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Read & Publish contracts in the context of a dynamic scholarly publishing system

**A study on future scenarios for the
scholarly publishing system**



Final report

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Preface

The scholarly publishing world has seen a rapid evolution over the last few years. After many years of advocacy and hard work, Open Access finally appears to become a new normal. However, enabling free and rapid access to all scientific publications and at the same time controlling and reducing total publishing expenses remains the great challenge. Universities and consortia are increasingly successful in securing transparent agreements at national level that solve some of the drawbacks of the traditional Big Deals, sometimes including Open Access publishing, authors retaining copyright and an end to unaccounted amounts paid for individual Article Processing Charges. Thus, there are many examples in Europe of negotiations leading to many different types of agreements, depending on the publisher and the different characteristics of the agreement, such as cost, duration of access, copyright model, text and data mining, etc.

While positive, partial remedies to some of the problems at first glance, many fundamental issues remain unsolved. The dominance of a handful of commercial publishers seems unfettered – and many universities and researchers wonder if new business models will simply reproduce the inequalities and dependencies of the Big Deal. For many, Open Access means a system in which the academic and scholarly community maintains much closer control of the publishing process and its infrastructure. These questions, of course, concern the price of scholarly publishing—almost certainly inflated through the market's long-standing lack of transparency—but go much deeper into the basic structure of scholarly publishing for the 21st century.

This is the starting point for the present report. EUA's widely received surveys on Big Deals and the resulting publications have laid a foundation for continued, critical inquiry into scholarly publishing markets—and highlighted their shortcomings. Mistakes that were made with Big Deals should not be repeated. The broad, international support of national rectors' conferences, universities, and national consortia to conduct this study highlights the interest of the European higher education community into the question how to design an open, equitable and sustainable publishing system, in particular to understand the place that could be taken by the "Publish & Read" model.

Now, the work of more than one year of intense discussions and research has come to an end. We hope that this report—a cross-sector inquiry into the possible short-term and long-term implications of a Publish & Read system and its alternatives—will be useful to guide the decisions of universities, rectors' conferences and consortia in this crucial period. It is intended to contribute to the debate on the long-term process of transforming scholarly publishing. Of course, scholarly publishing does not only concern universities. Therefore, we hope that researchers, research funding organisations and publishing initiatives will also find this report helpful to recognise and reflect about their role in the scholarly publishing market.

I would like to thank the entire project team of Technopolis Group, in particular Annemieke van Barneveld-Biesma, and Robert van der Vooren for their effort and dedication. I extend my thanks to the Steering Committee of the project and the supporting organisations that made



the study possible. The EUA Secretariat staff—Vinciane Gaillard, Acting Director for Research & Innovation, Lennart Stoy, Project Manager, and Lior Gianni, Office Manager—provided essential support and direction. Finally, we are indebted to Lidia Borrell-Damián, now Secretary General of Science Europe, having supported this work in her previous role at EUA, and Liam Earney (Jisc) and Dyveke Sijm (Royal Danish Library), who laid the crucial groundwork for this study.

Prof. Jean-Pierre Finance,

Chair of the EUA Expert Group on Science 2.0/Open Science



Management summary

Research performing (in consortia) and research funding organisations have, in recent years, taken steps to bring together the mission-based and economic drivers to accelerate the transition of scholarly journal publishing to open access. The discussions around implementing open access are, however, extremely complex: scholarly publishing is not merely a lucrative economic sector with considerable vested interests and financial investments of both private and public parties. It is also one of the most central elements of the very system of research and the scientific endeavour.

In this study we have essentially explored two future open access scenarios and one transitional pathway to open access in which the role of publishers, primarily, and the academic community varies. We have compared these with the baseline of predominantly subscription-based contracts with delayed open access through repositories after publishing. We did this with a Delphi survey among stakeholders and used reflections from experts. In our scenarios we included various stakeholders and their different motivations.

Respondents clearly see Read & Publish (R&P) contracts as an intermediary phase on the way to a different scholarly publishing market – not as an endpoint. Based on the set of scenarios defined in this study, it seems that the scholarly publishing market is most likely to move toward OA platforms over the long-term. Whether these are publisher-owned or community-owned may largely depend on the actions of stakeholders in the market (ambition and organising power of the scientific community, for instance). For now, the publisher-owned platform scenario is perceived to be most realistic. In this scenario, current journals and their distinguished brands could be maintained. Both publishers and scholarly stakeholders seem to benefit from this scenario. Moving beyond the current journal format will require a departure from the current researcher performance assessment mechanisms of institutions; while there is a strong movement to reduce reliance on bibliometric indicators associated with journals, practical implementation of new, alternative policies is a slow process.

On an overarching level we suggest five recommendations.

First, we recommend further exploration of the two platform scenarios, which were deemed most desirable by respondents. As the publisher-owned platforms are considered most realistic, further study of the desired characteristics of publisher-owned platforms, as well as their shortcomings, is recommended. Although perceived as less realistic, EUA members might also undertake further reflections of the conditions that are necessary in order to arrive at a scholarly publishing landscape dominated by community-owned platforms.

Second, if one of these scenarios for the scholarly publishing system would then be the ambition of EUA members, it would be wise to develop a plan or strategy to arrive at the ambition in the medium to long term.

Third, to understand and keep track of this rapid development, periodic research into the drivers and positions of stakeholders in the publishing landscape is required.

Fourth, as the majority of respondents view R&P type agreements as a transitional mechanism towards open access, EUA members could improve and strengthen their position through systematic information sharing and collaboration on strategies, negotiation expertise, and capacity building.

Finally, it is relevant to note that despite differences between EUA members they share common goals and urgency for open access. A transition from national negotiation consortia to a (more) European negotiation consortium could increase the negotiation position towards



publishers. A European policy that provides all EJA members with the necessary negotiations safeguards to sustain new open access strategies would be supportive to promote Europe's aim for a Digital Single Market.



1 Introduction

This report presents the results of a study conducted by Technopolis Group on behalf of the European University Association (EUA) and a group of 25 supporting organisations drawn from or represent EUA's collective members. The study analyses the possible impacts of the evolution of 'big deal' contracts with scholarly publishers on various stakeholders based on interviews, a Delphi survey and (qualitative) modelling. The data collection and analysis has been undertaken between June 2019 and March 2020.

1.1 A study on Read & Publish contracts in the context of a dynamic scholarly publishing system

As far back as the 1970s scientific journals started to transition from analogue print versions to (also) becoming available as digital and online versions. The process of change lasted well into this millennium before becoming mainstream practice. Publishers, readers and authors of these journals increasingly adapted to this avenue of sharing and accessing scientific knowledge. However, it became apparent in the early 2000s that the digital technology had the potential for even more: digital publishing offered new tools for advancing the academic purpose of exchanging scholarly knowledge through an 'open access publishing system'.

Open access refers to the "free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself."¹ Open Access improves the pace, efficiency and efficacy of research, and heightens the authors' visibility, and thus the potential impact of their work. It removes structural and geographical barriers that hinder the free circulation of knowledge and therefore contributes to increased collaboration, ultimately strengthening scientific excellence and capacity².

The full realisation of this concept requires, amongst others, a change in the current market model for publishers as well as appropriate methods for validating the quality of the free open access scholarly information. In the last decennia the open access movement invested significant time and money into growing open access through institutional repositories and new open access venues and platforms to contribute to this change. Still, these methods have not yet let to any significant diminishing of the market power of scholarly publishers, who have staunchly held to the subscription business model.

As with every kind of innovation that effectively alters its system and the role of the players in it, the process towards open science has taken years already and will likely take more years of trial and error before open science functions properly and becomes common practice. Much in line with Everett Roger's theory on diffusion of innovation, the scholarly publishing system has seen small and radical innovators lead the change and inspire early adopters to follow suit.

In 2016, the research performing organisations present at the 13th Berlin Open Access Conference launched the Open Access 2020 Initiative to promote the Large-Scale Implementation of Open Access to Scholarly Journals. In 2018 cOAlition S launched 'Plan S', a set of 10 principles formulated by a large group of research funding agencies designed to

¹ The Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities
<https://openaccess.mpg.de/Berlin-Declaration>

² <https://www.scienceeurope.org/our-priorities/open-access>

accelerate the transition to full and immediate Open Access.³ With this evolution, it is safe to say that Roger's 'early majority adopters' has by now been reached for open access⁴, meaning that multiple approaches to open access are tested and adopted across Europe and beyond.

The discussion on open access has thus become a public, mainstream discussion on the best possible pathways for enabling open access for all. Consequently, the current state of play of the scholarly publishing system is a rather dynamic arena, one where actors are defining priorities, seeking good practices and learning from each other's experiences.

It is against this backdrop that transformative agreements for reading and publishing scholarly articles, such as the so-called 'Read and Publish (R&P) contracts' have begun to evolve and have led to the questions addressed by this study.

1.2 Objectives of the study

Read and Publish-type contracts, now often referred to as "transformative agreements", are a relatively new development in the contractual relationship between publishers and the representatives of the scientific community such as universities, research libraries and negotiating consortia. This type of contracts is intended to enable a pathway for researchers to publish their articles open access and drive a definitive transition of scholarly journals currently published under the subscription business model to open access. Transformative agreements are transitional and, in that purpose, a temporary instrument to move towards immediate open access publishing and to better control costs for commercial publishing through increased transparency. With transformative agreements these goals are tried to be attained by increasing the number of articles that are published open access and by bringing the current subscription model into one contract with transparent, open access publishing fees⁵. The purpose of this study was to better understand how these contracts could evolve and what impact they could have on the scholarly publishing system if further spread.

During the formative phase of the study, in discussions with the Steering Committee and EUA, the specific objectives of the study have evolved compared to the original terms of reference. These changes were based on new insights and developments, but also on practical needs and feasibility. Most importantly the (quantitative) economic model of the scholarly publishing system has been replaced with a behavioural model, focussing more on the system dynamics and stakeholder positions than on economics and market analysis.⁶ More specifically, the EUA requested the study to produce:

- A behavioural model of the scholarly publishing system illustrating the perceived implications for stakeholders if "read and publish" deals, or other scenarios, become common;

³ See <https://www.coalition-s.org/addendum-to-the-coalition-s-guidance-on-the-implementation-of-plans/principles-and-implementation/>

⁴ Based on E.M. Rogers innovation adoption lifecycle, in which he distinguishes the phases of adoption of innovation, such as Open Access. In this theory, early adopters are an early group of users or customers, whose feedback is important in improving the new product, service or process. This is the group of users or customers before the early majority and after the innovators (first users/customers). See: Everett M. Rogers (1962), Diffusion of Innovations.

⁵ See: <https://esac-initiative.org/transformative-agreements-enable-oa-transition/>

⁶ Acknowledging the market characteristics of the scholarly publishing system, the terms "scholarly publishing system" and "scholarly publishing market" will be used almost interchangeably, as deemed appropriate in the context of the discussion. The same holds for "stakeholders" and "market players".



- An analysis of the political, economic, social, technological, legal and environmental factors (PESTLE) relating to the journal system and the transition to open access;
- A set of future scenarios, each of which is a plausible extrapolation from the current situation (reference scenario) and underlying trends, but where each scenario is distinctive – to be formulated in cooperation with the EUA and Steering Committee;
- An analysis of the Strengths, Weaknesses, Opportunities & Threats (SWOT) of each scenario;
- A set of recommendations.

The set-up of the study and the presentation of the results have been developed to take into consideration the wide group of stakeholders involved in the scholarly publishing system.

1.3 Methodology used for this study

To respond to its objectives, the study has been divided into three main parts, namely:

- Mapping the status quo, or the baseline, of current transformative agreements to determine, in as much as possible, the features of all existing models ('Read and Publish', 'Publish and Read', offsetting, etc.) as well as understanding the context in which they exist;
- Analysing the dynamics within the scholarly publishing system to understand the relationship between the actors involved and the (potential) behaviour if certain features were to change;
- Formulating and analysing scenarios for the future of publishing contracts to determine the potential impact if specific features change.

1.3.1 Mapping the baseline for transformative agreements

For mapping the state of play in the scholarly publishing system, we conducted desk research and interviews. We identified the different types of transformative agreements that are in place as well as those that are being considered.

The interviews held and literature consulted were furthermore used to gain insights into the different developments in the countries where the EUA is active (see Appendix B for the stakeholders interviewed and footnotes throughout the report for references to the literature used). By doing so, we identified the PESTLE factors shaping current and, potentially, future contracts.

We acknowledge that global discussions on open access and the scholarly publishing system are rather dynamic and changes to the system have occurred during the data collection for this study. We have sought to update our research findings accordingly throughout the study.

1.3.2 A behavioural model to understand the dynamics in the scholarly publishing system

The findings from the mapping phase were used to develop a behavioural model and framework that describe the scholarly publishing system in terms of its stakeholders, their relations and their behaviour through decision rules. Both help to understand the changing positions of the actors involved and to raise questions about (potential) implications (see Appendix C for a detailed description of the model and framework). It should be noted that this framework does not provide a quantification of the behaviour and their effects (i.e. no cost calculations). Instead, the framework offers the means to systematically compare different scenarios and explore the position and behaviour of stakeholders in the system.

Delegates of EUA and the supporting organisations served as Steering Committee for this study (see Appendix B.2 for the experts involved).

1.3.3 A future-oriented study using scenarios

In the study three hypothetical future scenarios are compared with a reference scenario:

- Scenario 1 (reference scenario): predominantly subscription-based contracts with delayed open access through repositories after publishing.
- Scenario 2: Predominantly Publish & Read contracts ('P&R/R&P') between publishers and negotiating consortia
- Scenario 3: Predominantly contracts for publishing open access through publisher-owned journals or platforms ('Publisher-owned OA platforms')
- Scenario 4: Predominantly contracts for publishing open access through community-owned platforms ('Community-owned OA platforms')

Due to methodological limitations compounded by the different departing points of the countries considered in this study, we have chosen for these scenarios to be steady states, whereby dynamics occurring to get to the scenario are not considered. We have focused on identifying the drivers and barriers for different stakeholders in each of these scenarios. This gives insight into the willingness of stakeholders to move towards such a hypothetical future and what their likely main concerns will be. These insights aim to increase transparency as the community takes further steps towards open access. They could, for example, be addressed when developing strategies for future negotiations and considered, for instance, in defining the goals of national negotiation consortia.

The input for the scenarios is derived through the application of the Delphi method. The Delphi method is used to obtain more consensus⁷ on a complex problem among a group of experts, often used in foresight when there is uncertainty. We used a set of two consecutive surveys across the key stakeholders identified in the behavioural model to obtain insights into the behaviour, decisions and expectations of the main actors involved in the scholarly publishing system in relation to the future scenarios. More details on the used Delphi approach and the response characteristics of the surveys can be found in Appendix D. A more detailed methodological discussion on the surveys is left for section 5.1 when the analysis of the survey results are discussed in more detail.

1.4 Reading guide

The next chapters present the results of this study.

In Chapter 2 we address the history of scholarly publishing and introduce the various concepts of open access. Chapter 3 describes the main actors in the world of scholarly publishing and introduces the main factors that drive their behaviour. Chapter 4 then introduces four scenarios for (open) access to academic publishing. The effects that these possible scenarios have are presented in different forms in Chapter 5-7. Chapter 5 takes the viewpoint of potential impacts, whereas chapter 6 takes the perspective of strengths and weaknesses of each scenario and Chapter 7 the perspective of each stakeholder group. Chapter 8 discusses desirability and reality of the scenarios. Finally, Chapter 9 provides conclusions and some reflections across scenarios.

Extensive descriptions of the effects of the scenarios and further methodological details are provided in the appendices.

⁷ Consensus is here understood as moving towards a shared understanding. Assessments on the future may still vary, but variations are lower than initially due to the reflection on (some of the) results of the initial round of the Delphi process. It gives a better understanding of expert expectations for the future.

2 A dynamic scholarly publishing system

2.1 A two-sided market

The scholarly publishing market is a **two-sided market**. Publishers of academic journals serve the academic community in two ways: they provide readers with access to scientific information and they provide authors with the opportunity to bring their research to the attention of a large audience (and therefore to enable dissemination and visibility of research results). In this market, readers and authors may be the same group of people. Authors benefit from publishers having many readers, and conversely, readers benefit from publishers having many authors.

Both readers and authors may have contractual service arrangements with the publisher. In traditional scholarly publishing readers are represented by university libraries (or consortia thereof) who conclude subscription contracts with publishers. Scholars have traditionally provided their time and expertise to publishers without remuneration as authors, reviewers and editors, but, in the context of open access, they may also pay publishers article processing charges for the open access publishing services rendered.

These “network effects” in a two-sided market, compounded by the lack of price transparency in institutional subscription agreements protected by non-disclosure clauses, endow publishers with a kind of monopoly power. This tends to limit competition and enhance concentration in this market. This has enabled publishers to charge high prices for journal access, increasing costs for readers (or their institutions) and limiting access to scientific knowledge because not all potential readers can afford the high prices. This situation is seen by many as one that hampers the scientific progress and that, potentially, increases inequalities.

2.2 Transitioning from the traditional subscription-based model

2.2.1 The departing point: subscription-based contractual agreements

The scholarly publishing system has long been characterised by the business model of **subscription-based contractual agreements**. In these arrangements between journal publishers and the scholarly community (traditionally represented by university libraries or consortia thereof), the subscriber pays to read an individual journal or a bundle of journals.

On the reader side, in the case of university libraries being the subscriber, the library pays for access for ‘its members’, often students and researchers. Non-subscribers (the institution’s students and researchers) who wish to read an article seek services from a library, whose contracts with the publishers allow them to share the articles with its members, or rely on authors to make their work freely accessible through open repositories (often after a **period of embargo**, see below).

On the publishing side, the scholarly publishing system is financially dominated by a **small group of commercial publishers** who control a large share of the market.⁸ The largest category of publishers however are not commercially oriented but a mixture of learned societies (some of which also with commercial interest), university presses and others. The production costs of

⁸ European University Association, EUA Big Deals Survey Report (April 2018), <https://eua.eu/downloads/publications/eua-big-deals-survey-report---the-first-mapping-of-major-scientific-publishing-contracts-in-europe.pdf> (p.15) and Larivière V, Haustein S, Mongeon P (2015) The Oligopoly of Academic Publishers in the Digital Era. PLOS ONE 10(6): e0127502. <https://doi.org/10.1371/journal.pone.0127502>.

scholarly journals vary greatly and, typically, these costs are recovered by subscription revenues, which is why only those who subscribe receive reading access.

In the subscription-based model, each article is submitted by the authors (who are generally part of the scholarly community) to a journal free of charge. It is an important feature of the traditional subscription-based system that authors sign agreements turning over **copyright** of their articles to the publisher and often are subject to an embargo period for sharing their own articles ranging for 3-36 months.⁹

As part of the editing process, all articles undergo a peer review before acceptance for publication in a journal. A peer review is the process under which one or more 'peer' scholars in the same field review an author's manuscript on behalf of the publisher to ensure that the research is scientifically sound and meets the standards of the relative journal. Not only is this peer review the quality assurance of the journal but is also the backbone of the validation and quality assurance of the whole scientific process and the foundation on which scientific reputations are based. The quality of the peer review therefore also influences publication behaviour of researchers.

The peer review process is organised by the publishers; however, they rely on the scholarly community to actually perform the peer review (generally with low or no financial compensation).

2.2.2 Signs of change: Digitisation and the formation of 'Big Deals'

When digital tools became available, publishers began to invest in digitising their journals and making them available online. Digital journals not only proved to be a fast way of distributing research, but also offered the readers a new way of searching for, and eventually through, articles in large digital archives.

The online versions of its journals also allowed publishers to offer a new business model, known as the '**Big Deal**'. In this new type of contract that started to take shape around the turn of the millennium, publishers did not license access to each individual journal, but instead bundled journals into packages tailored to their paid readership and offered under annual or multi-year subscription agreements.

In response to the offerings by publishers, university libraries and other stakeholders also began to form **negotiating consortia** to jointly receive the best possible deal for their readers. This step further compounded the cost options for these Big Deals as they no longer involved one institution.

Whilst Big Deals originally may have been attractive to the scholarly community who, effectively, received access to more journals for their money, they eventually created a (for many unforeseen) rather expensive and untransparent lock-in¹⁰ effect. This effect is comparable to other platform markets that turned into (near) monopolies which required firm public anti-trust activities¹¹. Because access to journals is deemed vital for researchers, publishers tended to exploit this market power to increase subscription fees without check,

⁹ As the push towards open access has taken form, so has the discussion around the transfer of the copyright towards the publisher. These discussions have led to some variations in contracts whereby authors retained more rights or where the embargo periods have been reduced.

¹⁰ EC DG Research (2006) Study on the economic and technical evolution of the scientific publication markets in Europe.

¹¹ TSE Digital Center Policy Papers series No.1, September 2019 The Economics of Platforms: A Theory Guide for Competition Policy



often well beyond the rate of inflation¹² and apparently independent of their actual production costs. The bundled pricing of Big Deals is a major factor making it impossible for negotiating institutions or consortia to determine the cost of any given journal. Due to their stronghold in the market, some of the key commercial publishers have been able to develop profit margins of up to 45%.¹³ Over time, this has also led to wide variations in the amounts that institutions pay for access to the same e-journal collections.¹⁴

2.2.3 The grand push for open access

Naturally, new technologies also meant that there was room for experimentation for the scholarly community, whom, including publishers, began to invest in new ways of sharing and accessing articles.

Paywalled models of publishing, however, are by their very definition a closed access route or, as Plan S describes it, “publication paywalls are withholding a substantial amount of research results from a large fraction of the scientific community and from society as a whole”. It is obvious that such a model of publishing is conflicting with the fundamental universality principle of science and should therefore be resolved.

Open access and its main drivers were described early 2002 in the Budapest Open Access Initiative¹⁵: “An old tradition and a new technology have converged to make possible an unprecedented public good. The old tradition is the willingness of scientists and scholars to publish the fruits of their research in scholarly journals without payment, for the sake of inquiry and knowledge. The new technology is the internet. The public good they make possible is the world-wide electronic distribution of the peer-reviewed journal literature and completely free and unrestricted access to it by all scientists, scholars, teachers, students, and other curious minds. Removing access barriers to this literature will accelerate research, enrich education, share the learning of the rich with the poor and the poor with the rich, make this literature as useful as it can be, and lay the foundation for unifying humanity in a common intellectual conversation and quest for knowledge.” Regardless of the financial side of the debate that currently dominates the discussions around open access, some form or push for open access was thus made inevitable with the advent of the internet and digital technologies.

In the meantime, university libraries and research funders have expressed concerns about the sustainability of the traditional subscription-based publishing market. Their growing dissatisfaction with the lock-in effects of big deals fuelled an unprecedented rise in joint-efforts to drive open access and a more transparent market underlying it. Actors that previously remained outside of negotiations (including university leadership, research funders and governments) began to exert their influence.

The Finch report¹⁶ in the UK is a striking and early example of government taking a position in open access. The UK government adopted the Finch report, explicitly acknowledging the

¹² European University Association (May 2019), “2019 Big Deals Survey Report. An Updated Mapping of Major Scholarly Publishing Contracts in Europe”. <https://eua.eu/resources/publications/829:2019-big-deals-survey-report.html>

¹³ https://oa2020.org/learn_more/

¹⁴ Earney, Liam. 2017. “Offsetting and Its Discontents: Challenges and Opportunities of Open Access Offsetting Agreements”. *Insights* 30 (1): 11–24.

¹⁵ The original text of the Budapest Open Access Initiative can be found here: <https://www.budapestopenaccessinitiative.org/read>

¹⁶ The official UK government decision and link to the Finch report can be found here: <https://www.gov.uk/government/news/government-to-open-up-publicly-funded-research>

disturbing effect of a paywalled publishing business model on economic and social benefits and the opportunities to keep the UK at the forefront of global research to drive innovation and growth. Political and academic institutional concerns in combination with the opportunities that digital technology provides, enabled a move towards a new way of organising the market for publishing research results; a move towards open access.

The transition to open access has since been pushed by researchers, those negotiating with publishers, research funders and to some extent governments. Examples of key policy documents across Europe that have signalled the need for change include, for EU member states, the 2007 Council Conclusions on scientific information in the digital age: access, dissemination and preservation¹⁷ and the 2016 Council Conclusions on the Transition towards an Open Science System¹⁸, for the European Commission, the 2012 Communication on A Reinforced European Research Area Partnership for Excellence and Growth¹⁹ and the 2018 Commission Recommendation on access to and preservation of scientific information²⁰, and for stakeholders across Europe, the Amsterdam Call to Action on Open Science (2016)²¹.

Most recently in 2018, a group of research funding organisations launched Plan S²² to accelerate the transition to open access. Plan S has been regarded as a disruptive response directly addressing the publishing industry to offer more sustainable and transparent²³ models for immediate open access, freely accessible and free of copyright and reuse restrictions. Research funders not only put (time) pressure on publishers but given all dependencies in the scholarly publishing system also on libraries, consortia and researchers.

Many of these policies, national declarations and concerted action plans refer to the principle of open access as **freely accessible scholarly articles**. This definition implies that articles are free to read for anyone, but not free of costs to publish. The latter is an important recognition of the costs that remain associated with the processing and quality assurance of scholarly articles.

Open access is to support both the basic principle of furthering and sharing scholarly knowledge, as well as the financial concerns regarding the growing costs of accessing journals as described in the previous section.

