International Observations and Policy Recommendations on the OA2020 Initiative (Post-print)

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Abstract

[Purpose/Significance] To provide reference suggestions for China to further promote and implement the signed OA2020 Initiative.

[Method/Process] Through web-based surveys, we tracked and observed the actions of educational institutions, research institutions, funding agencies, libraries, and international organizations in major scientific and technological countries worldwide in implementing large-scale transitions to open access publishing for academic journals, and systematically summarized the different stances and actions of major international publishers toward such transitions. We analyzed and summarized the problems and challenges faced by the aforementioned stakeholders in academic publishing during the transition, and proposed possible coping strategies.

[Results/Conclusion] Through analysis, we propose feasible recommendations for deepening open access development and achieving the OA2020 Initiative from five aspects: acknowledging national differences, transforming the role of libraries, negotiating and cooperating with publishers, addressing current issues in open access publishing, and confronting the deficiencies in offsetting and deduction mechanisms.

Full Text

Preamble

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OA2020 Initiative: International Observations and Policy Recommendations

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Abstract

[**Purpose/Significance**] This paper aims to provide reference suggestions for China to further promote and implement the signed OA2020 Initiative. [**Method/Process**] Through network investigation, this study tracks and observes the actions of major global scientific and technological countries' educational institutions, research institutions, funding agencies, libraries, and international organizations in implementing large-scale academic journal open publishing transformations. It summarizes the different attitudes and actions of major international publishers toward this transformation, analyzes the problems and challenges faced by these academic publishing stakeholders, and proposes possible response strategies. [**Result/Conclusion**] Based on analysis, this paper puts forward feasible recommendations for deepening open access development and achieving the OA2020 Initiative from five aspects: acknowledging national differences, transitioning library roles, negotiating and cooperating with publishers, addressing current open publishing problems, and confronting the shortcomings of offsetting and flipping mechanisms.

Keywords: OA2020 Initiative; open access publishing; subscription expenditures; large-scale transformation; library
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1. Background of the OA2020 Initiative

1.1 Genesis of OA2020

In 2003, the Max Planck Society (MPG) in Germany proposed the *Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities* [1], advocating for free online access, downloading, and reuse of human knowledge. Over the past decade, open access practice has mainly taken two forms for journal articles: (1) **Open archiving**, where journals remain subscription-based but accepted author manuscripts (AAM) are deposited in institutional repositories and made open access after an embargo period; and (2) **Open publishing**, where articles are made immediately open upon publication. Open publishing is further divided into fully open access journals (full OA journals), where the entire journal is open and all accepted papers require payment of an article processing charge (APC), and hybrid OA journals, where the journal remains subscription-based but authors can pay APCs to make their individual articles immediately open access.

More than a decade of open access practice has created new pathways for researchers to access information and promoted the democratization of knowledge [4], achieving tremendous global success. However, significant challenges remain: (1) Open archiving cannot fully realize open access benefits due to low author participation rates and restrictions imposed by embargo periods and accepted manuscripts; (2) Dedicated funding for open publishing is limited, with most funds locked in subscription fees. APC price negotiation mechanisms are

lacking, and "double-dipping" remains common in hybrid OA journals. Public research funding faces fragmented management, making it difficult to form coordinated policies and unified market bargaining power, resulting in either absent or weak APC price control mechanisms; (3) Most high-impact journals remain subscription-based, with 85% of research outputs requiring payment to read [5].

In 2013, the Global Research Council (GRC) released an open access action plan requiring all public research funding agencies to achieve open access for funded project publications [2]. Currently, nearly all public research funding agencies worldwide have issued open access policies. The United States, Canada, Australia, and Japan primarily support open archiving while explicitly allowing research funds to pay APCs for open publishing. Germany, the United Kingdom, the Netherlands, Austria, and other countries focus on supporting open publishing. As of January 2019, the Directory of Open Access Journals (DOAJ) indexed 12,518 open publishing journals covering 3,704,902 articles from 129 countries [3].

Some publishers have created "catch-all" open publishing journals that accept manuscripts rejected by their high-impact subscription journals, "turning waste into profit" to increase revenue. Worse, some "predatory" journals exploit the open publishing name to charge high APCs without proper quality control, seriously damaging open publishing's reputation. In some ways, open access has even become a tool for publishers to expand low-end publishing and extract residual market value. The critical question now is how to transform high-quality journals to open publishing models.

