Plan S: challenges and opportunities in Spain

Spain is one of the most active European countries in the open access (OA) movement. Although the gold route has scarcely been used, the green route has been intensively implemented through fulfilment of European and national mandates and the development of institutional policies. Plan S is becoming a disruptive element in the context of scientific communication, and Spain's possible adherence to Plan S could imply technical challenges in journals and repositories, additional costs that are difficult to estimate, or refusal to accept the Plan on the part of researchers (based on the loss of freedom to choose the journal in which to publish). However, the implementation of Plan S in Spain would also lead to greater transparency in APC spending, a reduction in publishing in predatory journals, greater visibility and impact for journals that are only published OA, improvements in OA monitoring and a change in the evaluation model for researchers from one based on the impact factor to one based on DORA recommendations.

Keywords
Open access; Plan S; Spain; funder mandates; APC; scholarly communication

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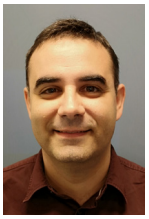

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Introduction

Currently, Spain occupies one of the first positions in open access (OA) publication worldwide, being the European country with the second greatest percentage of its scientific output available in OA (40.5%), only slightly behind the UK.[1] However, one of the most important features of OA in Spain is that the green and the gold routes have not developed at the same rate.

Spain, along with most other countries at the beginning of the OA movement, opted for the green route to offer open access to scientific publications. This decision meant that in a short period of time, a large number of repositories were created, increasing from 13 repositories in 2005 to 135 in 2012.[2] In 2018 there were 173 repositories registered in the Registry of Open Access Repositories (ROAR), making Spain, along with the UK and Germany, one of the countries with the highest number of repositories in Europe. Set against this, at a qualitative level Spain has ten institutional repositories within the

global Top 100 in Transparent Ranking,[3] which assesses the visibility of the content of repositories in Google Scholar.

This support for the green route is also reflected in the policies of academic publishers, where Spain ranks as the European country with the fourth largest number of self-archiving policies. This highlights the fact that only 4% of publishers do not allow self-archiving.[4] There is some support for the gold route nationally, such as participation in the SCOAP3 initiative,[5] but there are few examples of this in practice.

The ten principles of Plan S[6] establish a series of requirements that must be met by researchers who receive funds from cOALition S signatory agencies and that directly affect journals, repositories and even the form of evaluation of scientific activity. The publication of the Plan S implementation guide[7] has led to multiple reactions – both for and against – from universities, researchers, publishers, and so on.

'There is some support for the gold route… but there are few examples of this in practice'

There is no doubt that Plan S will have a great impact in Spain, generating a series of challenges and opportunities that must be studied from varying viewpoints. However, in order to understand the exact scope, it is necessary to analyze the Spanish context; specifically, the legislative framework, policies and mandates in favour of OA, as well as the relationship between scientific output in Spain and OA.

Funder mandates

At the heart of OA lie the researchers, a heterogeneous group with inconsistent participation in OA due, in part, to the influence of the professional evaluation system. In Spain this evaluation system is predicated primarily on the impact factor of publications. However, OA publication is also seriously affected by the contracts that transfer rights which authors usually accept by signing a copyright agreement when submitting their papers. In order to ensure compliance with OA, new initiatives such as Plan U[8] and South America-AmeliCA[9] have recently appeared. However, Plan S has had the greatest impact due to the support of important funding agencies.

The first major mandate was from the European Commission, which launched an OA pilot experience with the Seventh Framework Programme (FP7),[10] extending to all research projects funded by Horizon 2020.[11] These mandates clearly indicate to researchers that they must deposit the publications in repositories that OpenAIRE[12] collects, as well as the metadata[13] for the validation of the compliance with the mandate and its link to CORDIS.[14]

'Article 37 indicates that state-funded research results … should be accessible in OA repositories'

In Spain, four or five funding agencies are to be found depending on whether we consult Sherpa Juliet[15] or MELIBEA,[16] which, together with the OA policies of the universities (24 listed in RECOLECTA),[17] create an ecosystem that promotes and encourages open access.

Mandates were first introduced in Spain in 2011 with the Royal Decree which regulates official doctoral teaching.[18] This stipulates that once a doctoral thesis is approved, it will be archived in open electronic format in an institutional repository. Additionally, Article 37 of the Spanish Law on Science, Technology and Innovation[19] indicates that state-funded research results which are published in journals should be accessible in OA repositories in their final version. However, the same Law cedes to the conditions of some publishers, with Article 37.6 allowing that, if the publisher does not allow an author to disseminate the work in OA, the author will be deemed to comply with the Law even if though the work is in closed access.

