

WP2 Report

Analysis of the Survey on National Contributions to EOSC 2021

The EOSC Future project is co-funded by the European
Union Horizon Programme call INFRAEOSC-03-2020,
Grant Agreement number 101017536



Version 1.0
December / 2022
DOI: 10.5281/zenodo.7410828

WP2 Report / Analysis of the Survey on National Contributions to EOSC 2021

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Dissemination Level of the Document

Public (PU)

Abstract

This report provides and describes the analysis of the first annual Survey on National Contributions to EOSC that was launched in 2021 and conducted among the European Open Science Cloud Steering Board (EOSC-SB) members i.e., representatives of the EU member states and associated countries in the EOSC governance. The Survey questionnaire was developed by the EOSC Steering Board Subgroup 'National Contributions to EOSC' and launched in December 2021. The Survey is one of the instruments supporting the implementation of the monitoring framework that will measure progress towards Open Science collecting the data on policies, practices, and impact in the following years, while introducing regular updates and enhancements. Analysis of the Survey was part of the EOSC Future project strategic activities, and work on the EOSC Observatory policy intelligence tool. This document contains aggregated data presented to follow the structure of the survey questions.

Version History

Version	Date	Authors/Contributors	Description
Vo.1	07/11/2022	Vanja Komljenovic (CESSDA ERIC) Irena Vipavc Brvar (CESSDA ERIC/ UL, FDV/ADP)	SPSS data analysis, Initial Draft report prepared for EOSC Steering Board members and reviewers.
Vo.2	10/11/2022	Volker Beckmann (EOSC Steering Board co-chair)	Corrections and suggestions, integrating comments.
Vo.3	10/11/2022	Thomas Neidenmark (Policy Officer, Open Science unit, DG R&I, European Commission)	Corrections and suggestions, integrating comments.
Vo.4	11/11/2022	Sofia Abrahamsson (Senior Research Officer at the Swedish Research Council, and co-chair EOSC SB subgroup 'National Contributions to EOSC')	Corrections and suggestions, integrating comments.
Vo.5	14/11/2022	Vanja Komljenovic (CESSDA ERIC)	Addressing the comments.
Vo.6	01/12/2022	Irena Vipavc Brvar (CESSDA ERIC / UL, FDV/ADP)	Adjustments of the visuals and text.
Vo.7	09/12/2022	Gareth O'Neill (TGB)	Corrections and suggestions, integrating comments.
V1.0	14/12/2022	Vanja Komljenovic (CESSDA ERIC) Athanasia Spiliotopoulou (JNP)	Addressing the comments, finalisation of the document.

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Glossary

EOSC Future project Glossary is incorporated by reference: <https://wiki.eoscfuture.eu/x/JQCK>.

For explanations of the terms used in the Survey please refer to the EOSC Glossary: <https://doi.org/10.5281/zenodo.4472643> (Version December 2020).

List of Abbreviations and Terms

Acronym	Definition
AC	Associated country
CESSDA ERIC	Consortium of European Social Science Data Archives, European Research Infrastructure
EC	European Commission
EOSC	European Open Science Cloud
EOSC - SB	European Open Science Cloud Steering Board
ERA	European Research Area
FAIR	Findable, Accessible, Interoperable, Reusable
MC	Member country
Open Science ¹	Means an approach to the scientific process based on open cooperative work, tools, and diffusing knowledge.
Policy ²	Can be understood here in a wider sense, e.g., also recommendations, regulations, laws can be considered as a policy. At national/regional level should be understood as being applicable to all Research Performing Organisations/Research Funding Organisations at this level.
RFO	Research Funding Organisation
RPO	Research Performing Organisation
SRIA	Strategic Research and Innovation Agenda
TGB	Technopolis Group Belgium
UL, FDV/ADP	University of Ljubljana, Faculty of Social Sciences, Social Science Data Archives

¹ As per Recommendations on how to calculate national financial contributions to the EOSC

² Ibid

1 Executive summary

The European Open Science Cloud Steering Board (EOSC-SB) was created as independent expert group to support crucial role of Member states (MS), Associated countries (AC) and EU in sustaining and facilitating implementation of the EOSC environment in Europe and Open Science progress. The main purpose of the group is to provide advice and expertise to the Commission in relation to the strategy for the implementation of the EOSC as part of the European Research Area (ERA) actions, to support coordination of and synergies with European and national policies and investments in EOSC and to help monitoring the overall EOSC strategic development and implementation³.