2.3 Open access modalities

In the process to promote open access, different models have been followed depending on the financial, political and social circumstances of the negotiators. Two pathways have dominated the discussion, namely the 'green' and 'gold' modality.

Green open access is a modality in which the scholarly community enables open access through author self-archiving of articles. This pathway is based on authors depositing their

¹⁷ http://ec.europa.eu/research/science-society/document_library/pdf_06/council-conclusions97236_en.pdf

¹⁸ <https://data.consilium.europa.eu/doc/document/ST-9526-2016-INIT/en/pdf>

¹⁹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52012DC0392>

²⁰ <http://data.europa.eu/eli/reco/2018/790/oj>

²¹ The Amsterdam Call for Action on Open Science was launched during the Dutch EU presidency to foster immediate open access for publicly funded research output:
<https://www.government.nl/documents/reports/2016/04/04/amsterdam-call-for-action-on-open-science>

²² Plan S is an initiative for Open Access publishing that was launched in September 2018. Plan S requires that, from 2021, scientific publications that result from research funded by public grants must be published in compliant Open Access journals or platforms: <https://www.coalition-s.org/>

²³ The transparency framework of Plan S is available at <https://www.coalition-s.org/price-and-service-transparency-frameworks/>

manuscripts, peer-reviewed articles and/or not peer-reviewed pre-prints on servers of different kinds: institutional open repositories, platforms, preprint servers and many others. When applicable, open access is provided after an embargo period is expired – sometimes also immediately. Pre-prints and other not peer reviewed documents are usually not subject to embargos.

Green open access venues are typically community-owned. Green open access requires an investment in archiving systems and in the willingness and culture around self-archiving (including peer-pressure) to enable the route to 'work' properly. As a result, it works best when a group of similar minded people push this route forward, such as researchers from specific disciplines. Institutional policies linking self-archiving in institutional repositories to evaluation and assessment is another mechanism to advance green OA²⁴. The prevalence of this modality is especially high amongst institutions representing natural sciences, where the initial (idealistic) push for open access originated and there is a strong culture of self-archiving, from data to the author's accepted manuscript, to final publication. One of the oldest (since 1991) and noteworthy open access platforms in this sector is arXiv²⁵, a repository of pre-prints in the field of physics, maths and computer science.

Through the green pathway, several organisations across Europe are concentrating their efforts to create their own open access system of dissemination without focusing too heavily on negotiating new contract forms with publishers. They build their own repositories and, when they do negotiate with publishers, attempt to reduce the embargo period for the release of articles (usually appealing to 'reasonable' embargoes in line with national and European copyright legislation) and/or transferring copyright to the author. An example of green open access adoption is in Flanders (Belgium) where all relevant parties across the region have agreed to follow the Green route.

Gold open access, on the other hand, refers to the immediate, open publication of articles in by the publisher itself, with an irrevocable license.

In a common business model, the authors (or entities representing them) pay fees, in the form of so-called '**Article Processing Charges**' (APCs), in order to remunerate the publisher for their editing and publishing services (that, in the paywall system, would be recovered through subscription fees). Paying an APC is however not the distinctive criterium for an article to be gold open access – in fact many Gold OA journals do not charge APCs²⁶. Other models, such as institutional support models²⁷ or 'Diamond OA' operate without author-facing fees.

As mentioned above there are also hybrid modalities, where subscription journals offer authors the option to publish their articles (immediately) open access. In order to do this the authors (or entities on their behalf) have to pay APCs. These charges come on top of the subscription fees paid by institutions for the same subscription journals, constituting what is referred to as 'double dipping'. It is relevant to note that publishing in hybrid journals is increasingly criticised by universities and research funders due to double dipping. Coalition S has declared hybrid publishing not compliant with their open access policy outside of specific 'transformative arrangements'.

²⁴ Septon, Monique; Van Hee, Freia (2015), Open Access in Belgium, PASTEUR4OA Case Study, doi:10.5281/zenodo.54750

²⁵ arXiv is an open-access repository of preprints approved for posting after moderation, but not full peer review: <https://arxiv.org/>

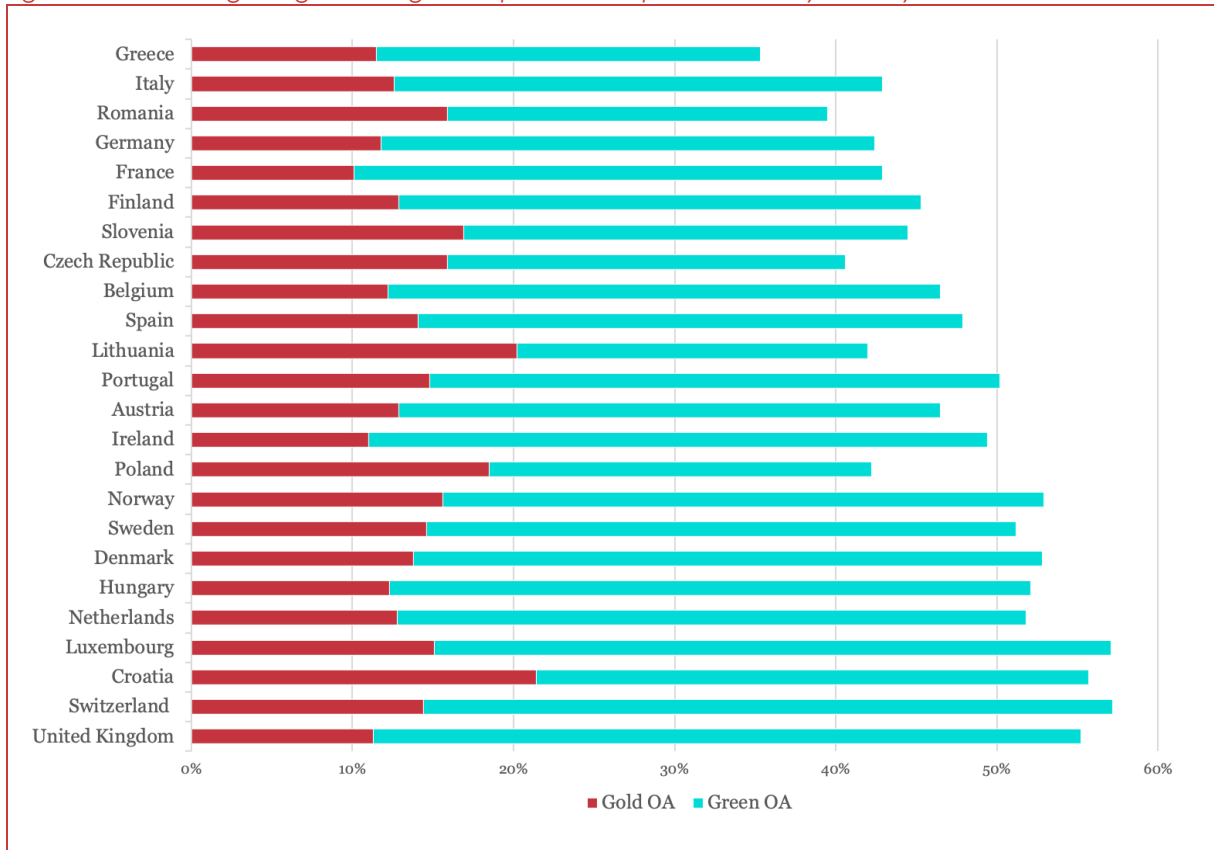
²⁶ See e.g. <https://sustainingknowledgecommons.org/2018/02/06/doi-apc-information-as-of-jan-31-2018/9/>

²⁷ See e.g. SCOAP³ at <https://scoap3.org/what-is-scoap3/>

In terms of product definition, a journal rather than an individual article can be fully gold, hybrid or closed access. It is a matter of market segments of journals. An author paying an APC for an article in a hybrid journal does not qualify for the status gold open access.

At present most countries have seen experimentation with both pathways. Figure 1 presents an overview of the percentage of gold and green open access publications per country.

Figure 1 Percentage of gold and green open access publications by country²⁸



Source: Scopus data and Unpaywall data. Reference data: 2008-2019

2.4 Transformative agreements

As most publishers rely on subscription revenues, open access to scholarly journals would require a change in their underlying business model. However, as commercial publishers seem reluctant to spontaneously switch from a subscription to an open access business model, increasingly, institutions and consortia thereof are trying to adapt contractual agreements with publishers that drive a shift in their business model. In the interviews that we conducted with consortia, we learned that the most important aim of these negotiations is to have a fair model involving transparency in terms of costs.

²⁸ For the data in this figure Green OA has been defined as "research outputs that are publications in a journal that are also available in an open access repository" and Gold OA has been defined as "research outputs that are publications in an open access journal". See https://ec.europa.eu/info/research-and-innovation/strategy/goals-research-and-innovation-policy/open-science/open-science-monitor/trends-open-access-publications_en for the data and definitions and a link to the methodology report.

Around 2015, most publishers emphasised that there were no signs of a declining subscriptions market in favour of an open access market. They would offer open access not as a substitute but as an add-on to the subscription model. Institutions backed up by the European Commission and governments as described in the previous paragraph, strongly felt that publicly funded research should not be locked behind paywalls and started negotiating differently. Without having to pay more than they previously did, institutions required open access provisions as a precondition to renewal of subscriptions contracts. They attempted to track the individual APCs charged to their researchers, grouped them and negotiated for them to be offset against the journal licenses they were paying.

This led to '**offsetting contracts**' in which research organisations, in addition to the normal journal access, received either a number of free (in the form of waivers) or discounted APCs for their authors, or a deduction of APC fees paid for individual articles from the reading license fee. Examples of such contracts can be found (on a small scale) across institutions in Austria, Germany, The Netherlands, Slovenia, Portugal and Sweden. The largest effort on this front, however, has taken place in the United Kingdom. There it became evident that this model may not lead to cost control, even though it does create an avenue for open access.²⁹

The next evolution in open access negotiations came following publication of the Max Planck Digital Library White Paper³⁰ which concluded that a "large-scale transformation from subscription to open access publishing is possible without added expense" and that "current library acquisition budgets are the ultimate reservoir for enabling the transformation without financial or other risks". Based on the evidence presented in the paper, it became clear to the community that, on a global scale, the money spent annually on journals subscriptions was amply sufficient to cover costs of open access publishing of those same journals. With this realisation, a new wave of transformative agreements emerged in which "authors no longer pay APCs and, instead, their institutions (via their libraries) repurpose former subscription expenditures to remunerate publishers for their editorial services associated with the open access publication of accepted articles."³¹ Transformative agreements were discussed and validated by the research community at the 14th Berlin Open Access Conference which concluded that they are temporary and transitional strategy to accelerate the open access transition and "should, at least initially, be cost-neutral, with the expectation that economic adjustments will follow as the markets transform."³² The element of cost-neutrality is intended as a frame of reference for institutions and consortia which determine, in the context of their local negotiations, what is considered to be a fair price for services rendered; in some cases institutions have accorded transformative agreements on the level of previous total spending in both subscriptions and 'hybrid' publishing fees, while in others negotiations have produced agreements that are cost-neutral with respect to former subscription expenditure – effectively securing more services, i.e. open access publishing and reading, for less money.

There are models of transformative agreements with varying mechanisms for transitioning expenditures away from access to paywalled content toward open access publishing services,

²⁹ Earney, Liam. 2017. "Offsetting and Its Discontents: Challenges and Opportunities of Open Access Offsetting Agreements". *Insights* 30 (1): 11–24.

Lundén, Anna, Camilla Smith, and Britt-Marie Wideberg. 2018. "National Licence Negotiations Advancing the Open Access Transition – a View from Sweden". *Insights* 31: 12.

³⁰ Schimmer, R., Geschuhn, K. K. and & Vogler, A. Disrupting the subscription journals' business model for the necessary large-scale transformation to open access. [Online] 2015. <https://doi.org/10.17617/1.3>

³¹ <https://esac-initiative.org/about/transformative-agreements/>

³² <https://oa2020.org/b14-conference/final-statement/>

but they generally adhere to a shared set of principles defined in the ESAC Guidelines for Transformative Agreements³³. Other negotiation elements may include post-cancellation or perpetual access, provisions for text and data mining (TDM), archival rights, early termination rights and copyrights³⁴, including copyright licensing and the right to be properly acknowledged and cited. In order to increase transparency and enable negotiating library and consortia to build on the latest benchmarks achieved in the transformative agreement negotiations of their peers, the ESAC registry was set up for the community to share and compare information on the key transitional elements of their agreements and, often, links to the full text contracts.

One of the first transformative agreement models to be tested was the **Read & Publish (R&P)** model. In this model, fees are articulated in a prepaid publishing fee allowing all affiliated authors to publish their articles immediately open access and a relatively small reading fee for access to content in the journals covered in the agreement still behind the paywalls. Usually, institutions conduct data analysis to estimate the expected amount of open access publishing entitlements required by their authors to inform the negotiations, and often a corridor is established to allow for some variation (risk mitigation). Additional APCs are only paid in cases whereby an article is published in a journal not covered by the contract (for most consortia that is in gold OA journals) or if an institution exceeds the prepaid number of open access articles. As this was the first evolution from offsetting agreements, and considering that most such agreement are multi-year contracts, the ESAC registry currently shows a large number of R&P contracts, both in terms of publishers and countries.

Not surprisingly, R&P contracts have been referred to as the “open access big deals”³⁵. In general, the R&P contracts conducted so far do not focus on cost reduction, but on cost control and on a shift from costs for reading to a cost for publishing. In many contracts the total cost of publishing (the total fee for reading and publishing) increases in line with standard price index increases. However, overall, there is a shift of the reading fee, which decreases each year, whilst the publication fee increases.

A newer model of transformative agreements is the **Publish and Read (PAR)** model, first introduced in Germany by Projekt DEAL³⁶. Under the PAR model, lump-sums of subscriptions are disaggregated, and costs are expressed in per-article Publish & Read (PAR) fees. Different from an Article Processing Charge or APC, PAR fees are paid centrally by participating institutions for each article published (alleviating authors of the financial and administrative burden) and cover the cost of the open access publishing services rendered and, to a lesser degree, reading access for the publisher's content still beyond the paywall. The PAR model has also now been implemented in Norway³⁷. As transformative agreements are, by definition, transitional, further experimentation and evolution of models can be expected as more institutions and consortia, globally, adopt publisher negotiations as a strategy to drive the open access transition.

³³ The ESAC Registry collects, aggregates and illustrates essential information on the nature and the mechanisms of the growing body of transformative agreements: <https://esac-initiative.org/about/transformative-agreements/agreement-registry/>

³⁴ Articles have mostly been made open access on publication under a CC BY license, though, some journals only offer CC-BY-NC and CC-BY-NC-ND.

³⁵ <https://www.insidehighered.com/news/2019/08/30/pursuing-new-kind-“big-deal”-publishers>

³⁶ See: <https://www.projekt-deal.de/about-deal/>

³⁷ <https://esac-initiative.org/about/transformative-agreements/agreement-registry/els2019unit/>

2.5 Publishing platforms

In parallel with the development of transformative agreements negotiated by research performing organisations, research funding organisations, such as the Bill & Melinda Gates Foundation and the Wellcome Trust, have invested in developing their own branded platforms to publish and showcase the research produced by their grantees. Such platforms leverage the expertise, technology and infrastructure of third-party, commercial service providers to host their platforms. In such cases, the funding organisation holds ownership of the branded platform and pays the hosting service provider a fixed fee per published article for the editorial, production and administrative support provided to authors throughout the publication and post-publication peer review process.³⁸

One of the most widely known providers in this context is F1000, an open access publisher which hosts the platforms of both the Bill & Melinda Gates Foundation (Gates Open Research) and the Wellcome Trust (Wellcome Open Research). In a surprising market development, the commercial publisher Taylor & Francis, subsidiary of the multinational INFORMA group, purchased F1000 in January 2020. Since that time, F1000 was selected by the European Commission (EC) to set up and manage an open access publishing platform to be launched in 2021 to host research outputs of Horizon 2020 and Horizon Europe beneficiaries.³⁹

In recent years, initiatives in specific disciplines, particularly those that have, traditionally, been lesser funded with respect to the Life Sciences, have given rise to community-owned platforms (as opposed to funder-owned or publisher-owned platforms). Examples are Linguistics in Open Access (LingOA) and the Open Library of the Humanities (OLH). LingOA is a non-profit foundation based in the Netherlands that provides a framework for hosting former subscription-based journals in an open access environment in accordance with its Fair Open Access Principles.⁴⁰ OLH is a UK charitable organisation dedicated to publishing open access scholarship with no author-facing article processing charges (APCs), funded by an international consortium of libraries. While LingOA was supported in its first five years through funding from the Dutch University Association (VSNU) and the Dutch Science Funder (NWO), it has now partnered with OLH to ensure long-term sustainability through its consortial library funding model.⁴¹ Both initiatives currently employ the publishing technology infrastructure of Ubiquity Press, a 'mission-based' commercial open access publisher. In some cases, open access publishing platforms are part of the national strategy for open science, as in the case of the French publishing infrastructure OpenEdition for journals and books.⁴²

³⁸ <https://www.gatesfoundation.org/how-we-work/general-information/open-access-policy/page-2>

³⁹ <https://blog.f1000.com/2020/03/25/f1000-research-ltd-wins-european-commission-contract-to-set-up-an-open-access-publishing-platform/>

⁴⁰ <https://www.lingoa.eu/about/mission/>

⁴¹ <http://www.lingoa.eu/about/mission/>

⁴² <https://www.openedition.org/6438>

3 Actors in the scholarly publishing system and their main drivers

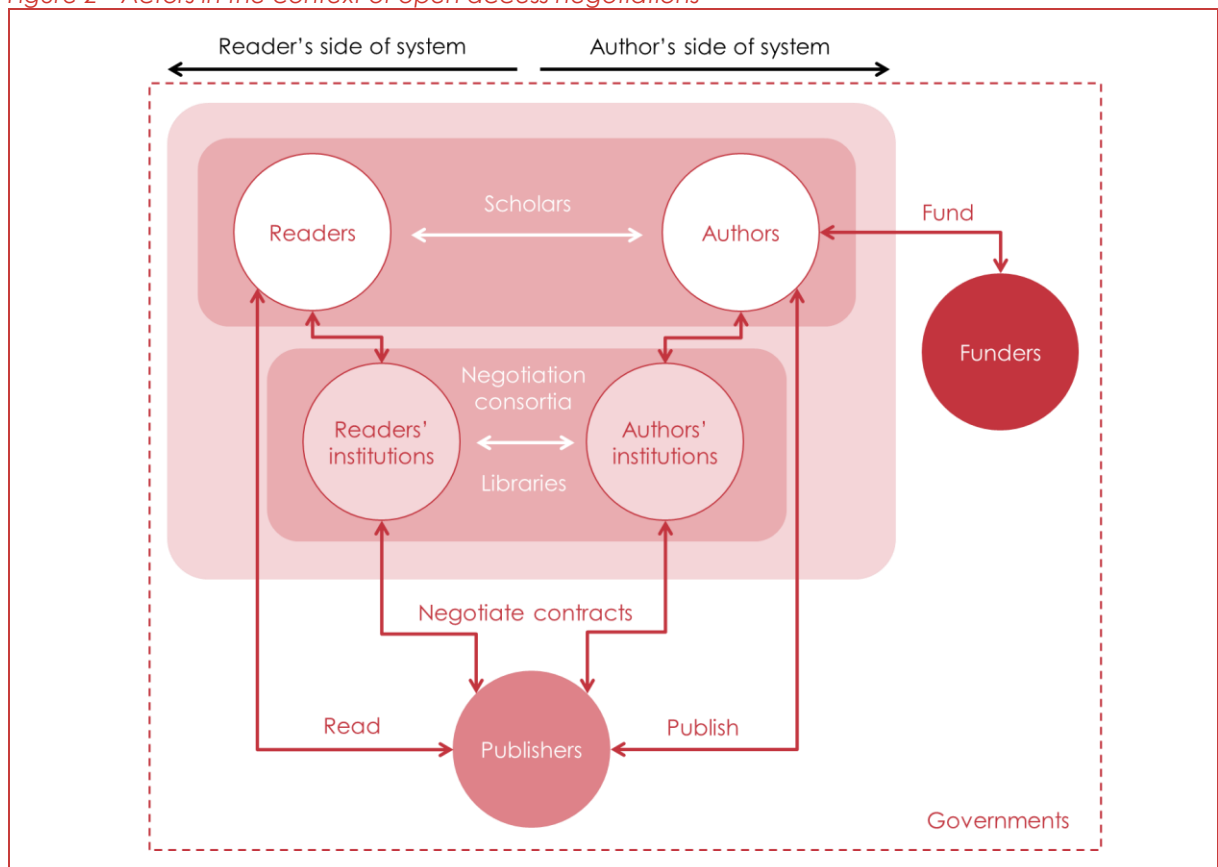
The actors in the scholarly publishing system are all stakeholders in open access negotiations. Some are directly involved, while others are represented. In this Chapter we present each group of stakeholders in the context of these negotiations.

In the Delphi surveys we have asked stakeholders to assess many different aspects of hypothetical future scenarios for the scholarly publishing system. We have analysed these responses using the behavioural model – our analytical framework – that was introduced in Chapter 1 and is in detail described in Appendix C. In the behavioural model we have identified, generalised and simplified decision rules for each of the stakeholders – as for any model. The decision rules – in general terms – guide the behaviour of the stakeholders in our model. We present here the decision rules per stakeholder, as these will be addressed for each scenario in the next chapters.

3.1 Stakeholders in the context of open access negotiations

Within the context of open access negotiations, there are many important stakeholders. These key stakeholders and their relations within the scholarly publishing system are shown in Figure 2.

Figure 2 Actors in the context of open access negotiations



Technopolis Group, 2020

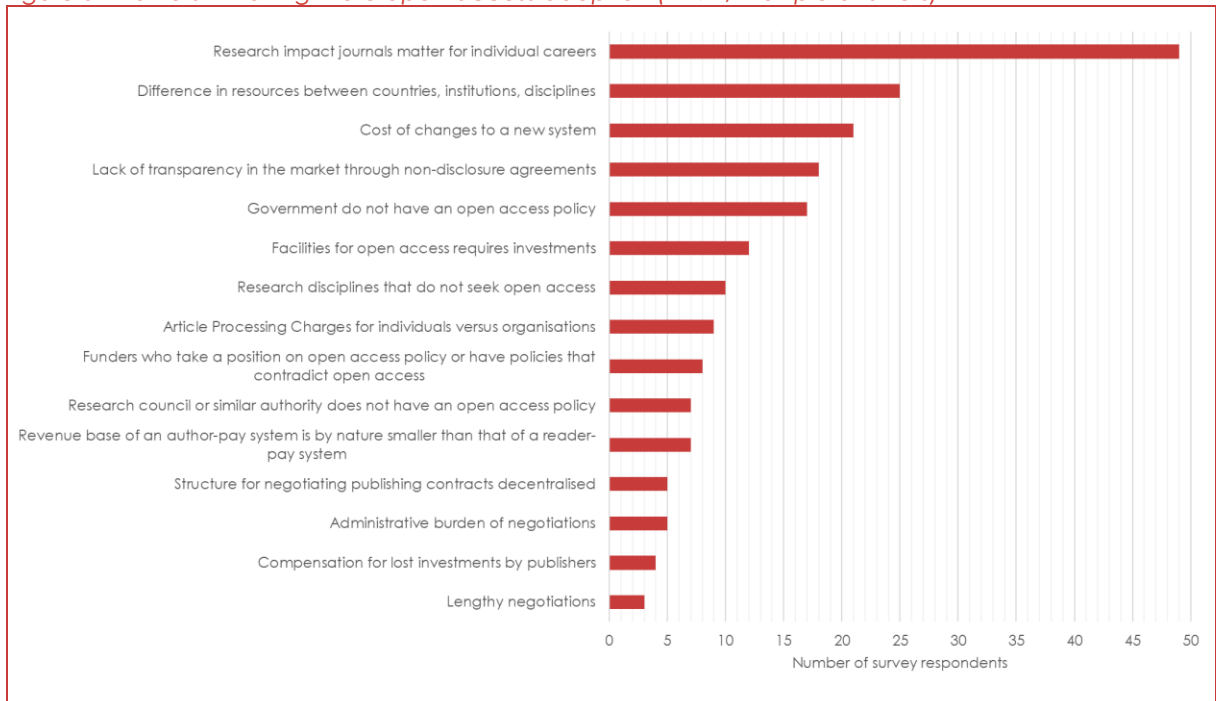
3.2 Authors and readers

Authors act as suppliers who grant copyright of their articles to publishers. Readers act as the consumers of these articles (demand side), they read the articles of authors published in

journals produced by publishers. Authors and readers overlap: practically all authors are readers, while some readers are also authors. We can make a distinction between academic authors/reader (e.g. scientists, students) and non-academic authors/readers (e.g. industry researchers, policy makers, interested public).

On the authors' side, publications determine to a large extent his or her scientific reputation – even though a growing movement of stakeholders is addressing this system for its shortcomings⁴³. Research performance evaluation and promotion is often based on bibliometric indicators (e.g. citations, type of journal, impact factor), and therefore it is important for authors to publish in journals with high impact factor. Although there is growing evidence that articles published under an open access model have higher citation rates, many journals with high impact factors are still subscription-based (or hybrid). In the first survey conducted as part of this study (cf. Appendix D), more than half of the respondents identified the need to publish in high impact journals for individual career advancement as a barrier inhibiting more open access adoption, thus making it the most frequent response among all options (Figure 3). It is noteworthy that this is a complex system also influenced by institutional funding formulas, international competition and/or quality assurance criteria.

