web page). US National Institutes of Health. https://grants.nih.gov/policy/research_integrity/what-is.htm
- Nwagwu, Williams Ezinwa. “Knowledge Production Ethos and Open Access Publishing: Africa in Focus / L’éthos de la production de connaissances et l’édition en livre accès : Regard sur l’Afrique.” Canadian Journal of Information and Library Science, vol. 42 no. 3, 2018, p. 249-277. Project MUSE muse.jhu.edu/article/743055.
- OECD. 2006. Background Document on Public Consultation. Organisation for Economic Cooperation and Development. <https://www.oecd.org/mena/governance/36785341.pdf>
- OECD. 2011. Regulatory Consultation: A MENA-OECS Practitioners’ Guide for Engaging Stakeholders in the Rule-making Process. Organisation for Economic Cooperation and Development. <https://www.oecd.org/mena/governance/MENA-Practitioners-Guide-%20EN.pdf>
- Oreskes, N, and EM Conway. 2011. Merchants of Doubt. Bloomsbury Publishing, ISBN 978-1608193943.
- OSI. 2022. Report on the 2022 OSI Researcher Surveys. Open Scholarship Initiative. DOI forthcoming.
- Paul, R. 2016 (Mar 23). How horse poop inspired the New York City stoop. 6sqft. <https://www.6sqft.com/how-horse-poop-inspired-the-new-york-city-stoop/>
- Piwowar, H, J Priem, V Larivière, JP Alperin, L Matthias, B Norlander, A Farley, J West, and S Haustein. 2018. The state of OA: a large-scale analysis of the prevalence and impact of Open Access articles. PeerJ 6:e4375. doi: 10.7717/peerj.4375
- Pollock, D and A Michael. 2021 (Oct). “Open Access Market Sizing Update 2021” (blog post). DeltaThink. <https://deltathink.com/news-views-open-access-market-sizing-update-2021>.
- Pollock, D and A Michael. 2022 (Jan). “Breaking Out Open Access License Types” (blog post). DeltaThink. <https://deltathink.com/news-views-breaking-out-open-access-license-types-2>.
- Poskett, J. 2022. Horizons: The Global Origins of Modern Science. Mariner Books.
- Poynder, R. 2019. Open access: Could defeat be snatched from the jaws of victory? <https://digitalcommons.unl.edu/scholcom/131/>
- REF. 2021. UK Research Evaluation Framework. <https://www.ref.ac.uk/>
- Salter, M. 2022 (May 4). Guest Post - Open Access in Japan: Tapping the Stone Bridge. The Scholarly Kitchen. <https://scholarlykitchen.sspnet.org/2022/05/04/guest-post-open-access-in-japan-tapping-the-stone-bridge/>
- Scaria, AG, and R Shreyashi. 2018. Open Science India Report. OSF Preprints. doi: 10.31219/osf.io/aj9gw
- Schneider, L. 2019. For Better Science. “Frontiers and Robert-Jan Smits emails reveal how Plan S was conceived” (blog post). <https://forbetterscience.com/2019/07/11/frontiers-and-robert-jan-smits-emails-reveal-how-plan-s-was-conceived>.

- Simard MA, Ghiasi G, Mongeon P, Larivière V (2022) National differences in dissemination and use of open access literature. *PLOS ONE* 17(8): e0272730. <https://doi.org/10.1371/journal.pone.0272730>
- Smith, AC, L Merz, JB Borden, CK Gulick, AR Kshirsagar, and EM Bruna. 2022. Assessing the effect of article processing charges on the geographic diversity of authors using Elsevier’s “Mirror Journal” system. *Quantitative Science Studies* 2022; 2 (4): 1123–1143. doi: 10.1162/qss_a_00157
- Suber P. 2008. An open access mandate for the National Institutes of Health. *Open Med.* 2008;2(2):e39-41. Epub 2008 Apr 17. PMID: 21602938; PMCID: PMC3090178.
- Tennant, J, JE Beamer, J Bosman, B Brembs, NC Chung, G Clement, T Crick, et al. 2019 (January). Foundations for Open Scholarship Strategy Development. doi: 10.31222/osf.io/b4v8p
- Tennant, J, R Agarwal, K Baždarić, D Brassard, T Crick, DJ Dunleavy, and T Yarkoni. 2020 (March 6). A tale of two ‘opens’: intersections between Free and Open Source Software and Open Scholarship. doi: 10.31235/osf.io/2kxq8
- UN. 1948. Universal Declaration of Human Rights. <https://www.un.org/en/about-us/universal-declaration-of-human-rights>
- UNESCO. 2021. UNESCO Recommendation on Open Science. <https://unesdoc.unesco.org/ark:/48223/pf0000379949.locale=en>
- Waltman, L, S Pinfield et al. 2021. Scholarly Communication in Times of Crisis: The response of the scholarly communication system to the COVID-19 pandemic. *RoRI*. DOI: 10.6084/m9.figshare.17125394
- Whitman, W. 1871. *Democratic Vistas*. Republished in 2016 by CreateSpace Independent Publishing Platform, ISBN 978-1530539475
- Wootton, D. 2015. *The Invention of Science: A New History of the Scientific Revolution*. HarperCollins

RESEARCHER SURVEYS CITED IN BOX 1

- AAAS. 2022. Exploring the Hidden Impacts of Open Access Financing Mechanisms: AAAS Survey on Scholarly Publication Experiences & Perspectives. American Association for the Advancement of Science. https://www.aaas.org/sites/default/files/2022-10/OpenAccessSurveyReport_Oct2022_FINAL.pdf
- Davies, T, SB Walker, M Rubinstein, and F Perini (eds). 2019. *The State of Open Data: Histories and Horizons*. African Minds, IDRC. ISBN 9781928331957. Book pdf from <https://www.idrc.ca/en/book/state-open-data-histories-and-horizons>. HTML rendition at <https://www.stateofopendata.od4d.net/>
- Editage. 2018. *Author Perspectives on Academic Publishing: Global Survey Report 2018*.
- Faniel, I. 2020. What researchers need when deciding to reuse data: Experiences from three disciplines. NIH Workshop, Session 3: Enabling Data Reuse. <https://bit.ly/3mendwQ>
- Graf, Chris. 2019 (Nov 4). “Open Research and Data Sharing: Are We Hearing What Researchers Are Telling Us?” Wiley website, <https://www.wiley.com/en-us/network/publishing/research-publishing/open-access/open-research-and-data-sharing-are-we-hearing-what-researchers-are-telling-us>.
- Hrynaszkiewicz, I, J Harney and L Cadwallader. 2021. A Survey of Researchers’ Needs and Priorities for Data Sharing. *Data Science Journal*, 20(1), 31. DOI: <http://doi.org/10.5334/dsj-2021-031>

National Academies of Sciences, Engineering, and Medicine (NASEM). 2020. Reflections on Sharing Clinical Trial Data: Challenges and a Way Forward. Workshop proceedings. Washington, DC: The National Academies Press

Perrier L, E Blondal, H MacDonald, 2020. The views, perspectives, and experiences of academic researchers with data sharing and reuse: A meta-synthesis. PLOS ONE 15(2): e0229182. DOI: 10.1371/journal.pone.0229182

Scaria, AG, and R Shreyashi. 2018. Open Science India Report. OSF Preprints. doi:10.31219/osf.io/aj9gw

Segado-Boj, F, JJ Prieto-Gutierrez, and J Martin-Quevedo. 2022. Attitudes, willingness, and resources to cover article publishing charges: The influence of age, position, income level country, discipline and open access habits. Association of Learned and Professional Society Publishers. doi: 10.1002/leap.1455

Stuart, D, G Baynes, I Hrynaszkiewicz, K Allin, D Penny, M Lucraft, et al. 2018. Whitepaper: Practical challenges for researchers in data sharing. figshare. Journal contribution. <https://doi.org/10.6084/m9.figshare.5975011.v1>

Taylor & Francis. 2019. Taylor & Francis Researcher Survey. <https://bit.ly/3koHgrX>

Wiley. 2019a. Wiley Open Research Survey. <https://www.wiley.com/en-us/network/publishing/research-publishing/open-access/researchers-on-open-access>

Wiley. 2019b. Wiley Open Data Survey. <https://www.wiley.com/network/researchers/licensing-and-open-access/what-do-researchers-think-about-op>

OTHER RESEARCHER SURVEYS

Digital Science. 2019. The State of Open Data. doi: 10.6084/m9.figshare.9980783

Funk, C, and M Hefferon. 2018. “As the need for highly trained scientists grows, a look at why people choose these careers” (blog post). Pew Research Center. <https://www.pewresearch.org/fact-tank/2016/10/24/as-the-need-for-highly-trained-scientists-grows-a-look-at-why-people-choose-these-careers>

Graf, C, D Flanagan, L Wylie, et al. 2019. The open data challenge: An analysis of 124,000 data availability statements, and an ironic lesson about data management plans. Authorea. October 31, 2019. doi: 10.22541/au.157253515.58528497

Nature editorial. 2021. “Industry scores higher than academia for job satisfaction” (news item). Nature. doi: 10.1038/d41586-021-03567-3

Taylor & Francis Open Access Survey. June 2014. Oxford

Tenopir, C, E Dalton, L Christian, M Jones, M McCabe, M Smith, and A Fish. 2017. Scenarios among Authors of Academic Scholarship College & Research Libraries, 78(6), 824. doi: 10.5860/crl.78.6.82

WAME Survey for OSI2017 conference—selected results. 2017. World Association of Medical Editors. As used in Barret, K, P Baskin, S Murray, A Packer and M Winker. 2017. OSI Journal Editors Stakeholder Report. OSI2017 conference. doi: 10.13021/G8osi.1.2017.1908

Annex 1: A synthesis of key 20th and 21st Century research communication doctrines

By Jason Steinhauer

For more than 70 years, researchers and scholarly organizations have issued declarations that touch on transparency, reliability, access, ethics and scientific responsibility. Below are several overarching themes that have emerged.

POST-WWII ETHOS OF HUMAN RIGHTS

After Nazi crimes during the Holocaust became known to the world, the biomedical research community issued the Nuremberg Code in 1949 to ensure such abuses would not occur again within the medical profession. The Nuremberg Code asserted that the informed and voluntary consent of research subjects was essential to any research trials; that proposed research must benefit society; that any proposed research study must safeguard the well-being of its subjects; and that the risks of any study must be calculated and justified. Most importantly, the Nuremberg Code imbued medical research with a responsibility to human dignity and human rights. That responsibility was still evident thirty years later in the Belmont Report of 1979. The Belmont Report placed a renewed emphasis on protecting research subjects from harm, while also introducing the importance of justice and fairness as guiding principles. The report also espoused that when research is supported by public funds, those who took the risk must experience the advantages, not solely those who can afford them.

The notion that those who risk should also benefit reemerged in NIH and CIOMS declarations in 2016. Both documents reiterated a protection for vulnerable populations; respect for human rights and human consent; the responsible evaluation of risks; and that research must have societal value. The Helsinki Declaration of 2013 restated that human protection and human rights were the first priority of biomedical research; that underrepresented peoples should be given access to the studies and the results; and that consent must be informed and agreed to. Helsinki took the notion of responsibility to the “public” one step further, arguing that “every research study involving human subjects must be registered in a publicly accessible database” and that “researchers have a duty to make publicly available the results of their research on human subjects.” Helsinki placed an ethical obligation on all involved in research studies—including editors and publishers—to disseminate the results.

THE ERA OF THE WORLD WIDE WEB

This imperative to disseminate results widely coincided with the promises and possibilities of the World Wide Web to distribute research across the globe, and the movement to make scholarly research more “open” to the world. In 2001, BOAI urged the scholarly community to remove all access barriers to research and make all research articles in all fields “freely available online.” BOAI specifically called for price barriers to be removed, advocating for new open access journals that would not charge subscription or access fees, and placing responsibility on actors across the ecosystem to institute such changes.

In the ensuing 20 years, various declarations have added nuance and complexity to the *cri de coeur* of BOAI. In 2010, the Panton Principles qualified that publicly funded science should be in the public domain and that licenses that limit the reuse of data be discouraged. DORA in 2012 and the Leiden Manifesto in 2015 both took aim at metrics and Journal Impact Factors, arguing that qualitative evaluations of research should matter more than quantitative evaluations. FAIR in 2016 specifically looked at data and meta-data, arguing that they must be easy to find, clearly accessible, interoperable with other systems, and optimized for re-use. The Lindau Guidelines of 2020 reiterated the need for scientific

data and results to be made “openly available,” while adding that research and evaluation criteria must be transparent. Harkening back to the biomedical research declarations, Lindau also stated that science has a responsibility to society to communicate, educate and engage.

In 2020 and 2021, the various manifestos and statements within the open access movement reached an apotheosis, of sorts, through OSI and UNESCO, which OSI advises. OSI’s Plan A, issued in 2020, called upon the entire movement to better understand the open landscape, modernize its infrastructure (including tools, services and websites), develop common ground among its vast array of stakeholders, and do more outreach and education, especially among researchers. That was followed in 2021 by OSI Open Solutions, which warned that current business models were creating a world of have’s and have-not’s, creating rifts along ideological and regional lines. An open future would have to be designed by the global research community, and meeting researcher’s varying needs would allow the best business models to succeed.

Finally, in 2021, UNESCO published its recommendations on Open Science, partially informed by the work of OSI. The seven recommendations were: (1) promote a common understanding of open science, associated benefits and challenges, as well as diverse paths to open science; (2) develop an enabling policy environment for open science; (3) invest in open science infrastructures and services; (4) invest in human resources, training, education, digital literacy and capacity building for open science; (5) foster a culture of open science and align incentives for open science; (6) promote innovative approaches for open science at different stages of the scientific process; and (7) promote international and multi-stakeholder cooperation in the context of open science and with view to reducing digital, technological and knowledge gaps.

TAKE-AWAYS AND KEY THEMES

First and foremost are questions around scientific responsibility. From the ashes of WWII emerged a consensus that science played a role in safeguarding and upholding human rights and the protections of vulnerable peoples. Over time that responsibility grew to include making scientific research and data more publicly available, ensuring that research and results are widely distributed—particularly if supported by tax-payers—and not solely available to those in positions of privilege. Reading between the lines, these messages appear to be reminding scientists that scientific research and practice are not solely about them. Science is as much about non-scientists—research subjects, vulnerable populations, tax-payers—as it is about those actively participating in the professional ecosystem.

