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2016-2017 EUA SURVEY

RESULTS

By Rita Morais

and Lidia Borrell-Damian

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European University Association asbl

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Acknowledgements

The authors would like to thank the members of the EUA Expert Group Science 2.0/ Open Science for their contribution to the EUA Open Access Survey and the present report. Special thanks are extended to Professor Jean-Pierre Finance, Chair of the Expert Group, for his insights on the evolution of open access across European universities and for the ongoing support to the development of this report.

1. Preface

EUA continues to strongly support Open Science, particularly in view of the renewed ambition of several European states and the European Commission to achieve Open Access to scientific publications by 2020.

In this context, the following questions remain unsolved and pertinent:

- How to engage researchers in new methods and tools based on Open Science in a quicker and more globalised way;
- How to speed up regulatory processes to ensure a higher degree of fairness and simplification in terms of copyright, text and data mining and Open Access to research data;
- How to control the costs of accessing publications (pay to read and/or pay to publish), especially counting on the expectation that an increase in the number of Open Access journals should lead to a decrease in the cost of subscriptions;
- How to increase fairness in the evaluation of scientific papers;
- How to transform research assessment (and thus the management of researchers' careers) by departing from the hypocrisy of the journal impact factor.

Over the years, EUA has developed studies and policy positions on these relevant topics and addressed them to national and European political leaders, as well as to university leaders (for example, EUA Statement on Open Science to EU Institutions and National Governments and Recommendations to University Leaders on Open Access to Research Publications and on Research Data Management and Text and Data Mining).

The EUA positions are informed and shaped by the expertise of long-standing and dedicated working groups (Expert Group on Science 2.0/Open Science, High-Level Group on Big Deals), but also by surveys addressed to European universities through the national rectors' conferences. Thus, these surveys, as well as those carried out in other thematic areas (University Autonomy Scorecard, Bologna Process, etc.), reinforce the position of EUA as a relevant monitoring centre of the European higher education and research systems.

It is in this context that EUA publishes the present report on the outcomes of the third wave of its Open Access Survey addressed to European universities. While the 2015-2016 survey gathered 169 responses, the rate doubled in the 2016-2017 edition, reaching 338 universities. Only 107 universities took part in the survey conducted in 2015-2016.

The reader will find evident stability in the percentages reported for the main indicators. In addition to the increase in responses, this suggests a positive evolution of universities towards Open Access (institutional policies on Open Access, the existence of institutional or shared repositories, linkages with OpenAIRE). At the same time, the reader will see that some important aspects of Open Access are still at a very low implementation level. For example, only 20% of articles published via a peer review mechanism are freely accessible.

Beyond the analysis of the annual evolution of Open Access to scientific publications in European universities, the 2016-2017 report also includes a section on research data management and Open Access to research data. In this area, however, the progress of universities is still somewhat feeble.

I am convinced this new report will help universities, researchers and librarians to better understand the current state of play in Open Access.

I warmly thank the EUA team responsible for the report for their excellent work.

Prof. Jean-Pierre Finance

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

1. Introduction

Open science, particularly open access to research publications and research data, is developing fast on many fronts including legal and technical aspects. This is likely to have a lasting impact on how science is conducted, used and disseminated. The dual role of European and national authorities, and universities, is to contribute to shaping the evolution of open access policies and to adapt practices to new developments. One major stakeholder initiative at EU-level is the Open Science Policy Platform (OSPP), of which EUA is a member.

European universities have a critical role in making open access a reality by 2020, as proposed in the Amsterdam Call for Action on Open Science. The European University Association (EUA) has been monitoring universities' progress in this area since 2007 and, more recently, has intensified this work with the Expert Group on Science 2.0/Open Science. The EUA Roadmap on Open Access to Research Publications sets the agenda for the association's open access activities. The priorities identified in this roadmap include monitoring European universities' open access policies.

The EUA Open Access Survey of European universities is now in its third round. Started in 2014, the first survey focused on how far institutional open access policies had been implemented. It has since been refined and re-launched every year. The report of the outcomes of the 2015-2016 EUA Survey on Open Access was published in June 2017. This report presents the results of the 2016-2017 survey. This third wave gathered 338 responses from universities and higher education institutions across 39 European countries, which represents a 100% increase from the 2015-2016 response rate. For the first time, the 2016-2017 survey also focused on research data management and open access to research data, in addition to open access to research publications.

The outcomes of this survey have informed EUA work on open science and are reflected in the major policy recommendations issued during 2017, as indicated in the preface.

EUA will continue to conduct its annual open access survey to monitor progress in this important area and to better support members as they make the transition to open access

2. Methodology and Participants

The 2016-2017 Open Access Survey included 27 questions grouped into three main sections:

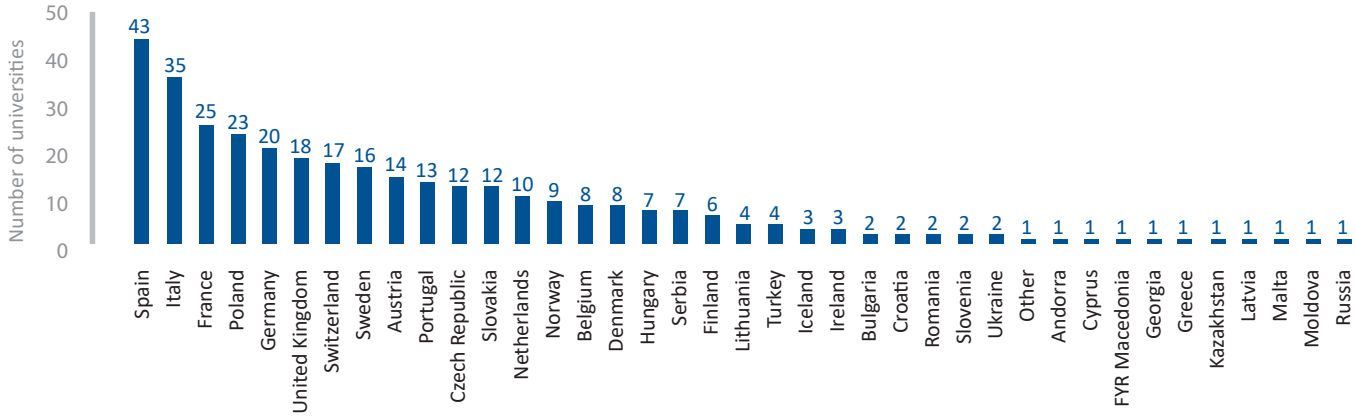
- The Institution and the Respondent
- Institutional Policies and Strategies for Open Access to Research Publications
- Research Data Management and Open Access to Research Data

Like previous EUA OA Surveys, the 2016-2017 questionnaire included both open- and closed-ended questions, covering topics such as the characteristics of institutional open access policies and infrastructure, awareness of open access initiatives, drivers and barriers to open access and potential actions.

The *Research Data Management and Open Access to Research Data* section built on the outcomes of the 2015-2016 survey and, for the first time, included exploratory, open questions focusing on the skills required for research data management and open access to research data.

The survey was open from 25 November 2016 until 31 March 2017. Only one response per institution was accepted.

Figure 1. Number of respondent institutions per country



The previous edition of the EUA Open Access Survey, conducted in 2015-2016, received responses from 169 institutions in 33 European countries[1]. The first wave of this survey, which was conducted back in 2014, collected 106 responses from 30 European countries. These figures indicate a 100% increase in the response rate from the 2015-2016 to the 2016-2017 surveys. It is also worth noting that 107 institutions participated in both the surveys conducted in 2015-2016 and 2016-2017 and that 36 institutions participated in the three waves of the EUA Open Access Survey (2014, 2015-2016, 2016-2017).

While the response rate for all EUA Open Access Surveys reflects the diversity of EUA membership, both in terms of geographical spread and university size, it is not possible to use the results reported to generalise about other institutions due to the nature of the data (convenience sample[2]).

This report focuses on the results of the 2016-2017 EUA Open Access Survey. Where appropriate and relevant, a comparison with the results of the 2015-2016 survey is provided.

1 The results of the 2015-2016 EUA Open Access Survey are available on the EUA website.
2 Convenience sampling is a type of non-probability sampling in which participants are selected because of their accessibility or proximity to the researcher. All EUA members were invited to take part in the EUA Open Access Survey. The sample comprises participating institutions.

3. Open Access to Research Publications

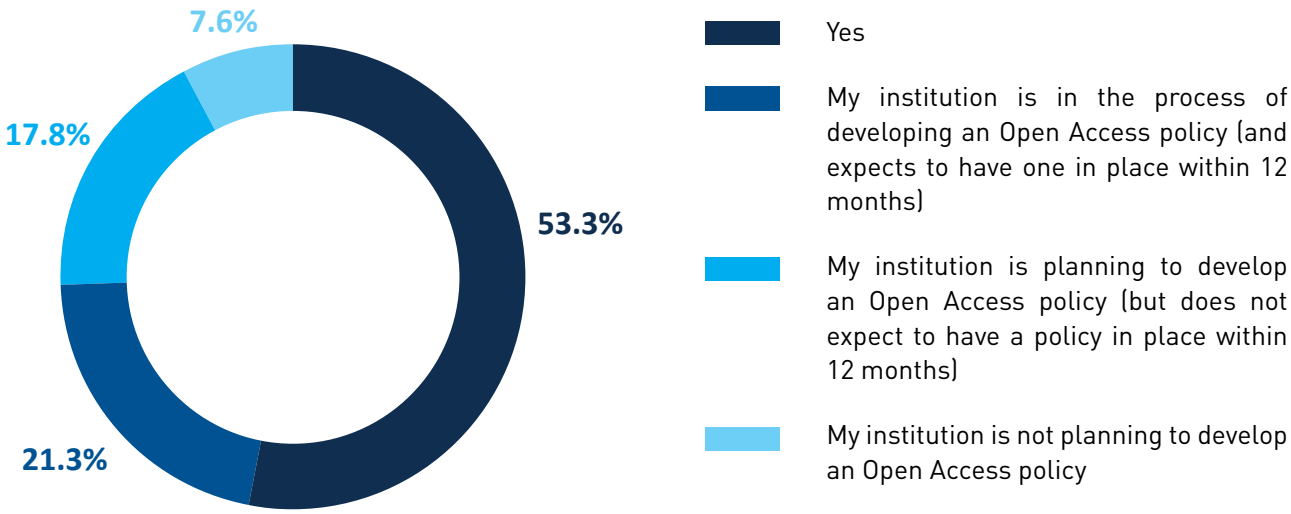
This chapter focuses on the degree of implementation of institutional open access policies to research publications. It covers a variety of topics, such as repositories, drivers and barriers to self-archiving, institutional awareness of open access and actions needed to further promote open access to research publications.

3.1. Institutional policies

Over 50% of the institutions surveyed stated they had implemented an open access policy to research publications and 21% reported being in the process of developing and implementing an open access policy over the next year. Globally, over nine out of ten universities indicated having an open access policy, being in the process of developing one or planning its development (Figure 2).

However, about 7% indicated that they were not planning to develop an institutional open access policy. The main reasons given related to the low priority given to open access by the institution, the lack of funds for open access costs (e.g. to establish and/or maintain a repository) and low levels of open access knowledge.

Figure 2. Institutional policy on open access to research publications



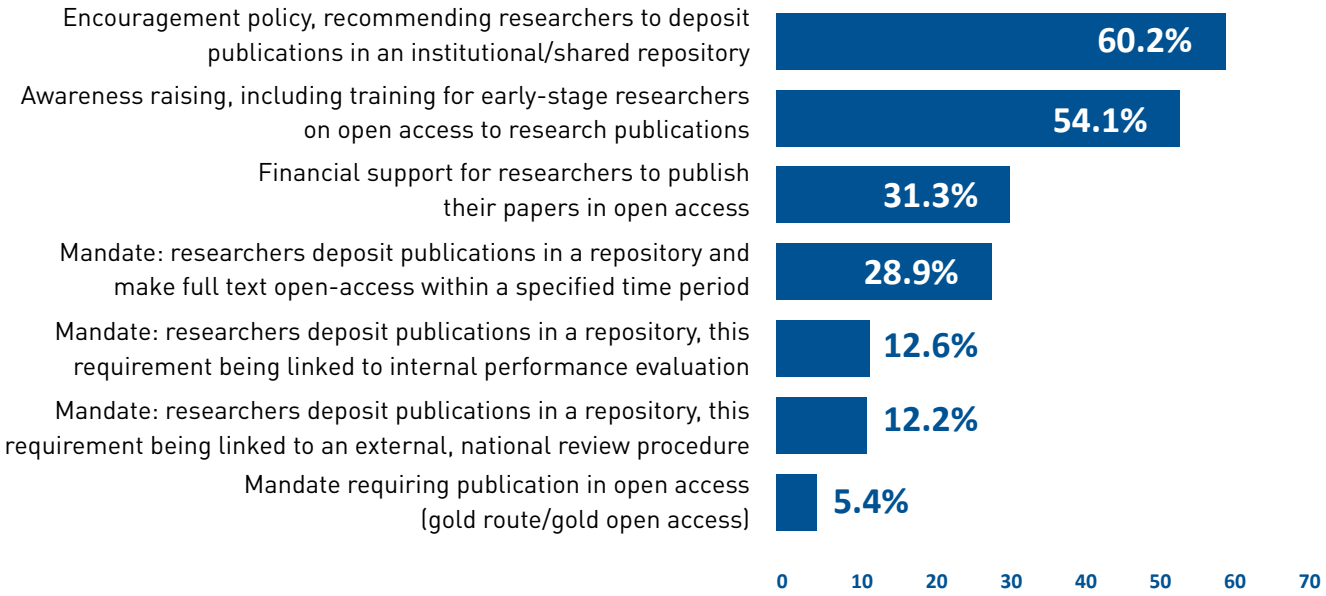
Number of respondents: 338/338.

Comparison with 2015-2016 results:

The results of the 2015-16 survey showed a similar pattern: 55.6% of the institutions reported having implemented an open access policy, 23.7% indicated being in the process of developing one and 17.2% were planning to develop an open access policy but did not expect it to be in place within 12 months.

The most common measures used at institutions with or developing an open access policy, are recommendations for researchers to self-archive their publications (60.2%) and activities and training to raise awareness about open access to research publications (54.1%). Mandatory policies linked to internal performance evaluation or external review procedures are still much less common (about 12%).

