

# POLICY OPPORTUNITIES

## ECONOMICS OF ACADEMIC PUBLISHING

UNIVERSITY OF WASHINGTON STRATEGIC ANALYSIS,  
RESEARCH & TRAINING (START) CENTER

REPORT TO THE BILL & MELINDA GATES FOUNDATION

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STRATEGIC ANALYSIS,  
RESEARCH & TRAINING CENTER

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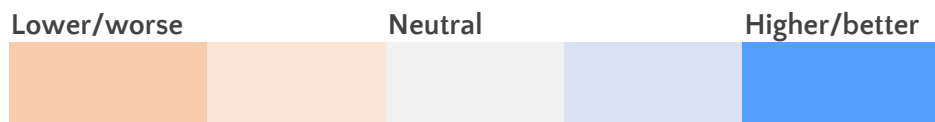
# Introduction

The following are possible policy changes or additions to the Bill and Melinda Gates Foundation (BMGF) [Open Access Policy](#). The BMGF Open Access (OA) policy requires that all funded research (i.e., manuscripts, papers, data, etc.) is published OA and covers all associated costs. The policy opportunities are the results of both a scholarly and gray literature review and key informant interviews (KIIs) with a diversity of stakeholders regarding opportunities for BMGF OA policy to positively impact the academic publishing ecosystem. The opportunities range from theoretically subtle to more broadly impactful policy changes. No single policy opportunity could be identified as the ideal choice given pros and cons about economic impacts, logistic impacts, equity impacts, and other additional factors. These opportunities have been developed with varying degrees of emphasis on the following different factors, with the following conceptual definitions:

- **Reduces financial burden for BMGF:** reduces OA Article-Processing Charges (APCs) that BMGF pays; does not take into consideration upfront costs for implementing an opportunity such as legal, business, etc.
- **Reduces financial burden for authors:** reduces APC charges that authors pay (either out of pocket or with other funds)
- **Reduces support for large commercial publishers:** reduces BMGF financial support for large commercial publishers
- **BMGF reduces interaction with publishers:** Reduces the amount that BMGF must coordinate with publishers, does not have to pay invoices, etc.
- **Reduces logistical burden for BMGF:** reduces amount of time spent and administrative efforts needed to implement and carry out opportunity
- **Reduces logistical burden for authors:** reduces amount of time authors must spend trying to get their research published while adhering to the BMGF OA policy
- **Increases OA compliance:** increases percentage of BMGF-funded research published open access
- **Supports broader open science landscape:** increases amount of BMGF-funded research that is available to the general public and decreases amount of time it takes to make research available to the general public
- **Involves authors in OA APC decision making:** incentivizes authors to be more price sensitive (increase price elasticity of demand)
- **Considers differences between grantees:** ensures that grantees from low-and middle-income countries (LMIC) or early career researchers are not disadvantaged due to policy changes
- **Increases equity of open access landscape:** increases overall access to OA publishing and de-incentivizes the current APC business model

Opportunities A-J are considered according to the above factors in Table 1. Table 2 summarizes the opportunities which are described in more detail on pages 6-18. There are also equity considerations that arose from our literature search and KIIs that are described on page 6.

Table 1: Rating of opportunities according to economic, logistic, equity, and additional factors



\*a neutral rating refers to maintaining the current BMGF OA policy

		Opportunities Ranking									
		A	B	C	D	E	F	G	H	I	J
Economic Factors	Reduces financial burden of APC costs for BMGF	Higher/better	Higher/better	Neutral	Neutral	Lower/worse	Neutral	Higher/better	Neutral	Lower/worse	Neutral
	Reduces financial burden of APC costs for authors	Lower/worse	Lower/worse	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
	BMGF reduces support for large commercial publishers	Higher/better	Higher/better	Neutral	Neutral	Neutral	Higher/better	Higher/better	Higher/better	Neutral	Higher/better
Logistic Factors	BMGF reduces interaction with publishers	Higher/better	Neutral	Neutral	Neutral	Neutral	Lower/worse	Lower/worse	Neutral	Neutral	Neutral
	Reduces logistical burden for BMGF	Higher/better	Lower/worse	Lower/worse	Lower/worse	Lower/worse	Lower/worse	Lower/worse	Lower/worse	Lower/worse	Lower/worse
	Reduces logistical burden for authors	Lower/worse	Lower/worse	Neutral	Neutral	Neutral	Neutral	Neutral	Lower/worse	Neutral	Lower/worse
Additional Factors	Increases open access compliance	Lower/worse	Lower/worse	Neutral	Neutral	Higher/better	Neutral	Neutral	Neutral	Neutral	Higher/better
	Supports broader open science	Lower/worse	Lower/worse	Neutral	Higher/better	Higher/better	Neutral	Neutral	Neutral	Higher/better	Neutral
	Involves authors in APC decision making	Higher/better	Higher/better	Neutral	Neutral	Neutral	Neutral	Neutral	Higher/better	Neutral	Higher/better
Equity Factors	Considers differences between grantees	Lower/worse	Lower/worse	Neutral	Neutral	Neutral	Neutral	Neutral	Lower/worse	Neutral	Neutral
	Increases equity of open access landscape	Higher/better	Higher/better	Higher/better	Higher/better	Lower/worse	Lower/worse	Lower/worse	Neutral	Lower/worse	Higher/better

Table 2. Summary of predicted impacts and implications for policy opportunities A-J