It would seem, then, that the highest standard of ethics requires a scientist to place the needs of the public good ahead of the needs of herself. That selflessness should be the ethos that drives the demand for access, transparency and a professional code of conduct. Research and study—and the results achieved from those activities—belong to the public if funded by public money, and even when funded by private money, should be made available to all who could benefit, not just a few.

In the past 20 years, however, this ideal has run into the realities of human behavior. Publishing the results of scientific research around the world is not a cost-free activity. Who should bear that cost: governments, universities, libraries, or researchers themselves? What if researchers or companies want to protect some data from becoming public until it has been peer-reviewed or commercialized in some manner? What incentives exist to change business models that are currently lucrative or profitable for actors who currently benefit from them? How does free publication affect tenure, promotion and prestige?

The key themes that emerge from debates around these questions are that more must be done to meet researchers where they currently are, recognizing that they will not abandon current models and systems overnight if there are not proper incentives and rewards for them to do so. Prestige, tenure and promotion are real motivators of human behavior, and such evaluations and rewards must be qualitatively done by those in the field, not solely by computed metrics. Metrics can support quali-

tative evaluations, but the criteria must be transparent and continually evaluated with a critical eye. New investments in infrastructure and culture must be made in order to make the transition to open access smoother and more sustainable. And global conversations must be held that are diverse and multi-stakeholder, to ensure the inequities of the past are not repeated in the future. Finally, all in the researcher ecosystem have a responsibility to engage, communicate, and distribute information widely and equitably across the world. No actors within the ecosystem is shielded from that responsibility, regardless of how well they benefit from the current models.

Annex 2: OSI's Open Solutions Proclamation³⁴

Preamble

Recognizing the urgency of addressing complex and interconnected environmental, social, health and economic challenges for the people and the planet;

Acknowledging the vital importance of factual information to respond to these challenges;

Committed to leaving no one behind with regard to access to factual information;

Recalling that one of the key functions of UNESCO is to maintain, increase and diffuse knowledge by encouraging cooperation among the nations in all branches of intellectual activity;

Recognizing the potential of open solutions to reduce existing global inequalities, accelerate progress toward needed solutions, and achieve the United Nations' Sustainable Development Goals;

Further recognizing that open solutions have a wide variety of definitions, motivations, goals, and adaptations that vary widely by field, region, and institution;

And taking fully into account, in the adoption and application of this recommendation, the great diversity of laws, regulations and customs which will determine how this recommendation will ultimately be adopted, be it hereby resolved that Member States:

1. Adopt the following recommendation on open solutions;
2. Take appropriate steps to give effect within their jurisdictions to the principles of this recommendation; and
3. Engage with UNESCO in the further development of the open solutions roadmap and action items at such dates and manner to be determined, in pursuance of this recommendation.

I. OBJECTIVE OF RECOMMENDATION

The objective of this Recommendation is to provide an international framework for open solutions policy and practice that recognizes the broad global diversity of open solutions actions and perspectives, and that also sets forward a roadmap for continued international engagement on open solutions and a growth in open solutions best practices, standards, and accomplishments.

II. DEFINITION OF OPEN SOLUTIONS

Open solutions is an umbrella concept that is being used by UNESCO to describe various movements and practices variously aimed at making scientific knowledge, methods, data and evidence more available and accessible (particularly to researchers from lower resourced regions and institutions);

34. Much of the proposed language here is distilled and adapted from UNESCO's draft recommendation on open science. Note that even though this proclamation is drafted with UNESCO in mind, governments or institutions are invited to adapt this for their own purposes.

increasing scientific collaboration and the potential from this collaboration; increasing the sharing of information of all kinds for the benefit of science and society; opening knowledge to societal actors beyond institutionalized communities; improving the reliability and factualness of information through increased transparency and replicability; and other similar motives. Not all open solutions practices share the same motives, nor the same goals, methods, actions or stakeholders. Additionally, a complex of intersecting and overlapping 'open' elements are generally involved in the conduct of open solutions, including but not limited to open access (generally meaning users being able to gain free access to research reports published in science journals), open data (generally meaning that research data is licensed in such a way that it can be reused without permission), open source/code, open government, open educational resources, and more.

III. ROADMAP FOR ACTION

The roadmap of global action on open solutions adopted by Member States should itself be open and transparent, developed by Member States and the full international community of stakeholders, and respecting the wide diversity of needs and perspectives surrounding open solutions. At its core, UNESCO, the United Nations, and UN Member States should avoid regulating what we don't yet fully understand, or adopting one-size-fits-all solutions that may make open solutions adoption impossible for some, or making open solutions dynamics worse for developing countries. In general, our approach must be:

1. **USER-FOCUSED.** Open solutions tools, services and options must be developed with heavy input from the research community, with solutions and approaches driven by user needs and concerns;
2. **COLLABORATIVE.** Successful and sustainable solutions will require broad collaboration, not just to ensure that all perspectives are considered, but also to ensure there is broad ownership of ideas;
3. **CONNECTED.** There are a great many interconnected issues in the open solutions space. Developing an effective future for open solutions will require a systemic approach;
4. **DIVERSE AND FLEXIBLE.** There are no one-size-fits-all solutions to open solutions reform. Instead, there are many different pathways to reform, likely including many that have not yet been conceived or deployed. Diversity, creativity and flexibility in this undertaking should be paramount, at the same time noting that common ground actions will be critical;
5. **INFORMED.** We need a better understanding of key issues in open solutions before moving forward. The more accurate and honest our assessments, the more accurate and honest our reform efforts can be, the easier these efforts will be to promote, and the more successful they will be;
6. **ETHICAL AND ACCOUNTABLE.** We need enforceable, community-developed standards to ensure the integrity of publishing, archiving, and other related activities and products, and to ensure that unethical approaches are not embraced;
7. **COMMON GOAL ORIENTED.** We must discuss and plan for what the future of open solutions means, beyond just having easier access to information, including defining what we plan to do with open information, where we need data interoperability, what tools and procedures we need to achieve this interoperability, and more. By doing this, we can better focus on and strive for our community's common goals;

8. **EQUITABLE.** People everywhere need to be able to access and contribute content to the global body of research information with minimal barriers. To the extent practicable, information—particularly information central to life and health—should not be unreasonably constrained by issues such as high access costs, poor journal indexing, and a lack of capacity-building programs;
9. **SUSTAINABLE.** Open solutions reform approaches need to be sustainable, which flows from all the other elements in this list. The reform solutions we design need to be achievable, affordable, popular, effective, and otherwise maintainable over the long term;
10. **TRANSPARENT.** The global community needs to maintain as much transparency as possible in this effort (with regard to pricing, usage, ownership, and so on) in order to maintain trust in this effort;
11. **UNDERSTANDABLE AND SIMPLE.** The global community needs to agree on high-level, common-ground goals for open solutions reform—a general set of goals that are understandable, achievable, and adaptable. By setting out general goals that can be easily achieved, participation can be made simple and easy, with low barriers to entry.
12. **BENEFICIAL.** In the end, these reforms need to benefit research first and foremost. While the argument to improve benefits to society is central, these benefits need to be matured carefully, deliberately, and realistically in order to ensure that societal benefits are indeed being conveyed as intended, and that research is not being harmed in the process.

IV. AREAS OF ACTION

With this roadmap for action in mind, the four general areas of action that should be supported by Member States are to:

1. **DISCOVER** critical missing pieces of the open solutions puzzle so we can design our reforms more effectively;
2. **DESIGN**, build and deploy an array of much needed open infrastructure tools to help accelerate the spread and adoption of open solutions practices;
3. **WORK TOGETHER** on finding common ground perspective solutions that address key issues and concerns; and
4. **EDUCATE** and listen to the research community about open solutions, and in doing so design solutions that better meet the needs of research.

To the extent possible and at a more detailed level, Member States are also recommended to pursue these 10 specific areas of action, taking into account their individual political, administrative and legal contexts:

1. **PROMOTE** a common understanding of open solutions as defined in this recommendation within the scientific community and among the different open solutions actors at the institutional, national and regional levels;
2. **ENSURE** that public research funders require open solutions practices and that all information outputs from publicly funded efforts are as open as possible, and only as closed as necessary;

3. **EMBRACE** and combine the efforts of the many different actors in the open solutions space, including research funders, universities, journals, and scientific journals;
4. **ENGAGE** the private sector in discussion about the ways in which the scope of open solutions principles and priorities can be enlarged and mutually shared;
5. **DEVELOP** or encourage policies, including those at the institutional and national levels, that are supportive of a transition to open solutions. This includes but is not limited to helping establish regional and international funding mechanisms for promoting and strengthening open solutions; supporting the creation and maintenance of effective collaborative networks to exchange best open solutions practices and policies; promoting cooperation among countries in capacity building for data management and stewardship; and investing in open solutions infrastructure and services;
6. **COMBAT** the practice of predatory publishing, wherein ‘fake’ publishers publish anything for a fee regardless of merit and without adequate gatekeeping mechanisms in place, and in doing so corrupt the global body of factual information;
7. **REVIEW** research assessment and career evaluation systems in order to align them with the principles of open solutions;
8. **LEARN** more about the open solutions space by helping fund additional studies and fact-finding efforts as needed to ensure that open solutions efforts are fully informed and optimally effective and efficient;
9. **COLLABORATE** on finding solutions to urgent science-based challenges such as climate change, medical research and food security. Demonstrating the value of open solutions collaboration efforts will advance the cause of open solutions while at the same time providing an urgently needed service to humankind;
10. **ENTRUST** UNESCO with the mission to coordinate, in consultation with stakeholders and Member States, the development and adoption of an evolving and detailed global framework for action on open solutions, which will guide and stimulate international cooperation to advance open solutions for the benefit of humankind and planetary sustainability.

V. MONITORING

Member States should, according to their specific conditions, governing structures and constitutional provisions, monitor policies and mechanisms related to open solutions using a combination of quantitative and qualitative approaches, as appropriate. The UNESCO-established coordinating body, in a mechanism to be determined, will collect these statistics and share them with Member States.

Annex 3: OSI's Plan A

March 30, 2020 version

An inclusive, achievable, sustainable approach to global scholarly communication reform

INTRODUCTION

OSI is a diverse, global group comprised of many of the world's most knowledgeable and trusted experts on open access. These experts are advising the world's most influential institutions, and as a group, OSI is advising the United Nations Educational, Scientific and Cultural Organization (UNESCO).

In service to these institutions, and to the global research community, OSI's Plan A will help advance the world toward greater open access. Plan A participants will:

- Conduct much needed studies to fill in gaps in our understanding of the open research challenge
- Create new and needed infrastructure tools and resources to help accelerate our progress toward open
- Develop and distribute open educational materials, and conduct outreach in the research community to help familiarize researchers with open concepts and resources
- Convene, survey, and communicate with all stakeholders, and work in partnership with UNESCO to help build our community's common ground, and
- Lead ambitious efforts to open more climate change research and health/medical research.
- Who is this effort for and why does it matter? The movement to “free” our information is a global phenomenon that has been transforming culture for decades now. These pressures have led to massive innovation, but also unintended consequences, like the rise of fake news and the death of newspapers. It is therefore vital that the changes we make to research communication are well considered—that we fully understand the facts behind our reform proposals, that we work on reforms as a community since there are so many different and equally valid interests and stake, and that we understand our common interests and so we can work together toward our common goals and strive for an open research future that is rich, robust, and sustainable.

Plan A is a necessary first step toward making real and lasting improvements to the future of research communication. From this strong foundation, the sky's the limit.

THE PROPOSAL

OVERVIEW

The Open Scholarship Initiative (OSI) is the world's only large-scale, high-level, multi-stakeholder effort focused on developing an inclusive, achievable, sustainable approach to global scholarly communication reform. Over 400 top leaders in scholarly communication have participated in OSI since 2015, representing 250 institutions from 27 countries and 18 stakeholder groups.

Plan A is a synopsis of the main themes and recommendations that have emerged in OSI during this group's examination of the scholarly communication landscape. Over this period, OSI participants have shared, analyzed, promoted, criticized and debated detailed perspectives and information through conferences, summit meetings, dozens of reports, and thousands of emails. In accordance with the group's goals and conversations, Plan A sets forth that the international scholarly communication community should begin immediate and significant joint action to:

1. **DISCOVER** critical missing pieces of the open scholarship puzzle so we can design our open reforms more effectively;
2. **DESIGN**, build and deploy an array of much need open infrastructure tools to help accelerate the spread and adoption of open scholarship practices;
3. **WORK TOGETHER** on finding common ground perspectives solutions that address key issues and concerns (see OSI's "Common Ground" policy paper for more detail); and
4. **REDOUBLE OUR COLLECTIVE EFFORTS** to educate and listen to the research community about open solutions, and in doing so design solutions that better meet the needs of research.

In pursuing these actions, our community should:

1. Work and contribute together (everyone, including publishers);
2. Work on all pieces of the puzzle so we can clear a path for open to succeed;
3. Discover missing pieces of information to ensure our efforts are evidence-based;
4. Embrace diversity. No one group has a perfect understanding of the needs and challenges in this space, and different groups have different needs and challenges.
5. Develop big picture agreement on the goals ahead and common ground approaches to meet these goals; and
6. Help build UNESCO's global open roadmap (described herein).

Plan A also recommends that the community's work in this space be common-goal oriented, accountable, equitable, sustainable, transparent, understandable, and responsive to the research community. While it is important to make research more open so society can benefit more from research, our approaches to this challenge must be developed carefully and in close collaboration with the research community. By doing so, we can ensure that research is protected during this transition, and that it is well-served by the outcome of our efforts.

