

REPORT

An Analysis of Open Science Policies in Europe, v4

August 2019



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1. Introduction

The DCC maintains a watching brief on funder data policies, and since 2016 we have been collaborating with SPARC Europe to extend our coverage to make it more comprehensive at European level, and to cover open research practice more generally. While some studies have been done in this area, all are either out of date or concentrate on open access publications or open government data rather than open research data. The most recent known analysis dates from 2013, and while this is a relatively short period the intervening period has been one of considerable change in research data policy.

This document presents an updated review of Open Data and Open Science policies in Europe as of July 2019. It does not include Open Access to publications policy. This analysis goes more into depth on the types of policy in place in Europe, their processes of creation, and some of their specifics. This updated version of the deeper analysis reflects changes that have been identified between November 2018 and July 2019. We concentrate on the twenty-eight EU member states, but we also consider relevant countries from the European Research Area, namely Iceland, Norway, Serbia and Switzerland.

As with the first version of this analysis, we once again reached out to the European research community and received extremely helpful comments and pointers, particularly where documents are not currently available in English or work in progress has not yet been publicised. We are particularly grateful to the OpenAIRE National Open Access Desks (NOADs) for their help in identifying relevant documents and initiatives. Specific acknowledgements are given at the end of the document.

To summarise changes since the previous version, four new policies (AT, CZ, FI, NO) have been added in the period between November 2018 and July 2019. Furthermore, new activity around national approaches to open data and open science has been noted in several additional countries, e.g., Bulgaria, Denmark, Portugal, Ireland, Romania and Slovakia.

What we note is that even though some countries have national policies in place, these are being further developed, or additional strategy documents developed to provide a stronger focus and provide updated mandates on FAIR data in Austria, Denmark, Finland, Ireland and Sweden for example.)

Summary of changes from version 3:

Insertion of three new tables listing and linking national policies in Europe, related national laws national policies under development; status 2019.

- Austrian entry updated;
- Belgian entry updated;
- Bulgarian entry updated;
- Czech Republic entry updated;
- Danish entry updated;
- Dutch entry updated;
- Finnish entry updated;
- Irish entry updated;
- Italian entry updated;
- Norwegian entry updated;
- Portuguese entry updated;
- Romanian entry updated;
- Slovenian entry updated;
- Overview tables updated;
- Analysis/comparison section updated.

In light of the increasingly active and varied policy environment in Europe and also considering the strong focus on FAIR data, SPARC Europe and the DCC will be changing the format of this document for the next version. This is to better meet the need for policy analysis and comparison between policy foci, time periods, approaches, countries etc. We will be inviting input from our readers to assist with the change, to ensure that these are in line with the community's needs. If you have good ideas for how to make this policy review more useful, please contact the DCC on info@dcc.ac.uk.

2. Executive summary

It has long been accepted that national energies are generally dedicated to implementing Open Access to publications before attention turns to research data, not least because of the potential penalties for non-compliance with funder mandates, which are rare in the data realm. This study found that, in some countries, research data has had to wait in line behind public sector data, i.e. that produced by government departments (and often re-used by HE researchers) as opposed to data created or captured by researchers in the field or the laboratory. Since 2016 there has however been an indication that open research data is now on the agenda, and a number of policies and initiatives have been developed during the time this policy review has been active. The European Commission's Open Research Data Pilot for Horizon 2020 is cited in multiple policy documents as a driver and influencing force in the development of national approaches. At the same time, the importance of underpinning infrastructure is clear, and while significant efforts have been taken to

develop a pan-EU research data management infrastructure via projects such as EUDAT, there is no consensus position shared within, less still across, the member states.

Since the last version of this report, partly thanks to a concerted effort between SPARC Europe, DCC, EBLIDA, LIBER and IFLA, the new EU's [Directive on Open Data and the Re-use of Public Sector Information](#) (PSI Directive) puts a greater focus on enhancing the way that publicly funded research data should be made available, accessed and shared. The new directive came into force in July 2019. The goals for change to this directive were to improve digital public services through a greater focus on data openness, greater use of AI and business support to tech startups among other things. The emphasis on improving access to publically funded research data is very welcome. Article 10 now states that "Member States shall support the availability of research data by adopting national policies and relevant actions aiming at making publicly funded research data openly available ('open access policies') following the principle of 'open by default' and compatible with FAIR principles." They shall be re-useable for commercial and non-commercial purposes if this data has made available in an institutional or subject-based repository. This relates to research data that is publicly funded or co-funded by public and private-sector entities. It also follows the principles of as open as possible, as closed as necessary to make necessary exclusions. This European legislation now needs to be implemented in each EU Member State in the coming 2 years.

Another important addition is the broad commitment for Open Science in the commitment in the next European Commission R&I Framework Programme [Horizon Europe](#). One of the operational objectives includes "fostering open science and ensuring visibility to the public and open access to scientific publications and research data, including appropriate exceptions."¹ Importantly it also emphasises the importance of uptake of more OS policy and practice: "Accelerating the transition towards open science, by monitoring, analysing and supporting the development and uptake of open science policies and practices, including the FAIR principles, at the level of Member States, regions, institutions and researchers, in a way that maximises synergies and coherence at EU level." The regulation goes further to encourage modernising recognition and reward systems on national levels, which are so crucial to the success of OA and OS. OA to research data is the general rule under the terms and conditions fo the new EU funding programme's grant agreement. It is rather well aligned with the PSI directive as mentioned above, endorsing FAIR and making data "as open as possible, as closed as necessary"; DMPs are also to be established. This legislation will be laid down in the Horizon European grant agreement and come into force in 2021.

Going back to reporting on developments in Open Science policies in European countries, despite the challenges inherent in making comparisons between quite different types of policy document, the analysis made some interesting findings. 14 of the 28 European Union

¹ European Commission, 2019, EU Budget for the Future:Horizon Europe. EU Funding for Research and Innovation 2021-2027, https://ec.europa.eu/commission/sites/beta-political/files/budget-may2018-research-innovation_en.pdf

member states have national, research data-related policies in place, which is up from 10 in January 2018. In the European Research Area, three further non-EU members (Norway, Serbia and Switzerland) have active policies. The majority of the policies we looked at are involve the national research funders, and consequently the type of policy that we see most often is the standard funder data policy, laying out expectations for grant recipients. Other types are available, ranging from national plans, strategy documents or roadmaps to codes of ethics, white papers, and even laws passed by national parliaments. The years in which the policies came into effect ranged from 2009 to 2019, with a pronounced tendency towards more recent implementation. Of the fourteen, there is roughly an even split between countries where research data is covered in the same policy as Open Access or Open Science and those where it is considered in isolation, and between countries with a ‘hard’ (imperative) and a ‘soft’ (encouraging) approach. Formal approaches to monitoring and compliance, and indeed fair mechanisms for reward and recognition, seem relatively low on the priority list, although four of the thirteen policies do make reference to these.

Where policies had been in place for a reasonable period of time, our original intention was to say something about their levels of uptake and success. In practice, none of the policies we looked at were more than 7 or 8 years old. In some cases, the current policies stand as successors to previous policies; in others, they are the first time that anything like this has been attempted at a national level.