Summary	Impact and Equity	Economic Implications	Logistical Implications
<b>A</b> <b>No longer pay APCs</b>	<p>Halting APC payments disincentivizes an inequitable OA model.</p> <p>OA publishing cost burden becomes disproportionately higher for authors with fewer resources.</p> <p>Halted OA APC funding may reduce OA compliance of grantees.</p>	<p>BMGF attains cost savings from halted APC spending.</p> <p>Authors bear the full cost of OA APCs or seek out alternative means of payment.</p> <p>Increased involvement of authors in APC payment may increase authors price sensitivity.</p>	<p>Enforcing and tracking OA compliance may be more challenging.</p> <p>Potential added logistical burden for authors related to identifying and accessing other APC funding and depositing closed articles in open repositories if permitted.</p>
<b>B</b> <b>Reimburse at different rates depending on journal tier</b>	<p>OA APC cost-value considered, disincentivizing selection of for-profit, high-cost, lower-value journals. More cost-effective journals still supported.</p> <p>OA journal selection reduced for authors with fewer resources.</p>	<p>BMGF attains partial cost savings from reduced APC spending.</p> <p>Authors bear no or partial costs of OA APCs potentially seeking out alternative means of payment.</p> <p>Increased involvement of authors in APC payment may increase authors price sensitivity.</p>	<p>Enforcing and tracking OA compliance may be more challenging.</p> <p>Potential added logistical burden for authors related to identifying journal tiers and accessing remaining OA APC funding.</p>
<b>C</b> <b>APC price cap</b>	<p>Partial OA APC reimbursement disincentivizes selection of for-profit higher-cost journals.</p> <p>OA journal selection reduced for authors with fewer resources.</p>	<p>BMGF attains partial cost savings from reduced OA APC spending.</p> <p>Authors bear no or partial costs of OA APCs potentially seeking out alternative means of payment.</p> <p>Increased involvement of authors in APC payment may increase authors price sensitivity.</p>	<p>Enforcing and tracking OA compliance may be more challenging.</p> <p>Potential added logistical burden for authors related to identifying journals under the price cap and/or accessing remaining OA APC funding.</p>
<b>D</b> <b>Require pre-print</b>	<p>Immediate OA to all research, avoiding publisher related delays.</p>	<p>BMGF OA costs remain per status quo.</p>	<p>Added BMGF task of tracking pre-print compliance.</p>

		Increases attention on broader pre-print environment.	Authors bear no OA APC costs.	Added author task of pre-print publication.
<b>E</b>	<b>Require 100% OA Policy compliance</b>	Increased OA compliance and access to BMGF funded research findings.  OA journal selection limited to compliant journals.	BMGF OA costs increase slightly.  Authors bear no OA APC costs, except when non-compliant.	Enforcing and tracking 100% OA compliance may be challenging.  Added author task of verifying journal compliance before submission.
<b>F</b>	<b>Establish flat fee contracts</b>	May encourage publishers to adopt a 'total cost of publication' model & reduce extra fees/charges.  May serve the interests of legacy/for-profit publishers as 'total cost of publication' varies by journal.  Minimal or no impact on authors.	Unclear impact on overall BMGF OA costs, as any savings may be offset by other APC costs.  Authors bear no OA APC costs.	Reduced BMGF administrative burden when corresponding with select publishers/authors.  Added labor and administration to develop and maintain contract(s).  Reduced author administrative burden when corresponding with select publishers and BMGF.
<b>G</b>	<b>Establish Transformative Agreements</b>	May contribute to existing academic publishing inequities, by supporting larger publishers (e.g., Springer Nature) in the Global North and potentially reducing academic content and financing for smaller journals and those located in the Global South.  May signal to publishers that BMGF is content to support financing of OA APCs on a longer-term basis.  May provide additional support to not-for-profit and more transparent publishers.	Unclear impact on overall BMGF OA costs, as any savings may be offset by other OA APC costs.  BMGF's higher historical spend on OA APCs compared to other institutions/authors may inflate pricing agreements.  May serve publisher's financial interests as contracts will be negotiated on BMGF's historical spending pattern, which may be inflated compared to other institutions.  Authors bear no OA APC costs.	Added labor and administration to develop and maintain contract(s).  Reduced BMGF administrative burden when corresponding with select publishers/authors.  Minimal or no impact on authors.

		Minimal short-term impact on authors.		
<b>H</b>	<b>Authors pursue discounts before BMGF payment</b>	<p>May provide additional clarity/data on variation in negotiated APCs from transformative agreements (TAs), supporting price transparency efforts.</p> <p>If reward system used, authors without access to discounts may be disadvantaged.</p>	<p>BMGF attains partial cost savings from reduced OA APC spending.</p> <p>May help reduce or control inflated costs in the academic publishing market.</p> <p>Authors bear no OA APC costs.</p> <p>Increased involvement of authors in APC payment/discount identification may increase authors price sensitivity.</p>	<p>Added BMGF task of tracking and verifying use of discounts.</p> <p>Added author task of identifying discounts before submission.</p>
<b>I</b>	<b>Reward OA Policy compliance</b>	<p>May increase OA compliance and access to BMGF funded research findings.</p> <p>Authors positively rewarded or recognized for compliance instead of being punished.</p>	<p>Higher overall BMGF OA costs.</p> <p>Authors bear no OA APC costs.</p>	<p>Added BMGF task of tracking and delivering incentives.</p> <p>Added author task of monitoring incentives.</p>
<b>J</b>	<b>Include price transparency requirement</b>	<p>May increase overall price transparency in OA publishing space.</p> <p>May encourage outstanding journals to share price transparency.</p> <p>OA journal selection reduced for authors wanting to publish in non-compliant journals.</p>	<p>BMGF OA costs remain per status quo.</p> <p>Authors bear no OA APC costs.</p>	<p>Enforcing and tracking compliance may be challenging.</p> <p>Added author task of verifying journal compliance before submission.</p>

# Equity Impact

Impact on equity is important to consider regardless of which opportunity or combination of opportunities are chosen. It could be useful to grantees if the BMGF developed an “equity factor” for journals or advocated for such a metric to be included in existing impact factor scores. An equity factor could consider a journal’s support for low- and middle-income country (LMIC) researchers including for OA publication(s), permitting access to subscription-based journals for institutions and/or researchers based in LMICs, diverse representation on editorial boards and among peer-reviewers, non-hybrid models, and overall contribution to a more equitable OA landscape<sup>12</sup>. These ratings could provide further transparency for grantees to decide where to publish and could also be a resource for other funders and the broader scientific community. It could also encourage journals to re-evaluate some of their policies and/or models to support a more equitable publishing landscape. Without attention to equity, it is possible that open science and fee-based OA publishing will exacerbate existing inequities in the scientific community resulting in narrower authorship among other impacts<sup>3</sup>.