Within the scope of the EOSC-SB activities the first EOSC-SB Survey on National Contributions to EOSC was released in December 2021 as one of the instruments supporting the implementation of the monitoring framework that will measure progress towards Open Science collecting data on policies, practices, and impact in the following years.

This document presents overview of the results that were obtained within the Survey and provides analysis of the countries' responses related to EOSC policies, financial investments, and EOSC practices.

First section describes Survey background and methodology and provides information on the activities and tools that were used to facilitate the process (EOSC Observatory policy intelligence tool).

Second section contains detailed analysis of Survey data providing information on the state of policies among the countries, levels of countries' financial investments to EOSC and their EOSC practices.

Final section provides a set of actionable recommendations derived from the Survey data analysis. Recommendations are intended for countries and EOSC-SB expert group to support their continued work on aligning national and regional policies.

The EOSC-SB Survey analysis process enabled insightful learning background and encouraged open discussion within the expert group and with other EOSC relevant stakeholders. As a positive consequence of the process and as a mean to facilitate new ideas, further discussions that are motivated by the survey results have a high value. This survey and future iterations of the same will lead to a deepened understanding of the EOSC investments, practices, and the possibility to distinguish these from other Open Science investments and practices.

Furthermore, the first EOSC-SB Survey on National Contributions to EOSC that was released in 2021 provided insights that led to the improved monitoring framework that will be implemented in the subsequent survey expected to be released in November 2022.

³ EOSC Steering Board Work Plan 2022, v.3.0

2 Introduction

2.1 Background

There is a critical need among the key stakeholders of EOSC not only to monitor the implementation and uptake of EOSC but also to strategically align and coordinate monitoring activities across these stakeholders. This need arises from the diverse policies and practices for EOSC and the differing states of EOSC readiness across MS/AC. [EOSC Future, Deliverable 2.8a EOSC Observatory, authors: Gareth O’Neill, Stefania Martziou, July 2022].

Established as the advisory expert group to the Commission on the EU policy for research data infrastructure and services, the EOSC-Steering Board supports the EOSC Governance, alignment of EU and national policy developments and investments with the EOSC Objectives, and supports the Commission in the coordination, and implementation of EOSC as part of the ERA Policy⁴. As one of the main purposes, the expert group participates in monitoring the overall EOSC strategic development and implementation.

As part of the EOSC-SB with the focus on understanding progress towards Open Science and alignment on Open Science monitoring initiatives, the subgroup ‘National Contributions to EOSC’ of the Steering Board was established with the following tasks:

- (a) Benchmarking of activities on international, national, regional, and institutional level:
 1. developing and implementing policies and supporting EOSC-ready infrastructures and initiatives; and
 2. providing contributions/investments and financing of EOSC relevant policies, infrastructures, and initiatives.
- (b) Monitor the benefits of MS/AC policies to the whole EOSC and the benefits of EOSC to the national research communities.

Within the scope of its objectives and activities, EOSC Steering Board subgroup developed the Survey questionnaire that would serve as an instrument for monitoring of investments and policies and their impact on EOSC readiness⁵. In addition, work of EOSC-SB expert group resulted in several Opinion papers⁶ and with document titled Opinion by the EOSC Steering Board expert group (Eo3756) on Monitoring Open Science⁷.