Some institutions have been making efforts advocating for OA:

- FECYT (Spanish Foundation for Science and Technology) 2014 saw the preparation of recommendations on the dissemination of OA[20] and the development of an indicator and methodology which enabled the first measurement of the degree of compliance

with the national OA policy[21] to be undertaken in 2016, and a proposal for national implementation of OA[22]

- REBIUN (Network of Spanish University Libraries): the REBIUN repository working group created a series of guidelines and recommendations on the monitoring of OA[23]
- CRUE (Conference of Rectors of Spanish Universities) published a statement outlining the commitment of Spanish universities to open science,[24] including aspects such as the inclusion of OA in negotiations with publishers without an increase in current expenditure, or changes in evaluation models for researchers.

All of the above initiatives have encountered difficulties in monitoring compliance with the mandates. The Spanish standards, unlike those established in other European projects, did not establish a detailed procedure, meaning that a number of issues were left open, such as the requirement for the metadata to be included in the publications for its transfer to the repositories. In contrast with some other countries, no effective monitoring proposal has been developed.[25]

Scientific production

In order to estimate the impact that Plan S might have, it is necessary to analyze the Spanish scientific output over recent years, especially in relation to OA. For this purpose, during February 2019 the data from Web of Science (WOS) and InCites covering the 2013–2017 period were analyzed – specifically, the number of articles published by Spanish authors.

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According to WOS, of the 280,335 articles published, one third are available OA. The increasing trend of OA articles over time compared to the total number of articles published is significant (see Figure 1).

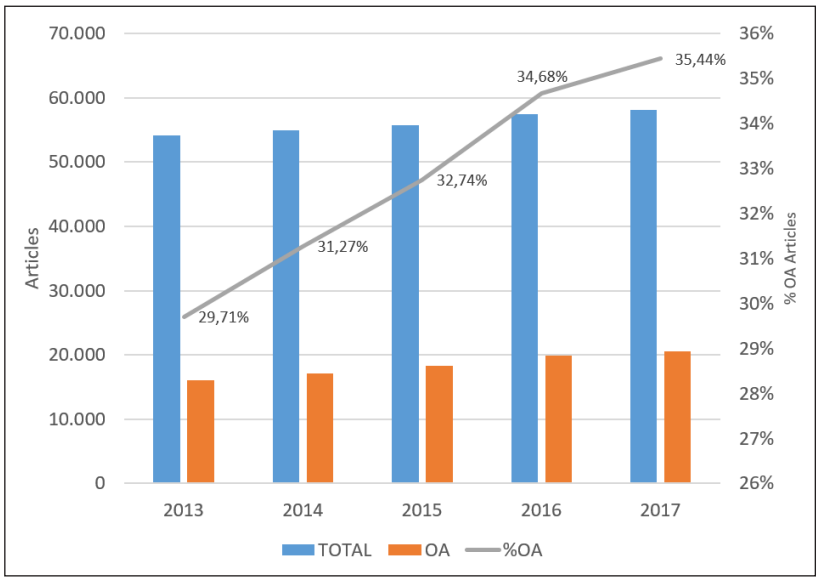

Figure 1. The evolution of OA publications in Spain 2013–2017

Having analyzed the routes articles took to OA publication, it can be seen that 47% of articles were published in OA journals,[26] i.e. pure OA journals, and 11% in hybrid journals. On the other hand, 53% of the published articles are in repositories, which is consistent with the strategy of strengthening repositories in Spain. In spite of that, it highlights that in recent years there has been an increase in the gold route, especially through publication in journals listed in DOAJ, compared to the trend for hybrid journals (see Figure 2).

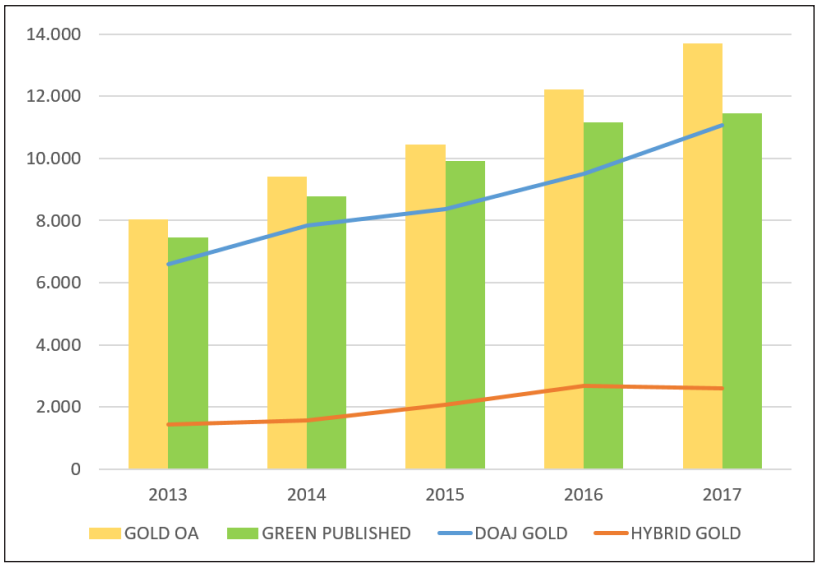

Figure 2. Comparison of different routes to OA publication in Spain

Finally, according to InCites, the main funders of research involving Spanish authors are the European Union (EU) and the Government of Spain, followed by the different autonomous governments. These funders make up 50% of the articles financed. These data are especially relevant, since the possible adoption of Plan S in Spain would have an important impact on Spanish scientific publication.