It is also important for BMGF to provide additional support to those who need it, such as researchers based in LMICs or early career researchers (ECRs). Authors from LMIC countries and ECRs may have less support through previous or concurrent funding, and thus may find it harder to cover APC costs. As an example, KII 1 recommended creating a fund to expand support to non-BMGF authors for OA APCs. This would be particularly relevant for researchers in middle-income countries who may not qualify for OA APC journal waivers, in addition to facing many economic and structural barriers (e.g., less access to development funding for research, weak currency, reduced access to subscription-based academic journals, research institutions with fewer resources, weaker infrastructure, etc.) that reduce their ability to conduct research and publish OA<sup>4</sup>. KII 10 also noted that smaller Diamond OA journals in LMICs could also benefit from increased access to funding support. In addition to the aforementioned structural barriers, these journals are often staffed by volunteers limiting their ability to compete and be impactful (e.g., fewer issues per year, limited marketing, etc.) in the current OA publishing landscape. Despite these challenges, they are often highly sought after by researchers in their region for a variety of reasons including greater support of Global South scholarship, language and communication, local topical relevance, and general accessibility<sup>56</sup>

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<sup>1</sup> Bancroft, S. F., Ryoo, K., & Miles, M. (2022). Promoting equity in the peer review process of journal publication. *Science Education*, 106(5), 1232–1248. <https://doi.org/10.1002/sce.21733>

<sup>2</sup> Schipper, E. L. F., Ensor, J., Mukherji, A., Mirzabaev, A., Fraser, A., Harvey, B., Totin, E., Garschagen, M., Pathak, M., Antwi-Agyei, P., Tanner, T., & Shawoo, Z. (2021). Equity in climate scholarship: a manifesto for action. *Climate and Development*, 13(10), 853–856. <https://doi.org/10.1080/17565529.2021.1923308>

<sup>3</sup> Ross-Hellauer, T. (2022). Open science, done wrong, will compound inequities. *Nature*, 603(7901), 363–363. <https://doi.org/10.1038/d41586-022-00724-0>

<sup>4</sup> Garlinghouse, M. (2022, August 17). Open Access Is Essential for Low-Income Countries. The Official PLOS Blog. <https://theplosblog.plos.org/2022/08/open-access-is-essential-for-low-income-countries/>

<sup>5</sup> Mouton, J., & Prozesky, H. (2018). Chapter 8: Research Publications. In *The Next Generation of Scientists in Africa* (pp. 125–146). African Minds. [muse.jhu.edu/book/63750](https://muse.jhu.edu/book/63750)

<sup>6</sup> Posada, A., & Chen, G. (2018). Inequality in Knowledge Production: The Integration of Academic Infrastructure by Big Publishers. *Journal d’Interaction Personne-Système, Connecting the Knowledge Commons: From Projects to Sustainable Infrastructure*. <https://doi.org/10.4000/proceedings.elpub.2018.30>



# Opportunity A: No longer pay APCs

## Executive Summary/Definition:

BMGF stops paying APCs for any articles published by grantees in all journals except Gates Open Research. OA APCs have risen at a rate three times of what would be expected if they were indexed to inflation<sup>7</sup>. Concurrently, BMGF OA academic publication-related spending has almost doubled from \$2.69 million to \$5.16 million USD between 2017- 2021<sup>89</sup>. Grantees would still be required to comply with the BMGF Open Access policy to ensure that all BMGF funded research is publicly available and could have their OA APC funded if choosing to publish via Gates Open Research.

Paying APCs supports the current predominantly for-profit academic publishing ecosystem. If everyone were to stop paying APCs, it would put pressure on publishers to reform their business models<sup>10</sup>. APC's have already created inequities, and if funders stop paying for APCs and incentivizing the model, then it may force publishers to shift towards a more equitable model. If BMGF stops paying APCs to primarily legacy publishers and instead supports other non-profit and more equitable model types (e.g., diamond OA, pre-prints), broader ecosystem changes may result. BMGF is also one of the few payers, compared to authors and academic institutions, that is continually paying the high-cost APC list prices potentially helping to drive APC price increases. By not reimbursing APCs, BMGF may increase researchers' engagement in the APC payment process potentially increasing their price sensitivity as they identify alternative funding sources or less costly journals. Currently, all APCs are covered by the BMGF, and the author is minimally involved in the payment process. As an analogy, this strategy aligns with the University of California (UC) system's efforts to increase authors' engagement in APC payments and aims to ultimately reduce OA APCs as authors' price sensitivity increases.

Early career researchers and those from LMICs would likely be most impacted by Opportunity A. If they are not able to identify alternative funding to pay for OA APCs then they would have the most difficulty complying with the BMGF OA Policy and thus may require additional support. As the current APC model itself is not equitable, it is important that these researchers are not excluded from OA publishing. However, efforts to address root causes and systemic inequities in academic publishing will need to extend beyond simply giving money to lower-income or early career academics to fund APCs and will require strong collaboration from academic institutions.

There may be criticism from authors if Opportunity A is implemented. However, as BMGF provides substantial support for researchers around the globe, we hypothesize that researchers would still be interested in partnering with BMGF.

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<sup>7</sup> Khoo, S. Y.-S. (2019). Article Processing Charge Hyperinflation and Price Insensitivity: An Open Access Sequel to the Serials Crisis. *LIBER Quarterly: The Journal of the Association of European Research Libraries*, 29(1), 1–18. <https://doi.org/10.18352/lq.1028>

<sup>8</sup> Gates Foundation OA Report. (2021). [Data Set].