To facilitate the EOSC monitoring process, strategically align and coordinate the monitoring of EOSC, and support reduction of overlaps in reporting demands and surveys, the EOSC Future Observatory team established connections with key EOSC stakeholders (representatives of the H2020 project EOSC Secretariat CSA⁸, the H2020 INFRAEOSC 5B regional projects^{9,10} task force on monitoring, EOSC Association, and individual experts). Mutual discussion on needed requirements has initiated development of the EOSC Observatory as a fit-for-purpose and sustainable EOSC monitoring tool¹¹.

⁴ EOSC-SB Terms of Reference FINAL <https://ec.europa.eu/transparency/expert-groups-register/screen/expert-groups/consult?lang=en&groupId=3756&fromMeetings=true&meetingId=27757> [accessed 31st October 2022].

⁵ Survey on National Contributions to EOSC <https://zenodo.org/record/7423953> [accessed 13th December 2022].

⁶ Opinion paper by the EOSC Steering Board expert group (Eo3756) on EOSC FAIR data literacy, DOI: 10.2777/716842;

Opinion paper by the EOSC Steering Board expert group (Eo3756) on FAIR data sovereignty in EOSC, DOI: 10.2777/32361;

Opinion paper by the EOSC Steering Board expert group (Eo3756) on EOSC and commercial partners, DOI: 10.2777/04436.

⁷ Opinion by the EOSC Steering Board expert group (Eo3756) on Monitoring Open Science, DOI: 10.2777/382490.

⁸ Project Factsheet <https://cordis.europa.eu/project/id/831644> [accessed 14th November 2022].

⁹ EOSC 5b regional projects <https://www.eoscsecretariat.eu/communities/eosc-regional-projects> [accessed 14th November 2022].

¹⁰ EOSC Nordic factsheet <https://cordis.europa.eu/project/id/857652>; EOSC Pillar factsheet

<https://cordis.europa.eu/project/id/857650>; EOSC- synergy Factsheet <https://cordis.europa.eu/project/id/857647>; NI4OS

factsheet <https://cordis.europa.eu/project/id/857645>; ExPaNDS factsheet <https://cordis.europa.eu/project/id/857641>;

FAIRsFAIR factsheet <https://cordis.europa.eu/project/id/857641> [All accessed 14th November 2022].

¹¹ O’Neill, Gareth and Stefania Martziou (2022) EOSC Observatory. Deliverable D2.8a of the EOSC Future project <https://zenodo.org/record/7424032> [Accessed 13 December 2022].

EOSC Observatory^{12, 13} as a policy intelligence tool contains a survey tool within its architecture as one of the main functionalities to be able to facilitate survey questionnaires that are established as annual monitoring practice. EOSC Observatory Survey tool was used to sustain implementation of the first EOSC-SB Survey and collect data which are now available in the Observatory¹⁴.

2.2 Methodology of the Survey on National Contribution to EOSC 2021

The EOSC-SB Survey on National Contributions to EOSC (EOSC-SB Survey 2021) was released in December 2021 as one of the instruments supporting the implementation of the monitoring framework that will measure progress towards Open Science becoming the new normal by 2030 by collecting data on policies, practices, and impact in the following years. The Survey was intended for EOSC-SB members, and the questionnaire was designed by the EOSC-SB subgroup with the aim to understand what contributions will be made by MS/AC to further develop EOSC, in synergy with the implementation of the SRIA¹⁵ on a European level and reach a collective understanding on how to assess these contributions.

- Evaluate how MS/AC support their organisations nationally, what are their data-related policies and financing mechanisms? What do MS/AC do on country level to advance FAIR and EOSC?
- Evaluate how national funding (other than from members of the EOSC Association) complements the contributions provided by the Association members.

Following a validation workshop with several stakeholders of Open Science monitoring initiatives in October 2021 a selection of EOSC relevant indicators were identified. The questionnaire that was agreed on after the workshop addressed the following topics:

2.1.1 EOSC Policies and financial investment

This section aimed at gathering information on policies relevant for Open Science in the year 2021, their prevalence and implementation at national level. It collected information on the financial investments in the year 2020 that are connected to the policies, sources of the financial estimations, and measures to ensure policies implementation.

