

Implementation of Open Science in Lithuania

By Rasa Dovidonytė

Abstract

The number of open science policies being adopted in Europe by universities and research institutions is constantly increasing, however many European countries face difficulties while implementing open science practically. This publication reveals the Lithuanian landscape of open science policies and institutional involvement in open science practices. Prerequisites for sustainable and consistent open science implementation such as open science infrastructure, incentives for researchers, research assessment, and repositories' compliance with EC requirements on a national level are discussed.

Keywords:

Open science landscape, research data repository, open access policy, open science implementation, research data life cycle, open access infrastructure

One of the main strategic goals of EU's research and innovation policy is Open Science and its effective implementation. In order to achieve this goal all EU countries are expected to follow and adopt research and innovation policies on a national level, create up-to-date infrastructures, and promote Open Science awareness among all representatives of the research information life cycle. Open Science is a broad concept: referring to the Open Science Taxonomy in Pontika et al. (2015), The Open Science Training Handbook describes Open Science as "a variety of practices, usually including areas like open access to publications, open research data, open source software/tools, open workflows, citizen science, open

Dovidonytė, R. «Implementation of Open Science in Lithuania», *Nordic Perspectives on Open Science* 2019

<https://doi.org/10.7557/11.4828>



© The author(s). Licensee Septentrio Academic Publishing, Tromsø, Norway. This is an open access article distributed under the terms and conditions of the Creative Commons Attribution license (<http://creativecommons.org/licenses/by/4.0/>).

educational resources, and alternative methods for research evaluation including open peer review”. In order to monitor open science situations in different countries, the European Commission has launched the Open Science Monitor – a website that allows access to data and trends related to open science. The Open Science Monitor indicates that open science implementation from country to country is very different. In this publication we present the current Lithuanian open science landscape and future challenges which will be faced while seeking its sustainable implementation on a national level.

National context and policy implementation

The importance of a national open access policy is highlighted in a variety of EC documents. Many EU countries face different challenges while adopting and implementing a national open science policy – Lithuania is no exception.

Lithuanian and French approach to open science policy is described as “the most high level of all” (Sparc Europe report, 2017). It is a very rare practice in Europe when a country has open access to publications and research data discussed in a legal document adopted by the parliament. In 2009 the Parliament of the Republic of Lithuania adopted the Law on Higher Education and Research (revised 2015 and 2016). According to this legal document, in order to ensure the quality and transparency of research results funded by the state budget, all research results must be announced publicly. Even though this law has been adopted, the roadmap of its implementation is not yet indicated.

To date, Lithuania does not have a national OA policy adopted by the Ministry of Education and Science, although in 2016 the country’s primary funder, the Research Council of Lithuania, adopted [Guidelines for Open Access to Research Results](#) (2016) – including policies on open access and open research data. According to these guidelines, researchers should not delay depositing their publications in a repository and should ensure open access to them after an embargo period (six months for sciences and twelve months for social sciences and humanities). *Guidelines for Open Access to Research Results* support publishing in full open access journals, and Article Processing Charges (APCs) are indicated as eligible costs. Furthermore, according to these guidelines, the project leader is responsible for data preservation: “The project leader shall ensure the preservation of the data generated in the course of the project implementation in digital form, and

the transfer of such data for storage at the institution and/or to the repository upon the end of the project”. The transition period of funder guidelines implementation is effective as of the 31st of December 2020. Moreover, advantages and disadvantages of the Lithuanian funder policy are addressed as following: “skills are not addressed, but the responsibilities for various aspects of open access and open data are covered in detail” (Sparc Europe, 2017). At the same time, competencies that researchers should acquire in order to practice open science are not presented, while *Guidelines on Open Access to Scientific Publications and Data* (2016) indicate that universities are responsible for development and adoption of institutional policies, procedures and monitoring systems.

Institutional involvement in open access activities and practices is an essential aspect in open access implementation. The adoption of *Guidelines for Open Access to Research Results* encouraged Lithuanian higher education institutions (Vilnius University, Kaunas University of Technology and Vilnius Gediminas Technical University) to adopt institutional open access policies. These guidelines are fully aligned with [Horizon 2020 \(H2020\) OA mandate and Open Research Data Pilot](#), and the July [2012 European Commission recommendations on access to and preservation of scientific information](#). As a result, researchers must prepare a data management plan and ensure access to research data related to publication. As it was highlighted in the EC report on *Access and Preservation of Scientific Information in Europe* (2018) “universities are more advanced in adopting open access principles, while research centers are closely following”. So far, ten Lithuanian higher education institutions have adopted and registered open access policies in the ROARMAP registry, the green open access road is prevailing.

