

Publication of Open Science Study Results (D.2.2)

Work Package No.: WP2

Lead Beneficiaries: Nantes Université

Type of Deliverable: Report

Dissemination Level: Public

Version: 2

Estimated Delivery Date (DoA): 31/10/2023

Date of Completion: 23/10/2023



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101035821.

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1. Introduction

1.1. Purpose of the Open Science Agenda

Work Package 2 (WP2) of the #Research project seeks to develop the Open Science Agenda for EUniWell, in alignment with the EU Open Science Agenda and with the LERU Open Science Roadmap. Aiming at integrating EUniWell's approach to Open Science with its well-being agenda, EUniWell's Open Science Agenda is strongly interlinked with how to exploit the potential for and address the challenges of rapidly emerging new digital research practices, formats, software, methods and infrastructure and the speed of data production, their features, quality, flexibility, and scalability.

EUniWell's research will facilitate interdisciplinary approaches to individual, social, and societal well-being that bring together the different disciplinary perspectives to explore core issues related to well-being and the Sustainable Development Goals.

EUniWell is co-creating initiatives that bring together researchers, teachers, students, and administrators from inside the partner universities with those outside – such as public authorities, hospitals, schools, businesses, and wider community organisations - to support and sustain civic well-being. Needless to say, that results of academic initiatives that aim to improve public well-being should be transparent and available to members of the public, be it within or outside of our universities.

These initiatives are delivered in four different ways:

- a. Providing training to university members to increase their impact on society;
- b. Making knowledge generated at the university accessible to wider society and contributing to shaping regional policy;
- c. Widening the boundaries of our campuses by inviting partners and other stakeholders to contribute to and collaborate with EUniWell initiatives; and,
- d. Measuring, monitoring, and evaluating the contributions of EUniWell initiatives on regional well-being.

1.2. Goal of the Open Science Study

The goal of this study is to scope the current situation regarding Open Science services and policies among EUniWell member institutions in order to set priorities for the development of the Open Science Agenda for EUniWell and determine which and if dedicated infrastructures could be shared.

The Open Science Working Group decided to look at the availability of services (including infrastructure, support, and documentation) by members of staff from participating universities.

The Open Science study results will help:

1. Map the infrastructure currently in place under each pillar, and identify areas where strong synergies exist, enabling alignment and optimisation of the Open Science principles within EUniWell institutions;

2. Identify elements across the existing infrastructures that are missing and would be needed for the full implementation of the Open Science principles;
3. Identify how EUniWell can best position itself to tap into and optimise the benefits from using the national and European structures and initiatives that promote Open Science and Open Access;
4. Highlight existing barriers related to working across national systems, legislation, platforms, and structures; and,
5. Formulate a set of recommendations addressing what would be needed to enable the full implementation of the Open Science principles across an inter-European university campus.

1.3. General purpose for EUniWell

Open Science is an umbrella term that is often used to describe a range of activities that aim to practise science in a transparent way, in order to make research output accessible, reproducible, and, as much as possible, freely available to people within and outside of academia.

Open Science also includes activities that facilitate transparency such as transparent methods, sharing of research tools, replication research, open peer-review, research integrity, sharing preprints, and (meta) research about scientific methods. Open Science is an integral part of EUniWell's ambitions as it seeks to drive excellence in research and education by, on the one hand, breaking down barriers across disciplines and empowering young researchers, and on the other hand, by fostering interactions with society.

The results of this study will ultimately provide a unique insight into the current state-of-the-art of Open Science within the EUniWell alliance. The data collected will enable the Open Science working group to build a solid EUniWell Open Science Agenda and accelerate EUniWell Open Science activities through new digital and green transitions with respect to FAIR data, digital methods, and infrastructure sharing.

2. Methodology

2.1 Leiden's Open Science Survey

At first, the University of Leiden local working group created a survey approved by the EUniWell Open Science Working Group. It defines four key 'Pillars of Activity':

1. Open Access (OA);
2. Research Data Management (RDM);
3. Open Educational Resources (OER); and,
4. Research Software management (RSM).

Some of the participating universities have collected answers from experts for each separate area of expertise and bundled them in the survey. The survey was set out through the Open Science Working Group and the EUniWell Management Team and results were submitted collectively by each partner. It is therefore not possible to specify the exact number of experts that were involved in the data collection.

In order to compare the current state of affairs regarding the four pillars of activities, six clusters of questions were applied to each pillar, with one exception. In research data management, specialised and sustainable data repositories are generally not set up by individual institutions, but rather operate on national and international levels. The survey questions focused on collaboration rather than on the availability of local funds. The clusters that are applied to each pillar are the following:

- a. Policy and awareness
- b. Services and infrastructure
- c. People and competencies
- d. Funding (and in the case of research data management collaboration)
- e. Monitoring and crediting
- f. Barriers

Although this survey allowed EUniWell to get a first glimpse of Open Science policies and services among the alliance, the survey was far too complex and asked for data that members of the Open Science working Group could not always provide since all institutions do not necessarily have the same indicators or monitoring practices. Therefore, the survey was only completed by 7 universities and has a very low participation rate. Its objective was also to identify the levers to achieve better practices and to pool skills, policies and infrastructures, but in consequences, the recommendations (produced too quickly and without consulting other members) do not live up to EUniWell's ambitions for open science

Nevertheless, and even if the results of the survey were not received until very late after Leiden's departure, the survey responses allowed the Open Science Working Group to have a basis for a follow-up study.

2.2 EUniWell's Open Science Checklist (OpenAIRE)

During the transition period between Leiden's departure and the resumption of the open science study, the open science working group was on hold. In addition, the reduced scope of the

recommendations from the first study and the arrival of new member universities such as Inalco, Universidad de Santiago de Compostela and University of Konstanz made it necessary to set up an extension to the Open Science study.

The questionnaire circulated by Leiden did not seem appropriate to EUniWell's needs, namely that of assessing its members readiness regarding Open Science. According to every member of the open science working group, the survey was also extremely difficult to complete. Therefore, a need for a simple model that could tell us something about the propensity of EUniWell universities to embrace a global open science policy emerged.

We therefore decided to use OpenAIRE¹'s [Open Science checklist](#): a simple questionnaire consisting of 14 general questions designed to assess the progress of institutions' open science policies and the infrastructures they offer. The questions concern the following areas :

1. Policy
2. Roles and responsibilities
3. Open Science activities
4. Publication and Sharing
5. Open Data
6. Infrastructure
7. Rewards and incentives
8. Educational programmes on data-intensive research
9. Training
10. Dissemination / Awareness-raising
11. Funding
12. Monitoring and compliance
13. Revision and updates
14. Machine-readability of the policy

An open field under each answer was set up so that each respondent could complete his or her answer according to his or her specific context and provide any necessary clarifications. Moreover, even if some of the questions of OpenAIRE's Open Science checklist did not match the areas covered by the Open Science study, this enabled the Open Science Working Group to start discussions regarding aspects of open science.

To date, all EUniWell universities have responded to the questionnaire, with the exception of Inalco, which has not yet appointed its representative for the Open Science Working Group.

¹ Open AIRE is a non-profit legal entity compounded by 50 organizations which provides a platform for Open Scholarly Communication. It has received EC's funding through the Horizon framework and is currently partnering with several European Universities Alliances, Academic Journals and other relevant stakeholders in the field of Open Science. Open AIRE is becoming a referent and is providing effective tools for Higher Education Institutions and Research Organizations to advance the topic of Open Science in a coordinated manner and following the European policy developments on this field.

2.3 Open Science meet-ups

Finally, since this is an Open Science study rather than an Open Science survey, we decided to strengthen the qualitative approach by involving as many of the Open Science Working Group's experts as possible. The aim was to make the study motivating by incorporating everyone's thoughts, comments and concerns.

To this end, we organised a major meeting of the Open Science Working Group, as well as several bilateral exchanges with certain members, notably those who have recently joined the alliance, in order to :

- confront the group with the answers to the various surveys in order to analyse the results collectively;
- gather new information directly, without the filter of a strictly quantitative approach;
- update the recommendations drawn up unilaterally by Leiden, and be able to formulate new ones as a group;
- recreate a real group dynamic and a community of practice around open science within the alliance.

All the universities were represented and received the information that had been gathered. The benefits of these meetings go far beyond the scope of this study; they reactivated the group and are allowing to establish dynamics of knowledge exchange, to share best practices and promote informed discussions around open science.