Figure 3 Barriers inhibiting more open access adoption (N=71, multiple answers)



Technopolis Group, 2019

Additionally, authors highlighted the importance of their academic freedom in selecting publishing outlets for their articles. Researchers indicated they are determined to continue selecting journals based on the relevance of the journal to the topic of their research and the

⁴³ European University Association (October 2019), "Research Assessment in the Transition to Open Science, 2019 EUA Open Science and Access Survey Results.". <https://eua.eu/resources/publications/888:research-assessment-in-the-transition-to-open-science.html>

reputation of the journal, but they expressed concern that a journal's lack of compliance with the principles of Plan S could restrict this freedom.

The costs of open access publishing, often expressed in Article Processing Charges (APCs), are also perceived as a potential barrier to publishing open access. In many European countries, there are no mechanisms to support authors in the payment of APCs, in the form of administrative assistance or actual funding, whereas in other countries national open access mandates complement funding for open access publishing and transformative agreements, such as in Austria, where APCs are, accordingly, managed centrally by libraries.⁴⁴ In the absence of a coordinated open access strategy, researchers are left to pay APCs without administrative or funding support nor, consequently, oversight mechanisms to enable tracking of how many articles have been published open access and how much money was spent to do so. When the costs are covered and centralised, it is much easier for authors to opt to publish open access and for institutions and agencies to keep track of the costs and results.

Interviewees argued that if the publishing workflow for scholars is made easy and understandable, then they are likely to prefer to publish open access. In the survey, a similar sentiment was present in some of the respondents with an academic affiliation who argued that they would prefer a research dissemination system that is open access and in the hands of academia if the levels of service and quality were to remain the same. However, some argue that publishing decisions are more strategically aimed at academic career progression than dedicated open or closed access. An additional requirement would thus be aligning current researcher's performance assessment with open access publishing.

3.2.1 Drivers of authors and readers in the analytical framework

Because of their central position in the system, authors and readers are important stakeholders in the behavioural model as well. In the behavioural model (which is of course a simplification of reality) the authors are driven by the following two factors:

- **Quality/reputation (IF):** For authors (and readers) the quality of (their) research is important. In general, this is important for scientific advancement. Journals, and publishers, play an important role in the quality assurance of scientific research by organising the peer review of articles submitted to journals. The current scientific performance assessment uses metrics (such as impact factor – IF) that are related to the journals in which the authors' articles are published and/or other measures of a journal's reputation. Therefore, quality of peer review, impact factors and/or reputation are (currently) important decision rules for authors to decide where they publish their articles.
- **Costs/publishing fee (APC):** The cost of publishing is a factor to be considered when deciding where to publish and whether this should be open access or not. Costs for authors can be alleviated by funders or through institutional transformative agreements with publishers.

Readers are driven by the following two factors:

- **Access to read:** The access to read determines whether a reader can read an article without having to pay as an individual. This access is determined by the subscription contract, or license, of the reader's institution with publishers as well as by open access. Not having access to important scientific knowledge can affect the research of readers, and the use of this knowledge beyond the academic community (e.g. industry).

⁴⁴ The national funding agency for research mandates OA for all publicly funded research

- **Price to read:** Access and price are connected. The price to read influences the decision of readers whether or not to read an article. Based on the Delphi survey, we learned that when readers have to pay for an article, they tend to find alternatives in order to get free access to the article. Generally, this only happens when that article is very relevant to read – quite a significant group also ignores the paper when not freely available. Only a small number of authors buy individual articles from publishers when relevant and only after having explored alternative routes to obtain the article for free. The results suggest that most readers first try to get access through their library (e.g. interlibrary loan), then they check for preprints or other OA versions of the manuscript (e.g. ArXiv or Research Gate), followed by requesting a copy from the author, before they start looking for alternative methods to locate the published article (e.g. Request for OA button or LibGen), including pirate distribution methods (e.g. Sci-Hub).

3.3 Negotiating consortia

Even though authors and readers are central actors in the system, neither authors nor readers have (individually) much influence on the publishing system (or market). Their interests are represented by the institutions they work for (at least at universities and research institutes).

Within the traditional print subscription-based business model, negotiation of subscription agreement with publishers tended to be conducted by individual university libraries (or the libraries of research organisations). With the evolution of digitisation, Big Deals, and other factors these organisations began to form negotiating consortia to undertake joint negotiations with publishers.

Because of the increasing strategic aspect of publisher negotiations, aimed no longer merely at subscription access but at securing open access publishing entitlements and driving the open access transition, negotiating consortia are broadening their negotiation teams to include other stakeholders beyond just the university library or consortium staff. This means involvement of university management, and, in some countries, representatives of the government and/or rectors conferences. By doing so, the broader interests of the country and/or universities are considered in the negotiations. In Sweden for instance, the Bibsam consortium and the national steering committee on open access interact closely with the consortium members (university and other libraries).

Nowadays, consortia who negotiate transformative agreements set out strategies to achieve minimal contractual conditions in publisher contracts, organise the payment for open access publishing (and invoice their members accordingly) and advise national bodies like the national rectors' conferences. They are at the heart of determining the pathways towards open access.

3.3.1 Drivers of readers' and authors' institutions who form the negotiation consortia

We discern two aspects that govern the behaviour of readers' institutions and negotiating consortia in our model:

- **Costs of subscriptions:** In contracts between publishers and institutions/consortia a price is negotiated for subscriptions. Controlling costs of subscriptions is an important factor for readers' institutions.
- **Coverage of disciplines:** The contracts that readers' institutions (sometimes through consortia) establish with publishers cover the disciplines of the institution. The main journals for each discipline should be accessible to the institute's readers in order to perform their research and educational tasks and to maintain excellent research(ers) at the institution.

In addition, we also discern two aspects or drivers that govern the behaviour of authors' institutions/consortia in our model:

- **Costs for publishing:** In contracts between publishers and institutions/consortia a price is negotiated for open access publishing services. Controlling these costs is an important factor for authors' institutions. The total costs for publishing and reading are in some scenarios more relevant, as these total costs need to be controlled – costs for publishing can move to costs for reading and vice versa.
- **Publishing policy:** The publishing (or public access) policy of the institution of authors may drive negotiations and the journals in which authors publish. Some institutions have an open access publishing policy or need to follow national policy that promotes open access publishing. This can be depositing research outputs in their institutional repository (green route) or in open access journals. In contrast, some institutions also have a publishing policy that requires or encourages authors to publish in highly ranked international journals.

3.4 Publishers

The role of publishers in the scholarly publishing system has been to provide the necessary services to make quality-controlled articles available to a broad audience. The move towards digitisation, first, and now towards open access, may arguably have the greatest impact on the functioning of publishers in this system. Open access constitutes a change in the underlying business model of scholarly publishing that is currently generating revenue through closed systems and from readers. The future scenarios in this study offer some insights on the potential impact of different forms of open access per type of publisher.

There has been significant pressure from academia, governments, the European Commission and funders on publishers to adapt to the demand for open access to scholarly content. They have in turn responded in different ways with some being more conservative than others. These responses range from offering fully open access journals with an APC-based cost model, to 'hybrid' publishing options in otherwise subscription journals with APC payment to experimenting with transformative agreements, and developing other new business models to allow for open access (notably amongst smaller, non-for profit publishers, for example the Subscribe to Open model). A more recent development amongst some (particularly larger for-profit) publishers has been to seek alternative business revenues, notably by diversifying their product offering with the inclusion of data analytics tools.

3.4.1 Drivers of publishers

In the behavioural model publishers are an intermediary between readers and authors. They provide services to disseminate knowledge and (co-)organise quality assurance through peer review. We consider different types of publishers in the model such as large, for profit, publishing houses (with/without R&P), learned society publishers (not-for-profit organisations and institutions that publish scholarly and professional content) and small (non-)OA publishers.⁴⁵

We discern five factors that govern the behaviour of publishers in our model:

- **Profit/income:** Publishers are generally companies. Companies are economic operators who strive for maximalisation of profit, to be obtained through high income (either through

⁴⁵ Large pure OA publishers have not been defined as a separate group at the onset of the study and cannot be used as a unit of analysis in the study. The initial assumption has been that all OA publishers are small as compared to large, traditional publishing houses, so that all pure OA publishers are covered under small OA publishers.

large volume or high prices). Profit and income depend on the number of competitors and their market share – these determine their negotiation position, volume and prices.

- **Dissemination:** The fundamental role of publishers is to disseminate scientific knowledge or – at the least – to facilitate that process. How well dissemination is achieved is basically determined by the number of readers reached by the journals of the publisher. This determines the (potential) spread of the published scientific knowledge.
- **Reputation:** The reputation of publishers is partly obtained by the journals they own. A high impact factor and a rigorous selection of papers contribute to the perceived reputation of journals. For publishers, this reputation is important in order to receive articles from authors and to attract many readers. Institutions generally find it important to include high-impact journals in their contracts with publishers.
- **Competition:** The competition between publishers may be affected by each scenario. Competition is influenced by the business model and strategy of the publishers and by their market share.
- **Market share:** It is also interesting to look at the market share of the publishers, which may be a result of competition, but also determines the competitive position of a market player. In general, one could say that publishers strive to maintain or improve their market share. In the scholarly publishing system, a relatively small number of publishers hold the largest portion of the market share, as expressed in article output.

3.5 Research funders

Research funders play an important role in the discussions around open access and have contributed to national and international open access policies such as the principles of Plan S.

Their role in the context of publishing contracts has been considered a key driving force for open access. This is reflected in the 2019 survey, the first Delphi survey for this study. There, over half of the respondents indicated that the need for publicly funded research to comply with an open access policy is a key driver of open access. Additionally, “funders supporting or demanding open access publishing” was considered one of two highest ranked factors affecting the negotiation process in terms of time and ease in the 2020 survey, the second Delphi survey (Figure 4). At the same time, funders having a policy contradicting open access were seen as a barrier to open access by some respondents.

Funders have this important position in open access because they (generally) set out the rules for the research they fund. By doing so, they are in the position to mandate that research funded by them is subsequently made open access. This is a powerful tool for imposing open access on scholars and their research organisations, who may have wished to do so previously, but did not have a mechanism in place to enable it. It is however one step to demand articles to be published open access, but another to enable this within the current state of dominance of the subscription-based business model in scholarly publishing. Interviewees highlighted the importance of the principle of freedom of researchers to publish their article in journals of their choice and not limiting their options to open access journals. Leveraging this power by funders does not, after all, directly change any aspect of the negotiations between consortia and journal publishers.

Funders may choose from multiple strategies to enable open access, including:

- 1) leave the responsibility with the researcher/their organisation to cover the costs and/or negotiate open access contracts;
- 2) allow for delayed open access through self-archiving, where applicable (green route);

- 3) offer funding to grantees to cover the costs of publishing open access in fully OA or 'hybrid' subscription journals (APCs paid by authors) or via their institutions to facilitate central open access publishing agreements (for fully OA journals) and transformative agreements;
- 4) develop a separate fund for open access publishing;
- 5) push for systematic change through joint-policies and plans (like Plan S) or participate at the negotiating table.

In theory, research funders thus have an important role to enable open access within the scholarly community. However, at the time of this study, few research councils or funders actually have an explicit open access policy. In the survey, funders from Austria, Belgium, Sweden, Netherlands, Spain and Denmark stated that they had an open access policy in place. Some are following national policy requirements while others did not specify the context of their approach. Among the funders, the approaches to open access include both green and gold open access policies – no unique statement can be made on embargo periods.

In Sweden, for example, the national research council is by far the largest funder in the country and has had an open access policy since 2010, but there are no national guidelines for open access from the Swedish government. Lacking these, the research council has instead worked with FAIR Data Principles⁴⁶ and applied them on publications and research data.

Indeed, it has been lamented by funders that there are too many different open access policies, which would indicate that open access, as such, is not embraced to the maturity of becoming the default in scholarly publishing. National guidelines would reduce the diversity in open access policies.

3.5.1 Drivers for research funders

In the behavioural model we have positioned research funders as an actor that mainly influences authors by setting policy and funding requirements.

We discern two decision rules that govern the behaviour of research funders in our model:

- **Willingness to pay for OA:** External research funders sometimes provide funding for publishing open access. In some countries, authors need to publish their articles open access when the research in these articles is funded by the research funder. Costs for APCs are sometimes reimbursed or covered in the grant funding. The rationale behind these financial incentives is to promote open access publishing. In some scenarios open access is the dominant mode of publishing (covered in contracts between institutions/consortia and publishers) and research funders may no longer be willing or feel the need to fund APCs or costs associated with OA publishing. In some instances, funders work together with consortia to fund transformative agreements.⁴⁷
- **Political will/pressure:** As research funders are often public agencies, their instruments and policies are often directed by national policy regarding open access. In some countries there is a clear political will or pressure to move to open access. Such a political will, pressure or policy may largely direct the behaviour of external/research funders in their support for (specific types of) open access. Plans like the Plan S Principles are expressions thereof.

⁴⁶ Wilkinson, M., Dumontier, M., Aalbersberg, I. et al. The FAIR Guiding Principles for scientific data management and stewardship. *Sci Data* 3, 160018 (2016). <https://doi.org/10.1038/sdata.2016.18>

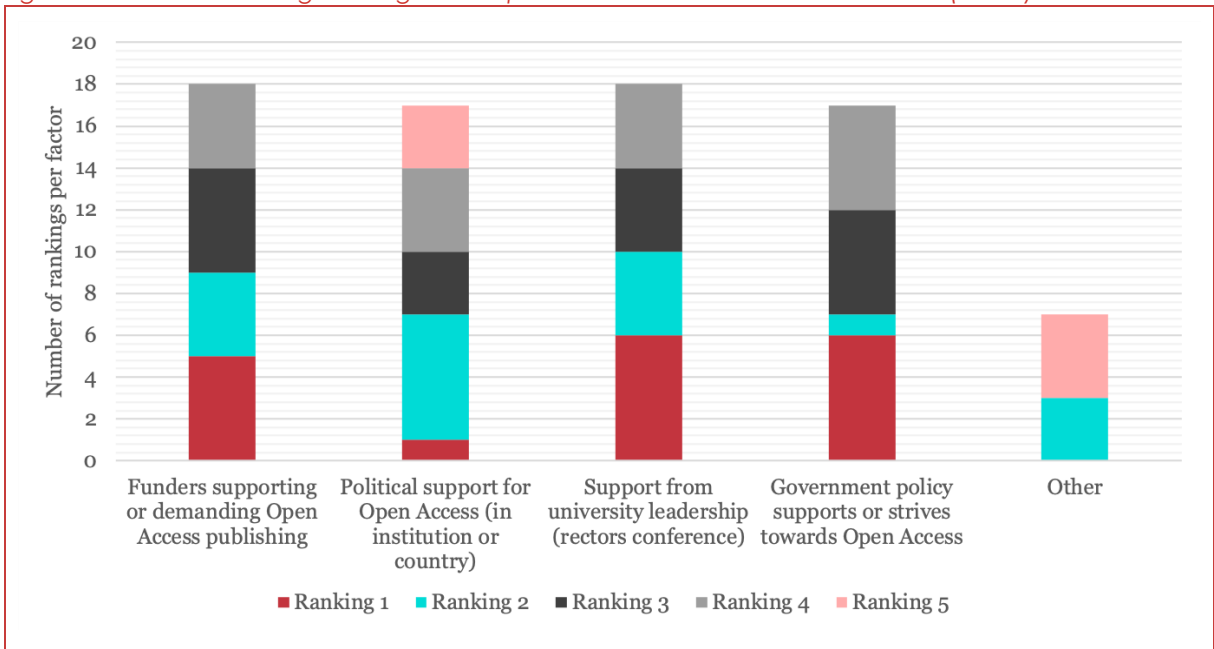
⁴⁷ See e.g. <https://www.kb.se/samverkan-och-utveckling/nytt-fran-kb/nyheter-samverkan-och-utveckling/2019-06-25-%E2%80%8Buniversities-and-funders-share-cost-of-publishing-in-new-agreement.html>

3.6 Governments

Over the years, governments have also become important players in the context of open access. Although governments usually do not directly take part in the negotiation of scholarly contracts, they can and do set out a roadmap for these negotiations through the development of national strategies, policies and laws. Differences in political systems are relevant for the role of governments in national open access approaches. In particular federal countries, such as Switzerland and Germany, cannot work with centralised, top-down approaches that we observe for instance in the UK.

Survey data indicate that the panel of respondents (N=77) considers government policy that supports or strives towards Open Access as one of the two most important factors affecting the negotiation process in terms of ease and duration as seen in Figure 4. Additionally, an open access policy of the government has been considered the third largest driver for open access in the first Delphi survey (N=75). On the other hand, political support is not valued highly by participants when it comes to the ease of negotiation process – it is almost never ranked first.

Figure 4 Factors affecting the negotiation process in terms of ease and duration (N= 77)



Technopolis Group, 2020

Various government bodies can take on the role of developing, implementing and/or monitoring such a strategy, policy or law.

Examples include the open access plan in the Czech Republic, which functions as a national strategy for publishing contracts and is overseen by the government council on research and development. Similarly, in Norway, there is an open access policy from the Norwegian government, whereas in Italy a national law for open access is under development.

At the time of writing however, most EU countries lack an immediate open access policy even though many signed the 2016 EU Competitiveness Council conclusions. Through these conclusions, as well as with Plan S, there is a growing European influence on policy and negotiations at a national level.



Some countries may not have an official open access policy or strategy as of yet but have moved towards exerting some political influence on the negotiations. The Ministry of Science in Serbia, for example, uses its position to reduce costs of contracts and to force negotiations into a green open access route. To this end, they adopted a document which obliges state universities, faculties and institutes to implement institutional repositories and publish articles in open access. They choose the publishers that the negotiating consortia should subscribe to and provide and allocate the budget in an attempt to harmonise the process. Additionally, they adjusted public procurement law to require specific tender procedures for all publishers, preventing multi-annual contracts.

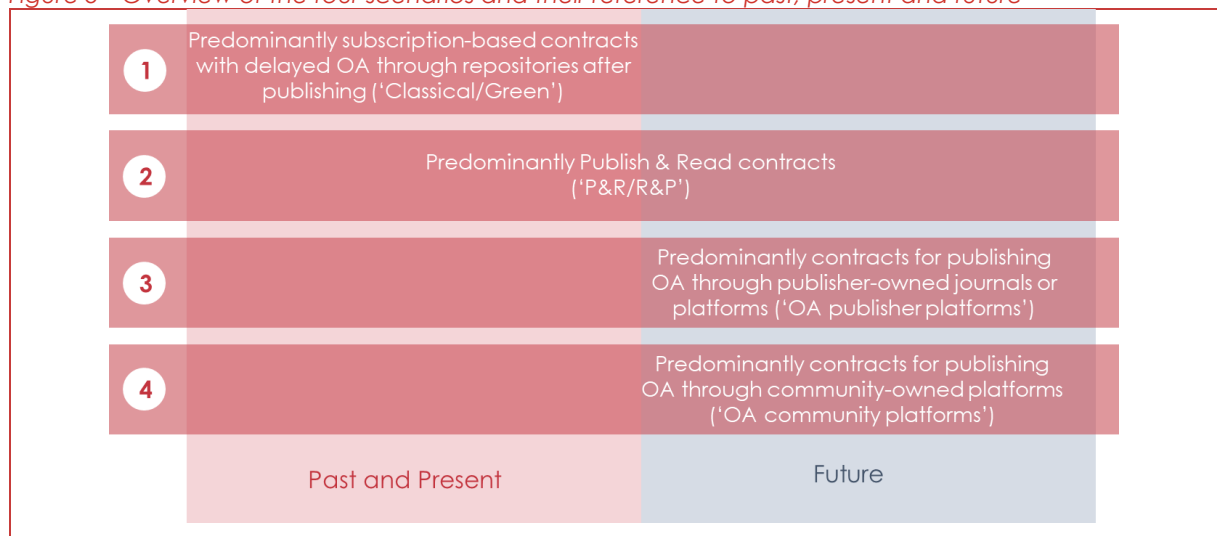
4 Four scenarios

For this study we have defined four scenarios. The descriptions of the scenarios provide the main defining characteristics of each scenario. These descriptions have been formulated in several iterations between the study team, EUA, and the Steering Committee. The scenario descriptions that are provided in this chapter, have been presented to the respondents of the surveys.

We have tried to not overcomplicate the scenario descriptions, while at the same time keeping in sufficient detail. The rationale for that lies in the methodology applied: all respondents to the survey – from stakeholder to expert – should be able to understand the main features of each scenario and their differences. Too much complexity (or too little) does not add to this understanding. As a result, the scenarios do not reflect, for instance, R&P in all its detail, but try to capture its main features for the purpose of this study.

Figure 5 provides an overview of the scenarios, positioning them also in time. The second scenario is positioned both as past/present and future, as in some countries this scenario is already present, while for other countries it is still a future. The second scenario resembles R&P in a stylised fashion and is considered more of a transitional state that is increasingly implemented in the present. The third and fourth scenarios (OA platforms) are projections of potential future end states for the scholarly publishing system, fully embracing open access.

Figure 5 Overview of the four scenarios and their reference to past, present and future



Technopolis Group, 2019

4.1 Reference scenario 1: Predominantly subscription-based contracts with delayed OA through repositories after publishing ('Classical/Green')

In this scenario, the publishing market is still subscription-based and thus publishing is free of charge to the author (at the cost of transferring copyright) and reading recent publications can only be done for a fee.⁴⁸ There is little 'true' or immediate open access, but authors have

⁴⁸ Notable exceptions in the form of publication fees exist, see e.g. <https://www.agu.org/Publish-with-AGU/Publish/Author-Resources/Publication-fees>.



the right to self-archive into a repository or to post their manuscript in a pre-print archive under certain conditions.

This scenario is not a future scenario but a reference scenario, sometimes past but generally still current practice in many countries. For every country, this has been a common and well-understood state from which the movement towards open access began.

The specific determining properties of this scenario are:

- Scholarly publishing system is dominated by publishers earning from subscriptions (for reading)
- Almost all contracts between publishers and institutions cover reading subscriptions only
- A fee is required to read papers outside these contracts, unless the paper is available through self-archiving repositories, often after an embargo period
- Publishing papers in journals is free, and authors are, where applicable, allowed to store papers in repositories or (pre-print) archives
- Embargos often mean several months of delay until an article is openly available

4.2 Scenario 2: Predominantly Publish & Read contracts ('P&R/R&P')

In this scenario, institutions and publishers make a deal that covers both reading non-OA articles and publishing OA-articles, so that OA is accommodated within one contract. It is by many considered as a step towards full OA.⁴⁹ Publishers earn mainly from publishing and from reading. Authors can read and publish for at no extra costs at journals within the contract. Copyright may or may not be transferred to the publishers and both delayed and immediate OA is possible.

The specific determining properties of this hypothetical scenario are:

- The scholarly publishing system (market) is dominated by publishers earning from open access publishing as well as a fee for reading (subscriptions). Almost all contracts between publishers and institutions cover publish and read costs
- For reading paywalled papers outside these contracts a fee is often required
- Publishing a paper is often free for authors (OA within the R&P contract), unless it is published in an OA journal that is not covered by the institution's R&P contract
- Embargo of several months for paywalled articles resulting in delayed OA for closed access articles and immediate OA for open access articles

4.3 Scenario 3: Predominantly contracts for publishing open access through publisher-owned journals or platforms ('publisher-owned OA platforms')

Whereas the R&P scenario is reflecting the increased practice of negotiating R&P contracts, this third scenario is a hypothetical future. This scenario extrapolates the lines of current platforms that publishers provide towards platforms on which scholars can publish open access. PLoS or F1000 can be seen as examples of publishers that broadly resemble this scenario.

⁴⁹ There is some controversy whether P&R contracts indeed will lead to full OA, so far there is no data to indicate either way. See for instance <https://blog.frontiersin.org/2020/03/10/current-transformative-agreements-are-not-transformative/>.

In this hypothetical scenario publishing is dominated by full OA journal publishing or publishing on OA platforms owned by publishers. Such OA platforms would be a modern and digital media alternative for the traditional journal format that originates from print media. The income mechanism of publishers is in this scenario based on income from publishing through journal APCs or platform publishing fees. We expect in this scenario that institutions will make contracts with publishers to cover the publishing costs of their authors (in journals or on platforms). Reading is not part of such a contract, as reading is free (OA). Articles are immediately published OA.

The specific determining properties of this scenario are:

- The scholarly publishing system (market) is dominated by publishers earning from publishing open access in journals or on open access platforms owned by publishers
- Almost all contracts between publishers and institutions cover publishing costs or access to these platforms for publishing
- Reading papers in journals/on platforms is free (open access)
- For publishing papers outside these contracts, a fee needs to be paid
- No embargo, resulting in immediate OA

4.4 Scenario 4: Predominantly contracts for publishing open access through community-owned platforms ('Community-owned OA platforms')

In this scenario the future scholarly publishing system would be dominated by publishing open access on community-owned platforms. Publishers would no longer own the platforms, but the scientific community would do so. This could be at different levels (institutional, regional, discipline etc.) and might very well be organised differently than traditional journals (e.g. overlay journals).