Figure 3. Elements of institutional policies on Open Access to research publications



Notes: this question only applies to universities that replied "yes", "my institution is in the process of developing an Open Access policy" or "my institution is planning to develop an Open Access policy" in Figure 2. The sub-sample for this question is 312.

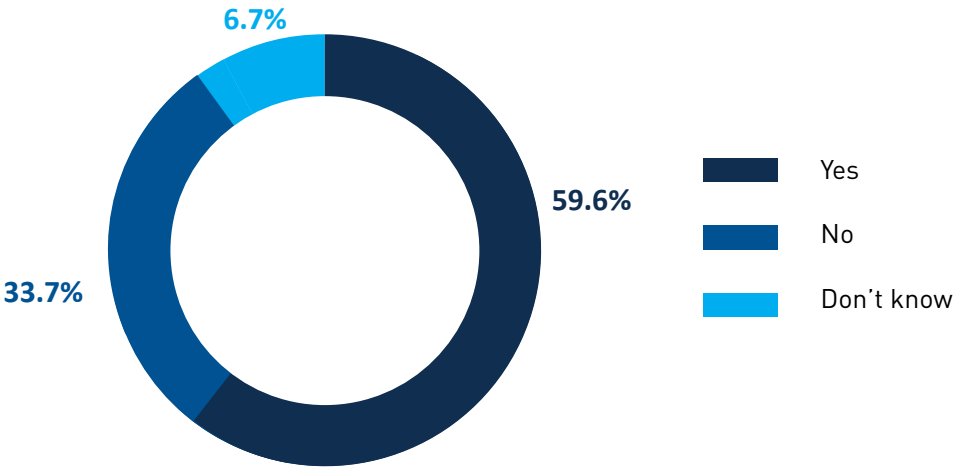
Multiple-choice question. Number of respondents 294/312.

Comparison with the 2015-2016 results:

The results of the survey conducted in 2015-2016 showed a similar pattern in terms of the use of recommendations for self-archiving (64.1% vs. 60.2% in 2016-2017). Institutional self-archiving requirements linked to internal performance evaluation were reported by a similar proportion of institutions in 2015-2016 and 2016-2017 (11.5% vs. 12.6%). However, financial support for researchers to publish their articles in open access increased between 2015-2016 and 2016-2017 (24.4% vs. 31.3%).

Almost 60% of the institutions with an existing policy on open access to research publications have registered their repository in ROARMAP (Figure 4).

Figure 4. Percentage of institutional repositories registered in the Registry of Open Access Repository Mandates and Policies (ROARMAP)



Notes: this question only applies to universities that replied "yes" in Figure 2. The sub-sample for this question is 180. Number of respondents: 178/180.

Comparison with 2015-2016 results:

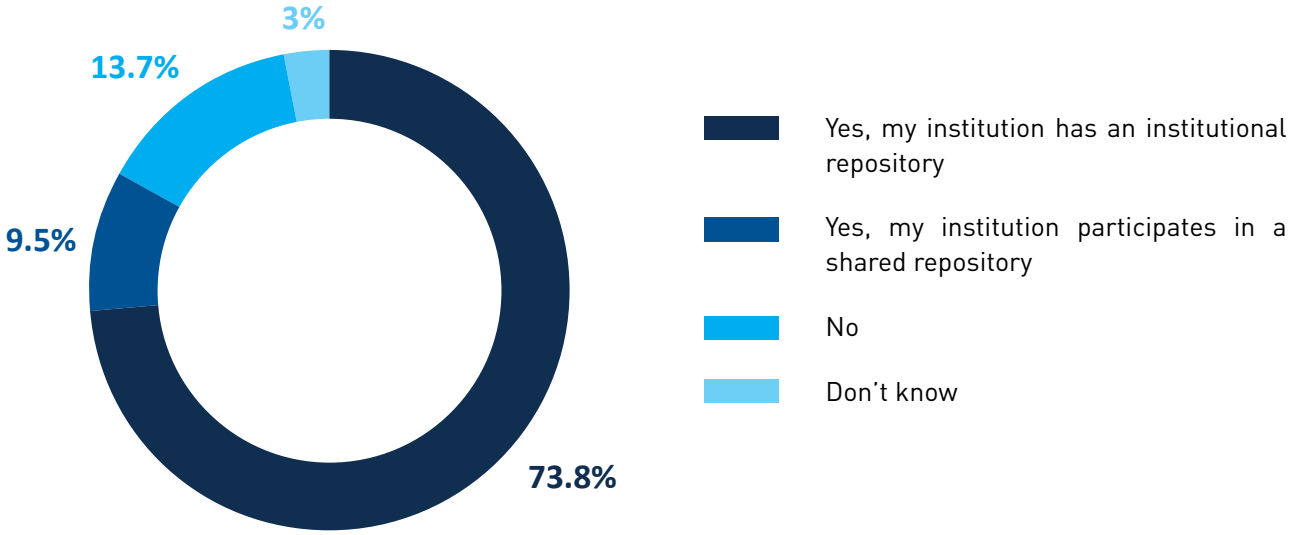
The pattern of responses in 2016-2017 and the previous year are very similar: in both cases, almost 60% of institutions had registered their open access policy in ROARMAP and around 35% did not.

3.1.1. Repositories and deposit rates

This section includes information about the existence and use of institutional repositories, software used, participation in the OpenAIRE portal and deposit rate evolution.

As shown in Figure 5, nearly three out of four institutions have a repository and about 10% participate in a shared repository. Almost 14% of the universities surveyed lacked both an institutional and a shared repository.

Figure 5. Existence of an institutional/shared repository



Number of respondents: 336/338.

Comparison with 2015-2016 results:

The results of the 2015-2016 survey were similar to those of 2016-2017 in terms of the institutions' own repositories or participation in shared repositories. In 2015-2016, almost 77% of universities had their own repository and about 12% participated in a shared repository. The number of institutions that did not participate in a shared repository or have their own increased from 9.5% in 2015-2016 to 13.7% in 2016-2017.

Repository software and aggregation

DSpace was the software most frequently used by institutions with either their own repositories or participating in a shared repository (Table 1).

Table 1. Repository software

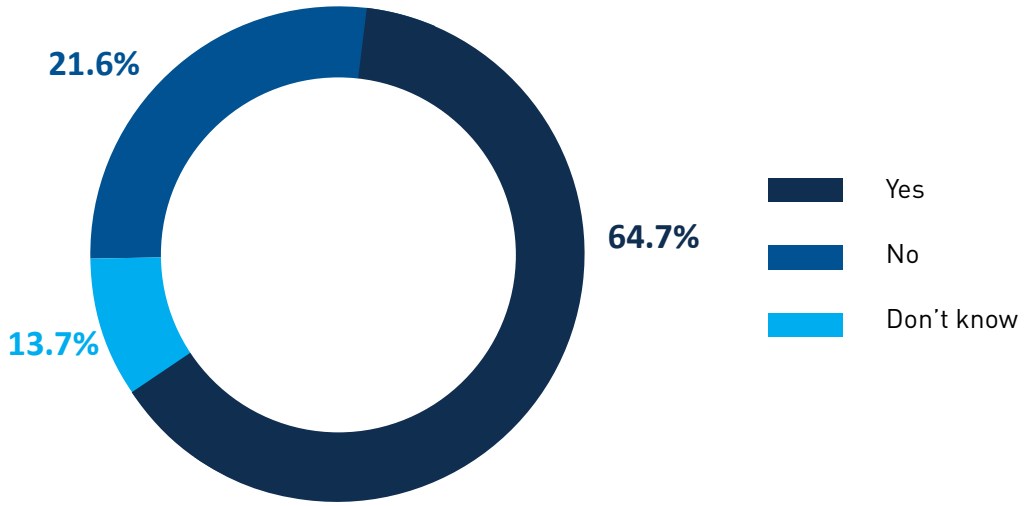
	Percentage
DSpace	45.5
Eprints	8.6
In-house software (e.g.part of the institutional information system)	7.2
Fedora	5
Invenio	2.5
Opus	1.4
Digital Commons	0.7
Other	23.4
Don't know	5.9

Notes: this question only applies to universities that replied "yes, my institution has an institutional repository" or "my institution participates in a shared repository" in Figure 5. The sub-sample for this question is 280. Number of respondents: 278/280.

The 'Other' category covers a wide variety of software. For example, some institutions used HAL, Iris, DiVA and Pure.

Almost seven out of ten institutions' repositories were aggregated by the OpenAIRE portal (Figure 6). Between 37% and 38% of these repositories used OpenAIRE Basic or OpenAIRE 3.0 (Table 2).

Figure 6. Institutional repository aggregated by the OpenAIRE[3] portal/infrastructure



Notes: Notes: this question only applies to universities that replied "yes, institutional repository" or "yes, shared repository" in Figure 5. The sub-sample for this question is 280. Number of respondents: 278/280.

Table 2. Institutional repository compatibility with OpenAIRE infrastructure

	Percentage
OpenAIRE Basic (DRIVER OA)	38.2
OpenAIRE 2.0 (EC funding)	4.7
OpenAIRE 2.0+ (DRIVER OA, EC funding)	20.6
OpenAIRE 3.0 (OA, funding)	36.5

Notes: this question only applies to universities that replied "yes" in Figure 6. The sub-sample for this question is 180. Number of respondents: 170/180.

Comparison with 2015-2016 results:

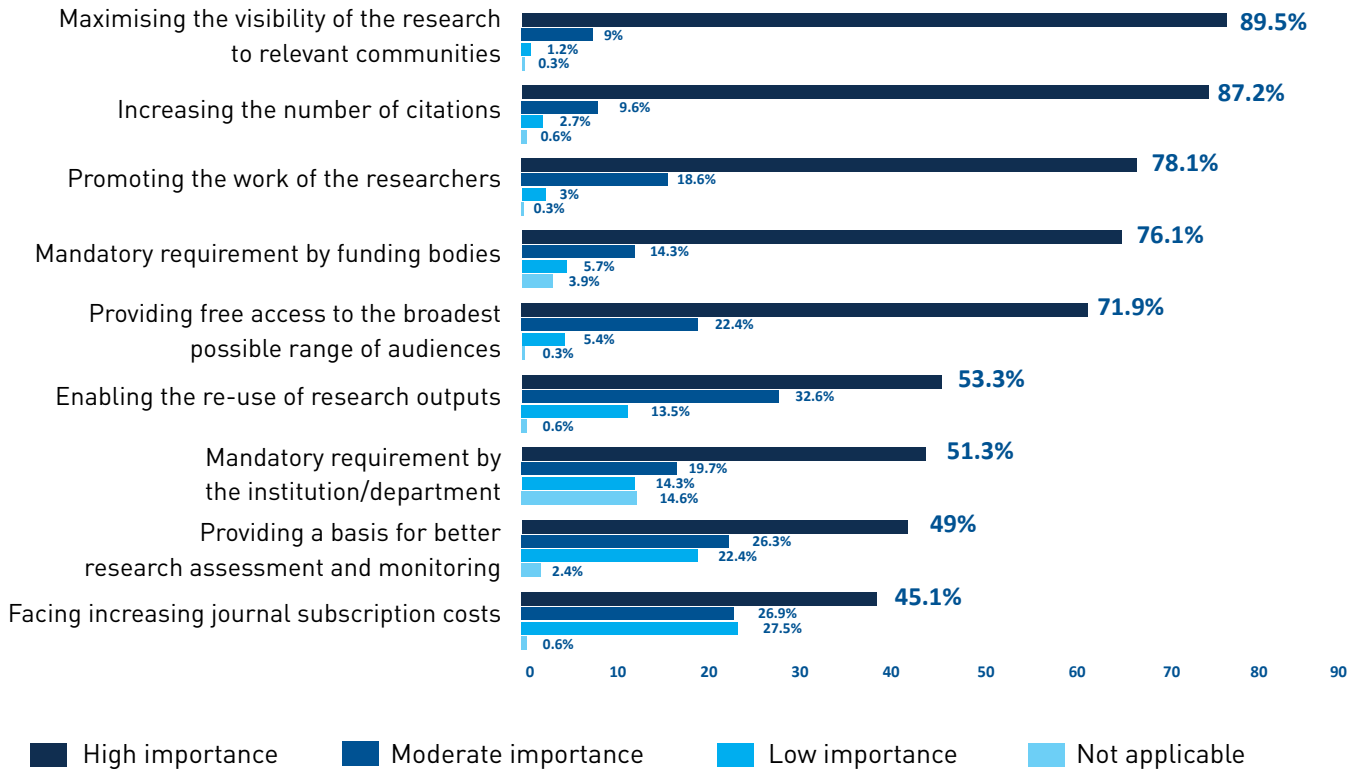
In 2016-2017, DSpace continued to be the most frequently used software, at 45% of institutions; in 2015-2016 this figure had been 51%. The proportion of repositories aggregated by the OpenAIRE portal was also similar, at 62% in 2015-2016 and 65% in 2016-2017.

3 www.openaire.eu

3.1.2. Drivers and barriers to self-archiving by researchers

To encourage researchers to self-archive their publications in the institutional or shared repository, a very high proportion of universities considered it was important to increase the visibility of research (89.5%) and the number of citations (87.2%, Figure 7). Over seven out of ten institutions indicated that research funding requirements were also critically important to increasing self-archiving.