2.4 Analysis

The results of this study are therefore based on the compilation of findings from:

1. Leiden's survey;
2. OpenAIRE's Open Science checklist;
3. Open Science meet-ups.

The data was collected by different means, favouring a participatory rather than top-down approach, qualitative rather than strictly quantitative, led by and for an alliance rather than by a single member.

The following analysis therefore includes all the member universities of EUniWell, except for Inalco. The Open Science Working Group analysed the responses by focusing on a holistic, qualitative approach. The aim was to map a landscape for Open Science within the whole of EUniWell, and specifically not to compare individual universities or regions.

2.5 Ideas for a follow-up study

This study is only possible thanks to the involvement of the alliance's open science experts and their knowledge of their institution. In order to carry out the update of this study as well as the implementation of an Open Science Agenda for EUniWell, the maintenance of the working group is essential.

It was identified that sporadic quantitative surveys might not be adapted to the context of open science and are not the ideal data gathering tool in a context of constant change and development. Calls for contributions and regular information points between members are essential in order to share the developments on the field of Open Science at EUniWell partner universities, which implies the involvement of different staff members and departments and the constant monitoring and response to the developments in terms of policy and technology, amongst other relevant factors

3. Mapping the landscape

In this part, we propose a synthesis of the different materials collected in order to provide a clear landscape of open science within EUniWell, an analysis of the practices, the links to the different policies and infrastructures in place if they exist as well as the recommendations made by the Open Science Working Group. A more detailed review of the different questions will be offered in the following “Analysis” section.

3.1 Policies

Having an open science policy is crucial for collaboration and innovation. However, institutions must consider their regional, national, and disciplinary contexts when implementing it. Factors like legal frameworks, funding, infrastructure, and research norms vary, requiring tailored approaches. Balancing universal benefits with local considerations ensures effective policies that promote openness while respecting unique circumstances.

The current state of open science policies among EUniWell’s institutions reveals room for improvement. Only **6 out of 10 institutions have developed proper policies**, indicating that there is work to be done. Additionally, **4 institutions are in the process** of developing one, but they are at varying stages of progress. A concerning finding is that **9 out of 10 institutions lack clear descriptions of roles and responsibilities**, which hampers effective implementation.

Open Science policies

- [University of Konstanz](#)

Open access policies

- [University of Murcia](#)
- [Linnaeus University](#) (Swedish only)
- [Semmelweis University](#)
- [University of Florence](#)
- [University of Santiago de Compostela](#) (Spanish only)

Research Data Management policies

- [University of Birmingham](#)

Statements, guidelines, endorsements...

- **University of Birmingham :**
[OA statement](#)
- **University of Cologne :**
[Open Science Guidelines](#) (German only)
Berlin Declaration endorsed by the German Rectors Assembly and the German Research Foundation
- **Nantes University :**
[Mandatory deposit statement](#) (French only)
Berlin and San Francisco declarations signed

- **Taras Shevchenko National University of Kyiv :**

Order on «National Plan on the Open Science» by Ukrainian Government

Another OpenAIRE's Open Science checklist finding is that half of EUniWell's institutional policies or statements do not align with H2020 requirements, which include mandatory deposit of research outputs.

However, **very few universities have taken the initiative of setting up binding procedures for all their research teams**, such as mandatory deposit. Indeed, within the alliance, **only one university has such a policy in place**, and it only concerns publications. All the experts on the Open Science working group agree that it is very difficult, if not counter-productive, to try to engage the entire scientific community by coercion. However, it can be a requirement for funded research projects (H2020, national research agencies, etc.).

The various surveys as well as the exchanges within the group have enabled us to note that the practices for monitoring activities around open science are very varied. The quantity of Open Access publications is often monitored, but **none of the institutions has monitoring practices that include sanctions in case of no compliance**. It seems there are no rewards or incentives in place for open science engagements as well.

Finally, revising and updating the policies in place seem not to be a common thing for the moment, but half of EUniWell's universities are on their way to develop such a plan.

3.2 Spread of activities

Open Access and Research Data Management have played a prevalent role on the research agenda for a longer period of time than Open Educational Resources and Research Software Management, as the Berlin Declaration on Open Access² dates from 2003. Time has given universities worldwide the opportunity to develop and communicate policies, to set aside funds and to create infrastructures, hire dedicated members of staff, and install procedures for monitoring results.

The responses from the surveys shows that Open Science activities within EUniWell as well as policies, statements, etc. from the institution **mainly focus on publications and data**. Not all respondents were even able to answer the questions on open educational resources and research software management. As a result, there may seem to be an **imbalance if one were to try to compare the pillars**, but in fact efforts to set up activities in open educational resources and research software management are in such early stages of development that there simply is not very much to compare or analyse.

The heatmap provided by Leiden's first survey illustrates this imbalance among the 4 pillars :

² <https://openaccess.mpg.de/Berlin-Declaration>

OA					RDM				
policy	infrastructure	people	funds	credits	policy	infrastructure	people	funds	credits
5	4	5	5	2	3	3	3	3	2
5	4	5	5	3	4	3	4	3	3
5	4	5	5	2	2	3	4	1	3
5	3	5	4	3	1	3	4	1	3
3	4	5	5	3	2	5	5	3	3
5	4	5	3	2	1	1	1	1	1
5	4	5	3	3	4	4	5	4	2
4.71	3.86	5.00	4.29	2.57	2.43	3.14	3.71	2.29	2.43

OER					RSM				
policy	infrastructure	people	funds	credits	policy	infrastructure	people	funds	credits
1	0	0	1	0	0	0	0	0	0
1	3	1	3	1	1	0	0	0	0
1	1	3	1	1	4	3	5	1	1
5	2	1	3	2	2	1	1	1	1
2	4	5	4	1	2	2	1	1	2
2	2	1	1	1	1	0	0	0	0
1	3	3	3	1	3	3	2	1	2
1.86	2.14	2.00	2.29	1.00	2.17	1.50	1.50	0.67	1.00

0 = no answer given

1 = no activity

2 = low level of activity

3 = intermediate level of activity

4 = high level of activity, but some work still in progress

5 = high level of activity, goals have been achieved

While this may be explained by the fact that the development of open science activities is still in progress, it should not be forgotten that certain pillars are not necessarily covered by the same services. For example, at most universities involved in open educational resources, these activities are managed by departments that are not yet linked to open science service units :

- **University of Murcia** : Unidad de innovación (+ rewarding)
- **University of Santiago de Compostela** : Servizo de Innovación Educativa e Campus Dixital
- **University of Birmingham** : Higher Education Futures Institute (HEFi)
- **University of Cologne** : ORCA (cooperation of 42 universities)
- **Nantes University** : Centre de Développement Pédagogique

As a result, this study can only focus mainly on open access and research data management because of the lack of development and/or information provided regarding the other activities, but the fact that open educational resources and research software management activities are still emerging or scattered inside the institutions is a finding itself and stress the fact that **the link between Open Science departments and departments monitoring research software and open educational resources need to be reinforced.**

3.3 Funds, rewards and incentives

Funding for open science activities is extremely difficult to calculate. It may come from universities, but also from research institutes, laboratories, research clusters, national or international research programs, and on very different scales.

Within the institutional budget of Universities, they are often not on the same budget lines. As an example, **4 out of 10 institutions have no specific budget line for Open Science.**

However, just because there is no specific budget line does not mean there is no funding or financial support. Regarding open access, **every EUniWell's university has transformative agreements with publishers** to transition traditional subscription-based publishing models to open access, making research articles freely accessible to readers while addressing the costs associated with publishing. **40 % of them also provide direct support for covering the cost of APCs³.**

- **University of Konstanz** : transformative agreements + support for APC costs
- **University of Murcia** : transformative agreements + support for APC costs (competitive calls)
- **Linnaeus University** : transformative agreements
- **Semmelweis University** : transformative agreements + support for APC costs
- **University of Florence** : transformative agreements + support for APC costs
- **University of Santiago de Compostela** : transformative agreements
- **University of Birmingham** : transformative agreements + support for APC costs
- **University of Cologne** : transformative agreements + support for APC costs (temporary)
- **Nantes University** : transformative agreements
- **Taras Shevchenko National University of Kyiv** : transformative agreements

As it is very difficult to evaluate the cost of open access for a single university, at this stage it is unfortunately merely impossible to evaluate this cost at an alliance level.