Challenges

The implementation of Plan S poses several challenges for Spanish scientific communication, as listed below.

- ***Government support***
  While the Ministry of Science affirms that they are supporters of Plan S, Robert-Jan Smits states that they cannot find a Spanish interlocutor to discuss Plan S. On the other hand, the Congress of Deputies approved[27] a motion relating to the incorporation of Spain into Coalition S. It will therefore not be until June 2019 that a report will be published outlining the impact of the application of Plan S in Spain.

- ***Researchers' support***
  Although many researchers support the goals of Plan S,[28] with varying degrees of reservation, others state that Plan S would eliminate their freedom of choice over the journal in which they choose to publish.[29] In fact, one of the objectives of the government's report on Plan S is to study the consequences that may arise from the withdrawal of this freedom of choice for scientists when publishing.

'While … only 10% of the journals that are in DOAJ are compatible with Plan S, none at all are from Spanish publishers'

- ***Journals***
  While at an international level only 10% of the journals that are in DOAJ are compatible with Plan S, none at all are from Spanish publishers.[30] In addition, Plan S should consider small publishers and/or non-APC-based journals. In general, journals will need a moratorium to meet certain technical requirements, for example being listed in DOAJ, APC exemption programme, etc.

- ***Repositories***
  In the short term it will be difficult to comply with the technical requirements established in Plan S, for example the storage of full texts in XML format or the availability of open APIs to promote access to their contents. For this reason, it will be advisable to use a strategy similar to the journals with 'basic mandatory criteria' and 'recommended additional criteria' following an incremental strategy (COAR).[31]

- ***APC management***
  Except in a very few areas,[32] there is no centralized management of APCs either from institutions or at the national level. The adoption of Plan S will accelerate gold OA. It could imply that the institutions, through their library structures, should perform new functions not undertaken until now due to the limited gold OA adoption in Spain: administrative tasks related to APC management, unified criteria for the assignment of the author and their affiliation, establishment of a relationship between the institution and APCs, etc.

- ***National negotiations***
  Spain currently negotiates very few resources at national level, so getting a single interlocutor can be complicated. However, it will be necessary for negotiations with publishers, as happens in other countries, to be carried out at the national level to achieve greater transparency in costs, better negotiating capacity, and so on. If this is achieved, it will be possible to comply with the premises established by the FECYT for the transition to OA in Spain (Towards Open Access by Default).[33] With some publishers currently seeing profits of 30–40%, it will have to be accepted during negotiations that wider publishing in OA will result in a diminution of income[34] – the so-called 'lost profit' – since publishers lose potential future sources of income such as the commercialization of back-files of journals.

'Spain currently negotiates very few resources at national level'

- ***Transitional models***
  In the area of national negotiations, large publishers proposed 'read and publish' models, but these were rejected due to the extra cost involved. In 2019 and 2020 existing Elsevier, Springer Nature and Wiley subscriptions, that affect the majority of Spanish universities, will come to an end, so future negotiations will be need to be driven by the possible adoption of Plan S in Spain.

- ***Cost overrun***
  Having to take on more costs in order to access scientific information and publish Spanish scientific outputs in OA may be an insurmountable challenge. There are doubts at the Ministry of Science[35] about the assertions of Robert-Jan Smits that costs will be offset by a decrease in spend on subscriptions, achieved through negotiating APC payment models with the publishers. Both elements must be compensated and prevent the final balance from resulting in an increase in costs for institutions or governments.

'future negotiations will be need to be driven by the possible adoption of Plan S in Spain'

Opportunities

In addition to offering open access to a greater number of scientific works, the implementation of Plan S in Spain also presents a number of other opportunities, such as those detailed below.

- ***Greater transparency in spending***
  In many cases APCs are paid directly by the researchers, making it difficult for the institutions to know about spending by publishers. Agreements with publishers, at the national and/or institutional level, in which APCs are included, will facilitate control and compliance with Spanish legislation[36] that obliges public bodies to publish and make their expenses accessible.