<sup>9</sup> Bill and Melinda Gates Foundation. (2019). Gates Open Access Publishing Charges Project. UCLA Dataverse. <https://doi.org/10.25346/S6/EEFYIP>

<sup>10</sup> Alperin, J. P., Fischman, G. E., & Willinsky, J. (2008). Open access and scholarly publishing in Latin America: ten flavours and a few reflections. *Liinc Em Revista*. <https://www.semanticscholar.org/paper/Open-access-and-scholarly-publishing>

### **Economic Impact:**

Authors choosing to publish outside of Gates Open Research or diamond OA journals would have to find alternative funding or pay out of pocket for the APC to comply with the BMGF OA policy. BMGF would save an estimated \$5.3 million USD per year (based on 2021 data). These savings could be re-invested into the OA publishing ecosystem by supporting diamond OA journals, authors from LMICs, or redirected towards BMGF global health programming. BMGF's contribution to the total number of published academic manuscripts is minimal. Halting APC payments would therefore have limited impact on publishers' bottom-line but could still drive change due to BMGF's reputation. Taking the lead in stopping APC payments may inspire other funders and institutions to follow in BMGF's footsteps, broadening the impact of Opportunity A on publishers and the overall OA ecosystem. While it is positive that BMGF would no longer be financing large commercial publishers, this opportunity could hinder the growth of smaller and more equitable publishers.

### **Logistical Impact:**

Authors choosing to publish in subscription-based journals (no author APC costs), would have to drop another version in a repository to comply with the Gates Open Access policy, which may be difficult depending on the article licensing. Correspondingly, Opportunity A may increase the number of manuscripts that are non-compliant with the Gates Open Access policy, leading to a decrease in the overall number of OA publications and reducing access to BMGF-funded research.

Opportunity A could make article compliance tracking more challenging, as two versions of an article may exist (closed journal and repository), and overall OA policy compliance may decrease. Enforcing compliance is important to increase and sustain the number of OA publications published from BMGF funded work.

### **Consulted Klls:**

KII 7

KII 9

# Opportunity B: Reimburse at different rates depending on journal tier

## Executive Summary/Definition:

BMGF establishes tiers of journals that it reimburses at different rates based on some measure of their relative ‘values’. The rationale for this opportunity is that APCs would be tied to some aspects of the value provided by publishing in a specific journal/journal tier, thus creating a level of transparency in cost and to limit BMGF from paying APCs for journals that provide relatively little value compared to their cost<sup>11</sup>. The rate at which BMGF reimburses APCs would depend on journal type (e.g., full OA versus for-profit, non-profit, diamond, university press), location of journal (e.g., continuing support for local journals, specifically those located in the Global South), journal price transparency, “best-buy” factor, and other criteria. For example, BMGF would pay full APCs for Gates Open Research and fully open non-profit journal platforms. All researchers have the option to publish via Gates Open Research where costs are fully covered to ensure that all BMGF funded research is publicly available.

## Economic Impact:

This opportunity would reduce the total OA APC spending for BMGF while still supporting authors and non-commercial or smaller and more equitable publishers. These savings could be re-invested into the OA publishing ecosystem by supporting diamond OA journals, authors from LMICs, or redirected towards BMGF global health programming. Handling APCs in this way would also increase authors exposure and involvement in the APC payment process and increase their understanding of “best buy” factors, which may also increase author price sensitivity<sup>11</sup>. Authors have the choice of publishing in a higher BMGF-tier journal at no cost or an alternative journal of their choosing with only partial APC reimbursement. Reducing BMGF’s support for higher cost and for-profit journals may place pressure on these publishers to price their OA APC more competitively<sup>11</sup>.

## Logistical Impact:

Opportunity B would increase BMGF administrative tasks related to defining, categorizing, and maintaining different APC reimbursement tiers and added communication with authors, especially in cases of partial or no APC reimbursement. Opportunity B could make article compliance tracking more challenging as two versions of an article may exist (closed journal and repository), and overall OA policy compliance may decrease. Enforcing compliance is important to increase and sustain the number of OA publications published from BMGF funded work.

Authors administrative burden would also increase, especially for those choosing to publish in journals that are not fully reimbursed. Authors would still be expected to comply with BMGF’s OA policy to ensure that BMGF-funded research is publicly available. If they choose to publish in a subscription-based journal due to OA costs not being fully reimbursed, they would be expected to deposit the article in an open repository to adhere to BMGF’s OA policy, which may be difficult depending on the article licensing. Correspondingly, Opportunity B may increase

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<sup>11</sup> Björk, Bo-Christer, & Solomon, D. (2020). Developing an Effective Market for Open Access Article Processing Charges (p. 1135957 Bytes) [Online resource]. Wellcome Trust. [https://wellcome.figshare.com/articles/online\\_resource/Developing\\_an\\_Effective\\_Market\\_for\\_Open\\_Access\\_Article\\_Processing\\_Charges/13193957/1](https://wellcome.figshare.com/articles/online_resource/Developing_an_Effective_Market_for_Open_Access_Article_Processing_Charges/13193957/1)

the number of manuscripts that are non-compliant with the Gates Open Access policy, leading to a decrease in the overall number of OA publications and reducing access to BMGF-funded research.

**Consulted KIIs:**

KII 7

# Opportunity C: APC price cap

## Executive Summary/Definition:

BMGF only reimburses a portion of APCs by implementing a price cap. There are a high proportion of journals that have an APC less than \$2,000 USD, while also having similar article influence and impact those journals with a higher APC<sup>12</sup>. Thus, there is no need to be paying high APCs for journals whose value does not reflect the high price. For example, Wellcome Trust and German Research Foundation have implemented price caps in the past, but no longer have active price cap policies due to transitions to transformative agreements<sup>13</sup>. The German Research Foundation had a price cap at €2,000 (~\$2,173 USD), which applied only to pure gold open access journals while other journal models were not funded<sup>12</sup>. A recent analysis of charging trends for over 4,300 OA journals included price banding. Based on this analysis, a price cap of \$3,000 USD in 2021, or less than BMGF's median per article spend, would have covered 97% of the OA journal APCs in their sample<sup>14</sup>.