Policy implementation difficulties

Even though funder and institutional open access policies have been adopted, problems implementing these policies arise. In order to achieve successful policy implementation, as emphasized by Levin et al. (2016), cooperation among diverse stakeholders in scientific research is essentially important. Meanwhile, cooperation among stakeholders in Lithuania is currently insufficient, which leads to fragmentation both for infrastructure development in different universities and services provided for researchers. Furthermore, in the policies adopted there is no indication about incentives which researchers receive for practicing open science. Yet, one of the key

priorities indicated in *Open Science Policy Platform Recommendations* (2018) is giving rewards and incentives for practicing open science. According to these recommendations both funders and research institutions “should actively develop/adjust evaluation practices and routines to give extra credit to individuals, groups and projects who integrate Open Science within their research practice”. From the global perspective, many universities worldwide have adopted open access policies – however, “this is not sufficient to create the change in the habits of researchers. It is important to determine their awareness and degree of compliance, and to find ways of monitoring compliance” (Serrano-Vincente et. al 2016). It is expected that in the near future – when the Ministry of Education and Science adopts a national open access policy – it will follow EC recommendations, and incentives for practicing open science will be outlined in the national policy.

The other aspect of open science implementation which should be addressed is “a conflict between institutional mandates for depositing research results in open access and the growing pressure to publish in journals with a high impact factor” (Serrano-Vicente et. al 2016). Academic institutions in Lithuania impose requirements on researchers to select and publish their research papers in journals with a high impact factor in their domain. Researchers are evaluated on the institutional, regional and national level based on journal impact factor. At the same time, research evaluation based only on the impact factor is negatively valued in the open science community. The shortcomings of the impact factor when evaluating a journal or a researcher are the following: “Being an arithmetic mean, it gives disproportionate significance to a few very highly cited papers, and it falsely implies that papers with only a few citations are relatively unimportant” (Nature Editorial 2016). Furthermore, in [The San Francisco Declaration on Research Assessment](#) (2012) it is emphasized that journal impact factor was created as a tool for librarians to help select journals which should be purchased. Limitations for using journal impact factor outside its primary purpose are also listed in *The San Francisco Declaration on Research Assessment* (2012). In Lithuania this aspect is not taken into consideration by the policy makers in the field of higher education. In the meantime, the European Commission has developed a system called the Open Science Career Assessment Matrix (OS-CAM) where researchers are evaluated taking into account how they implement open science activities in their research: these activities include “open access to publications, open data, open peer review, research integrity, citizen science and stakeholder engagement“ (O’Carroll et al 2017). These open science

activities and their evaluation criteria should be adopted and implemented carrying out research evaluation in Lithuania on a national level.

Publication repositories' compliance with EC requirements and maintenance

In Lithuania the green open access road is practiced most often. This recommendation is indicated in funder and institutional open access guidelines. At first glance it seems that Lithuania has a well-developed repository network, as fourteen publication repositories from Lithuania are registered in the OpenDOAR registry, which indicates that these repositories meet the quality requirements. Moreover, nine repositories are OpenAIRE compliant. On the contrary, libraries lose the advantage by managing institutional repositories. “The theory of the “network effect” holds that a product gains value much faster as more people use it, and it is characterized by the use of cloud-based infrastructure and services” (Arlitsch and Grant 2018). Libraries lose the advantage because the repository services are managed locally, at individual libraries, and not in a cloud. In order to address and solve fragmentation of open science infrastructure problems, the European Commission launched the European Open Science Cloud (EOSC). One of the main aims of the EOSC project is to unify currently existing infrastructures in Europe and provide virtual environment for research data life cycle services.

In order to address the issue of fragmentation among research libraries, the Ministry of Education and Science founded The Electronic Academic Library of Lithuania (eLABa) which operates as a national open access repository. Currently, fifty Lithuanian academic institutions (universities, colleges, institutes, research centers) are uploading research production (electronic theses and dissertations, journals, books, proceedings, working papers, empirical data) to the eLABa repository. Researchers and students can upload their papers to eLABa; later the metadata of their records are checked and confirmed by librarians. In practice, researchers rarely use the opportunity to upload their research papers to the repository by themselves. Usually, they contact librarians asking for assistance. This kind of researcher behavior in Lithuania is not unique, the same tendencies are prevailing worldwide: “author self-archiving has remained a minority sport, with researchers reluctant to take on the task of depositing their papers in their institutional repository. Where deposit *does* take place, it is invariably hard-pressed intermediaries who do the work” (Poynder 2016).