This hypothetical scenario is a more 'radical' scenario in which articles are immediately published on OA platforms (repositories, archives etc.) of which most are set-up, maintained and (largely) funded by institutions, research communities or research funders. Publishers, then rather publishing service providers, transform their business model and earn money by providing services: e.g. processes for international peer reviewing, editing and layout, multi-platform search engines and delivering platforms as a service (distribution) to communities, funders and institutions.⁵⁰ Publishing in these repositories is free for authors – as the infrastructure and processing is paid for.⁵¹ There is no true journal publishing anymore.

The specific determining properties of this scenario are:

- The scholarly publishing system (market) is dominated by community-owned platforms with publishers earning from offering open access (platform) infrastructures as a service to others and other services, such as international peer reviewing processes, multi-platform search engines, editing and layout to institutions, research communities and science funders

⁵⁰ It was remarked by the Steering Committee that publishing will likely not be a single service, provided by a single "publisher" in this scenario, but a decoupled and decentralised service, with the registration/archiving function performed by community/institutional owned/led repositories (but can be hosted by cloud or similar service providers), quality control/peer-review, editing/formatting and dissemination services provided by academic/community organisations, or third party commercial service providers.

⁵¹ In this scenario APCs are thus not likely, as costs of running or contracting infrastructures and services are supported by institutions or communities.



- Almost all contracts between publishers and institutions cover delivery of this infrastructure and associated services
- Reading papers in infrastructures is free (open access repository)
- Publishing papers in such OA infrastructures is possible for the whole research community, but may require a registration/membership fee or a fair price for publishing on the platform related to true costs
- No embargo, resulting in immediate OA

5 Differences in implications between the scenarios

5.1 Methodological note and limitations

The different scenarios are compared with the reference scenario (i.e. Scenario 1, 'Classical/Green') based on two rounds of surveys that have been sent to stakeholders in the scholarly publishing system. For these surveys we have invited 296 stakeholders for Round 1 and 397 stakeholders for Round 2. These invited stakeholders were spread across Europe and market players. This led to 108 responses in Round 1 (of which 75 complete responses) and 91 responses in Round 2 (of which 48 complete responses). This results in a response rate of 36% and 23% for Rounds 1 and 2, respectively. Although the response rate may be rather low, the results of the survey are still useful and relevant. First of all, we want to highlight some strong aspects of those who did respond:

- Those who responded turned out to be rather knowledgeable on the subject;
- Several respondents have filled-out the survey on behalf of several colleagues within their organisation after consultation – they thus represent other respondents as well;
- Responses from all market players have been received, with a good spread across Europe.

The results are useful for a predominantly qualitative analysis (comparisons, substantiating trends, supporting reasoning etc.). In some cases, results can only be considered illustrative, in other cases comparisons can be statistically significant (between groups). In particular, the Authors/Readers and Funders groups are insufficiently represented. The number of respondents from University Libraries and Negotiation Consortia – two groups that largely overlap in their perspective – are satisfactory. These groups are fairly spread across countries and consist of highly knowledgeable experts.

Based on the responses to the Delphi survey we compared the different scenarios on several aspects. This comparison is based on weighted averages of answers for different market players to the surveys. These answers concern perceptions, expectations and assessments of the future or their understanding of the current situation in their country. Responses have been based on the descriptions of the scenarios in Chapter 4 and their understanding of the matter.

With the obtained number of responses per stakeholder group, we cannot report on specific types of market players. For example: we cannot distinguish between academic and non-academic authors/readers or between learned society publishers or small OA publishers, but we can distinguish between authors/readers and publishers. This provides an indication on how different scenarios score on the aspects and which scenario is assessed best on those aspects. As stated, these differences are not always statistically significant – we tested at 95% confidence level between groups.

Details about the model and the outcomes can be found in Appendix C. In the remainder of this chapter we discuss several expected impacts and implications of the different scenarios. We first start with exploring the expected impact of scenarios on academic freedom and the related freedom to publish in preferred journals.

5.2 Impact on academic freedom and the freedom to publish in preferred journals

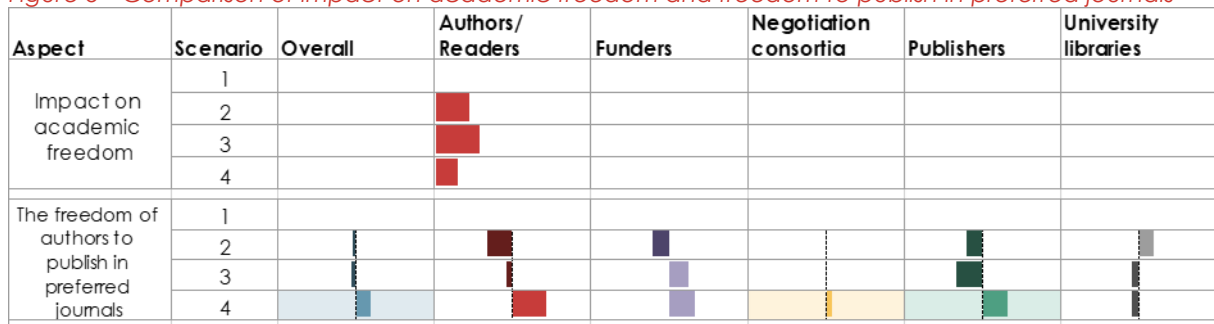
Academic freedom is an important value for authors and readers in the system that we are considering. Authors and readers have indicated minor impacts on academic freedom for all scenarios surveyed (scenarios 2-4). **The responses are not significantly different in each scenario, although authors/readers seem to assess the least impact on academic freedom when OA is realised through community-owned platforms.**



The freedom of authors to publish in preferred journals is arguably related to academic freedom, but separately addressed in the survey. **The overall response shows that the freedom to publish in preferred journal is assessed significantly highest in the community-owned platforms scenario (scenario 4).** Remarkably, this response is also confirmed by publishers. For R&P and publisher-owned platforms this aspect is assessed negatively. University libraries seem most positive on R&P, while negotiation consortia seem across all scenarios rather neutral.

Regarding aspects of academic freedom (including freedom to publish), it thus seems that, overall, the most positive effects are expected for community-owned platforms, but the differences in assessments among the scenarios are small and not all significant. **Academic freedom therefore seems not to be a strong distinctive factor for choosing one of the scenarios.**

Figure 6 Comparison of impact on academic freedom and freedom to publish in preferred journals⁵²



Technopolis Group, 2020

5.3 Ability to perform current research(er) performance assessment

Current research(er) performance assessment is often based on bibliometrics, such as citations, and number of publications in high-impact journals. The scenarios may impact the current research performance assessment, e.g. by moving away from journal structures. We asked participants in the survey to assess this. Overall, we see in the response that **the scenario in which OA is realised through community-owned platforms is expected to provide the lowest ability to perform the current research(er) performance assessment.** This is a significant difference compared to the other scenarios. For the other scenarios the difference seems to be small.

Interestingly, **respondents seem to relate the highest ability to perform current research(er) performance assessment to scenarios in which publishers have a dominant role.** Why this is the case is not fully clear, perhaps publishers are considered a neutral and trusted source for bibliometrics. OA platforms seem to be not very distinctive in this, as OA through publisher-owned platforms seem to score similarly to R&P and our reference scenario (subscriptions with delayed repository publishing).

⁵² The figures throughout this chapter show the (weighted) average response for each aspect (vertical). This is calculated per scenario (1-4, vertical) and per market player as well as across market players (horizontal, incl. "overall"). Responses can be positive, such as indicated by the bars for the aspects "Desired future" and "Realistic as a potential future", or also negative, such as indicated by the bars for the aspect "Likelihood of implementation in 10 years' time". The colours are chosen to better visualise the different market players. The length of the bar indicates the value of the weighted average – numbers are omitted as they do not provide additional insights and are less easy to visually compare. Cells that have a light-coloured background contain values that are significantly (95% confidence) different from the other scenarios. This means that the weighted average of the obtained value for this scenario is with 95% confidence, in contrast to the weighted average of the values for one of the other scenarios. All other values are indicative, for which we use more careful wording when describing them (e.g. seems or might).



If the ability to perform the current research(er) performance assessment is considered a relevant aspect, it may also be a distinctive aspect for choosing for a specific scenario. The response would then suggest that OA through publisher-owned platforms is then favoured. This is notable under the knowledge that many stakeholders are working to reform research assessment, and in particular the use of publisher-controlled bibliometric indicators.⁵³

Figure 7 Comparison of the ability to perform current research(er) performance assessment

Aspect	Scenario	Overall	Authors/Readers	Funders	Negotiation consortia	Publishers	University libraries
Ability to do current research performance assessment	1						
	2						
	3						
	4						

Technopolis Group, 2020

5.4 Service levels of publishers and innovation in research communities

In all scenarios, publishers offer services to several other market players. Although these services differ per scenario, we have asked in the survey to assess the potential effect of a scenario on the service levels that publishers provide. **The response shows some differences across scenarios, although the differences are not significant.** The scores on these aspects are not so high. It seems that overall, slightly better service levels are expected with R&P than with community-owned platforms. Publishers are fairly neutral in their response.

Across scenarios the role of publishers changes: from being a provider of content, or goods, as in the case of subscriptions, to providers of services that are procured by communities (community-owned platforms). These changes affect the innovation in research communities for scholarly publishing. When the role for communities increases, participants to the survey believe innovation will be highest. **The overall response shows a significantly higher assessment of innovation in the community-owned platform scenario (scenario 4)** compared to the other scenarios. Some respondents seem to even assess innovation negatively for R&P (e.g. publishers and funders), although on the level of market players the difference between scenarios was not significant.

If innovation in research communities for scholarly publishing is considered a relevant aspect, it may also be a distinctive aspect for choosing for a specific scenario. The response would then suggest that OA through community-owned platforms is favoured.

⁵³ See e.g. <https://sfedora.org/>; <https://eua.eu/resources/publications/830:the-european-university-association-and-science-europe-join-efforts-to-improve-scholarly-research-assessment-methodologies.html>; <https://www.nwo.nl/en/news-and-events/news/2019/11/knowledge-sector-sector-takes-major-step-forward-in-new-approach-to-recognising-and-rewarding-academics.html>

Figure 8 Comparison of service levels of publishers and innovation in research communities

Aspect	Scenario	Overall	Authors/Readers	Funders	Negotiation consortia	Publishers	University libraries
The service levels offered by publishers	1						
	2						
	3						
	4						
The innovation in research communities for academic publishing	1						
	2						
	3						
	4						

Technopolis Group, 2020

5.5 Transparency in the market

Transparency in the market is helpful when negotiating contracts between market players. It gives better insights in prices, positions/stakes and strategies. We have asked market players in the survey to assess transparency in different scenarios. **The overall response is not very distinctive across scenarios.** Transparency is considered to slightly increase in all future scenarios. However, publishers seem to expect more of a decrease in transparency in R&P. As these differences are not significant, **this seems not to be a strong discriminating aspect for the scenarios.**

Figure 9 Comparison of transparency in the market

Aspect	Scenario	Overall	Authors/Readers	Funders	Negotiation consortia	Publishers	University libraries
The transparency in the market	1						
	2						
	3						
	4						

Technopolis Group, 2020

5.6 Effects on the arts, humanities and social sciences

Publishing cultures between disciplines can be different. The arts, humanities and social sciences are known to have a distinctive publishing culture with respect to many other disciplines. We have therefore asked participants in our survey whether they expect the identified scenarios to have different effects on the arts, humanities and social sciences. The overall response – and those of individual market players – is nonetheless fairly similar for all scenarios: **it does not seem that the effects on arts, humanities and social sciences are perceived as significantly different across scenarios.** At the same time, some effects for these disciplines are recognised.

In conclusion: **this seems not to be a strong determining aspect for choosing of one of the scenarios.**

Figure 10 Comparison of different effects on the arts, humanities and social sciences

Aspect	Scenario	Overall	Authors/Readers	Funders	Negotiation consortia	Publishers	University libraries
Different effects on the arts, humanities and social sciences	1						
	2						
	3						
	4						

Technopolis Group, 2020

6 Perceived strengths and weaknesses of hypothetical scenarios

For all hypothetical future scenarios for the scholarly publication system we have asked stakeholders to indicate the strengths and weaknesses that they perceive or expect. These have been open questions that have been clustered and analysed in terms of frequency and content. The most frequent responses per scenario have been included in an overview of strengths and weakness.

In this chapter we provide the analysis of these responses – it is an analysis of perceptions and expectations expressed in the survey by a variety of stakeholders. These have been expressed based on the scenario descriptions in Chapter 4 and their understanding of the matter.

6.1 Scenario 2: R&P contracts

6.1.1 Strengths

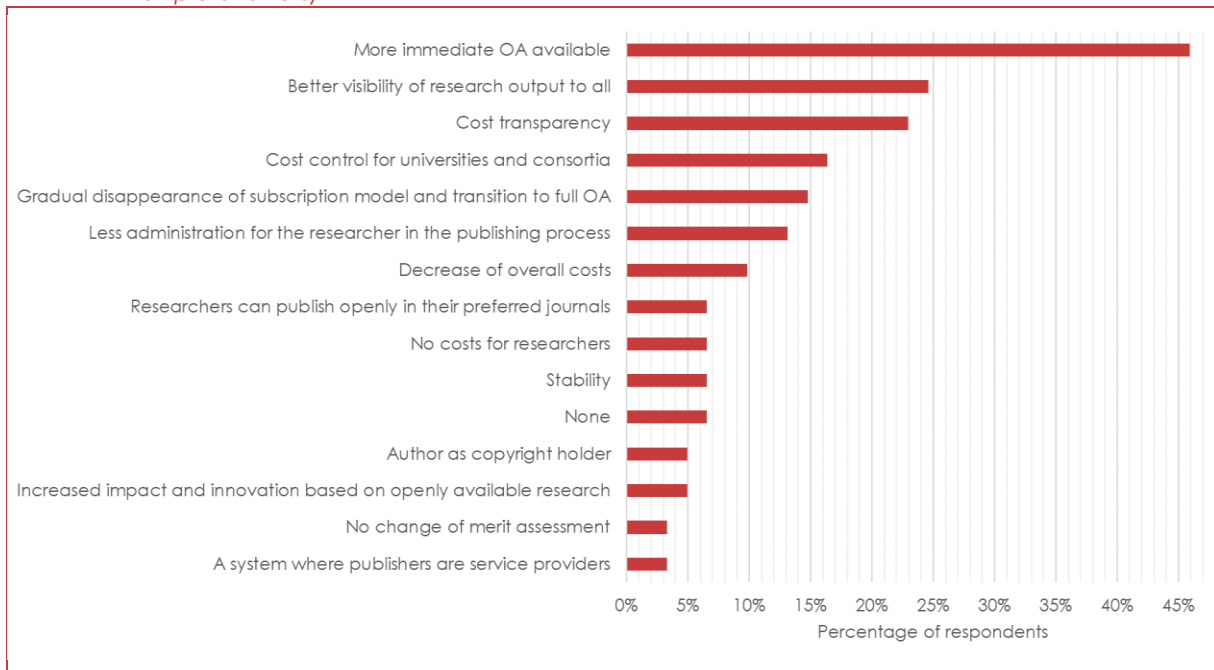
According to the vast majority of respondents in the surveys, the **main strength** of scenario 2 is that they expect more **immediate Open Access** (as compared to the other scenarios). More content is expected to be available and, as a result of open access, there will be an **increase in visibility** due to broader dissemination of research outputs in society. With that there will be an end of exclusive rights on content thanks to creative commons licenses, according to the respondents. Thus, researchers and society as a whole are expected to gain better access to previously closed research.

The third largest strength according to the respondents is a better financial overview for institutions, **cost control** and **accountable use of public funding**. If R&P contracts are concluded as transformative, then an increasing share of open access articles will be available for approximately the same amount that is currently paid for closed scholarly communication. Additionally, respondents indicate that they believe it would lead to a more sustainable, transparent, fair and equal scholarly communication ecosystem and the development of market competition. While subscription pricing has been largely sheltered from the forces of market competition, hidden by non-disclosure clauses and rising from historic print expenditures, transformative agreements introduce cost transparency by removing non-disclosure clauses and place value on service levels rather than access. In this way, respondents argue that the playing field of scholarly publishing is opened to cost comparison and economic market competition forces that drive **innovation**, at least in terms of new services and business models from the side of existing commercial publishers.

Respondents also indicated that transformative agreements create the preconditions necessary for **systemic change in scholarly communication** (especially in terms of business models and moving towards OA). Transformative agreements offer institutions a framework to take immediate action and address the subscription paywall system head-on. While revenues may still flow to the dominant publishers during this period of transition, by transparently articulating fees at the article level or at the service level, a number of developments are believed to be set in motion.

Furthermore, some respondents expect that the **administrative burden for researchers will decrease** as institutions will cover the costs for publishing and broad access to articles. It will also be easy to interest researchers in Open Access. They will have the **freedom to choose the journal for publishing** without the pressure of extra costs while preserving the availability of a large number of journals to read.

Figure 11 Advantages of a shift towards a market/system that is dominated by R&P contracts (N=61, multiple answers)⁵⁴



Technopolis Group, 2019

6.1.2 Weaknesses

The largest weakness considered by the vast majority of respondents is the **persistence of the current oligopoly of large publishers** and therefore **less competition in the market**. The respondents argue that R&P contracts are likely to reinforce dominance of larger publishers that are making large profits. This is accompanied with the fear of further market consolidation by publishers better equipped to manage these contracts. Thus, there is the concern that **control and power position** will remain with publishers, resulting in a reduction of competition between publishers, increasing the market power of the largest publishers. The transformative and innovative aspect of such agreements are therefore essentially in the business model and move towards OA, instead of changing the general market composition (oligopoly).

Secondly, respondents indicate that another important weakness is the potential **cost increase** that is also linked to the **risk of locking out new players**: the rise in cost of publishing and the lack of transparency of costs. It is argued that if costs cannot be restrained, libraries will not be able to free money from their subscription budgets to close possible "publish deals" with other, full OA publishers. Consortia may very well be interested but can only act if costs for their R&P deals with the big commercial players are constrained. Cost increase of publication will have an impact on the options available to publish and hence, the quality of research. The current market is still based on historical expenditure. It is, furthermore, considered to be not affordable for research intensive universities, due to the high fees resulting from a high research output.

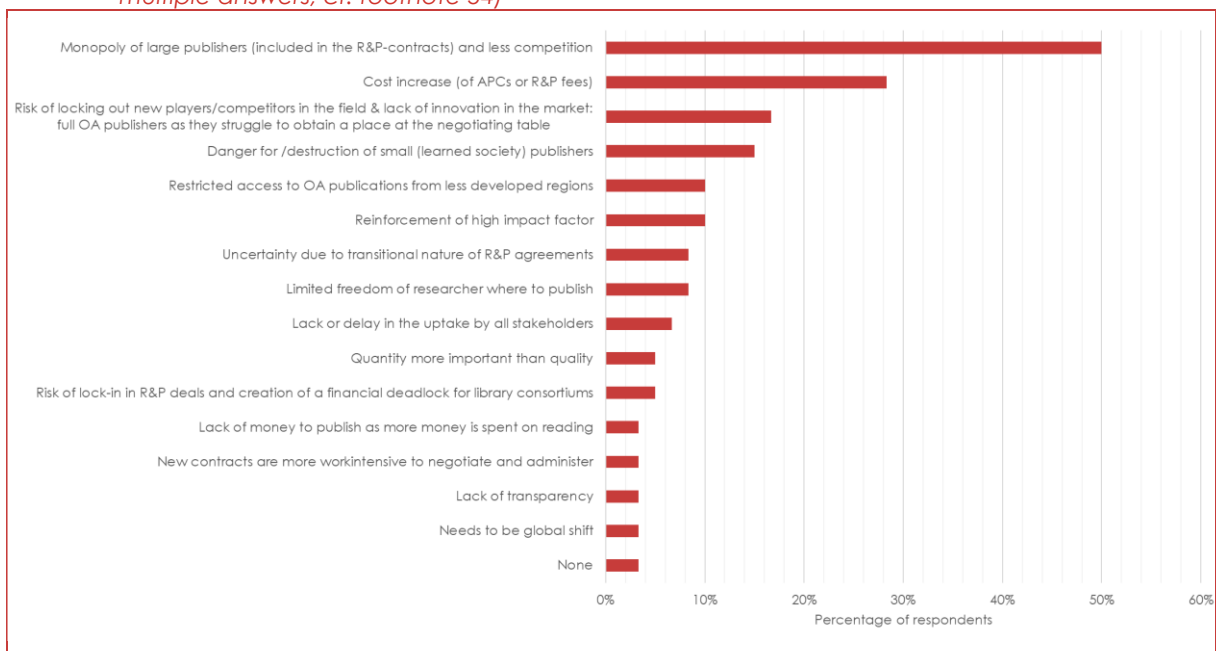
Also, researchers will probably prefer publishing Open Access in journals from the big publishing houses which are covered by a R&P contract, instead of paying for publishing (or publishing

⁵⁴ Please note that in the graphs presented in this chapter the percentages are relative to the number of respondents (N). The number of respondents is different per graph, as in the surveys these questions were not mandatory and therefore not filled out by every survey participant. The percentages add up to more than 100% as respondents could indicate multiple strengths or weaknesses which were clustered in our analysis.

without OA) at smaller publishers. Hence, **smaller publishers might disappear**, some respondents argue.

A large group of respondents indicate that the reinforcement of the current monopoly of large publishers goes hand in hand with **reducing the scope for new publishing initiatives, or the development of alternative financial systems to support OA**. The lack of differentiation in business models is believed to stop innovation in the market. Therefore, respondents indicated that full OA publishers have to think harder about ways to increase their value proposition, and what benefits could be offered to consortia when they enter a publish deal.

Figure 12 Weaknesses of a shift towards a market/system that is dominated by R&P contracts (N=60, multiple answers, cf. footnote 54)



Technopolis Group, 2019

6.2 Scenario 3: Publisher-owned OA platforms or journals

6.2.1 Strengths

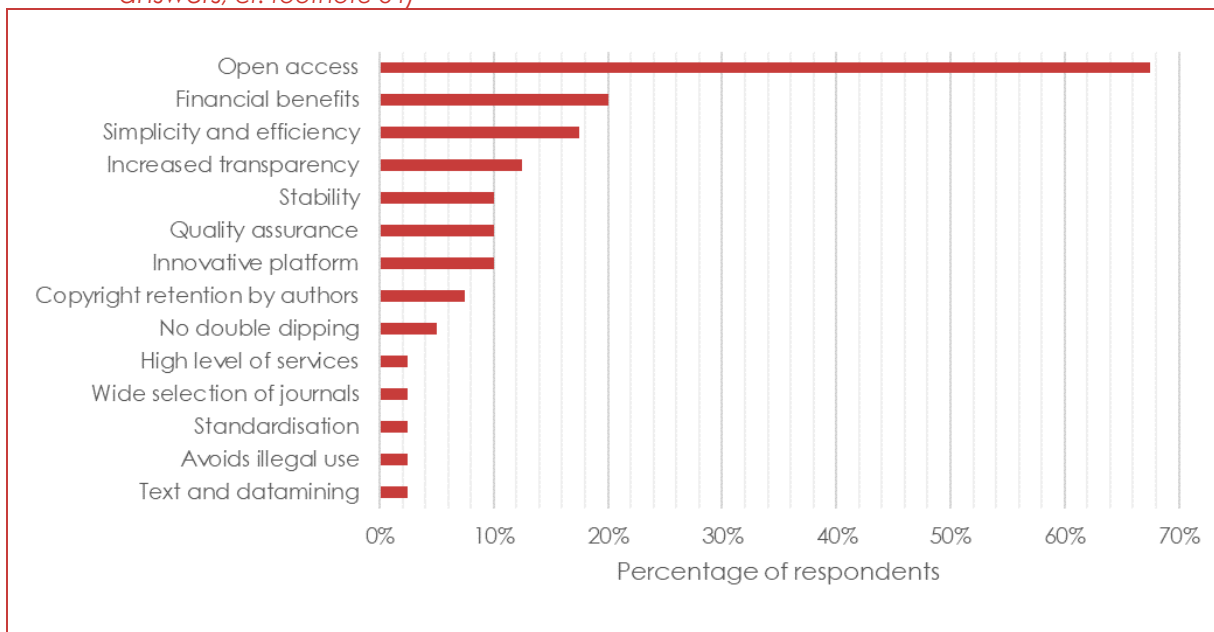
The main strength of this scenario is **open access to research outputs for all stakeholders** including the wider public (as in the other scenarios). This has been pointed out by many comments in the survey and sometimes been listed as the only advantage. In contrast to other scenarios, respondents expect that this scenario could provide a more **immediate and smooth transition to OA** and requires **no additional economic investment** (of institutions) while retaining the support of strong partners in the form of publishers. As the research community is familiar with the system in place, which would persist in this scenario, it provides stability in the current research landscape. This would allow stakeholders, such as authors, to continue publishing in their preferred journals/platforms. As a result, **little adjustment is required**, offering simplicity to readers and authors. Additionally, due to the background of scientific publishers in organising peer reviews, the scenario poses a **lower threat to publication quality** due to similar quality assurance procedures.