## Economic Impact:

This opportunity would reduce the total OA APC spending for BMGF while still supporting authors and non-commercial or smaller and more equitable publishers. These savings could be re-invested into the OA publishing ecosystem by supporting diamond OA journals, authors from LMICs, or redirected towards BMGF global health programming.

This opportunity, like other policy opportunities, has the potential to increase price sensitivity among authors as they are required to have increased involvement in APC payments. Authors may choose to publish in journals below the price cap, and thus the full APC will be paid by the BMGF, or they may publish in journals with APCs above the price cap and would have to come up with additional funding. Authors from LMICs and early career researchers may have a harder time finding alternative funding to make up the APC price but there should be many journal options with a high author value that are at or below the price cap. Increasing author exposure to APC prices and implementing a price cap may also encourage price competition among OA publishers leading to an overall decrease or constrained increases in OA APCs.

## Logistical Impact:

Opportunity C would increase BMGF administrative tasks and communication with authors related to the APC reimbursement that exceeds the price cap. Opportunity C could make article compliance tracking more challenging, as two versions of an article may exist (closed journal and repository), and overall OA policy compliance may decrease. Enforcing

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<sup>12</sup> West, J. D., Bergstrom, T., & Bergstrom, C. T. (2014). COST EFFECTIVENESS OF OPEN ACCESS PUBLICATIONS. *Economic Inquiry*, 52(4), 1315–1321. <https://doi.org/10.1111/ecin.12117>

<sup>13</sup> How does the DFG support open access in infrastructure funding? (n.d.). [Www.Dfg.De](http://www.Dfg.De). Retrieved January 27, 2023, from [https://www.dfg.de/en/research\\_funding/programmes/infrastructure/lis/open\\_access/infrastructure\\_funding/index.html](https://www.dfg.de/en/research_funding/programmes/infrastructure/lis/open_access/infrastructure_funding/index.html)

<sup>14</sup> Morrison, H., Borges, L., Zhao, X., Kakou, T. L., & Shanbhog, A. N. (2022). Change and growth in open access journal publishing and charging trends 2011–2021. *Journal of the Association for Information Science and Technology*, 73(12), 1793–1805. <https://doi.org/10.1002/asi.24717>

compliance is important to increase and sustain the number of OA publications published from BMGF funded work.

Authors' administrative burdens would also increase, especially for those choosing to publish in journals that are not fully reimbursed. Authors would still be expected to comply with BMGF's OA policy to ensure that BMGF funded research is publicly available. If they choose to publish in a subscription-based journal due to OA costs not being fully reimbursed, they would be expected to deposit the article in an open repository to adhere to BMGF's OA policy, which may be difficult depending on the article licensing. Opportunity C may increase the number of manuscripts that are non-compliant with the Gates Open Access policy leading to a decrease in the overall number of OA publications and reducing access to BMGF funded research.

**Consulted KIIs:**

- KII 3
- KII 5
- KII 6
- KII 7
- KII 12
- KII 13
- KII 14

# Opportunity D: Require pre-print

## Executive Summary/Definition:

Opportunity D requires that authors pre-print their manuscript in an OA repository before the subsequent journal APC is reimbursed. The most impactful benefit of this opportunity is that BMGF-funded research findings would be immediately available, avoiding OA embargo periods and delays between manuscript submission and publication. This contributes to the broader open science landscape in a timelier manner, may increase engagement from the academic and lay communities, and may protect against scooping which benefits BMGF researchers. It may also increase overall open access to BMGF funded research.

Pre-prints are not without controversy. Lack of peer-review can lead to the dissemination of inaccurate information, and some BMGF-funded researchers may push back on this policy due to concerns related to the rigor and sustainability of pre-prints<sup>15</sup>. Pre-print servers may end up mirroring journals, with some pre-print servers already selecting and curating articles to build more of a “brand” and being purchased by legacy publishers that may eliminate the benefits of these servers (KII 3). However, BMGF can also use this opportunity to increase the discourse around pre-prints and educate authors of the importance of OA and potential benefits of pre-print, including a boost in citations with preprints<sup>1617</sup>.

This opportunity would differ from existing strategies aimed at expediting research sharing. For example, post-publication peer-review (PPPR) which has had marginal success over the past decade for reasons that are not yet fully understood<sup>1819</sup>. Instead, opportunity D aims to achieve early result sharing while also adhering to more traditional scholarly peer-review processes as these may be more advantageous and less negative for authors than PPPR, although also imperfect and insufficiently studied<sup>1820</sup>.

Another option and version of this opportunity would be to include language about pre-prints in OA policy but not require compliance.

## Economic Impact:

Assuming all authors who publish a pre-print go on to publish in an academic journal, there would be no obvious economic impacts for BMGF or funded authors. BMGF would continue to fully fund APCs and authors would continue to receive full OA APC reimbursement.

