Assessing Readiness for Open Access Policy Implementation across Europe

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Summary

This report presents a European-wide case study for assessing EU Member State's readiness for Open Access (OA) policy implementation – and specifically for the European Commission H2020 policy. Aspects like the availability of OA infrastructure, the awareness of OA and the availability of harmonised working procedures and coordination mechanisms are analysed, providing the means to assess the situation of specific countries.

Introduction

The PASTEUR4OA European project is all about *collecting* and *analysing* Open Access (OA) policies, aiming to support the July 2012 European Commission's Recommendation to Member States that they develop and implement policies to ensure Open Access to all outputs from publicly-funded research [1]. *Policy collection* means producing a structured and comprehensive directory of worldwide OA policies so that it's possible to see what policies are available for specific geographical areas at institutional, funder and/or regional/national levels. This will allow to identify and spread best practices in OA policy issuing, with advanced countries playing a role model for those with less advanced models. *Policy analysis* means then designing and applying the tools for assessing the effectiveness of a given set of available OA policies and identifying the factors that will contribute to make them successful.

OA policies are important because they support, facilitate and encourage:
1. early, wide and open availability (ideally without charge) to the results of research;
2. take-up, knowledge and technology transfer to industry for wealth creation or to government policies for improving the quality of life;
3. comparative statistics of output by country, by research domain, by institution, by facility perhaps related to per capita wealth, country size;
4. relating the scholarly publications – and datasets – to researchers, research groups for evaluation purposes – perhaps also relating the outputs to the inputs (funding);
5. assessment of how much e-Research depends on OA policies;

all leading to a clearly defined need for OA policies anchored to the need for wealth creation and improvement in the quality of life.

A critical factor for the success of OA policies is the availability of the required infrastructure for them to work. This can take different forms, the most frequent one being a tightly knotted open access repository network like the one put together across the EU by the European **OpenAIRE project** [2] (which will provide the infrastructure basis for enabling the European Commission OA policy associated to the H2020 research programme [3]). There is however a wide range of technical solutions and resources that will contribute to the effectiveness of an OA policy. This document will first provide a brief summary of the different technical tools and systems that will enable an OA policy to be effective, covering Open Access repositories as well as Current Research Information Systems (CRIS) and the interoperabiity between both kinds of systems. A number of relevant factors which will enable any OA policy to be successfully adopted are also analysed, together with a first description of how different geographical areas are placed with regard to them. The second part of this report is devoted to providing a description and an analysis of the current European landscape in terms of the available infrastructure for enabling an effective application of OA policies.

Together with this European-wide case study, PASTEUR4OA has commissioned seven national use cases for advanced countries from an infrastructure viewpoint, namely the UK, Belgium, Ireland, Norway, Denmark, Portugal and Hungary. This wider use case will build upon these national use cases, providing additional compared information on the kind of systems available for supporting OA policy implementation across Europe and analysing to what extent specific solutions may be re-used in other countries where there has been not such a relevant progress so far in comparison to the countries featured on the national use cases. This European-wide report will also address the situation in whole geographic areas not covered by the national use cases, making an attempt to provide general-purpose case studies where different countries may fit in from different perspectives, including the availability of national repository networks, the ability of institutional or regional/national CRISs to play an effective role in supporting OA policy implementation, the level of awareness about OA initiatives (especially at European level) and others.

1. Achieving Open Access: Infrastructure Requirements

As mentioned in the introduction above, a previous availability of a sufficiently solid Open Access infrastructure is a prerequisite for an OA policy to be successfully adopted. This mainly relates to the existence of a network of content management systems where the research outputs covered by a given OA policy can be filed following agreed research information standards for their description. The systems that best meet this requirement are Open Access repositories, either institutional or discipline-based ones. However, other systems can also provide the required functionality for OA implementation, such as Current Research Information Systems or CRIS.

1.1. Availability of an Open Access repository network

The two phases of the DRIVER European Project (Digital Repository Infrastructure Vision for European Research [4]) held from June 2006 to November 2009 enabled the foundation of an Open Access repository network across Europe. Harmonisation instruments like the DRIVER Guidelines allowed the growth of such network to happen in an aligned and collaborative way. Such standards allowed repositories to flourish.