2.1.2 EOSC Practices

This section gathered data on progress in Open Science practices that may or may not be a consequence of existing policies, providing information on Mandated Organisation to the EOSC Association, monitoring and listing specific Open Science use-cases.

The Survey incorporated following 19 questions that contained multiple choice or a single entry:

1. Are there EOSC-relevant policies in place at national or regional level?
2. Do the EOSC-relevant policies in place include measures to ensure implementation?
3. Are the financial contributions to the EOSC at national level linked to the policies and actions mentioned above?
4. Total amount of national EOSC contribution [in million €] spent in 2020:
5. What was the amount of funds [in million €] allocated in 2020 to current EOSC Association Members (including Mandated Organisations)?

¹² Website of the EOSC Observatory hosted by the EOSC Future project <https://eoscobservatory.eosc-portal.eu> [Accessed 13th December 2022]

¹³ Introduction to EOSC Observatory <https://zenodo.org/record/7410634> Video available to watch on YouTube: <https://www.youtube.com/watch?v=jMWA1D1yaio> [Accessed 13th December 2022]

¹⁴ Data of Survey on National Contributions to EOSC 2021. Data set of the EOSC Future project. <https://zenodo.org/record/7431678> [Accessed 13th December 2022].

¹⁵ European Commission, Directorate-General for Research and Innovation, Strategic Research and Innovation Agenda (SRIA) of the European Open Science Cloud (EOSC), Publications Office of the European Union, 2022, <https://data.europa.eu/doi/10.2777/935288> [Accessed 13th December 2022]

6. How much of the funds [in million €] were allocated in 2020 to organizations which are now not members of the EOSC Association?
7. What were the sources for the estimate?
8. The estimate includes government contributions from which levels?
9. If the national funds included earmarked funding (explicitly for EOSC and open science-related activities), how much was calculated [in million €]?
10. If the national funding included non-earmarked funding (i.e., national funding not explicitly given for EOSC- or Open Science-related activities, but [partly] used for EOSC-relevant activities), how much was calculated [in million €]?
11. Did European Structural and Investment funds contribute to the EOSC relevant investment, and if so, how much was calculated [in million €]?
12. Were one or more of the following EOSC-relevant activities considered in your funding?
13. Were one or more of the following service-related activities considered in your funding?
14. Were one or more of the following infrastructure-related activities considered in your funding?
15. Has your country appointed a Mandated Organization to the EOSC Association?
16. Is there any official national monitoring or mapping exercise of one or several of the following open science elements?
17. If there is a monitoring indicated in the previous question, how is it reported? If possible, please add link to the monitoring exercise or national dashboard in the last field.
18. In which open science dimensions do you have use cases and best practices to present?
19. If you indicated occurrence of an open science use case in the previous question, please provide a description.

Survey questions and answers were facilitated via the EOSC Observatory policy intelligence tool¹⁶ and will be updated for the next collection (Figure 2.1).

¹⁶ EOSC Observatory website <https://eoscobservatory.eosc-portal.eu/home> [accessed 31st October 2022]

1. Are there EOSC-relevant policies in place at national or regional level? (Multiple choice):

1. "Policy" can be understood here in a wider sense, e.g., also recommendations, regulations, laws can be considered as a policy
2. At national / regional level should be understood as being applicable to all RPOs/RFOs at this level.

There are one or more policies relevant for the EOSC in place

Policy most relevant for EOSC in place since:

Latest update of the policy most relevant for EOSC:

Link(s) to EOSC-relevant policy/policies:

X

X

X

[+ Add Link\(s\) to EOSC-relevant policy/policies:](#)

Policy in planning

One or more of the open science policies explicitly mentions EOSC

Figure 2.1. EOSC Observatory, internal dashboard, display of a survey question (Source: EOSC Observatory)

The EOSC Observatory tool was also used to provide visualization and survey analysis within the dashboard as demonstrated Figure 2.2 and Figure 2.3 below.

