



## PUBLISHING

# The world debates open-access mandates

Spurred by European funders behind Plan S, many countries consider similar moves

By **Tania Rabesandratana**

How far will Plan S spread?

Since the September 2018 launch of the Europe-backed program to mandate immediate open access (OA) to scientific literature, 16 funders in 13 countries have signed on. That's still far shy of Plan S's ambition: to convince the world's major research funders to require immediate OA to all published papers stemming from their grants. Whether it will reach that goal depends in part on details that remain to be settled, including a cap on the author charges that funders will pay for OA publication (*Science*, 30 November 2018, p. 983). But the plan has gained momentum: In December 2018, China stunned many by expressing strong support for Plan S (*Science*, 14 December 2018, p. 1218). This month, a national funding agency in Africa is expected to join, possibly followed by a second U.S. funder. Others around the world are considering whether to sign on.

Plan S, scheduled to take effect on 1 Janu-

ary 2020, has drawn support from many scientists, who welcome a shake-up of a publishing system that can generate large profits while keeping taxpayer-funded research results behind paywalls. But publishers (including AAAS, which publishes *Science*) are concerned, and some scientists worry that Plan S could restrict their choices.

If Plan S fails to grow, it could remain a divisive mandate that applies to only a

***"[Plan S] is perhaps our best chance to transform the publishing industry soon."***

**Jeffrey MacKie-Mason**, University of California, Berkeley

small percentage of the world's scientific papers. (Delta Think, a consulting company in Philadelphia, Pennsylvania, estimates that the first 15 funders to back Plan S accounted for 3.5% of the global research articles in 2017.) To transform publishing, the plan needs global buy-in. The more funders join, the more articles will be published in OA journals that comply with its requirements, pushing publishers to flip their journals from paywall-protected subscriptions

to OA, says librarian Jeffrey MacKie-Mason, the chief digital scholarship officer at the University of California, Berkeley.

Robert-Jan Smits, the European Commission's OA envoy in Brussels, who is one of the architects of Plan S, says publishers have stalled by emphasizing the need for broad participation. "The big publishers told me: 'Listen, we can only flip our journals [to OA] if this is signed by everyone. So first go on a trip around the world and come back in 20 years. Then we can talk again,'" Smits recalls. "Some people try to do anything to keep the status quo."

OA mandates are nothing new: In Europe, 74 research funders require that papers be made free at some point, up from 12 in 2005, according to the Registry of Open Access Repository Mandates and Policies. But existing policies typically allow a delay of 6 or 12 months after initial publication, during which papers can remain behind a publisher paywall.

Plan S requires immediate OA; it also insists that authors retain copyright and that hybrid journals, which charge subscrip-

tions but also offer a paid OA option, sign “transformative agreements” to switch to fully OA.

Some European funders think Plan S goes too far. “We and many German [organizations] think that we should not be as prescriptive as Plan S is,” says Wilhelm Krull, secretary general of the Volkswagen Foundation, a private research funder in Hannover, Germany. The country is Europe’s top producer of scientific papers, ahead of the United Kingdom and France, whose main funding agencies have signed on to Plan S. Germany’s biggest federal funding agency, DFG, said it supports Plan S’s goals but prefers to let researchers drive the change. Other funders, including the Estonian Research Council, say the timeline is too tight, and they will reconsider joining when Plan S’s impact is clearer.

Other European funders are weighing pros and cons. Spain’s science ministry says it is analyzing the potential repercussions of Plan S on the country’s science and finances, and on researchers’ careers. FNRS, the fund for scientific research in Belgium’s Wallonia-Brussels region, is waiting for Plan S to announce its cap on article-processing charges (APCs), the fees for publishing in OA journals, which the coalition’s funders have pledged to pay. “We’re not ready to commit if the costs are too high,” says Véronique Halloin, secretary-general of FNRS, whose existing OA mandate caps APC reimbursement at €500—which Halloin admits is on the low side.

Many await the European Commission’s policy: Although its grants represent a small percentage of research funding in Europe, its OA rules can influence national mandates. The commission’s research chief, Carlos Moedas, supports Plan S, and its 7-year funding program Horizon Europe, which will begin in 2021, contains general statements of support for OA. Plan S’s rules will go into the program’s model contract for grants, Smits says.

Smits has found unexpected support from China, which now produces more scientific papers than any other country. Last month, China’s largest

government research funder and two national science libraries issued strong statements backing Plan S’s goals. “China needs to contribute to international open access [and] open its research results to its own people,” says Zhang Xiaolin of Shanghai-Tech University in China, who chairs the Strategic Planning Committee of the Chinese National Science and Technology Library. Even if Chinese organizations do not join Plan S formally, similar OA policies in China would have a “huge, perhaps decisive impact on the publishing industry,” MacKie-Mason says.