OpenDOAR (retrieved Sep 20th, 2014)

Search or Browse for Repositories

Europe (1244)
Albania (1)   Latvia (3)
Austria (16)   Lithuania (10)
Belarus (12)   Luxembourg (1)
Belgium (28)   Macedonia (1)
Bulgaria (6)   Moldova (1)
Croatia (6)   Netherlands (27)
Cyprus (4)   Norway (50)
Czech Republic (11)   Poland (85)
Denmark (13)   Portugal (45)
Estonia (5)   Romania (1)
Finland (13)   Russian Federation (22)
France (89)   Serbia (8)
Germany (170)   Slovenia (6)
Greece (28)   Spain (115)
Hungary (24)   Sweden (45)
Iceland (2)   Switzerland (17)
Ireland (20)   Ukraine (56)
Italy (74)   United Kingdom (229)

According to the OpenDOAR repository directory [5], there are around 1,250 Open Access repositories in Europe as of Sep 2014. This means nearly half of the worldwide repositories are in Europe. This is the direct result of the DRIVER work and its follow-up by the ongoing OpenAIRE project. This infrastructure is to provide the basis for the H2020 OA policy implementation.

However, the repository network distribution across countries is far from homogeneous. While country size considerations must be kept in mind, Open Access repositories are clearly more popular in Western European countries like the UK, Germany, Spain, France or Italy, with Poland being an exception to this trend. When taking country area into account besides the sheer number of available platforms, the resulting weighted list is again topped by the UK, followed by Belgium, The Netherlands, Portugal and Germany.

While OpenDOAR is a very useful directory for collecting figures on the total number of available repositories by country, the best indicator on how ready the repository infrastructure at national level may be for supporting the implementation of an Open Access policy is the OpenAIRE Member State OA Statistics for Content Collection shown below. This data, released and maintained by the OpenAIRE project, describe the number of OpenAIRE-compliant repositories by country and the amount of contents – or number of harvested items – delivered to the common database of research outputs by such compliant repositories.

OpenAIRE Member State OA Statistics for Content Delivery (as of May 25, 2015)
[source: "Overview of Open Access in the EU Member States",
https://www.openaire.eu/eu-member-states/noads/member-states-overview]

COUNTRY	OpenAIRE-COMPLIANT REPOSITORIES	OA PUBLICATIONS
Austria	4	39,966
Belgium	13	118,701
Bulgaria	13	7,821
Croatia	3	123,292
Cyprus	2	1,451
Czech Republic	4	102,954
Denmark	9	81,085
Estonia	1	38,988
Finland	4	120,193
France	17	463,162
Germany	82	598,022
Greece	1	8,019
Hungary	5	3,947
Iceland	2	18,266
Ireland	11	70,803
Italy	31	257,055
Latvia	2	-
Lithuania	1	25,207
Luxembourg	2	5,463
Malta	0	0
Netherlands	23	665,027
Norway	4	28,438
Poland	11	28,491
Portugal	36	184,892
Romania	0	0
Serbia	4	3,835
Slovakia	1	839
Slovenia	4	42,350
Spain	46	622,504
Sweden	18	141,942
Switzerland	13	146,200
Turkey	13	4,419
United Kingdom	75	3,615,426*

*includes about 2.5 mi publications from EuropePMC

This is an evolving picture, as many additional repositories are presently in the process of becoming OpenAIRE-compliant, but the differences across countries when analysing the level of contents contributed to the global aggregation are even more dramatic than those shown in the OpenDOAR directory. When considering the need for the European Research Area aggregation to contain the outputs of every country involved in the initiative, the current picture shows significant room for improvement.

Two are then the requirements for implementing a repository network at national level than may support an Open Access policy: first, the OA institutional repositories must be made available, and then these should gradually become OpenAIRE-compliant. However, alternative platforms may also be put to work in order to support OA policy implementation in areas with low repository availability, and this is relevant for an European-wide OA policies like the one issued for the Horizon 2020.Framework Programme.