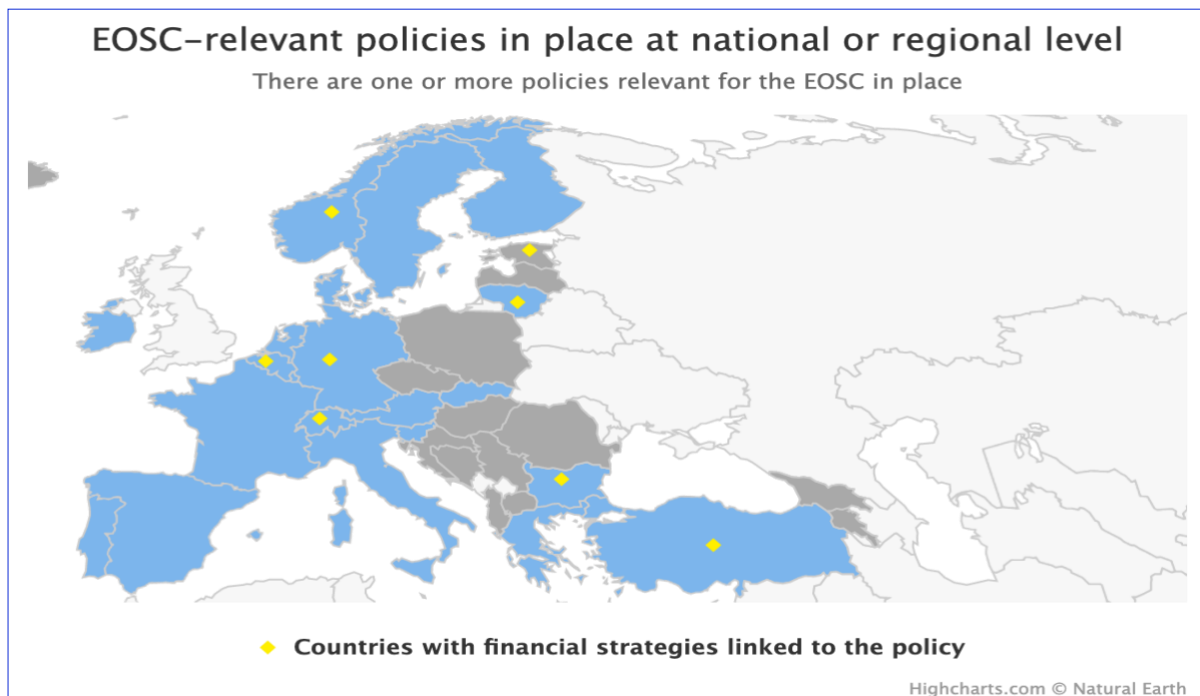


Figure 2.2. EOSC Observatory (Source: EOSC Observatory)