Another potential area for further study is in codes of research ethics. Numerous European countries have these in place, often serving as a form of community-derived *de facto* policy.² It may be worth future effort to look at these in more detail, particularly as carrying out comparisons between them will be comparing like with like. On the other hand, whilst coverage may vary between them, it seems unlikely that their positions on specific issues would vary greatly from country to country, given the general scientific consensus about the benefits of openness. What divides opinion now is less whether or not openness is a good thing, but rather how best to implement it, whose responsibility it should be, and who will pay.

3. Overview

By policy here we mean “a set of ideas or a plan of what to do in particular situations that has been agreed to officially by a group of people, or an organisation” (lightly adapted from the Cambridge dictionary definition). Specifically, this means Laws passed by Parliament, and Research Plans/Roadmaps, Concordats/Agreements between multiple influential parties, and Codes of Research Practice/ Integrity/ Ethics, etc. We also classify national policies under the label of ‘national policy’, if they have a significant national impact on the research sector of the country. Note that the next version of this document will include more national research funders as a result of the RIF and FAIRSFAR Projects. Many of the documents examined in the course of this study are pitched at a high level, with detail about issues such as scope and compliance devolved to individual institutions or funding

² See for example <http://www.enrio.eu/>

bodies, or to supporting documents such as FAQs. Just as there is no “one-size-fits-all” solution for research data management (the needs of a small, specialist Art college, for example, will be quite different from those of a large, research-intensive university) there is no single shape and size of “a European national RDM policy document”. How these are arranged, and the level at which they are pitched, depends to a considerable degree on several factors, such as existing national infrastructure, number of public research funders, number of research organisations, and the national culture – which can be difficult for an outsider to grasp. In some cases the documents are not yet available in English, so we have used our local contacts to better understand the process of developing the policies, their current level of maturity or engagement, and their position within the larger national and European picture(s).

We have sought to identify where national open data policies are linked to other agendas, such as Open Access or Open Science more broadly. Naturally, in addition to addressing the benefits of openness, it should be said that many of these policies are also explicit about situations where data should not be shared, for ethical, commercial or security-related reasons.

Below we present national policies (Table 1) and laws (Table 2), in two separate tables, with names of, and links to, each individual document. Table 3 presents a snapshot overview of ongoing work in each European Country, and Table 4 presents further analysis of each policy document.

Table 1 - List of National Policies in Europe; status July 2019

National Policies of EU Member States³	
In alphabetical order by country code	
Country	Name of policy
AT	Open Access Policy: Open Access to Research Data (Policy of national funder FWF)
CY	National Policy of the Republic of Cyprus for Open Access to Scientific Information
CZ	Action Plan for Implementation of the National Strategy on Open Access to Scientific Information of the Czech Republic for 2017–2020
DK	National Strategy for Open Access
DE	Principles for the Handling of Research Data (Policy of Alliance of German Science Organisations) and the DFG Guidelines on the Handling of Research Data
ES	State Plan for Research, Development and Innovation 2017-2020 in January 2018
FR	National Plan for Open Science
FI	Open Science and data - Action Programme for the Finnish Scholarly Community

³ In this table we also include national funder that have had a significant national impact.

LT	Guidelines on Open Access to Scientific Publications and Data (Policy of Research Council of Lithuania)
NL	National Plan Open Science
PT	Policy on management and sharing of data and other results arising from FCT-funded research (Policy of national funder FCT)
SI	National Strategy of Open Access to Scientific Publications and Research Data in Slovenia 2015-2020
SK	The Open Government Partnership National Action Plan of the Slovak Republic 2017 – 2019 includes Open Science.
UK	UKRI Common Principles on Data Policy (Policy of UK national funder organisation UK Research and Innovation) Concordat on Open Research Data (Policy of a UK multi-stakeholder group, including research funders and higher education associations)
Selected non-EU National Policies	
CH	White Paper for a Swiss Information Provisioning and Processing Infrastructure 2020
NO	National Strategy on Access to and Sharing of Research Data
RS	Open Science Platform

Table 2 - List of National Laws; status July 2019

National Laws referring to Open Science in European Member States	
FR	Law for a Digital Republic
LT	Law on Higher Education and Research

Table 3 - National Policies under development; status 2019

MEMBER STATE / COUNTRY	EXISTING POLICY? (Y/N)	IS THERE WORK AFOOT?	WHAT SORT OF WORK?
EUROPEAN UNION			
BG	N	Y	The National Science Strategy (2017-2030) recommends planning regarding open access to and long-term preservation of research data.
HR	N	Y	Research and Innovation Infrastructures Roadmap (under the auspices of the Ministry of Science, Education and Sports)
CZ	Y	Y	The Czech National Action Plan on OA was approved by the Czech government in April 2019.
DK	Y	Y	The Ministry of Higher Education and Science commissioned work on a preliminary analysis of FAIR data in Denmark.
EE	N	Y	Recommendations for the development of a national policy
FI	Y	Y	The Open Science and Data: Action Programme for the Finnish Scholarly Community was launched in 2018, with a strong focus on FAIR data.
EL	N	Y	A proposal for the re-formulation of a National Open Science High Level Task Force under the auspices of the General Secretariat of Research and Technology (GSRT) was made in November 2018.
HU	N	Y	Joint committee on open science, bringing together representatives of various stakeholder groups
IE	N	Y	The Government of Ireland launched a framework, prepared by The National Open Research Forum (NORF), which precedes a National Action Plan on the Transition to an Open Research Environment.
IT	N	Y	New Working group ICDI (Italian Computing and Data Infrastructure) was recently created by representatives of some of the main Italian Research Infrastructures and Infrastructures with the aim of promoting synergies to optimize Italian participation in e.g., EOSC, EDI and HPC.
LU	N	Y	A working group has been set up to define a Luxembourg wide national open access to science plan for 2020.
MT	N	Y	Collaboration between the Ministry and UM who are working towards an Open Access/Open Science policy for Malta.
PL	N	Y	Ministry has declared that a new OA policy will be published soon
PT	Y	Y	A National Open Science Policy is under development by an Interministerial Working Group set up by the Ministry of Science, Technology and Higher Education.

MEMBER STATE / COUNTRY	EXISTING POLICY? (Y/N)	IS THERE WORK AFOOT?	WHAT SORT OF WORK?
RO	N	Y	The Executive Agency for Higher Education, Research, Development and Innovation Funding / OpenAIRE Romania are starting to implement a European funded project which includes a strong component dedicated to the elaboration of a proposal for an Open Science national strategy.
SE	N	Y	The Swedish Research Council is coordinating a national open research data initiative, in conjunction with the National Library and National Archive, at the behest of the Swedish government. Swedish Funder Formas mandates open access to research data in their guidelines to applicants.
NON-EU			
IS	N	Y	Addressed within the Ministry of Education, Science and Culture's plan for Icelandic HE (2017-2021)

4. State by state

4.1 Summary

Table 4 - Countries with National Policies in Place⁴

MEMBER STATE / COUNTRY	TYPE OF POLICY (STATUTE, GOVERNMENT MINISTRY, FUNDER POLICY)	YEAR POLICY CAME INTO EFFECT	SPONSORING ORGANISATION (MINISTRY, FUNDER, ETC)	SCOPE / COVERAGE BEYOND DATA	LINKED TO OA / OPEN SCIENCE POLICY?	SOFT/HARD ⁵	COVERAGE OF SKILLS OR TRAINING?	MONITORING AND/OR COMPLIANCE ⁶
EU								
AT	Funder Policy	2019	FWF Der Wissenschaftsfonds	Only Data	No	Hard	No	Yes
BE	Code of Ethics	2009	Learned Societies, supported by Federal Government	Protocols	No	Hard	No	No
CY	Joint policy of Government and Funder	2016	Working group involving government ministry, funder and universities	Publications	Yes	Soft	No	No
CZ	National Strategy	2017	Ministry of Science, Research and Innovation	Publications	Yes	Soft	Yes	No

⁴ In this table we also include national funder that have had a significant national impact.