Financially, some point out that the scenario provides additional benefits for institutions by making the negotiation process **more efficient and cost effective**. Additionally, some respondents argue that this scenario is increasing **transparency in the market** and allows more

control over costs, possibly by tying the costs to specific articles (output) rather than access to a group of journals. In this scenario, respondents also pointed out that copyright remains with authors, which they saw as highly beneficial. As access costs to journals are removed, publishers would have **no possibility of double dipping** – charging for access to journals and for publication of articles within the same journals.

Lastly, the platform approach is believed to have the potential to increase innovation in the scholarly system. Some more anecdotal comments listed additional strengths such a **wide selection of journals to publish in**.

Figure 13 Strengths of scenario 3 by response count based on free comments (N=40, multiple answers, cf. footnote 54)



Technopolis Group, 2019

6.2.2 Weaknesses

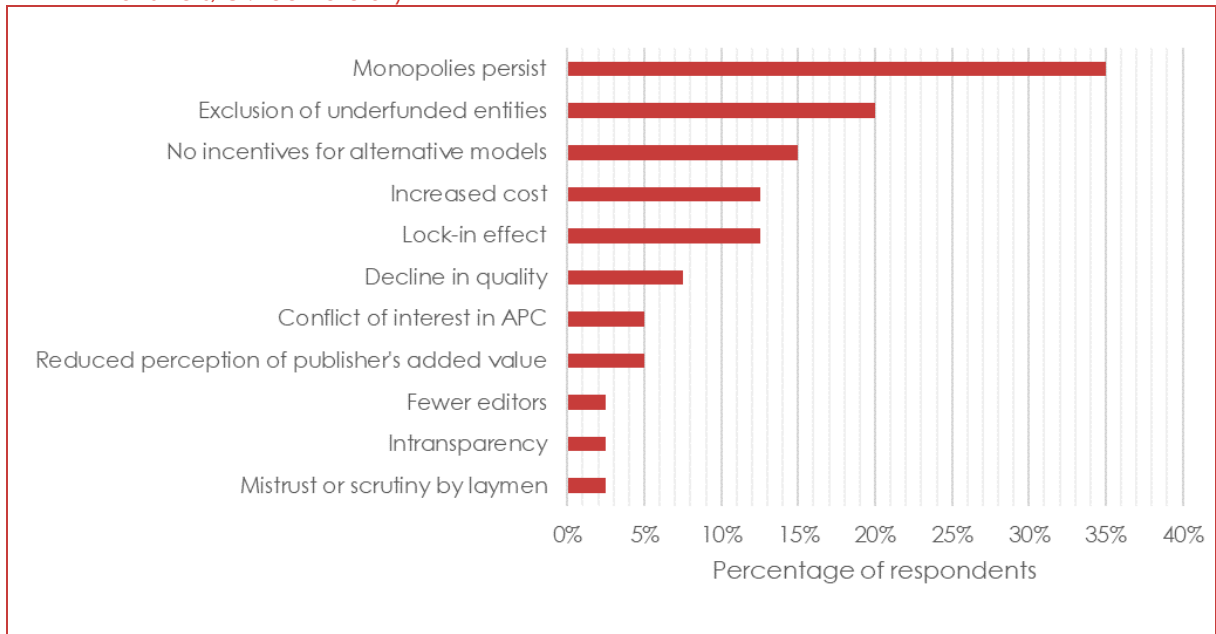
The largest weakness of the scenario is the persistence of the current publishing landscape. Therefore, **the oligopoly of large commercial publishers** will not be resolved by this model. More precisely, some respondents believe that the change could introduce a **lock-in effect** that fixes the market position of big publishers. This could make entry for new contestants more challenging and **smaller publishers might struggle** to be viable with APCs as their only income. Additionally, it might disincentivise the development of alternative, more innovative models.

While financial aspects have been argued as a strength by some, other see the implications as mostly negative. In contrast to an access paywall, comments expressed concern for an **APC paywall** if prices for article publication can be freely raised by profit-seeking publishers. Here, **lack of transparency in APC prices** could lead to deals behind closed doors and rising costs. Additionally, while the system might benefit readers outside academia or affiliated with low-income institutions, authors with these backgrounds are suffering due to the **inability to access funds in order to publish**. This could exclude both populations from authorship and needs to be addressed in this scenario.

Other concerns included the challenge to balance scientific and economic concerns. This has implications both on quality as well as the ethical background of scholarly publishing. More

precisely, it could lead to a decline in quality due to a possible **conflict of interest of publishers** to include more articles in order to make higher profits through APCs.

Figure 14 Weaknesses of scenario 3 by response count based on free comments (N=40, multiple answers, cf. footnote 54)



Technopolis Group, 2019

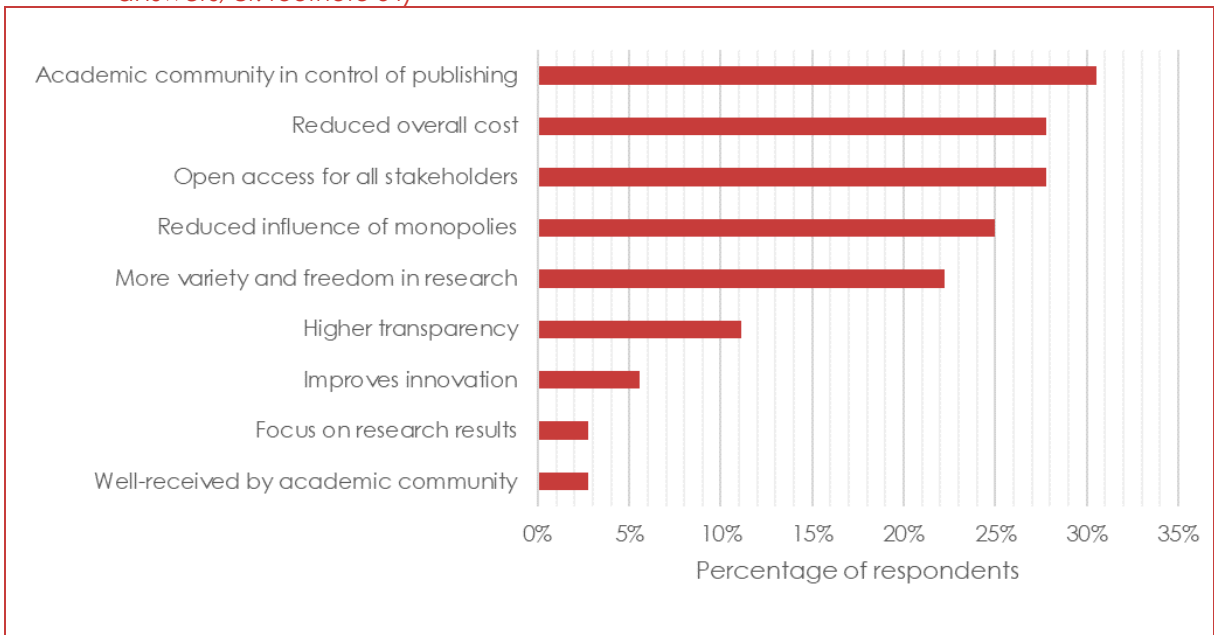
6.3 Scenario 4: Community-owned OA platforms

6.3.1 Strengths

The main strength of this scenario, as expressed by respondents to the survey, is the concept that **academia is in control over scientific output/publishing** in contrast to third parties with a commercial interest. This would **reduce the strength of the publishing oligopoly** currently in place. In turn, the influence of current metrics such as the journal impact factor would also (need to) cease to exist. As a result of this, overall **costs of publishing** are expected to be **more transparent** as they are connected to research institutions, funders or communities. It is expected that prices will be reduced in the long run, as they are not tied to profits but rather to a realistic figure to cover costs.

Similar to the scenario of open access journals or platforms owned by publishers, the scenario at hand provides **immediate open access for all stakeholders** (as in the other scenarios), allowing more stakeholders such as industry or the general public to benefit of scientific publications. Due to the reduced focus of prestigious high-impact journals, some respondents argue that the **variety and freedom in the research community** might increase. On a similar note, the break in the system might induce other **innovations in scholarly publishing** such as new ways of measuring scientific excellence.

Figure 15 Strengths of scenario 4 by response count based on free comments (N=36, multiple answers, cf. footnote 54)



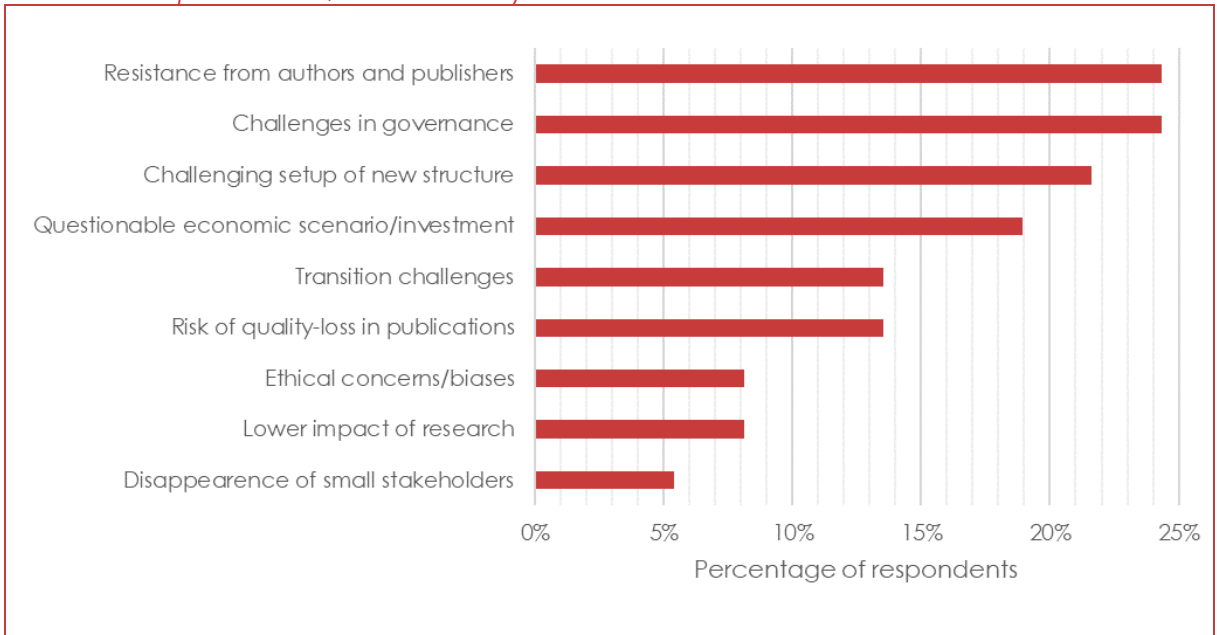
Technopolis Group, 2019

6.3.2 Weaknesses

While this scenario has been regarded as desirable by many respondents, the replies were very often hesitant about the **feasibility** of the idea. Firstly, due to the significant change in the system, implementors have to expect **resistance both from publishers as well as from authors**. Publishers will aim to protect their revenue model and market position while authors might be opposed to abandoning the journal structure as a watermark of the quality of their research output. The disruption of the system is argued by some to potentially lead to a **reduction in quality control** and therefore publication quality. This should thus be well arranged in the scenario. However, the majority of comments was concerned with the **challenges of implementation and governance** of such a system. Financially, due to the initial setup cost of the IT infrastructure, publishing costs could potentially rise while funding for the system remains unclear. Overall, a robust economic scenario and the **financial viability** of the setting are questioned.

As the timescale of the transition as well as the exact outcome is unclear to most study participants, they argue that it might have a significant influence on the scientific community that could result in **reputation and impact concerns**. Ethical dilemmas are also mentioned as it is uncertain how the evaluation of research is carried out in the scenario and who is controlling the reviewers. While large-scale publishers might transition to a service-based function, the scenario could lead to the **disappearance of smaller stakeholders** such as small publishers.

Figure 16 Weaknesses of scenario 4 by response count based on free comments (N=37, multiple answers, cf. footnote 54)



Technopolis Group, 2019

7 Potential effects of the hypothetical scenarios on each stakeholder group

In the surveys we have asked stakeholders questions about their assessment, perceptions and expectations about the potential effects of the scenarios on stakeholder groups in the scholarly publishing system. Questions have been asked to experts in different stakeholder groups that are expected to be sufficiently knowledgeable to answer the question at hand.

For each scenario we have tested the drivers of stakeholders to better understand their position and behaviour in each of the potential future scenarios. Their responses have been given based on the scenario descriptions provided in Chapter 4 and their understanding of the matter.

In this chapter we summarise the potential effects of the scenarios on the various stakeholders based on our analysis of the survey results. The methodology for this analysis is analogous to the methodology described in section 5.1 and is subject to the same limitations expressed there.

7.1 Authors and readers

7.1.1 Readers

For readers it is important to obtain the information they need to do their research, be it in an academic, industrial or other professional setting. To that end it is important to have good access to read and an acceptable price to read. In the Delphi survey we have seen that readers are affected by price: when they need to pay for articles, they find alternative solutions to obtain the article for free – when considered very relevant to read. Quite a number of readers also ignore the article when not freely available. Only a small number of authors buy an article from publishers when relevant and only after having explored alternative routes to obtain the article for free. Access and price are related: when access to the article is provided through the reader's institution or through OA, reading the article is free for the reader.

We see that for readers **the access to read is best in scenarios 3 and 4**. If OA platforms are the dominant mode of publishing, most articles will be freely accessible both for academic as well as non-academic readers. In the R&P scenario access to read should be stable or slightly better compared to the reference scenario, but still considered medium.

Similarly, **the cost to read is also best for individual scholars in scenarios 3 and 4**. In these scenarios open access publishing is fully the norm, eliminating costs to read academic literature. In R&P, prices are considered stable compared to the reference scenario. In practice, however, one would expect that with R&P more articles are published open access so that the overall costs for reading would be lower than the reference scenario.

In general, one could consider that, on an individual level, **non-academic readers benefit most in the OA platform scenarios** (both in terms of access and costs), as their organisations at the moment (scenario 1) often provide less access to academic literature than academic institutions. This increased access can contribute to a better dissemination of knowledge beyond the academic community, with potential to increase innovation and university-business cooperation as well. This is, in the context of valorisation (or utilisation), an important perspective and has always been one of the main arguments for Open Access.

7.1.2 Authors

Regarding costs, authors favour the R&P scenario. Most costs for OA publishing are likely to be covered within institutional contracts with publishers, publishing in subscription journals remains

free. Authors expect costs for OA publishing to be decreased under R&P as compared to the current (reference) scenario. Under R&P these costs are for all contracted publishers to be handled centrally by their libraries/institutions, which is an improvement for them with respect to OA publishing under the current (reference) scenario. In the case of OA platforms, costs are more uncertain. In addition, the funding model for publisher-owned and community-owned platforms are likely to be different given the different role of communities and publishers in these scenarios. We expect that institutions will have contracts that bear most of the costs, but not all platforms may be contracted and some platforms may require some sort of contribution to publish – which could resemble the APC model. As the dominant mode of publishing will be open access, it is likely that in these scenarios the costs for many authors will increase as compared to the reference scenario (and as compared to R&P). **For non-academics, who presumably would not benefit from institutional contracts, costs are likely to increase most (more than for academics) in the OA platform scenarios.**⁵⁵

Quality and reputation of research seem to remain stable across all scenarios. In the survey for this study we have asked respondents to consider the quality of research and how this might be assessed by their peer group and public opinion as well as public opinion on the value of research. Overall, all of these aspects remain rather stable across scenarios with no significant difference between the weighted average response. The response of specific stakeholder groups differs slightly, as authors/readers seem most positive with regard to community-owned OA platforms (scenario 4) – though the difference is not significant.

7.2 Negotiating consortia

7.2.1 Readers' institutions

For readers institutions, the costs associated with subscriptions to journals and how well disciplines within the institution are served with access to relevant journals are important drivers. Both portfolio and price are important parameters in contracts and negotiations and vary clearly across scenarios.

In this study we learned that **the costs of subscriptions for the readers' institutions are expected to strongly decrease in the OA platform scenarios (3 and 4)**. This is, of course, related to the dominant OA nature of publishing. In the R&P scenario the costs for reading (subscriptions) and publishing are hard to disentangle. However, respondents do believe overall that for R&P (scenario 2) the total costs for institutions would increase. In practice, this would depend on the output of institutions – for research-intensive institutions the costs for readers' institutions could increase. Given these institutional differences, we believe that from a cost perspective for readers' institutions scenario 2 is least attractive.

The **coverage of disciplines is expected to increase in the OA platform scenarios**, again due to the dominant OA nature of publishing. On the readers' side of the scholarly publishing system OA platforms seem to be highly preferential. For R&P we see that respondents expect increased coverage with respect to the reference scenario. Therefore, **R&P can also be considered as an improvement, but less so than in the OA platform scenarios**.

7.2.2 Authors' institutions

For the institutions of authors, the costs for publishing matter as well. Often, they also have policies related to researcher's performance assessment that motivate the desire to publish in

⁵⁵ This may be different for community-owned platforms or journals operation under a 'diamond' open access model without author fees, such as OLH.

high-impact journals. We tested both drivers in the study for the three hypothetical future scenarios.

The costs for publishing in scenarios 3 and 4 (OA platform scenarios) correspond to the total costs that academic institutions need to spend on contracts with publishers or equivalent entities. We see that these **total costs for institutions are expected to be reduced for community-owned platforms (scenario 4) with respect to the reference (and other) scenarios. This seems to be the most favourable scenario, significantly more positive than the others.** For publisher-owned platforms (scenario 3) costs are expected to increase. For R&P we cannot disentangle costs for publishing and subscriptions, but we do see a potential increase in total costs compared to the reference scenario. This is indeed possible in the case of research-intensive institutions.

The **impact on the publishing policies of institutions, closely linked to research assessment, is likely to be highest in the community-owned OA platform scenario (scenario 4).** The main reason for this is that current research performance assessment mechanisms, largely based on commercial metrics, are not feasible in this scenario and new platforms must therefore be accompanied by a completely new system of assessment and related publishing policies. This is not expected to be the case in other scenarios where publishers still have a dominant role in providing publishing services, although some impact compared to the reference scenario is likely.

7.3 Publishers

The effects on publishers in the different scenarios seem to vary depending on the type of publisher. **All publishers expect stable or decreased revenues in the R&P scenario.**⁵⁶ In the OA platform scenarios (scenarios 3 and 4) small non-OA publishers seem to be most positive about their turnover and profit, with an expected increase in their income. It seems large publishers are most negatively affected in the community-owned platform scenario which would see them transform to a service provider for the academic community (scenario 4), while maintaining stable turnover and profit in the publisher-owned scenario. **This would suggest that, in terms of turnover and profit, most publishers are best off with this publisher-owned platform scenario (scenario 3).**

In terms of dissemination of research outputs, the platform scenarios seem to be best for all publishers. Due to a low number of responding publishers we could not find significant differences between types of publishers. The community-owned scenario seems slightly better in terms of dissemination. The dissemination of OA articles increases, while the dissemination of non-OA articles seems to remain stable or decrease.

The favourable reputation of publishers is deemed to be most likely in the publisher-owned scenario. An increase in the favourable reputation of publishers is expected here, while for R&P this is expected to be stable. The improvement in reputation is mainly linked to open access publishing. This is considered less so when communities own the platforms, probably due to less visibility (and less control) of publishers and loss of vested journal brands, or transfers from journals away from commercial to community publishers, in this scenario.

In terms of competition the picture is not clear cut, especially in the R&P scenario where different publishers have different assessments of the competition they might face. Here large publishers are more positive about their ability to address competition (especially those who

⁵⁶ Compared to the perspective of readers' institutions, who overall expect a potential increase in total cost compared to the reference scenario, publishers are clearly less positive about their revenues (stable/decreased).



already have R&P contracts) than small OA publishers. **One thing is however clear, all publishers expect to face more competition in the OA platform scenarios (scenario 3 and 4).** This makes sense as this would entail new market products (and business models) to be developed.

The picture of responses regarding market share is even more scattered, with differences across specific types of publishers. Thus, in the survey we asked several stakeholders to assess the extent to which a shift towards each of the scenarios will impact the market share of different types of publishers.

The results show that respondents expect the **market share of large publishing houses to be significantly decreased in the community-owned platform scenario (scenario 4).** In all other scenarios the market share for this type of publisher is expected to persist or increase. In tandem, **for small non-OA publishers we see a significant difference in scenario 4 with respect to the other scenarios, with an expected decrease in market share at its lowest in the fourth scenario.** In all other scenarios small non-OA publishers experience stronger decreases in market share – they are expected to fare worst as the scholarly publishing market evolves from the current status quo.

For the other types of publishers, we see no significant differences among scenarios. However, for learned societies, publishers significantly assess a greater potential decrease of the market share in the R&P scenario than in the other scenarios. **Most publishers are expected to experience some decrease of market share in all scenarios – large publishing houses with R&P seem to be the only exception according to the respondents of the survey.** Unless new types of publishers will enter the market, or existing ones change their business models, in practice a reduction in market share for one player will result in an increased market share for another player. This suggests that respondents find it hard to assess the future market share of publishers, or that they are overly pessimistic in their assessment.

Figure 17 Comparison of impact of scenarios on the market share of different types of publishers

Aspect	Scenario	Overall	Authors/Readers	Funders	Negotiation consortia	Publishers	University libraries
Impact large publishing houses with R&P	1						
	2						
	3						
	4						
Impact large publishing houses without R&P	1						
	2						
	3						
	4						
Impact learned society publ. (no R&P)	1						
	2						
	3						
	4						
Impact on small OA publishers (no R&P)	1						
	2						
	3						
	4						
Impact on small non-OA publishers (no R&P)	1						
	2						
	3						
	4						

Technopolis Group, 2020



7.4 Funders

In the case of funders, we consider drivers to be their willingness to proportionally reimburse OA publishing costs and their political will/pressure to move towards OA.

The various scenarios manifest the political pressure of funders to move towards open access with significant differences. The **greatest reduction in pressure is attained in the OA platforms scenarios (scenarios 3 and 4)**, as in these scenarios open access is achieved. Both scenarios can be considered as end-states for open access publishing, while in R&P (scenario 2) open access is only partly achieved, making it more of an intermediary state. In all three hypothetical future scenarios the political pressure is reduced compared to the reference scenario, but only resolved in scenarios 3 and 4.

The **willingness to proportionally reimburse OA costs seems to be highest in the community-owned platform scenario (scenario 4)**. Here costs are born by the community in which funders could presumably be a partner, especially when initially investing in setting-up these platforms. In the other scenarios costs for OA are largely considered to be included in contracts with publishers, replacing previous costs for subscriptions.

8 Desirability and feasibility of the hypothetical scenarios

In the surveys we have asked stakeholders to assess the desirability and feasibility of hypothetical scenarios. We have analysed these assessments and expectations for all stakeholders and provide some results per stakeholder group in this chapter. The responses of stakeholders are based on the scenario descriptions in Chapter 4 and their understanding of the matter.

8.1 Scenario 2: Predominantly Publish & Read contracts ('P&R/R&P')

In the survey, 68% of respondents find a future in which R&P contracts are predominant not desirable or only desirable to a small extent. Only 12% of respondents find such a future desirable to a large extent. **Responses indicate that R&P contracts are an intermediate stage towards other types of contracts.**

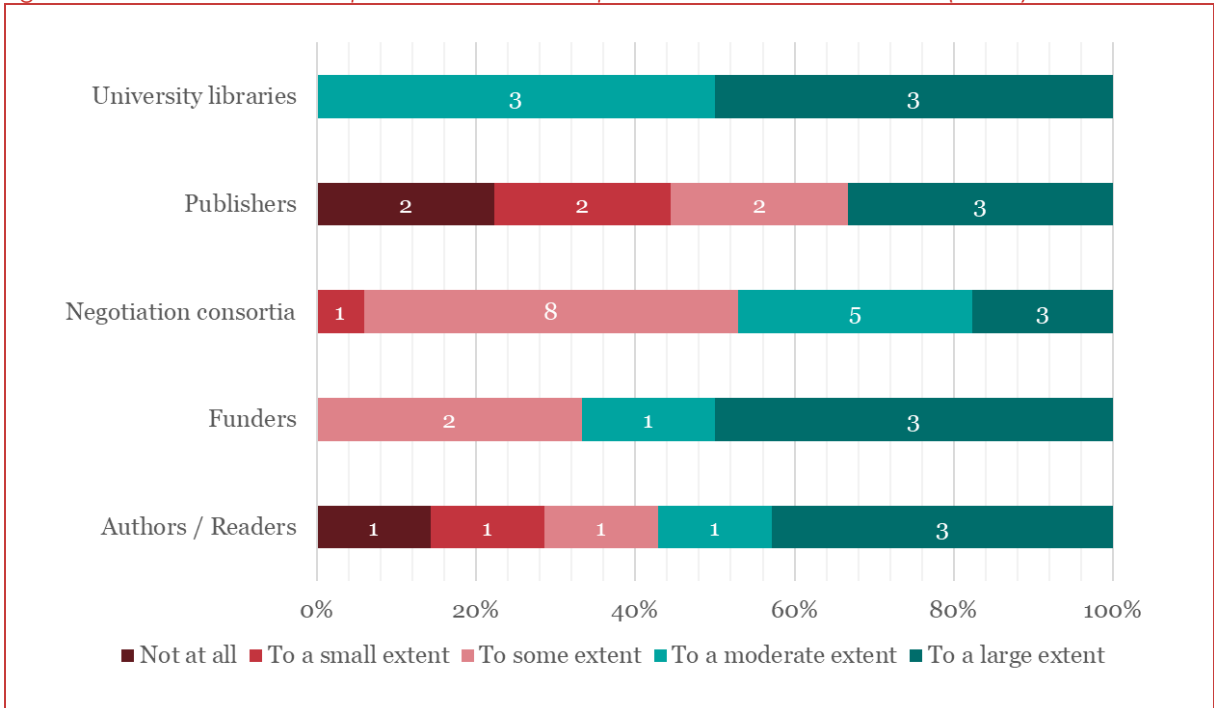
However, most of the survey respondents indicated that, realistically, R&P contracts will be the dominant scenario in the coming years. Common arguments for this are **political drivers** and **mandates** as well as R&P being regarded as a **convenient** and **immediate** pathway to satisfy open access concerns of most parties. **Rather than marking a new model itself, R&P is seen as a transition or intermediary phase towards full OA to be succeeded by a different scenario (e.g. the scenarios 3 or 4).** The vast majority of respondents believes R&P makes some level contribution toward the realisation of OA – so one does expect a **positive effect**. Even a vast majority of publishers believes R&P contributes to some or a moderate extent to OA publishing. The largest group to expect a large contribution toward OA through R&P are negotiation consortia.