Furthermore, universities within the EUniWell alliance are engaged in negotiation consortiums at national level, which are more powerful than European alliances and adapted to national contexts. As it was stressed by the members of the Open Science working group that **negotiating with publishers for gold open access⁴ might not be the best way to bring about the change of system which is the very ambition of the open science movement.**

3.4 Infrastructures in place

One of EUniWell's most striking strengths is that, with regard to the two pillars of open access and research data management, **each member institution provides access to infrastructures for hosting publications and data.** Seven EUniWell's institution have its own local Open Access repositories, 60% have its own local research data repositories, the other relies on national infrastructures:

³ Article Processing Charges

⁴ [Pp](#) permanently and freely online access to a publication

- **University of Konstanz :**
<https://kops.uni-konstanz.de> (OA, local) + <https://kondata.uni-konstanz.de/> (RD, local)
- **University of Murcia :**
<https://digitum.um.es/digitum/> (OA + RD, local)
- **Linnaeus University :**
<https://lnu.diva-portal.org/> (OA, national) + <https://snd.gu.se/en/catalogue/search> (RD, national)
- **Semmelweis University :**
<http://repo.lib.semmelweis.hu/> (OA, local) + <https://science-research-data.hu/> (RD, national)
- **University of Florence :**
<https://flore.unifi.it/> (OA, local)
- **University of Santiago de Compostela :**
<https://minerva.usc.es/> (OA + RD, local)
- **University of Birmingham :**
<http://erepositories.bham.ac.uk/> (OA + RD, local)
- **University of Cologne :**
<https://kups.ub.uni-koeln.de/> (OA, local)
- **Nantes University :**
<https://hal-nantes-universite.archives-ouvertes.fr/> (OA, national) +
<https://entrepot.recherche.data.gouv.fr/dataverse/univ-nantes> (RD, national)
- **Taras Shevchenko National University of Kyiv :**
<https://www.library.univ.kiev.ua/ukr/about/eknutshir.pdf> (need details)

However, these infrastructures (local or national) are open archives. **Fewer universities offer proper publishing platforms (6)**, even though open access diamond seems to be the most virtuous and ambitious path.

- **University of Konstanz :**
<https://www.kim.uni-konstanz.de/en/openscience/publishing-and-open-access/open-access-journals/>
- **Linnaeus University :**
<https://lnu.se/en/research/published-research/linnaeus-university-press/>
- **University of Florence :**
<https://journals.fupress.net/>
- **University of Santiago de Compostela :**
<https://www.usc.gal/en/services/area/santiago-compostela-university-press>
- **University of Cologne :**
<https://journals.ub.uni-koeln.de/>
- **University of Murcia :**
<https://www.um.es/en/web/editum/>

Regarding Open Educational Resources, for most institutions, setting up an effective infrastructure for open educational resources still poses many challenges. With respect to open educational resources, the overall trend is that the institutional anchoring and the infrastructures are still underdeveloped.

Furthermore, it is essential to stress that Open Educational Resources infrastructures may rely on either local or international initiatives. There is only one university with a local technical infrastructure for open educational resources. Such a repository is currently being developed with D-Space at two other institutions whereas others can benefit from national repositories (for instance, [ZOERR](#) in Germany). EUniWell collaborative projects could benefit from using the facilities and infrastructure of partner organisations that have already been in a position to set up services.

Finally, concerning research software, none of the universities have set up their own infrastructure, but their services utilise international digital infrastructures, namely university-subscribed [GitHub](#) or [GitLab](#) environments. Some institutions do provide computing support, coding and programming training, and local instances of Git environments. They could make an easy start to benefit from exchanging experiences in the use of these external facilities.

3.5 Trainings, support and educational programs

Support, training and coaching activities not only seem to be those that most benefit research teams, but are also the **most developed activities within the alliance**. Every EUniWell's institution provides at least an information point for Open Science principles and **9 of EUniWell's institutions provide support and training for Open Science**, as well as 8 for research data management only.

A full mapping of the PhD training offers specifically - including open science trainings - will be available in the deliverable D3.5 PostDoc-Hub-Established.

3.7 Barriers

According to the Open Science group, the main barriers to implement Open Science principles are

- **Financial:** high APC-costs, no central fund, costs for transformative agreements, costs of local infrastructures for research software and research data management, still many subscription-based journals, not enough money for human resources or to invest to change the infrastructure/ecosystem, lack of skills and expertise for specific activities (RS/research data management)
- **Harmonisation:** lack of standardize procedure, common practices and vision
- **Assessment:** research evaluation systems still based on number of publications and impact factors
- **Awareness:** researchers still have reservations regarding the benefits of open science

As Open Educational Resources is seen as a very specific activity among open science pillars, it is to be stressed that institutions face different challenges regarding this topic, such as:

- Time: the development of open educational resources can be very time-consuming.
- Legal or other practical issues complicating the reuse of educational materials.
- Lack of experienced support staff helping educators with their open educational resources
- Lack of funding for open educational resources projects.

- Lack of awareness of the relevance of open educational resources, both among teachers and university management

4. General recommendations

Harmonise and strengthen Open Science policies among the alliance, extend it to all pillars

Creating a common and binding Open Science policy for EUniWell as a research institution may be too difficult since universities mostly have local and national policies already. However, **advocating for policies toward green open access** seems more feasible and reasonable.

Since we cannot commit thousands of researchers across Europe with different practices, we still can **commit the researchers working on projects funded by EUniWell**. Hence, EUniWell could endorse declarations like DORA and CoARA as a funding institution, but not as a university.

Because every policy implies its own evaluation, we believe it is essential to think about a solution that will enable us to **measure the progress of open science** for each of our institutions as well as for the alliance as a whole. EUniWell's involvement in **open science needs to be measured using relevant indicators**.

Furthermore, since the study stressed that Open Educational Resources and Research Software Management activities are still underdeveloped, EUniWell's universities need to **reinforce the link between Open Science departments and departments monitoring research software management and open educational resources**.

Finally, the first step should be to **set up an exchange of ideas and experiences** in supporting research software management and open educational resources within external infrastructures among the EUniWell partners.

Support and advocate for Diamond Open Access

The negotiations of transformative agreements are already structured by consortia throughout Europe, and these consortia carry more weight than EUniWell. Furthermore, these agreements are not stable over time and support a model that open science aims to surpass.

As an alliance and as experts in open science, we believe it is necessary to **support the green and, most importantly, diamond open access** - which is the most ambitious path - by encouraging publication in institutionally-funded journals.

We believe that **encouraging the use and creation of institution-funded open access journals** is essential. Universities without a publishing platform can, if necessary, rely on the expertise of others.

Another idea to explore is the **creation of an open-access journal dedicated to EUniWell research topics**. Furthermore, this journal could be directly linked to the future collaborative research portal, which concept is under development of the #Research Digital Innovation Group. Nevertheless, we acknowledge that maintaining an emerging journal is a difficult task. We

recommend the use of existing journals, if any (a search through the Directory of Open Access Journals will be needed).

Encourage the use of existing infrastructures

EUniWell project collaboration among the partners should be sought to leverage their already existing initiatives and scale them up to a stronger network. We believe that there is **no need for a new infrastructure dedicated to open science** since there are already numerous existing infrastructures, both general and discipline-specific, at local, national, and European levels, which members of EUniWell can leverage.

Developing and maintaining such platforms involves significant financial and human costs that could be allocated to training and support efforts to guide researchers towards the relevant infrastructures and good practices.

Pool and further develop training and support among the 4 pillars

As we are convinced that enabling funds to support gold open access may be counterproductive, we believe **Open Science funding should go to the support and training activities which are essential to researchers**. Each university already offers education and support in different degrees, so we believe that we should rely on the existing offerings while benefiting each member of the alliance.

We recommend **creating a training program with defined learning objectives regarding open science linking to the various modules offered within the alliance**, encouraging each member to make them accessible to as many people as possible and develop them, especially toward domain-specific guidelines at faculty level.

We also recommend **encouraging the creation of open educational resources by providing awareness-rising to a broad level, as well as consulting** (especially towards licences and copyright) and technical support (creation of video capsules, motion design, etc).

As a group of experts, the Open Science Working Group is willing to contribute to the implementation of all the above-mentioned recommendations insofar its skills allow.