Figure 7. Importance of different factors in encouraging researchers to self-archive research publications in a repository (green route/green open access)



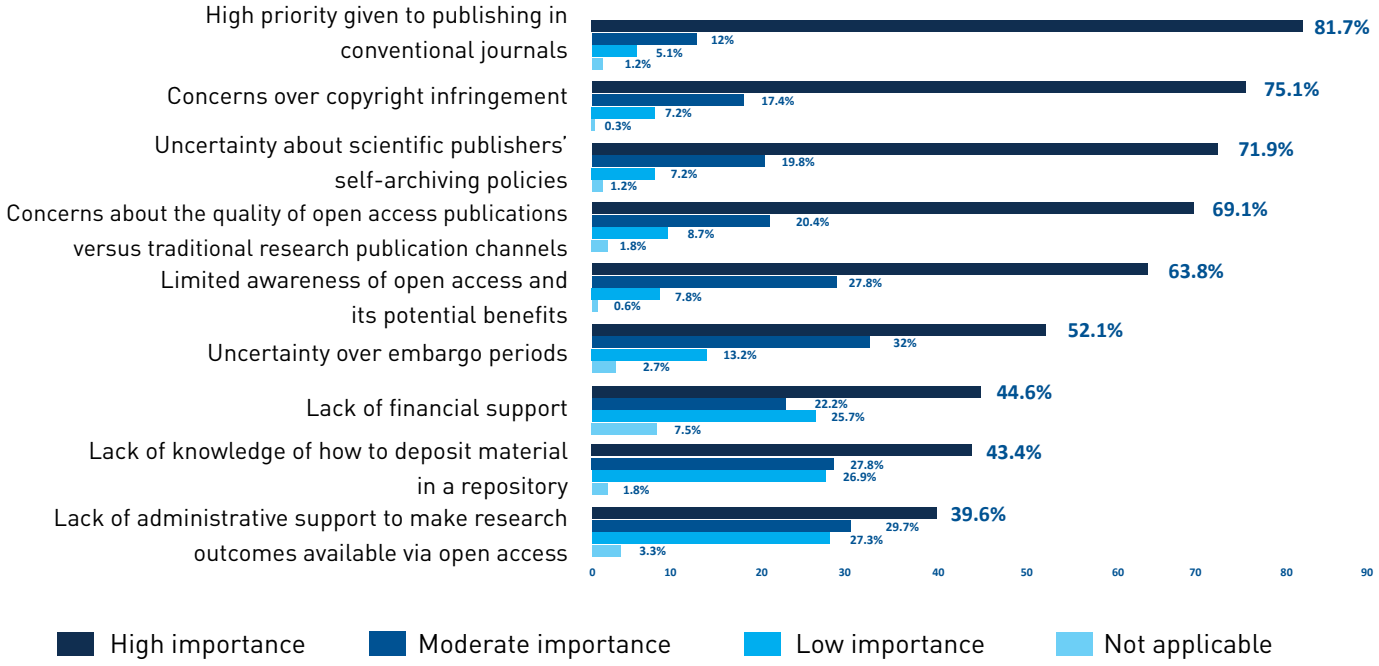
Notes: number of respondents: 335/338, except for the items, "Maximising the visibility of research," "Enabling the use of research outputs," and "Promoting the work of researchers," which had 334/338.

Comparison with 2015-2016 results:

The 2015-2016 survey showed a similar pattern of results. A very high proportion of universities (between 70%-80%) indicated that the most important reasons encouraging self-archiving were: maximising research visibility, increasing the number of citations, promoting researchers' work and mandatory requirements by funding bodies.

When looking at researchers' concerns about self-archiving (Figure 8), most institutions placed greatest importance on factors related to the importance of publishing in conventional journals (81.7%), which is probably related to research assessment. Uncertainties about copyright (75.1%), publisher policies (71.9%) and the reputation of open access publications (69.1%) were also frequently cited.

Figure 8. Researchers' concerns about self-archiving publications in a repository (green route/green open access)



Notes: number of respondents: 334/338, except items "Lack of administrative support to make research outcomes available via open access," and "Concerns about the quality of open access publications versus traditional research publication channels," which had 333/338.

Comparison with 2015-2016 results:

The question used in the 2015-2016 survey asked universities to indicate the frequency of different researchers' concerns. The list of potential concerns was also more limited than in the 2016-2017 survey. Despite these differences, uncertainty about scientific publishers' policies and concerns about copyright infringement ranked among the most frequent/important researcher concerns regarding self-archiving in both survey waves.

3.1.3. Institutional monitoring of open access to research publications

Universities were asked about the share of peer-reviewed open access publications (including journal articles, monographs/books, proceedings/conference papers) authored from members of the institution between 1 January 2013 and 31 December 2015. This question was open to all institutions surveyed, irrespective of whether the institution had an open access policy (Table 3). The results were analysed both for the overall sample and for the sub-sample of institutions with an existing open access policy. Only the overall sample results are presented below, as the outcomes for both samples were identical.

Table 3. Estimated percentage of peer-reviewed research publications (including journal articles, monographs/books, proceedings/conference papers) authored by members of the institution between 1 January 2013 and 31 December 2015 (all institutions)

	Deposit in the institutional /shared repository (green open access) (% of institutions)	Open access publishing (gold open access) (% of institutions)
Less than 20%	59.6	69.6
20-40%	22.7	19.9
40-60%	4.9	3.9
60-80%	7.6	3.3
More than 80%	5.3	3.3

Notes: number of responses: green open access = 225/338, gold open access = 157/338.

A 60-70% majority of institutions reported that less than 20% of their peer-reviewed research publications were available in open access, either through the green or gold route. In addition, over eight in ten universities indicated that a maximum of 40% of their publications were available in open access (repositories - green route, or open access publishing - gold route), which indicates that most peer-reviewed publications from the institutions surveyed are still not available in open access.

It is also worth noting that several institutions were unable to reply to this question as the institution lacked mechanisms for collecting and/or analysing open access publication data.

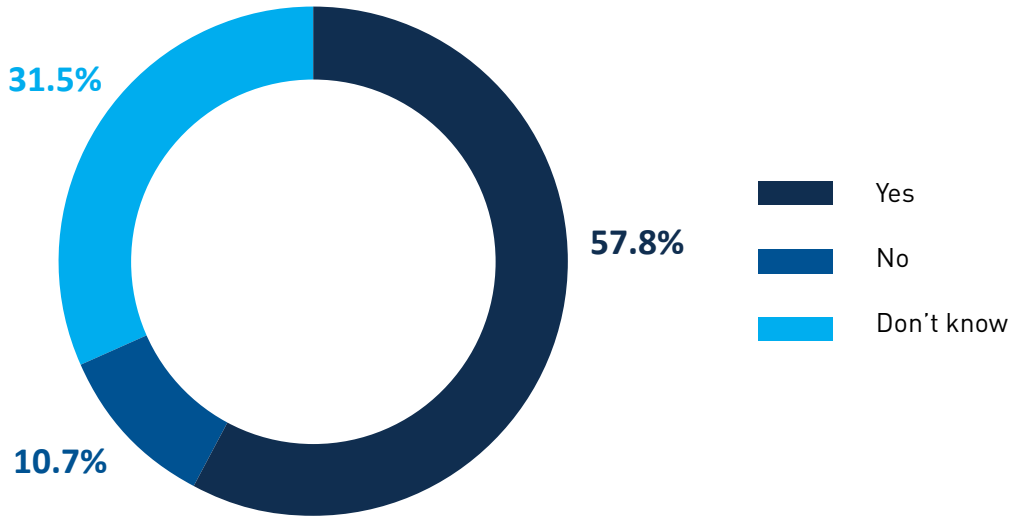
Comparison with 2015-2016 results:

The 2015-2016 and 2016-2017 results are broadly equivalent. In both survey waves, most institutions reported that less than 20% of their peer-reviewed publications were available in open access, whether via repositories (60% of universities in both 2015-2016 and 2016-2017) or open access publishing (80% in 2015-2016 vs. 70% in 2016-2017). The most relevant difference was found in the proportion of institutions with between 20-40% of their publications available through open access publishing – in 2015-2016 this was the case for only 8.5% of universities, but in 2016-2017 the proportion increased to 20%.

Effectiveness of institutional open access policies

Almost 60% of universities with an existing open access policy indicated an increase in the deposit rates in the institutional/shared repository (Figure 9). Almost 11% of these institutions indicated no increase in deposits and about 32% indicated that they did not know whether deposit rates had increased since they had adopted an open access policy.

Figure 9. Increase in the deposit rate of publications in the institutional/shared repository after adopting an institutional policy on open access to research publications



Notes: this question only applied to universities that indicated they had an institutional policy in place (Figure 2). The sub-sample for this question is 180. Number of respondents: 178/180.

Comparison with 2015-2016 results:

The 2015-2016 and 2016-2017 results are identical. In both survey waves, about 60% of institutions with an open access policy indicated an increase in repository deposit rates. Importantly, around 30% of the universities in both survey waves reported they had no information about the evolution of deposit rates in the institutional or shared repository.

Institutions that reported an increase in the deposit rate after adopting an open access policy were asked to provide more information about the evolution in depositing journal articles, monographs/books, proceedings/conference papers (all peer-reviewed) and doctoral theses.

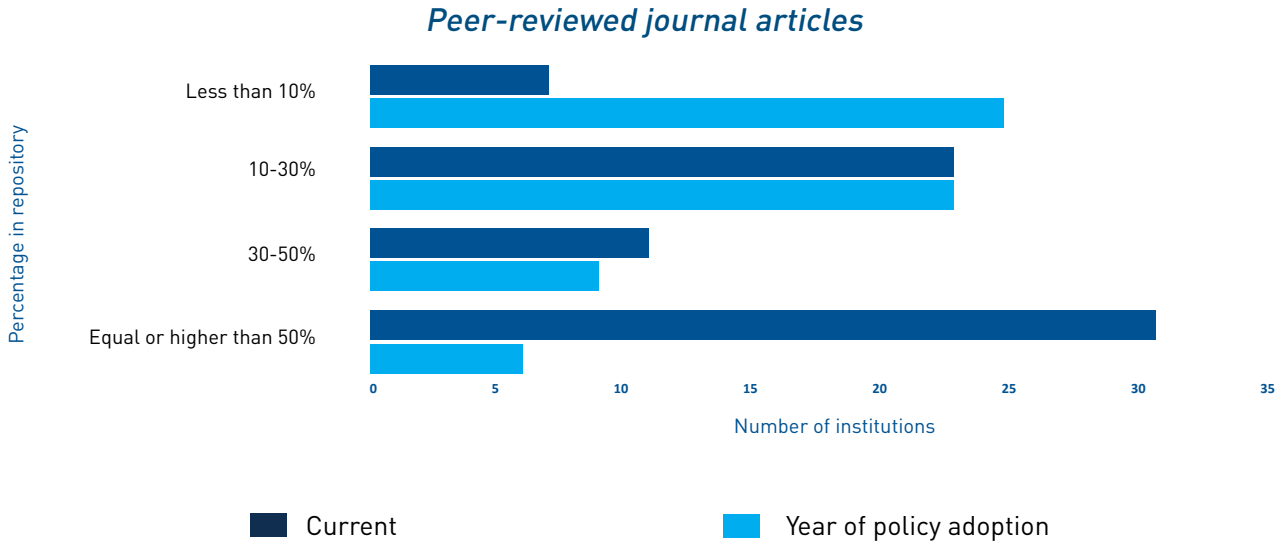
One hundred and three institutions reported an increase in deposit rates following adoption of an open access policy (Figure 7). The year in which this group of universities adopted their open access policy is shown in Table 4. A few institutions implemented their open access policies in the early 2000's, but most adopted open access policies between 2010-2015.

Table 4. Year of institution-wide adoption of the open access policy (institutions reporting an increase in deposit rates since policy adoption)

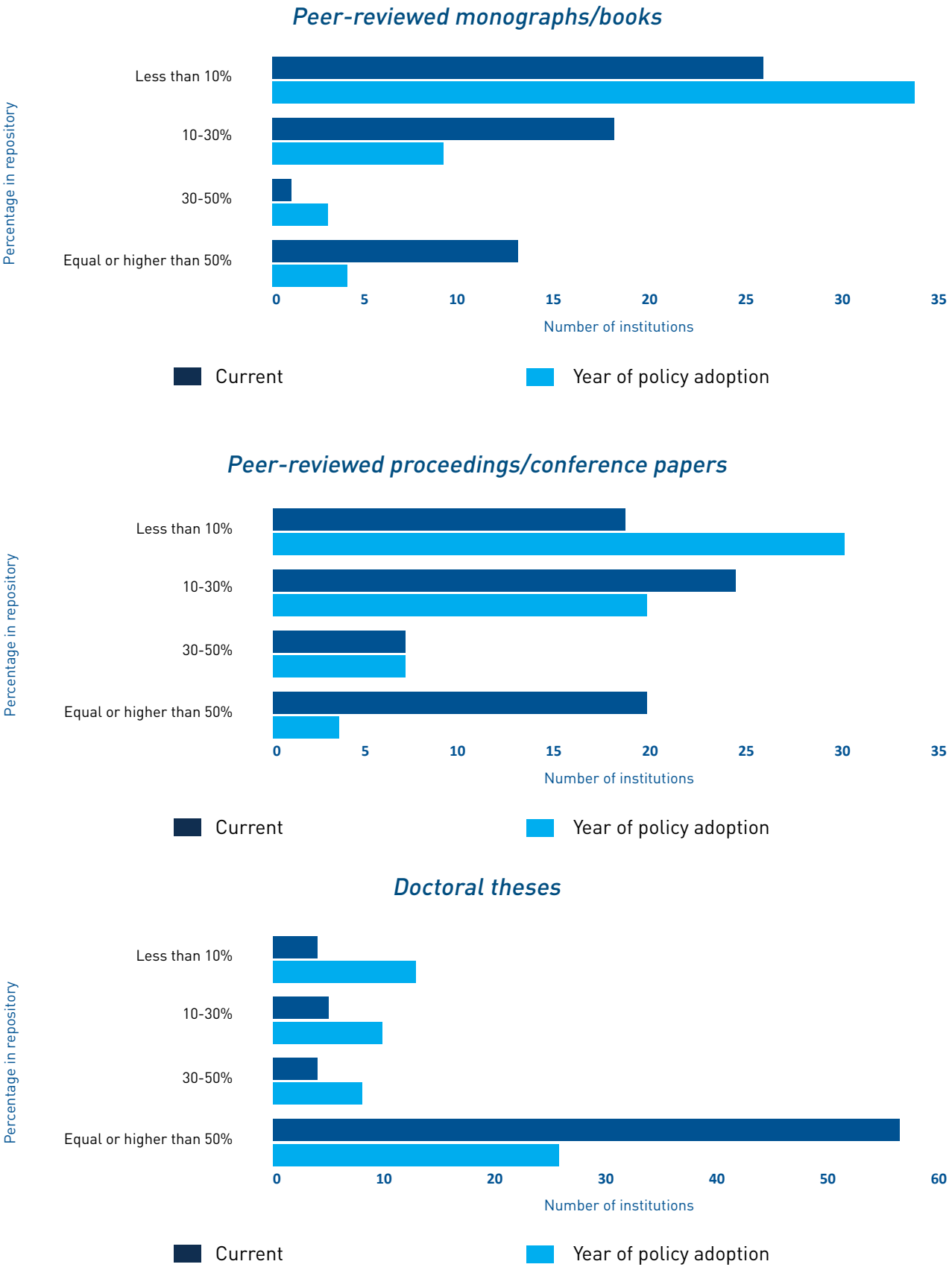
Year	Number of institutions
2000	1
2005	1
2006	2
2007	3
2008	5
2009	3
2010	9
2011	12
2012	9
2013	10
2014	12
2015	18
2016	7
Non-response	11
Total	**103**

Only a limited number of these 103 institutions provided figures for both current deposit rates and those at the time of the policy adoption. The data collected is presented in Figure 10. The very limited response rate means that the results can only be interpreted as an indication of the situation at these institutions[4].