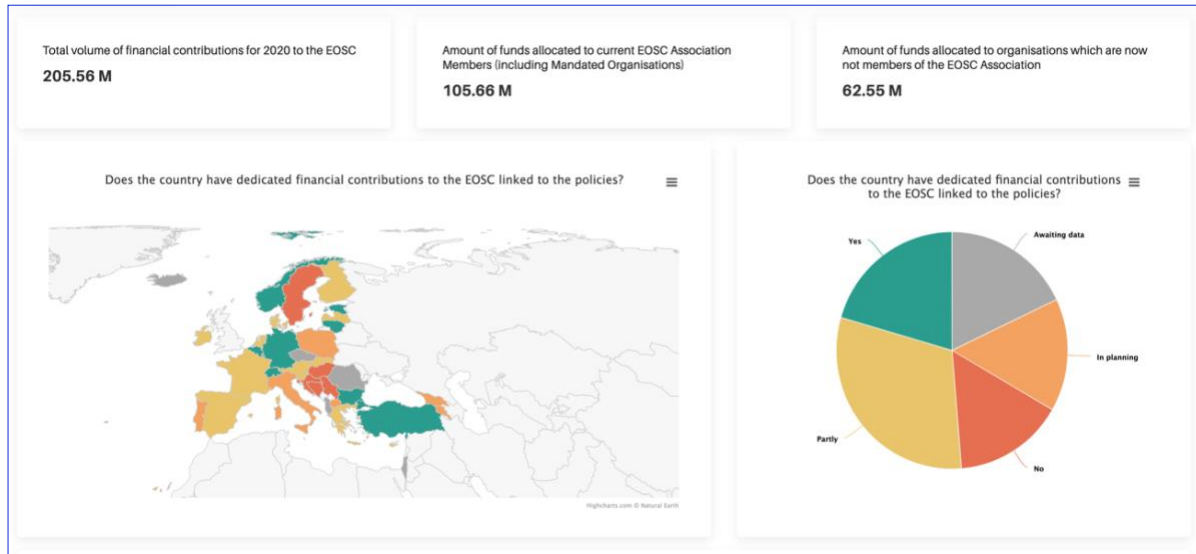


Figure 2.3. EOSC Observatory (Source: EOSC Observatory)

Following the Survey launch in 2021 an introductory EOSC-SB workshop was organized. The workshop resulted in the development of a document titled 'Recommendations on how to calculate national financial contributions to the EOSC'¹⁷ which provided further explanations on the survey terminology and a basis for calculation of national financial contributions to EOSC. During the process of completing the Survey and while providing answers, respondents were facilitated with further explanations and possibilities for corrections. Furthermore, the preliminary Survey analysis shows that additional clarification was required with regards to estimating national financial contributions to EOSC. To address that, respondents were given an opportunity to provide feedback on the Survey via a questionnaire and individual interviews, and a follow-up workshop for EOSC-SB was organised on 7 October 2022. The results of the feedback questionnaire, interviews and follow-up workshop will be described in a separate Report to be issued in January 2023.

3 Analysis of the Survey on National Contributions to EOSC 2021

This chapter provides the analysis of data that reflects the feedback collected from 34 EOSC Steering Board members (25 Member countries, 8 Associated countries, and 1 other country) of which all 34 answers were validated. More than 75% of respondents had a survey completion rate above 80%. Analysis presented in the sections below does not include detailed responses related to the financial contributions to EOSC as this data is restricted to the EOSC-SB members.

3.1 EOSC Policies and financial investment

Detailed analysis of the policies relevant for Open Science and national financial contributions to EOSC will be presented within this section. Within the scope of this Survey, policies were understood in a wider sense, e.g., also recommendations, regulations, laws can be considered as a policy. At national/regional level was understood as being applicable to all Research Performing Organisations (RPOs)/Research Funding Organisations (RFOs) at this level.

3.1.1 EOSC Relevant policies at national or regional level and measures to ensure implementation

Based on the data provided by the respondents, 62% of the countries (21 countries) have one or more policies relevant for EOSC in place. Furthermore, 52% (18 countries) replied that they had EOSC relevant policies in planning¹⁸. The earliest policies provided dated back to 2009, while in 2017 and especially in 2021, the highest

¹⁷ Survey on National Contributions to EOSC 2021 <https://zenodo.org/record/7423953> [Accessed 13th December 2022]

¹⁸ Total number is higher than 34 as some countries that already have policies in place are either preparing new / additional or updating the existing policies

percentage of policies was put in place (Figure 3.1). These data peaks possibly correspond with changes in the policy landscape on the European level, and background correlations should be further explored.

