



European Commission background note on open access to publications and data in Horizon 2020

1. What is open access to scientific information?

Open access can be defined as **the practice of providing on-line access to scientific information that is free of charge to the reader**¹. In the context of R&D, open access typically focuses on access to 'scientific information', which refers to two main categories:

- Peer-reviewed scientific research articles (published in academic journals);
- Scientific research data (data underlying publications and/or raw data).

It is important to note that:

- Open access publications go through the same peer review process as non-open access publications;
- As an open access requirement comes after a decision to publish, it is not an obligation to publish: it is up to researchers whether they want to publish some results or not;
- As the decision on whether to commercially exploit results (e.g. through patents or otherwise) is made before the decision to publish (open access or not), open access does not interfere with the commercial exploitation of research results.

2. What are 'Green' and 'Gold' open access?

They are two main and non-mutually exclusive routes towards open access:

- **'Green' open access** (also called self-archiving) means that the published article or the final peer-reviewed manuscript is archived by the researcher in an online repository before, after or alongside its publication. Access to this article is often delayed ('embargo period'). Publishers recoup their investment by selling subscriptions and charging pay-per-download/view fees during this period during an exclusivity period. This model is promoted alongside the 'Gold' route by the open access community of researchers and librarians, and is often preferred.
- **'Gold' open access** (also called open access publishing, or author pays publishing) means that a publication is immediately provided in open access mode by the scientific publisher. Associate costs are shifted from readers to the university or research institute to which the researcher is affiliated, or to the funding agency

¹ Costs are associated e.g. article-processing charges, maintenance of electronic archives (repositories) etc.

supporting the research. This model is usually the one promoted by the community of well-established scientific publishers in the business.

Most well-established publishers have adapted to the research community's interest in publishing in open access mode, yet usually in favour of 'Gold' open access (depending on the publisher, associated costs requested can sum up to a few thousand Euro per article). Nevertheless, a large number of journals, including those with high prestige and/or high impact factors have also developed self-archiving policies ('Green' open access) that are compatible with the policies of research funding bodies such as the Commission for Horizon 2020.

3. What are the benefits of open access?

All research builds on former work and depends on scientists' possibilities to access and share scientific information. The advent of the Internet and electronic publishing has resulted in unprecedented possibilities for the dissemination and exchange of information. In particular, fuller and wider access to scientific publications and data can help to accelerate innovation (faster to market = faster growth); foster collaboration and avoid duplication of effort (greater efficiency); build on previous research results (improved quality of results); involve citizens and society (improved transparency of the scientific process).

What is at stake is the speed of scientific progress and the return on R&D investment, and in particular publicly-funded investment which has enormous potential for boosting productivity, competitiveness and growth.

Research e.g. by Swan (2010)² also shows that when researchers use open access, the increase in citations is significant in some disciplines (e.g. between 300% and 450% in medicine, between 170% and 580% in physics/astronomy and between 200% and 600% in agricultural sciences).

4. Why are researchers, librarians, funders, businesses and the public at large asking for open access to scientific information?

In recent years, rising subscription prices for scientific journals have put a strain on university library budgets and research institutions.³ Businesses also experience problems in accessing relevant scientific information. According to a 2009 UK survey⁴, a significant share of SMEs (55%) said that they had recently experienced difficulty accessing a research article (against 34% in the case of large companies), with the payment barrier reported as the key difficulty.

² Swan, Alma (2010) The Open Access citation advantage: studies and results to date. <http://eprints.ecs.soton.ac.uk/18516/>

³ To the point where even Harvard university cannot afford all subscriptions anymore. See <http://www.guardian.co.uk/science/2012/apr/24/harvard-university-journal-publishers-prices>

⁴ Publishing Research Consortium (2009), Research Report, Access by UK small and medium-sized enterprises to professional and academic information, Mark Ware Consulting Ltd, August 2009, <http://www.publishingresearch.net/documents/SMEAccessResearchReport.pdf>

Two recent Commission public consultations⁵ show that **researchers, libraries, research funders and businesses believe that there is a problem with access to scientific information and that this is a key barrier to the optimal circulation of knowledge in Europe, affecting both academic research and industrial uptake of research results.** Respondents to these consultations indicate that open access is a key tool to overcome access limitations. Over 90% of respondents expressed the view that publications resulting from publically funded research should as a matter of principle be available in open access mode.

Open access is backed by a growing number of universities, research centres and funding agencies in Germany, UK, the Nordic countries and all across Europe as well as beyond. National initiatives and practices are still fragmented, thus preventing the European Union from realising its full research and innovation potential.