1.2. Current Research Information Systems (CRIS)

Current Research Information Systems [6] can be one of such alternative platforms for storing research outputs in a harmonised way. CRISs aim to provide a comprehensive research information context to research outputs in areas such as research funding (projects), research organisations (institutions, funders) and researching individuals. Although generally more focused on business intelligence and having loosely different goals from repositories [7], CRISs may very effectively support Open Access implementation too when appropriately designed – especially once the OpenAIRE Guidelines for CRIS managers [8] have been made available that will allow content to be delivered to OpenAIRE from CRISs as well as from repositories.

Of particular interest for supporting the implementation of an Open Access policy are national-level CRISs which collect the research outputs – together with their research information context – for a whole country. CRIStin, the Norwegian national CRIS, is a good example for such systems, which are rather frequent too in Central and Eastern Europe where the repository network is frequently weaker. There are in fact initiatives under way to connect national CRISs to the repository network in order to allow them to deliver full-content outputs to the OpenAIRE aggregation. These initiatives fall under the area of CRIS-repository interoperability.

1.3. CRIS-repository interoperability

The concept of linking CRISs to Open Access repositories as a way of achieving the main goals of both systems, i.e. the collection of the full set of relevant metadata by CRISs and the provision of full-content versions of the research outputs by OA repositories has a rather long tradition at institutions such as the University of St Andrews [9]. It is however its application on a national-level scale which offers the most promising features to support an Open Access policy. This involves establishing technical interoperability (i.e. the ability to exchange information on the basis of specific protocols) between a national CRIS and a whole national repository network, and has been pioneered by the CRIStin National CRIS in Norway by means of its link to the NORA network of Norwegian OA repositories [10].

Other countries, especially in Central and Eastern Europe, find themselves in a situation from the point of view of infrastructure availability which could effectively benefit from a similar approach to implementing CRIS-repository interoperability at national level. A strong national CRIS where comprehensive research information is being collected on the research outputs for a country and the gradual strengthening of a still relatively weak repository network can result in a connected network where access to the full-content is jointly provided by the linked systems. Once the OpenAIRE Guidelines for CRIS managers have been made available, it is now possible to deliver OpenAIRE-compliance at national CRIS level, potentially allowing a vast amount of materials to be delivered into the content aggregation by countries where the repository network has not consolidated as quickly as in the most successful ones. It will take some time however for this strategy to deliver its full potential, since no national CRIS has yet achieved OpenAIRE-compliance given the still very recent release of the Guidelines. Work is already under way anyway, and once a first national CRIS becomes OpenAIRE-compliant, it should be much easier for the rest to quickly follow suit.

1.4. Availability of Local Open Access Journal Portfolios

One of the most effective strategies some countries have applied for making a large fraction of their national research output Open Access all at once (especially in the Social Sciences and Humanities) has been to provide the technical and funding mechanisms for turning a significant number of local serials into Open Access journals [11].

When addressing the low awareness of Open Access (especially among scholars) and the low OA infrastructure availability in specific geographic areas, the possibility of flipping to Open Access high-quality local journals in languages other than English is also a strategy to be kept in mind. Open Access repositories remain the most sensible

and affordable way to ensure that "information already paid for by the public purse" gets freely shared and re-used. Additional means are however at hand, especially where the repository network is yet to consolidate, for allowing Open Access to flourish while the supporting infrastructure is made available: as of Sep 20th, nearly 10,000 Open Access journal titles are listed in the Directory of Open Access Journals (DOAJ) [12]. Moreover, OpenAIRE has released a Guide for Open Access Journals to become compliant and have their content harvested in the same way as repositories [13].

2. Readiness for Open Access policy implementation: additional factors

Beyond the availability of a well-designed, well-maintained and well-populated open access repository network or an equivalent infrastructure, achieving the OpenAIRE objectives at national level will require the consolidation of the associated working procedures for ensuring a **comprehensive research output collection** and an **effective awareness-raising activity among researchers and scholars**. Well-established Open Access teams are needed at institutions to keep the OA goals on top of the institutional agenda, and the number and effectiveness of current institutional OA policies in a country will often provide the best indicator for its success in OA implementation. In a situation where no reliable **tools for monitoring OA policy compliance** have yet been made available by the OA community even at institutional level, the assessment of how ready a whole country actually is for implementing OA policies is rather subjective. As a result of both the funders' requirements and the discussion on the effectiveness of Open Access policies, work is however under way in different countries to provide the instruments for monitoring policy compliance. Once these efforts result in the provision of the required tools and mechanisms, estimating the level of progress of countries towards a successful Open Access implementation will become a much more objective exercise.