MAIN ITEMS

Plan A proposes that beginning in mid-2020 and continuing for a period of five years, the global scholarly communication community cooperate and collaborate on four main categories of action: studies, infrastructure development, common ground work, and education/outreach:

1. **Studies:** We need to develop a better understanding of the scholarly communication landscape. Our community's lack of understanding about key issues has, for the last 20-plus years, made it difficult to create effective reforms. To this end, we propose working collaboratively to support and conduct studies that will help us find needed answers to questions such as (but not limited to): What are the exact dimensions and implications of so-called "predatory publishing" (how fast is it growing, how is it changing, how is it impacting research, and more)? How can we reduce misuse of the impact factor (is inventing a different impact factor the answer, and if so,

what does this look like in practice)? Can embargoes be reduced or eliminated (and if so, how; we need to generate actual data on this)? What are the demonstrable impacts on research and society of openness (the open access citation advantage is just one such measure; how else are impacts being measured and what kind of quantitative comparisons can we make)? What kinds of open are most effective in what fields and for what purposes (are CC-BY-licensed studies and studies with data used everywhere as intended, how does this use compare with other kinds of study formats, and more)? What global approaches will succeed at shifting the culture of communication in academia toward more openness? OSI has identified 12 such studies that should be considered, and that are foundational to designing approaches to open research that are evidence-based. OSI's study recommendations are flexible. Plan A participants will decide which studies to fund and in what order.

- 2. Infrastructure development:** The global scholarly communication community needs new infrastructure items—products, services, tools, websites, and other resources—that will help encourage, achieve, sustain and monitor reforms in this space. Our community should develop these items together, and reasonably quickly, so reforms can be more easily adopted and the scholarly communication landscape can be more quickly and easily improved and maintained. OSI has identified seven infrastructure items for potential development, including an all-scholarship repository (possibly built using CERN's Invenio), an APC discount/subsidy database, an open index of all scholarly publications, an APC price comparison tool, a Yelp site for scholarly publishing, repository upgrades, publisher standards, and an annual “state of open” survey. OSI's recommendations are flexible. Plan A participants as a group will decide which infrastructure items to develop and in what order.
- 3. Common-ground work:** There is vast common ground in the scholarly communication community. Most of the groups in this space from across the regional and stakeholder spectrum recognize and respond to many of the same challenges and issues. This commonality exists both within and between stakeholder groups. As a broad, global community, though, we have never taken time to work through our differing perspectives and identify specific ways we can work on these challenges and issues together at scale (there have been many instances of limited sharing and collaboration, including OSI itself, but nothing approaching a global movement to work together). OSI conference delegates have done this kind of work—their ideas and perspectives are summarized in OSI's “Common Ground” policy paper. These ideas and perspectives might be helpful seeds of a broader, global conversation. What are our common goals for the future of open? Can we create a common framework for understanding how open publishing practices overlap with open data, open education, and open code? Can we learn from the open movement writ large to inform and guide what we're trying to accomplish in academia and where we want this work to ultimately lead us? Are there specific common ground solutions identified by OSI that we can move forward with right away? Building on the common ground we have in this community, we have a better chance of developing the right detailed solutions together, in the right order, and for the right reasons, and these solutions will have a better chance of being adopted, sustained, and bearing fruit.
- 4. Education/outreach:** The scholarly communication community has overestimated the degree to which researchers are informed and convinced about open scholarship. There is, in fact, a great deal of misinformation and lack of information in this space which is hindering progress. In order to make more and faster progress on open reforms, our community needs to be better informed with regard to “open” definitions, opportunities, impacts, processes, options, and so on (note that some of this information will come by way of new studies that more clearly identify the impacts of open). Our community also needs a better system in place for listening to stakeholder feedback, and for creating and adjusting to solutions accordingly. Of particular focus on the listening side, we need a clearer and more detailed understanding of exactly what

researchers want and need, what they will use, and what we hope to accomplish with reforms so we can make sure to ask the right questions, collect the right data, and pursue the right solutions. OSI has identified three key education/outreach programs to pursue, including international meetings where all stakeholders can discuss the outlines of a new global roadmap for open scholarship (both independently and as part of UNESCO’s global roadmap effort), combating predatory publishing through improved awareness and standards, and working together to better understand the needs, goals and concerns of researchers in different disciplines, fields, labs, regions and institutions, and career stages.

In addition to these four main categories of action, Plan A also proposes that, in parallel, we begin taking immediate action as a community to improve the relevance of open research to researchers, and the value of open research to society, by:

1. Opening and centralizing all climate change-related research (to the extent it can be without compromising private health information);
2. Creating zero-embargo compassionate use access portals for patient families and for researchers combating health crises (whether through a new program or by strengthening and expanding the existing Emergency Access Initiative);
3. Creating a more robust Research-4-Life program for lower-resourced regions and institutions; and
4. Considering how to modify current openness programs to improve researcher use and engagement.

FUNDING DETAILS

The following funding details are flexible. Plan A funders will work together to decide which studies to fund at what level and in what order. Plan A funders are welcome to earmark their contributions for specific deliverables listed below, or request that their funding go toward different deliverables (subject to the approval of Plan A’s advisory board):

BUDGET FOCUS

Plan A annual revenue (US\$)	Studies	Infrastructure	Outreach & Education	Common ground work	Climate change focus	Compassionate use focus
\$0				☑	☑	
\$50,000			☑	☑	☑	
\$150,000	☑	☑	☑	☑	☑	☑
\$250,000	☑☑	☑☑	☑	☑☑	☑☑	☑☑
\$500,000	☑☑	☑☑☑	☑☑	☑☑☑	☑☑☑	☑☑☑
\$1 million +	☑☑	☑☑☑☑	☑☑☑	☑☑☑☑	☑☑☑☑	☑☑☑☑

STUDIES

Priority	Subject	Summary	Estimated cost (US\$)	Estimated time required
1	Predatory publishing	What are the exact dimensions and implications of predatory publishing—how fast is it growing, how is it changing, how is it impacting research, and more? This will be a novel analysis using proprietary data. The findings will help guide policy response on this issue.	\$75,000	1 year from funding

2	Impact factors	How can we reduce misuse of the journal impact factor? Is inventing a different impact factor the answer? If so, what does this look like in practice? This will be a novel examination involving statistical critiques of the JIF. The findings will help guide development of better tools and practices for assessing impact.	\$50,000	2 years from funding
3	Embargoes	Can embargoes be reduced or eliminated? If so, how? This will be the first effort to generate actual data on embargoes via a blind study conducted with cooperation from major commercial publishers. Researcher surveys will also be conducted. The findings will help inform policy decisions regarding how quickly journal articles can be made publicly accessible.	\$50,000	2 years from funding
4	Open spectrum	What kinds of open are most effective in what fields and for what purposes? What kinds of open are most desired by field and type of study? How are open and closed data being used today and what are the real-world pros and cons? Research team surveys will be conducted, alongside an extensive literature review. The findings will help align open policies with what researchers need and/or are able to use.	\$100,000	2 years from funding
5	Culture of communication in academia	What global approaches will succeed at shifting the culture of communication in academia toward more openness? This study will involve a meta-analysis of existing work in this field, supplemented with surveys of university provosts. The findings will help inform the design of policies geared toward improving the acceptance and adoption of open practices at research universities.	\$75,000	2 years from funding
6	Open impacts	What are the demonstrable impacts on research and society of openness? The open access citation advantage is just one such measure; how else are impacts being measured and what kind of quantitative comparisons can we make? This study will involve a meta-analysis of existing work on this topic, including interdisciplinary scholarship on systems. Combined with the understanding derived from other studies, this work will help policy makers and research administrators better understand exactly what impacts are being sought by open policies, what impacts can be reasonably expected, and how policies should change to improve impact.	\$100,000	3 years
7-50	Other	Open roadmap development; global flip analysis; global publishing standards development; replicating the SciELO model in specific regions; improving scholarly publishing research; a closer look at publisher profit margins; other	\$50,000 each	1 year each

INFRASTRUCTURE

Priority	Subject	Summary	Estimated cost (US\$)	Estimated time required
1	APC discount/subsidy database	There are no databases of article processing charges (APCs) or subscription discounts or subsidies. Research4Life leaders have noted that building such resources would be immensely helpful to authors. OSI researchers will collect and input initial APC and discount/subsidy data over a period of six months, after which point publishers and discount/subsidy providers will be given instructions on how to keep their data current.	\$20,000	6 months
2	APC price comparison database	APC price shopping may not exist yet simply because there is no tool to help facilitate this (price is a factor, but surveys have shown that authors care more about quality and impact than price). An APC price comparator tool might therefore be of service to the global scholarly communication community. No such tool currently exists. The development and deployment of this tool would need to proceed with care. While providing price information is valuable, we don't want to help promote fake journals either.	\$20,000	6 months
3	Global open indicators + annual survey of open	Our community needs some way to better assess, on a regular and comparable basis, how much open exists and where, and where we need to focus our efforts for more improvement. This task can be triangulated upon from several angles, including an annual survey of the state of open (current surveys are irregular and don't have a common baseline or common methodology), and a global open indicators tool that can measure open more granularly and by region, country, field, etc. (the indicators tool may be developed in collaboration with UNESCO).	\$75,000	12 months to develop + 2 months/year thereafter
4	Journal whitelist/blacklist lookup	This system-wide lookup tool will be used to verify whether a journal is listed on a particular index, and will help dissuade citing non-indexed and possibly suspect work. Journals will be encouraged to adopt an editorial policy whereby if a referenced journal does not appear on a whitelist, then authors must justify the citation.	\$50,000	18 months to develop pilot

5	Yelp site for journals	OSI will build a few tools that have wide “category-killer” appeal and real paradigm-shifting potential for scholarly communication. A Yelp site for journals is one such tool. The core purpose of the Yelp site is to provide an easy-to-use, familiar-looking interface where customers (authors, editors, reviewers, funders and more) can rate scholarly journals and where publishers can provide important contact and product information—a link to their website, a summary of their products and services, links and credentialing badges that verify data such as indexing and impact factors, and much more. Customers will be able to search this database for publishers in their field, price range, region and more—like the actual Yelp site, searches can be filtered in a wide variety of ways. Customers will also be able to provide reviews regarding their experiences with publishers, which will help round out the data provided by Cabell’s blacklist and other information sources. Ad revenue will help support the upkeep and sustainability of this product, with excess revenues accruing to OSI toward the development of OSI’s other products (and studies); sponsorship support will also be important. This will be a complicated product to develop, launch and fine-tune, and very labor intensive as well.	\$100,000	18 months to develop pilot
6	All-Scholarship Repository	The All-Scholarship Repository (ASR) is the ultimate game changer in scholarly communication. Rather than continuing to rely on (and expand) our global network of institutional and national repositories, and then exert herculean and ultimately inadequate efforts to connect the meta data in these repositories (which ends up only providing a glimpse into the contents of each repository, not full access to the contents themselves—at least at the moment), ASR jumps over this step and instead creates a single warehouse for all scholarly research content. In terms of architecture, ASR would be single database with many spokes—many independent owner/operator channels through which data can be added and outputs can be customized. The central ASR database would be replicated and archived continuously; it would also be cloned by owner/operators. A fuller description of the ASR concept and operation is available in the appendix of OSI’s February 2015 report (OSIWG 2015).	\$350,000	2 years to develop pilot version
7-50	Other	There are many good ideas floating around the scholarly communication community—developing an open impact factor, a global journal index, an iTunes-like single article download site, or global publishing standards; better funding existing infrastructure like DOAJ; and more. The Plan A funding group will decide which of these projects to prioritize.	Approx. \$20,000-\$200,000 each	Approx. 2 years for each pilot

OUTREACH/EDUCATION

Priority	Subject	Summary	Estimated cost (US\$)	Estimated time required
1	Global Open Access Portal (GOAP)	Built in collaboration with UNESCO, this portal will be a comprehensive resource for all open-related information, organizations, definitions, processes, and so on.	\$25,000 annually	6 months for pilot, 10 hours/week to maintain
2	OSI briefs & reports	OSI has accumulated a wealth of knowledge over its four years of operation. We are publishing readable two-page issue summaries (briefs) and longer policy papers that consolidate and translate this knowledge for lay audiences. A few of these have been published to-date; many more are planned. These materials will be a central component of UNESCO’s GOAP.	\$15,000 annually	1-2 months per report
2	Misc. education	A variety of one-off education efforts are needed for specific purposes—for instance, to combat predatory publishing through improved awareness of this issue.	Varies	Varies
3	Misc. engagement	A variety of “engagement resources” are needed for bringing together the scholarly communication community (not events, which are described in the “Common Ground” section). For instance, our community needs an annual report similar to what the STM Association publishes annually on the state of STM publishing.	Varies (at the high end, \$50,000 annually for survey or report)	Varies
4-50	–	There are a number of high priority needs in this space. The Plan A funding group will decide which of these to prioritize, with a focus on funding projects that provide broad and nonpartisan background on open (not projects teaching that open looks like x, or trading in negative stereotypes about publishers or other stakeholder groups, but projects that teach what open means to various constituencies, the benefits of open, ways to engage in open, etc.)	–	–

COMMON GROUND WORK

Priority	Subject	Summary	Estimated cost (US\$)	Estimated time required
1	UNESCO open roadmap	Continue helping/advising UNESCO in creating a UN-wide roadmap for the future of open science	–	18 months

2	Meetings	Meetings are needed all stakeholders can discuss the outlines of a new global roadmap for open scholarship (both independently and as part of UNESCO's global roadmap effort), and where diverse groups can work together to better understand the needs, goals and concerns of researchers in different disciplines, fields, labs, regions and institutions, and career stages.	\$50,000 per meeting	4 months planning and follow-up per meeting
3	Surveys	We need a clearer and more detailed understanding of exactly what researchers want and need, what they will use, and what we hope to accomplish with reforms so we can make sure to ask the right questions, collect the right data, and pursue the right solutions.	\$20,000 per survey	6 months
4-50	–	The OSI2016 and 2017 workgroups came up with a long list of recommendations for collaborative actions in the scholarly communication space. These should be carefully looked at by the Plan A group as possible projects. See the OSI2017 report (on the OSI website) for details.	–	–

CLIMATE CHANGE FOCUS

Priority	Subject	Summary	Estimated cost (US\$)	Estimated time required
1	Open policy meetings	Climate science is closed relative to many other fields. Figuring out how to make it more open is critical—to enable scientists from all countries and from all fields related to climate science to share their data more freely on everything from atmospheric carbon removal technology to methane capture to temperature modeling.	\$50,000 investment per meeting (net invest is \$0)	4 months planning and follow-up per meeting
2	Education conventions	Conventions are needed to educate business and policy groups about the range of existing tech options for carbon and methane capture. Presentations should also take place at these meetings on barriers to action, risks of uncoordinated action, forming international networks for investment and action, etc.	\$100,000 investment per meeting (net invest is \$0)	4 months planning and follow-up per meeting
3	Action frameworks	Once the data is clear and the barriers and risks have been assessed, action frameworks can begin taking shape. Openness will be key in this—establishing frameworks built on discoverable information, communicated clearly to policy makers and the public, with clear, sound, accountable objectives in mind and strong sustainability.	\$75,000 annually	6-12 months to begin making measurable progress
4	Replicability	Once developed, OSI's climate change model can be replicated to other research challenges.	–	–

COMPASSIONATE USE FOCUS

Priority	Subject	Summary	Estimated cost (US\$)	Estimated time required
1	Open policy meetings	Compassionate use access to medical research is spotty. Publishers have some one-off mechanisms in place for daylighting research during times of global health crisis (such as COVID-19 research. Several international conventions also exist. However, there are no turn-key procedures or resources in place. Figuring out how to make critically needed health and medical research available to researchers and policy makers (as well as individuals researching cures for loved ones) will fill an important needs gap in the scholarly communication space. The first step is to meet to talk about needs, gaps, barriers, possible solutions, etc.	\$50,000 investment per meeting (net invest is \$0)	4 months planning and follow-up per meeting
2	Action frameworks	Once the challenge is clear and the options have been assessed, action frameworks can begin taking shape. Openness will be key in this—establishing frameworks built on discoverable information, communicated clearly to policy makers and the public, with clear, sound, accountable objectives in mind and strong sustainability.	\$75,000 annually	6-12 months to begin making measurable progress

WHY?