5. Annexe 1 - Analysis of the responses

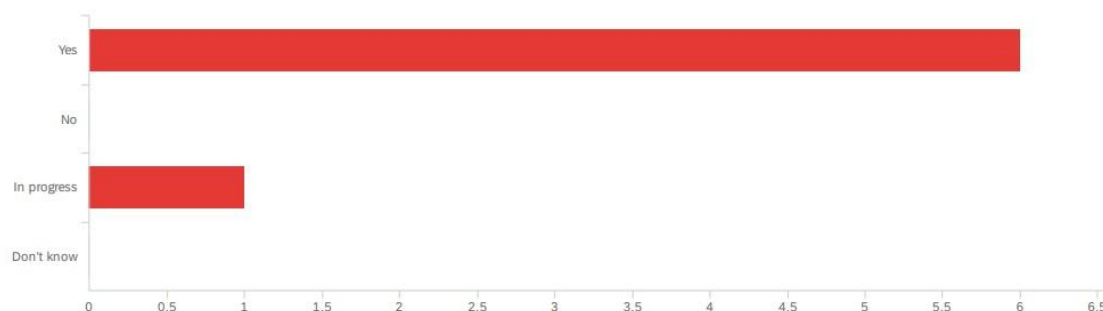
5.1 Leiden's Open Science survey

5.1.1 Open Access

Policy and awareness

Six of the seven universities that participated in the survey have a policy in place and have it publicly available on their website. The policies are formulated on a university-wide level. One university has a policy in progress. One of the participants added that their 'policy' is not an official policy but more a statement to ensure compliance with a national assessment framework.

Q2.2 - Does your institution have an open access (OA) publishing policy?



Of the six universities with a policy, all mention green open access in their policy. In general, the green policy entails uploading in an institutional or national repository in line with the publisher policy (mostly an Author Accepted Manuscript [AAM]) or the national law. The types of publications that should be uploaded are not specified. Three universities have combined their green policy with gold or (transitional) hybrid or a combination thereof.

The channels used to communicate the open access policy and services to researchers are websites (6x), email (5x), training or online courses (4x), social events or outreach (3x), social media (2x), newsletters of the institutions and faculties (1x); and the employment contract (1x).

To comply with the open access policy, institutions mention that they provide a repository (5x), information on the website or a guide 'how to comply' (3x), funding for publishing (3x), training (3x), dedicated staff (for example for deposits, information publication support) (3x), transformative agreements (via national consortia) (2x), projects (1x), and management information (1x).

The competencies mentioned and required to support open access are quite diverse: librarians with knowledge of scholarly communication; basic skills in the use of computers, which can be updated with training actions; good understanding of open access principles; up to date knowledge of open access policy; attention to detail; budget management; negotiation skills;

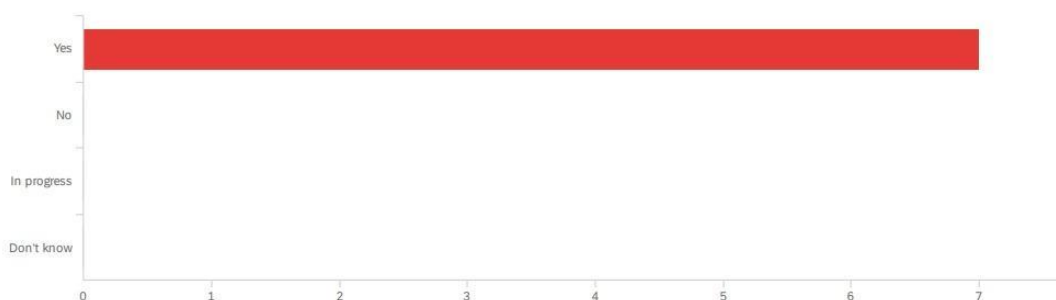
knowledge of the scientific editorial environment; knowledge of the academic research environment; skills in data management; skills in information and communication science, informatics, research integrity, ethics and law; open access publication support, consulting, contracts with scientific publishers that do not charge members of the university or offer discounts on APCs; knowledge of open access sources, financial skills, legal skills, IT (software development, migration); communication skills (website, workshops, support, projects), monitoring skills (making progress reports), technical support infrastructure (repository).

Two universities have formal regular evaluations of the relevance and quality of all services needed to support the open access policy. One university is in the process of setting one up, while four do not have these evaluations.

Services and infrastructure

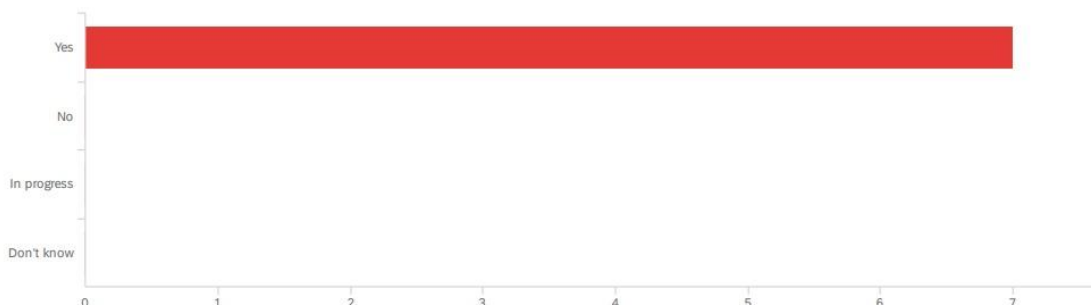
All seven universities indicated in the survey to participate in open access agreements with academic publishers to facilitate open access publication by their researchers. The numbers of papers published on a yearly basis as part of such agreements vary widely per university, as they depend not only on the number of agreements available, but also on the numbers of research staff to author these publications.

Q2.9 - Does your institution participate in any OA (e.g., "read and publish") agreements with academic publishers?



All seven universities indicated to have an open access repository. Eprints has been mentioned twice while DSpace and Islandora have been mentioned once. At four universities the open access repository is local, two are national, and one is a combination. Only one repository is proprietary, but this university also has an open-source repository in house for thesis and other materials. Five repositories have been made in-house, of which one by another university. It was not clear if one repository mentioned was made in-house or is proprietary. Two universities use a CRIS as their front end to register. Both CRISs are proprietary. One of the two CRISs also uses the CRIS as an institutional repository; the other CRIS is connected to an open source in-house made local repository. All repositories are interoperable. Most mention OAI-PMH. Only one repository is Plan S compliant, four are in progress, one is not compliant, and at one university this status is unknown.

Q2.12 - Does your institution have an open access repository?



All seven universities monitor the use of the open access infrastructure. Only one of the seven universities mentions in the survey that they have a specific fund for open access infrastructure: “A central IT budget pays for the proprietary software and open-source software; and the Library Infrastructure and Tools budget pays for a range of open access supporting services (e.g. ORCID, Datacite).” but also states: “There is no specific infrastructure budget dedicated to open access infrastructure alone.” We might conclude that none of the universities have a specific fund for open access infrastructure.

Four of the seven universities have their own open access journal(s), while two universities have a publication platform that runs on the OJS.

People and competencies

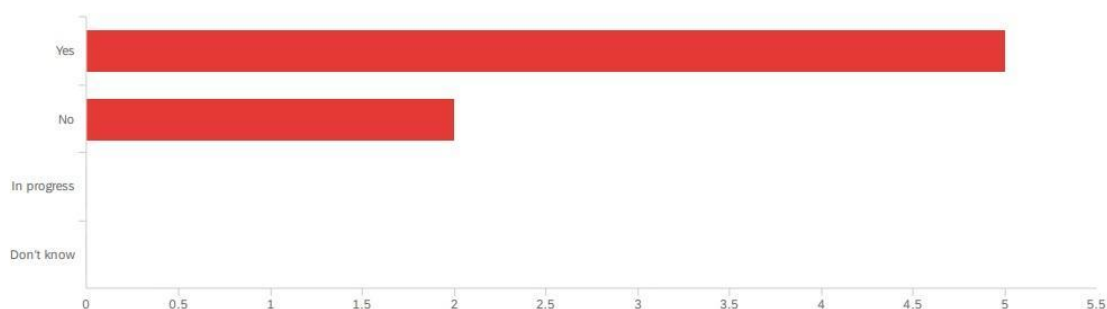
All seven universities indicate they have staff with competencies in open access in place for different roles in open access development. The number of people and FTE are difficult to compare as some have mentioned the number of staff and others the amount of FTE and some a combination thereof. If we look at the number of people involved, the minimum is 2 and the maximum 15. It is most likely that these 15 people are not all fully dedicated to open access. If we look at the FTE, we see a minimum of 1,5 and a maximum of 8,9 FTE. As a result, very different competencies have been described:

- Open access expertise (5x) e.g. knowledge about transformative agreements, financial models, new open publications strategies etc.
- Expertise in academic publishing and research
- Institutional repositories and CRIS
- Metadata & Persistent identifiers
- Copyright and Licensing
- Digital preservation
- Skills in information and communication science

Funding

Five of the seven universities mention they have an open access fund and two do not. Three universities have an open access fund paid by the University (Library). One university can make use of an external open access fund of a national research funder. Regarding the fifth university, it is not clear if the funding is coming from the university or research projects or a combination thereof.