Global library subscription expenditures are estimated at €7.6 billion annually [6]. Recognizing that these funds represent the largest, most professionally managed, and most potentially coordinated resource for supporting publishing, stakeholders have begun redirecting them toward open access transformation. Current transition pathways include **offsetting** (deducting subscription fees based on the proportion of open publishing articles in hybrid journals), **flipping** (mutual offsetting between subscription fees and APCs), and **domain transformation** (such as SCOAP3's initiative to convert high-energy physics journals to open publishing) [7].

1.2 How OA2020 Transforms Academic Publishing Rules

On March 21, 2016, the Max Planck Society and other institutions launched the "Open Access 2020" Initiative (OA2020), requiring institutional members to make articles authored by corresponding authors in their subscribed journals immediately open access, thereby converting most academic journals from subscription to open publishing models. To achieve this goal, MPG also released the *Expression of Interest in the Large-scale Implementation of Open Access to Scholarly Journals* (EoI) [8], clarifying the core mission of transforming subscription journals to open publishing, converting subscription funds to open publishing support, and maximizing academic and social benefits through stakeholder

participation. The initiative also established the "OA2020 Roadmap" [9] to guide practical implementation steps.

Achieving large-scale transformation requires collective effort and coordination among all countries and institutions. OA2020 invites all academic publishing stakeholders—including universities, research institutions, funding agencies, libraries, and publishers—to collaborate for rapid, efficient transformation. As of February 2019, 130 institutions from 37 countries had signed the EoI [8], including the Max Planck Society, Fraunhofer Society, and Helmholtz Association in Germany; UC Berkeley, UC San Francisco, and UC Davis in the United States; national science foundations from Italy, the Netherlands, Spain, Portugal, Switzerland, and Austria; academies of sciences from Germany, Switzerland, and the Czech Republic; libraries and consortia from China, the UK, the Netherlands, Finland, Sweden, South Africa, Japan, South Korea, and Denmark; the World Meteorological Organization; and various universities and publishers. These institutions commit to "working together to achieve free online access to and maximum use and reuse of scholarly articles on a large scale, and to support new and improved forms of open publishing" [10].

OA2020 is thus a feasible international action plan based on the Berlin Declaration and more than a decade of open access development, grounded in data on converting literature subscription funds to open publishing funds [11]. It will break publishers' monopoly over continuously rising subscription prices, change how researchers and the public access and utilize the latest scientific achievements, expand knowledge dissemination, improve public fund utilization efficiency, and enhance social innovation capacity.

2. Practices in Selected Countries and Organizations

Among the over 100 countries that have signed the OA2020 Initiative, European nations led by Germany, the UK, the Netherlands, Sweden [12], and Austria [13] have responded by establishing project teams or designated agencies to implement transformation actions, negotiating transformation agreements or transitional understandings with publishers. While the United States, China, Finland [14], and Canada [15] have not yet formed national actions, their domestic funding agencies, universities, and libraries are actively exploring various transformation pathways. Other countries and organizations are also investigating but have not announced concrete actions. This section presents cases from selected countries and organizations whose experiences in organizational structure, negotiation strategies, and agreement formulation offer valuable lessons.

2.1 Germany's Max Planck Society

As Germany's most influential research institution, the Max Planck Society has been a leading advocate and practitioner of open access. The Max Planck Digital Library (MPDL) serves as MPG's institutional representative, bearing primary responsibility for implementing OA2020. MPDL first determined that

over 80% of its members' corresponding-author articles appear in journals from 20 major publishers, five of which are already fully open access. It then established a new consortium project team (DEAL Project) [16] comprising university, research institution, and library personnel. The team selected three major publishers as initial negotiation targets: Elsevier, Springer Nature, and Wiley. The negotiation strategy offered publishers two choices: participate fairly in the transformation (e.g., through offsetting) or face institutional cancellation of cooperation and subscriptions [17].

After nearly three years of negotiation, in January 2019 DEAL reached the first national-level open publishing transformation agreement with Wiley, enabling researchers at over 700 German institutions to freely access more than 1,500 Wiley journals and publish open access articles without APC charges [18]. This agreement holds significant meaning for advancing open access in German, European, and global science.