Scholarly communication tools and practices have been evolving for decades now. Where they end up decades from now is truly anyone's guess. Until then, there are many issues that need to be resolved, and many reforms that should be pursued.

So what's the holdup? Nothing really. There are a large number of organizations in the scholarly communication space who are working on reforms. Some of these groups are working together, most are not. Overall, our progress toward a more open research world has been growing steadily, although much progress remains to be made.

Or at least some people see it this way. Others are convinced that not nearly enough progress has been made to-date, which isn't wrong—they're just measuring progress differently. There are fundamental disagreements in scholarly communication about what kind of reforms we should be making. Some feel quite strongly that commercial publishers have no place in the future of research and that no reforms are complete unless publishers are excised from the picture. Others feel quite strongly that publishers have a centuries-long track record of serving the research community and that the tools and processes put in place by publishers are essential to retain because they facilitate good research and are valued by the research community. Still others are caught somewhere in between—yes, publishing is valuable, but exactly what is “publishing” in the digital age, and can't we do things more efficiently today than in years past?

There is also a wide range of disagreement over how fast needed reforms can and should happen. “Right now” is too slow for some, and “ten years from now” is too fast for others. On the fast side, advocates see the need for the immediate daylighting of research information that could cure cancer and reverse climate change. On the slow side, advocates see the need to move with caution lest we damage research with rash and ill-considered changes.

Aside from issues directly related to open access reform—what kind of open and how fast—there are also many persistent issues in this space that will require global cooperation to solve. The misuse of impact factors is one such issue, for instance. Impact factors at their most innocent simply tell researchers which journals are more important than others. At their most sinister they are used as a proxy for quality and drive publishing behavior that works at cross purposes to a more open world (what researcher, after all, wants to publish in a small start-up journal that is free to read if the real credit and glamor comes from publishing in the *New England Journal of Medicine*).

Plan A isn't advocating one particular approach or time frame, but rather a necessary and inclusive process. By working together—however quickly and aggressively we decide to do this as a community—on realistic, robust, collaborative solutions that improve the capacity of research for all researchers everywhere, Plan A's vision is that we will arrive at solutions that are both sustainable and highly effective—much more effective than any “solutions” imposed by outside groups with their own biases and agendas.

Indeed, Plan A's vision is that by working together, and only by working together, we will eventually—maybe 15 years from now, maybe less, maybe more—arrive at an “Open Renaissance” where the research ecosystem will grow exponentially more powerful as more open and connected data catalyzes more innovation and improvement. New fields and directions will emerge based on “connecting the dots,” funding efficiency will improve, and discovery will accelerate; the social impact of research will exceed today's levels (including improved literacy, public engagement, and public policy impact); and knowledge will become more of a global public good, with society reaping the benefits.

GUIDING PRINCIPLES

This work will be guided by 12 general principles that represent a global, multi-stakeholder, common ground perspective on the future of scholarly communication. Plan A's work and work products will be:

1. **Researcher-focused.** Research communication tools, services and options need to be developed with heavy input from the research community, with solutions and approaches driven by researcher needs and concerns.

2. **Collaborative.** Successful and sustainable solutions will require broad collaboration, not just to ensure that all perspectives are considered, but also to ensure there is broad ownership of ideas.
3. **Connected.** There are a great many interconnected issues in scholarly communication. We can't just improve the openness of information without also addressing issues such as the current functioning of impact factors, peer review, and predatory publishing. Reforming scholarly communication will require a systemic approach.
4. **Diverse and flexible.** There are no one-size-fits-all solutions to scholarly communication reform. Instead, there are many different pathways to reform, including many that have not yet been conceived or deployed. Diversity, creativity and flexibility in this undertaking should be encouraged, at the same time noting that we should try to maximize adherence to the other principles represented here.
5. **Informed.** We need a better understanding of key issues in scholarly communication before moving forward. For instance, what is the impact of open research? The more accurate and honest our assessments, the more accurate and honest our reform efforts can be, the easier these efforts will be to promote, and the more successful they will be.
6. **Ethical and accountable.** We need enforceable, community-developed/driven standards to ensure the integrity of journal publishing, repositories, and other related activities/products, and to ensure that unethical approaches are not embraced.
7. **Common goal oriented.** We must discuss and plan for what the future of scholarly communication means, beyond just having access. For instance, we need to identify precisely what we plan to do with open information, where we will need data interoperability, what tools and procedures we will need to achieve this interoperability, and so on. By doing this, we focus on and strive for our community's common goals.
8. **Equitable.** Researchers everywhere need to be able to access and contribute information to the global body of research information with minimal barriers. To the extent practicable, research information—particularly information central to life and health—should not be unreasonably constrained by issues such as high access costs, poor journal indexing, and a lack of capacity-building programs.
9. **Sustainable.** Scholarly communication reform approaches need to be sustainable, which flows from all the other elements in this list. That is, the reform solutions we design need to be achievable, affordable, popular, effective, and so on.
10. **Transparent.** This community needs to maintain as much transparency as possible in this effort (with regard to pricing, usage, ownership, and so on) in order to address the trust issues that have plagued this space for so long.
11. **Understandable and simple:** This community needs to agree on a few simple, high-level, common-ground goals for scholarly communication reform—not anything specific with regard to publishing requirements, for example, but a general set of goals that are understandable, achievable, and adaptable. By setting out general goals that can be easily achieved, participation can be made simple and easy, with low barriers to entry.
12. **Beneficial:** In the end, these reforms need to benefit research first and foremost. While the argument to improve benefits to society is central, these benefits need to be matured carefully, deliberately, and realistically in order to ensure that societal benefits are indeed being conveyed as intended, and that research is not being harmed in the process.

ENACTMENT

It is important to note that the global “scholarly communication community” addressed by this Plan A is vague and amorphous. However, this community also has much in common, and it shares common goals and interests (see OSI’s “Common Ground” paper for more detail). It is in this broad sense that we speak of community—not with the unrealistic expectation that every organization currently working in this space will or should stop what they are doing, leave their disagreements aside, abandon their own priorities and join hands, but with the knowledge that ample common ground exists in this community to support common action that benefits everyone everywhere. The vast majority of stakeholders in this space are not, after all, ideologically attached to any one particular approach—most are simply trying to figure out what to do with regard to open policies. In addition, even groups who may be invested in one particular approach or perspective share a common desire to improve open. The contributions to openness supported by this plan—studies, infrastructure development, common ground collaborations, and education/outreach—will help all groups in this space and will help advance open for everyone.

With regard to enacting this plan, participants will decide how best to jointly manage Plan A and its activities. OSI will be the initial manager until such time as decided otherwise by the group, under a governance plan to be released at a later date. The goal is for Plan A to be fully operational by mid-2020 (i.e., beginning to work on targeted projects, studies, outreach, and other to-do items), with work continuing for as long as funding and interest continue.

FEEDBACK

Feedback on this plan from the global scholarly communication community is welcome. Comments should be sent to info@osiglobal.org. This plan will be revised over time in response to this feedback, and also in collaboration and consultation with UNESCO’s open research roadmap effort.

FAQS

1. Where’s the beef? I’m looking for a bold plan with lots of action.
 - Finding a common ground starting point for action is vital. What the scholarly communication community needs is a respectful, collaborative effort to work together on solutions that everyone has a say in developing and that will benefit everyone everywhere. Assessing the wealth of recommendations from OSI2016 and OSI2017 workgroup participants (see the OSI2017 report for details), the most frequently mentioned crosscutting issues were the need for more studies and the need to reform the culture of communication in academia. The most frequently mentioned approaches for reforming scholarly communication were studies, coordination and collaboration, outreach, new tools and programs, improved standards, pilots, resource development, and policy leadership. Plan A’s focus is derived from these recommendations, overlaid with what the OSI group has learned and observed since these meetings about our internal strengths and about the environment for global reform. Specifically, what can realistically be accomplished and has the greatest chance of serving as a foundation for real and lasting improvement? Plan A is it, and from this effort, trust, accomplishments and progress will build and grow.
2. Is this a manifesto or a plan?
 - It’s both—a description of the need to come together to solve a very important problem, and the mechanism for doing so.

3. This is for the benefit of publishers, right?
 - Wrong. Publishers need to know what to do. Plan A provides a framework for action that allows everyone to work together instead of everyone rowing in different directions.
4. Is OSI pro-publisher?
 - OSI is pro-stakeholder. Everyone deserves a seat at the table, even publishers, who have been targeted for years as being somehow culpable for not providing more information free of charge. The reality is that “free” isn’t a sustainable business model. If we value what publishers bring to the table—gatekeeping, evaluation, editing, structure, organization, dissemination, and global integration—then we need to work with them to create effective and sustainable change. If we prefer to wipe the slate clean and start all over again, that’s an okay perspective too, bearing in mind that this approach has risks and may result in simply reinventing the wheel and ending up with the same costs and issues as before, just different players.
5. This is a lot of work. Who pays for it?
 - No one yet. OSI is currently (as of March 2020) seeking support for this plan. Our hope is that at least some of the larger signatories will be willing to each contribute a small amount of support to help get the ball rolling.
6. A lot of Plan A hinges on having adequate support. Is this a problem?
 - Yes and no. There is plenty for us to do in the short-term absence of full funding (see funding section for details)—continuing to write grants, write briefs, plan studies, build alliances, advise UNESCO, and more. This said, funding may be on the horizon for specific deliverables. Also, as Plan A gets promoted, funders may come on board (whereas if they haven’t supported OSI in the past, this may be because OSI itself wasn’t proposing to build anything).
7. What’s the relationship between OSI and Plan A?
 - Plan A is an invention of OSI, representing the collective wisdom of OSI participants. However, in order to ensure that Plan A can grow and evolve in accordance with the wishes of the organizations who sign this plan, the current intent is for Plan A to become an independent group by the end of 2020, with its own management structure and governance rules. OSI will retain a seat on the Plan A board, and will likely continue to provide the bulk of Plan A’s financial support.
8. Why 5 years? Why not now?
 - The open access movement has been pushing for “now” solutions for the past 20 years. They don’t work, because “now” is not an acceptable substitute for appropriate consultation. The scholarly communication community has many stakeholder groups with a stake in the outcome of reform measures. It is essential, both for the success of these reforms and for their long-term sustainability, that the first step in these efforts involves bringing everyone together. From there, who knows? Maybe real reform will take only four years? But continuing to pursue “now” solutions for another 20 years isn’t the right approach.

SIGNATORIES

Groups that sign Plan A indicate a willingness to working together to fulfill the plan’s goals. A current list of signatories will be available online.