For now, North America is not following suit. The Bill & Melinda Gates Foundation was the first Plan S participant outside Europe, and another private funder may follow. But U.S. federal agencies are sticking to policies developed after a 2013 White House order to make peer-reviewed papers on work they funded freely available within 12 months of publication (*Science*, 10 April 2015, p. 167). “We don’t anticipate making any changes to our model,” said Brian Hitson of the U.S. Department of Energy in Oak Ridge, Tennessee, who directs that agency’s public access policy.

Nor are the three main federal research funders in Canada ready to change their joint 2015 OA policy. Plan S is “a bold and aggressive approach, which is why we want to make sure we’ve done our homework to ensure it would have the best effect on Canadian science,” says Kevin Fitzgibbons, executive director of corporate planning and policy at Canada’s Natural Sciences and Engineering Research Council in Ottawa.

Outside Europe and North America, funders gave *Science* mixed responses about Plan S. India, the third biggest producer of scientific papers in the world, will “very likely” join Plan S, says Krishnaswamy VijayRaghavan in New Delhi, principal scientific adviser to India’s government. But the Russian Science Foundation is not planning to join. South Africa’s National Research Foundation says it “supports Plan S in principle,” but wants to consult stakeholders before signing on. Jun Adachi of the

National Institute of Informatics in Tokyo, an adviser to the Japan Alliance of University Library Consortia for E-Resources, says that despite interest from funders and libraries, OA has yet to gain much traction in his country.

South America has a strong tradition of OA repositories and fee-free publishing, often with government subsidies. Bianca Amaro, president of LA Referencia, a Santiago-based Latin American network of repositories, says Plan S takes a more “systemic view” than previous policies, and she values its pledge to monitor APCs and their impact—a worry for lower-income countries. “We’ll see how Europe handles this,” she says.

Of course, MacKie-Mason says, not every funding agency will agree that Plan S is the best way to universal OA. “But some will agree it’s good enough and perhaps our best chance to transform the publishing industry soon,” he says. It comes in the wake of often incremental OA initiatives in the past 15 years, and some disagreement about the best route to OA.

“In the OA movement, it seems to a lot of people that you have to choose a road: green or gold or diamond,” says Colleen Campbell, director of the OA2020 initiative at the Max Planck Digital Library in Munich, Germany, referring to various styles of OA. “Publishers are sitting back laughing at us while we argue about different shades” instead of focusing on a shared goal of complete, immediate OA. Because of its bold, stringent requirements, she and others think Plan S can galvanize advocates to align their efforts to shake up the publishing system.

The Plan S team predicts steady growth in the coming months. Funders will discuss Plan S in São Paulo, Brazil, at the May meeting of the Global Research Council, an informal group of funding agencies. Although Smits will leave the European Commission in March, the Plan S coalition is seeking a replacement who can keep the momentum going.

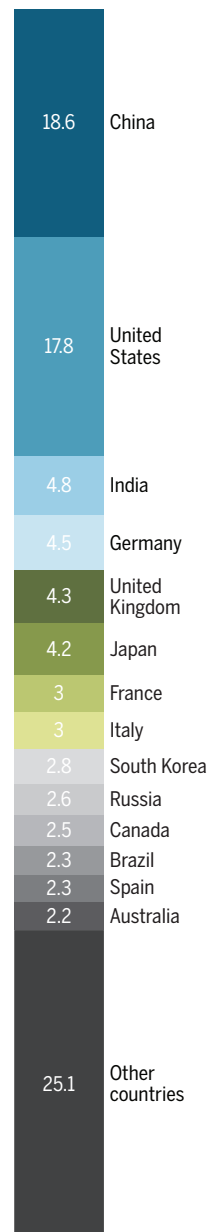
“The combined weight of Europe and China is probably enough to move the system,” says astrophysicist Luke Drury, of the Dublin Institute for Advanced Studies and the lead author of a cautiously supportive response to Plan S by All European Academies, a federation of European academies of sciences and humanities.

If Plan S does succeed in bringing about a fairer publishing system, he says, a transition to worldwide OA is sure to follow. “Somebody has to take the lead, and I’m pleased that it looks like it’s coming from Europe.” ■

*With reporting by Jeffrey Brainard, Sanjay Kumar, Dennis Normile, and Brian Owens.*

## Paper players

Percentages of the world’s 2016 science articles by country





# Science

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