The Max Planck Society has also reached offsetting agreements with several publishers, allowing its members to publish open access articles under CC BY licenses in Springer (limited to 1,600+ subscription journals) [19], Taylor & Francis [20], IOP (limited to 36 subscription journals) [21], and RSC [22] journals without personal APC payments. Additionally, MPDL has secured APC discounts (50%-70%) or APC vouchers for authors at other publishers, such as Science, IOS, Karger, Mary Ann Liebert, and ECS [23].

2.2 United Kingdom

The UK Joint Information Systems Committee (JISC) supports digital resource procurement for UK higher education and research institutions, with JISC Collections handling negotiations and licensing [24]. To address double-payment to hybrid OA journal publishers, JISC Collections established five offsetting principles [25]: (1) Offsetting should operate in and support the transition to full open publishing, be inclusive, and remove barriers for authors and institutions while ensuring all institutional outputs can be immediately open published under appropriate licenses and funder requirements; (2) Offsetting should ensure publishers do not double-charge institutions paying both subscriptions and APCs; (3) Offsetting should apply not only to large journal subscribers but also to institutions subscribing to individual hybrid OA journals; (4) Offsetting should accommodate all subscription levels to ensure academic publishing costs are covered for all institutions, with publishers globally reducing subscription fees according to their "no double-dipping" policies to increase open publishing in hybrid journals; (5) Offsetting should use a cash basis to avoid additional administrative work, especially regarding voucher expiration. If voucher-based offsetting is used, payments must go to institutions rather than individual authors to ensure proper implementation.

JISC Collections has reached offsetting or flipping agreements with multiple publishers and continues supporting offsetting because it delivers real benefits

to UK libraries [23]. A 2015 evaluation report showed offsetting agreements saved UK higher education institutions approximately £2.5 million in 2015 [26]. Table 1 summarizes some JISC Collections agreements.

2.3 Netherlands

The Association of Universities in the Netherlands (VSNU) and the Consortium of University Libraries and the National Library of the Netherlands (UKB) represent Dutch universities in "big deal" negotiations with publishers [28]. VSNU's 2016 e-zine report identified four key success factors for the "Dutch approach" [29,30]: (1) Unique collective negotiation model, 不同于美国和西班牙的区域性谈判或法国的政府层面谈判，荷兰委托三位大学校长/执行委员会主席作为首席谈判顾问全权代表所有相关机构，赋予谈判者很大权力和地位; (2) Strong representative teams that elevate negotiations to the highest administrative level, 不同于通常的图书馆谈判层面; (3) Adherence to principles, such as maintaining budget neutrality (no additional costs for open publishing) in negotiations with Elsevier, which achieved a 10% annual increase in Dutch authors' open publishing without extra fees; (4) Clear policy support requiring 60% of Dutch scientific publications to be open access by 2018 and 100% by 2024 [28]. The Netherlands Organization for Scientific Research (NWO), the country's major research funder, mandates immediate open access for funded results [31].

VSNU targeted eight publishers accounting for 70%-80% of Dutch scientific publications [27] and has reached agreements with Springer [32], Wiley [33], Taylor & Francis [34], ACS [35], SAGE [36], Brill [37], Cambridge University Press [38], and Elsevier (for a certain percentage of articles) [39], enabling corresponding authors from Dutch institutions to publish open access without APCs. VSNU also secured APC discounts with Walter de Gruyter [40] and Thieme [41], and APC vouchers with Emerald [42].

2.4 United States

As of January 2019, 11 US institutions had signed OA2020, including UC Berkeley, UC Davis, UC San Francisco, UC Northridge, UC Merced, UC Riverside, UC Los Angeles, UC San Diego, University of North Texas, Iowa State University Library, and Wayne State University [43]. These institutions issued a joint statement on OA2020.us calling for broader US participation to break the closed subscription system's constraints [44]. UC Berkeley reached an APC voucher agreement with RSC in 2014 [45], and the UC Digital Library (CDL) secured a system-wide APC discount agreement with Taylor & Francis in 2016 [46].