Q2.23 - Does your organization have an OA fund?



Six out of seven universities are involved in collaborations that work on new tools, services, expertise, and other components of the open access ecosystem. Many different collaborations have been mentioned: (1) the OJS network; (2) JISC open access monitor; (3) OS Switchboard; (4) EOSC; (5) Open peer review and preprint platform; (6) REBIUM, the University Libraries National Network, in order to exchange experiences with other libraries and to collaborate in different projects; (7) FECYT, for providing access to our repository for indexing at national/international level; (8) LERU's Public Infrastructure to explore what universities can do in establishing a public infrastructure to publish all kinds of academic output with open access, while preserving digital sovereignty, academic quality and integrity; (9) investigating alternative (diamond) publication platforms on a national level; and (10) within the Knowledge Exchange research on alternative publication platforms.

Monitoring and crediting

Six universities register open access publications. Three use a repository, two a CRIS, and one has its own developed system. One university cannot be reported on as it has interpreted the question differently than the other universities.

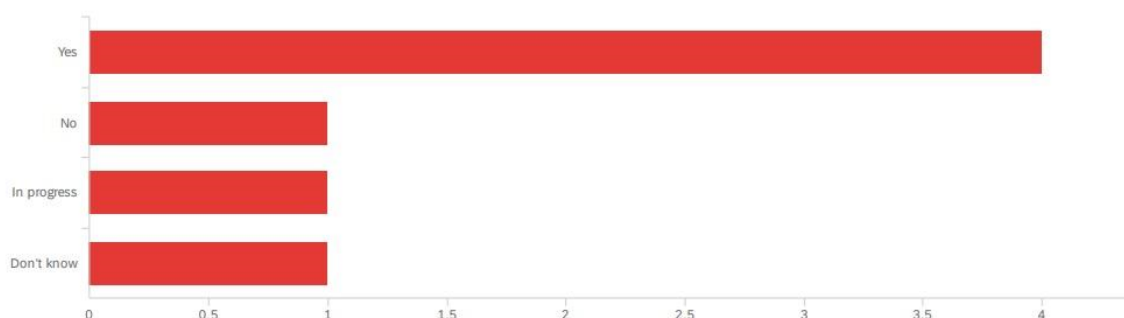
None of the universities reward open access publishing in their organisation, but two are working on it, for example, via financial aid and productivity score. Two universities have included open access publishing as a criterion in the institutional evaluation process, two are working on it, two do not have open access as an evaluation criterion, and one university does not answer. Two universities are working on including open access publication in regular career evaluations of research staff, three do not know, one university states 'no' and one did not answer.

5.1.2 Research Data Management

Policy and awareness

Most of the universities that participated in the survey do have a policy in place or in the making. The FAIR principles are often mentioned in the policies, but not always. Only one participant indicates that there is no such policy, and one participant is unsure. These policies are mostly

Q3.2 - Does your institution have a policy on research data management (RDM)?



formulated on a university-wide level and do not translate to faculty-level policies or protocols. However, two universities are currently working towards specifying faculty-specific policies. The policy support needed to implement them is mostly lacking. The two participants that do have support in place offer this mostly via a website and news channels such as mailing lists, blogs, Twitter, etc.

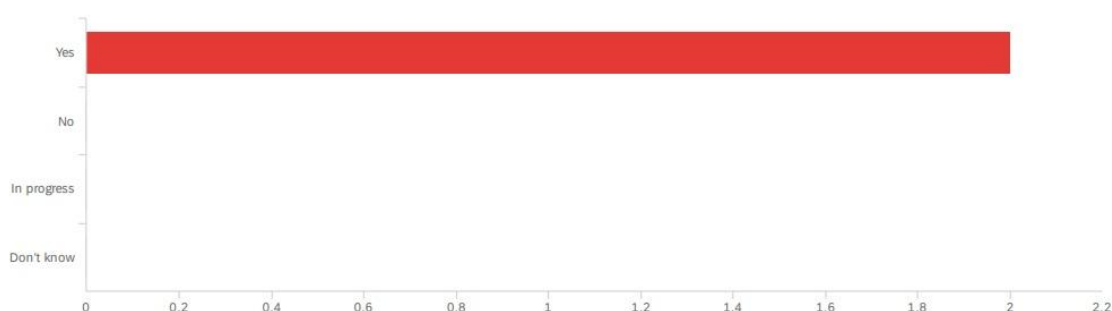
Services and Infrastructure

With regard to services and infrastructure, we have observed a lot of variation among the institutions. Broadly speaking the infrastructure is either in place or in the making. The types of services that are provided mostly fall into two categories: repositories and training. Repositories are sometimes federated services (mostly nationally, with local instances) or they have been developed locally. In the latter case, they are often based on shared technology (e.g. DSpace, Dataverse). The training services and information sharing is often organised centrally via the library. The use of the services and infrastructure is monitored by roughly half of the participants. Only two participants do not monitor at all, and one participant is unsure.

People and competencies

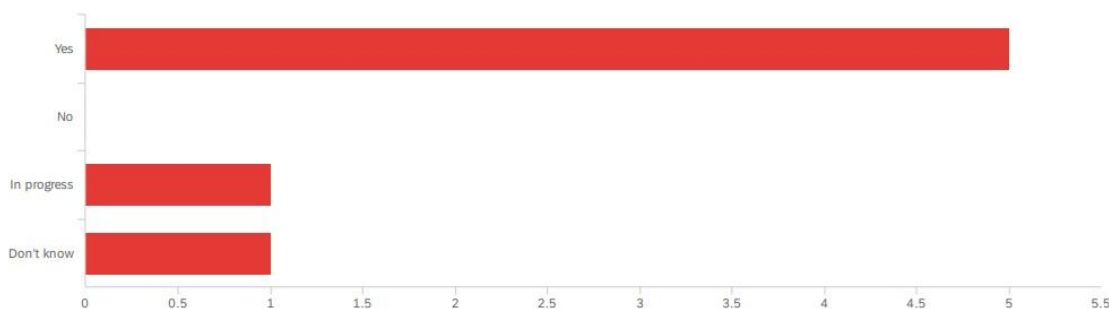
Six out of seven of the partners have dedicated staff with expertise in Data Management. However, the number of staff has a wide range, between 0 and up to 30 full time equivalent members of staff. The roles and competencies also vary greatly. Sometimes the staff are located in the library, offering central services, and sometimes there are domain-specific data stewards embedded in the faculties. Among the competencies that these support staff need to have mentioned in the survey, knowledge of data management training skills, expertise in writing Data Management Plans and general knowledge and awareness of the Open Science agenda are included.

Q3.7 - Is the general research data policy supported by dedicated support staff?



Q3.18 - Does your organization have staff with competencies in RDM in place for

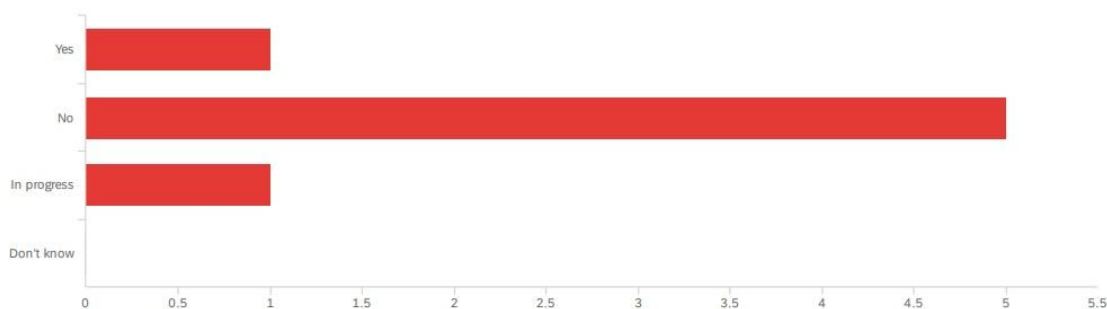
different roles in RDM development?