5. What is the potential economic impact of open access?

The Europe 2020 strategy for a smart, sustainable and inclusive economy underlines the central role of knowledge and innovation in generating growth. Open access has an important role to play in this context:

- Research results (publications and data), and in particular publicly-funded research results need to be circulated rapidly and widely, using digital media. This accelerates scientific discovery, enables new forms of data-intensive research and allows research findings to be systematically taken up by European business and industry⁶.
- In addition, open access is generating competition among well-established scientific publishers and has stimulated the creation of new, usually less expensive, sometime non-profit scientific publishers⁷.

6. What has the Commission done about open access up to now?

The Commission has been developing policy and measures on open access since 2006. A petition for guaranteed public access to publicly-funded research results, now signed by over 28,000 institutions and individuals, was presented to the European Commission in 2007⁸.

⁵ Consultation on the European Research Area Framework http://ec.europa.eu/research/era/pdf/era-summary-report-2012_en.pdf ; Survey on Scientific Information in the Digital Age http://ec.europa.eu/research/science-society/document_library/pdf_06/survey-on-scientific-information-digital-age_en.pdf

⁶ For example, it has been estimated that government investments of \$3.8 billion in the Human Genome Project, have had an economic impact worth \$796 billion, created 310.000 jobs and launched the genome revolution. This is an excellent illustration of the power that open access to scientific information can have.

⁷ For example, the Public Library of Science <http://www.plos.org/>

⁸ "The following actions could be taken at the European level: (i) Establish a European policy mandating published articles arising from EC-funded research to be available after a given time period in open access archives, and (ii) Explore with Member States and with European research and academic associations whether and how such policies and open repositories could be implemented."

- Key policy documents include a [Commission Communication](#) and [Council Conclusions](#) in 2007.
- In 2008, the EC launched a [pilot on open access](#) covering 20% of the FP7 budget in seven research areas of FP7, which has proven effective. Both 'Gold' and 'Green' roads are promoted and the costs for 'Gold' open access are [eligible](#) for all projects in FP7, even those outside the scope of the pilot.
- The Commission also funds [OpenAIRE](#) (**Open Access Infrastructure for Research in Europe**) which supports the implementation of open access in Europe by providing an infrastructure and national helpdesks. OpenAIRE currently identifies over 27.000 FP7 publications, some 9.500 of which are open access and some 16.800 of which are still under embargo.
- The ERC has also published open access guidelines (6 months embargo, including primary data)

7. What does the Commission propose to do about open access to publications in Horizon 2020?

On 17th July 2012, the European Commission outlined measures to improve access to scientific information produced in Europe in a [Communication](#) and a [Recommendation](#) to the Member States. The need for the widest possible access to publicly funded research results, while maintaining a solid and sustainable scientific dissemination system, has been a key consideration in defining the concrete measures of the Commission's initiative. The Commission has followed the most recent debates and reactions around initiatives such as 'The cost of knowledge' and documents such as Finch report and the paper from the ALPSP.

The Commission proposes to make open access to scientific publications a general principle of Horizon 2020, building on the already existing activities in FP7 (e.g. eligibility of open access publishing costs, embargo for 'Green' open access of six to twelve months).⁹

The Commission views open access as a means to improve knowledge circulation and not a goal in itself. As is the case in FP7, **Horizon 2020 will include both 'Green' and 'Gold' open access measures.** The Commission believes that [both routes](#) are valid and complementary approaches for open access to be **effective, fair, affordable, competitive and sustainable for researchers and innovative businesses.**

The Commission will also continue to fund relevant open access projects (research, coordination & support) and infrastructure.

The scientific community, research libraries and organisations, funding bodies and civil society organisations have reacted very positively to the Communication.

⁹ This is in line with the policies of many other funding bodies (UK Research Councils, the Wellcome Trust, the European Research Council, the Howard Hughes Institute in the US, etc.). Moreover, it must be underlined that scientific publishers have so far failed to show evidence of the potential harm of a six-month embargo in the green open access model (see, for example, the results of the PEER project, www.peerproject.eu).

8. What does the Commission propose to do about open access to data in Horizon 2020?

The Commission proposed in its Communication 'Towards better access to scientific information' to develop a pilot on open access to data, primarily those data underlying (open access) scientific publications. The areas covered by the pilot should be discussed together with the thematic Units within the Commission and their stakeholders.

Project results which are related to privacy, trade secrets, national security, legitimate commercial interests and to intellectual property rights shall not be requested in open access mode. Additionally, any data, know-how and/or information whatever their form or nature which are held by private parties in a joint public/private partnership **prior** to the research action and have been identified as such shall also not fall under such an open access obligation.

9. Where can I find more information?

A variety of information on the EC activities as regards open access is available on the internet:

- European Commission: http://ec.europa.eu/research/science-society/open_access
- OpenAIRE: <http://www.openaire.eu/en>.

You can also contact the European Commission's Open Access team at RTD-OPEN-ACCESS@ec.europa.eu