CDL's 2016 "Pay It Forward" study on transformation costs and benefits [47] found that: (1) For large research institutions, full open publishing would exceed current library subscription budgets; (2) The funding gap could be covered by research project funds, which have become a major source of open publishing support; (3) Transformation funding mechanisms must allow author choice of publication venue, introducing competition and downward APC price pres-

sure within the journal system; (4) Future funding models should incorporate appropriate incentives to manage expenditures and continuously improve the publishing system.

While the US lacks specific calls for subscription fund conversion, suggestions include libraries allocating 2.5% of total budgets to public digital infrastructure supporting open scholarship [48]. The Association of Research Libraries (ARL) also recommends converting both subscription funds and scholars' publishing funds to support open, discipline-based preprint repositories [49].

2.5 SCOAP3

The Sponsoring Consortium for Open Access Publishing in Particle Physics (SCOAP3) [7] has been a staunch open publishing supporter, achieving the first large-scale conversion of high-energy physics journals. SCOAP3 unites over 3,000 research and education institutions and libraries from 44 countries, converting journal subscription fees to open publishing support [50]. Members share costs proportionally by article output, eliminating individual APC payments [51]. SCOAP3 has agreements with 11 high-energy physics journals, negotiating APCs of €900-1,000 per article for 2017-2019 [52], well below the market average of $3,000 (approximately €2,500) [53]. SCOAP3's work in price regulation, standard setting, and quality monitoring provides important positive guidance for open publishing transformation [54].

2.6 China

As of January 2019, 14 mainland Chinese institutions had signed the OA2020 EoI: National Science Library (Chinese Academy of Sciences), National Science and Technology Library (NSTL), ShanghaiTech University Library, Agricultural Information Institute (Chinese Academy of Agricultural Sciences), Guangdong Science and Technology Library, Peking University Library, Tsinghua University Library, Sichuan University Library, Nanjing University Library, Xi'an Jiaotong-Liverpool University Library, China University of Mining and Technology Library, Nanjing Normal University Library, and Guangxi University of Science and Technology Library. This demonstrates China's commitment to international cooperation in transforming academic journals from subscription to open access, improving literature support for Chinese researchers.

China has also explored various transformation pathways. In 2014, NSTL subscribed to ECS Plus [55], obtaining unlimited article credits for Chinese authors [56]. In 2016, NSTL joined SCOAP3 on behalf of China [57], enabling Chinese authors to publish open access in high-energy physics and promoting research sharing while demonstrating China's international responsibility as a major research nation. In 2015, the National Science Library reached an offsetting agreement with IOP, deducting APCs for Chinese Academy of Sciences corresponding authors publishing in IOP hybrid journals from the next year's consortium subscription fees based on calculated proportions. China's Open Access Promotion

Week conferences in 2017 and 2018 featured themes on "OA2020: China's Challenges and Choices" and "OA2020 China Practice," promoting the initiative domestically.

3. Attitudes and Actions of Major International Publishers

As essential partners in scholarly publishing, publishers deserve appropriate compensation for their contributions to reviewing, editing, and disseminating research. OA2020's call for large-scale transformation from subscription to open publishing requires publishers to adjust APC pricing mechanisms, funding supervision systems, and rights allocation in publishing agreements (including text and data mining), abandoning monopoly over existing markets and sharing digital network benefits [58] to better serve researchers. Different publishers hold varying attitudes toward OA2020, related to their market positioning, history, scale, and profit models. While some concerns about transformation are normal, publishers have evolved from initial opposition to open access to now nearly all offering hybrid options [59], making large-scale transformation inevitable.

3.1 Early Adopters

Wiley is OA2020's strongest supporter, reaching the first open publishing transformation agreement with Germany's DEAL project and disclosing specific terms and costs: From July 1, 2019, German researchers' "publish and read fee" for open publishing in Wiley hybrid journals is €2,750 per article. With estimated annual output of 9,500 articles, advance payments total approximately €13 million for July-December 2019 and €26 million for 2020. A "transition fee" of about €1,200 covers January-June 2019. German researchers also receive 20% APC discounts in Wiley's existing open access journals [60]. Wiley's 1,300+ subscription journals offer OnlineOpen options, eliminating individual APC payments for corresponding authors from participating institutions [61]. Wiley has reached similar agreements with the Netherlands, Austria, and the UK [62] and provides open publishing services for US government agencies (NIH, DOE, DOD, USGS, NSF), foundations (Bill & Melinda Gates Foundation), and institutes (Howard Hughes Medical Institute), depositing final articles in PubMed Central under CC licenses when funded authors choose open publishing [62].