⁵ Here we define a 'hard' policy as one that employs language such as "must" or "should", as opposed to soft policies which more gently advise or encourage.

⁶ In this column, a "No" entry means either that compliance is not addressed explicitly, or is devolved to a lower level.

MEMBER STATE / COUNTRY	TYPE OF POLICY (STATUTE, GOVERNMENT MINISTRY, FUNDER POLICY)	YEAR POLICY CAME INTO EFFECT	SPONSORING ORGANISATION (MINISTRY, FUNDER, ETC)	SCOPE / COVERAGE BEYOND DATA	LINKED TO OA / OPEN SCIENCE POLICY?	SOFT/HARD ⁵	COVERAGE OF SKILLS OR TRAINING?	MONITORING AND/OR COMPLIANCE ⁶
DK	National Plan	2015	Steering group involving universities, libraries and national ICT infrastructure provider	Software, protocols	No	Hard	Yes	No
ES	State Plan	2018	Ministry	Covers data alongside many other RDI related issues, including OA	Yes	Soft	Yes	No
FI	National Plan	2014	Ministry	Publications, tools, methodologies	Yes	Hard	Yes	Yes
FR	Law/National Plan	2016/2018	Parliament/Ministry	Covers data alongside many other ICT related issues, including OA	Yes	Hard	No/Yes	No
DE	Funder Policy	2010	Research Council	Software, methods	No	Hard	No	No
IE	National Framework	2019	Ministry for Training, Skills, Innovation, Research and Development	Publications, Infrastructure	No	Hard	Yes	Yes
LT	Law / Funder Policy	2016	Research Council / Parliament	Publications	Yes	Hard	No	Yes
NL	National Plan / Concordat	2017	Ministry	Publications	Yes	Soft	Yes	Yes
PT	Funder Policy	2014	Research Council	Samples, software, models	No	Soft	No	No

MEMBER STATE / COUNTRY	TYPE OF POLICY (STATUTE, GOVERNMENT MINISTRY, FUNDER POLICY)	YEAR POLICY CAME INTO EFFECT	SPONSORING ORGANISATION (MINISTRY, FUNDER, ETC)	SCOPE / COVERAGE BEYOND DATA	LINKED TO OA / OPEN SCIENCE POLICY?	SOFT/HARD ⁵	COVERAGE OF SKILLS OR TRAINING?	MONITORING AND/OR COMPLIANCE ⁶
SI	National Policy	2015	Government	Publications	Yes	Hard	Yes	Yes
UK	Funder Policy / Concordat	2015/2016	Funding Council, Research Councils, Universities, Private Funder	Software (in the FAQs and Concordat)	No	Hard	Yes	No
<i>NON-EU</i>								
NO	National Strategy	2017	Government	Only data	No	Hard	No	No
CH	White Paper	2014	Universities	Covers data alongside many other ICT related issues, including OA	Yes	Hard	Yes	Yes
RS	National policy	2018	Ministry	Open Science	Yes	Soft	Yes	Yes

4.2 Member states with existing national policies (14/28)

AUSTRIA (AT)

Austria has no national policies at present, but the Austrian Science Fund (FWF) has an open science policy, which mandates open access to research data, collected and/or analysed using FWF funds for projects approved from 1 January 2019, under [new guidelines](#). The guidelines were developed following a pilot project of 12 research projects. The guidelines mandate open access to research data on which the research publications of the project are based. Research data are all data necessary to reproduce and to verify the results of the publications, including the associated metadata. All research data and their metadata should be FAIR (findable, accessible, interoperable and reusable) the guidelines provide criteria for choosing repositories, licencing models and persistent identifiers.

BELGIUM (BE)

Policy specifics

An Open Access clause was adopted in the [Belgian Copyright law](#) in Sep. 2018. This law gives authors the right to make research publications available in open access if the publication is a result of research funded by public funds for at least 50%, with a maximum embargo period of 6 months for STM and 12 months for SSH. The law doesn't mention data specifically. [This law](#) completes and reinforces the recent [decree](#) of the fédération Wallonie-Bruxelles (FWB) which requires the deposit in open access of scientific articles in institutional repositories. We have included this law here, as it demonstrates Belgium's commitment to OA, which could see a stronger focus on research data in the future.

Preserving and providing access to data to allow verification of published research is addressed within the "[Code of Ethics for Scientific Research in Belgium](#)", which states that "the primary data of a research project and the protocols must be kept and made accessible during a determined and sufficient period of time. When publications, especially review and summary articles, do not contain all the necessary data for verification, the data should nevertheless be available." (p8.) The rationale for RDM stems from the need for verifiability of research results.

The Belgian approach, which is similar in some ways to Estonia's Statement of Principles, was led by the Learned Societies of Belgium, with the support of the Federal Government, and covers both primary data and the protocols and methods required to replicate scholarly findings. The document draws legitimacy from its origins within the Belgian learned societies, claiming that: "A code of ethics offers advantages in relation to legal or statutory standards. Indeed, it is impossible to elaborate precise rules covering all cases and circumstances. Furthermore, a code, which is based on the values shared by researchers, has a greater moral legitimacy than the rules imposed top down."

It is noteworthy for being the longest-lived of the policies considered in this report. While this is a ‘hard’ policy in terms of its language, the policy appeals more to the scholar’s sense of being part of a community sharing high standards than some other ‘carrot-and-stick’ types approaches. This is demonstrated by the process of its creation, via the Learned Societies. Skills and training are addressed only in very general terms, in that researchers must become skilled in all techniques necessary to conduct their research, data management being but one of these.

Additional information

In addition to the Code of Ethics, “[The Brussels Declaration on Open Access](#)” of 2012 (signed by the federal, Flemish and Brussels-Wallonia Science Ministers), commits the signatories to “investigating possibilities and new opportunities in the broad Open Access field, all in frequent collaboration with relevant stakeholders, considering Open Access to scientific publications a forerunner of new initiatives in the ‘Open Data’ and ‘Open Science’ areas”.

Research Foundation Flanders (FWO), a national funding agency now mandates the use of DMPs for all projects funded by the agency.⁷

CYPRUS (CY)

The Cypriot [national policy for Open Access](#) was developed via a working group including government, national funder and universities, and approved at Government level in 2016, although – as with the Portuguese and Norwegian policies – it is important to note that the Cypriot policy encourages without mandating; the Horizon 2020 Open Data Pilot is currently the only ‘hard’ mandate governing HE research in Cyprus. The national policy has also been adopted by the national funder, the Research Promotion Foundation (RPF), and universities are expected to follow the national policy, but are also free to create their own institutional policies which align with it. The policy covers both data and Open Access publications. Having recently come into effect, the policy’s efficacy has not received any formal monitoring, although this expected to begin when the first batch of funded projects begin to complete, although the OpenAIRE NOAD in the country has already reported contact from researchers asking for help in meeting the policy expectations: an encouraging sign, although obviously for a larger country (Cyprus has a population of 1.1M) such an approach would not scale.⁸

⁷ <https://www.fwo.be/en/the-fwo/organisation/data-management-plan/>

⁸ The policy is currently available only in Greek, although colleagues in Cyprus have offered to produce an English translation as a result of this study’s interest in the Cypriot national approach.