Figure 10: Evolution in the deposit rates of publications in the institutional/shared repository



4 A similar analysis was performed for the data reported in the EUA OA Survey 2015-2016.

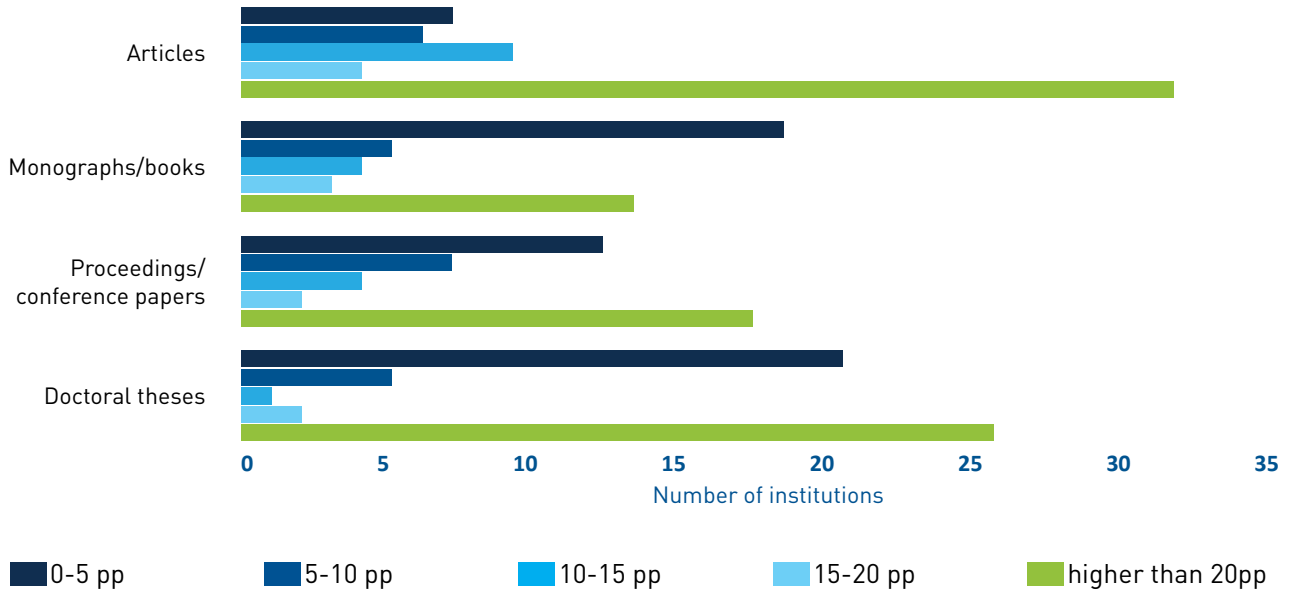


Notes: number of responses: journal articles (year of policy adoption = 63/103, current = 72/103); monographs/books (year of policy adoption = 50/103, current= 58/103); proceedings/conference papers (year of policy adoption = 52/103, current = 60/103); doctoral theses (year of policy adoption = 57/103, current = 70/103).

Most universities surveyed indicated having up to 30% of their peer-reviewed articles, monographs and conference papers in the repository when institutional policies were implemented. A higher number of institutions reported that 50% or more of their doctoral theses were deposited in the repository. After an open access policy was adopted, more institutions reported deposit rates equal to or above 50% in all types of publications, especially in peer-reviewed journal articles and doctoral theses. Monographs/books and, to a lesser extent, conference papers, are more frequently deposited at rates of up to 30%.

The evolution of deposit rates in institutional/shared repositories was also analysed by looking at the increase in deposit rates from the year of policy adoption to date. Deposit rates in the year of policy adoption were subtracted from current deposit rates, for each separate publication type. The results are expressed as percentage points and shown in Figure 11.

Figure 11. Increase in deposit rates per publication type (in percentage points, pp)



Notes: number of responses: articles = 57/103, monographs/books = 43/103, proceedings/conference papers = 42/103, doctoral theses = 53/103. Only institutions that provided data for both current deposit rates and deposit rates in the year of policy adoption were included in the analysis.

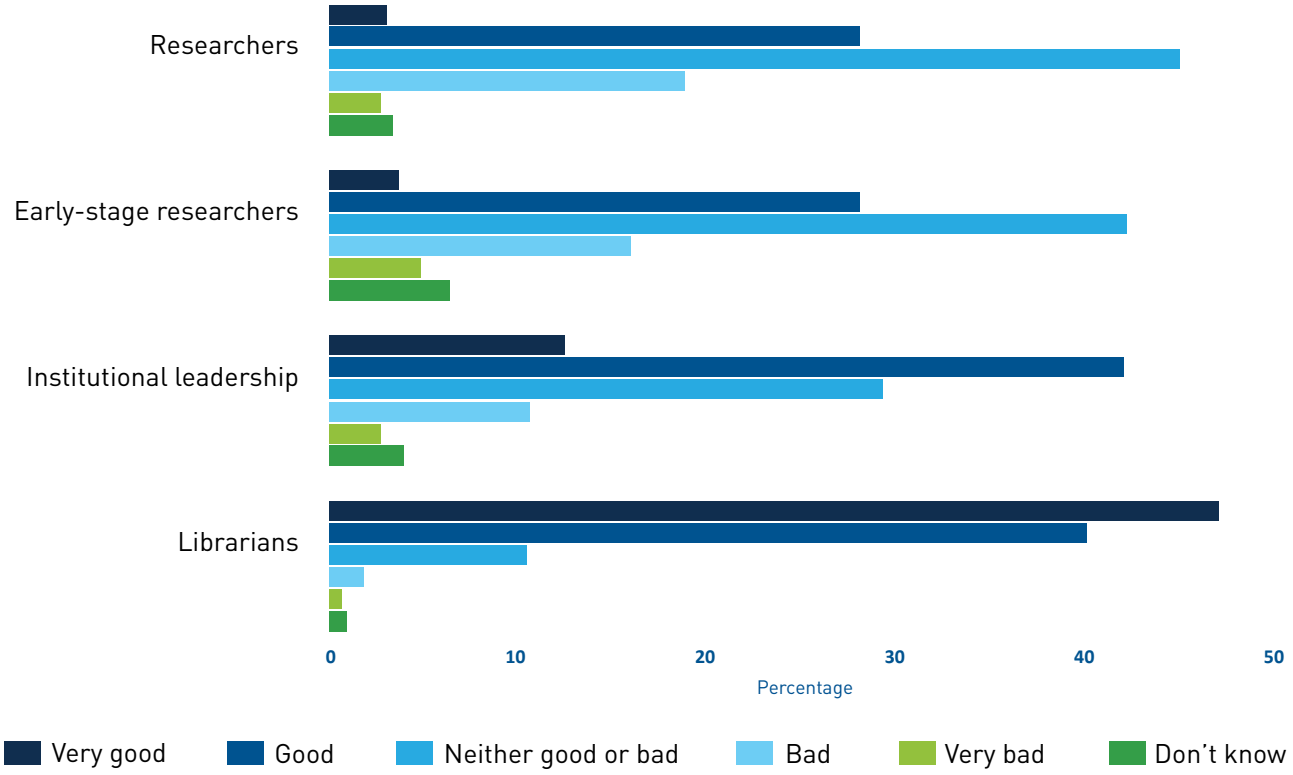
For all types of publications, except articles, most institutions reported either a modest (between 0-5 pp) or a more significant increase (more than 20 pp). Only a few universities reported moderate increases (between 5 and 20 pp). However, for peer-reviewed articles, a clear majority of universities indicated deposits had increased by more than 20 pp after adopting an open access policy. Deposit rates for doctoral theses also increased by more than 20 pp at most universities.

3.2. Institutional awareness of and financial support for open access

The survey included questions about levels of awareness of different aspects of open access among different groups, namely institutional leadership, librarians, early-stage researchers (e.g. doctoral candidates, post-docs) and researchers (e.g. faculty).

As shown in Figure 12, librarians were seen as having the best knowledge of scientific publishers' open access policies – 86.3% of institutions considered their knowledge as 'good' or 'very good', followed by institutional leadership at 53.9%, and early-stage researchers and researchers at 31% each. It is also worth noting that around 40% of institutions assessed both groups of researchers awareness of publishers' policies as 'neither good nor bad'.

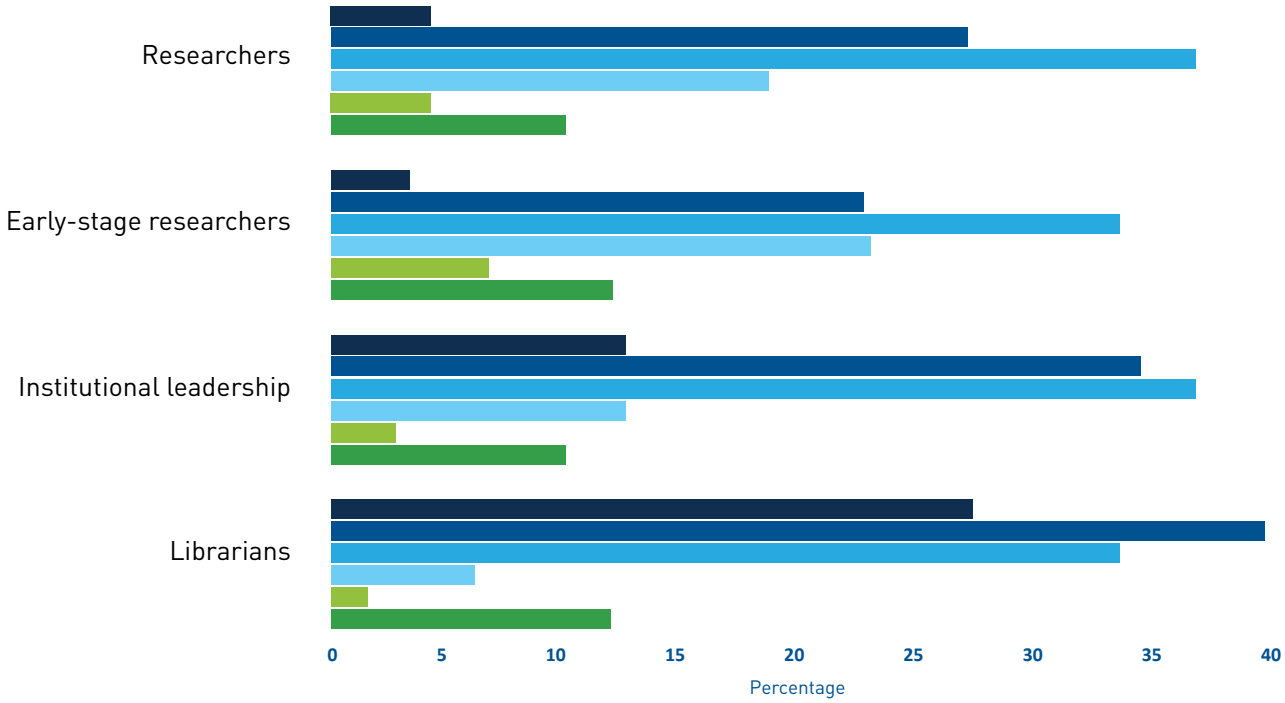
Figure 12. Awareness of scientific publishers' open access policies among different university populations



Notes: number of respondents: 335/338, except for institutional leadership and researchers with 334/338. 'Early researchers' means doctoral candidates and post-docs and 'researchers' means faculty and other research professionals.

Librarians and the institutional leadership were again seen to have the best knowledge of the open access rules defined in Horizon 2020 (Figure 13). Librarians were seen to have 'good' or 'very good' knowledge by 66.3% of the respondents and institutional leadership achieved 46.5% in these categories. However, knowledge of the open access rules set out in Horizon 2020 was assessed in a negative way ('very bad' or 'bad') with early-stage researchers scoring 30% and established researchers 22.6% by the institutions surveyed.

Figure 13. Awareness of the open access rules defined in Horizon 2020 - the current EU framework programme for research and innovation



Notes: number of respondents: 331/338, except for librarians with 333/338 and researchers with 332/338. 'Early researchers' means doctoral candidates and post-docs and 'researchers' means faculty and other research professionals.