Funding

For Research Data Management, the questions in this section of the survey focus more on collaboration than on direct funding. Most of the participating institutions are indeed involved in some form of collaboration in the FAIR ecosystem. Only one participant indicates that they are not participating in any collaborative efforts, and one participant is unsure. The types of collaborations include library networks, national and international infrastructures, and the European Open Science Cloud. Despite the active involvement in developing the FAIR ecosystem, FAIR data compliance is not rewarded at any of the participating institutions.

Q3.15 - Is your institution provided with specific funds for FAIR data services?



Monitoring and crediting

Most of the institutions are still developing the process of monitoring data registration. As long as this monitoring is not fully in place, crediting output in the form of datasets becomes challenging, since the basic information needed is simply missing. The systems in use specifically for registering datasets may be institutional (e.g. DIGITUM in the case of the University of Murcia), national (e.g. DORIS/SND in the case of Linnaeus University), or international (e.g. DataCite in the case of University of Birmingham). In some cases, the registration of datasets is done in the local CRIS.

5.1.3 Open Educational Resources

Policy and awareness

For most institutions, strategic thinking regarding support for open educational resources is still at an early stage. Among the seven institutions that have responded to the survey, a formal policy on open educational resources communicated on the institutional website was available only at one institution. A policy document is in preparation at two universities. It was recognised, however, that the *EUniWell Open Education Declaration* can serve as a useful framework during the development of local policies.

It is important to note that, at present, none of the EUniWell partners organise formal evaluations of the relevance and quality of all services needed to support open educational resources

Services and Infrastructure

In the EUniWell consortium, there was only one university with a local technical infrastructure for open educational resources, an open educational resources repository named Digitum. A repository dedicated to open educational resources is currently being developed at two other

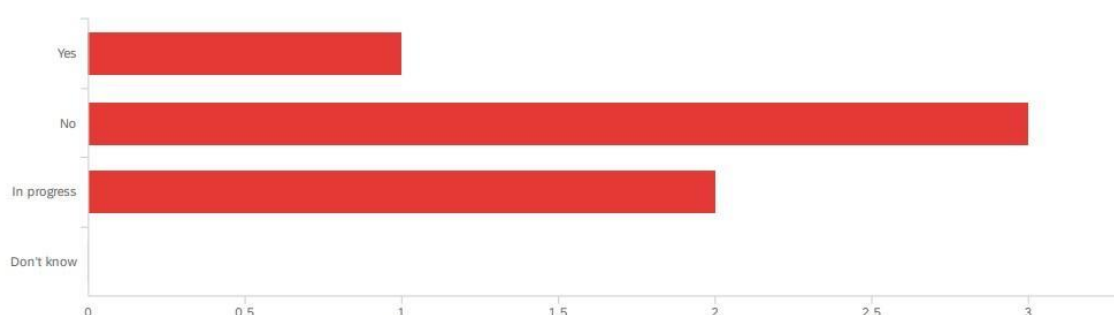
Q4.2 - Does your institution have an open educational resources (OER) policy?



institutions. One university does not have its own repository, but is strongly engaged within the ORCA.nrw repository project, a non-proprietary platform which services multiple universities in the local region. For teachers who contribute materials, a basic knowledge of the Learning Management System is required.

The data in this regional ORCA.nrw repository, adhere to relevant standards and protocols in the field of open educational resources. ORCA.nrw provides funding for various aspects of open educational resources. Local support staff is largely funded through grants provided by ORCA.nrw. There is some uncertainty, however, regarding the interoperability of the data in other systems.

Q4.7 - Does your institution have an OER repository?



Two universities participate in collaborations that work on the development of new tools, services, expertise, and other components of open educational resources. One is actively involved in ORCA.nrw. The other has been a member of the Consortium for Open Education since 2012 and has signed the EUniWell Open Education Declaration in January 2022. One institution has been selected to organise the 2022 edition of the international congress Open Education Global, and it holds the UNESCO Chair in Free Educational Resources and Artificial Intelligence. Other institutions have indicated that they are not involved in such national or international collaborations, or that they are not aware of any such collaborations.

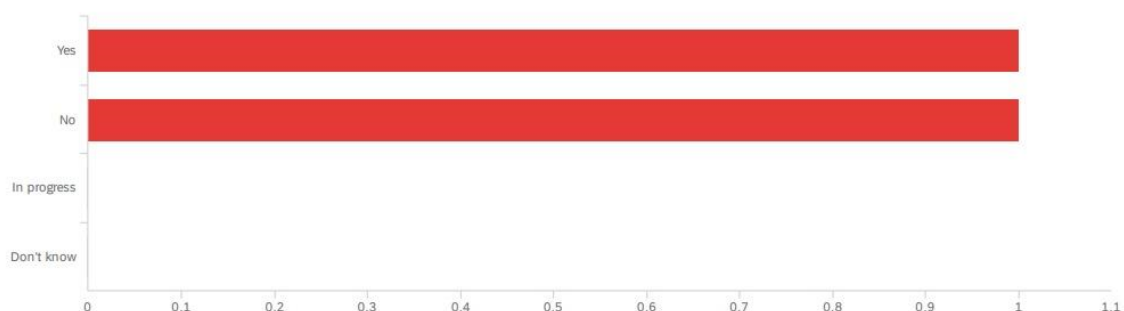
People and competencies

While a formal policy is not in place yet at all institutions, many universities have appointed dedicated service staff to help teachers as they prepare open educational resources. One university offers courses on open educational resources, next to offering in-person support for scholars working on teaching materials. This university also issues various open educational resources-focused grants, such as those provided via ORCA.nrw; additionally, it employs a full-time staff member with competencies in open educational resources for the different roles in open educational resources development.

At one institution there are some open educational resources practitioners who share their knowledge and experience informally. Others may have dedicated units to provide training on the creation of MOOCs and on Creative Common licence to support open teaching resources. The services may also issue annual calls for new resources. Researchers and teachers can receive information about the open educational resources policy and associated services via emails and

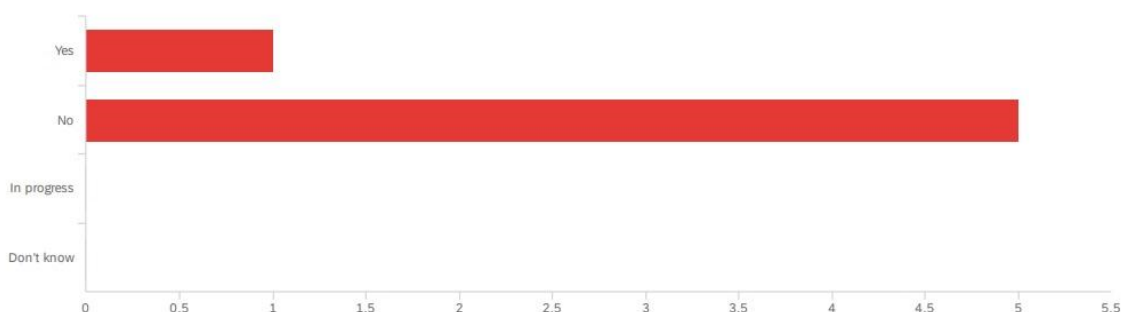
via a university website. In many cases, there is still some uncertainty concerning the exact roles and responsibilities of open educational resources support staff.

Q4.4 - Is the OER policy supported by dedicated service staff (e.g., the library)?



Funding

Q4.13 - Are you provided with specific funds for OER services?



Only one university has funding for open educational resources activities. This funding is provided by ORCA.nrw and DH.nrw. The funds are used mostly to fund the open educational resources support staff.

Monitoring and crediting

Out of all the six universities examined in this survey, only one institution formally registers the open educational resources materials of its educators. None of the organisations include open educational resources adoption as a criterion in the institutional evaluation process, and, as far as could be ascertained in this survey, none of the organisations include the subject of open educational resources in regular HR evaluations with research staff. Additionally, none of the institutions surveyed have conducted formal evaluations of the relevance and quality of services needed to support open educational resources.

Reward systems for activities in the field of open educational resources exist in a nascent stage only. One university works with an innovation score for researchers, and at one other new evaluation and quality systems are currently being developed: open educational resources will eventually play a role in these.