In the meantime there are a number of factors that provide good indicators on the progress achieved, such as for instance the **cohesion of national repository networks**. This involves having the adequate mechanisms in place for ensuring an appropriate coordination of working procedures and criteria across institutions. Small countries like Portugal, Ireland or The Netherlands unsurprisingly score far better than large ones in this regard as a rule. The national case studies put together by PASTEUR4OA include large countries as well as small ones, and there are best practices in this area to be closely followed.

An additional factor is the **number and relevance of national and/or regional Open Access conferences and events** held in a country. This is of course tightly linked to the previous one, since the existence of national Open Access organisations and working groups will naturally lead to the organisation of high-profile OA events to share and discuss best practices often at international level. Although the situation is rapidly evolving in this regard, this factor may partially explain a certain European divide in terms of readiness for OA policies, where Western European countries have traditionally hosted many international Open Access meetings and harmonisation initiatives.

When examining the high-level strategy for Open Access implementation across the EU, it's easy to see a first effort – through projects like DRIVER and OpenAIRE – to get the OA repository infrastructure built and harmonised. Only when this had been achieved to a certain extent there was a shift towards the issuing of OA policies. This strategy means that no successful OA policies can be expected to arise in areas where no infrastructure is available for meeting the deposit mandates. However, a third stage is required on top of the two previous ones for an effective OA policy adoption: **mechanisms for assessing policy compliance** must also be made available.

As an increasing number of OA policies are issued across the Continent at institutional level and beyond, the availability of tools for monitoring and reporting on their compliance is becoming a key missing element. Such tools are now starting to be developed, driven by funders' requests for reports on the way their investments on Open Access are being used at Higher Education Institutions [15]. These include monitoring the availability of full-text files

stored in repositories through aggregations like CORE [16]. Initiatives like the HEFCE post-2014 REF Open Access policy [17] issued by the Higher Education Funding Council for England are also strongly driving the development of cross-institutional services that will enable HEIs to monitor Open Access publications and their associated expenses.

3. Use case analysis

Once the different factors have been examined that will establish the readiness for OA policy implementation, the second part of this report will deal with some detailed description of how they are addressed in different countries. A categorisation for the degree of progress in Open Access implementation is provided first, followed by brief descriptions of the OA landscape for a number of countries.

Detailed national case studies for the most advanced countries in terms of Open Access implementations are provided in the national reports commissioned by PASTEUR4OA – and this section will subsequently not thoroughly deal with these. The description of the OA landscape will instead be focused on countries not covered by such national reports, which will also provide the opportunity to identify specific areas where a further effort would be useful.

3.1. Success in Open Access implementation: categories

The degree of success in Open Access implementation across Europe is rather diverse at the moment. A broad categorisation of such progress is provided below, addressing use cases rather than specific national landscapes. These categories are however not clear-cut ones, and the situation for specific countries will often lie somewhere in between them.

The **first scenario** involves a situation where Open Access is a high-priority objective for policymakers, funders and institutions and there are effective coordination mechanisms and organisations for its implementation at universities and research centres. A comprehensive repository network is available and institutional OA policies have been around for some time, which has resulted in a joint effort for its implementation covering both OA awareness-raising activities for scholars and the availability of basic reporting mechanisms at least at repository management level. This is the best-case scenario for an effective OA policy implementation, and it's a fairly accurate description of the Open Access landscape in small countries like Portugal, The Netherlands, Belgium or Ireland, plus some large ones like the UK or Germany.

A **second scenario** shows a wide OA repository network in place. The coordination mechanisms are however missing or rather loose, and Open Access does not have such a high-profile at policymaker level as in the first scenario above. There may be a number of institutional OA policies in place, but there are scarcely implemented and no specific mechanisms are available for monitoring their effective application. This is often an evolving situation, and the availability and dissemination of a few best practice implementations might suffice for shifting the landscape towards the best-case scenario. This situation is archetypical in large countries such as Spain or Italy, where coordination and raising the profile of OA at political level remain tough challenges.