8.2 Scenario 3: Predominantly contracts for publishing open access through publisher-owned journals or platforms ('Publisher-owned OA platforms')

The stakeholder perspective on scenario 3 is not unified, but **overall, the majority of respondents sees this scenario more as a desired future**, as illustrated in Figure 18. All university libraries assess the desirability of this scenario to a moderate or to a large extent. However, other respondents consider the scenario to be a desired future to a lesser extent; in particular, publishers and authors/readers seem especially to be least fond of this scenario. For publishers, while a majority (2/3) sees the scenario as less desirable, the remainder (1/3) consider the scenario to be largely desirable. Both groups contain a variety of types of publishers and thus do not show a clear different perspective between OA and subscription publishers. This split is interesting, as publishers have a leading role in this scenario.

Those seeing this possibility as a desirable future base their arguments mostly on feasibility and likelihood of occurrence. Additionally, the APC-based model is acknowledged as a functional scenario by all parties with a caveat on reasonable pricing. Emphasis here is placed on the challenge to find a mechanism in order to keep APC prices of large publishers from rising steadily and resulting in an APC-wall. Additionally, there are some concerns for certain cases in which either APCs would not be enough to generate sufficient revenue for journals to survive, for example in the case of disciplines with lower research output, or institutions would not be in a position to cover the actual publication costs.

Figure 18 The extent to which publisher-owned OA platforms are a desired future (N= 45)



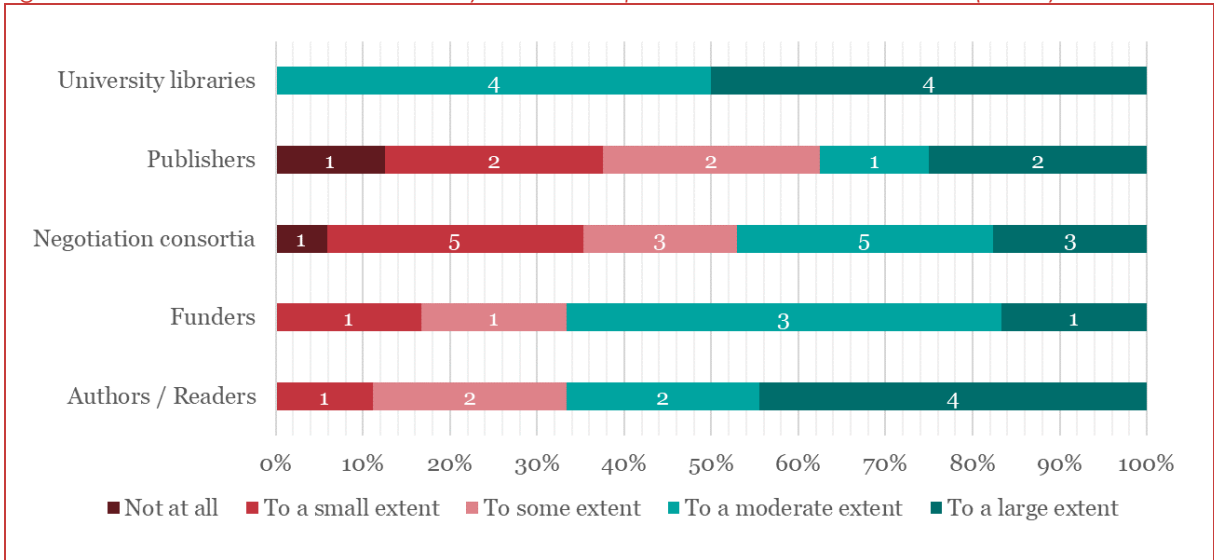
Technopolis Group, 2020

8.3 Scenario 4: Predominantly contracts for publishing open access through community-owned platforms ('Community-owned OA platforms')

Overall, most respondents also consider scenario 4 as a desired future, although like in scenario 3, views among stakeholders differ. University libraries are most positive, while the view of others is more dispersed. Publishers and negotiation consortia are most sceptical: more than 30% of the respondents did not find the scenario to be a desirable future. For all other stakeholders more than 50% of the respondents think the scenario is desired to a moderate or large extent. In general, the main anecdotes advocating for such platforms are based on desires of academia. They argue that this scenario would allow the academic sector to take back control over publishing, resulting in potential cost savings as well as an increased bibliodiversity.

However, similar to the overall positive response, most respondents caveat their comments by questioning the feasibility of such a scenario. While the perception of the desirability of the scenario is different between stakeholders, most of them agree that it is **not very likely to come into being**. Less than 50% of the respondents believe community-owned platforms to be even moderately realistic as a potential future scenario. They argue that too many open questions remain to give a valid assessment at this point. One argument brought up is the challenge for the peer review process to remain on par with the current state. Concerns are also placed on the ability of higher education institutions to support the platforms via administrative personnel which is already under decline. Lastly, respondents could see researchers opposing this change as they would not be able to publish in desirable journals and get their 'quality stamp' which is currently one of the fundamentals of progress in the academic career system.

Figure 19 The extent to which community-owned OA platforms are a desired future (N= 48)



Technopolis Group, 2020

9 Overview and main conclusions

9.1 Open access drivers

Open access is a publishing model for scholarly communication that makes research information freely available to readers, as opposed to the traditional closed access model in which readers have access to scholarly information via subscriptions paid for through their institutions.⁵⁷ As the pursuit of research is to increase global knowledge, disseminating work through open access channels means that scholars and scientists can make their research findings more easily available to their peers, including those in less resourced institutions, as well as with practitioners in the field and the general public.

Open Access accelerates the pace of discovery and the translation of research into benefits for the public by sharing results with other researchers in a timely manner who can build on it and practitioners who can apply the new knowledge. There is also considerable evidence that reaching more readers by making work open access results in citable articles being cited more. Open Access also allows institutions a wider audience for their outputs.⁵⁸ Thus, higher education and research organisations are driven to pursue open access dissemination of research outputs as this aligns with their fundamental mission as institutes of science and learning.

In parallel, there are economic factors driving the pursuit of open access. The predominant business model in scholarly publishing today is still the subscription business model, and the market is characterised by many as unsustainable due to a number of key factors:

- Subscription pricing is opaque, which shelters publishers from the pressure of market forces such as cost comparison, leaving publishers free to charge “what the market can bear” and limits competition between different publishers
- Consequently, increases in subscription pricing have far out-paced standard consumer price index rates over the last decade. Price increases of journal subscriptions in the STM fields, especially, (considered to be essential) have encroached on library budgets leaving ever smaller proportions of money to dedicate to other disciplines and/or open access publishing initiatives
- The introduction of the ‘hybrid’ option to publish individual articles open access within closed, or subscription, journals for an added fee, often called an Article Processing Charge, or APC, has generated a duplicate revenue stream flowing from institutions to publishers: institutional subscriptions and APCs paid by institutions or authors. This is often described with the term “double-dipping”
- The scholarly journal publishing landscape is dominated by a relatively small group of large publishers that, through the conditions described above, have been able to extract profit margins up to 45%.

In this context, two stakeholder groups have, in recent years, taken steps to bring together the mission-based and economic drivers to accelerate the transition of scholarly journal publishing to open access. Universities, research performing organisations and library consortia initiated publisher negotiation strategies aimed at reining in ‘hybrid’ spending and shifting investments to support open access publishing in addition to or, more recently, instead of subscription paywalls (OA2020). Research funding organisation have, similarly, adopted strategies aimed at accelerating the transition to open access by implementing more ambitious policies around

⁵⁷ See: <https://www.openaccess.nl/en/what-is-open-access>

⁵⁸ See: <https://aoasq.org.au/why-open-access/>



open dissemination of the results of their grantees research, including open access policies of many national research councils, EU policy and, most recently, the Plan S principles promoted by cOAlition S.

The discussions around implementing open access are, however, extremely complex. Perhaps one of the most challenging characteristics of the scholarly publishing market today is to be found in the role of researchers who are both producers and consumers of scholarly articles and whose publishing choices may be driven by the desire to publish in reputable journals with the highest standard of peer review (open or closed as they may be), the ability to adhere to the publishing policies of their grant funders (increasingly open access), and the need to publish in high-impact journals which help them satisfy the criteria for promotion and tenure within their institutions (more often than not, subscription journals).

Scholarly publishing is not merely a lucrative economic sector with considerable vested interests and financial investments of both private and public parties. It is also one of the most central elements of the very system of research and the scientific endeavour. Approaches to address the current tensions in the transition to open access must therefore consider its complexities, its many players with different positions, motivations, stakes and leverage, varying discipline, political and geographic perspectives, and quite often, the uneven balances of market power.

9.2 Implications of R&P contracts

In this study we have sketched the features of a scholarly publishing system that is dominated by R&P contracts. We have considered this as a scenario to which we applied our behavioural model and framework for the scholarly publishing system. Publishers still have a strong negotiation position in such a system. However, several aspects will experience changes when R&P becomes the predominant type of contract.

These aspects have been tested in this study through surveys among stakeholders in the scholarly publishing system. Based on their assessments, perceptions and expectations on scenarios, insights are obtained on these aspects per scenario. Given the number of respondents, the responses to the survey are useful for a predominantly qualitative analysis. In some cases, results can only be considered illustrative, in other cases comparisons can be statistically significant (between groups). In particular, the Authors/Readers and Funders groups are insufficiently represented. We therefore have presented our results with care. With the same care we present here the results on each of the aspects that were studied for R&P contracts.

Overall, most respondents expect that with R&P the **total costs** that academic institutions need to pay for reading and publishing will increase as compared to the reference scenario. The total costs may be affected by the publication output of the institution, i.e. research-intensive institutions may see rising costs depending on the model for cost distribution within a consortium. The **publication costs for researchers** (authors) is expected to decrease as compared to current OA publishing, as these costs are largely covered in R&P contracts and funded through institutional budgets or research grants. Individual publishing costs (APCs) are thus expected to decrease under R&P, at least for authors whose institutions have concluded such a transformative agreement.

Most respondents expect to see **transparency in the market** increase, overall, with respect to the reference scenario. Only publishers expect a decrease of transparency with R&P. The **service levels of publishers** are, overall, expected to increase with R&P. Negotiation consortia and university libraries are most positive in this belief. **Different types of publishers** are affected in various ways when moving towards R&P as the predominant contract mode. Large publishers seem to be best positioned in such a system, although their profit and income is

expected to decrease – an expectation expressed by all publishers. In terms of competition and market share, small OA publishers are expected to see these decreases, whereas possible effects on learned societies and small non-OA publishers were unclear based on the data available.

The **freedom to publish in preferred journals** is expected to remain the same under R&P. Authors and publishers are more negative in their assessment (they anticipate on average a slight decrease in freedom to publish), while negotiation consortia and university libraries are more positive in their assessment (they predict on average a slight increase in freedom to publish).

With R&P **the innovation (for academic publishing) in research communities** is generally expected to increase. Publishers, however, believe this innovation will significantly decrease. With R&P change is likely to occur, as one moves more towards open access.

The **arts, humanities and social sciences (AHSS)** are expected to experience different effects than Science, Technology, Engineering and Mathematics (STEM). This is expected to be more with R&P than in the reference scenario. The concerns are that, within AHSS, books and monographs remain very important, which are likely to fall outside R&P contracts, as opposed to journal papers in STEM.

9.3 Implications of future scenarios for the scholarly publishing system

Set against the scenarios of predominantly contracts for publishing open access through publisher-owned journals or platforms (scenario 3) and predominantly contracts for publishing open access through community-owned platforms (scenario 4), **academic freedom**, at large, is not expected to be much affected. In our observation the effects on the **freedom to publish in preferred journals** is expected to be highest for the community-owned platform scenario (scenario 4), while for the R&P scenario this is assessed even negatively. In particular authors and readers voiced the concern they will experience barriers in choosing where they may publish. It seems that the different scenarios do not vary in their **impact on the arts, humanities and social science**, as their publishing culture is less focused on articles.

There are also some concerns about the **service levels** that publishers provide in the different scenarios. Negotiation consortia and university libraries seem to expect service levels of publishers to decrease in scenarios that fully embrace open access (scenario 3 and 4). However, in the overall response and in the response of publishers, specifically, there seems to be no (significant) evidence for such concerns. **Transparency in the publishing market** is also not distinctively affected, although publishers and funders seem to be more positive about transparency in the publishing platform scenarios (scenario 3 and 4).

We do see clear differences across scenarios in the **innovation in research communities**. Working towards community-owned OA platforms is likely to sprout innovations in different research communities. However, these may require significant initial investment and organisation from research communities.

9.4 Implications of future scenarios for various stakeholders

The perceived benefits of stakeholders differ across the scenarios. When applying the behavioural model and framework to the survey results, we observe that most stakeholders seem to expect to benefit more in the OA platform scenarios than they do in the R&P scenario:

- **Readers** seem best off in the OA platform scenarios, with little distinction between the two. Both allow them the best access and price to read articles they need. This holds especially true for non-academic readers, who benefit most from open access.

- **Readers' institutions** seem best off with the OA platform scenarios as well. Costs of subscriptions are expected to strongly decrease while the coverage of disciplines is expected to increase. R&P is an improvement for them, but less so than OA platforms.
- **Publishers** seem best off with the publisher-owned OA platforms scenario in terms of their turnover, profit and reputation. The downside is more competition among publishers in the OA platform scenarios, while dissemination is improved. In any of the scenarios most publishers seem to expect a decrease of their market share.
- **Authors** seem to believe that they are best off with the R&P scenario in terms of costs, probably due to the fact that individual costs for authors are more uncertain in the OA platform scenarios. For non-academic authors (e.g. from industry), OA platforms are more expensive. Quality and reputation of research seem to be stable across scenarios.
- **Author's institutions** seem to be best off with community-owned platforms. Costs are expected to be reduced, although they might entail higher upfront investments and require sustainable funding strategies. Current promotion and tenure and publishing policies may need to be adapted significantly.
- **Funders** seem to be best off with the community-owned platform scenario. In this scenario political pressure is reduced, while there is still a contribution for OA publishing from funders – they can still support open science from their role in a meaningful way.

Of course, nuances exist for individual stakeholders.

9.5 Desired future, realistic future and likelihood of implementation

The publishing platform scenarios, both publisher-owned and community-owned, are most desired as a future. Overall, the R&P scenario is considered least desired, which is in line with the view shared across all market players that this scenario is not, in fact, an endpoint at all but a transitional pathway leading to open access. The difference between the publisher-owned platforms and community-owned platforms is too small to be considered different. However, it seems that authors/readers are more in favour of community-owned platforms compared to other stakeholders.

Nevertheless, desires are not always realistic. R&P and publisher-owned platforms are considered by all as the most realistic as a future scenario. The reference scenario (subscriptions with delayed repository publishing) is considered to be the least realistic as a future scenario, while the community-owned platforms are seen as less realistic than R&P and publisher-owned platforms. In general, this picture holds true for all market players, although funders seem to find R&P most realistic, while authors/readers and publishers seem to find publisher-owned platforms most realistic. The differences in their responses are, however, not significant.

Indeed, all market players believe that publisher-owned platforms are more likely to be implemented within 10 years' time. All market players have negatively assessed the likelihood that community-owned platforms will be dominant over 10 years. This difference is significant.

This analysis suggests that open access realised through publisher-owned platforms (scenario 3) may be desirable and most realistic – even on a time scale of 10 years.

Figure 20 Comparison of desired future, realistic future and likelihood of implementation

Aspect	Scenario	Overall	Authors/ Readers	Funders	Negotiation consortia	Publishers	University libraries
Desired future	1						
	2						
	3						
	4						
Realistic as a potential future	1						
	2						
	3						
	4						
Likelihood of implemen- tation in 10 years' time	1						
	2						
	3						
	4						

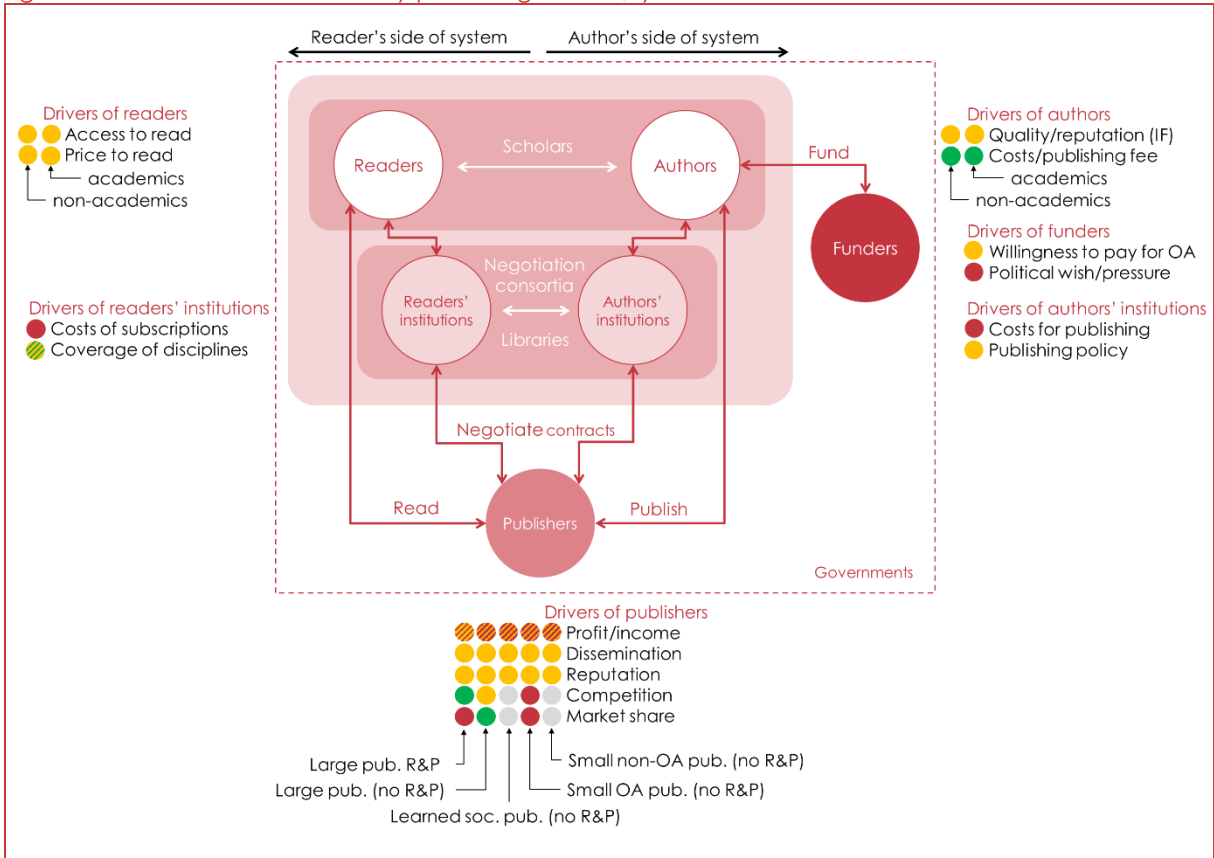
Technopolis Group, 2020 (shared cells are significantly different at 95% confidence level)

9.6 Schematic overview of scenarios

To visually compare the different scenarios, we have provided a graphical display of the behavioural model that we used as the analytical framework in this study (see Figure 21 to Figure 23 on the next pages). For each of the decision rules of the stakeholder we have indicated the status of the decision rules for each scenario by using traffic light colouring. These colours are based on the analysis in this and previous chapters.

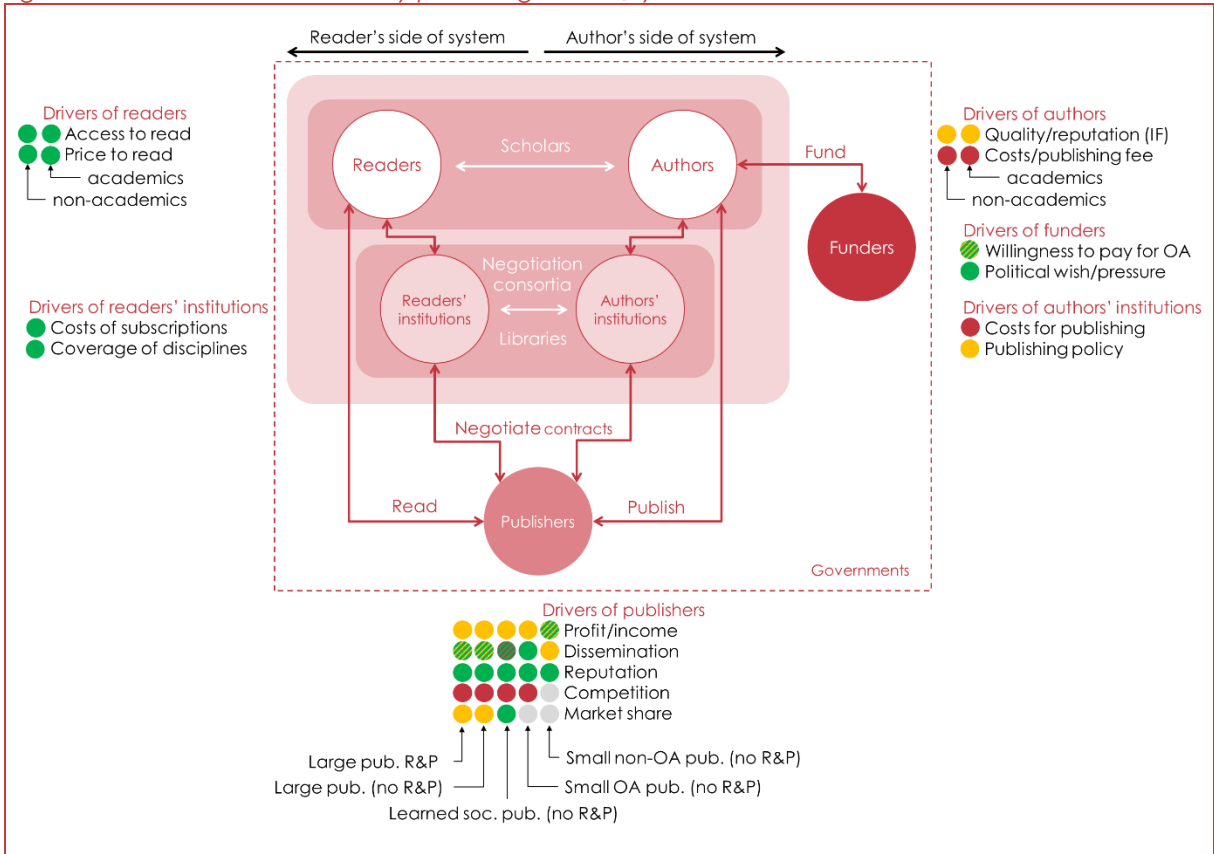
Orange/yellow indicates stability, green indicates an increase/improvement and red indicates decrease/regression, grey indicates that no or insufficient data was available for an analysis. A striped pattern with multiple colours indicates that the aspects for this decision rule were answered differently – indicated by the two different colours – or that the answer was inconclusive (e.g. stable/increase would give green stripes on a yellow background). For more detail, we refer to the summary tables in Appendix E.