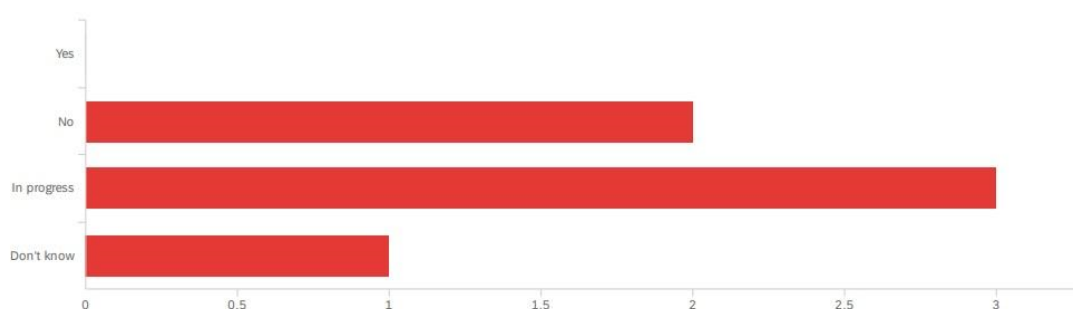
It was recognised that the development of open educational resources can be very time-consuming, and that teachers rarely have sufficient time to work on the development of well-considered open teaching materials. It can also be challenging to incentivise teachers to make themselves available for the necessary time. Respondents have also indicated that there can be legal or practical issues complicating the reuse of educational materials. A key adoption barrier is a lack of experienced support staff helping educators with their open educational resources, and this challenge is related to the fact that it is generally difficult to secure funding for open educational resources projects. Overall, there appears to be a lack of awareness of the relevance of open educational resources, both among teachers and university management. open educational resources clearly receive less attention than areas such as research excellence, clinical work, or actual teaching. One institution mentioned that any prioritisation of open educational resources may also be viewed as a diversion from these core tasks of the university.

5.1.4 Research Software Management

Policy and awareness

While some participating institutions are not yet at the stage of considering policies for research software management, others are beginning to strategise both the content and personnel needed to initiate official guidance. Institutions who are at the initial stages of research software management programmes can build upon the precedents and infrastructure developed for other Open Science initiatives, such as open access and research data management. Communications networks, training capabilities, and dedicated staff are often in place due to the ground-breaking work of prior Open Science initiatives.

Q5.2 - Does your institution have a research software management (RSM) policy?

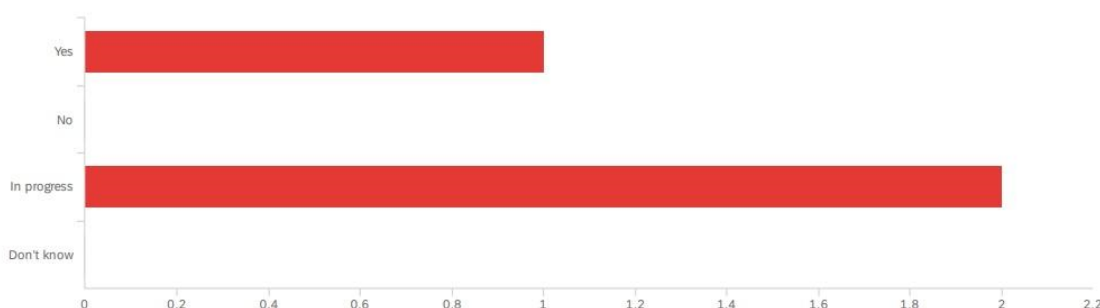


Services and Infrastructure

Most services in place for research software management utilise international digital infrastructure, namely university-subscribed Git environments developed by organisations

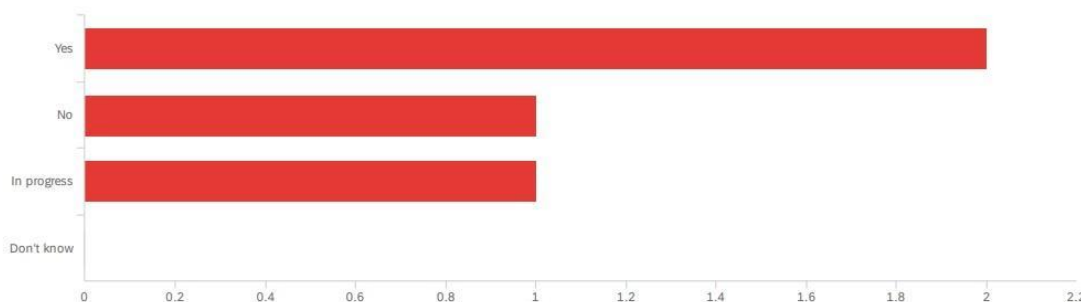
external to academia. Git environments are critical infrastructure for research software management as it is designed to enable discoverability, reusability, versioning, documentation, licensing, and several other management steps, but their placement outside the university limits their responsiveness to researcher needs. Institutions that demonstrated a more graduated and university-led perspective on Research Software provided computing support, coding and programming training, and local instances of Git environments. These institutions also dedicate resources to support and training, provide extended engagements in software support to researchers, and employ research software engineers at faculty levels while consistently assessing and responding to Research Software needs.

Q5.4 - Is the RSM policy supported by dedicated support staff (e.g., IT)?



People and competencies

Q5.13 - Does your institution use open, long-term research software management preservation sites (e.g., GitHub)?



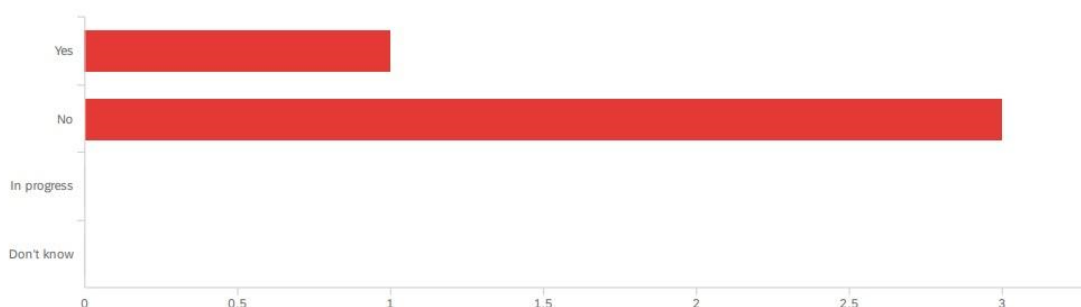
Most of the institutions in our survey do not yet have staff in place dedicated to research software management. However, the survey provided an example of a multi-member group of professionals

dedicated to Research Software from both central and faculty levels. Those staff competencies spanned both Research Software and Research Applications / digital infrastructure. At another institution, the initiation of a central position to develop research software management programmes throughout the university has a competency focus on community development in order to democratise the participation of an array of stakeholders in guiding the programme throughout the institution and at unique contexts per faculty and institute.

Funding

Across institutions, Research Software is not recognised sufficiently to support robust development. There is a stark lack of infrastructure to reward contributions to an institution’s commitment to open and FAIR software. Without documentation, personnel, or funding, research software management will be limited as an Open Science practice.

Q5.15 - Are you provided with specific funds for RSM?



Monitoring and crediting

Conversations on research software management include issues of licensing, citation, and archiving in order to include methods of monitoring and crediting software development, as well as reuse. However, at the institutional level, there is a distinct lack of strategy and tools to monitor software as a research output. Respondents noted a lack of resources, financial and in terms of personnel, as well as barriers to organise institutional practices to monitor and credit contributions to a sustainable environment in which researchers can manage, document, and maintain software for the long term.

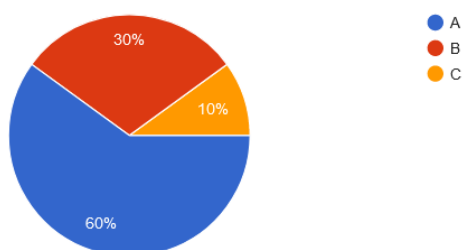
5.2 OpenAIRE's Open Science Checklist

A. My institution already has a policy on Open Science/Open Access, endorsed by [Rector/other appropriate committee

B. My institution is in the process of developing an Open Science/ Open Policy and has already endorsed related declarations ([Berlin Declaration](#), [San Francisco Declaration](#))

C. My institution does not have an Open Science/ Open Access policy, nor has it endorsed related declarations

10 responses



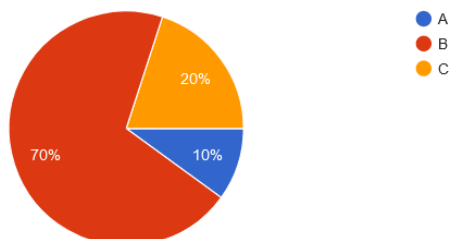
Policy

A. The institutional policy specifies the roles, rights and responsibilities of each member/ unit/ department or other service within the institution with a role in the adoption and implementation of the policy