ANNEX

STUDIES

OSI will begin conducting studies that target key issues in scholarly communication where a lack of firm understanding is making it difficult to create effective policy reforms. These studies will be “leveraged” through OSI, not outsourced. That is, OSI has enough internal and volunteer capacity to do all the study design, oversight, writing and analyses in-house. Grant funds will be used mostly for data-gathering and statistical analyses. The OSI team will identify and hire researchers as needed (some may end up being OSI participants already) who can conduct original research work as needed, and hire statisticians as needed to crunch numbers and maybe take a first pass at analysis, but the final writing and analysis will be done in-house by OSI participants. In this way, we can get the most studies possible with the smallest outlay of time and money. The studies we will conduct are as follows:

- DECEPTIVE/PREDATORY PUBLISHING:** Exactly how fast is deceptive/predatory publishing growing, how much of it exists, and what are its dimension (by region, discipline and so on)? Very little definitive is known about this phenomenon, and yet it is perhaps the single most disruptive influence in publishing today (Anderson 2019; Strinzel 2019). As more emphasis is placed by libraries and funders on open access publishing, more open access publishing options are becoming available to authors. Some of these options are legitimate, some are not. This study will describe what we already know about predatory publishing, and will also enlist the aid of leading researchers who are part of OSI to suss out long-term data about the growth of predatory titles over time. A rough outline of this study is as follows:

Title: Using new and improved data to assess the academic journal landscape

Section	Description	Pages	New or novel?	Notes	Lead author?
Intro	Overview	0.5	No	Why can't we just do a count in Google? Well, for one, they won't let us. Second, there's no accounting for quality. The future needs to be built on systems that are reliable and accountable.	Glenn Hampson
What is a journal?	Essay	1	No		Rick Anderson
The growth of journals and journal articles	Statistics	2	Yes	This is a known concept but will use new/better data from 1findr	Eric Archambault
Breaking down the nature of this growth	Statistics	3	Yes	Same as above. Focus on regions, disciplines, rates, and types (open, subscription, hybrid, other; predatory, indexed, non-indexed), plus—from other studies—how this compares to growth rates for “other” types of science communication like white papers, blog posts, preprints; who is publishing and why; etc. (from other studies)	Eric for new material, Glenn for rest
Discerning legitimacy	Overview	0.5	No	A quick case for how we define real science publishing and how evolving publishing norms are making it easier to push these boundaries	Rick
The statistics of legitimacy	Stats	4	Yes	A detailed look at what Cabell's is doing, plus a detailed breakdown of the predatory landscape (rates, regions, disciplines, etc.), as well as a breakdown of what kinds of “violations” exist. How much of this “predatory” work is mixed in with real work, and how does this change the growth estimates that Eric came up with? This will need to be broken down by region and discipline—the aggregate numbers won't be revealing.	Simon Linacre

Testing assumptions	Stats	4	Yes	Random sample Google search results in various topics from different parts of the world to if what comes up in Google searches matches what “should” come up in terms of significance and legitimacy. [This is important insofar as GS is the primary search mechanism for a majority of the world’s researchers.] For instance, does searching for “cancer vaccine research” return real work more often than not, or lots of predatory work? Understanding this will help us understand how worried we should be about fake science corrupting our knowledge base.	Not sure
Re-thinking the landscape	Informatics	2	Yes	How else can we visualize what’s happening in scholarly publishing? For instance, would it make more sense to group journals into “read” and “not read” (and/or relevant and not relevant, compliant and/or noncompliant, etc.)? By audience saturation? Etc. In other words, is it necessary to think in terms of the growth of articles and journals if what’s actually being used/read is remaining essentially unchanged (save for new journals covering new fields), or if journals are born and quickly die?	Glenn et al
Issues and recommendations	Policy	3	Yes	What are the issues that are important in this landscape (like inclusion and preservation), and what issues are preventing us from tracking academic scholarship more closely (ISSN errors, naming differences, indexing problems, completeness issues like poor inclusion of SciELO journals, etc.), how prevalent are these, and what can/should we do to remedy these? Is a global open index a solution (plus a global open impact factor)? These ideas will be explored more fully in a forthcoming OSI project.	Glenn et al

- IMPACT FACTORS:** Impact factors are one of the most destructive, most corrosive measures used in science today (OSI 2016a, Bosman 2013). They are also one of the most important and widely used. How can both of these statements be true? Because impact factors are the statistic we love and hate—we know they are more or less meaningless (Lozano 2012), but we also know that high impact factor work translates into promotions and grants. And so we turn a blind eye to their shortcomings and keep using them. Much has been written about the use and misuse of impact factors (i.e., explaining what they were intended to measure versus how they are promoted), alternatives to the impact factor, and calls for broadening the metrics we use in assessments (particularly RPT). But nothing has ever been written about the statistical validity of this measure. In fact, the impact factor isn’t mathematically valid at all for the purposes of measuring “impact” (for several reasons—the most significant of which are that this is an aggregate journal level metric and not an article level metric; also, citation counts are just aggregate, not positive or negative, so a bad article could be highly cited as an example of what not to do. After disassembling the mathematical foundation of impact factors, this study will propose how to remake the impact factor to improve its use. It will also rethink policies regarding how we use future impact factors in order to avoid perpetuating the “arms race” situation we have now where publishing in high impact factor journals is seen (incorrectly) as a proxy for quality, relevance and impact (disassembling this narrative will require evidence). Finally, this study will review the existing literature for an explanation of why we use these measures in the first place (plus an overview of who uses them and how), and review other proposed means of measuring impacts (existing tools, new tools, etc.). One final approach that may also be explored as part of this paper, depending on how far along the development of a proposed product has progressed (see “open impact factor + open index”) is a new “open impact factor” measure (built on the new math but using a global index) that everyone can have/use and that doesn’t discriminate

against small/new publishers. Currently, only journals indexed by Clarivate (representing a narrow and elite set of journals) can have an actual impact factor calculated; everyone else needs to use a fake impact factor (like the Global Impact Factor) or invent one out of thin air. Creating an open impact factor will first require creating a global index, which is described in more detail in the open impact factor + open index product proposal.

- **EMBARGOES:** How necessary are embargoes? Publishers insist that a 6-12 month delay is necessary between publication and free public access in order to protect subscription revenues. Critics contend that this time could be shortened—that there are other ways to protect revenue streams that don't involve long paywalls. To-date, the only estimates of ideal embargo length have come from citation half-life studies. In order to generate more “real” data on this matter that directly answers the question of how long is too long (instead of inferring this from half-lives), we will conduct a blind with the cooperation of publishers (Elsevier volunteered to participate in this study in 2016; we will revisit this offer and see if we can also include other publishers). This study will reduce or eliminate embargoes for a select number of publications and will monitor this impact of this action on revenues. If the impact is negligible, the evidence may suggest that embargoes can be shortened (or that revenue loss can be offset through other value-added access means—e.g., increasing access to the article but not the dataset, which will lead to more purchases of the dataset). The need for embargoes remains a major sticking point in open debates. Figuring out how to make progress on this issue is important to the future of open.
- **IMPACTS:** Not to be confused with “impact factor,” understanding the actual impacts of open in research, education and society is vitally important. This is more of a meta study than anything, but it's needed to better “sell” the advantages of open (or to better understand why open is not selling and what we really need in open—more standardization of data, for instance). The OA citation advantage is the most visible attempt so far to quantify open impact, but studies trying to measure even this one statistic have reached different conclusions to-date. Eric Archambault's most recent study (Science-Metrix 2018) is the most authoritative, but even this study didn't look at the full spectrum of open products, just “gratis” (which crosses several categories of open). What we need to know is much more granular: what kinds of green open are the most effective (for instance, the green in institutional repositories, or on preprint servers, or where?), how well is gold received by researcher (and what type), bronze, public access, and so on? In other words, exactly what kind of open is needed to improve visibility and reuse? What kind of open works best and why (what factors are most important—readability, findability, reusability, all of these, or none of the above)? What measures other than citation might we use to triangulate on actual impact (since citations can be influenced by press coverage, topic salience, etc.). What correlates can we note between open and research uptake, R&D investment, and more? The entire corpus of open work to-date has taken it as an article of faith that all open is created equal and that open itself—vaguely defined as it is—is meritorious. We need to get a clearer idea of what we're working to achieve and why, beginning with understanding how the current constellation of open outcomes are being received in the marketplace. (Possible OSI research leads: Rob Johnson, Caroline Wagner, Eric Olson; Rob's possible time frame for working on this is June-Aug 2020)
- **PUBLISHER PROFIT MARGINS:** A major point of contention in this space is how much profit Elsevier makes. Critics say 37 percent. The company (in correspondence with the OSI list) says much less—that Elsevier's income and expenses are entangled with those of its parent company RELX and that revenues come from many sources not related to academic publishing. A clearer picture is simple enough to arrive at by hiring auditors to examine the books (not just of Elsevier but other major publishers as well) and issue an authoritative analysis, and also by reviewing the scholarship on how to properly interpret profit margins within and across industries. We will also review the landscape of funding and costs for universities to see how

publishing fits into all of this. Charges of profit-mongering and double-dipping have fueled attacks on commercial publishers or at least 15 years now and these attacks have been used as an excuse to keep publishers from participating equally in global conversations about the future of open. To the extent we can help shed more understanding on these numbers, it will help provide a firmer foundation of transparency and realistic expectations for open reforms. In order to develop a fuller understanding of the underlying tensions in this debate—it's largely just a push and pull between libraries and publishers, with each accusing the other of financial misdeeds—we may also find merit in expanding this study to include a look library finances as well. The publishers with whom we have spoken are willing to participate in this study insofar as providing requested data.

- **CONNECTEDNESS/STANDARDS/ROADMAP:** How related are different concepts and applications of open (across coding, books, journals, etc.), and where can we merge these concepts, applications and even open efforts? As we (not just OSI, but the United Nations, scholarly societies and others) begin developing new roadmaps for the future of open, it behooves all of us to collaborate not just within scholarly publishing, but between journal publishing, book publishing, data science, and so on. OSI is actively pursuing partnerships in the roadmap effort on several fronts but needs to have a roadmap of its own showing who is working on what, what concepts overlap, what concepts differ, and how this landscape of interests and perspectives fits together. From this work, it should be possible to create a new global conversation around global open standards and a global open roadmap built on common ground and connectedness and that applies broadly to all fields and all open efforts. From this position, we can establish policies that are flexible and adaptable and that all pull in the same direction toward more open. A study like this hasn't been conducted before—this would be a first attempt to define the full landscape of open.
- **NEEDS:** Tying in closely to our impact study, the scholarly communication community also needs a study that looks at how much open is needed by field (for instance, is CC-BY licensing always necessary everywhere)? As noted in the impact study description, open efforts have long proceeded from the assumption that we know what works and what the market needs, but in fact we have no idea. This study would first survey existing literature to get a fuller picture of what we already know with regard to researcher wants (primarily various author surveys conducted over the years by publishers and universities). Information gaps would then be filled via new, global surveys, facilitated with the assistance of Editage/CACTUS and others in OSI who have volunteered to help. Getting a broad sense of this demand across regions and institutions, as well as across disciplines and faculty types (as is usually done) is critical insofar as trying to ascertain global needs and perspectives and not just Northern/Western needs. Getting a better sense of what kind of open we should be working toward is also critical. The impact study will look at this from a market perspective, assessing what's being used. The needs study will look at this from an aspirational perspective—what needs are present that are not being met? Do current solutions align with marketplace options? Is there alignment between what researchers are asking for and what the marketplace looks like?
- **PUBLISHING IN RPT:** Publish or perish has been the norm in academia for decades now. This dynamic is not abating; indeed, it's accelerating (Plume 2014). Around the world, we see a wide variety of influences that are causing the number of research articles to stay high, including requiring publishing for a PhD (India), awarding cash bonuses for publishing in high-impact journals (in China; Montgomery 2018), having journal articles ghost-written for you to improve resumes (Russia), and everywhere, having more opportunities available to publish (faster, at lower cost, as part of large multi-author teams, as part of grant requirements—regardless of whether study findings are complete or meritorious, as salami-sliced articles, as a consequence of increased specialization, and more. Concurrent with this avalanche of paper, there is also

increasing sloppiness in the system wherein tenure committees aren't necessarily valuing the quality of publications—that is, publishing in predatory journals may not always be noticed or questioned (Shamseer 2016). OSI has debated this issue at length and there aren't any good answers. Do we expand the scope of what “counts” in publishing to include blog posts, videos, press interviews and more? Do we lower the bar and allow preprints to count for more? Do we create professional standards such that publishing in a non-indexed journal (see tech project on indexing) is disallowed. Or even more aggressively, do we create standards that say publishing in such journals is unethical? OSI isn't the only group that has debated this issue. What is needed is a landscape analysis of RPT practices worldwide with regard to publishing. From this analysis, we will develop a set of best practices recommendations for UNESCO and national departments of education. Once we lower the pressure to publish in academia, it will become easier to rationally discuss and implement solutions aimed at improving the quality and quantity of research publishing. Until then, and without addressing this systemic issue, reform measures will simply be reactive.

- **PEER REVIEW:** Peer review is what separates vetted science from non-vetted science. It's a critical part of the current scholarly publishing ecosystem. Peer review is also unpaid labor and an incredible burden to many in academia. To this end, different methods of peer review are evolving and being tested—for instance, post-publication peer review, which allows articles to be quickly shared and then refined via broad feedback in real time online. Peer review is also being faked—deceptive journals promise peer review but deliver only a cursory editorial review instead, if that. OSI has debated this issue at length and is well-positioned to author a landscape analysis of the current state of peer review, along with best practices recommendations for UNESCO and national departments of education. Without figuring out the right way forward for peer review, our open efforts will flounder—we can't create more open without ensuring the scientific integrity of these articles. We also need to develop and share best practices with the global community in an authoritative way, which this landscape analysis will facilitate. This effort will be focused on settling the highest priority concerns in peer review (Tennant 2019): what is peer review anyway, what value does it add, how do we define expertise, how do we protect diversity and more. These questions will be answered through broad stakeholder polling and consensus. This study will be part fact-finding, part survey, part consensus cultivating, and will involve meetings, email discussions, proposal drafts floated to institution heads, and collaboration with standards agencies like NISO and editorial agencies like WAME (which all participate in OSI).
- **GLOBAL FLIP:** California's library system, cOAlition S, MPDL's OA2020 Initiative, and other influencers in global scholarly communication system all believe quite firmly that a global “flip” to open is economically feasible, wherein closed subscription publications convert to APC-funded open publications. This belief is grounded at least in part in a 2015 study from the Max Planck Digital (Schimmer 2015) suggesting that the world has enough capacity to make this flip possible and that costs will come down as a result of APC competition. These data have never been examined closely in another research piece (they have been challenged in numerous blog posts since then) but they need to be so the global community can assess this strategy more objectively. Mounting evidence suggests that authors do not comparison shop for APCs (Tenopir 2017), so there is no downward pressure on prices. What we have instead are escalating prices, and a shifting of the cost burden from institutions to authors, all of which is only widening the gap between haves and have-nots. Are APCs the way to go? Maybe, maybe not. The fact is we don't know. More research is needed. This study will go back to square one and re-examine the data and assumptions of the original global flip study, updating data points and re-examining assumptions such as price competition based on new studies. It will then look at the variety of pricing models that have emerged in the global publishing system over the last 10 years (such as PAR) and estimate what may actually be possible—that is, estimate what the

market may actually be looking for and what reforms may be achievable. Based on this analysis, this study will search for the “sweet spot”—maybe, for instance a global flip to PAR in 10 years bracketed on the high and low end by layers of subscriptions and preprints, or whatever the case may be. This analysis is important insofar as trying to visualize the end-zone for reforms. We know what problems exist and what changes need to be made. What we don't know is where the market is headed. Having a better idea of this will allow the global community to start pulling in the same direction and improve collaboration on measures that aim for the same goal.

