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Report on the existing open science practice in the Western Balkan countries



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INTRODUCTION

One of the key principles of open access and open science (OA/OS) is that publicly funded research should be publicly available to enable the scientific community, industry, citizens, etc. to benefit from research results. This principle is emphasized in all OA and OS policies, pointing to the social responsibility of scientific research. Therefore, OA/OS has a leading role in increasing trust in science, overcoming the so-called crisis of reproducibility in science and increasing the reliability and integrity of research. The attitude of decision-makers and the research community towards Open Science is reflected in the readiness to make rules and procedures related to scientific research transparent, which is achieved through policies, infrastructure and raising awareness of the importance of this topic for science and research results. OA/OS policies regulate research-related rules and regulations, introducing new academic practices into the scientific community.

The main purpose of this report is to provide a comprehensive overview of the existing strategies, recommendations, policies, and technical infrastructure aiming at fostering OA/OS at Western Balkan countries (WBC). This comprehensive analysis is necessary to understand past efforts and future flows of OS involving a variety of stakeholders, such as decision makers, research funds, research institutions, researchers etc. The report is divided into four parts. The first one refers to data collection methodology, the second to the national and institutional legislation, while the third one covers infrastructure capacities. Comprehensive review on WBC OA/OS resources is considered in the fourth part.



SECTION 1: METHODOLOGY

Questionnaire

The questionnaire used in the survey was custom-made to cover all relevant issues related to the OA/OS resources in WBC. The first part of the questionnaire aimed to identify national or institutional legislative documents relevant for the implementation of OA/OS principles and provide a link (URL) for the full document, preferably in English. The second part was related to the existing open science practice, technical resources, and information infrastructure at WBC. The third part related to attitudes towards OA/OS among decision makers and includes questions such as “How do researchers at your institution pay for APC (article processing charge)?” or “If your institution does not have a repository, do you think there is a need to develop it?”.

It was prepared in the Google form open-source software and distributed online in English language. The questionnaire is given in Appendix 1.

Sample

Invitation to participate in the survey was sent to all universities and research institutes in Albania, Bosnia and Herzegovina, Montenegro, North Macedonia and Serbia. It is estimated that the questionnaire was directly addressed to some 50 institutions.

The questionnaire was fulfilled by responsible persons in Co-PLAN, Institute for Habitat Development, Albania, POLIS University, Albania, Center for Development Evaluation and Social Science Research, BiH, University of Zenica, BiH, University of East Sarajevo, BiH, University of Banja Luka, BiH, University of Sarajevo, BiH, Ministry of Science and Technological Development, Montenegro, NCDIEL - National Centre for Development of Innovation and Entrepreneurial Learning, North Macedonia, University Ss. Cyril and Methodius in Skopje, Faculty of EE and IT, North Macedonia, University of Belgrade, Serbia, University of Novi Sad, Serbia, University of Nis, Serbia, University of Arts in Belgrade, Serbia, University of Kragujevac, Serbia, University of Pristina in Kosovska Mitrovica, Serbia, Union-Nikola Tesla, Serbia, Institute of Physics Belgrade, Serbia, Institute for Biological Research "Siniša Stanković" National Institute of the Republic of Serbia, University of Belgrade, Serbia, Institute of Chemistry, Technology and Metallurgy – IHTM, Serbia, Mathematical Institute of SANU, Serbia, Vinča Institute of Nuclear Sciences, Serbia and Institute of Technical Sciences of SASA, Serbia.

Current report presents the result as of July 1th 2022 but the questionnaire is still available for all interested participants at the WBC-RRI.Net website:

<https://docs.google.com/forms/d/e/1FAIpQLSdjnzK5i0GQWKKAIMWdpkJwSUPUP4AT2nwLWYQwpDwAWorkgg/viewform>



SECTION 2: OPEN SCIENCE POLICIES

In the broadest sense, OA/OS policies can be classified as national, funding, and institutional. This classification is not explicit, as sometimes funding policies can be used as national. Documents that are considered as policies can be different, such as laws, strategies, or guidelines.

Albania

Currently, there is not a national OA/OS initiative in Albania, although researchers from scientific institutions are making progress towards OA/OS policies. Also, Open Access Policy Regulation document is required as part of research grants from public funds, while Data management plans are parts of specific projects.

Bosnia and Herzegovina

Currently there is no OA/OS national or institutional policies in Bosnia and Herzegovina. However, the Data Archive for Social Sciences in Bosnia and Herzegovina, as the national service with a role to ensure long-term preservation and dissemination of social science research data in Bosnia and Herzegovina was established in 2018 and adopted preservation policy. This policy and repository were developed within Centre for Development Evaluation and Social Science Research (CREDI).