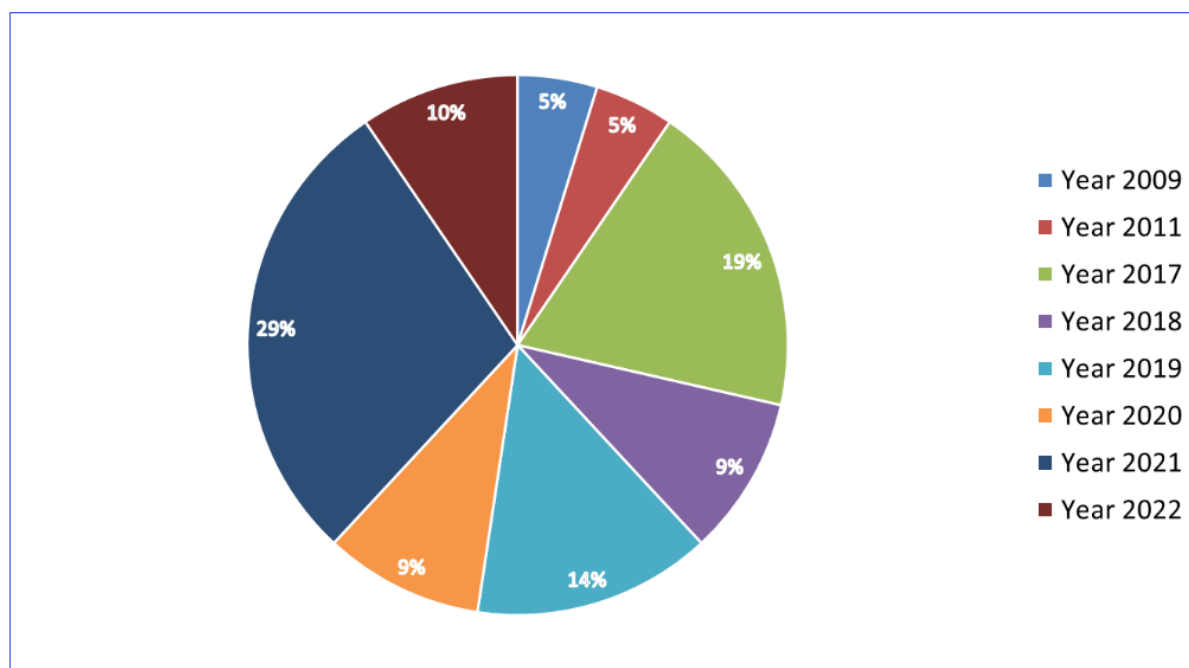


Figure 3.1. Distribution of policies per year (Source: Survey on National Contributions to EOSC 2021)

With regards to the policies' distribution, according to the specific Open Science area for all available data input, it is noticeable that the highest percentage (76%) of the responses relates to policies addressing open access to data, data management and or FAIR, following with policies addressing preservation and reuse of scientific information (65%), and policies addressing infrastructures that include aspects on Open Science (62%). However, the lowest percentage corresponds to policies that address open access to software and policies addressing citizen science, both 32% of responses (Table 3-1, Figure 3.2). There are five¹⁹ countries having policies in place for all the defined values.

Table 3-1. Distribution of responses per areas of Open Science being addressed in policies

Policy	Number of countries that selected the response
Open Science policies explicitly mention EOSC	18
Policy addresses Open access to data, data management and/or FAIR	26
Policy addresses FAIRisation of data	17
Policy addresses Open access to software	11
Policy addresses Preservation and reuse of scientific information	22
Policy addresses Infrastructures that include aspects of Open Science	21
Policy addresses Skills and competencies	19
Policy addresses Incentives and rewards	16
Policy addresses Citizen science	11
Other policies	6