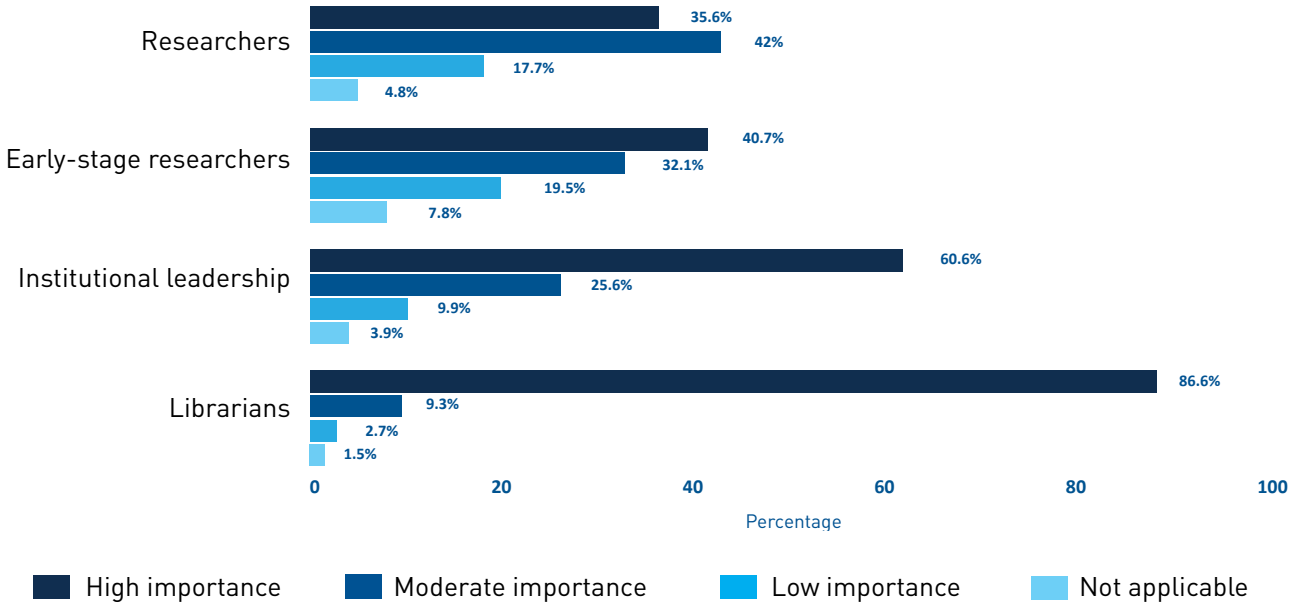
Comparison with 2015-2016 results:

The results of the 2015-2016 survey are consistent with 2016-2017. In 2015-2016, librarians and institutional leaders were considered most knowledgeable about publishers' open access policies (88.1% of universities considered librarians awareness to be 'good' or 'very good' and institutional leaders scored 54% in these categories) and about the Horizon 2020 open access rules (e.g. 70% of universities indicated librarians awareness 'good' or 'very good').

The 2015-2016 survey did not distinguish between researchers and early-stage researchers; nevertheless, by and large, 'researchers' were considered as being least aware of publishers' open access policies and the Horizon 2020 open access rules.

Overall, most universities considered that open access is important or very important for all professional groups (Figure 14). Open access was considered as being highly strategically important for librarians at almost 86.6% of the institutions surveyed, while the same was true for 60.6% of institutional leadership. Between 35-40% of institutions considered open access strategically important for both groups of researchers.

Figure 14. The strategic importance of open access at the university

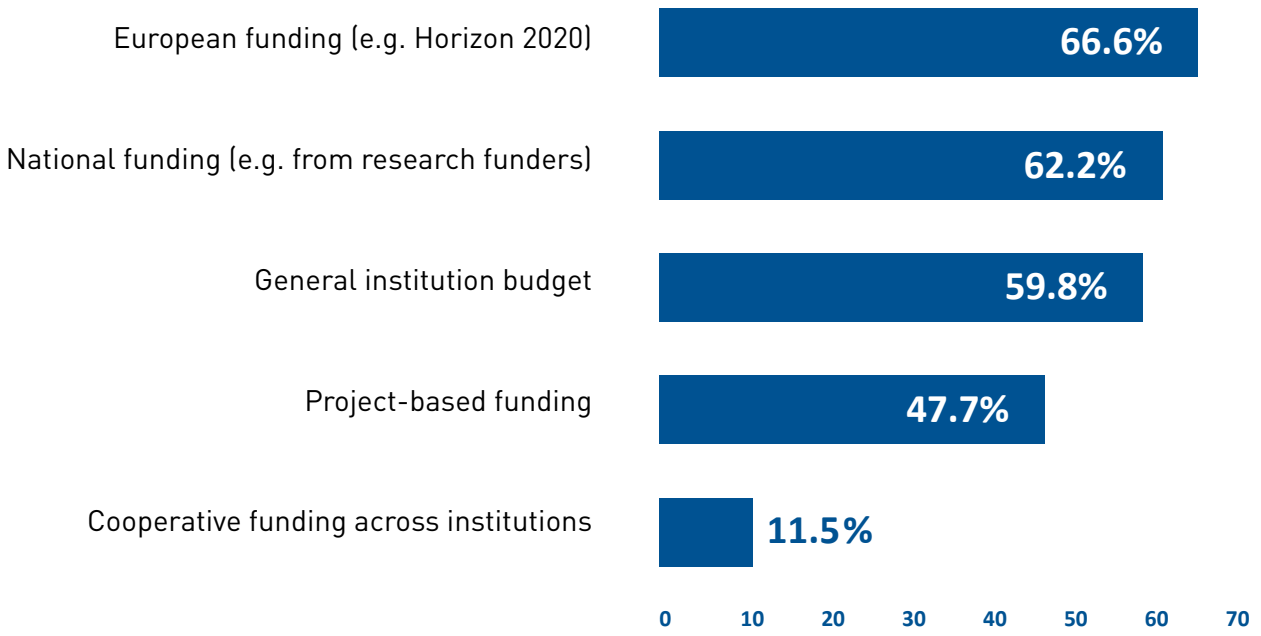


Notes: number of respondents: 334/338, except for institutional leadership with 333/338 and librarians with 335/338. 'Early researchers' means doctoral candidates and post-docs and 'researchers' means faculty and other research professionals.

Financial support to open access to research publications

Over half of the institutions surveyed indicated they could access both European and national funding, in addition to the institution's own budget, to support open access to research publications (Figure 15).

Figure 15. Sources of funding to support open access to research publications



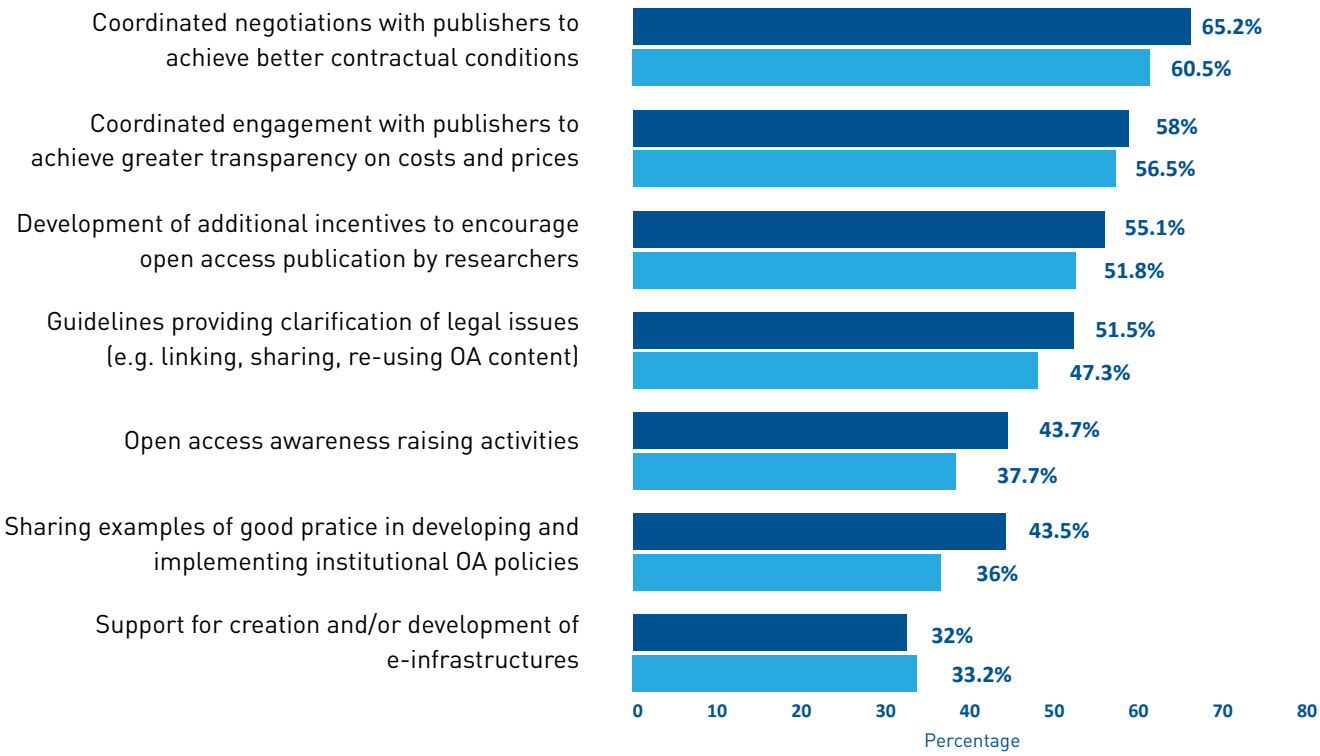
Number of respondents: 323/338. Multiple-choice question.

3.3. National and European actions to promote open access to research publications

Figure 16 shows the proportion of universities that strongly agreed with different national and European actions in the area of open access to research publications. Coordinated engagement and negotiations with scientific publishers to improve contractual conditions and secure greater transparency on costs were seen as the most relevant areas at both national and European levels.

Activities to raise awareness about open access and share good practices on institutional open access policies were generally considered more important at national than at European level.

Figure 16. National and European priorities for open access to research publications



Notes: the chart displays the percentages of 'strongly agree' responses. Number of respondents: between 329 and 334/338.

Comparison with 2015-2016 results:

The 2015-2016 survey included a more limited list of items than the 2016-2017 version. In 2015-2016, the two actions perceived as most important (between 56-58%) at both national and European levels were: the development of more incentives for researchers and the provision of guidelines clarifying legal matters.

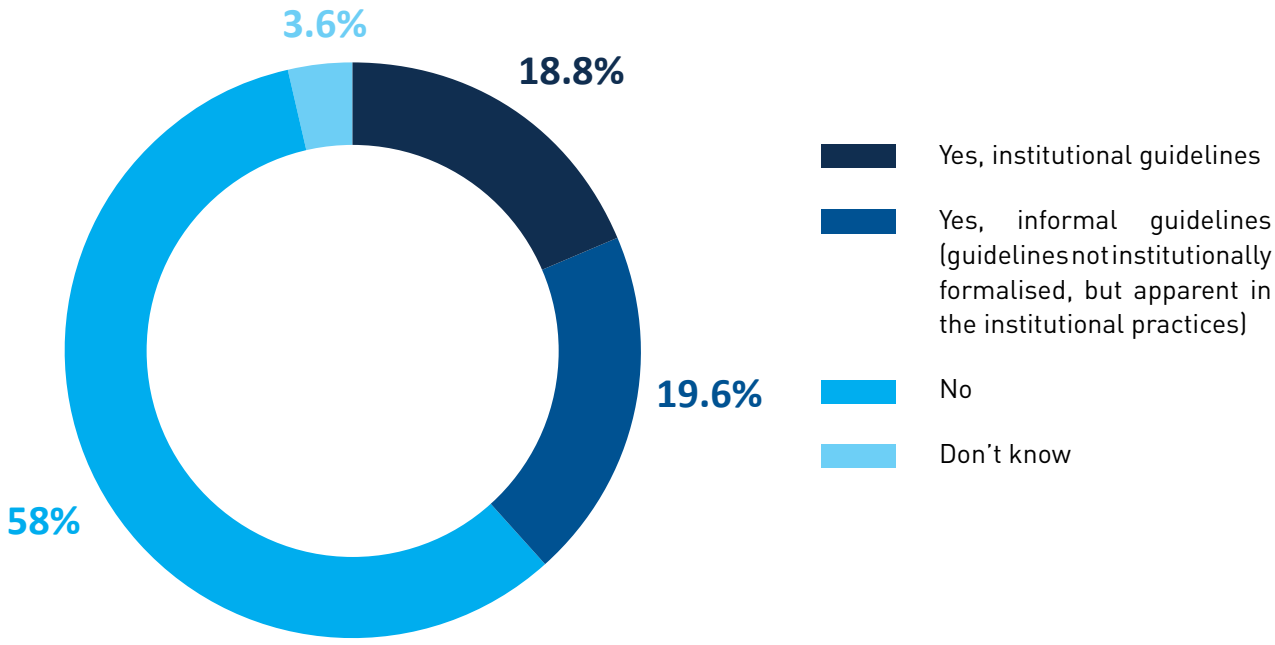
4. Research Data Management and Open Access to Research Data

The 2016-2017 survey included a dedicated section on research data management and open access to research data. The 2015-2016 survey had only considered open access to research data. Distinguishing between these concepts in 2016-2017 allowed a more detailed understanding of the different levels of development of research data management and open access to research data at institutions across Europe.

4.1. Institutional guidelines, awareness and organisational structures

Only about 19% of the institutions surveyed had an institutional research data management policy (Figure 17); 19.6% of the institutions indicated that they had informal guidelines in place. Consequently, almost six out of ten universities reported having no RDM guidelines.

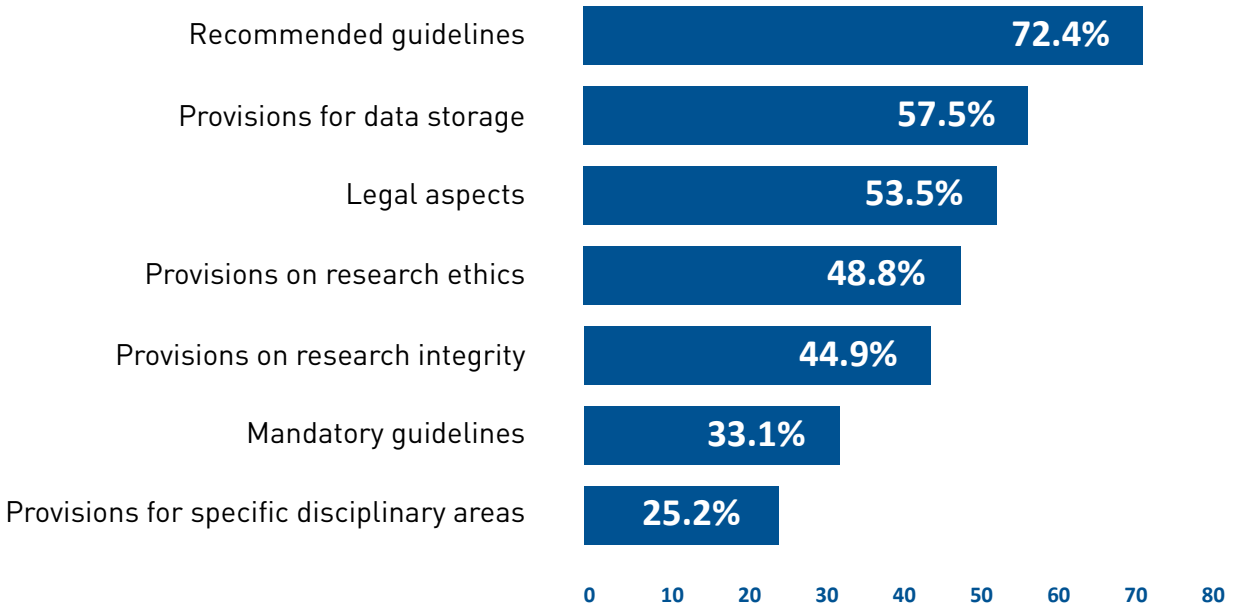
Figure 17. Existence of institutional guidelines for research data management



Number of respondents: 336/338.