Figure 21 Overview of the scholarly publishing market/system model for scenario 2



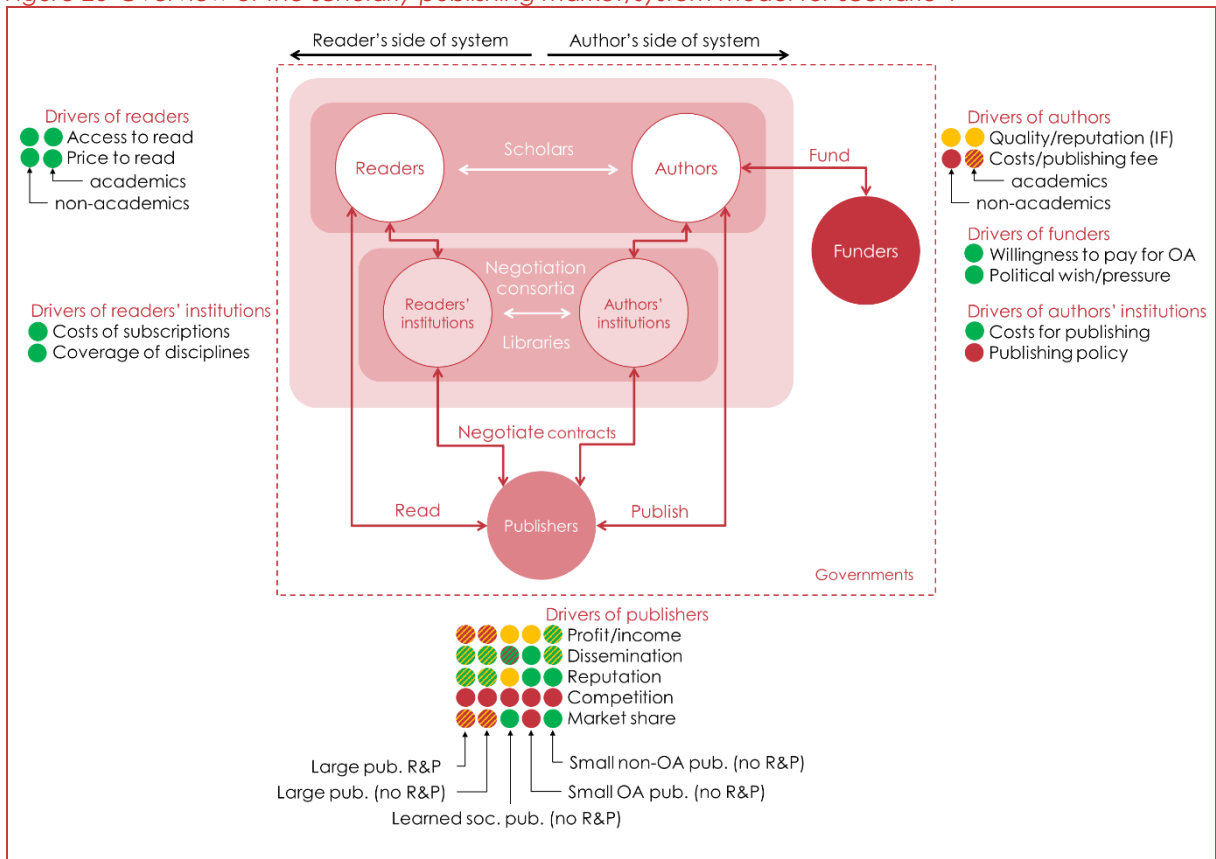
Technopolis Group, 2020

Figure 22 Overview of the scholarly publishing market/system model for scenario 3



Technopolis Group, 2020

Figure 23 Overview of the scholarly publishing market/system model for scenario 4



Technopolis Group, 2020

9.7 Discussion and reflection

In this study we have essentially explored two future open access scenarios and one transitional pathway to open access in which the role of publishers, primarily, and the academic community varies. The vast majority of respondents have characterised **both publisher-owned platforms (scenario 3) and community-owned platforms (scenario 4) as desirable** future scenarios, yet most found dominance of the former to be the most realistic expectation.

Indeed, commercial publishers already inhabit their own established and globally recognised infrastructure and are therefore well positioned to nimbly repurpose existing processes and services in order to adapt to the evolving needs of researchers. Creating or amassing community-owned platforms, on the other hand, will require significant new investment, development and coordination. At the same time, while the study presented the two future scenarios as alternatives, the established presence of publishing platforms such as Wellcome Open Research or the pre-print server arXiv, thriving in the current landscape, give a strong indication that community-owned platforms are feasible and, if further pursued, the scenarios might well coexist.

Similarly, while scenario 4 was characterised by the release of scholarly articles from the confines of the journal format, strong support for the journal, as such, in some research domains may lead to its persistence regardless of whether it is hosted in a publisher or community-owned platform. Perhaps more significantly, moving beyond the journal format will require a departure from the current **researcher performance assessment mechanisms of institutions**; while there is a strong movement to reduce reliance on bibliometric indicators associated with journals, practical implementation of new, alternative policies is a slow process.

Respondents clearly see R&P as an intermediary phase on the way to a different scholarly publishing market, and not an endpoint. **Now is the time, therefore, for academic stakeholders to reflect further on the desired end points even as they progress through the transitional R&P phase**, as publishers are likely already looking ahead. Being prepared and taking initiative in a certain direction is strategic and can be useful in negotiations. These end points may vary per region, but some convergence is likely to appear as the scholarly publishing system is international and thus cannot be bound to regions. **When more radical changes are aimed for, such as community-owned platforms, convergence of stakeholders around a shared desire for that endpoint is essential.**

The Plan S Principles, embraced by the research funding organisations that form cOAlition S, constitute a challenge but also an opportunity for alignment and convergence of stakeholders. When considering the four scenarios presented in the study, **all hold the potential for compliance with the Plan S principles** via one of the three routes specified by cOAlition S:

1. authors publish in an open access journal or platform (present in scenarios 1, 2, 3, 4);
2. authors publish in a subscription journal and make either the final published version or the author's accepted manuscript openly available in a repository (present in scenario 1 and 2);
3. authors publish open access in a 'hybrid' subscription journal under a transformative arrangement (R&P) (scenario 2).

With specific regard to the second route of compliance, publishing in the context of scenario 1 (subscriptions) comes with **the condition of immediate deposit** of some version of the author's work in an open repository. This represents a challenge as publishers generally impose embargo periods for deposit of up to 24 months and, in many countries, copyright legislation does not yet override the copyright transfer agreements authors are generally required to sign when publishing in subscription journals.

As for the third route of compliance (scenario 2), cOAlition S funders strongly encourage institutions and consortia to develop new transformative (R&P) agreements but will only support agreements after 1 January 2021 where they **adhere to the ESAC Guidelines**⁵⁹.

cOAlition S has also produced guidance and requirements with regard to price and service transparency⁶⁰ that aim to guide stakeholders in assessing and comparing costs and service levels; these may be useful to EUA members as they take steps toward scenarios 3 and 4.

Based on the set of scenarios defined in this study, **it seems that the scholarly publishing market is most likely to move toward OA platforms over the long-term**. Whether these are publisher-owned or community-owned may largely depend on the actions of stakeholders in the market (ambition and organising power of the scientific community, for instance). For now, the publisher-owned platform scenario is perceived to be most realistic. In this scenario, current journals and their distinguished brands could be maintained. Both publishers and scholarly stakeholders seem to benefit from this scenario.

9.8 Recommendations

Due to the diverse membership of EUA across different academic and political systems, it is difficult to address recommendations to individual members. Nevertheless, this report seeks to inform decision-makers about relevant factors and the dynamics within the system and

⁵⁹ See: <https://esac-initiative.org/about/transformative-agreements/guidelines-for-transformative-agreements/>

⁶⁰ See: <https://www.coalition-s.org/price-and-service-transparency-frameworks/>



provides universities, national rectors' conference and other actors a helpful and deeper understanding of stakeholders' behaviours within scholarly communications that will help them to consider negotiation strategies and tactics.

On an overarching level we suggest five recommendations.

First, we recommend **further exploration of the two platform scenarios**, which were deemed most desirable by respondents. **Further study of the desired characteristics of publisher-owned platforms is recommended, since they are** – according to the survey results – **most realistic** amongst the explored potential future scenarios. This exploration should also address the perceived shortcomings of the scenario.

While perceived as a less realistic yet nonetheless desirable future scenario, EUA members might **undertake further study of the conditions that are necessary in order to arrive at a scholarly publishing landscape dominated by community-owned platforms**. Given the interdependence of players in scholarly publishing and level of coordination required, such analysis should involve representatives from the various stakeholder groups (funders, administrators, librarians, researchers). Initial steps could be taken to describe and achieve consensus around the characteristics of the desired scenario and map out the financial, technical, political and cultural prerequisites in order to draw a realistic roadmap and relative milestones, building on the experiences of similar initiatives already present in the landscape.

Second, if such a scenario for the scholarly publishing system would then be the ambition of EUA members, it would be wise to **develop a plan or strategy to arrive at the ambition in the medium to long term**. Naturally, adapting their business models and service offerings would be a responsibility of publishers, but given the insight into publisher behaviour as described in Chapter 2 we would **urge academic stakeholders to take the lead in guiding the future shape of scholarly publishing**.

Third, in recent years the community has noted that the publishing landscape is changing rapidly. **To understand and keep track of this rapid development, periodic research into the drivers and positions of stakeholders in the publishing landscape is required**. Individual EUA members will likely have to make strategic decisions in the next few years in the context of publisher negotiations. They will certainly benefit from periodic monitoring and it would complement the portfolio of EUA monitoring.

Fourth, as the majority of respondents view R&P type agreements as a transitional mechanism towards open access, EUA members could improve and strengthen their position through **systematic information sharing and collaboration on strategies, negotiation expertise, and capacity building**. EUA members should additionally seek opportunities to share and gain insight from and align with organisations outside of the EUA that are negotiating different types of agreements.

Finally, it is relevant to note that despite differences between EUA members they share common goals and urgency for open access. Negotiations are just one aspect of open access, but it requires substantial resources from all stakeholders. A transition from national negotiation consortia to a (more) European negotiation consortium could increase the negotiation position towards publishers. At the same time, open access serves a far more important role for the positions of universities and society at large. **A European policy that provides all EUA members with the necessary negotiations safeguards to sustain new open access strategies would be supportive to promote Europe's aim for a Digital Single Market**.



Appendix A List of abbreviations used

AHSS	Arts, Humanities and Social Sciences
APC	Article Processing Charges
BY	Attribution required
CC	Creative Commons
DG	Directorate General
EC	European Commission
ESAC	Efficiency and Standards for Article Charges
EU	European Union
EUA	European University Association
IF	Impact Factor
LingOA	Linguistics in Open Access
NC	Non-Commercial use
ND	No Derivative works allowed
NWO	Netherlands Organisation for Scientific Research
OA	Open Access
OLH	Open Library of the Humanities
P&R	Publish and Read, cf. PAR
PAR	Publish And Read, cf. P&R
PESTLE	Political, Economic, Social, Technological, Legal and Environmental
R&P	Read and Publish
STEM	Science, Technology, Engineering and Mathematics
SWOT	Strengths Weaknesses Opportunities and Threats
TDM	Text and Data Mining
UK	United Kingdom
VSNU	Association of Universities in the Netherlands

Appendix B Consulted stakeholders

B.1 Stakeholders interviewed

Table 1 Stakeholders interviewed

Name	Organisation	Country
Brigitte Kromp	University of Vienna	Austria
Hilde Van Kiel	KU Leuven	Belgium
Jadranka Stojanovski	University of Zadar	Croatia
Martin Svoboda	CzechELib	Czech Republic
Niels Stern	Royal Danish Library	Denmark
Arja Tuuliniemi	University of Helsinki	Finland
Lise Dumasy	Université Grenoble Alpes	France
Ralf Schimmer	Max Planck Digital Library	Germany
Lia Ollandezou	Hellenic Academic Libraries Link	Greece
Ádám Dér	Electronic Service National Programme (EISZ)	Hungary
Halldór Jónsson	University of Iceland	Iceland
Cathal McCauley	Irish Research eLibrary (IREL)	Ireland
Mirko Degli Esposti	University of Bologna	Italy
Rimantas Jankauskas	Vilnius University	Lithuania
Juliane Schulze	National Library of Luxembourg	Luxembourg
Wilma van Wezenbeek	Association of Universities in the Netherlands (VSNU)	Netherlands
Nils Andenæs	Unit – Directorate for ICT and Joint Services in Higher Education & Research	Norway
Marek Michalewicz	University of Warsaw	Poland
Joao Moreira	FTC	Portugal
Cristina Albu	Universitatea „Politehnica” din București, Biblioteca Centrală	Romania
Tatjana Timotijevic	KoBSON	Serbia
Maria Čikešová	Slovak Rectors' Conference	Slovakia
Mojca Kotar	University of Ljubljana	Slovenia
Ignasi Labastida i Juan	University of Barcelona	Spain
Anna Lunden	National Library of Sweden	Sweden

Fabian Felder	Consortium of Swiss Academic Libraries	Switzerland
Abdullah Atalar	Bilkent University	Turkey
Liam Earney	Jisc	United Kingdom
Bernard Rentier	Université de Liège	Belgium

Source: Technopolis 2020

B.2 Members of the study's Steering Committee

Table 2 Members of the study's Steering Committee

Name	Affiliation	Country
Caroline Schober-Trummler	Medical University of Graz	Austria
Inge Van Nieuwerburgh	Ghent University	Belgium
Martin Svoboda	CzechELib - National Centre for Electronic Information Resources	Czech Republic
Niels Stern	Royal Danish Library	Denmark
Seppo Parkkila	Tampere University	Finland
Lise Dumasy	Université Grenoble Alpes	France
Jean-Pierre Finance	European University Association	France
Katalin Urbán	Hungarian Academy of Sciences	Hungary
Gudbjorg Linda Rafnsdottir	University of Iceland	Iceland
Cathal McCauley	Irish Research eLibrary (IReL)	Ireland
Mirko Degli Esposti	University of Bologna	Italy
Rimantas Jankauskas	Vilnius University	Lithuania
Juliane Schulze	National Library of Luxembourg	Luxembourg
Mael Guennou	University of Luxembourg	Luxembourg
Hubert Krekels	Wageningen University & Research	Netherlands
Katrine Weisteen Bjerde	Unit – Directorate for ICT and Joint Services in Higher Education & Research	Norway
Marek Michalewicz	Interdisciplinary Center for Mathematical and Computational Modelling (ICM), University of Warsaw	Poland
Joao Moreira	FTC	Portugal
Mihnea Costoiu	University POLITEHNICA of Bucharest	Romania
Pavol Sovák	Pavol Jozef Šafárik University in Košice	Slovakia
Mojca Kotar	University of Ljubljana	Slovenia



Ignasi Labastida i Juan	University of Barcelona	Spain
Wilhelm Widmark	Stockholm University Library	Sweden
Patrick Furrer (Gabi Schneider)	Swissuniversities	Switzerland
Abdullah Atalar	Bilkent University	Turkey
Liam Earney	Jisc	United Kingdom

Source: Technopolis 2020

Appendix C Description of the behavioural model and application to scenarios

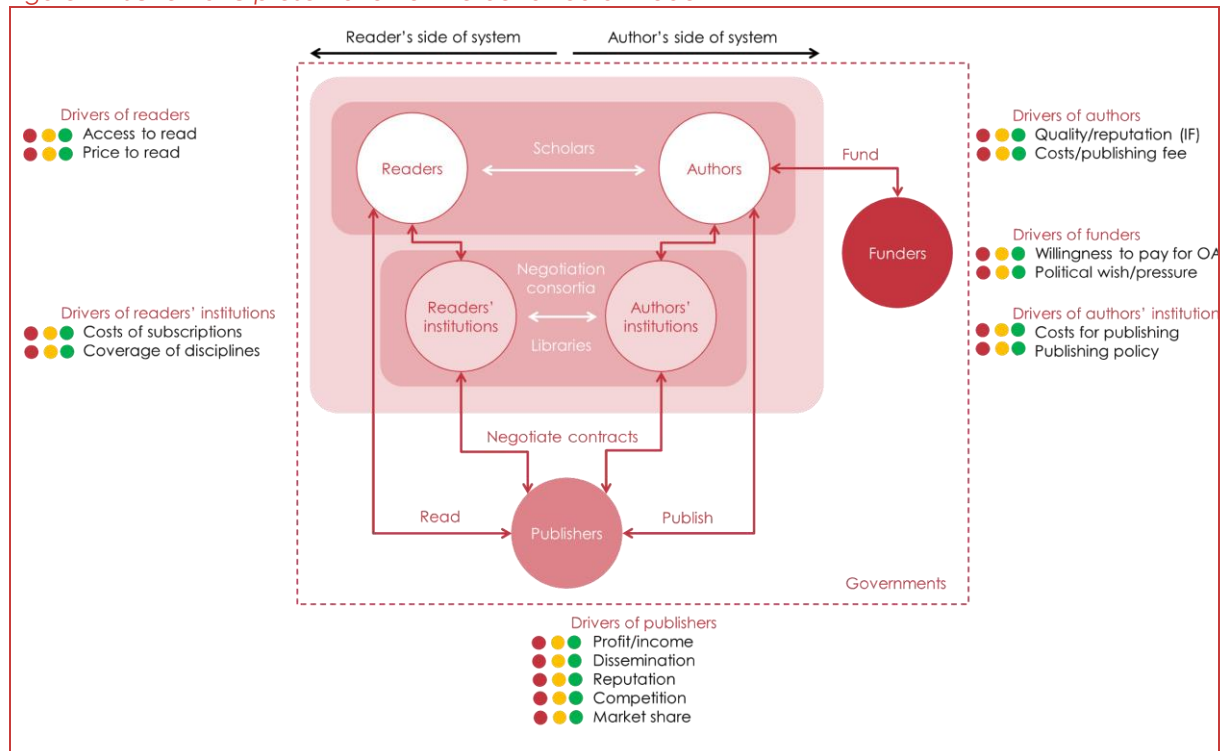
For this study we have developed a behavioural model that describes how the different actors in the scholarly publishing market are related and what factors influence the behaviour of these actors. A model is a simplification of the real world: it helps in better understanding a system at the cost of generalisation – it neglects nuances and differences within groups of actors. The model presented here is not a quantitative model, but a behavioural model. It does not help in quantifying the behaviour, but it does help in understanding the effects of a changing system on different actors. The behavioural model can thus be used as a systematic thinking tool to understand the changing positions of market players and to raise questions about (potential) implications of these changes.

C.1 The behavioural model

We discern **five major market players** (stakeholders) **and their interactions**: authors and readers, the institutions of authors and readers (e.g. university libraries or combined in negotiation consortia), publishers and funders. The model is used to understand the changes in the market and the effects on market players. Through the model one can also better understand drivers, barriers and decisions of market players as it gives qualitative insights in the scholarly publishing market.

The behavioural model is schematically represented in Figure 24. In the behavioural model we have indicated the decision rules of each market player. These decision rules are stylised and general rules that govern the actions of market players, which may depend on the action of others (e.g. funders may lower publishing fees for authors). Each decision rule is discussed in more detail, and per stakeholder, in Chapter 3 of the report.

Figure 24 Schematic presentation of the behavioural model

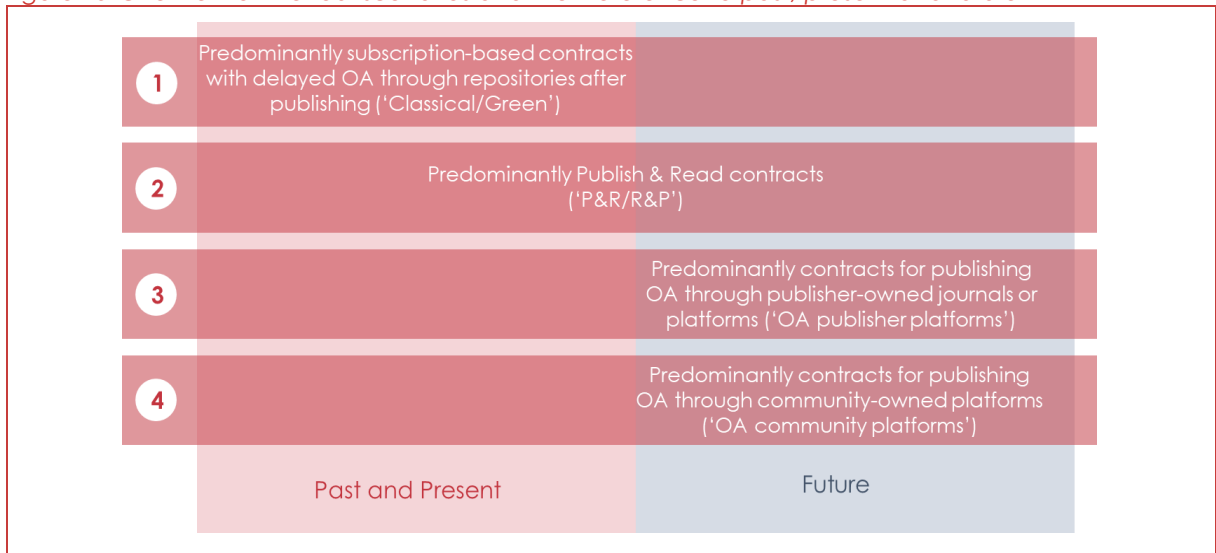


C.2 The use of the behavioural model

The behavioural model is, in essence, static. It can be used to take snapshots under certain conditions, which we call scenarios. Scenarios describes the characteristics of a hypothetical future state, defining some context and input variables to the behavioural model, which can be compared to a reference scenario – a description of the characteristics of the current state. By doing this, differences in decision rules can be studied: is the status of the decision rule in Scenario X improved for the market player compared to the reference scenario?

In this study we have defined four scenarios (Chapter 4) in collaboration with the EUA and the steering committee. One of these scenarios is the reference scenario. In Figure 25 we provide an overview of the scenarios, positioning them also in time. The second scenario is positioned both as past/present and future, as in some countries this scenario is already present, while for other countries it is still a future.

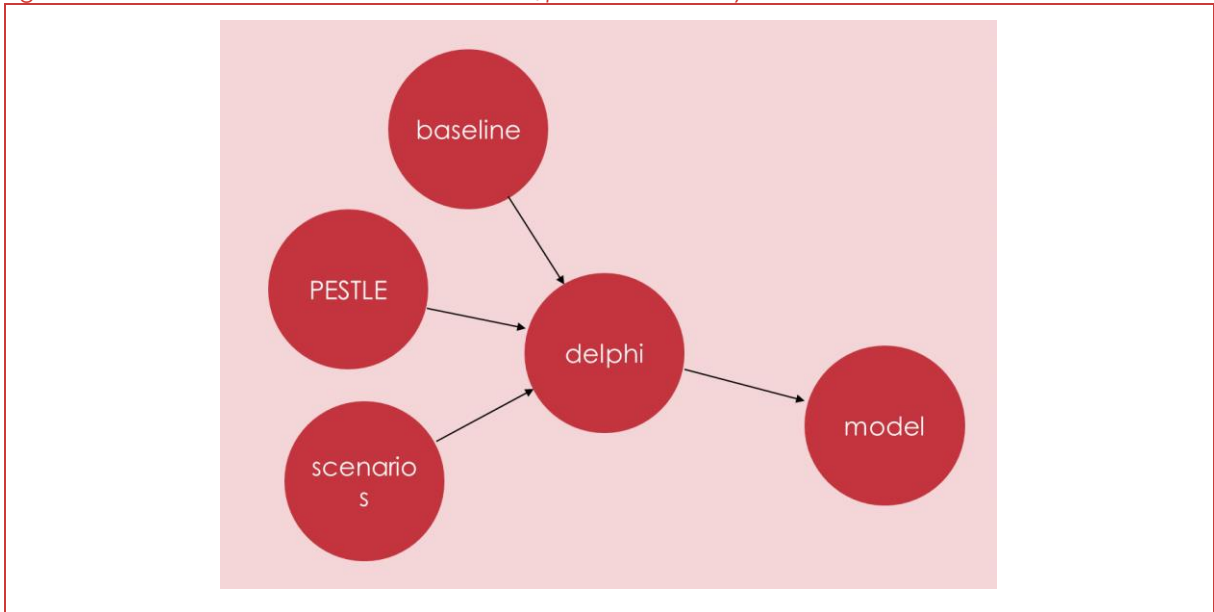
Figure 25 Overview of the four scenarios and their reference to past, present and future



Technopolis Group, 2019

Input on the scenarios are obtained through two Delphi surveys, of which the first focusses on Scenario 2 and the second focusses on Scenarios 3 and 4. In the Delphi surveys the decision rules are tested among stakeholders (market players). Stakeholders are requested to provide their assessment of these decision rules per scenario. This information provides input on the model, which is used to compare the different scenarios and to analyse the results. Figure 26 shows how the model receives input from the Delphi (which in turn is based on other tasks/parts of the study).

Figure 26 Relation between the different tasks/parts of the study



Technopolis Group, 2019

For the analysis of the behavioural model an analytical framework was developed. This framework is directly related to the behavioural model and provides per scenario, for each stakeholder the status of the drivers that are important for them. In addition, for each stakeholder the main benefits and barriers/costs are listed. The analytical framework was used to determine the effects of the scenarios in the report.

Appendix D Details on the Delphi surveys

In order to build the behavioural framework and gather data for the study, Technopolis Group has used an approach based on the Delphi methodology. The following paragraphs describe the approach as well as the results of both survey rounds.

D.1 Approach

The Delphi method is an approach to structure and facilitate group discussions about complex problems in several rounds to achieve consensus on expectations for the future.⁶¹ The method was developed at RAND Corporation in the 1950s and since then used for strategy and policy in many organisations.

Following Loo (2002)⁶², the Delphi has five characteristics:

1. The participants form a panel that is selected to form a representative mix of stakeholders covering a broad spectrum of opinions;
2. The participants in the panel are anonymous, although their characteristics are known;
3. The participants receive a series of structured surveys and feedback reports to respond to over the course of the Delphi from the moderator;
4. The Delphi is an iterative process involving several rounds of surveys and feedback reports to acquire consensus;
5. The output is usually a report with the results of the Delphi, forecasts and options/scenarios with a SWOT and recommendations in the form of advice to senior management or policymakers.