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<sup>15</sup> Watson, C. (2022). Rise of the preprint: how rapid data sharing during COVID-19 has changed science forever. *Nature Medicine*, 28(1), 2–5. <https://doi.org/10.1038/s41591-021-01654-6>

<sup>16</sup> Conroy, G. (2019, July 9). Preprints boost article citations and mentions. *Nature Index*. <https://www.nature.com/nature-index/news-blog/preprints-boost-article-citations-and-mentions>

<sup>17</sup> Serghiou, S., & Ioannidis, J. P. A. (2018). Altmetric Scores, Citations, and Publication of Studies Posted as Preprints. *JAMA*, 319(4), 402–404. <https://doi.org/10.1001/jama.2017.21168>

<sup>18</sup> Knoepfler, P. (2015). Reviewing post-publication peer review. *Trends in Genetics*, 31(5), 221–223. <https://doi.org/10.1016/j.tig.2015.03.006>

<sup>19</sup> Lawrence, R. (2012, February 7). F1000 Research: a pre-print server? *F1000 Blogs*. <https://blog.f1000.com/2012/02/07/f1000-research-a-pre-print-server/>

<sup>20</sup> Horbach, S. P. J. M., & Halffman, W. (2019). The ability of different peer review procedures to flag problematic publications. *Scientometrics*, 118(1), 339–373. <https://doi.org/10.1007/s11192-018-2969-2>

## Logistical Impact:

Opportunity D would increase BMGF administrative tasks to monitor pre-print compliance. Opportunity D could make article compliance tracking more challenging as two versions of an article would exist (pre-print and journal). It is possible that authors who do not want to comply with the pre-print requirement would then also choose to not publish OA, potentially reducing overall OA policy compliance. Enforcing compliance is important to increase and sustain the number of OA publications published from BMGF funded work.

Authors administrative burden would also increase as they would have to publish their article on a pre-print platform in addition to the OA journal of their choosing. However, some journals have unclear pre-print policies or do not allow pre-prints making this process potentially more complex and limiting<sup>21</sup>. Authors would still be expected to comply with BMGF's OA policy to ensure that BMGF funded research is publicly available, however the requirement of pre-prints earlier on in the publishing process may increase overall OA of BMGF-funded research.

## Consulted KIIIs:

KII 3  
KII 11

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<sup>21</sup> Klebel, T., Reichmann, S., Polka, J., McDowell, G., Penfold, N., Hindle, S., & Ross-Hellauer, T. (2020). Peer review and preprint policies are unclear at most major journals. PLoS ONE, 15(10). <https://doi.org/https://doi.org/10.1371/journal.pone.0239518>



# Opportunity E: Require 100% OA policy compliance

## Executive Summary/Definition:

BMGF requires that journal articles are 100% compliant with the current BMGF OA policy before reimbursing APCs. This would push more authors/researchers to be familiar with the BMGF OA policy. At present, there are no consequences for not meeting the BMGF OA Policy. Author's OA publishing costs continue to be fully reimbursed.

Between 2005-2022, the adoption of OA policies by institutions has dramatically increased ten-fold<sup>22</sup> with the numbers of policies adopted by funders increasing from 19 in 2005 to 142 in 2022<sup>23</sup>. Accordingly, increased awareness of OA policies and expectations that all BMGF-funded authors comply with the policy may be well timed.

## Economic Impact:

This would potentially require increased costs related to an increase in full-time equivalent administration at BMGF to monitor and ensure compliance. It would also potentially increase costs for BMGF as the Foundation would need to fund CC-BY license options for all journals to be compliant with policy. For journals such as Oxford Academic's Clinical Infectious Diseases, the CC-BY licensee option is restricted to articles funded by the Wellcome Trust, U.K. Research and Innovation, British Heart Foundation, Cancer Research U.K., and Academy of Finland.

The CC-BY license is the most permissive of the Creative Commons licenses, it permits others to use, reproduce, disseminate, or display your article in any way, including for commercial purposes, as long as they credit you and any co-author(s) for the original creation.

## Logistical Impact:

Opportunity E may increase the administrative burden for BMGF and authors, but it ensures full implementation of the OA policy. The Wellcome Trust (WT) provides an example of how compliance checks could be implemented and enforced. WT completes a compliance check, if authors are not compliant, WT issues a formal notification for any funding renewals or new grants until applicants have ensured that their Wellcome-funded manuscripts – resulting from current or previous grants – are compliant. An extension of this could be to not accept or fund new grant applications from researchers who have not complied with the OA policy in an end-of-grant report until their manuscripts have been made compliant.

## Consulted KIs:

KII 7: *"Factors that impact authors publishing OA include mandates from funders with no opt out and full compliance"*

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<sup>22</sup> Welcome to ROARMAP - ROARMAP. (n.d.). Retrieved March 4, 2023, from <https://roarmap.eprints.org/>

<sup>23</sup> Liao, T.-I. (n.d.). The Changing Landscape of Open Access Compliance. Digital Science. <https://www.digital-science.com/blog/2022/10/the-changing-landscape-of-open-access-compliance/>

# Opportunity F: Establish flat fee contracts

## Executive Summary/Definition:

BMGF establishes flat fee contracts with certain publishers that take the ‘total cost of publication’ into account. This may be difficult to determine as some publishers have been reluctant to answer what the ‘total cost of publication’ is<sup>24</sup>, and others quote vastly different amounts ranging from USD \$10 - \$40,000 per article<sup>25</sup>. As with any industry, there is a wide range of business models for academic publishers and the corresponding inputs and outputs affect the ‘total cost of publication’. However, this may help reduce additional or outdated charges or fees (e.g., color printing fee, page count fee, etc.).

## Economic Impact:

This approach could positively or negatively impact overall BMGF APC spending, depending on which publishers would be included. The ‘total cost of publication’ varies broadly by publisher (e.g., for-profit vs. University press). If contracts are established with legacy publishers, it is likely that a significant amount of resources will be required for the negotiations, which may just serve the publishers’ interests as each publisher determines their total cost of publication based on their business model.

## Logistical Impact:

This opportunity considers APCs along with the associated administrative fees and/or per page charges that are paid to publishers. By negotiating flat fee contracts, BMGF may be able to reduce some of the day-to-day administrative burden as all associated costs for the publisher would be factored in ahead of time and issued on one invoice instead of multiple. However, it is likely that significant labor and resources will be required to negotiate and maintain these contracts with publishers.