The vast majority of institutions with research data management guidelines (including informal principles) had developed recommendations. Over half of the institutions also included data storage provisions and information about legal aspects (Figure 18).

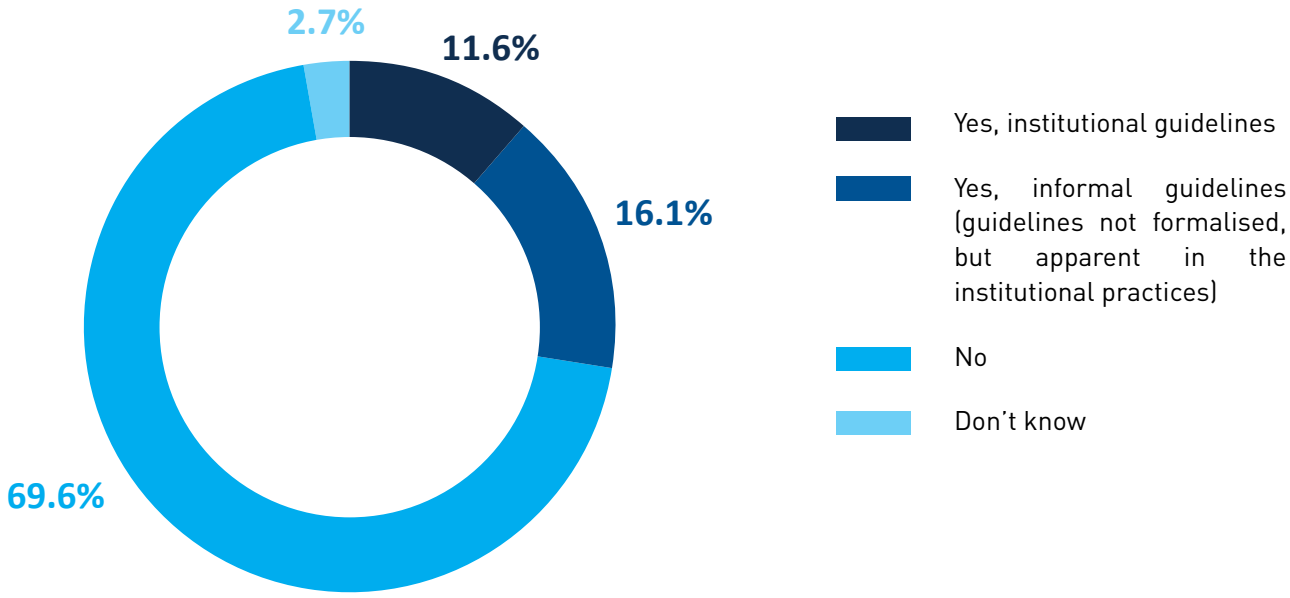
Figure 18. Elements covered by institutional guidelines for research data management



Notes: multiple-choice question. Number of respondents: 127/129. Only the institutions that answered "Yes, institutional guidelines" or "Yes, informal guidelines" in Figure 17 were included in this analysis.

A lower proportion of institutions reported the existence of formal or informal guidelines for open access to research data (27.7%; Figure 19). Almost seven out of ten institutions indicated not having any guidelines for open access to research data in place.

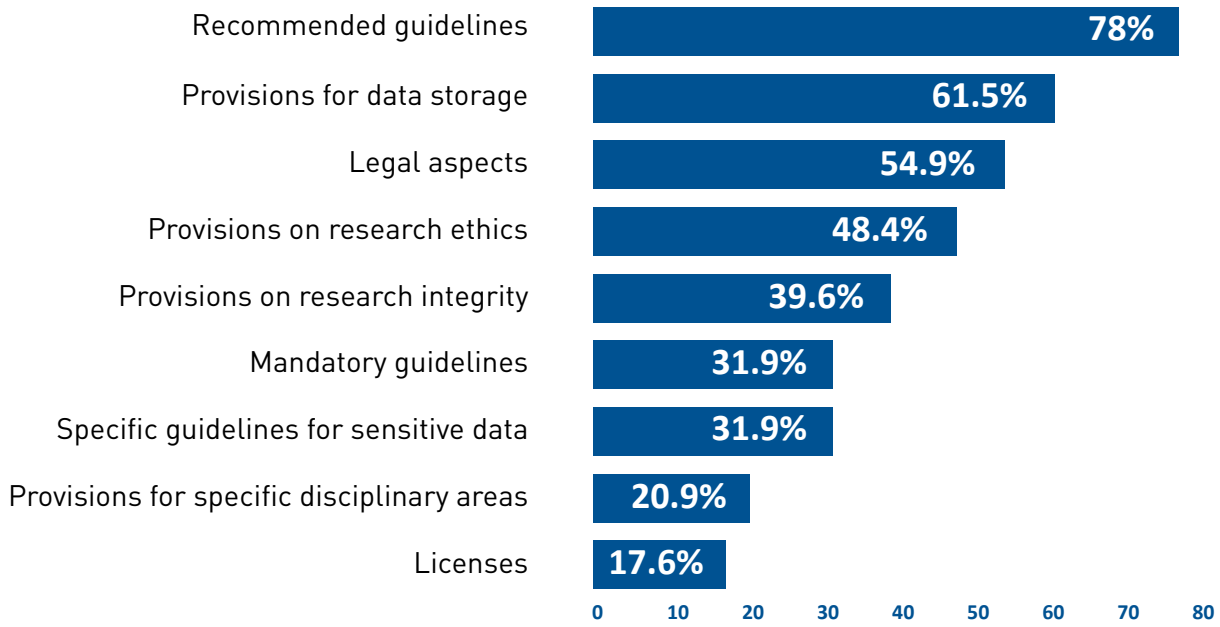
Figure 19. Existence of institutional guidelines for open access to research data



Number of respondents: 336/338.

Like institutional guidelines for research data management, the most common elements of guidelines for open access to research data were: recommendations, provisions for data storage and legal issues (Figure 20). Provisions for specific disciplines and licenses were seldom mentioned.

Figure 20. Elements included in institutional guidelines for open access to research data



Notes: multiple-choice question. Number of respondents: 91/93. Only the institutions that indicated "Yes, institutional guidelines" or "Yes, informal guidelines" in Figure 19 were included in this analysis.

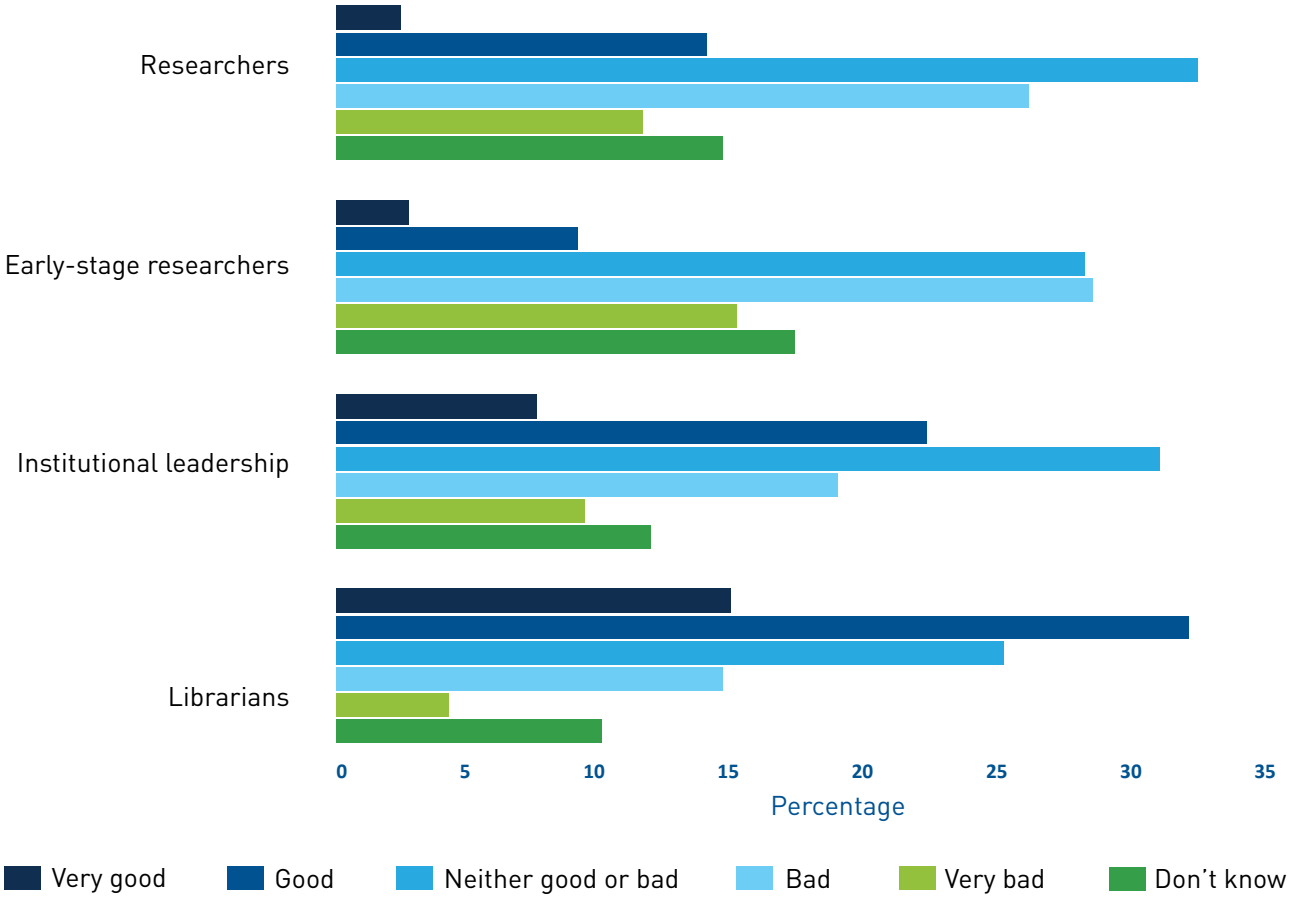
Comparison with 2015-2016 results:

The 2015-2016 survey only included questions focusing on open access to research data. The total proportion of institutions reporting formal or informal guidelines in 2015-2016 was 24.8%. 72.2% reported having no such guidelines in place. These figures are broadly consistent with those observed in 2016-2017.

Awareness of the Horizon 2020 Open Research Data Pilot

Institutions were also asked about different university populations' awareness of the Horizon 2020 Open Research Data Pilot (Figure 21). These were generally low, particularly among early-stage researchers and researchers. About 19% of institutions considered librarians' awareness as 'very bad' or 'bad'. This figure increased to 28.0% for institutional leadership, 37.2% for researchers and 43.2% for early-stage researchers.

Figure 21. Awareness of the Horizon 2020 Open Research Data Pilot



Notes: number of respondents: 333/338, except for institutional leadership with 332/338. 'Early researchers' means doctoral candidates and post-docs and 'researchers' means faculty and other research professionals.

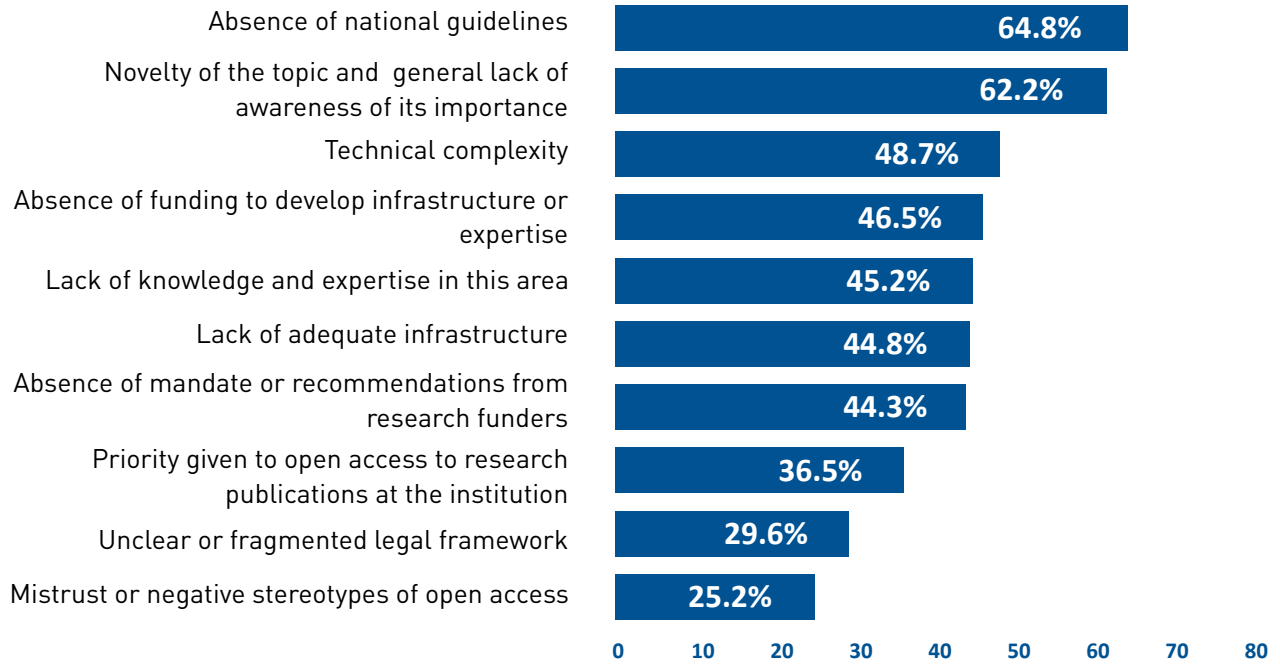
Comparison with 2015-2016 results:

The results of the 2015-2016 survey are consistent with those in 2016-2017. In 2015-2016, librarians and institutional leaders were considered to have most knowledge about the Horizon 2020 Open Research Data Pilot (49.7% of universities considered librarians' awareness 'good' or 'very good'. For institutional leaders, this figure was about 35%). As a group, researchers were considered least aware of the Horizon 2020 Open Research Data Pilot.