CZECH REPUBLIC (CZ)

A National Strategy on Open Access To Scientific Information (2017–2020) was approved by the Government in 2017, which covers both research publications and research data. This document originates from the office of the Deputy Prime Minister and is pitched at quite a high level. In the first half of 2019, a long foreseen [Action Plan for Implementation of the National Strategy on Open Access to Scientific Information of the Czech Republic for 2017–2020](#) was approved by the Czech Government. The Action Plan defines concrete goals and methods in the aim of fulfilling general ideas of the National Strategy.

Besides the National Strategy, several research institutions in the Czech Republic have their own Open Access policies, for example, [AV ČR](#), [MUNI](#), [VŠB-TUO](#), and [VUT](#), to name some of them. A brief overview of the current situation of Open Access in the Czech Republic can be found at <http://openaccess.cz/en/open-access-in-the-czech-republic/>.

DENMARK (DK)

A Danish [National Strategy for Open Access](#) was published in June 2018. The strategy states that the implementation of Open Access is to take place through the green model and to monitor the transition this transition to OA publications, an [OA indicator service](#) has been set up. With regard to open access to research data The Ministry of Higher Education commissioned experts in 2017 to carry out a preliminary analysis of the potential for implementing FAIR data in Denmark, which may be a precede policy or strategy formation in this area. The [report](#) was published in March 2018 and highlights, for example, the need for national co-ordination and cooperation across research actors, libraries and research funding actors. The ministry webpage refers to a longstanding tradition of data management and refers back to work carried out in 2014 carried out by the Steering Group for National Data Management, which presented a [strategy on data management](#) in 2015 (in Danish.) This advocates a structured, holistic approach to data management, data preservation and data infrastructures, with a bottom-up process based on stakeholder collaboration. (Source: NordForsk (2016), “Open Access to Research Data – Status, Issues and Outlook”). A [National Forum for Data Management](#) (Danish language) was formed in 2015, with representatives from the Danish universities and national libraries and a secretariat from DeIC. Its vision is “to promote academic and research initiatives in research data management within universities, and link them in a national and international cooperation.”

The Danish policy employs terms such as “should” and “shall”, although practical implementation and monitoring are devolved to individual research organisations via their own policies and procedures. The strategy, being a national one, is quite wide-ranging, covering both data and the software/protocols necessary to re-run experiments (although not publications, which are mentioned only in passing), noting also the need to foster

research data management skills. The strategy is clearly the product of considerable liaison across and between stakeholder groups, and is sensitive to the differences between academic disciplines in terms of how research data management should be organised in practice.

FINLAND (FI)

The Finnish universities' council of rectors (UNIFI) established the 2018 [Open Science and data - Action Programme for the Finnish Scholarly Community](#), which is being co-ordinated by [The Federation of Finnish Learned Societies](#). The Action programme refers to FAIR data as one of the key three themes of the programme, the other two being 'open publications' and 'culture of openness'. The action programme follows on from the development of Finland's "[Open Science and Research Roadmap 2014–2017](#)", which was led by the government's Ministry of Education and Culture, and sets out the policy framework for a national approach. The document is both ambitious – its aim is "to make Finland the leading country for openness in science and research by 2017, and for the opportunities afforded by open science to be extensively harnessed in Finnish society" – and it is consequently broad in scope, covering publications, data, methods and tools. It is linked to the national Open Access strategy, and is complemented by an Open Science Handbook and a Data Management Guide for Finnish researchers.

The language used is relatively hard, using terms such as "will" rather than "should". Monitoring and compliance responsibilities are divided amongst stakeholder groups, and responsibility for skills and training is delegated to the Doctoral Training Centres, placing it firmly within the academic domain, and putting the emphasis on shared best practice as opposed to a top-down mandate. The Roadmap refers to a forthcoming Certificate of Open Research, due in 2017.

FRANCE (FR)

The French approach is, together with Lithuania, the most high level of all: the "[Law for a Digital Republic](#)" (Loi n°2016-1321 pour une République numérique,) passed by the French Senate in 2016. Designed by the French government as a framework for the development of the entire national digital economy, this is also the most wide-ranging of all the policies examined in this study, covering a multitude of digital issues, including both Open Access publications and research data. Article 30 ensures the re-usability of open data deriving from public funding:

When data result from a research activity funded for at least half by the State, local authorities or public institutions, by national agencies or by European Union grant are not protected by a specific right or a particular regulation and have been made public by the researcher, the institution or the research agency, their reuse is free. The publisher of a

scientific publication [...] cannot limit the reuse of the research data made public in the publication.⁹

The French law is unlike most of the other policies in that it focuses on rights, rather than obligations, such as the right to access research data and the right to deposit publications in an Open Access repository. In practical terms, it seems somewhat obvious to say that implementation and monitoring will not be the duty of the French parliament but rather devolved to individual research organisations and publishers, although the ultimate arbiter of any disputes will be the French legal system. Being a law, it is very much a hard policy.

Training is addressed in a sense, although as such a wide-ranging document this is not specifically in the context of data, but rather about the role of trade organisations in developing skills, which could conceivably be extrapolated to a Learned Societies/HE context.

In July 2018, The Ministry of Higher Education, Research and Innovation adopted the ambition [National Plan for Open Science](#). The plan presents three broad commitments under the headings:

- *‘Generalising Open Access to Publications’*
- *‘Structuring Research Data and Making it Available through Open Access’*
- *‘Be part of a sustainable European and international open science dynamic’*

Each commitment is accompanied by a short Roadmap section, which outlines the stepping stones to meeting each commitment. The section on open data can be summarised in the following quote:

“Our ambition is to make sure that the data produced by French public research are gradually structured in accordance with FAIR principles (Easy to find, Accessible, Interoperable, Reusable), preserved and, when this is possible, open.”¹⁰

The Plan references the "[Artificial Intelligence Strategy](#)" which was launched in March 29, 2018, where the President announced the establishment of openness principles by default for all data published by projects funded by public funds. The plan furthermore recognizes the limitations placed on some data by law, professional secrecy, commercial limitations and IPR issues etc. Data processing will now be an eligible research expense in funded projects and researchers will be invited to submit their data to in certified data repositories. The plan also states that Data Management Plans will be

⁹OpenAIRE blog, *New French Digital Republic Law boosts support for OA and TDM*, 29.11.2016.

<https://www.openaire.eu/blogs/new-french-digital-republic-law-boosts-support-for-oa-and-tdm-1>

¹⁰ National Plan for Open Science (2018) p.6. http://cache.media.enseignementsup-recherche.gouv.fr/file/Recherche/50/1/SO_A4_2018_EN_01_leger_982501.pdf

generalized; a prize for research data will be set up to reward and highlight research teams who are excelling in this area and pledges the support of France to the RDA. The plan pledges the support of France to the RDA and software and technical solution development in this field.