## Consulted Kils:

KII 2

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<sup>24</sup> Pinfield, S., Salter, J., & Bath, P. (2015). The “total cost of publication” in a hybrid open-access environment: Institutional approaches to funding journal article-processing charges in combination with subscriptions. *Journal of the Association for Information Science and Technology*, 67(7), 1751–1766. <https://doi.org/https://doi.org/10.1002/asi.23446>

<sup>25</sup> Van Noorden, R. (2013). Open access: The true cost of science publishing. *Nature*, 495(7442), 426–429. <https://doi.org/10.1038/495426a>

# Opportunity G: Establish Transformative Agreements

## Executive Summary/Definition:

BMGF could develop and sign transformative agreement(s) (TA) with their top volume publishers (e.g., PLoS or Springer Nature). This would require personnel, time, and financial resources to develop, negotiate, and maintain these agreements/contracts with various publishers.

## Economic Impact:

This opportunity has the potential to reduce some publishing costs as BMGF would have an established discounted price instead of having to pay the 'premium' APC list price. It may also help limit APC inflation costs as a fixed price would be outlined in each contract while it is valid. Any potential long-term savings from this approach could be invested into other areas/programs at BMGF. However, as these contracts are often based on historical publishing and spending patterns, agreements with BMGF may be artificially inflated compared to other institutions that have been able to take advantage of discounted prices<sup>2627</sup>. This opportunity may consequently end up serving the interests of publishers. Furthermore, depending on the overhead costs to negotiate these contracts, the return on the negotiation investment may be minimal, especially if most BMGF authors are already based at a research-intensive university where a TA may already be in place and potentially at a lower agreed-upon price than what BMGF has negotiated<sup>28</sup>. By engaging directly with publishers to negotiate agreements, publishers may conclude that BMGF is content to support financing of OA APCs on a longer-term basis. Finally, strategy may contribute to existing academic publishing inequities, as TAs tend to be limited to larger institutions in the Global North. Thus, although BMGF may be able to negotiate discounted APCs, non-BMGF affiliated authors will likely still have to pay a higher list price. In addition, by pre-establishing financial support for larger publishers located in the Global North through these agreements, BMGF may be unintentionally directing academic content and financing away from smaller journals, including those located in the Global South.

## Logistical Impact:

There is a potential for significant initial overhead costs and BMGF labor to negotiate contract(s), which may outweigh any savings. This may reduce some day-to-day administrative burden for BMGF, as top volume publishers would send bulk instead of individual invoices. This could also be a strategy to direct more support towards not-for-profit and transparent publishers (e.g., PLoS) over for-profit publishers.

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<sup>26</sup> Farley, A., Langham-Putrow, A., Shook, E., Sterman, L. B., & Wacha, M. (2021). Transformative agreements: Six myths, busted. *College & Research Libraries News*, 82(7), 298. <https://doi.org/10.5860/crln.82.7.298>

<sup>27</sup> Hinchliffe, L. J. (2019, April 23). Read-and-publish? Publish-and-read? A primer on transformative agreements by @lisalibrarian. *The Scholarly Kitchen*. <https://scholarlykitchen.sspnet.org/2019/04/23/transformative-agreements/>

<sup>28</sup> Schönfelder, N., de Looper, A., & Stavenga, M. (2022). A new model for transformative agreements and its implementation by a small publisher: enhancing a smooth transition to open access. Presented at the UKSG 45th Annual Conference and Exhibition, Telford, UK.

**Consulted Klls:**

Kll 6: *“The TA saved the US system a range of 1.5-2 million in one year, and for every dollar we spend, the system gets \$4.50 worth of content.”*

# Opportunity H: Authors pursue discounts before BMGF payment

## Executive Summary/Definition:

BMGF authors would pay the OA APC using existing academic institutional-level deals and society or membership deals<sup>2930</sup>. The APC invoice would then be submitted to BMGF for reimbursement, allowing BMGF to finance lower APC costs instead of the higher 'premium' list prices it currently finances.

To incentivize authors to use these discounts, BMGF could consider a reward system (e.g., author keeps the difference in discretionary funds, receives points for a subsequent application, are featured in a newsletter/blog post) as described in Opportunity I.

## Economic Impact:

This strategy is likely to reduce BMGF's overall APC spending as they would now be funding discounted APCs compared to the higher list prices they currently finance. These potential savings could be invested into other areas/programs. This approach may also help to reduce inflated costs in the academic publishing market as in the current model funders may be unintentionally driving up costs in a market economy as they are some of the only stakeholders in the academic publishing sphere who pay the full OA list price, particularly the very high-cost OA APCs.

By increasing authors' participation in the APC payment process via the identification of discounted prices, it is possible that they may develop increased APC price sensitivity, which could impact their future journal selection.

This strategy may also provide additional clarity and/or partial data around the variation in negotiated APCs from TAs, as BMGF would receive invoices from authors located at different institutions who are publishing articles in the same journals. This added data may further support OA price transparency efforts that have been led by Coalition S.

## Logistical Impact:

This strategy may require additional administrative work for authors and potentially also the BMGF. However, this strategy takes advantage of existing TAs, society memberships, etc. and therefore BMGF would not have to spend time or resources negotiating discounts or agreements directly with publishers.

## Consulted KIIs:

KII 5  
KII 7  
KII 9

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<sup>29</sup> Cochran, A. (2022, October 24). The Beginning of the End of Publisher-Society Partner Contracts. The Scholarly Kitchen. <https://scholarlykitchen.sspnet.org/2022/10/24/the-beginning-of-the-end-of-publisher-society-partner-contracts/>

<sup>30</sup> Publisher OA Agreements and Discounts. (n.d.). Office of Scholarly Communication. Retrieved March 4, 2023, from <https://osc.universityofcalifornia.edu/for-authors/publishing-discounts/>

# Opportunity I: BMGF rewards authors that publish in Open Access

## Executive Summary/Definition:

Update the BMGF policy to reward authors that publish OA. The rationale for this opportunity is that if researchers are recognized and/or incentivized for their OA contributions, they may be more likely to publish OA in the future and encourage increased OA publishing in the academic community. This opportunity aims to positively reward authors who comply with the policy, rather than punishing those who do not<sup>3132</sup>. Rewards could be implemented in a variety of different ways including recognition and/or funding incentives. Recognition of authors complying with the OA policy could be achieved via donor reports, newsletters, social media posts, or other publications where OA compliant projects could be highlighted. Ideally, the added recognition would benefit authors and elevate their profile, potentially increasing manuscript views, citations, and Altmetrics. Similarly, a reward through a \$100 (or another reasonable amount) unrestricted grant for those who comply may further encourage authors to publish OA and have that additional fund for research.