3.2 Supporters

Springer Nature supports OA2020 and has reached offsetting agreements with Germany, the UK, the Netherlands, Austria, and Sweden [63], enabling corresponding authors from participating institutions to publish open access in over 2,000 Springer subscription journals without APCs while retaining full journal access. In October 2017, Springer Nature announced that more than 70% of corresponding authors in the UK, Sweden, the Netherlands, and Austria were already publishing via open access, calling for continued partnership to promote

discovery through open publishing and open research technologies [64].

Taylor & Francis addresses double-dipping in hybrid journals through membership policies and prepayment discounts, offering open publishing options in 2,300+ subscription journals [66]. It has reached offsetting agreements with the UK, Austria, Germany, and the Netherlands [67], and APC discount agreements with UC Digital Library, Finnish Digital Library, and Chinese Academy of Medical Sciences.

The Royal Society of Chemistry (RSC) offers "Read & Publish" agreements combining publishing fees (based on previous years' corresponding-author article counts) and reading fees (costs for accessing non-OA articles) minus various conversion discounts [68]. RSC provides APC-free vouchers or 15% discounts on hybrid journal APCs for subscribing institutions [69].

The American Chemical Society (ACS) offers 25% APC discounts for hybrid journal open publishing at subscribing institutions [70], though CC BY or CC BY-NC-ND licenses cost an additional $1,000 ($500 for members).

3.3 Experimenters

IOP advocates for open science and open access research, building a transparent system that reduces subscription prices to repay open access revenue [71]. To control costs and avoid double payment, IOP has signed offsetting agreements with SCOAP3, Austria, Germany, Norway, Sweden, and the UK [72].

SAGE has offset subscription prices for hybrid journals with over 5% open publishing content since 2015 [73], with 20 journals implementing offsetting in 2015 and nine more added in 2018. The offset rate is calculated as a rolling average from 2014-2016 to eliminate annual fluctuations, with discounts ranging 1%-5% in 2018.

Cambridge University Press has strict offsetting rules [74]: discounts apply only when (1) OA articles exceed 5% of total journal articles, (2) total APC income exceeds £5,000, and (3) the discount is based on the lower of either the OA article proportion or the APC income proportion of total subscription income. Discounts are calculated on the previous full year's data, with 2019 discounts based on 2018 data using a minimum journal APC price of £5,250. Table 2 details these rules.

3.4 Observers

Elsevier claims to support open science but shows relatively low actual support compared to other publishers. Elsevier has proposed: (1) "Openness within Europe," suggesting OA2020 need not pursue international consensus and that Europe could quickly achieve "European-wide open sharing" while other countries continue open archiving—contradicting open publishing's global, timely, and free principles; (2) "First movers become losers," arguing that open publishing support costs will exceed current subscription fees, making early adopters

losers while latecomers or "free riders" win [75]. This argument masks publishers' "frog-boiling" price strategies: stable initial increases lull institutions before prices rise to unbearable levels. In reality, early transformers gain initiative in rule-making and price negotiations, while latecomers must accept publishers' terms.

DEAL has negotiated with Elsevier since 2016 without agreement. Elsevier demands: (1) pricing based on current subscriptions plus potential lost new subscription revenue; (2) hybrid journal prices far exceeding both subscription and full OA journal APCs; (3) complete separation of "publish" and "read" models; (4) compliance with Elsevier's standard open archiving policies; and (5) password-based rather than institutional authentication per Elsevier's "network security policy" [5]. Max Planck insists on "publish and read" principles. In February 2019, UC terminated its Elsevier subscription, immediately making research from all 10 campuses (nearly 10% of US academic output) freely available worldwide [76]. In March 2019, Norway also stopped renewing its Elsevier agreement [77]. Over 70 institutions globally have canceled Elsevier subscriptions, with projections of 200 major universities and research institutions by 2018 [78]. Interestingly, Elsevier still allows 200+ canceled institutions access while continuing negotiations [79], and has taken some transformative steps: in 2014, its *Physics Letters B* and *Nuclear Physics B* converted to full open access under SCOAP3 funding [80,81], and in 2015 it agreed with Dutch universities to make 30% of Dutch-authored articles open access by 2018 [39].