Additional information

As a member of the G8, together with Germany, Italy and the UK, France is party to the G8 science ministers statement, made in London on 12 June 2013.¹¹ This statement “proposes to the G8 for consideration new areas for collaboration and agreement on global challenges, global research infrastructure, open scientific research data, and increasing access to the peer-reviewed, published results of scientific research.”

GERMANY (DE)

Policy specifics

Germany, DFG (the main German research funder) has “[DFG Guidelines on the Handling of Research Data](#),” which also point towards a set of “[Principles for the Handling of Research Data](#)” developed in partnership between a number of high profile German research organisations and adopted by the Alliance of German Science Organisations in June 2010. The DFG policy focuses on research data, although it also addresses the software and methods necessary for validation and/or replication. It is a hard policy, and does not explicitly address skills or training, but does make reference to the necessity of national infrastructure funding, which could be seen to cover human as well as technical infrastructure. (The accompanying Principles document, an analogue of which the UK also uses in its FAQs, does address skills explicitly.)

As with the Dutch approach, the German policy emphasises the need to formally recognise the effort and time required for data management:

The commitment and efforts of researchers to make research data available, for example the subject-specific further development of the discussion process or the technical possibilities of archiving, evaluating and networking research data should be given greater emphasis in the appraisal of scientific qualifications and achievements.

Additional information

In 2016 the Helmholtz Association, a union of 18 German scientific-technical and biological-medical research Centres, adopted a [position paper on the management of research data](#). This includes a commitment to “store research data from the Centres within suitable data infrastructures and make them available openly and free of charge for subsequent use by science and society.”

¹¹ G8 Science Ministers Statement (2013), URL: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/206801/G8_Science_Meeting_Statement_12_June_2013.pdf

As a member of the G8, together with France, Italy and the UK, Germany is party to the G8 science ministers statement, made in London on 12 June 2013.¹² This statement “proposes to the G8 for consideration new areas for collaboration and agreement on global challenges, global research infrastructure, open scientific research data, and increasing access to the peer-reviewed, published results of scientific research.”

LITHUANIA (LT)

Policy specifics

Although Lithuania has a [Law on Higher Education and Research](#) (2009, revised 2015 and 2016) which covers Open Access and research data, stipulating that “the results of all research works carried out in state higher education and research institutions must be communicated to the public,” in practice the more relevant policy document is the Research Council of Lithuania’s [“Guidelines on Open Access to Scientific Publications and Data”](#) (2016). These guidelines likewise cover both publications and data. Skills are not addressed, but responsibilities for various aspects of Open Access and Open Data are covered in detail, indeed in more explicit detail than most of the other national policies. As with France, the only other EU country known to have enshrined OA and research data in law, the focus is more on rights than on obligations, and the inference is that universities will be responsible for developing their own policies, procedures, guidance and monitoring systems.

Additional information

Some research institutions in Lithuania, including Kaunas University of Technology, Lithuanian University of Health Sciences, Mykolas Romeris University, Vytautas Magnus University, Lithuanian University of Educational Sciences and Vilnius Gediminas Technical University are understood to have adopted institutional policies aligned with the Research Council guidelines, the Horizon 2020 Open Access Mandate and Open Research Data Pilot, and the Guidelines on Data Management in Horizon 2020.¹³

NETHERLANDS (NL)

Open data is addressed within the [“National Plan Open Science”](#) which deals with data as well as other research outputs. There is also a [National Coordination Point for Research Data Management](#). The National Plan is sponsored by the government’s Ministry of Education, Culture and Science, and covers OA publications and data in detail. The document outlines ambitions to make research data optimally suited for reuse. Furthermore, to set clear and agreed technical and policy-related preconditions to facilitate reuse of research data, including provision of the necessary expertise and support. Mention is also made of other “Open” components, such as software and methods, but these are

¹² G8 Science Ministers Statement (2013), *op. cit.*

¹³ Further information is available in the blog post at <http://eifl.net/eifl-in-action/open-access-lithuania>

deferred/devolved to the National Platform for Open Science.) This is a relatively soft policy, speaking of ambitions rather than requirements, and addresses both the need for evaluation/ monitoring approaches, and also – encouragingly – incentives and rewards for engagement and effort.

The national funding agency Netherlands Organisation for Scientific Research (NWO) has since 2016 mandated Data Management Plans and that data should be made open and available as is possible. The policy also makes reference to the FAIR principles and provides links to support resources for applicants on how to create and maintain a DMP throughout the course of each project.¹⁴

PORTUGAL (PT)

Policy specifics

A preparation of a National Policy for Open Science is underway in Portugal. The work is initiated by the Government and Ministry for Science, Technology and Higher Education (MCTES). The website set up for Open Science in Portugal, describes the three pillars of the policy to be: (1) transparency in practices, methodology, observation and data collection, (2) public availability and re-use of scientific data, (3) public access and transparency in scientific communication, (4) use of web-based tools to facilitate scientific collaboration.

FCT (the national research funder) has a [policy on management and sharing of data and other results arising from FCT-funded research](#). In practice this is a general, aspirational call for researchers to share their data, and not a mandatory policy. The policy document is brief, at under two pages in length, and very much on the soft (suggest and encourage) end of the scale. It “encourages researchers to make available the data resulting from R&D projects it finances in appropriate Open Access databases, where possible,” with scope for opting out if the nature of the data does not lend itself to open sharing. The focus is on sharing data (and other research outputs, such as samples and software models) “*with other researchers.*” [our italics]

The policy suggests that a data management plan should be produced, proposing a basic template/table of contents, and that best practice be followed for whichever scientific discipline the research sits closest to. The only mandatory element of the policy is that FCT must be credited as a funder of any dataset made openly available. Skills are not addressed in the document, and – given the soft, aspirational approach – compliance is not covered either, but the document is clear that the policy will continue to be developed in order to “converge with international best practices, in particular with the initiatives of this domain that may be established within the European Union.”

¹⁴ NWO, Open (FAIR)data. Available at: <https://www.nwo.nl/en/policies/open+science/data+management>

SLOVENIA (SI)

[National open access strategy](#) was adopted by the Government of the Republic of Slovenia in September 2015. The Strategy contains a chapter on an open data pilot, more or less in line with the EU H2020 pilot. It contains a requirement for Open Access by default, the production of a data management plan, and recommendations about where to store data for the long term. The government strategy was followed by an [action plan](#) which was implemented in 2017 wherein the national research agency will adapt the regulation and specify the scope and details of an open data pilot. It is expected that the coverage of the infrastructure will be broadened to include preservation and access as well as data storage and archiving.

SPAIN (ES)

The Spanish Government published the [State Plan for Research, Development and Innovation 2017-2020 in January 2018](#). The plan includes a new focus on open access to scientific publications and research data¹⁵. The State Plan is the main instrument of the State Government for developing and achieving those objectives set at the Spanish Strategy for Science and Technology and Innovation 2013-2020, and at the Europe 2020 Strategy. The state plan presents a new focus on research data with a voluntary mandate that data from research funded by public funds should be stored and made available through Open Access for purposes of replication and reproduction of research and analysis.