## Economic Impact:

This opportunity would negatively impact the BMGF by increasing their OA related spending. This cost would be partially offset by an increase in OA policy compliance. However, an increase in OA compliance would also result in a greater number of OA APCs to reimburse, thus the additional cost of the reward system could be accompanied by greater expenditure on OA APCs assuming increased compliance. Authors would continue to bear no OA APC costs and would have the added benefit of the reward. Publishers would continue to be fully paid per the OA APC list price.

## Logistical Impact:

The addition of a reward system would also add greater logistical burden for BMGF. There would be a need to track OA policy compliance in real time as well as the added task and business process for tracking and administering rewards. This opportunity would have minimal logistical implications on authors, aside from the potential added task of monitoring their incentives.

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<sup>31</sup> Sharot, T. (2017, September 26). What Motivates Employees More: Rewards or Punishments? Motivating People. <https://hbr.org/2017/09/what-motivates-employees-more-rewards-or-punishments>

<sup>32</sup> Thaler, R. (2009). Nudge: Improving Decisions About Health, Wealth, and Happiness.

# Opportunity J: Update OA policy to include price transparency requirement

## Executive Summary/Definition:

Update the BMGF OA policy to include a price transparency requirement for journals where BMGF authors publish. Price transparency in the academic publishing space has been championed by Coalition S as a means of increasing customers' understanding of the costs of services, which allows for more informed decision-making when selecting where to publish<sup>3334</sup>. The goal of increased price transparency is to drive down or control OA APCs costs through increased market competition in the industry<sup>3536</sup>. At present, more than 2,000 journals, across 27 publishers, share price transparency information through Plan S and would be considered eligible journals for BMGF authors to publish in (Coalition S link below). Authors can verify whether a journal is compliant by using the Plan S [Journal Checker Tool](#)<sup>37</sup>. Journals not currently providing price transparency information would be invited to participate and would be supported by the Coalition S price transparency framework which includes a data collection spreadsheet, implementation guide, and additional opportunities (Coalition S).

## Economic Impact:

There would be no direct economic implications for BMGF or authors with this policy change, as similar to the current OA policy authors would not face any sanction for not fully adhering to the policy.

## Logistical Impact:

The logistical impact of this policy update would be minimal but would require updates to the policy and communication of the change to researchers and publishers. Authors would have the added task of checking whether targeted journals are compliant with BMGF's price transparency policy.

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<sup>33</sup> Price and Service Transparency Frameworks | Plan S. (n.d.). Retrieved March 4, 2023, from <https://www.coalition-s.org/price-and-service-transparency-frameworks/>

<sup>34</sup> More than 2000 journals share price and service data through Plan S's Journal Comparison Service | Plan S. (n.d.). Retrieved March 4, 2023, from <https://www.coalition-s.org/more-than-2000-journals-share-price-and-service-data-through-journal-comparison-service/>

<sup>35</sup> Price and Service Transparency Frameworks | Plan S. (n.d.). Retrieved March 4, 2023, from <https://www.coalition-s.org/price-and-service-transparency-frameworks/>

<sup>36</sup> Mellins-Cohen, T. (2021). Price transparency: let's make it simple. *UKSG Insights*, 34(17), 1. <https://doi.org/http://doi.org/10.1629/uksg.551>

<sup>37</sup> List of publishers/journals that provide price and service data to the Journal Comparison Service. (n.d.). Retrieved March 4, 2023, from <https://journalcheckertool.org/jcs/>

## Appendix A: Key Informants

Our findings include insights and ideas from our key informant interviews. These include researchers, publishers, economists, academic librarians, a funder, and journal editors.

<b>Alias</b>	<b>Group</b>	<b>Area of Expertise and geographic location</b>
KII 1	Academic Researcher	Global health scholar based in a middle-income country in Sub-Saharan Africa
KII 2	Publisher	Open access journal based in Global North
KII 3	Academic Researcher	Improving scientific quality and global impact of scholarly work in Northern and Latin America
KII 4	Economist	Professor of finance based in the Global North
KII 5	Economist	University librarian and professor of economics based in the Global North
KII 6	Economist	Expert on open access agreements based at a large U.S. institutional library
KII 7	Academic Librarian	Academic librarian and researcher based in Europe
KII 8	Academic Librarian	Academic librarian at a large U.S. institutional library
KII 9	Funder	Open science staff member based at a European funder
KII 10	Journal Editor	Journal editor at an African journal
KII 11	Publisher	Open access journal based in Global North
KII 12	Academic Librarian	Academic librarian at a large U.S. institution
KII 13	Academic Librarian	Academic librarian at a large U.S. institution
KII 14	Academic Librarian	Academic librarian at a large U.S. institution



# Appendix B: Glossary and Definitions

BMGF: Bill and Melinda Gates Foundation

APC: Article Processing Charge

LMIC: Low- and Middle-Income Countries

OA: Open Access

KII: Key Informant Interview

cOAlition S: an international consortium of research funding and performing organizations

Plan S: an initiative for Open Access publishing requiring that, from 2021, scientific publications that result from research funded by public grants must be published in compliant Open Access journals or platforms.

TA: Transformative Agreement

WT: Wellcome Trust

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