A low-developed repository network (especially in terms of OpenAIRE-compliant repositories) is the main feature of the **third scenario**. Even if some institutions may have a repository and may have implemented a best practice approach for its management, there are few or no mechanisms in place for ensuring an effective coordination of the activity at national level and the political profile of Open Access is very low. Other pieces of infrastructure such as

subject-based repositories or national CRISs may however be available, and this may well provide a solid starting point for OA policy adoption purposes. Most Central and Eastern European countries fall within this category. Potential steps to consider for achieving progress could include setting up Open Access working groups at national level – with a good and rather recent example in this regard provided by Austria [17]. Sharing best practice case studies in the development of repository platforms at regional level might also be a useful initiative.

3.2. Brief case studies

A brief description is provided to conclude this report of the situation around Open Access, its associated infrastructure and the initiatives towards increasing readiness for OA policies in specific countries. Descriptions are provided in rather broad terms here, since the landscape keeps swiftly evolving and any analysis will quickly become outdated if not generic enough. The three main areas to be addressed in these brief case studies will be the strength of the national repository network (plus alternative infrastructure), the coordination initiatives taking place at national level and the level of OA policy issuing at Research Performing Organisations (RPOs) in the country.

3.2.1. Germany

With 170 OA repositories listed in the OpenDOAR directory snapshot provided above, Germany has the strongest repository network available in Europe only second to the UK's. This network, together with the growing implementation of institutional CRIS systems, provides a very solid infrastructure for OA policy implementation in the country. Although the repository infrastructure has sometimes in the past been described as "fragmented" in a large, federal country, there are effective coordination initiatives taking place in this area from the German Research Foundation (DFG) [18], the German Initiative for Network Information (DINI) and the DFG-funded Open Access Network platform [19] among others. Topics like repository certification (in a common thread with a number of additional European countries) or the different models for achieving Open Access are high on the OA discussion agenda at the time.

This strong coordination effort results in the organisation of frequent OA events and a general high-level of awareness of the topic among policymakers – even if OA policies were not in the programme of the most recent 'Open Access Days' event held Sep 2014 in Cologne [20]. However, the OA policy collection recently gathered by PASTEUR4OA shows there are 22 OA policies in place at different German universities and research centres, which makes it likely for policies and their compliance to shortly become highly-relevant topics in the discussion about Open Access.

3.2.2. France

France has 89 repositories available according to the OpenDOAR data, which makes it a fairly strong network with the national Hyper Articles en Ligne (HAL) repository sitting at its core and serving the whole institutional network in the country. France was also a partner in the recently finished MedOANet European project, which offered valuable opportunities for coordination at international level. There are nevertheless frequent claims from the French OA community that Open Access is not sufficiently high on the policymakers' agenda in the country, and significant efforts are being made in the last few years to promote the extension of the current OA deposit policy for theses and dissertations into further research outputs.

The coordination of the Open Access initiatives in the country, currently under the Couperin consortium, is not yet as strong as in other countries, and there is also a smaller number of high-profile events on Open Access. There was

nevertheless top-level official representation at the Jan 2013 OA Conference held in Paris by Couperin [21], where Open Access was acknowledged as a relevant topic in the Government's agenda, and which resulted in the signature by 25 organisations of a partnership agreement in favour of Open Access and the use of HAL [22], but then none of the 15 French OA policies recently collected on the PASTEUR4OA database is classified as A-level.