The plan outlines how funded research projects may include, as an option, a plan for the management of research data that will be deposited in national/institutional/international repositories after the end of the project. The plan also recognises that data must be protected and some may not be amenable to openness for reasons of security, confidentiality or commercial reasons. The plan recommends that evaluation of researchers should take into account work published in open repositories and this regards both publications as well as research data.

Furthermore, two HE consortia (“Consortio Madroño” in Madrid and CSUC in Catalonia) have developed RDM services to support their researchers. Work is currently underway to create guidance and policies for member institutions based on the LEARN model policy.¹⁶

¹⁵ 2017-2020 Plan Estatal de Investigación Científica y Técnica y de Innovación (pages 30-31)

¹⁶ LEARN, *Highlights of the Fifth LEARN Workshop in Barcelona*, 09.02.2017. <http://learn-rdm.eu/en/highlights-of-the-fifth-learn-workshop-in-barcelona/>

UNITED KINGDOM (UK)¹⁷

Policy specifics

In December 2018, UK Research and Innovation (UKRI), the umbrella organisation for the the UK Research Councils presented [Common principles on data policy](#), which is the overarching framework for the individual UK Research Councils. All UKRI funded researchers should make their data available to the research community in a responsible and timely manner, unless there are justifications for not doing so. The seven principles describe publically funded research data as a “public good” that should be made openly available with as few restrictions as possible. The principles stipulate the use of data management plans, good metadata practices and citations. Furthermore, they recognise the ethical and legal barriers to publishing data, and the use of embargoes to allow researchers to fully use their data, before publication. The last principle, importantly, recognises the costs associated with data management and sharing of research data and presents that as an eligible part of research funding applications.

The UK approach is multilevel, and also comprises the high level “[Concordat on Open Research Data](#)” (2016), which was signed by the HE funding council (HEFCE), the umbrella group representing the seven national research funders (RCUK), the umbrella group representing c. 135 of the c. 1964 UK universities (Universities UK), and one large and influential private funder (the Wellcome Trust).

Additional information

As a member of the G8, together with France, Germany and Italy, the UK is party to the G8 science ministers statement, made in London on 12 June 2013.¹⁸ This statement “proposes to the G8 for consideration new areas for collaboration and agreement on global challenges, global research infrastructure, open scientific research data, and increasing access to the peer-reviewed, published results of scientific research.”

¹⁷ The United Kingdom is expected to leave the European Union in March 2019.

¹⁸ G8 Science Ministers Statement (2013), *op. cit.*

4.3 Member states with no national policy but which are active in this space (12/28)

Thirteen further EU states do not yet have active policies in place, but are known to be developing national approaches.

BULGARIA (BG)

The Bulgarian Government published a [National Strategy for Development of Scientific Research in the Republic of Bulgaria 2017 – 2030. Better Science for Better Bulgaria](#). The strategy contains recommendations regarding the development of a national policy on open access to scientific results. Recommendation 13 states that “Planning open access and long-term conservation of the original data. The archiving of data should be planned, so as to ensure present and future access to them.”¹⁹

CROATIA (HR)

No national policy is yet in place, but there is much on-going work in this area. National policies on access and preservation of scientific information (both publications and data) are under the responsibility of the Ministry of Science, Education and Sports. The Ministry strongly supports open access to scientific information to provide maximum impact from the research they support. The Croatian “[Research and Innovation Infrastructures Roadmap 2014-2020](#)” addresses the promotion of open access to research data, “especially data funded from public sources.” (See p.8, paragraphs g to j.)

ESTONIA (EE)

Responsibility for research data lies with the Estonian Research Council, who host a webpage dedicated to it (in [English](#)). Their report “Open Science in Estonia - Open Science Expert Group of the Estonian Research Council, Principles and Recommendations for Developing National Policy” outlines the current state of play. The expert committee behind this report comprise representatives of government ministries, Estonian universities and the national library, so here again we see an example of a collaborative, consultative and collegiate approach.

The document is wide-ranging in terms of its scope, covering publications, data, code and methodologies, and addresses the relationship between data and OA publications. It is not a mandate as such, but rather lays out a series of (fairly strongly worded) recommendations for a national policy. Skills are explicitly addressed, with responsibility for developing

¹⁹ See OpenAIRE entry on Bulgaria for information on the recommendations. Available online: <https://www.openaire.eu/item/bulgaria>

researcher abilities and understanding placed at the door of the research libraries. As in the Danish case, monitoring and compliance are expected to be devolved to individual institutions' policy documents. In practical terms, RDM in Estonia remains a work in progress. Most research projects will deposit their output, including data, with international publishers and third-party service providers. University libraries – such as Tartu and Tallinn - have joined the DataCite consortium and offer data archiving services. Some research centres are also members of CLARIN and DARIAH, and the national data archive for social science data (ESTA) is a CESSDA member.

GREECE (EL)

Law 4310/2014 supports open access to publicly funded research, however Greece does not have a national Open Access/Open Science policy as of yet. On the 29 and 30 November 2018 OpenAIRE organised a [Greek Open Science Symposium](#) which aimed at understanding the current research ecosystem and prioritise actions towards the development of a National Open Science Strategy. Drawn from discussions during the 1st day, a proposal for the re-formulation of a National Open Science High Level Task Force under the auspices of the General Secretariat of Research and Technology (GSRT) was made.

HUNGARY (HU)

No policy is yet in place, but first steps are being taken in Autumn 2017, with the formation of a joint committee on open science. The committee has produced a policy draft which is currently being discussed.

IRELAND (IE)

In July 2019 the Minister of State for Training, Skills, Innovation, Research and Development launched a new National Framework on the Transition to an Open Research Environment. The framework is a first step in a process to create a National Action Plan for the transition to an open research environment in Ireland. The framework is aligned with European Commission policy and developed in response to EU Recommendation 2018/790 25 April 2018, which asks Member States to set and implement clear policies which cover open access to publications, management of research data etc, preservation and reuse of scientific information, infrastructures for open research, skills and competencies and incentives and rewards²⁰.

²⁰ Commission Recommendation (EU) 2018/790 of 25 April 2018 on access to and preservation of scientific information C/2018/2375.(OJ L 134, 31.5.2018, p. 12 -18). Available online: <http://data.europa.eu/eli/reco/2018/790/oj>

With regard to open access publications, the framework states that “all Irish scholarly publications resulting from publicly funded research will be openly available by default from 2020 onwards”²¹

The framework specifically aims to enable FAIR data by supporting the foundational principles of Findable, Accessible, Interoperable and Reusable research data. To support FAIR data, the framework specifically highlights skills and competencies; research management planning and DMPs; interoperability across disciplines, systems and domains; the use of citations and persistent identifiers. Regarding data openness, the framework refers to the EC guidance that data should be “as open as possible, as closed as necessary”²² and that funders and institutions should support requirements for data management and sharing through grant conditions, and monitor compliance.

Until now, the EPA (Environmental Protection Agency) was the sole Irish funder requiring data deposit from projects which they fund. “All significant datasets produced during the research project must be submitted to the EPA at the end of the project for archiving in the EPA Research Data Archive. Some other funders’ OA publications policies also mention archiving data where possible, and a few HEIs, including Trinity College Dublin and University College Cork, have introduced RDM policies.”²³

ITALY (I)

There is no known national policy as yet, but there have been announcements about a national policy on Open Science and research data from the Ministry of Research and Education. [A recent report](#) from the Ministry (June 2016) makes reference to it:

The current Italian National Research Program aims to encourage the development and dissemination of Open Science and Big Data [...] The plan is to adopt a national policy on the deposit, open access and the reuse of products and research data, in consideration also of big data. In this regard, a working group will be set up to define and propose short strategies, guidelines, implementation plans and shared tools at inter-institutional level, European and international level[.] (Translated from p. 74.)