'Plan S is a great opportunity to improve the quality of Spanish journals'

- ***Disappearance of predatory publishers***
  The transparency of journals will be improved by moving from blacklists, designed to avoid predators[37] (with the partiality that that is inherent in that approach), to a whitelist, like DOAJ, where journals fulfill quality criteria.

- ***Improvements in OA***
  DOAJ shows 680 Spanish journals as being published OA,[38] though half do not offer any identifier (DOI, handle, etc.), only 27% have CC BY or CC BY-SA licences and 68% allow tracking the full text of the articles. Plan S is a great opportunity to improve the quality of Spanish journals, not only technically but also by increasing the visibility and impact of

their contents. For example, universities and the CSIC (Centro Superior de Investigaciones Científicas/Spanish National Research Council) publish more than 60% of the Spanish journals in DOAJ, so these institutions have a good justification to invest in their journals.

- ***Better monitoring of OA***
  We noticed slight changes in the text in the last national research plan[39] for Spain: '... It will take into account the works published in open institutional repositories'. This wording first appeared in the 2011 Law on Science, Technology and Innovation. The difficulties noted in the attempts to monitor OA have already been discussed. The availability of Spanish scientific outputs in OA with publishers with whom agreements have been reached on APCs will allow monitoring to be simplified significantly.

- ***Greater importance of repositories***
  Spain has a good network of repositories, co-ordinated under the REBIUN umbrella, which work on the requirements of the OpenAIRE[40] and RECOLECTA guidelines[41] in addition to its own guidelines and quality standards. OA Experts in Spain[42] agree with other international proposals (LIBER,[43] COAR,[44] Harvard-MIT),[45] requesting that the implementation of Plan S give more importance to repositories, putting green OA at the same level as the gold route, and not relegating them to a long-term archive function. A good example is the Netherlands and its pilot, which applies the 'Taverne amendment',[46] where after a maximum period of six months of embargo, the editorial versions of the repositories will be released in OA.

- ***Changing the researchers' evaluation model***
  Plan S cannot be seen in isolation. The academic communication ecosystem needs other reforms, with new evaluation systems based not only on quantitative measurements. These might include, for example, signing the DORA Declaration,[47] as Wellcome Trust has done[48] and/or support for the Leiden Manifesto.[49] In Spain, where the impact factor is practically the only indicator used, researchers have been asking for a change for quite some time,[50] including the possibility of contributing by means of published versions in repositories.[51]

Conclusions

'A disruptive change for Spain will be the centralized payment of ACPs'

Although everyone may support the idea of OA, just as from the outset it was divided into gold and green routes, there are still great differences in views (from publishers, researchers, funders or institutions) on the optimal way to achieve it. Plan S, though it has received great support, has seen less enthusiasm from publishers. It has also received more than 600 individual and institutional comments[52] on its implementation, mostly relating to the technical requirements for journals and repositories. It is a great opportunity to improve Plan S, but it will be necessary to measure the timeline and requirements requested.

A disruptive change for Spain will be the centralized payment of ACPs, rather than researchers dealing with them directly. This change will help combat predatory publishers while allowing monitoring, and will give greater transparency to the APCs without increasing current costs. We hope to see how it materializes in the upcoming national negotiations with Elsevier, Springer Nature or Wiley, as requested in the commitment of the CRUE to implement open science in Spain.[53]

'The adhesion of Spain to Plan S would have a direct effect for researchers'

We have to wait until June 2019 for the report that will help the government to decide if Plan S affects, as some researchers say, 'their academic freedom by preventing them from publishing in journals of their choice' (hybrid journals). It does not seem that this new scenario will affect the institutional evaluation of researchers based on the classification of the journal where they publish. Aligned with the Plan S, CRUE's commitment pushes for changes to the evaluation model, focused on researchers with 'the implementation of more comprehensive indicators, not only quantitative and based on publication impact indexes'.

The adhesion of Spain to Plan S would have a direct effect for researchers[54] and for OA, since EU and state plans constitute about 50% of research funds. Repositories, in addition

to offering a means of preservation, can be a fundamental tool for monitoring the fulfillment of mandates thanks to their connection with the institutional CRIS (current research information system). With possible refinements, it seems that Plan S is here to stay.

Abbreviations and Acronyms
A list of the abbreviations and acronyms used in this and other *Insights* articles can be accessed here – click on the URL below and then select the 'full list of industry A&As' link: http://www.uksg.org/publications#aa

Competing interests
The authors have declared no competing interests.

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To cite this article:
Martínez-Galindo F J, Rubio F, Hernández-San-Miguel J and Burguete S F, "Plan S: challenges and opportunities in Spain," *Insights*, 2019, 32: 17, 1–9; DOI: https://doi.org/10.1629/uksg.467

Submitted on 01 March 2019 Accepted on 23 April 2019 Published on 15 May 2019

Published by UKSG in association with Ubiquity Press.