Institutional repositories in Lithuania are based on the usage of DSpace repository software and infrastructure. According to a survey carried out by the European University Association (EUA), open source software DSpace is used by 45.5 % of the total repositories in Europe (Morais & Borrell-Damian, 2018). This is the most frequently used repository software among European institutional repositories. However, the same survey results show that 23.4 % of institutional repositories use alternative, cloud-based software HAL, Iris, Diva and Pure. Does the infrastructure of existing repositories in Lithuania meet the requirements for contemporary open access repositories? This question and future possibilities to join EOSC are being discussed among repository managers and policy makers in Lithuania – and the question until now is open, as it was indicated by the National Point of Reference on Scientific Information in Lithuania in the European Commission’s 2018 report: “At the moment, the country is monitoring the current situation in order to evaluate already existing e-infrastructures, and is expecting to create conditions for them to integrate into international infrastructures” (Miedema, Mayer, Holmber & Leonelli, 2018).

Open data repositories infrastructure

The importance of trusted research data repositories is highlighted in the EOSC declaration action list: “Scientist must be able to find, re-use, deposit and share data via trusted data repositories that implement FAIR data principles and that ensure long-term sustainability of research data across all disciplines” (EOSC Declaration Action List). Even though there are five Lithuanian research data repositories registered in Re3Data.org registry, researchers are not eager to share their research data by uploading it to the subject data repositories. Currently, in the Lithuanian Humanities and Social Sciences data archive LIDA data providers have uploaded 300 data sets, while the national research data archive MIDAS preserves 135 elements.

There might be several reasons why sharing of research data is low. LIDA archive launched in 2006, with this project funded from EU structural funds. After funding finished in 2011, the software of this data archive was not updated to meet the needs of contemporary open access IT systems. The EC recommendations on access to and preservation of scientific information indicated that Lithuania is not an exception as “lack of sustainable funding for established infrastructures is seen as major problem by many countries”. Additionally, it is not obligatory for projects funded by

the Lithuanian Research Council to upload research data to the data archive. The Research Council's Guidelines for Open Access to Research Results recommend researchers to prepare RDM plans and upload data to a repository – however, there are no incentives encouraging researchers to share data. In order to increase the number of uploaded datasets in data repositories, favorable prerequisites must be ensured. Policy makers should provide incentives for researchers who give access to their research data. Additional funding for maintenance of existing research data repositories should be provided. Furthermore, data librarians who are competent enough to give consultation for researchers on how to upload data to the repository must be available at every academic institution. This leads to the idea that better collaboration between infrastructure managers and policy makers would be beneficial, as it would help to increase the number of data sets uploaded into data archives, whereas additional funding for open science infrastructure would help to maintain and develop existing infrastructures.

The national research data archive MIDAS initiates hands-on training for researchers on how to upload research data to the data archive and actively promotes the benefits of research data sharing. One of the campaigns MIDAS organized was *Double Win with MIDAS*. Researchers and students of Vilnius University were invited to upload their research data or metadata and had a possibility to win a personal Web of Science and Scopus scientometric analysis and subscription to scientific literature with a value of 100 Eur. This initiative organized by the Vilnius university library was successful as the number of MIDAS users increased by 49 %.

Stakeholders' point of view, initiatives

Some important steps are taken by national stakeholders and funders to ensure sustainability and development of the existing infrastructure for research results. As it was pointed out in the 2018 report “Access to and Preservation of Scientific Information in Europe”, Lithuania is planning to join the European Strategy Forum on Research Infrastructures (ESFRI) in order to “ensure operability of National e-infrastructures at European level”. This kind of pro-activeness is necessary – however, it is not clear if it will have long-term sustainability. For instance, in 2016 Guidelines on Open Access to Scientific Publications and Data were adopted by the Research Council of Lithuania, but the progress of its implementation is not being monitored by the Research Council of Lithuania so far.

One of the key prerequisites for efficient open science infrastructure is repositories' interoperability with the Current Research Information System (CRIS). The necessity to assess research results on an institutional level encouraged many academic institutions to purchase or locally develop their own CRIS: national CRIS systems such as CRISin in Norway, NARCIS, IS, VaVAI in the Czech Republic, NISRT in Greece or SK-CRIS in Slovakia are indicated as successful CRIS systems. It gives “the opportunity to harvest the whole national research output” (De Castro et al 2017). Lithuania has nine OpenAIRE compliant repositories, but neither a locally developed nor a commercial CRIS system has been implemented with any of these repositories so far. Currently, stakeholders in Lithuania are analyzing different countries' experience of CRIS implementation and functionality. When members of the Lithuanian Research Library Consortium make a common decision, a CRIS system will be purchased and implemented on a national level.