Inspired by the Delphi methodology, Technopolis Group has developed an approach specifically adapted to this study. In this study, two Delphi surveys gathered the views and expectations of a large group of market players (stakeholders) in three different scenarios.

The approach for the Delphi in this study consisted of seven steps:

1. In order to request participation in the Delphi from a large panel of market players/stakeholders, we approached a vast number of contacts for the Delphi. Together with contacts that we obtained from our desk research this formed the first set of contacts. To ensure a sufficient number of participants, we used snowballing: asking participants to nominate others for contact.
2. We developed two linked surveys. The first survey round asked general questions for the study and Delphi questions regarding expected futures and related implications for the second scenario. The second round the results from the analysis of the first round were shared with the panel including the answer provided by the respondent. Each respondent is then requested to reflect on the result from the analysis and asked whether the respondent would like to change his/her answer given the results. Additionally, respondents were asked questions regarding scenarios 3 and 4 and some questions looking back at all three scenarios.

⁶¹ Robert Loo (2002). The Delphi Method: a powerful tool for strategic management. *Policing: An International Journal of Police Strategies & Management*, 25 (4), pp. 762 – 769.

⁶² Ibid

3. The first round was launched, and the number of responses was closely monitored. Two reminders were sent to those in the panel that do not respond.
4. The first round was analysed and the results of the Delphi questions placed in the second survey. The analysis used advanced data analysis tools such as R (RStudio) for the quantitative analysis. Where possible, the results were visually represented and included in round 2 of the Delphi.
5. After the analysis of the first round, the second round was launched and sent to those in the panel that responded to the first round as well as to additional respondents to enhance the panel size and total number of responses. In all other respects, the procedure was similar to the first round. Prior to opening the survey, we also approached the publishers who had not responded to the first survey by phone to better understand their low response rate. We furthermore expanded the panel size when we did not get the desired number of responses.
6. The second round was analysed. For this we repeated the analysis for the first round with the new data. We also compared the differences between the two rounds to see what effects there were on the consensus of each.
7. The results obtained with the model is intended to be shared with interested respondents.

For these surveys we have invited 296 stakeholders for Round 1 and 397 stakeholders for Round 2. These invited stakeholders were spread across Europe and all market players. This led to 108 responses in Round 1 and 91 responses in Round 2. This results in a response rate of 36% and 23% for Round 1 and 2, respectively, which is considered rather low.

D.2 Response characteristics of Survey Round 1

Of 296 stakeholders invited, there were 108 responses of which 75 were complete and 33 were incomplete. From those 108 responses, most responses came from negotiation consortia (40), followed by university libraries (27), and authors and readers (21). The fewest responses came from funders (12) and publishers (8).

Based on the geographical location of the survey respondents, it is shown that most respondents who completed the survey are from Western Europe.

Participants from the Netherlands and Turkey completed the survey most often, while respondents from Croatia, Cyprus and Greece frequently only addressed part of the questions. No completed survey responses are available from Bulgaria and Lithuania.

Looking specifically at the types of market players and their geographical location, market players are represented from all European regions, except for the funders. There are no funders who participated in this survey from Eastern Europe.

Based on scientific disciplines, most survey respondents that completed the survey categorised their scientific discipline as 'general'. The least responses came from the respondents who categorised their scientific discipline as 'engineering and natural sciences'.

D.3 Response characteristics of Survey Round 2

In total, there were 91 responses from 397 invitation of which 48 were complete and 43 were incomplete. Most responses came from negotiation consortia (26), followed by publishers (21). The least responses came from university libraries (15), authors and readers (14) and funders (12). Almost all respondents to the survey are academic, we can therefore not draw conclusions on the perspectives non-academics/industry (only 1 full participant).



The survey was completed by panel members across Europe and beyond (only publishers for the latter). The largest group of respondents who completed the survey is from Western Europe, while the least came from Northern Europe. There are at least nine responses from all European geographies. The largest number of survey respondents that completed the survey fully are from Spain (6) and the Netherlands (5), while for 14 countries we only received a single completed response each. Survey respondents from Canada, Cyprus, Czech Republic, Estonia, Iceland, Latvia and Norway did not complete the survey.

For all market players except publishers, there are responses from across Europe. As for publishers, only those based in Southern Europe or beyond Europe's borders participated in this survey.

Most full respondents are from the Natural Sciences or Engineering and Technology, while overall the spread across disciplines among full respondents is quite even (between 2 and 4 respondents each).

Appendix E Scenario summary tables

E.1 Summary table for scenario 2

		Scenario 2: Predominantly Publish & Read contracts ('R&R/R&P')		
General market players	Specific market players	Decision rules/Drivers	Benefits	Barriers/Costs
Readers	Academic	<ul style="list-style-type: none"> Access to read: Medium Price to read: Stable 	<ul style="list-style-type: none"> More articles are freely accessible Prices remain stable Recognisable publishing system (still journals etc.) 	<ul style="list-style-type: none"> Still quite some articles behind paywalls Non-academia generally has no/limited contracts with publishers
	Non-academic	<ul style="list-style-type: none"> Access to read: Medium Price to read: Stable 		
Reader's institutions	University libraries	<ul style="list-style-type: none"> Costs of subscription: Increase Coverage of disciplines: Stable/Increase 	<ul style="list-style-type: none"> Coverage of disciplines not affected Known relation with publishers 	<ul style="list-style-type: none"> Higher overall costs for contracts (P&R) Limited transition towards OA
Publishers	Large publishing houses with R&P	<ul style="list-style-type: none"> Profit/income: Profit stable/decrease, income decrease Dissemination: Stable Reputation: Stable Competition: Competition decrease, market share decrease 	<ul style="list-style-type: none"> No impact on dissemination No impact on reputation Less competition 	<ul style="list-style-type: none"> Stable or lower profit Decreasing income (no double dipping) Lower market share
	Large publishing houses without R&P	<ul style="list-style-type: none"> Profit/income: Profit stable/decrease, income decrease Dissemination: Stable Reputation: Stable Competition: Competition stable, market share increase 	<ul style="list-style-type: none"> No impact on dissemination No impact on reputation Stable competition Increased market share 	<ul style="list-style-type: none"> Stable or lower profit Decreasing income (no double dipping) Need to change business model?
	Learned society publishers (no R&P)	<ul style="list-style-type: none"> Profit/income: Profit stable/decrease, income decrease Dissemination: Stable Reputation: Stable Competition: Unknown 	<ul style="list-style-type: none"> No impact on dissemination No impact on reputation Stand out with community services/ membership 	<ul style="list-style-type: none"> Stable or lower profit Decreasing income (no double dipping) Need to change business model?

	Small OA publishers (no R&P)	<ul style="list-style-type: none"> Profit/income: Profit stable/decrease, income decrease Dissemination: Stable Reputation: Stable Competition: Competition strong increase, market share decrease 	<ul style="list-style-type: none"> No impact on dissemination No impact on reputation 	<ul style="list-style-type: none"> Stable or lower profit Decreasing income (no double dipping) Strong increase in competition Decreased market share Need to change business model? Less unique proposition
	Small non-OA publishers (no R&P)	<ul style="list-style-type: none"> Profit/income: profit stable/decrease, income decrease Dissemination: Stable Reputation: Stable Competition: unknown 	<ul style="list-style-type: none"> No impact on dissemination No impact on reputation 	<ul style="list-style-type: none"> Stable or lower profit Decreasing income (no double dipping) Likely to also have a strong increase in competition Likely to have a decreased market share Need to change business model? Less favourable current offering
Authors	Academic	<ul style="list-style-type: none"> Quality/reputation (IF): Stable Costs/publishing fee: Decrease 	<ul style="list-style-type: none"> Quality/reputation not affected Overall lower costs for publishing OA Freedom to publish in preferred journals not affected 	<ul style="list-style-type: none"> Still need to pay for some OA publishing outside contracts Non-academia generally has no/limited contracts with publishers
	Non-academic	<ul style="list-style-type: none"> Quality/reputation (IF): Stable Costs/publishing fee: Decrease 		
Authors' institutions	University libraries	<ul style="list-style-type: none"> Costs for publishing: Increase Publishing policy: Stable 	<ul style="list-style-type: none"> Publishing policy not affected Less additional APCs to cover 	<ul style="list-style-type: none"> Higher overall costs for contracts (P&R)
External/research funders	Research funders			<ul style="list-style-type: none"> Likely to reimburse less

	OA sponsors	<ul style="list-style-type: none"> Willingness to pay for OA: Partially Political wish/pressure: Increase 	<ul style="list-style-type: none"> Step closer to more/full OA 	<p>APCs as many are covered in R&P contracts between institutions and publishers</p> <ul style="list-style-type: none"> Limited transition towards OA Increasing political pressure to move further to OA
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E.2 Summary table for scenario 3

Scenario 3: Predominantly contracts for publishing open access through publisher-owned journals or platforms ('Publisher-owned OA platforms')				
General market players	Specific market players	Decision rules/Drivers	Benefits	Barriers/Costs
Readers	Academic	<ul style="list-style-type: none"> Access to read: High Price to read: Strong decrease 	<ul style="list-style-type: none"> Most articles are freely accessible Almost no costs associated with reading Platform could provide additional digital services to readers 	<ul style="list-style-type: none"> Platforms may differ from current ways of reading and known journal structure
	Non-academic	<ul style="list-style-type: none"> Access to read: High Price to read: Strong decrease 		
Reader's institutions	University libraries	<ul style="list-style-type: none"> Costs of subscription: Strongly decrease Coverage of disciplines: Increase 	<ul style="list-style-type: none"> Coverage of disciplines likely to increase due to open access Almost no costs for subscriptions Moved to OA 	<ul style="list-style-type: none"> Higher overall costs for contracts (but only for publishing) Still a few subscription fees
Publishers	Large publishing houses with R&P	<ul style="list-style-type: none"> Profit/income: Profit stable, income stable Dissemination: Increase (OA), stable (non-OA) Reputation: Increase Competition: Competition increase, market share stable 	<ul style="list-style-type: none"> Better dissemination due to mostly OA and platforms No impact on reputation Stable market share More resources to develop (dominant) platform 	<ul style="list-style-type: none"> Stable profit Stable income (long-term) More competition Need to make investments in platform Need to change

				business model?
Large publishing houses without R&P	<ul style="list-style-type: none"> Profit/income: Profit stable, income stable Dissemination: Increase (OA), stable (non-OA) Reputation: Increase Competition: Competition increase, market share stable 	<ul style="list-style-type: none"> Better dissemination due to mostly OA and platforms Improved reputation Stable market share More resources to develop (dominant) platform 	<ul style="list-style-type: none"> Stable profit Stable income (long-term) More competition Need to make investments in platform Need to change business model? 	
Learned society publishers (no R&P)	<ul style="list-style-type: none"> Profit/income: Profit stable, income stable Dissemination: Strong increase (OA), decrease (non-OA) Reputation: Increase Competition: Competition increase, market share strong increase 	<ul style="list-style-type: none"> Better dissemination due to mostly OA and platforms Improved reputation Strong increase in market share Stand out with community services/ membership 	<ul style="list-style-type: none"> Stable profit Stable income (long-term) More competition Need to make investments in platform Need to change business model? 	
Small OA publishers (no R&P)	<ul style="list-style-type: none"> Profit/income: Profit stable, income stable Dissemination: Increase Reputation: Increase Competition: competition increase, market share unknown 	<ul style="list-style-type: none"> Better dissemination due to mostly OA and platforms Improved reputation More experienced with OA services and only OA business model 	<ul style="list-style-type: none"> Stable profit Stable income (long-term) More competition Need to make investments in platform Less unique proposition 	
Small non-OA publishers (no R&P)	<ul style="list-style-type: none"> Profit/income: Profit stable, income increase Dissemination: Stable Reputation: Increase (?) Competition: unknown 	<ul style="list-style-type: none"> Stable or reduced (long-term) dissemination (no OA) Reputation might improve Increased income (short-term?) Unique offering (free publishing) Likely to have reduced competition 	<ul style="list-style-type: none"> Stable profit Less favourable offering Likely to have a decreased market share 	

			(different segment)	
Authors	Academic	<ul style="list-style-type: none"> Quality/reputation (IF): Stable Costs/publishing fee: Increase 	<ul style="list-style-type: none"> Quality/reputation not affected Increasing cost for publishing, strongly so for non-academics Freedom to publish in preferred journals not (strongly) affected 	<ul style="list-style-type: none"> Still need to pay for some OA publishing outside contracts Non-academia generally has no/limited contracts with publishers Economics may reduce (perceived) freedom to publish
	Non-academic	<ul style="list-style-type: none"> Quality/reputation (IF): Stable Costs/publishing fee: Strongly increase 		
Authors' institutions	University libraries	<ul style="list-style-type: none"> Costs for publishing: Increase Publishing policy: Moderately impacted 	<ul style="list-style-type: none"> Publishing policy moderately affected – may need to change Less additional APCs to cover 	<ul style="list-style-type: none"> Higher overall costs for contracts (only for publishing) Long-term costs could be lower (initial investment)
External/research funders	Research funders	<ul style="list-style-type: none"> Willingness to pay for OA: Partially or fully Political wish/pressure: Strong decrease 	<ul style="list-style-type: none"> In short-term still partial of full reimbursement Full OA achieved Less political pressure 	<ul style="list-style-type: none"> Likely to reimburse less APCs in long-term as many are covered in contracts between institutions and publishers
	OA sponsors			

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E.3 Summary table for scenario 4

Scenario 4: Predominantly contracts for publishing open access through community-owned platforms ('Community-owned OA platforms')				
General market players	Specific market players	Decision rules/Drivers	Benefits	Barriers/Costs
Readers	Academic	<ul style="list-style-type: none"> Access to read: High Price to read: Strong decrease 	<ul style="list-style-type: none"> Most articles are freely accessible Almost no costs associated with reading Platform could provide additional digital services to readers 	<ul style="list-style-type: none"> Platforms may differ from current ways of reading and known journal structure
	Non-academic	<ul style="list-style-type: none"> Access to read: High Price to read: Strong decrease 		

Reader's institutions	University libraries	<ul style="list-style-type: none"> • Costs of subscription: Strongly decrease • Coverage of disciplines: Increase 	<ul style="list-style-type: none"> • Coverage of disciplines likely to increase due to open access • Almost no costs for subscriptions • Moved to OA 	<ul style="list-style-type: none"> • Higher overall costs for platform investments or membership (but only for publishing) • Still a few subscription fees
Publishers	Large publishing houses with R&P	<ul style="list-style-type: none"> • Profit/income: Profit decrease/stable, income decrease/stable • Dissemination: Increase (OA), stable (non-OA) • Reputation: Stable/increase • Competition: Competition strong increase, market share decreased/stable 	<ul style="list-style-type: none"> • Better dissemination due to mostly OA and platforms • No impact on reputation or improvement thereof • Many resources to develop new services and skills 	<ul style="list-style-type: none"> • Profit likely to decrease or remain stable • Income likely to decrease or remain stable • Strong increase of competition • Decreased or stable market share, losing monopoly position • Need to change business model • Fear of potential new entrants
	Large publishing houses without R&P	<ul style="list-style-type: none"> • Profit/income: Profit decrease/stable, income decrease/stable • Dissemination: Increase (OA), stable (non-OA) • Reputation: Stable/increase • Competition: Competition strong increase, market share decreased/stable 	<ul style="list-style-type: none"> • Better dissemination due to mostly OA and platforms • No impact on reputation or improvement thereof • Many resources to develop new services and skills 	<ul style="list-style-type: none"> • Profit likely to decrease or remain stable • Income likely to decrease or remain stable • Strong increase of competition • Decreased or stable market share, losing monopoly position • Need to change business model

				<ul style="list-style-type: none"> • Fear of potential new entrants
	Learned society publishers (no R&P)	<ul style="list-style-type: none"> • Profit/income: Profit stable, income stable • Dissemination: increase (OA), decrease/stable (non-OA) • Reputation: stable • Competition: Competition increase, market share increase 	<ul style="list-style-type: none"> • Better dissemination due to mostly OA and platforms • Stable reputation • Increase in market share • Stand out with community services/membership • Potential to develop and maintain own community-owned platform 	<ul style="list-style-type: none"> • Stable profit • Stable income • More competition • Need to change business model?
	Small OA publishers (no R&P)	<ul style="list-style-type: none"> • Profit/income: Profit stable, income stable • Dissemination: Increase • Reputation: Increase • Competition: competition strong increase, market share decrease 	<ul style="list-style-type: none"> • Better dissemination due to mostly OA and platforms • Improved reputation • More experienced with OA services and only OA business models 	<ul style="list-style-type: none"> • Stable profit • Stable income • Strong increase in competition • Decreased market share • Less unique proposition • Fear of potential new entrants
	Small non-OA publishers (no R&P)	<ul style="list-style-type: none"> • Profit/income: Profit stable/increase, income stable/increase • Dissemination: Stable • Reputation: Increase (?) • Competition: competition strong increase, market share increase 	<ul style="list-style-type: none"> • Stable (or reduced?) dissemination (no OA) • Reputation might improve • Increased or stable income (short-term?) • Increased or stable profit (short-term?) • Increased market share (potentially in niche market only) • Unique offering (free publishing) 	<ul style="list-style-type: none"> • Strong increase in competition (new platforms) • Less favourable offering • Difficulty to compete with large publishers
Authors	Academic	<ul style="list-style-type: none"> • Quality/reputation (IF): Stable • Costs/publishing fee: Stable/slight increase 	<ul style="list-style-type: none"> • Quality/reputation not affected • At worst only slight increase of cost for publishing, potentially stable • Increase in freedom to publish in preferred journals 	<ul style="list-style-type: none"> • Still need to pay for some OA publishing • Can non-academia gain access to platforms when not investing?
	Non-academic	<ul style="list-style-type: none"> • Quality/reputation (IF): Stable • Costs/publishing fee: Slight increase 		

			(no/limited additional costs)	Commercial tariffs?
Authors' institutions	University libraries	<ul style="list-style-type: none"> • Costs for publishing: Decrease • Publishing policy: Largely impacted 	<ul style="list-style-type: none"> • Long-term costs expected to be lower (e.g. memberships or maintenance/service costs only) • Publishing policy largely affected – requires change, also in researcher's performance assessment • Very few APCs to cover • 	<ul style="list-style-type: none"> • High initial investments or co-funding of platforms (depending on types of platforms)
External/research funders	Research funders	<ul style="list-style-type: none"> • Willingness to pay for OA: fully (initially) 	<ul style="list-style-type: none"> • In short-term still full reimbursement • Full OA achieved • Less political pressure 	<ul style="list-style-type: none"> • Likely to reimburse less publishing costs in long-term as institutions may use former subscription budgets • Co-investments in community-owned platforms?
	OA sponsors	<ul style="list-style-type: none"> • Political wish/pressure: Strong decrease 		

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Appendix F Details on contractual conditions

The table in this appendix (Table 3) indicates the contractual conditions that we have looked at in relation to each (hypothetical future) scenario. In the survey, the respondents were indirectly asked to reflect on the hypothetical future scenarios with regard to the contractual conditions, such as **embargo periods** and **copyright**.

F.1 Embargo periods

In our first survey, we compared how the market players think &P contracts will affect the embargo periods for delayed open access, on the one hand and full immediate open access on the other. In both cases, university libraries and negotiation consortia seem to more strongly believe that these embargo periods will significantly decrease with R&P contracts as opposed to the other market players. However, authors and readers, funders and negotiation consortia seem to more strongly believe that the embargo periods will significantly increase under R&P. Some respondents that indicated that the embargos will decrease argue that there will be a need to manage costs and an increased push for lower embargo periods as not all institutions will be able to afford to participate in R&P models. Also, it was argued that a decrease of embargo periods will highly increase the transparency, as well as the public opinion on the value of research.

In the second survey, which focussed on the publisher- and community-owned OA platform scenarios, some respondents indicated that by 2030 open access is expected to be the default way of publishing scientific research. With that mode of publishing authors retain all copyrights and no embargo periods apply. The scholarly communication cannot remain behind the paywalls and with copyright restrictions, is their view.

F.2 Copyright

For both community-owned and publisher-owned scenarios, respondents indicated that it is a strength that the copyright is retained by the author. Moreover, some respondents argue that when copyrights are with the authors, there will be competition among publishers for content leading to more transparent pricing and overall lower prices. When asked what the 'legal' motives are that drive the organisations in the negotiations, the argument that authors should hold copyright was mentioned, as well as the duty of the institution to negotiate on behalf of their authors to enable them to retain copyright of their works.

F.3 Relevance of contractual conditions in scenarios

Based on the scenarios we have analysed the relevance of several contractual conditions in these scenarios. Some contractual conditions are no longer relevant in certain scenarios due to open access or preconditions set to the scenario.⁶³ In Table 3 we have made an overview of the relevance of contractual conditions and the impact of not having these included in a contract (not reaching agreement on these conditions). We provided some colour coding to indicate impact of not reaching agreement (low = green, medium = yellow and high = red) and relevance (grey = irrelevant). For each assessment we provided a short explanation in the table.

⁶³ Depending on the specific conditions in each country, a specific scenario may need to be changed to be viable in a country. Some conditions may thus be still relevant when scenarios (as presented in this report) are adapted to the local context or changed for any other reason.

Table 3 clearly shows that in the OA platform scenarios (scenarios 3 and 4), many of the contractual conditions are no longer relevant due to OA being the dominant mode of publishing or scenario conditions. Impacts of not obtaining agreement on these contractual conditions are also generally assessed lower. Especially in scenario 4 (community-owned OA platforms) contractual conditions have reduced in relevance or impact. In this scenario contracts will be completely different, with the initiative lying with communities – new conditions may become relevant in such a situation.

Scenario 1 (the reference scenario) clearly provides most contractual conditions, with highest impact. This is however not a future scenario. Of the future scenarios, scenario 2 (R&P contracts) has most conditions, with some having less impact if no agreement is reached on this condition than compared to the reference scenario.

Table 3 Contract specificities and relation with scenarios – relevance and impact of no agreement

Contractual condition	Scenario 1: subscription-based contracts with delayed OA through repositories	Scenario 2: R&P contracts	Scenario 3: publisher-owned OA platforms	Scenario 4: community-owned OA platforms
Post-cancellation access / perpetual access	Medium impact: no longer read non-OA articles within embargo period, later access depends on level of self-archiving	Medium impact: no longer read non-OA articles within embargo period	NA: immediate OA, always access	NA: immediate OA, always access
Provisions for text and data mining (TDM)	Low impact: TDM for small group only on self-archived papers after embargo period	Medium impact: no TDM for small group	Medium impact: no TDM for small group	NA: own repository, own rules and copyright retained at author
Embargo periods for delayed OA	Low impact: later OA for non-academics and articles outside deal	Low impact: later OA for non-academics and articles outside deal	NA: immediate OA	NA: immediate OA
Archival rights	High impact: self-archiving conditions important for move towards open access	Medium impact: self-archiving could be seen as additional as more articles are published open access	NA: journals are OA, open archive by publisher	NA: archived in own repository
Early termination rights	Medium impact: no longer read most recent publications, only beyond embargo if high level of self-archiving	Medium impact: no longer read non-OA, OA publishing at APC	Low impact: OA publishing at APC, would result in higher costs for publishing, access for reading unaffected	Low impact: no longer service support, but many alternative providers
Copyright transferral	Transferred to publisher	Retained at author OR institution if OA	Retained at author OR institution	Retained at author OR institution



Copyright licensing regime	Strict	Strict or NA if OA (copyright retained at author OR institution)	NA: copyright retained at author OR institution	NA: copyright retained at author OR institution
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Appendix G PESTLE Factors

Throughout the study various factors have been identified that influence the pathway to open access. This appendix highlights the key PESTLE factors identified.

G.1 Political factors

- European influence on the direction at national level (Plan S, EU Competitiveness Council)
- Government has or does not have an open access policy
- Research council or similar authority has or does not have an open access policy
- Funders who take a position on open access policy or have policies that contradict open access
- Structure for negotiating publishing contracts centralised or decentralised
- Priorities of the negotiating consortia and their strategy towards open access
- Governance of negotiation consortia; choice between all-in or opt-in
- "One open access policy" at universities with rectors involved in negotiations
- Research disciplines that do or do not seek open access

G.2 Economic factors

- Publishers annual charge increase is relatively high; serial price crisis
- Compensation for lost investments by publishers
- Insufficient market transparency
- Difference in resources between countries, institutions, disciplines
- Revenue base of an author-pay system is by nature smaller than that of a reader-pay system
- Article Processing Charges for individuals versus organisations
- Authors do not need to access recent research too often
- Cost of changes to a new system
- Administrative burden of negotiations
- Facilities for open access requires investments
- Vendor lock in
- Historical print spent

G.3 Social factors

- Research impact journals matter for individual careers
- Increasing demand for societal added value of research
- Civil society pressure for open access
- 'Voting with money' to support open access journals
- Ethics matter too for open access
- Awareness of open access



G.4 Technological factors

- Availability of (meta)data to analyse behaviour for contracts
- Infrastructure for archives
- Open access for dissemination

G.5 Legal factors

- Lengthy negotiations
- Lack of transparency in the market through non-disclosure agreements
- Contractual conditions such as copyright infringements
- Availability of illegal sources such as SCIHUB