Montenegro

Ministry of Education of Montenegro has adopted National policy of OA/OS in 2020. The policy contains an action plan and anticipates providing open access to peer-reviewed scientific papers; direct open access to national academic publishing; open access to research data, encouraging the preparation and submission of a data management plan within the research process, the availability of research infrastructures (premises, devices and digital infrastructure) if their procurement or establishment is financed by public funds, as well as the interoperability of digital infrastructures with international digital research infrastructures, raising awareness, strengthening skills and conducting trainings in the field of OS for all researchers and recognition the practice of OA/OS during scientific evaluation.

North Macedonia

National Open Science Cloud Initiative has adopted National policy in the form of declaration in 2021. All researchers and stakeholders are free to sign the declaration, relying on The European Open Science Cloud ecosystem and existing international thematic repositories.

Serbia



The Ministry of Education, Science and Technological Development of Republic of Serbia adopted National open science platform in 2018. The Ministry stipulates that open access must be provided to an electronic copy of the final, published version (if allowed by the publisher's policy) or the peer-reviewed version (accepted for publication) of every scientific publication and recommends that open access to primary data collected during the research should be enabled immediately after publishing the results based on them in a publication, whenever there are no legal and/or ethical limitations. Almost all higher education and research institutions adopted institutional open science policies in following years. The University of Novi Sad adopted Decision on Amendments to the Bylaw on Doctoral Studies, related to the Data Management Plan. In case a student has created a factual material during his research and work on his doctoral dissertation that can be subject to testing the achieved research results, when submitting the report on evaluation of a doctoral dissertation and the doctoral dissertation for making it public by publishing at the University and Faculty website, the student also submits a Data Management Plan. Also, Science Fund of the Republic of Serbia has regulated open access publishing and open data treatment in accordance with FAIR principles on all projects applying for research grants.



Table 1. Links to the OS policies at WBC

COUNTRY	National OS policies	Institutional OS policies	Open data policies
ALBANIA			
BOSNIA AND HERZEGOVINA			Data Archive for Social Sciences in Bosnia and Herzegovina – DASS-BiH
MONTENEGRO	Ministry of Education of Montenegro		
NORTH MACEDONIA	National Open Science Cloud Initiative		
SERBIA	Ministry of Education, Science and Technological Development of Republic of Serbia	University of Novi Sad University of Kragujevac University of Belgrade State University of Novi Pazar University of Niš University of Priština University of Arts in Belgrade Criminal Police University Institute of Technical Sciences of SANU Balkan Institute of SANU Institute of Plant Protection and Environment Institute of Architecture and Urbanism of Serbia Institute of Animal Husbandry, Belgrade-Zemun Institute of Field and Vegetable Crops University of Belgrade – Faculty of Chemistry Faculty of Special Education and Rehabilitation Maize Research Institute „Zemun Polje“	University of Novi Sad: Decision on Amendments to the Bylaw on Doctoral Studies – related to the Data Management Plan

SECTION 3: OPEN SCIENCE INFRASTRUCTURE

Albania

In Albania, researchers rely only on international OA/OS repositories, such as Zenodo. Public publications exist within the non-profit organization Co-PLAN, which is dedicated to sustainable development by enabling good urban and regional governance, tackling key environmental issues, developing civil society, impacting policies, and promoting community participation knowledge-making. Responsible persons for maintenance of repository are from IT sector or researchers (Figure 1), by institutional recourses.

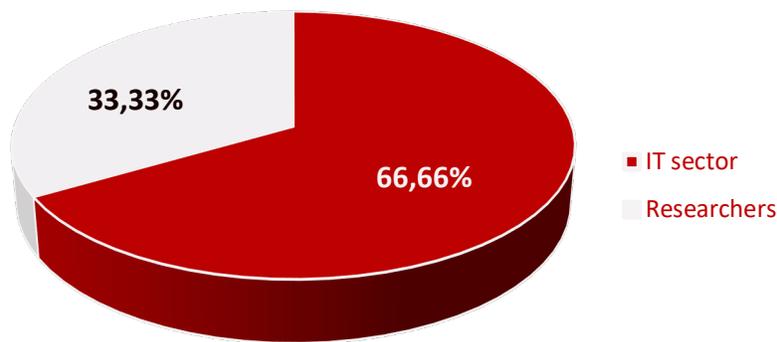


Figure 1. Responsibility for maintenance of repositories

APC costs for publishing in open access journals are mostly paid by project funds (Figure 2). However, researchers must also rely on both their own resources and institutional.