- **GLOBAL RESEARCH PUBLISHING STANDARDS:** Figuring out how much deceptive/predatory publishing exists, what it looks like, who is using it and why (see previous study proposal on deceptive/predatory) is just part of the effort to improve global research publishing. Another critical part is to figure out what research publishing standards we need. Several organizations in scholarly communication have discussed best practices over the years (most notably editorial and umbrella groups like NISO, WAME, COPE, and OASPA), but these discussions have stopped short of creating and issuing internationally-backed recommendations for publishing standards and the methods for enforcing these standards. This study will first gather together best practices recommendations that have been discussed to-date, update these with input from the organizations represented in OSI (which includes editorial and umbrella groups plus over 200 other organizations), and then evaluate realistic measures for creating and enforcing standards for the global research publishing community which will be observed not just by publishers but by others as well—most notably funders and universities. The goal of these standards will not be to erect barriers to publishing, but to map out the boundaries of what we mean by “open,” “publishing,” “peer review,” and other terms that lack a clear definition. These standards will also define the minimum expectations we should have for publisher competency so that the global research publishing enterprise as utilized by universities in particular is consistent and well-defined. Since this study will rely on findings from several other OSI studies, it will need to wait until these other studies are complete before beginning. Creating thoughtful, fact-based, widely-adopted standards for global research publishing is critical to ensuring that research publishing grows in a way that represents the needs of researchers and not just market forces (e.g., less deceptive publishing, less pressure to publish in journals, etc.).
- **REPLICATING THE SCIELO MODEL:** SciELO is one of the most unique organizations in the world of scholarly communication. It is a soup-to-nuts provider of everything from publisher training to editorial services to data management and repository management, serving as a pioneering open access network and hub for dozens of journals across Latin and South America. It is a model for how the publishing industry should evolve in the global south to ensure improved focus and better access. We will undertake a study to determine the feasibility of expanding SciELO from Latin and South America to CAMENA (Central Asia, the Middle East and North Africa), Sub-Saharan Africa, and SE Asia. Is there a need in these regions? Interest? Potential financial support? Should these new SciELO's operate independently or in cooperation with one another? Based on the outcome of our study, we will then approach UNESCO and other possible funders and partners with financing and development proposals (note: an initial version of this plan was raised last year at SciELO-20 with the heads of SciELO and its parent body FAPSEP, as well as UNESCO).
- **IMPROVING SCHOLARLY PUBLISHING RESEARCH:** The majority of research into scholarly publishing-related issues and reforms isn't adequate. This is an impossible statement to corroborate—it's an observation based on the volumes of research the OSI group has reviewed over the past four years. Too much of this research exhibits a fundamental misunderstanding of the nuances in this field. In an effort to promote better research, we will research and publish a paper that describes the conditions researchers need to keep in mind when doing open research. For instance, when researching predatory journals, Beall's List should not be used as

a starting point since this list is not transparent and is no longer supported (i.e., the criteria for inclusion on this list were always taken on faith—Beall never made these criteria public—which is not how science should be done). Also, we cannot assume “open” means the same thing as open access. Too much research tracks “open” without understanding that it exists in many variations, and gold/green CC-BY open is just one such variation. Also, we cannot treat databases like Scopus as being representative of all journals. This database is, in fact, narrow and highly selective. There are many more observations about scholarly publishing research we’ve noted over the years; publishing this as guidance will help improve the quality of future research work in this area.

- **OTHER:** The OSI group is constantly talking. It’s quite likely that other study ideas will be raised. If some of these ideas are meritorious, they will be added to this grant proposal with permission and pursued if possible.

INFRASTRUCTURE

OSI will also begin developing tech products and solutions that fill key needs in the scholarly communication ecosystem where a lack of government and/or private sector action has hindered the progress of open reforms. As with OSI studies, these products and solutions will be “leveraged” through OSI, not outsourced. That is, OSI will design and oversee development in-house, and NSF funds will be used for certain programming and other work that cannot be handled in-house. The OSI team will identify and hire personnel as needed (some may end up being OSI participants already) who can conduct this work as needed, but the final design decisions and assessments will be done in-house by OSI participants. All of these products and solutions will fully deploy before 2025. Grant funds (if available) will be used to maintain these products and solutions over grant periods, but all solutions will become self-supporting through various combinations of advertising, sponsor fees, and member fees for content providers (none of these products/solutions will have user fees for basic access, although premium access models may emerge as a means of support). The products/solutions OSI will consider building are:

- **APC DISCOUNT/SUBSIDY DATABASE:** There are no databases of article processing charges (APCs) or subscription discounts or subsidies. Researchers looking for charges, discounts or subsidies need to search for these one at a time. Research4Life leaders (who are part of OSI) have noted that building such resources would be immensely helpful to authors, particularly those from the global south where discounts and subsidies are most needed, and also where price comparisons are more needed. OSI researchers will collect and input initial APC and discount/subsidy data over a period of six months, after which point publishers and discount/subsidy providers will be given instructions on how to keep their data current. This data from this system will feed into other systems we develop (see, for instance, the Yelp product).
- **OPEN IMPACT FACTOR + OPEN INDEXES:** Our uneven progress toward open is having unintended consequences. Among these consequences are the unavailability of legitimate impact factors for all journals (because not all journals are indexed), uncertainty about the number and growth of so-called deceptive/predatory journals (see deceptive/predatory study proposal), and the growing incidence of citations from non-indexed journals. Regarding this first problem, because the need exists for thousands of journals to get some sort of legitimate impact factor (whether this uses the same math as the current impact factor is a separate question—see the impact factor study, which will precede the development of this tool), because most journals will never earn a legitimate impact factor through Clarivate (since these journals don’t pass rigorous tests for index inclusion), and because the alternatives (such as “global impact factor” or “universal impact factor”) aren’t legitimate, there is a need in the marketplace for new solutions that are legitimate. OSI has discussed developing three possible solutions to these challenges: (1) Creating an open impact factor measure (described below), (2) creating an all-inclusive

open index, and (3) creating an index of indexes. All three products/services have unique audiences and all three will be developed/piloted together. The first solution—the open impact factor—simply decouples Garfield’s impact factor calculation from the private management and ownership of it by Clarivate—decoupling the algorithm from the data source so we can have as many lowercase “impact factors” with as many algorithms as we want. (Clarivate has trademarked “impact factor” and “journal impact factor” in the US but does not own the mathematical concept. This move is not wresting control of the impact factor away from Clarivate since the product they provide has substantial independent merit. Rather, it is simply providing legitimate alternatives to the “universal impact factor” and “global impact factor” for journals that do not qualify for a Clarivate-issued impact factor.) To do this will first require a developing a global index of journals, which is proposed solution number two. Current indexes are limited in scope and focus primarily on English-centered indexes. In order to improve the identification of deceptive journals it is necessary that we have a universal indexing system that overcomes the natural or operational exclusion of current indexes. Today such indexing is provided only by Google Scholar. Idea number three is to create an automated journal whitelist look-up, whereby a program will make an API call to a look up and return a list of whitelists on which a given journal appears (with cooperation from Cabell’s, this call could also include blacklists). This system will return a finding like: “Journal X is indexed by WoS, JCR, Scopus, DOAJ, and MEDLINE.” The lookup will also include subject lists (like EconLit, PsycINFO, MLA, and so forth) as well as regional titles. This system will be used to help dissuade citing non-indexed and possibly suspect work. Journals will be encouraged to adopt an editorial policy whereby if a referenced journal does not appear on a whitelist, then authors must justify the citation. This approach does not require much in the way of new infrastructure or the creation of new lists. It will, however, require various whitelist publishers to agree to allow such an API look-up (akin to Indeed or Monster scraping various job boards to provide one meta job board). The look-up would not contain any additional information from the white lists—only an indication of whether a journal appears on it.

- APC PRICE COMPARISON TOOL:** As noted earlier, several recent studies have confirmed (Tenopir 2017) that scholars do not shop around for the best prices on APCs. And yet price shopping is behavior is assumed to exist and is fundamentally important to the success of the University of California’s position with regard to cancelling access to Elsevier journals and hoping that alternative publishing options will not only take hold but save the system money (as enunciated by the UC’s lead negotiator Jeff Mackie-Mason; see Mackie-Mason 2016), and also to the MPDL’s OA2020 effort (which underpins the EU’s Plan S initiative). APC price shopping may not exist yet simply because there is no tool to help facilitate this (to be clear, price is a factor, but surveys have shown that authors care more about quality and impact than price; the argument here is that if it was easier to compare prices, then maybe price would factor more in decisions). Although many in OSI are opposed to the carelessness of Plan S, we are not opposed to the idea of helping contain costs in publishing; developing an APC price comparator tool would therefore be of great service to the global scholarly communication community. No such tool currently exists. The development and deployment of this tool would need to proceed with care. While providing price information is valuable, we don’t want to help promote fake journals either. Therefore, with help from Cabell’s, DOAJ, SSP, and other relevant organizations in OSI, we will begin by creating a self-populating database of APCs from currently indexed journals only (seeded with initial data as available, at which point publishers will be emailed and instructed how to self-update information). Non-indexed journals with egregiously bad behavior (plagiarism, fake peer review, etc.) will not be listed in this database; non-indexed journals with smaller question marks (new, no street address, broad subject coverage, regional interest, etc.) may be listed with asterisks (indicating that authors should seek input from their library officials before publishing in it).

- YELP SITE FOR SCHOLARLY PUBLISHING:** OSI will build a few tools that have wide “category-killer” appeal and real paradigm-shifting potential for scholarly communication. A Yelp site for publishers is one such tool (an All-Scholarship Repository is another). Both of these tools will have significant overlap with other tools we build and that exist on the market today—that is, they will incorporate some of the same data, but they will have broader audiences and fill more needs at once. The core purpose of the Yelp site for scholarly publishing is to provide an easy-to-use, familiar-looking interface where customers (authors, editors, reviewers, funders and more) can rate scholarly publishers (not just commercial journals but university presses, scholarly society journals and more) and where publishers can provide important contact and product information—a link to their website, a summary of their products and services, links and credentialing badges that verify data such as indexing and impact factors, and much more. Customers will be able to search this database for publishers in their field, price range, region and more—like the actual Yelp site, searches can be filtered in a wide variety of ways. Customers will also be able to provide reviews regarding their experiences with publishers, which will help round out the data provided by Cabell’s blacklist and other information sources. For instance, customers might report that their peer review experience with a particular black-listed publisher was perfectly acceptable, or conversely, that it was entirely inadequate with a highly-ranked publisher. The reviews that get posted on this website will take a few years to become accurate. At first they will be dominated by people who are either trying to mask bad products or punish good ones, but over time we suspect that this will become the go-to resource for all authors looking to publish their research and funders looking to identify reliable open access publishing options. As such, it will be heavily trafficked (at least relative to other products in the scholarly communication space) and a good revenue-generator. Ad revenue will help support the upkeep and sustainability of this product, with excess revenues accruing to OSI toward the development of OSI’s other products (and studies); sponsorship support will also be important. This will be a complicated product to develop, launch and fine-tune, and very labor intensive as well. If we are able to begin product development in early 2020, it will take six months to work out the architecture, six more to populate with starter data, and six months after that to beta test and refine—a total of 18 months before the first iteration of this site is up and running. Due to its complexity, the vast majority of this product will be hired out—very little of the programming work will be conducted in-house.
- ALL SCHOLARSHIP REPOSITORY:** The All-Scholarship Repository (ASR) is the ultimate game changer in scholarly communication. Rather than continuing to rely on (and expand) our global network of institutional and national repositories, and then exert herculean and ultimately inadequate efforts to connect the meta data in these repositories (which ends up only providing a glimpse into the contents of each repository, not full access to the contents themselves—at least at the moment), ASR jumps over this step and instead creates a single warehouse for all scholarly research content. The advantages of this global preprint server concept are multifaceted: full-text searches across all articles, the potential for widescale database standardization and integration, the potential for vastly expanded cross-discipline integration, the potential to implement widescale online peer review solutions, real-time and transparent impact measurement (via downloads, views, comments and reader scores), instant open for all content, and more. ASR, in essence, solves a hundred pressing issues in scholarly communication in one fell swoop. It’s a leap, though, and will require widespread buy-in in order to succeed, including from publishers whose content is needed for this system. Where would publishers end up with this system? The same as now, publishers would identify the best and most promising research and publish these articles in their journals. They would also put their own interface on the ASR (a public resource) and curate contents as they see fit, adding value by analyzing trends, highlighting significant new discoveries in fields of interest, and more. The only difference would be that the preprint world would be “unshackled” from the print world, and would be free to grow at its own pace and direction. This may eventually mean fewer print journals and more reliance

on the ASR, but a possible decline in publisher subscription revenues would be offset by an increase in value added revenues. In terms of architecture, ASR would be single database with many spokes—many independent owner/operator channels through which data can be added and outputs can be customized. The Digital Public Library of America is the best example of how this system would operate. The central ASR database would be replicated and archived continuously; it would also be cloned by owner/operators. A fuller description of the ASR concept and operation is available in the appendix of OSI's February 2015 report (OSIWG 2015). The time frame for developing and launching ASR is longer than for our Yelp site since we will need about a year to discuss and arrange collaborations with major pre-print and government servers about data scraping and integration (we aren't expecting that ASR will replace any existing services until it is very populated, although the prospect of replacement will be promoted; US government agencies in particular, if directed by OSTP, might be keen to explore repository replacement instead of long-term and costly upkeep and modernization). If funding for ASR is secured by early 2020, our goal is to have an initial version of this repository running by end-2022. Like the Yelp site, this site will have revenue generating potential, but on a much more massive scale—not only advertising and sponsor revenue channels, but also percentage revenue arrangements with publishers who provide data for the site and resell data from the site. Excess revenues will be directed to OSI to ensure the continued full funding of OSI operations, in accord with the NSF's guidelines on this matter.