The current CAPLAB initiative to implement a unified research information management system across French universities and CNRS laboratories may provide additional infrastructure support to a gradual awareness-raising activity with regard to OA policy implementation in the country

3.2.3. Austria

With only 16 Austrian OA repositories listed in OpenDOAR and 5 OA policies in the PASTEUR4OA database, the situation of the country with regard to OA policy implementation shouldn't in principle look too promising. However, Austria – which is a small country, with the already mentioned advantages this offers in terms of coordination – is presently one of the most dynamic areas in Europe in terms of Open Access promotion, under the energetic coordination of its central funding organisation the Austrian Science Fund (FWF). FWF recently became a partner in the former UKPMC platform -- prompting its name to be changed to EuropePMC after the European Research Council also joined the originally UK-focused initiative – and has its own, well-advertised Open Access policy [22]. FWF is also effectively working with Austrian universities to promote the gradual setting up of the required deposit infrastructure – including both OA repositories and CRISs – and the establishing of Open Access working groups where discussions and coordination can take place.

Even if a number of areas need further consolidation to ensure readiness for OA policy implementation, the rather quick progress recently experienced by the country makes it a suitable candidate for becoming a case study in its own, and a potentially very useful one too for neighbour nations where Open Access is not too high on the policymakers' agenda.

3.2.4. Czech Republic

With 11 OA repositories listed in OpenDOAR -- three of which are OpenAIRE-compliant -- and just one Open Access policy in the country (from the National Academy of Sciences), the repository infrastructure in the Czech Republic does not at the moment look strong enough to carry out an effective OA policy implementation activity. However, the major Czech universities such as Charles University in Prague, Czech Technical University in Prague, Masaryk University in Brno, University Tomas Bata in Zlín or the Technical University of Ostrava have institutional repositories, a fact which could provide the basis for establishing joint collaborative initiatives that could help other institutions. At the same time, the Czech Republic has one of the most advanced national CRIS systems available in Europe, including a comprehensive database of research results. Even if most of these records are in metadata-only format at the time, the availability of such a research information management infrastructure means there could be opportunities for exploiting the CRIS/repository synergies and using them as a starting point for addressing OA policy implementation.

Moreover, awareness-raising activities around Open Access recently organised by the ongoing FOSTER project [23] have added to the significant coordination work that was already taking place in the country. The fact that both repositories and the national CRIS have taken part in such advocacy activities could mean an opportunity to tackle the existing infrastructure gaps.

3.2.5. Estonia

Estonia has 5 Open Access repositories listed in OpenDOAR, just one of which is OpenAIRE-compliant, and no OA policy records in the PASTEUR4OA database. However, this small Baltic Republic punches well above its weight in the OpenAIRE content delivery figures displayed above, being the largest content provider in the Baltics and outscoring much larger countries both in Eastern and Western Europe.

A key element for explaining this success in Open Access content delivery is the fact that the Estonian national CRIS ETIS [23], which contains nearly 160,000 bibliographic records for research results, is the most Open Access-friendly platform of all national CRISs in Central and Eastern Europe. ETIS allows researchers to choose at data delivery time whether or not to make the full-content Open Access available. Given that delivering bibliographic metadata into ETIS is compulsory for Estonian researchers, there are again good opportunities here for establishing the connection between CRIS and institutional repositories and using ETIS as supporting platform for OA policy implementation, providing some re-usable best practice along the way.

Conclusion

At a time when Open Access policies are becoming increasingly relevant for advancing in the implementation of the Open Access agenda, this report provides an assessment of the readiness for Open Access policy implementation across Europe. The results of the analysis show a rather fragmented landscape where some countries are already succeeding in an effective Open Access policy adoption while others still lack the repository infrastructure and/or the social and technical coordination initiatives that will allow Open Access to be successfully implemented.

At the same time, alternative mechanisms for Open Access implementation have been identified involving the use of Current Research Information Systems and the application of the OpenAIRE Guidelines for CRIS managers. This area remains to be fully realised at the moment, but there is promising progress taking place at the moment and new developments in the area can be expected to arrive in the short term.

Initiatives like the OpenAIRE European project have played and continue to play a significant role in promoting the harmonisation of best practices across countries for repository and Open Access implementation purposes, but there is still a gap to be filled by PASTEUR4OA in this relatively new area of OA policies. By highlighting effective approaches where identified, promoting the sharing of best practices and enabling an international conversation to be held on the best way to jointly progress towards a common objective while keeping in mind at the same time the specificities of each national landscape, PASTEUR4OA can significantly contribute to the realisation of the European Open Access agenda bringing the policy area closer to the technical one along the way.

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