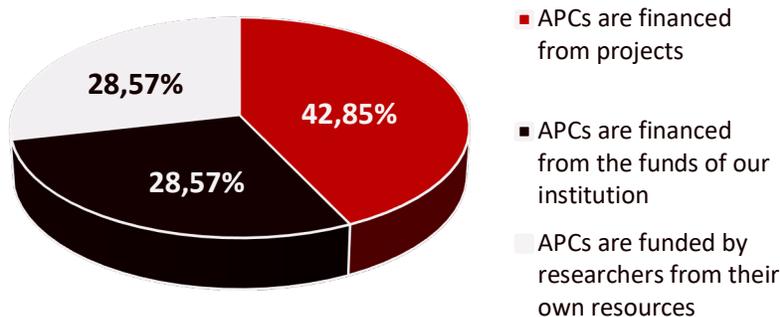


Figure 2. APC charges

In general, there is no systemic solution to the OA/OS challenges and researchers face the need for OA/OS mainly relying on internationally established resources.

Bosnia and Herzegovina

Although no OA/OS policies have been adopted in BiH, some higher education institutions have developed repositories to help researchers make the results of scientific work more visible. The University of Banja Luka, the University of Zenica, and Data Archive for Social Sciences in Bosnia and Herzegovina – DASS-BiH maintain digital repositories with the support of the Ministry of Science and with their own funds (Figure 4). The IT sector, librarians and researchers are in charge of maintaining the repositories (Figure 3).

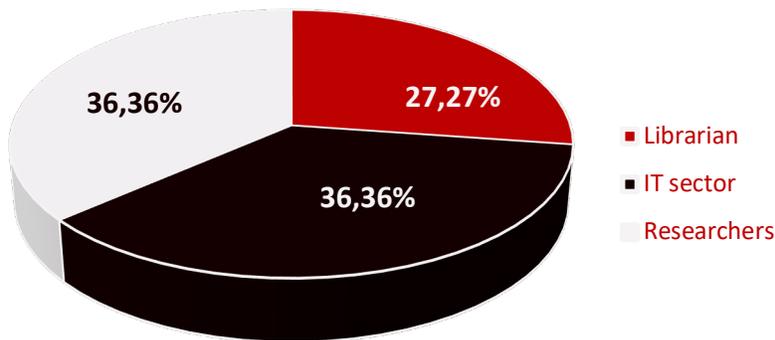


Figure 3. Responsible persons for maintenance of repositories

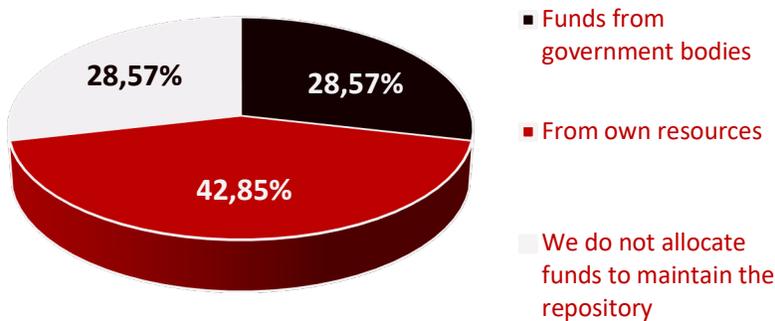


Figure 4. Funds for maintenance of repositories

APC costs for publishing in open access journals are mostly paid by project funds (Figure 5) and by the researcher’s own resources. Occasionally, research institutions also support researchers in this process. Attitudes that APC should not be paid illustrate the fact that if there is a systemic solution for green open access publishing, researchers can avoid additional costs of publishing.