B. There is a rather vague description of the roles and responsibilities of each party involved in the implementation of the policy

C. There is no description of roles and responsibilities in the policy

10 responses



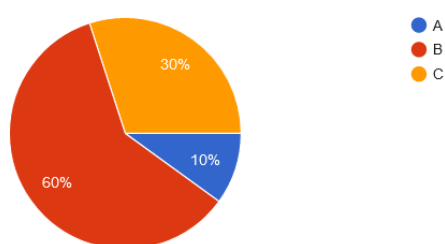
Roles and responsibilities

A. My institution actively encourages the uptake of Open Science practices (beyond open access to publications and data) such as the involvement in citizen science projects, the use of open peer review, the use of open educational resources etc., supports researchers through awareness raising and information activities and tracks their uptake

B. My institution encourages the uptake of Open Science practices (beyond open access to publications and data), such as the involvement in citizen science projects, the use of open peer review, the use of open educational resources etc., but does not have a mechanism to monitor their uptake

C. The policy makes reference only to open access to publications and research data

10 responses



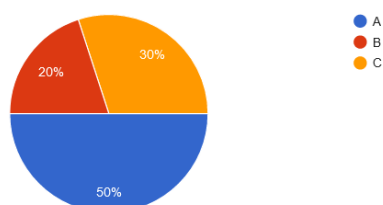
Open Science activities

A. The policy is aligned with the Horizon2020 requirements in defining the terms of providing open access to publications (mandatory deposit, locus of deposit, time of deposit and embargo periods, licenses and copyright etc.)

B. The policy defines the terms of providing open access to publications, but these are not aligned with the Horizon2020 requirements

C. There is no mandatory provision at my institution regarding open access to publication

10 responses



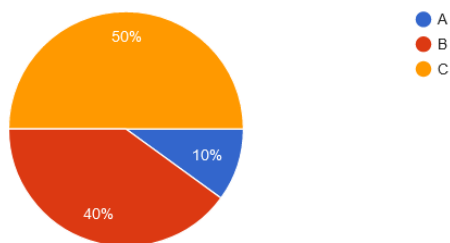
Publication and Sharing

A. My institution has specific provisions (aligned with the Horizon 2020 requirements) stipulating open data by default, establishing reasons for opting-out and laying down provisions for archiving, sharing, long-term preservation etc.

B. My institution has provisions on open data, but these are not aligned with the Horizon 2020 requirements

C. There are no mandatory provisions on opening and sharing data in my institution

10 responses



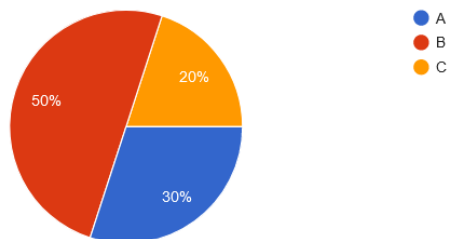
Open Data

A. My institution has a repository for researchers to manage research outputs at different stages of the research cycle that meets trusted quality standards (CoreTrustSeal, OpenAIRE compatibility, meeting FAIR principles)

B. My institution has a repository, but this does not yet meet trusted quality standards

C. My institution provides ad hoc support to researchers in locating appropriate services of third parties

10 responses



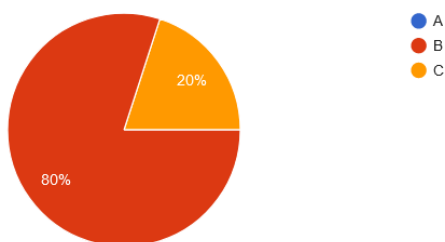
Infrastructure

A. Open Science constitutes a formal criterion in research assessment and evaluation procedures

B. My institution encourages the adoption of Open Science practices, yet these are not embedded as a formal criterion in research assessment and evaluation procedures

C. There is no mechanism for incentivizing or rewarding researchers engaged in Open Science practices

10 responses



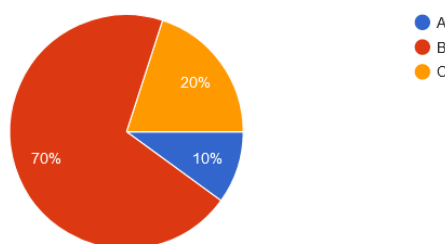
Rewards and incentives

A. My institution provides courses on data management and data-intensive research, as part of the curriculum and leading to the award of specific titles

B. My institution provides some training on data management and data-intensive research through ad hoc workshops and other trainings, yet these are not part of the curriculum and do not lead to the award of a specific title

C. There are no such courses offered in the institution

10 responses



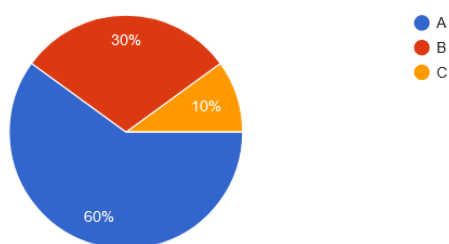
Educational programmes on data-intensive research

A. My institution (university library in cooperation with other departments/units or other appropriate services) organizes on a regular basis training courses of different open science topics, targeting researchers at different stages of their careers, library staff and other members of the institution and taking into consideration disciplinary differences

B. My institution provides open science training courses, yet not a regular basis and of limited scope

C. My institution does not provide any training courses on open science/ open access, yet provides guidance on training courses offered by OpenAIRE, FOSTER, RDA and other related projects and/or networks

10 responses



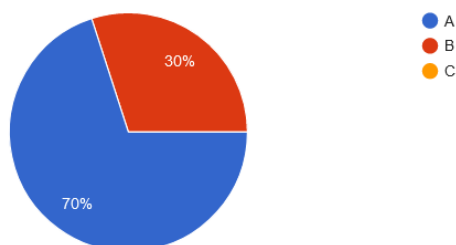
Training

A. My institution has developed materials to familiarize its members with Open Science, operates an information point/ webpage dedicated to Open Science

B. My institution provides limited information through its library service on general Open Science/ Open Access topics

C. There is no central information point operating at my institution

10 responses



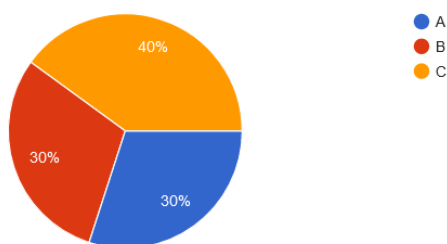
Dissemination / Awareness-raising

A. My institution has a clear estimation of the costs related to Open Science research and activities (developing and maintaining the infrastructure, APC costs, licensing agreement costs, training and awareness raising activities, etc.) and has secured appropriate funding

B. My institution receives ad hoc funding to support Open Science research and activities

C. There is no specific budget line for Open Science related activities

10 responses



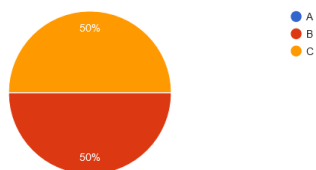
Funding

A. My institution has set up a mechanism for monitoring compliance of its members with the policy, including sanctions in the case of no compliance

B. My institution has a monitoring mechanism to accompany the policy, yet there are no actions foreseen in the case of no compliance

C. There is no monitoring mechanism foreseen in the institutional Open Science/ Open Access policy

10 responses



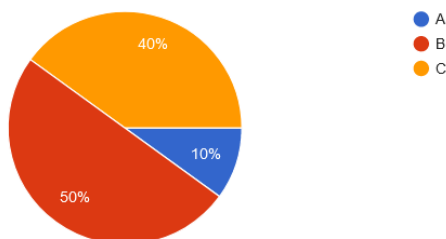
Monitoring and compliance

A. My institution already has a specific time plan for updating its policy (specifying the time and the people, departments/units or other service involved)

B. My institution is in the process of developing such plan

C. There is no provision in the policy for its review

10 responses



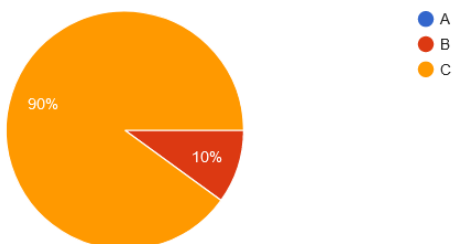
Revision and updates

A. The policy is provided in a machine-readable format and can be accessed via API

B. The institution will shortly provide the policy in a machine-readable format

C. The policy is not provided in a machine-readable format

10 responses



Machine-readability of the policy