- **PREDATORY PUBLISHER BLACKLIST:** In collaboration with other organizations in this space OSI will create a free, publicly available list of the largest, most prolific predatory publishers. Curating and maintaining the full list is a labor-intensive endeavor and will remain a retail product of Cabell's, but the OSI list will serve as an initial "quick check" for potential authors, highlighting the most egregious and prolific predatory journals who account for the most of this kind of output and/or the most blatantly fake outputs (like OMICS). This site will also provide background information on predatory publishing, links to resources like Think-Check-Submit and Cabell's (for the full list of predatory publishers), and case studies on why this kind of publishing should be avoided (due to risks it poses to careers and science). There is no other resource like this on the market.
- **ITUNES SINGLE ARTICLE DOWNLOAD:** The idea of having an iTunes-type of tool for single-article downloads has been kicked around for years in publishing but never pursued. Various experts have dismissed it out-of-hand for various reasons, with criticisms like we shouldn't have to pay anything for these articles, and customers won't pay when they can find them for free with a little digging (interlibrary loans, etc.). These criticisms have never been tested though. Our hypothesis is that, in fact, creating a model where consumers can legally access the latest work (or close to it—maybe downloads from this system would be embargoed only briefly but not for as long as free articles) would be extremely well received by both publishers and the marketplace, creating new revenue pathways for publishers and cheaper access for customers. As with some of the other tech solutions we're proposing, this one may end up being a "module" of the ASR, so it will be developed with this in mind. That is, eventually the ASR may feature access to various categories of articles and products—free, cheap, PPV and subscription, for instance—and inasmuch, the architecture of this iTunes site should integrate seamlessly with the ASR. Ultimately, we view the iTunes site as a transitional tool—as a way to allow publishers to daylight a hundred years of backlisted articles now but in such a way as to still generate revenues from these assets. Careful modeling will need to take place first to determine price points, catalog, frontlist integration and more. Over time, as the ASR becomes richer and more populated, it may become more advantageous to de-monetize more and more of this backlist. Like the ASR and Yelp sites, the iTunes site will have significant revenues accruing from ads and sponsors. It will also accrue revenues from percentage sales. As with ASR, excess revenues from this site will be directed to OSI. Development and deployment will be on the same schedule as the ASR site, with full operation by end-2022.

EXISTING WORK/PRIORITIES

In addition to studies and tech products, OSI's existing work/priorities will also be supported by this grant. This includes:

- **CONSOLIDATION AND IMPLEMENTATION OF OSI RECOMMENDATIONS:** OSI has accumulated a wealth of knowledge over its four years of operation. We are in the early stages of publishing materials that consolidate this knowledge into issue briefs and policy perspectives. A few of these have been published to-date; many more are planned (around 50 have been identified), to be written by OSI participants. In terms of priorities, the next most needed publication is OSI's "Plan A" for open—a summary paper that captures the general sense of the OSI group with regard to what steps the global community should take next in order to ensure the rapid, collaborative and sustainable development of global open science. We expect this Plan A document to be issued by year-end 2019. Plan A will, in essence, be OSI's roadmap for the future of open science. A number of different stakeholder groups (including IGO's, led by UNESCO; scholarly societies, led by the NAS; the AAU, representing university provosts; and others) also realize that broad, collaborative action is needed now. What we are seeing as a result are parallel, high-level efforts happening around the world to create a new roadmap for the future of open. However, there is no convergence of activity and no central point. OSI will fill this role and communicate this convergence perspective in Plan A—as an observatory to keep these similar and important efforts connected, aware of each other's existence and activities, and coordinated so actions and policies can have more impact. We need this central hub to ensure that we can have reasonable, sustainable, global, inclusive action—a group to inform, coordinate and share policies that will lay the groundwork for the future of open research/data and open science in particular.
- **ANNUAL GLOBAL SURVEY OF STATE OF OPEN:** How is open changing? The fact is we just don't know. Studies measuring open aren't conducted at regular intervals and don't use the same methodology. In order to measure global progress toward open, we need a baseline and consistent, comprehensive, global measurements. Several OSI participants have volunteered to help develop this product and implement it. The Center for Open Science is once such partner; Editage/CATCUS is another (who will help translate this and disseminate it to global audiences). This annual survey will be an important tool in helping us better understand current needs and perspectives, understand where we need to focus our open efforts, and track our progress toward achieving our objectives.
- **EDUCATION/OUTREACH:**
 - One of OSI's goals is to help countries understand open and understand how this issue (and current global proposals) impacts their equity, education and development goals. Our issue briefs (which UNESCO has promised to help co-brand and promote) are one tool in our education arsenal. Our studies and tech products are other tools. In addition to these, we will improve/enrich the OSI website with the goal of making it more of a hub/resource for open and a more useful teaching tool.
 - There are many ways to learn about open, far fewer ways to collaborate on global actions to improve open that aren't biased toward set end-points (e.g., "let's do a global flip," or "let's remove publishers from the process"). There are a great many groups looking for constructive ways to engage in realistic measures. An important approach OSI will cultivate beginning in 2020 is to bring organizations together to help pick the low hanging fruit—to create a global environment of cooperation for solving the most urgent problems together and in doing so build a track record of success. We don't need a Plan S that changes everything for everyone tomorrow without regard for the consequences.

We do need a Plan A that describes what needs to be addressed and describes realistic and sustainable ways to begin tackling these issues together in ways that are easy and make sense for everyone, and importantly, that have incentives aligned such that partners will be joining in this effort out of self-interest and not due to threat or obligation.

- **EVENTS:** OSI has hosted two full-group meetings to-date (in 2016 and 2017), one executive team meeting (in 2018), and helped sponsor several other meetings in this space (such as SciELO-20 in 2018). We will need to hold and sponsor a number of other meetings in the coming years. There is no better way to get solid input from a diverse range of participants than to hold meetings. Email works okay to continue the conversation, but there is simply no substitute for breaking down walls and making progress than in-person meetings. OSI participants will also participate as speakers and panelists in other global meetings, communicating OSI's lessons of experience and also forging partnerships with universities, publishers, research institutions, governments, funders, societies and policy groups interested in moving forward with workable, global solutions to open research. By November of 2019, OSI will have marked four such efforts: (1) A presentation about OSI on the opening panel of the SciELO 20th Anniversary conference; (2) A presentation about OSI in the keynote portion of this year's Charleston conference, and (3) Inclusion of OSI and key OSI outputs (such as the DARTS open spectrum) in the 50th Anniversary addition of the STM Report, a key resource for the scholarly publishing community; and (4) Inclusion of OSI in a debate at the 2019 Falling Walls conference about the future direction of open science.

CITED REFERENCES

- AAP. 2018 (Nov 8). AAP, Researchers, Deeply Concerned About Plan S. Association of American Publishers
- AHA. 2019 (Feb 4). AHA Expresses Concerns about Potential Impact of Plan S on the Humanities. American Historical Association
- AIP. 2019 (April 30). An Interview with OSTP Director Kelvin Droegemeier. American Institute of Physics, newsletter 42.
- Anderson, R. 2019. OSI Issue Brief 3: Deceptive Publishing. Open Scholarship Initiative. doi:10.13021/osi2019.2419
- Archambault, É, D Amyot, P Deschamps, AF Nicol, F Provencher, L Rebout, and G Roberge. 2014. Proportion of open access papers published in peer-reviewed journals at the European and world levels–1996–2013. European Commission
- Bosman, J. 2013. Nine reasons why Impact Factors fail and using them may be harmful to science. March 11, 2013 blog post. <http://bit.ly/2mcZjYR>
- Budapest Open Access Initiative (BOAI). 2002. <https://www.budapestopenaccessinitiative.org/>
- cOAlition S. 2018. Plan S website. <https://www.coalition-s.org/>
- Davis, PM, and WH Walters. 2011. The impact of free access to the scientific literature: a review of recent research. *Journal of the Medical Library Association: JMLA* 99(3), 208-217.
- Force11 (<https://www.force11.org/>)
- Hampson, G. 2018a. Finding common ground. SciELO conference presentation
- Hampson, G. 2019a (2nd ed.). OSI Policy Perspective 1: Plan S & the quest for global open access. Open Scholarship Initiative. doi: 10.13021/osi2019.2450
- Herb, U, and J Schöpfel. 2018. *Open Divide Emerges as Open Access Unfolds*. In J. Schöpfel & U. Herb (Eds.), *Open Divide? Critical Studies on Open Access* (pp. 7-13). Sacramento, USA: Litwin Books.
- Himmelstein, DS, et al. 2018. Sci-Hub provides access to nearly all scholarly literature. *eLife* 2018;7:e32822. doi: 10.7554/eLife.32822
- Lozano, G., et al. 2012. The weakening relationship between the Impact Factor and papers' citations in the digital age. arXiv. May 19, 2012. <http://arXiv.org/ftp/arXiv/papers/1205/1205.4328.pdf>
- Mackie-Mason, J. 2016 (April 26). Economic thoughts about "gold" open access. madLibbing (blog). <http://madlibbing.berkeley.edu/economic-thoughts-about-gold-open-access/>
- McKenzie, L. 2019 (August 16). Linking Liability. Inside Higher Ed. <https://www.insidehighered.com/news/2019/08/16/>

legal-questions-raised-over-links-sci-hub

Moniz, EJ. 2019 (June 14). Innovating a Green Real Deal. *Science*. Vol. 364, Issue 6445, pp. 1013. doi: 10.1126/science.aay3140

Montgomery, L and R Xiang. 2018. Understanding open knowledge in China: A Chinese approach to openness? *Cultural Science Journal* 10(1), 17–26. doi: 10.5334/csci.106

Open Science Initiative Working Group (OSIWG). 2015. Mapping the Future of Scholarly Publishing. Science Communication Institute

OSI. 2016a. Report from the impact factors workgroup. Open Scholarship Initiative. doi: 10.13021/G88304

OSI. 2016b. Report from the embargo workgroup. Open Scholarship Initiative. doi: 10.13021/G8S014

Plume, A, and D van Weijen. 2014 (September). Publish or perish? The rise of the fractional author. *Research Trends* 38.

Plutchak, TS. 2018. OSI Issue Brief 1: What do we mean by open? Open Scholarship Initiative. doi:10.13021/osi.v3i0.2367

Salmon, J. 2016. The Grand Compromise of US Public Access Programs: Going Green. US Department of Energy (OSTI). <https://www.osti.gov/grand-compromise-us-public-access-programs-going-green>

Schimmer, R, KK Geschuhn, and A Vogler. 2015. Disrupting the subscription journals' business model for the necessary large-scale transformation to open access. doi:10.17617/1.3.

SciELO. <https://www.scielo.org/>

Science-Metrix. 2018. Analytical support for bibliometrics indicators: Open access availability of scientific publications. Science-Metrix.

SciHub (currently at <https://sci-hub.se/>)

Shamseer, L, D Moher, O Maduekwe, L Turner, V Barbour, R Burch, J Clark, J Galipeau, J Roberts, and BJ Shea. 2016. Potential predatory and legitimate biomedical journals: can you tell the difference? A cross-sectional comparison. *BMC Medicine*, 2017 15:28. doi: 10.1186/s12916-017-0785-9

STM. 2018. The STM Report: An overview of scientific and scholarly publishing (50th edition). 2018 (Edited by Johnson, R, A Wilkinson, and M Mabe). International Association of Scientific, Technical and Medical Publishers.

Strinzel, M, A Severin, K Milzow, and M Egger. 2019. Blacklists and Whitelists To Tackle Predatory Publishing: a Cross-Sectional Comparison and Thematic Analysis. *mBio*. Doi:10:e00411-19.

Taylor & Francis. 2014. Taylor & Francis Open Access Survey. tandf.co.uk/journals/explore/open-access-survey-june2014.pdf

Tennant, J, and T Ross-Hellauer. 2019. The limitations to our understanding of peer review. *SocArXiv*. doi: 10.31235/osf.io/jq623

Tenopir, C, E Dalton, L Christian, M Jones, M McCabe, M Smith, and A Fish. 2017. Imagining a Gold Open Access Future: Attitudes, Behaviors, and Funding Scenarios among Authors of Academic Scholarship. *College & Research Libraries*, 78(6), 824. doi:10.5860/crl.78.6.824

Unpaywall (<https://unpaywall.org/>)

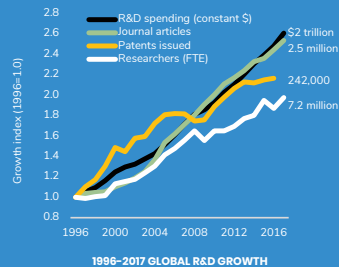
Annex 4: OSI Infographic 3.1



WHO DOES RESEARCH? UNDERSTANDING GLOBAL RESEARCH & DEVELOPMENT

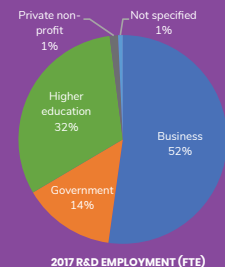
GROWTH

In the two decades from 1996-2017, global research and development (R&D) increased by around 250 percent. Similar increases occurred in the number of researchers, patents, and journal articles published.



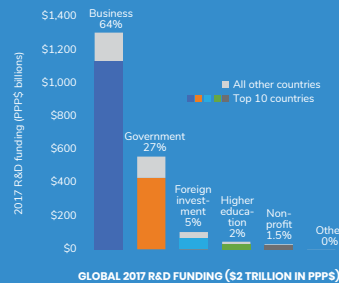
PEOPLE

Approximately 7.2 million people (FTE) are employed as researchers (not including many more who work in supporting R&D roles). Most researchers work for businesses. Women are 30% of the R&D workforce.



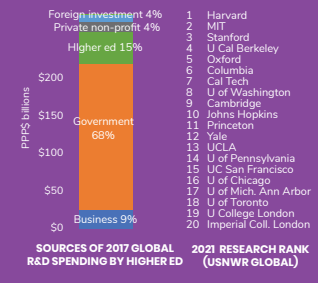
FUNDING

Businesses fund 64% of all R&D globally. Government funding is second highest at 27 percent. Most R&D happens in just a handful of countries (see below). Higher education performs much more R&D than it funds.



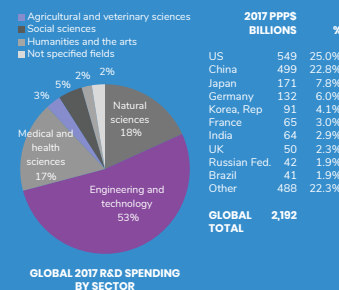
HIGHER ED

Higher education institutions performed \$286 billion of R&D work in 2017. This work is impactful, accounting for almost all research published in journals. Businesses also increasingly outsource their basic research to higher ed.