Conclusions

One of the main aspects of sustainability in open science is the adoption of open science policies and their successful implementation on national, funder and institutional levels. Lithuania has adopted funder and institutional OA guidelines – however, the roadmap of these policies' implementation is not sufficiently developed, due to the following reasons:

- Stakeholders have not developed any incentives for Lithuanian researchers who publish their research data or publications in open access, whereas one of the key recommendations of European Commission is to include open science practices in research project assessment.
- On the institutional level, Vilnius University organized campaigns by giving incentives to researchers who upload their research data to data archives, but more sustainable reward mechanisms could be applied on a national level – such as the Open Science Career Assessment Matrix (O'Carroll et al 2017).
- Moreover, the practice of prioritizing impact factor versus publishing in open access in researcher evaluation, currently prevailing in Lithuania, should be taken into consideration.
- The lack of sustainability mechanisms is also visible in the field of open access infrastructure: researchers are not eager to provide open access to their research results, collaboration among all research data cycle members (researchers, repository managers, policy makers, stakeholders, data librarians) is fragmented.

- Monitoring of open science implementation is not carried out on a national level, while regular monitoring could in principle be carried out by the Lithuanian Research Council.

On the positive side, universities actively promote and do their best to implement open science ideas by adopting institutional policies, giving training to researchers on open science practices and ensuring OA to research results. Correspondingly, policy makers participate in a variety of initiatives seeking to ensure interoperability of national OS infrastructure and join the EOSC. Finally, even though lack of sustainability in open science implementation is visible – as it is a complex concept involving a whole range of participants and practices in the open science life cycle – in recent years a better collaboration between stakeholders has started to develop, which hopefully will lead to more sustainable achievements in the field of open science.

REFERENCES

- Arlitsch, K. & Grant, C. (2018). “Why So Many Repositories? Examining the Limitations and Possibilities of the Institutional Repositories Landscape”, in *Journal of Library Administration*, vol. 58, no. 3, pp. 264-281. <https://doi.org/10.1080/01930826.2018.1436778>
- Bezjak, S et al. (2018). *The Open Science Training Handbook*. Available at <https://book.fosteropenscience.eu/> [Accessed 8 Jul.2018].
- De Castro, P., Schirrwagen, J., Karaikos, D., Dvořák, J., Bollini, A., Bonis, V., Gasparis, N., Tsoukala, V., Manghi, P. & Príncipe, P. (2017). “Progress in the Implementation of the OpenAIRE Guidelines for CRIS Managers”, in *Procedia Computer Science*, vol. 106, pp. 104-111. <https://doi.org/10.1016/j.procs.2017.03.042>
- European Commission (2017). *EOSC Declaration Action List*. Available at https://ec.europa.eu/research/openscience/pdf/eosc_declaration_action_list.pdf#view=fit&pagemode=none. [Accessed 8 Jul.2018].
- European Commission (2018a). *Access to and Preservation of Scientific Information in Europe. Report on the implementation of Commission Recommendation C(2012) 4890 final*. Available at <https://publications.europa.eu/en/publication-detail/->

</publication/676f8a3b-62f6-11e8-ab9c-01aa75ed71a1/language-en>.

[Accessed 8 Jul.2018].

European Commission (2018b). *Commission Recommendation (EU) 2018/790 of 25 April 2018 on access to and preservation of scientific information*, C/2018/2375. <http://data.europa.eu/eli/reco/2018/790/oj>.

[Accessed 14 Jul.2018].

European Commission (2018c). *Open Science Policy Platform Recommendations*.

[online] Available at:

https://ec.europa.eu/research/openscience/pdf/integrated_advice_opssp_recommendations.pdf#view=fit&pagemode=none [Accessed

12 Jul. 2018].

European Commission (2018d). *Mutual Learning Exercise (MLE) on Open Science: Altmetrics and Rewards*. Available at

<https://rio.jrc.ec.europa.eu/en/library/mle-open-science-final-report-altmetrics-and-rewards> [Accessed 18 Jul.2018].

European Commission (2018e). *Guidelines to the Rules on Open Access to Scientific Publications and Open Access to Research Data in Horizon 2020*.

Available at

https://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-pilot-guide_en.pdf [Accessed 12

Jul. 2018].