Reasons for a lack of guidelines for research data management and/or open access to research data

Universities with no policies or guidelines for research data management and/or open access to research data indicated that this was most often due to the absence of national guidelines and a general lack of awareness of the importance of these areas (Figure 22). Lack of infrastructure and expertise, the absence of dedicated funding or research funding requirements, and the technical complexity of research data management and open access to research data, all make a relevant contribution to the absence of institutional policies. Interestingly, about a quarter of institutions also mention negative open access stereotypes.

Figure 22. Reasons for the absence of institutional guidelines for research data management and/or open access to research data

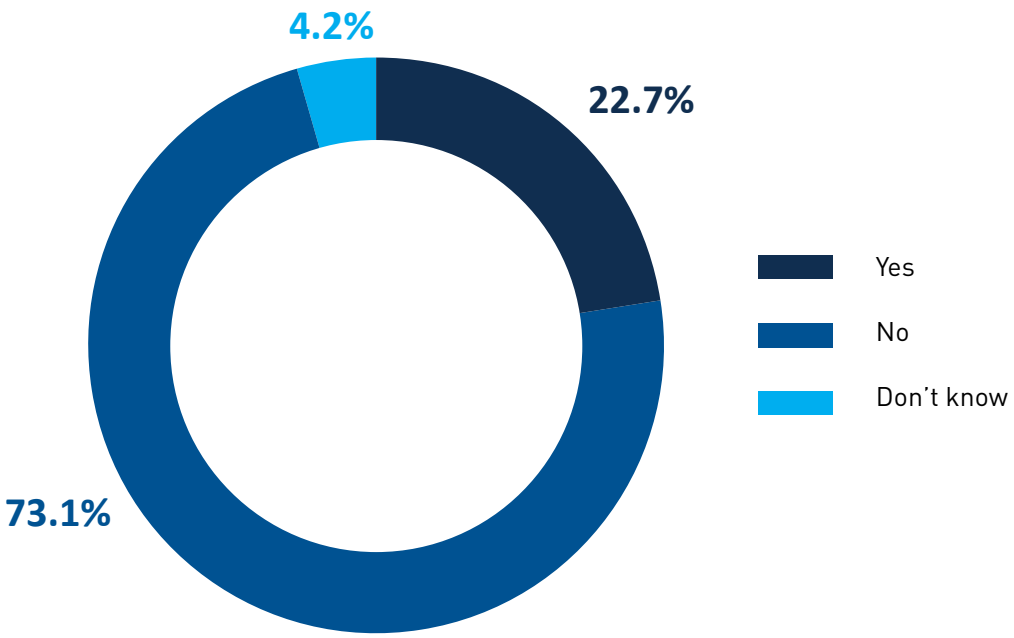


Notes: multiple-choice question. Number of respondents: 230/244. Only those institutions that answered 'No' in Figure 17 or 19 were included in this analysis.

Organisational structures

Universities were also asked about the existence of open research data working groups or committees. As shown in Figure 23, less than one quarter of the institutions surveyed reported the existence of such structures.

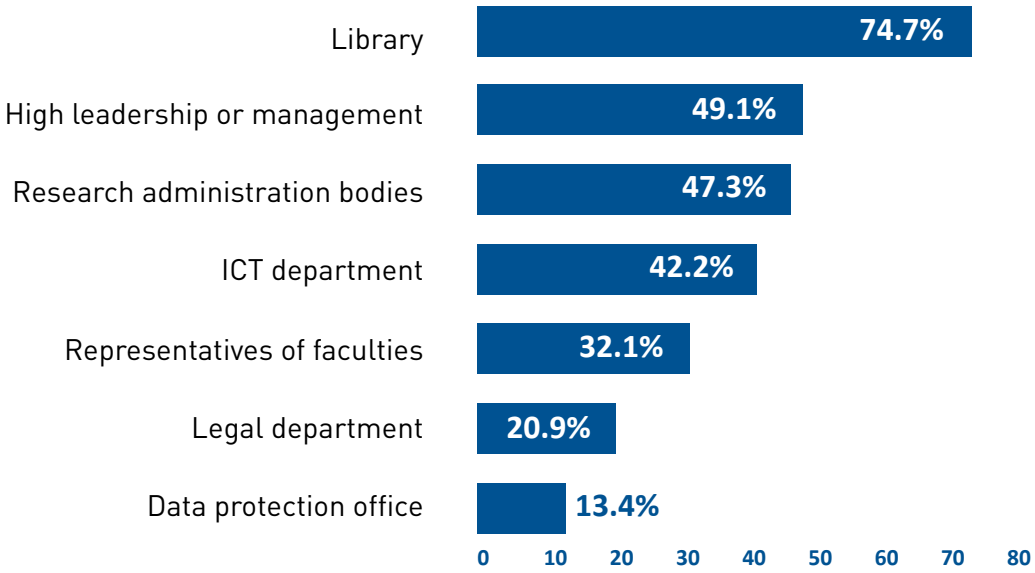
Figure 23. Establishment of a permanent open research data working group or committee



Number of respondents: 331/338.

Universities also reported the composition of the governance structure responsible for research data management and/or open access to research data at institutional level (Figure 24). The library handled these topics at over seven out of ten institutions. High-level institutional management, research administration bodies and the ICT department were also involved at over 40% of the institutions. The legal department and data protection office were less often involved.

Figure 24. Governance structure responsible for research data management and/or open access to research data at institutional level

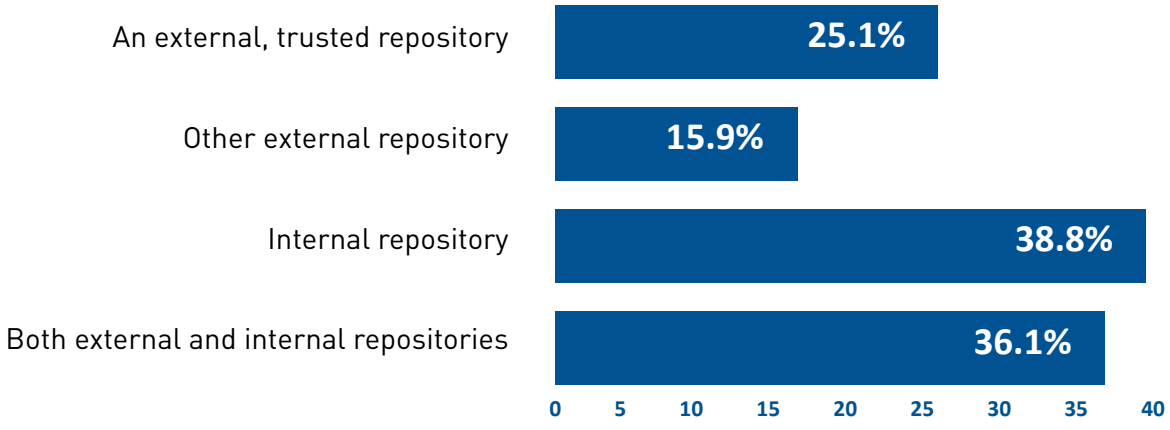


Notes: multiple-choice question. Number of respondents: 277/338.

4.2. Research data management and open access to research data infrastructure and resources

Slightly over a third of the institutions stated that they used either internal or internal and external repositories for research data management and/or open access to research data (Figure 25). A quarter of universities reported using an external, trusted repository (e.g. identified through re3data.org).

Figure 25. Infrastructure used for research data management and/or open access to research data



Number of respondents: 263/338.

Institutions were asked to indicate the type of resources they needed to streamline research data management activities, including data creation, data storage and data curation. The resources identified can be grouped into the following three broad categories:

A. Human resources

- Need for skilled, specialist support staff (e.g. data stewards, ICT personnel, administrative support, archive staff, library staff).
- Need to train existing staff.
- Need to increase staff numbers.

B. Technical resources

- Data repositories.
- Appropriate e-infrastructure.
- Appropriate software (e.g. open source software, in-house solutions).

C. Transversal needs

- Sustainable funding for human resources and technical e-infrastructure.
- Awareness raising activities/research data management advocacy for different. institutional groups: university leadership, faculty management and researchers.
- Awareness raising activities about the importance of research data management and how it can be applied in different scientific fields (taking into account their specificities).
- Clear university research data management policies and guidelines, including legal considerations. University policies and guidelines should also include provisions for different scientific fields.
- Guidance for drafting data management plans.
- Institutional strategy on data storage that considers eventual changes to support and accommodate growth.
- Research data management coordination at institutional level.

Research data management and open access to research data skills

Universities identified several skills and other requirements needed to implement research data management and open access to research data at institutional level:

- Legal skills, including knowledge of copyright, licensing, data privacy, data protection.
- Technical skills: data experts or library staff with specific training on:
    - Metadata
    - Data storage, management, data curation, data preservation
    - Technical standards
    - Data sharing
    - Data archiving.

- Technical skills: IT experts with the skills to develop e-infrastructure.
- Increase researchers' skills in areas such as: data visualisation, data mining, and data quality.
- Professionals with a knowledge of national and European research data management/ open access policies and data standards.
- Professionals who can advise researchers on the technical, organisational and operational aspects of research data management.
- Mechanisms for coordination between researchers, librarians and other technical staff.
- Mechanisms for research data management/open access coordination across the institution.

Examples:

"Training, both administrative staff and researchers in data management, curation and quality, support for archiving research data, tools for metadata creation and management, efforts to drive cultural change, etc." (A Finnish Institution)

"Training or recruiting more technical, library and legal staff to extend and improve the support service. Soft skills training and eLearning programs to help research teams understand new requirements. DMPonline tools more specifically designed to meet H2020 requirements." (An Italian Institution)

"The most critical and underdeveloped issues are user-friendly data environments during the research stage, funding research data management costs per project/ discipline (is there actually a viable business case for FAIR-based research data management in each discipline and how to deal with this), and related to this, what is the general applicability, viability (costs) and consequences of the rather complex FAIR Research Data Management principles (what does interoperable actually mean in real life at what costs), avoiding mistakes with Open Access publishing (e.g., is CC-BY license actually a good idea for data, shades of access is what most researchers find (more) acceptable (...) Researchers often don't know what is expected of them. A typical researcher comment is, "Do they now also expect us to become data scientists, I don't have the time or money for that even if I wanted to." Representatives/contact persons working for funders are often unable to provide clear answers about what is reasonably expected (especially in relation to what is or not eligible for funding), which leads to further confusion. Access and licensing alternatives that balance the interests of all parties involved), researcher awareness (the open science message/propaganda does not work for all researchers, broaden the discourse), and when and why should data stewards enter the research data management process (again at what cost)." (A Dutch Institution)

Virtually all of the institutions surveyed indicated a greater or lesser possession of the skills identified above. For example, the vast majority of institutions have legal and technical (both IT and library-related) skills available, distributed among their library, legal, research and IT services. What is needed is more specialist training for current staff, as well as more time for staff to work on research data management and open access to data. Several institutions indicated they would need more funding to be able to recruit more staff to work on these areas. Institutions also indicated they would need more professionals with knowledge and skills covering the different areas relevant to research data management and open access to data (e.g. IT skills, legal knowledge, data management skills).

Institutions were also asked about the support that researchers, including doctoral candidates, who are interested in open access to research data, receive. The open-ended answers provided were classified into different categories, which are presented below. The proportion of universities that indicated a response in each category is also provided. It is important to note that about 26% of institutions do not currently provide support to researchers interested in open access to research data, but they are planning to do so in the near future.

A. **Support services provided by library or other specialised staff, typically on a one-to-one basis**. Such support typically focuses on legal issues, technical help (e.g. archiving, managing data, open access to data, advice on data repositories, information about policies relevant to research data management and/or open access to data) (20.8%).

B. A **dedicated office or service** supporting researchers is available at some institutions. Examples include an open access office, helpdesk, research data management support desk, university data centre. Support typically focuses on technical issues, legal matters and information about relevant policies (9.9%).

C. **Training for researchers and support staff** (e.g. research data management workshops, H2020) provided on a regular basis or ad hoc on demand (22.6%).

D. **Training for graduate students**, including doctoral candidates: some institutions provide courses, workshops or specialist training about open science, research data management, legal and ethical matters (22.6%). A few institutions provide doctoral candidates with individual support to create data management plans.

E. **Information events** focusing on research data management and/or open access to research data (6.7%).

F. **Institutional website** with information about research data management and open access to research data, blogs, newsletters (13%).

G. **Specific financial support for researchers**, including doctoral candidates, to attend events on open access to research data and/or for open access publications (1.8%).