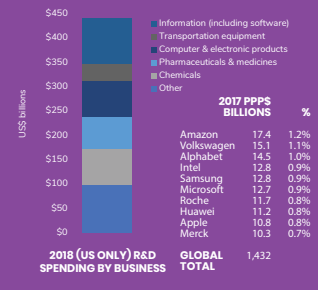
SPENDING

Most R&D spending is in engineering and technology. However, countries prioritize their R&D spending differently, and spend widely varying amounts on R&D. The top 10 countries account for 78% of the global total R&D.



COMPANIES

Information, auto and pharmaceutical companies are big spenders on R&D. The top 10 companies account for 9% of investment by this sector. Business R&D spending is higher as a percent total R&D in top-10 countries (see left).



TYPES

R&D is divided into basic research, applied research, and experimental development. Most is experimental development, of which business performs 90 percent. Higher education performs 44% of basic research.



LINKS

A global ecosystem of stakeholders creates and sustains research, from universities to businesses, governments, publishers, and beyond. The interconnectedness and impact of this work is broad and significant.



Sources & notes: See next page



OSI Infographic 3 sources & notes

Most of the data in this infographic was extracted from the UNESCO UIS dataset at <http://data.uis.unesco.org>. Additional data sources are as noted.

<p>Growth</p> <ul style="list-style-type: none"> • R&D and researchers: UNESCO UIS data tables. Count only includes personnel classified as researchers, not all include all R&D personnel (such as technicians). • Publication data: US NSB Science & Engineering Indicators, https://nces.nsf.gov/pubs/nsb20206/publication-output-by-region-country-or-economy • Patent data: OECD data tables, https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB#. Patent reporting for 2017 is incomplete (2016 is last available year). 	<p>People</p> <ul style="list-style-type: none"> • R&D and researchers: UNESCO UIS data tables. Count only includes personnel classified as researchers, not all include all R&D personnel (such as technicians).
<p>Funding</p> <ul style="list-style-type: none"> • UNESCO UIS data tables 	<p>Higher ed</p> <ul style="list-style-type: none"> • Figures from UNESCO UIS data tables • Rankings from US News & World Report research university rankings. List and ranking methodology at https://www.usnews.com/education/best-global-universities/rankings • Additional data from https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0202120
<p>Spending</p> <ul style="list-style-type: none"> • Main data from UNESCO UIS data tables • Data for US from: NSB S&E indicators: https://nces.nsf.gov/pubs/nsb20203/recent-trends-in-federal-support-for-u-s-r-d#figureCtr920 • Data for Germany from: https://www.datenportal.bmbf.de/portal/en/K1.html • Available worksheets show how US and Germany data was transposed and converted to PPP 	<p>Companies</p> <ul style="list-style-type: none"> • Individual company R&D: https://www.visualcapitalist.com/global-leaders-r-d-spending/ • Aggregate global figures: https://nces.nsf.gov/pubs/nsf20316/
<p>Types</p> <ul style="list-style-type: none"> • UNESCO UIS database 	<p>Links</p> <ul style="list-style-type: none"> • Source: https://nces.nsf.gov/pubs/nsb20201/global-science-and-technology-capabilities. See https://www.natureindex.com/news-blog/international-collaborations-growing-exponentially for additional (callout) data

Annex 5: List of OSI Reports, Briefs and Presentations

Anderson, R. 2019. OSI Issue Brief 3: Deceptive Publishing. Open Scholarship Initiative. doi:10.13021/osi2019.2419.

Hampson, G, M DeSart, J Steinhauer, EA Gadd, LJ Hinchliffe, M Vandegrift, C Erdmann, and R Johnson. 2020b (June). OSI Policy Perspective 3: Open science roadmap recommendations to UNESCO. Open Scholarship Initiative. doi: 10.13021/osi2020.2735

Hampson, G, M DeSart, L Kamerlin, R Johnson, H Hanahoe, A Nurnberger and C Graf. 2021. OSI Policy Perspective 4: Open Solutions: Unifying the meaning of open and designing a new global open solutions policy framework. Open Scholarship Initiative. January 2021 edition. doi: 10.13021/osi2020.2930

Hampson, G. 2018. Comment to EPS on proposed rule, “Strengthenig Transparency in Regulatory Science.” Open Scholarship Initiative.

Hampson, G. 2018. The future of scholarly publishing. Video presentation for the 2016 SciELO conference. <https://osiglobal.org/wp-content/uploads/2021/04/SciELO-presentation.pdf>

Hampson, G. 2019 (2nd ed.). OSI Policy Perspective 1: Plan S & the quest for global open access. Open Scholarship Initiative. doi: 10.13021/osi2019.2450

Hampson, G. 2019. Finding common ground. Presentation for the SciELO20 conference. <https://www.youtube.com/watch?v=-H8mTObdlbs>

Hampson, G. 2019. OSI Issue Brief 2 (v. 2): How fast is open growing? Open Scholarship Initiative. <http://doi.org/10.13021/osi.v3i0.2368>

Hampson, G. 2020 (Nov 12). The future of open science: How we get there from here. Council of Science Editors (CSE) webinar, “Understanding Open Access, Plan S, and Other Global Initiatives in the Current Publishing Ecosystem: An Overview and International Perspective During a Pandemic.” <https://securereservercdn.net/198.71.233.65/i81.b11.myftupload.com/wp-content/uploads/2021/04/CSE-presentation-Hampson.pdf?time=1617912104>

Hampson, G. 2020 (Sept 30). Opening Science for Building Resilience in the face of Covid-19: Finding the best path forward. UNESCO webinar presentation. <https://osiglobal.org/wp-content/uploads/2021/04/Hampson-slides.pdf>

Hampson, G. 2020. How can we work together to create common ground? Podcast interview with Emerald Publishing. <https://www.emeraldgroupublishing.com/podcast-future-open-research-how-can-we-work-together-create-a-common-ground>

Hampson, G. 2020. OSI Policy Perspective 2: Common ground in the global quest for open research. Open Scholarship Initiative. doi: 10.13021/osi2020.2725

Hampson, G. 2020. Peer review in the COVID era. Slide presentation for Second Virtual Session for the VI Brazilian Meeting on Research Integrity, Science, and Publication Ethics (VI BRISPE). <https://osiglobal.org/wp-content/uploads/2021/04/BRISPE-presentation-final-Hampson.pdf>

Hampson, G. 2021 (July 29). Diverse Routes to Open Access. 4TH Forum for World STM Journals. China Association for Science and Technology (CAST). Conference presentation. https://drive.google.com/file/d/1xm_tTpTbotWktLsgDkHdW1Wg6sK1m1XQ/view

Hampson, G. 2021 (July 9). Better science communication. MH21 (Materials for Humanity 2021) conference presentation. <https://osiglobal.org/wp-content/uploads/2021/11/MH21-Hampson-Better-Science-Communication-final.pdf>

Hampson, G. 2021 (Mar 24). Unleashing the Open Renaissance. Computers in Libraries Connect 2021 Conference. <https://secureservercdn.net/198.71.233.65/i81.b11.myftpupload.com/wp-content/uploads/2021/04/UNLEASHING-THE-OPEN-RENAISSANCE-final.pdf?time=1617912104>

Hampson, G. 2021 (May 7). Creating an Open Renaissance. WSIS 2021 Conference. <https://osiglobal.org/wp-content/uploads/2021/05/WSIS-2021-CREATING-AN-OPEN-RENAISSANCE.pdf>

Hampson, G. 2021. Competition, Collaboration & Data Sharing in Science: An Overview of Ongoing Challenges. VI BRISPE conference. <https://osiglobal.org/wp-content/uploads/2021/11/VI-BRISPE-panel-3-presentation-on-data-sharing-Hampson.pdf>

Hampson, G. 2021. Contributions to panel on “Challenges on the road to open,” Council of Science Editors 2021 Annual Meeting. <https://osiglobal.org/wp-content/uploads/2021/05/5-Challenges-CSE2021.pdf>

Hampson, G. 2021. Contributions to UNESCO conference, “Leveraging digital technologies for peace and sustainable development.” <https://www.youtube.com/watch?v=6xhmjmMz1bQ>

Hampson, G. 2021. Our Open Future. Opening address for NISO virtual conference on open research (November 17, 2021). <https://osiglobal.org/wp-content/uploads/2021/11/NISO-presentation-Hampson.pdf>

Hampson, G. 2023. OSI Policy Perspective 5: Summary of OSI2022 Research Communication Surveys. Open Scholarship Initiative (OSI). doi: forthcoming.

Hampson, G. 2023. OSI Policy Perspective 6: Considering evidence-based open access policies. Open Scholarship Initiative (OSI). Doi forthcoming.

OSI website. <https://osiglobal.org>

OSI. 2015. Mapping the future of scholarly publishing. Open Science Initiative Working Group (predecessor group of the Open Scholarship Initiative).

OSI. 2015-2020. The OSI listserv. Open Scholarship Initiative.

OSI. 2016. OSI2016: Summary report of the inaugural conference of the global Open Scholarship Initiative. Open Scholarship Initiative.

OSI. 2016. Preface to the OSI2016 Workgroup Papers. Open Scholarship Initiative.

OSI. 2016. Report from the “What is Open?” Workgroup. Open Scholarship Initiative. doi: 10.13021/G8XK5R

OSI. 2016. Report from the “What is Publishing?” Workgroup 1. Open Scholarship Initiative. doi: 10.13021/G8630H

OSI. 2016. Report from the “What is Publishing?” Workgroup 2. Open Scholarship Initiative. doi: 10.13021/G8CS33

OSI. 2016. Report from the “Who Decides?” Workgroup. Open Scholarship Initiative. doi: 10.13021/G8P30V

OSI. 2016. Report from the At-large Workgroup. Open Scholarship Initiative. doi: 10.13021/G80K5C

OSI. 2016. Report from the Embargo Workgroup. Open Scholarship Initiative. doi: 10.13021/G8S014

OSI. 2016. Report from the Evolving Open Solutions Workgroup 1. Open Scholarship Initiative. doi: 10.13021/G8VS3F

OSI. 2016. Report from the Evolving Open Solutions Workgroup 2. Open Scholarship Initiative. doi: 10.13021/G8ZK52

OSI. 2016. Report from the Impact Factors Workgroup. Open Scholarship Initiative. doi: 10.13021/G88304

OSI. 2016. Report from the Information Overload Workgroup. Open Scholarship Initiative. doi: 10.13021/G8R30G

OSI. 2016. Report from the Moral Dimensions Workgroup. Open Scholarship Initiative. doi: 10.13021/G8SW2G

OSI. 2016. Report from the Open Impacts Workgroup. Open Scholarship Initiative. doi: 10.13021/G8488N

OSI. 2016. Report from the Participation Workgroup. Open Scholarship Initiative. doi: 10.13021/G82C7P

OSI. 2016. Report from the Peer Review Workgroup. Open Scholarship Initiative. doi: 10.13021/G8K88P

OSI. 2017. Report from the Commercial Publishers Stakeholder Group. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1919

OSI. 2017. Report from the Culture of Communication in Academia Workgroup. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1933

OSI. 2017. Report from the Funding Models Workgroup. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1931

OSI. 2017. Report from the Global Flip Workgroup. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1934

OSI. 2017. Report from the HSS & Scholars Workgroup. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1920

OSI. 2017. Report from the Impact Factors Workgroup. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1936

OSI. 2017. Report from the Infrastructure Stakeholder Group. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1909

OSI. 2017. Report from the Institutional Repositories Workgroup. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1921

OSI. 2017. Report from the Journal Editors Stakeholder Group. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1908

OSI. 2017. Report from the Open Knowledge Stakeholder Group. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1930

OSI. 2017. Report from the P&T Reform Workgroup. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1928

OSI. 2017. Report from the Patent Lit Workgroup. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1935

OSI. 2017. Report from the Peer Review Workgroup. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1939

OSI. 2017. Report from the Research Universities Stakeholder Group. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1940

OSI. 2017. Report from the Rogue Workgroup. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1937

OSI. 2017. Report from the Scholarly Libraries Stakeholder Group. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1929

OSI. 2017. Report from the Scholarly Societies Stakeholder Group. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1927

OSI. 2017. Report from the Scholcomm Experts Stakeholder Group. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1918

OSI. 2017. Report from the Standards Workgroup. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1932

OSI. 2017. Report from the Summit Group. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1907

OSI. 2017. Report from the Underserved Workgroup. Open Scholarship Initiative. doi: 10.13021/G8osi.1.2017.1926

OSI. 2017. Report on the 2nd annual conference of the global Open Scholarship Initiative. Open Scholarship Initiative.

OSI. 2018. Report on the 1st summit meeting of the global Open Scholarship Initiative. Open Scholarship Initiative.

OSI. 2020. Report on the 2019 activities of the Open Scholarship Initiative. Open Scholarship Initiative.

OSI. 2021. OSI Scholarly Communication Infographic 1: The Idea Lifecycle. Open Scholarship Initiative.

OSI. 2021. OSI Scholarly Communication Infographic 2: Publishing STM Research. Open Scholarship Initiative.

OSI. 2021. OSI Scholarly Communication Infographic 3: Who Does Research? Open Scholarship Initiative.

OSI. 2021. Report on the 2020 activities of the Open Scholarship Initiative. Open Scholarship Initiative.

OSI. 2022. Report on the 2021 activities of the Open Scholarship Initiative. Open Scholarship Initiative.

Plan A website. <https://plan-a.world>

Plutchak, TS. 2018. OSI Issue Brief 1: What do we mean by open? Open Scholarship Initiative. <http://doi.org/10.13021/osi.v3i0.2367>



United Nations
Educational, Scientific and
Cultural Organization



DD

DORIS DUKE
CHARITABLE FOUNDATION



Alfred P. Sloan
FOUNDATION



Copyright
Clearance
Center



emerald
PUBLISHING



Taylor & Francis Group
an informa business



ELSEVIER

WILEY

AGU



Research
Consulting



RESEARCH MEDIA



SPRINGER
NATURE

SAGE

Delta
Think

CABELLS
SCHOLARLY ANALYTICS

CACTUS

SCI

OPEN SCHOLARSHIP INITIATIVE