The Conference of Rectors of Italian Universities, CRUI, has a Working Group on Open Access, which is planning to take action in this area. At the same time, several individual universities and research centres are creating their own policies to manage research data

²¹ Government of Ireland, (2019) National Framework on the Transition to an Open Research Environment. Prepared by the National Open Research Forum, p. 6. Available online: http://norf-ireland.net/wp-content/uploads/2019/07/NORF_Framework_10_July_2019-2.pdf

²² Ibid. p 8.

²³ In a distant but still noteworthy initiative, the Irish government’s Government Reform Unit has recently published its “Open Data Strategy 2017 – 2022” which notes an intention to “Explore the possibility to broaden the initiative to include Open Research Data, in line with the requirements of the Horizon 2020 research programmes, and with emerging policy in Irish research funding bodies. Where research is publicly-funded, make the research findings available in Open Data formats.” This exploratory work is anticipated to begin in 2021.

and provide support to researchers; some research centres have consolidated experience in research data management in their own specific domains. A small working group (comprising IT, librarians and research administrators from five Italian universities) [Italian Open Science Support Group \(IOSSG\)](#) has produced templates for institutional research data policy, together with implementation guidelines. In recent years several RDM workshops have been organised under the auspices of OpenAIRE, RDA and the Italian Association for the Promotion of Open Science, but the lack of a single, central body to coordinate these efforts has been noted.

A newly formed working group ICDI (Italian Computing and Data Infrastructure) was recently created by representatives of some of the main Italian Research Infrastructures and Infrastructures with the aim of promoting synergies at national level in order to optimize Italian participation in current European challenges in this sector, including the European Open Science Cloud (EOSC), the European Data Infrastructure (EDI) and HPC. Due to its recent formation, it is as of yet unclear what activities on open research data will be carried out and what its role will be within the Italian research landscape.

Furthermore, as a member of the G8, together with France, Germany and the UK, Italy is party to the G8 science ministers statement, made in London on 12 June 2013.²⁴ This statement “proposes to the G8 for consideration new areas for collaboration and agreement on global challenges, global research infrastructure, open scientific research data, and increasing access to the peer-reviewed, published results of scientific research.”

LUXEMBOURG (LU)

Luxembourg has had a [National Policy on Open Access](#) since 2015, which focuses on open access to publications. The national research funder (FNR) is a strong supporter of OA and led the policy’s adoption. The Open Science Forum was held by OpenAIRE in Luxembourg in November 2018 and ahead of the event a working group consisting of stakeholders including CEOs from Luxembourg research institutions, as well as researchers and representatives from OpenAIRE, gathered to discuss a Luxembourg National Plan for Open Science. This working group will define a Luxembourg-wide plan for open access to science, with a goal to implement the plan by 2020. Five principles, including publications in open access journals, making data openly available, developing infrastructure, as well as making adjustments to how researchers and proposals are evaluated with a focus on open science practice, will be at the heart of the open science plan for Luxembourg.

²⁴ G8 Science Ministers Statement (2013), *op. cit.*

MALTA (MT)

Malta does not have a national Open Access/Open Science policy. Open Access to publicly funded research is anchored within Malta's National Research and Innovation Strategy 2020. There is work underway to compile a National Open Science Policy for Malta, which is currently being undertaken by The University of Malta (UM) Library and MCST and other national stakeholders. Malta has submitted an application for support under the H2020 Policy Support Facility so as to implement a National Open Access Policy. The University of Malta adopted an [Open Access Policy](#) which was approved by Senate on 20th September, 2017 but this focuses solely on open access to publications.

POLAND (PL)

An initial document on the future of OA in Poland was published in 2015 with the title "Directions of the development of open access to research publications and research results in Poland. The document addresses data briefly, in a single paragraph stating that, in line with EC recommendations, Open Access should also be extended to research data, and recommends that research institutions and individual researchers should open research data taking into consideration world trends and best practices. These recommendations are non-binding.

In parallel, the Polish Ministry of Science and Higher Education has also undertaken to:

- Analyse how data are processed, preserved, curated and shared in the Polish research environment;
- Identify best practices, strategies and policies for Open Data worldwide;
- Consult with key stakeholders to identify noteworthy differences between specific disciplines.²⁵

In April 2018, '*Report on Open Access Policy in Poland*' along with guidelines and educational materials on Open Access was published by the Ministry, which summarises OA efforts for the last two years, which has been hindered by a number of barriers such as lack of resources and systematic approach. The Ministry has declared that a new Open Access policy will be published.

²⁵ Further information is available in the blog post at <https://www.openaire.eu/blogs/poland-initial-open-access-policy-1>

ROMANIA (RO)

Currently, Romania does not have a national Open Access/ Open Science policy. Open Access is however mentioned in The National Plan for Research and Innovation 2015-2020. During the next period, UEFISCDI ([Executive Agency for Higher Education, Research, Development and Innovation Funding](#)) and OpenAIRE Romania NOAD will start implementing a project financed through European structural funds which includes a strong component dedicated to the elaboration of a proposal for an Open Science national strategy. On the other hand, on the 15th of November 2018, the Romanian Government approved the [2018-2020 National Action Plan](#). The new Plan includes a commitment which aims to lead to the adoption of a national Open Access strategy to research results, by implementing pilot programs and substantiating Open Government Partnership research and public consultations. The institution in charge with this activity is the Romanian Ministry of Research and Innovation.

SLOVAKIA (SK)

Currently there are no national Open Data or Open Science policies in Slovakia. Some organizations such as the Slovak Research and Development Agency recommend OA for publications and Ministry of Education recommends CC license in KEGA projects. In 2017 „[Open Government Partnership National Action Plan of the Slovak Republic 2017 – 2019](#)“ was approved and includes Open Science policy commitments. There are no special policies for Open Research Data. Open Data is mentioned in above do for example, to introduce the basic principles of Open Access to scientific publications under a public license under the Operational Program Research and Innovation; establish conditions for passportization of open research data under a public license and monitor its implementation in practice. Implementation work is ongoing.

SWEDEN (SE)

While no policies are yet in place, the Swedish Research Council (Vetenskapsrådet,VR) proposed a set of national guidelines for open access to scientific information in January 2015. This proposal includes a section on Guidelines for Open Access to publications, and a description of a process towards providing Open Access also to research data. The intention is that all research data, produced in whole or in part through public funding, should be made openly available as soon as possible, with the default responsibility for archiving and preservation of data falling on the shoulders of the Swedish HEIs, with pathfinder work currently underway coordinated by the Swedish Research Council (in a similar way to the National Library's coordination of Open Access implementation. (Source: NordForsk (2016), op. cit.)

In 2017 VR received the Swedish government's assignment to coordinate the national implementation of open access to research data. This will be carried out in conjunction with the National Library of Sweden and the National Archive of Sweden. VR intends to be a driving actor for policies regarding open access to research data, particularly with regard to developing guidelines and generating incentives for researchers to make their research data open.