Examples:

"Support for writing grant applications, support for creating a data management plan, legal advice (IPR), advice on where to deposit data. Awareness raised via websites, seminars." (A Dutch Institution)

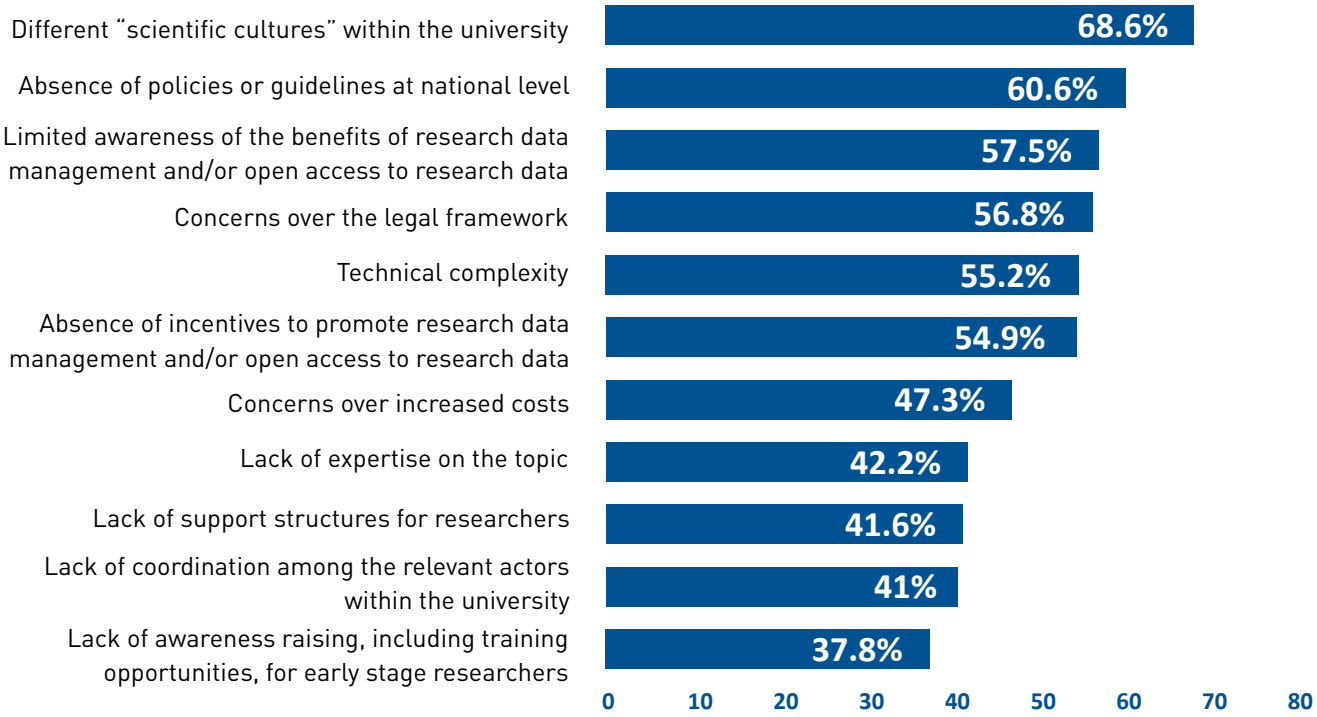
"The university encourages open access publication by researchers to increase author and institutional visibility and to extend free access to research outcomes. The doctoral school has a course." (A Romanian Institution)

"The Research Data Management Group provides guidance and advice. Researchers have access to the recently established skills development program, which also covers topics relating to open access to data. In 2017, research support staff will also receive training that will help them provide local support to researchers interested in sharing their data openly. In terms of promotion, the Research Data Management Group achieve this through training and by organising events, attending departmental meetings and also by engaging in institutional discussions around the topic." (A Norwegian Institution)

4.3. Barriers to research data management and open access to research data

Institutions identified a wide range of institutional level barriers to research data management and open access to research data (Figure 26). Different scientific cultures and the absence of national guidelines were identified as major barriers by over six out of ten institutions. A combination of scarce institutional resources, inherent technical complexity and low awareness of the benefits of research data management and open access to research data were the factors most identified as institutional barriers.

Figure 26. Institutional barriers to promoting research data management and/or open access to research data

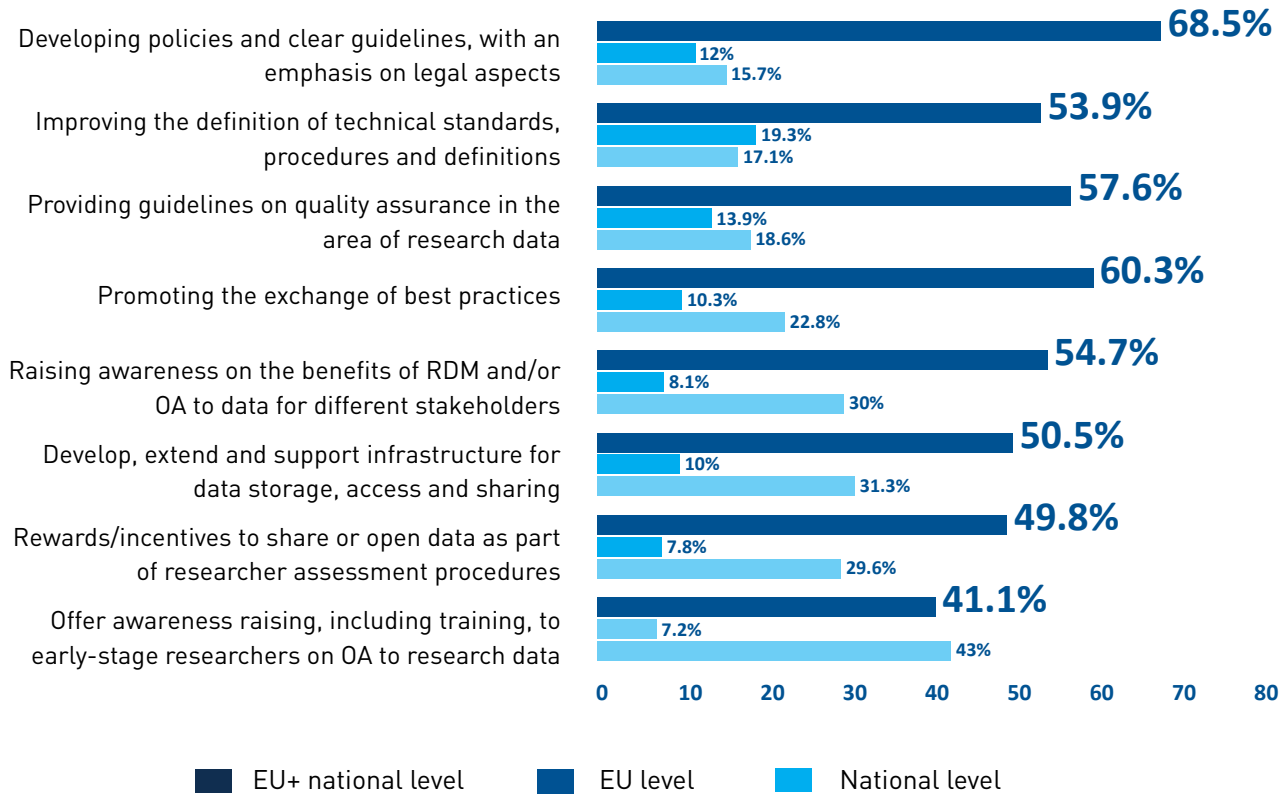


Notes: multiple-choice question. Number of respondents: 315/338.

4.4. National and European actions to promote research data management and open access to research data

Most universities considered that it was important to carry out most courses of action at both national and European levels (Figure 27). Almost 70% of the institutions saw the creation of policies and guidelines as most relevant to supporting universities make the transition to research data management and open access to research data. The exchange of best practices, research data quality assurance, raising awareness in these areas and developing clear technical standards were also considered very important measures to promote the take-up of research data management and open access to research data. Activities to raise awareness and train early-stage researchers in open access to research data seemed particularly important at national level (43.0% of the institutions).

Figure 27. Importance of different actions to help institutions make the transition to research data management and open access to research data



Number of respondents: between 319-324/338.

5. Conclusions

The results of the 2016-2017 EUA Open Access Survey show that a growing number of European universities are making progress in the transition towards open access to research publications. The survey outcomes also indicate that while some research data management and open access to research data initiatives are being undertaken, progress is at a less mature stage.

MAIN OUTCOMES REGARDING OPEN ACCESS TO RESEARCH PUBLICATIONS

- More than nine out of ten universities indicated the existence or planned implementation of an institutional open access policy.
- Most policies involve recommendations that researchers self-archive publications and include provisions to raise awareness and provide training in open access. Policies that link open access to research assessment are seldom reported.
- While three out of four universities indicated having an institutional repository, many still lack the technical or procedural means to ascertain the deposit rate for different publication types (e.g. peer-reviewed journal articles, conference proceedings).
- Universities, particularly institutional leadership (61%) and librarians (87%), saw open access as an important strategic area. For researchers and early-stage researchers, this figure dropped to 35%-40%.
- Universities called for European and national initiatives focusing on negotiations with scientific publishers to achieve better contractual conditions and greater transparency regarding costs.

These results are largely in line with those reported in the 2015-2016 EUA Open Access Survey. It is interesting to note the consistency in the result patterns across the various survey waves, this despite the growing number of institutions participating. In fact, 400[5] different institutions completed the 2015-2016 and 2016-2017 EUA Open Access surveys combined – about half of the association's members. This shows the increasing importance European universities ascribe to the area of open access.

5 Participation in both the 2015-2016 and 2016-2017 surveys = 107 institutions, participation in the 2015-2016 survey alone = 62 institutions, participation in the 2016-2017 survey alone = 231 institutions.

MAIN OUTCOMES REGARDING RESEARCH DATA MANAGEMENT AND OPEN ACCESS TO RESEARCH DATA

- Six out of ten institutions had no research data management guidelines in place.
- Seven out of ten institutions had no open access to research data guidelines in place.
- Institutions that lacked research data management and open access to research data guidelines, indicated that this was mainly due to the absence of national guidelines and the novelty of the topic. ¬
- Universities underlined the need for specific human and technical resources (skilled and specialist staff), data repositories, appropriate e-infrastructure and software to streamline research data management.
- To improve open access to research data, universities indicated the need for clear university policies, including provisions for different scientific fields, and for sustainable funding outlooks to develop human resources and technical infrastructure.
- Universities observed that the specific skills needed for research data management and open access to research data must span diverse areas, including legal, data and technical aspects. Institutional coordination is also critical, as relevant skills are typically scattered across different units, departments and staff members.
- Universities called for policies on research data management and open access to research data at national and European levels, with an emphasis on quality assurance and legal matters. Best practice exchange was also considered critical at both national and European levels.

Policy implications

The results of this survey contain relevant information for shaping European and national developments in open access and open science. Achieving full open access to research publications by 2020 will require greater engagement by all of the relevant stakeholders.

The results of the EUA Open Access Survey show that only about 12% of those institutions developing or with an existing policy on open access to research publications have mandatory policies linked to internal performance evaluation or external review procedures. More than seven out of ten institutions indicated that a research funding requirement is needed to increase self-archiving. **Mandatory policies at both research funding bodies and universities could accelerate the transition to open access research publications**.

A large proportion of institutions with a policy on open access to research publications do not have mechanisms to collect and analyse data about the number of publications in the institution's repository or published in open access journals. There is therefore a **need for monitoring mechanisms that allow institutions to assess their progress**.

Greater researcher engagement is also critical. The results of both the 2015-2016 and 2016-2017 EUA Open Access Surveys clearly indicate that librarians and institutional leaders are most knowledgeable about open access. Researchers and early-stage researchers are, however, considered as having the lowest awareness of publishers' open access policies, Horizon 2020 open access rules and the Horizon 2020 Open Data Research Pilot. This situation certainly needs to change if open access to both research publications and research data is to become a reality in the next few years. These results are also relevant to the EU Open Science policy debate, i.e., the European Open Science Cloud. **Raising researcher awareness of open access and open research data is a crucial prerequisite for making data available in an open and FAIR way as envisioned for the European Open Science Cloud**.[6]

The EUA Open Access Survey identified frequent barriers to research data management and open access to research data. These included a combination of limited financial resources, technical complexities, diverse disciplinary cultures and an absence of policies and sufficient guidelines at national and European level. These **economic, technical, scientific and cultural challenges need to be addressed, and ultimately solved for the European Open Science Cloud to succeed**.

Another critical factor in making open access a reality is the need for both universities and research funders to include open science practices as part of researchers' performance evaluation and as a criteria for funding research proposals. Changes to research assessment practices that depart from over-reliance on the journal impact-factor and move towards multi-dimensional assessment criteria are crucial to providing incentives for researchers to engage in open science practices (e.g. open access to research outcomes). Criticism about using journals' impact factor as the main criterion to assess researchers and a call for more complex assessment approaches is gaining traction. Examples include the San Francisco Declaration on Research Assessment (DORA declaration), which dates back to 2012 and is now signed by more than 11,000 individuals and 500 organisations, including EUA. The European Commission is also working on this area and has recently published a report outlining a set of recommendations for European and national authorities on how to embed open science practices in research career assessments (Evaluation of Research Careers fully acknowledging Open Science Practices. Rewards, incentives and/or recognition for researchers practicing Open Science). **Universities and research funders must change their assessment practices, moving away from the impact factor, and providing incentives for researchers to engage in open science practices**.

6 High Level Expert Group on the European Open Science Cloud, Brussels: DG RTD 2016, available online at https://ec.europa.eu/research/openscience/pdf/realising_the_european_open_science_cloud_2016.pdf; Mark D. Wilkinson et al., The FAIR Guiding Principles for scientific data management and stewardship, in: Scientific Data 3 (2016), DOI: 10.1038/sdata.2016.18, available online at https://www.nature.com/articles/sdata201618.pdf.

The results of this survey have informed recent EUA initiatives in Open Science, namely the EUA Statement on Open Science to EU Institutions and National Governments, the recommendations for university leaders and National Rectors' Conferences on open access to research publications and on Research Data Management and Text and Data Mining. In these documents, EUA has called on all relevant stakeholders to develop the necessary framework conditions to enable the rapid transition towards open access to research publications and to accelerate the progress of European universities in developing policies, structures and skills in the areas of research data management, open access to research data and text and data mining.

EUA will continue to develop initiatives to assess progress in the transition towards open access, namely through new waves of the EUA Open Access Survey. EUA will also continue to support its members take up new open science challenges, including those related to legislative developments (e.g. copyright), citizen science, research assessment, and skills and rewards for open science.

The European University Association (EUA) is the representative organisation of universities and national rectors' conferences in 47 European countries. EUA plays a crucial role in the Bologna Process and in influencing EU policies on higher education, research and innovation. Thanks to its interaction with a range of other European and international organisations EUA ensures that the independent voice of European universities is heard wherever decisions are being taken that will impact their activities.

The Association provides a unique expertise in higher education and research as well as a forum for exchange of ideas and good practice among universities. The results of EUA's work are made available to members and stakeholders through conferences, seminars, website and publications.

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