Republic of Lithuania Law on Higher Education and Research, 30 April

2009, No XI-242. Available at [https://e-](https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/548a2a30ead611e59b76f36d7fa634f8?jfwid=rp9xf47k7)

[seimas.lrs.lt/portal/legalAct/lt/TAD/548a2a30ead611e59b76f36d7fa634f8?jfwid=rp9xf47k7](https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/548a2a30ead611e59b76f36d7fa634f8?jfwid=rp9xf47k7)

Levin, N., Leonelli, S., Weckowska, D., Castle, D. & Dupré, J. (2016)

“How Do Scientists Define Openness? Exploring the Relationship Between Open Science Policies and Research Practice”, in *Bulletin of Science, Technology & Society*, vol. 36, no. 2, pp. 128-141.

<https://doi.org/10.1177/02704676166668760>

Morais, R. & Borrell-Damian, L.(2018). *Open Access 2016-2017 EUA*

Survey Results. Available at

<https://eua.eu/downloads/publications/open%20access%202016-2017%20eua%20survey%20results.pdf>. [Accessed 18 Jul. 2018].

Midas.lt (2017). *Double win with MIDAS: Announcing the Winners and New*

Stage of the Campaign. Available at <https://www.midas.lt/public->

[app.html#/news?documentId=31780&newFields=Body&galleryField=GalleryImage&titleField=Title&lang=en](#). [Accessed 8 Jul.2018].

Miedema, F., Mayer, K., Holmberg, K., Leonelli, S. (2018). *Mutual Learning Exercise. Open Science: Altmetrics and Rewards*. Available at <https://rio.jrc.ec.europa.eu/en/library/mle-open-science-final-report-altmetrics-and-rewards>. [Accessed 15 Jul. 2018].

Nature.com (2016). “Time to Remodel the Journal Impact Factor”. <https://doi.org/10.1038/535466a>

O’Carroll, C., Rentier, B., Cabello Valdes, C., Esposito, F., Kaunismaa, E., Maas, K., Metcalfe, J., Mcallister, D. & Vandeveld, K. (2017). *Evaluation of Research Careers fully acknowledging Open Science Practices*. Available at https://ec.europa.eu/research/openscience/pdf/os_rewards_wgreport_final.pdf

OpenDOAR – Directory of Open Access Repositories. At <http://v2.sherpa.ac.uk/opensoar/>

Open Science Monitor. Available at: https://ec.europa.eu/info/research-and-innovation/strategy/goals-research-and-innovation-policy/open-science/open-science-monitor_en

Pontika, N., Knoth, P., Cancellieri, M. et al. (2015). “Fostering Open Science to Research Using a Taxonomy and an ELearning Portal”, in *Proceedings of the 15th International Conference on Knowledge Technologies and Data-Driven Business - i-KNOW 15*. Association for Computing Machinery (ACM). <https://doi.org/10.1145/2809563.2809571>

Poynder, R. (2016). *Q & A with CNI’s Clifford Lynch: Time to rethink the institutional repository?* Available at <https://poynder.blogspot.com/2016/09/q-with-cnis-clifford-lynch-time-to-re-22.html>. [Accessed 16 Jul.2018].

Registry of Research Data Repositories. At www.re3data.org [Accessed 20 Jul. 2018].

Research Council of Lithuania (2016). *Resolution Regarding the Approval of the Guidelines on Open Access to Scientific Publication and Data*. Available at https://www.lmt.lt/data/public/uploads/2016/09/eng_atvira-priega_galutinis.pdf [Accessed 10 Jul.2018].

Serrano-Vicente, R., Melero, R. & Abadal, E. (2016). “Open Access Awareness and Perceptions in an Institutional Landscape”, in *The Journal of Academic Librarianship*, vol. 42, no. 5, pp. 595-603. <https://doi.org/10.1016/j.acalib.2016.07.002>

Sparceurope.org (2017). *An analysis of Open Data and Open Science Policies in Europe*. Available at <https://sparceurope.org/new-sparc-europe-report-analyses-open-data-open-science-policies-europe/>. [Accessed 16 Jul.2018].

About the author

Rasa Dovidonytė <https://orcid.org/0000-0002-1530-5275>

Senior information manager at the Library of Kaunas University of Technology (**Lithuania**)

Rasa Dovidonytė has her master’s degree in International Business. Being subject librarian of School of Economics and Business Rasa gives information literacy trainings for academic community, collaborates with academic community seeking to find out and meet the information needs of the community. Rasa is in the field of open science since 2015. Participating in OpenAIRE project she disseminated information, gave presentations and provided consultation about open science and its implementation to different target groups; she also prepared translated dissemination and advocacy material about open science. She was in the organizing team of national open science conferences such as Foster and OpenCon.

To contact the author: Please create a reader account with the journal and use the e-mailing functionality of the journal site.