In 2018 VR received the assignment from the Swedish Government to develop a criteria assessing the extent to which research data, partly or fully resulting from public funding, complies with the so-called FAIR principles. The results shall be reported to the Ministry of Education no later than the 28th of February, 2019.

4.4 Member states with no policy or activity (1/28)

Those EU member states which are not covered above are understood to have no national open science or open data policies in place, nor any national activities underway, although there are individual research organisations in these countries which are leading the way by setting up institutional level working groups, and by organising and hosting symposia.

LATVIA (LV)

Latvia does not have a national Open Access/Open Science policy yet. However, in 2016 the Ministry of Education and Science released the "[Latvian European Research Area Roadmap 2016-2020](#)", listing the promotion of Open Access as a top priority.

4.5 Selected non-EU countries

ICELAND (IS)

Discussions on Open Access to research data have recently been initiated both within the Ministry of Education, Science and Culture and at the National and University Library, and awareness of the importance of issues relating to open access to digital research results, especially for smaller countries, is growing. The Ministry is currently drawing up a plan for Icelandic higher education and research for the years 2017–2021, and the importance of structured data management and open access to research data is likely to be included there. Currently, no requirements on (e.g.) providing a data management plan are imposed when applying for a grant in the public competitive funds. (Source: NordForsk (2016), op. cit.)

NORWAY (NO)

The Norwegian [National Strategy on Access to and Sharing of Research Data](#) was published in December 2017 and “states three basic principles for publicly funded research data in Norway:

- Research data should be as open as possible and as closed as necessary.
- Research data should be processed and adapted in such a way that the content of the data can be exploited in the best possible way.
- Decisions on archiving and facilitating research data must be taken in the research communities.

The Government established a new directorate (UNIT) in 2017 that, in addition to offering services, will also coordinate and harmonise IT services, increase synergies, reduce duplication of efforts and oversee the implementation of the aforementioned principles.”²⁶

SERBIA (RS)

Serbia adopted a national science policy called ‘[Open Science Platform](#)’ in July 2018. The Ministry of Education, Science and Technological Development (MESTD), which is also the main research funder in Serbia developed and published the policy, which is the national OA policy. The PASTEUR4OA and OpenAIRE projects contributed during the drafting phase.

The policy sets out the basic requirements for the depositing procedures, responsibilities for training, administration, monitoring the efficiency of OA policies, etc., but details will be set out in institutional policies. According to the policy, universities and research institutes should define and adopt their open science platforms within six months. Progress and compliance will be monitored by the Ministry. The overall focus of the policy is on OA publications resulting from MESTD research funding, which should now be mandatory (Green OA). Open research data is not mandated but recommended. The policy furthermore specifies instances where data should not be shared.

SWITZERLAND (CH)

The programme “Scientific information: access, processing and safeguarding,” initiated by the Rectors’ Conference of Swiss Universities (Program SUC 2013-2016 P-2), addresses research data in its “[White Paper for a Swiss Information Provisioning and Processing Infrastructure 2020](#)”. The Swiss approach is the least “policy-like” of the documents examined, and the most like a project plan. Labelled as a white paper, and led by the umbrella group representing the heads of the Swiss universities, the document is wide-

²⁶ NEIC (2018) The State of Open Science in the Nordic Countries: Enabling data-driven science in the Nordic countries. A report by Anders O. Jaansen for NEIC, September 2018, p. 13. Available online: https://www.nordforsk.org/en/publications/publications_container/state-o-open-science-in-the-nordic-countries/view

ranging in scope, addressing data amongst a number of other ICT infrastructure issues, including Open Access publications. It is difficult to categorise this document as hard or soft, as it is more of a project plan, setting out what will be done. Non-compliance does not seem to be a likelihood, although reference is made to a potential future monitoring role for the Swiss National Science Foundation (SNSF). Further to this, in 2017 the SNSF released its [Research Policy on Open Research Data](#), in which it states that the SNSF expects all researchers to store their research data, to share the research data (unless there are ethical or legal reasons not to do so) and to deposit their data and metadata into repositories in reusable formats, where they are open and easily findable.

5. Analysis/comparison of existing policies

This section looks in more detail at the ten EU member states with national open data policies in place, as well as two non-EU ERA members (Norway and Switzerland), hence twelve countries in total.

Types of policy / lead or sponsoring organisation

The documents considered here do not readily lend themselves to classification, but nonetheless we have attempted to do so.:

- Sixteen national policies, strategies, action plans or roadmaps (AT, CH, CY, CZ, DE, DK, ES, FR, FI, LT, NL, NO, PT, RS, SK, SI) , incl. a few national research funders
- Two concordat-type documents (NL, UK)
- Two laws (FR, LT)
- One code of ethics (BE)
- One white paper (CH)

Similarly, identifying the lead, ranking or otherwise 'sponsoring' organisation was not always straightforward; at other times the documents were co-signed by multiple organisations on an equal footing:

- Eight were led by (or otherwise involved) national public research funders (AT, CH, CY, DE, LT, NO, PT, UK)
- Four involved university representative bodies (such as Universities UK) (CH, CY, DK, UK)
- Nine were led by, or had the explicit support of, government ministries (BE, CY, ES, FR, FI, NL, RS, SK, SI)
- Two laws passed by the national parliament (FR, LT)
- Three approaches were led by the academic community (Rectors and Learned Societies) (BE, CH, FI)

The following were also involved (as a signatory, or as part of one or more working groups): national library, national ICT infrastructure provider, national (non research) HE funder, and private research funder.

The years in which the policies came into effect ranged from 2009 to 2019, with a heavy tendency towards more recent years: only two policies (BE and DE) date from before 2014, although many have their roots in earlier documents, not always originating from precisely the same organisation as the current policy does.

Scope/coverage/relationship with Open Access / Open Science

By definition, all of the policies address research data. Eight address software, code, tools or models. Five address methods, workflows or protocols, and one addresses physical (non-digital) samples. The split between countries with policies which address open research data issues in isolation is (8), and those which deal with data under a broader umbrella such as “Open Science” or “Open Access” (10).²⁷

‘Soft’ vs ‘Hard’ / Monitoring and compliance

Six of the national approaches can be considered ‘soft’, in that they are explicitly recommendations, and do not mandate compliance. Of the remainder, i.e. those that can be considered ‘hard’ policies, seven make reference to monitoring compliance, or raise the question of sanctions for non-compliance. This is perhaps unsurprising given the youth of many of the policies, the development of which tends to follow a pattern such as: Encourage > Expect > Require > Mandate. It is also encouraging to see a couple of national policies (DE, FR and NE) which not only address the potential of penalties for non-compliance, but also reward and recognition for work well done.

Skills and training

The split between countries with policies which refer to the need to develop skills and training is (10), and those which do not (8). This may well be considered to be more of a procedural issue than a policy one, and as such it may be more appropriate to address training and skills in subsidiary documents, such as implementation plans, FAQs and further information.

²⁷ See Table 4, Overview Table: Countries with national policies

6. Acknowledgements

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The information held within this report is accurate to the best of DCC's knowledge as of November 2018. We will continue to investigate the open data policy landscape across Europe, updating this document periodically. It is a living document. If you are aware of existing policies or relevant national initiatives, or have corrections to share, please get in touch: info@dcc.ac.uk

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