Oxford University Press also failed to reach agreement with Dutch universities [82] due to proposed transformation costs exceeding their capacity. Dutch universities viewed this as a step backward for open access, though an exception that won't affect the overall trend.

4. Challenges and Potential Strategies for OA2020

OA2020 will accelerate the international will and action to transform scholarly journals to open publishing, representing not just publishing system reform but transformation of the entire scholarly communication system, research process, and knowledge dissemination mechanism. This is the inevitable trend of digital-era scientific publishing serving research with faster, broader, and more efficient impact, and the inherent requirement of science for openness, freedom, and convenience. However, this reform requires joint efforts from all publishing stakeholders, facing external challenges from national economic and technological development differences, internal challenges requiring role changes from publishing stakeholders, and both old challenges from current open access practice and new challenges from transformation exploration.

4.1 Acknowledging National and Regional Differences

Different countries and regions hold different attitudes toward subscription-to-open publishing transformation due to varying technological and economic de-

velopment levels. In Europe, offsetting agreements are implemented through centralized, national-level negotiations backed by funding policies supporting open publishing, making transformation meaningful [83]. However, UC's study shows that full APC-based institutional support costs would exceed current library budgets, and even if research funds could cover the gap, transformation appears disadvantageous for North American institutions [27,84]. ARL's Advocacy and Public Policy Committee Chair V. Steel stated that "OA2020 goals are not suitable for global international research institutions, funding agencies, and publishers," and that "transformation models require higher costs unsustainable under current systems" [85].

Faced with these differences, we advocate "some countries taking the lead first" to become frontier pioneers. Max Planck statistics show that 80% of global research output concentrates in 20 countries [17]. Therefore, obtaining firm support from just 100 leading, distributed institutions among the top 20 publishing countries (US, China, UK, Germany, etc.) would ensure OA2020's success (see Table 3 , adapted from a presentation by R. Schimmer, Director of Scientific Information at Max Planck Digital Library, with permission).

4.2 Libraries Must Play a Central Role in Transformation

Libraries possess the most subscription funds, professional expertise, and qualifications to negotiate open publishing transformation mechanisms. They are the primary force driving OA2020 internationally and domestically. However, libraries currently lack the determination to actively transform. While the subscription mechanism is mature after years of practice, knowledge about establishing, implementing, and evaluating open publishing support mechanisms remains limited. Facing transformation, libraries must reposition themselves not just as resource purchasers but as integrated professional institutions supporting knowledge discovery, organization, publishing, and dissemination—a new opportunity in the open science environment. Libraries should serve as: (1) **Analysts**, conducting foundational data work on subscription expenditures, author output statistics, and transformation cost calculations; (2) **Negotiators**, analyzing publisher lists, developing principles and strategies, and conducting or facilitating high-level negotiations; (3) **Monitors**, tracking subscription prices, APCs, and whether offsetting agreements truly serve as transitions; (4) **Service providers**, guiding authors and the public to understand and benefit from open publishing; and (5) **Collaborators**, working internationally with Max Planck and other institutions to drive global transformation.

4.3 Allowing Publishers Transformation Time

Publishers remain heavily dependent on subscription models and uncertain about new models. Although major publishers have implemented offsetting and flipping policies, they often label them as "pilots," reflecting concerns about large-scale transformation [27]. New models unite libraries, funders, and researchers, giving payers greater control than the current fragmented system,

which publishers anticipate will resist future price increases.

We must maintain negotiation initiative while acknowledging transformation complexity, allowing publishers transition time to seek new business models within open scholarly communication. For example, DEAL's latest negotiations with Springer Nature [86] maintain current subscription prices while seeking more negotiation time. Dutch universities extended their Wiley subscription contract to end-2015 [87] before reaching a transformation agreement in 2016 [33].