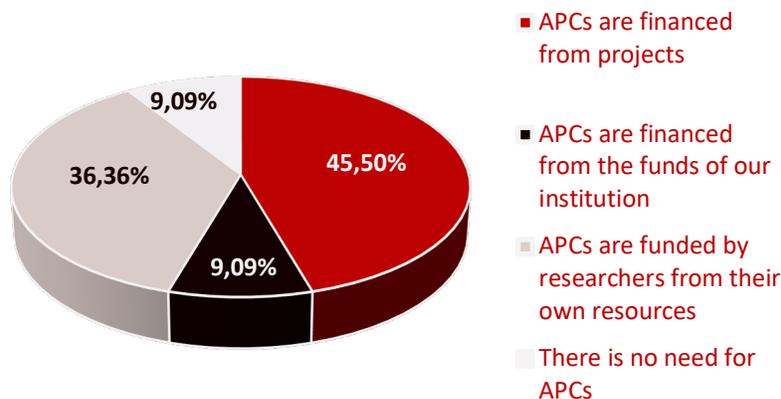


Figure 5. APC charges

Overall, there are research institutions in BiH that take responsibility for the results of scientific research, developing and maintaining resources for their visibility. The advantage of this bottom-up approach is reflected in the willingness of researchers and decision makers to respond to the OA/OS challenges. However, these examples of good practice do not reflect the situation in the entire BiH research community.

Montenegro

For now, in Montenegro only the University of Montenegro has the practice of depositing results in the institutional repository. Since only one state institution participated in the survey, there are no data on how the repository is financed and maintained, or what resources researchers rely on to pay the APCs.

North Macedonia

In North Macedonia, only the University Ss. Cyril and Methodius in Skopje, Faculty of EE and IT has the institutional OA/OS repository. Apart from that, research institutions do not allocate funds for OA/OS resources. The repository is maintained by researchers and so far, there is no support from the IT sector or librarians. However, it seems that researchers have substantial support from institutions for APC chargers (Figure 7).

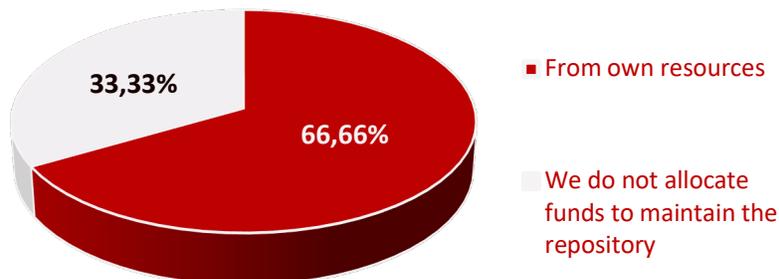


Figure 6. Funds for maintenance of repositories

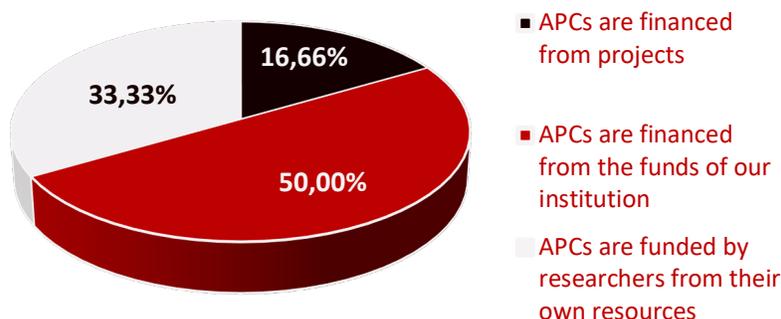


Figure 7. APC charges

Serbia

In Serbia, many research institutions have developed digital repositories. However, except in the case of the University of Belgrade and research institutes, these repositories are not maintained, and many are not functional (Table 2). The repositories are mainly maintained by librarians and the IT sector (Figure 8), which illustrates the importance of their role in supporting science and research. For example, the national repository of doctoral dissertations is maintained exclusively by librarians, according to an established protocol. However, there is still no regulated system for OA/OS repositories, so progress depends solely on the willingness of institutions to focus on this topic. Also, repositories are maintained mostly with the funds of institutions (Figure 9) and therefore depend directly on their income. On the other hand, researchers mainly use project grants or their own resources to pay for APCs (Figure 10), which is also a consequence of the lack of institutional support for open science practice.

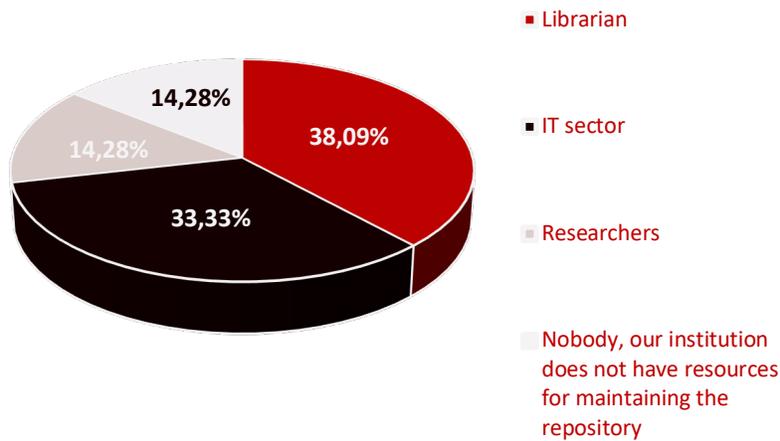


Figure 8. Responsible persons for maintenance of repositories

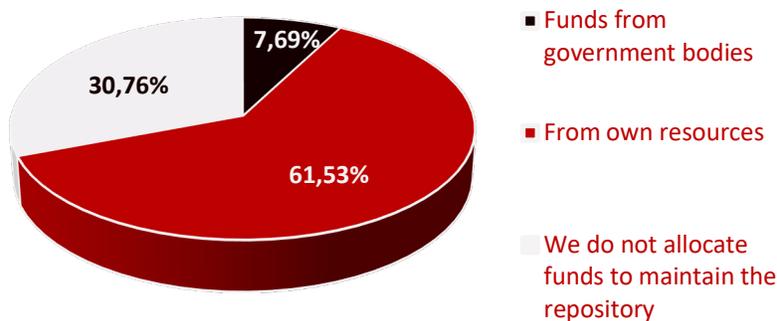


Figure 9. Funds for maintenance of repositories

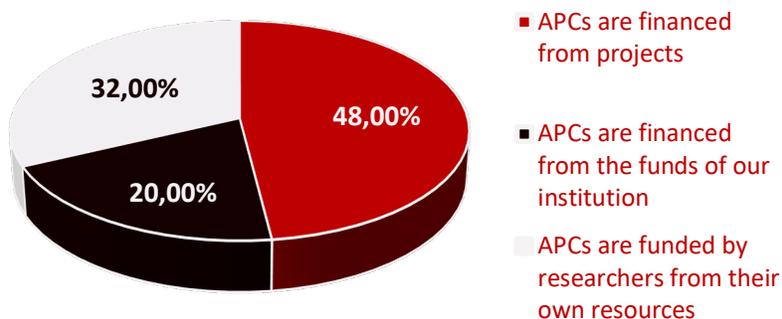


Figure 10. APC charges

Table 2. Links to the OS repositories at WBC

COUNTRY	National repositories	Institutional repositories	Thematic repositories
ALBANIA		Co-PLAN : a non-profit organization	
BOSNIA AND HERZEGOVINA		University of Banja Luka	Data Archive for Social Sciences in Bosnia and Herzegovina – DASS-BiH
		“E-theses” of the University of Banja Luka	
		University of Zenica	
MONTENEGRO		University of Montenegro	
		“E-theses” of the University of Montenegro	
NORTH MACEDONIA		University Ss. Cyril and Methodius in Skopje, Faculty of EE and IT	
SERBIA	NaRDuS (National Repository of Dissertations in Serbia) Repositories of the PhD theses at the University of Belgrade, University of Novi Sad, University of Niš and University of Kragujevac are included in NaRDuS	University of Belgrade - SPIRA Collection of 32 institutional repositories	<i>National Repository of Agricultural Education - CaSA NaRA</i>
		University of Kragujevac	The Jewish Digital Library
		University of Novi Sad *	Repository of psychological instruments in Serbian - REPOPSI
		State University of Novi Pazar*	
		University of Arts in Belgrade*	
		University of Niš*	
		Full lists of repositories in Serbia can be found at National portal of Open Science	
* repository not maintained			

Section 4: Overview

The landscape of OA/OS policies and resources in the WBC is diverse and it would be impossible to apply a single model in all countries and institutions. Although national policy should provide a flexible framework for defining policies at lower levels and a solution for infrastructure, existing policies declaratively regulate OA/OS, respecting its importance, without an action plan for infrastructure maintenance. Also, OA/OS policies and resources are often determined by available resources and local context. For example, although national policies have been adopted in Montenegro and Macedonia, resources for their implementation are not available to researchers. Researchers in Albania rely solely on international policies and repositories, such as Zenodo, without regulating this topic at the national or institutional level. Although there are no national policies in Bosnia and Herzegovina, leading universities have developed institutional repositories. An excellent resource is the Data Archive for Social Sciences in Bosnia and Herzegovina – DASS-BiH, which illustrates the response of researchers to the challenges of OA/OS and the bottom-up approach in solving them. Serbia is among the leading countries in terms of adopted OA/OS policies. The importance of OA/OS is recognized in the Law on Science, National Policy, Research Funds and Higher Education and Research Institutions. However, none of these policies provide a solution for the resources needed to implement the OA/OS principles. Therefore, functional OA/OS repositories exist only within the University of Belgrade and research institutes, which rely on their own resources. Although other universities have repositories, their maintenance is not ensured, which reduces the enthusiasm of researchers for their use.