4.4 Addressing Current Open Publishing Practice Problems

Existing open publishing problems must be resolved during transformation. High APC prices result from absent public interest representation, with current pricing based on individual author-publisher negotiations where authors, pressured to publish, accept APC increases [58]. OA2020 provides an opportunity to leverage institutional, funder, and library purchasing power through collective funding and negotiation to guide APC price regulation. Predatory journals are not caused by OA but by unscrupulous publishers exploiting the OA name. The OA journal field has established normative codes of conduct and authoritative whitelists [54], with many OA journals becoming high-quality leaders in their fields. Libraries must continue professional guidance to protect researchers, while funders should establish review standards for new OA journals (including APC pricing mechanisms and operational transparency) to quickly partner with high-quality new journals.

4.5 Confronting Offsetting and Flipping Mechanism Shortcomings

Offsetting agreements are transitional mechanisms with inherent limitations: (1) **Increased administrative costs** [26]. Transformation costs include not just APCs but also management expenses—estimated at £88 per OA article plus agreement administration, implementation decisions, and researcher communication costs. (2) **Cost-sharing challenges**. Large-scale transformation requires multi-country participation and recognition. (3) **Lack of unified standards** for negotiating and implementing big deals. (4) **Transparency issues**, as undisclosed financial details hinder implementation and oversight [27].

Flipping mechanisms directly offset APCs against subscription fees, making subscriptions unnecessary when enough institutions participate. However, flipping also has shortcomings [54]: (1) **Restricting author submission channels** by cementing relationships between subscribing institutions and specific publishers, potentially limiting academic freedom and market competition; (2) **Weakening APC control** by effectively endorsing current publisher policies and pricing; and (3) **Uncertain universal applicability** across countries and institutions with different publication volumes and growth rates.

Despite these challenges, OA2020 moves us closer to global knowledge sharing. When open publishing becomes mainstream, we will gain three benefits: (1) **Di-**

rect benefits: Better support for high-tech enterprises, startups, SMEs, social organizations, and the public to access latest scientific knowledge economically, improving innovation and operational efficiency; (2) **Indirect benefits**: Enhanced research transparency, data mining support, open science promotion, and open knowledge infrastructure; and (3) **Potential benefits**: Support for linked knowledge, smart business applications, rapid knowledge condensation and promotion, and innovation in China's publishing and information services capabilities. Large-scale open publishing transformation is the necessary path for deepening open access in the digital environment—we can only advance.

China has long actively promoted open access, which aligns with national innovation strategy and core interests of the innovation-driven development strategy. Max Planck's Web of Science data shows Chinese corresponding authors ranked second globally in 2015, producing 17% of total output [17]. By this proportion, China needs 8-12 firm supporters for global transformation. While 14 Chinese institutions have signed the OA2020 EoI, more influential research, education, and funding institutions must assess the situation and join transformation practice. The first step is signing the OA2020 EoI to demonstrate clear support. Signed institutions should unite with division of labor and cooperation to drive practice and demonstrate leadership. Libraries should proactively conduct cost-benefit analyses of subscription-to-open publishing fund conversion [54], expanding to national data analysis to support policy formulation and international rule-making [83]. Libraries, universities, and funders should leverage strengths to negotiate with supportive publishers first, win over observers, and gain initiative on APC pricing, rights allocation, and quality control. Through conferences, publications, media coverage, and special research funding, they should rally government and societal support for OA2020, uniting international stakeholders to advance global practice and contribute Chinese strength and wisdom while demonstrating international responsibility.

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OA2020 Initiative: International Observations and Policy Recommendations

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Abstract: [Purpose/significance] This paper aims to provide reference suggestions for China to further promote and implement the signed OA2020 Initiative. [Method/process] Through network investigation, this study tracks and observes the actions of major global scientific and technological countries' educational institutions, research institutions, funding agencies, libraries, and international organizations in implementing large-scale academic journal open publishing transformations. It summarizes the different attitudes and actions of major international publishers toward this transformation, analyzes the problems and challenges faced by these academic publishing stakeholders, and proposes possible response strategies. [Result/conclusion] Based on analysis of the research results, this paper puts forward feasible suggestions for promoting the further development of open access and achieving the OA2020 Initiative from five aspects: acknowledging national differences, transitioning library roles, cooperating with publishers, solving existing problems of open publishing, and confronting the shortcomings of offsetting and flipping mechanisms.

Keywords: OA2020 Initiative; open access publishing; subscription expenditures; large-scale transformation; library

Note: Figure translations are in progress. See original paper for figures.