Overall, the WBC generally have developed OA/OS policies, except for Albania and BiH. However, these policies do not define the resources that institutions and researchers would rely on to adhere to new research practices. Also, with the rise of internationally coordinated infrastructures, such as EOSC, these policies need to meet some internationally agreed requirements. It will be necessary to revise all national, funding, and institutional policies as respond to this development. Research institutions and researchers develop OA/OS repositories mainly through internationally funded projects, leading to a lack of their sustainability. In other words, OA/OS is implemented through a bottom-up approach, which depends on the enthusiasm of participants in the research process, such as researchers or librarians. A systematic approach to addressing all OA/OS challenges therefore needs to be developed involving all stakeholders. Decision-makers should be better informed about internationally accepted standards and requirements, while researchers should be introduced to new research practices.



Appendix

WBC-RRI.NET project – open science short survey

In the framework of the Horizon 2020 project „Embedding RRI in Western Balkan Countries: Enhancement of Self-Sustaining R&I Ecosystem“, with acronym [WBC-RRI.NET](#), one of the important tasks is to create a map of existing institutional open science repositories in the Western Balkan countries as well as to provide an overview of existing open science and open access legislation in the Western Balkan region. We would like kindly to ask you to fulfil the following questions related to these topics. We really appreciate your time (maximum 10 minutes) and devotion!

WG3, [WBC-RRI.NET](#) project team

 sgoran@uns.ac.rs (not shared) [Switch account](#) 

* Required

1. What policies regulate the topics of open science and open access at your institution? (Multiple answers possible) *

- a) Institutional platform of open science (e.g., regulations, recommendations, etc.)
- b) Institutional policy of open data (e.g., Data management plan)
- c) None of the above documents exist
- d) I do not know that such documents exist
- Other: _____

2. Link to the institutional policy of open science:

Your answer _____



3. Link to institutional open data policy:

Your answer _____

4. If your institution does not have an open science policy, do you think there is a need to adopt it? (Multiple answers possible)

- a) Yes, it will significantly increase the visibility and citation of researchers
- b) Yes, this is required by government bodies (e.g., EU; National)
- c) Yes, this will allow easier access to project financing
- d) No, I do not see the benefit of such a policy for our researchers
- Other: _____

5. Does your institution have a repository for depositing the results of scientific work? *

- a) Yes, there is a repository and it is regularly maintained
- b) Yes, there is a repository but it is not maintained
- c) No, there is no repository at our institution
- d) The repository does not exist, but its development is planned
- e) The repository does not exist, but researchers have the obligation to deposit their work in international thematic repositories
- Other: _____

6. Link to the institutional repository:

Your answer _____

7. If you have an institutional repository, who is responsible for its maintenance?
(Multiple answers possible)

- a) Librarian
- b) IT sector
- c) Researchers (e.g., young researchers, etc.)
- d) We have a contract with a specialized agency, institution, etc.
- e) Nobody, our institution does not have resources for maintaining the repository
- Other: _____

8. If you have an institutional repository, what funds are used for its maintenance?
(Multiple answers possible)

- a) Funds from government bodies (e.g., Ministry for Science etc.)
- b) From own resources
- c) We do not allocate funds to maintain the repository
- Other: _____

9. If your institution does not have a repository, do you think there is a need to develop it?

- a) Yes, it will significantly increase the visibility and citation of researchers
- b) Yes, this is required by the line ministry
- c) Yes, this will allow easier access to project financing
- d) Yes, but we do not have the resources to create a repository
- e) No, I do not see the benefit of a repository for our researchers
- f) There is no need for our institution to built its own open repository, but all research content/product should be published in existing international open repositories
- Other: _____

10. How do researchers at your institution pay for APC (article processing charge)?
(Multiple answers possible)

- a) APCs are financed from projects
- b) APCs are financed from the funds of our institution
- c) APCs are funded by researchers from their own resources
- d) There is no need for APCs
- Other: _____

11. Your institution is in: *

Choose ▼

12. Type of your institution: (Multiple answers possible) *

University/Faculty

Research institution

NGO

Government institution

Business

Media

Other: _____

13. The name of your institution:

Your answer _____