¹⁹ Austria, Finland, Norway, Slovenia, and Switzerland

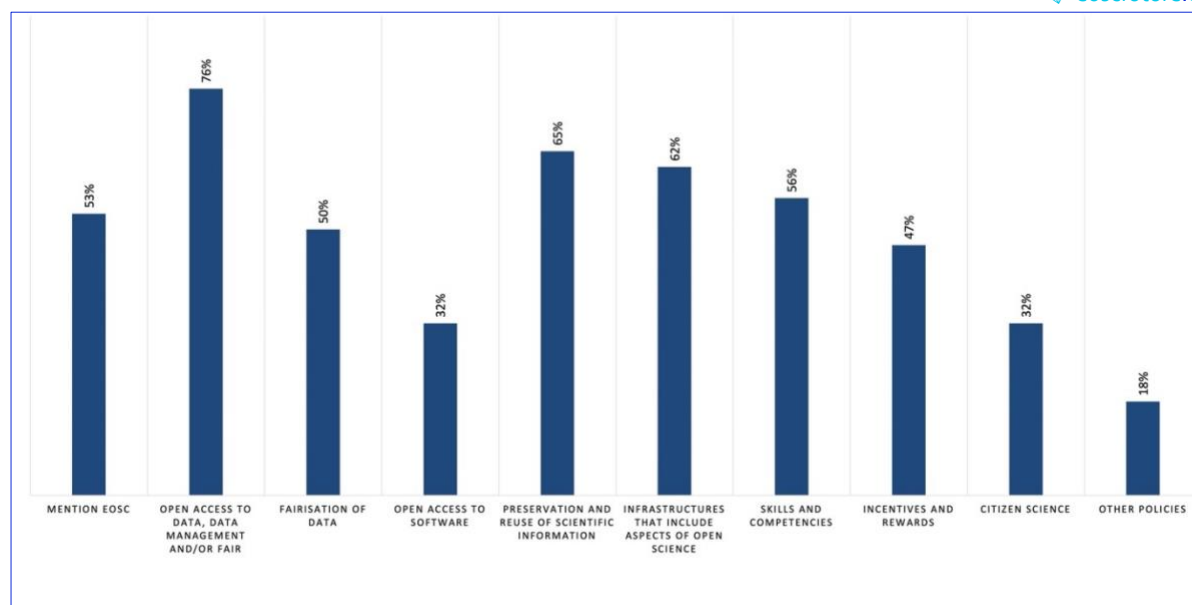


Figure 3.2. Percentages per areas of open science being addressed in policies (Source: Survey on National Contributions to EOSC 2021)

The distribution according to the countries that have policies in place, countries that have policies in planning, and countries that did not define the status of their policies, shows different percentages. The data range taken into consideration comprises 21 countries that have policies in place and 9 countries that have policies in planning. Countries that have both policies in place and policies in planning have not been considered as the related questions did not provide differentiation of the policies in place and policies in planning per specific Open Science area and it would lead to an overlap of the values. In addition, countries that have not defined the status of the policies but provided input for specific areas were also not considered as this is a small sample of 4 countries only. Within the scope of data for 21 countries, the highest percentage (95%) relates to policies addressing open access to data, data management and/or FAIR and policies addressing preservation and reuse of scientific information, the lowest percentage (48%) relates to policies addressing citizen science, followed by policies addressing open access to software (52%) and policies addressing incentives and rewards (57%), while all other categories have values above 70%. These numbers correspond with the above-mentioned percentages and representation of responses. Considering the data provided by the 9 countries that have policies in planning, the highest percentage (44%) is also related to policies addressing open access to data, data management and/or FAIR, while several policy areas (policies explicitly mention EOSC, policies addressing open access to software, preservation and reuse of scientific information, skills and competencies, and citizen science) have 0%. (Table 3-2, Figure 3.3).

Table 3-2. Distribution of responses per policies and countries with policies in place and countries with policies in planning

Policy	Number of countries with policies in place	Number of countries with policy in planning
Open science policies explicitly mention EOSC	16	0
Policy addresses Open access to data, data management and/or FAIR	20	4
Policy addresses FAIRisation of data	15	1
Policy addresses Open access to software	11	0
Policy addresses Preservation and reuse of scientific information	20	0
Policy addresses Infrastructures that include aspects of Open Science	16	2
Policy addresses Skills and competencies	16	0

Policy addresses Incentives and rewards	12	1
Policy addresses Citizen science	10	0
Other policies	4	1

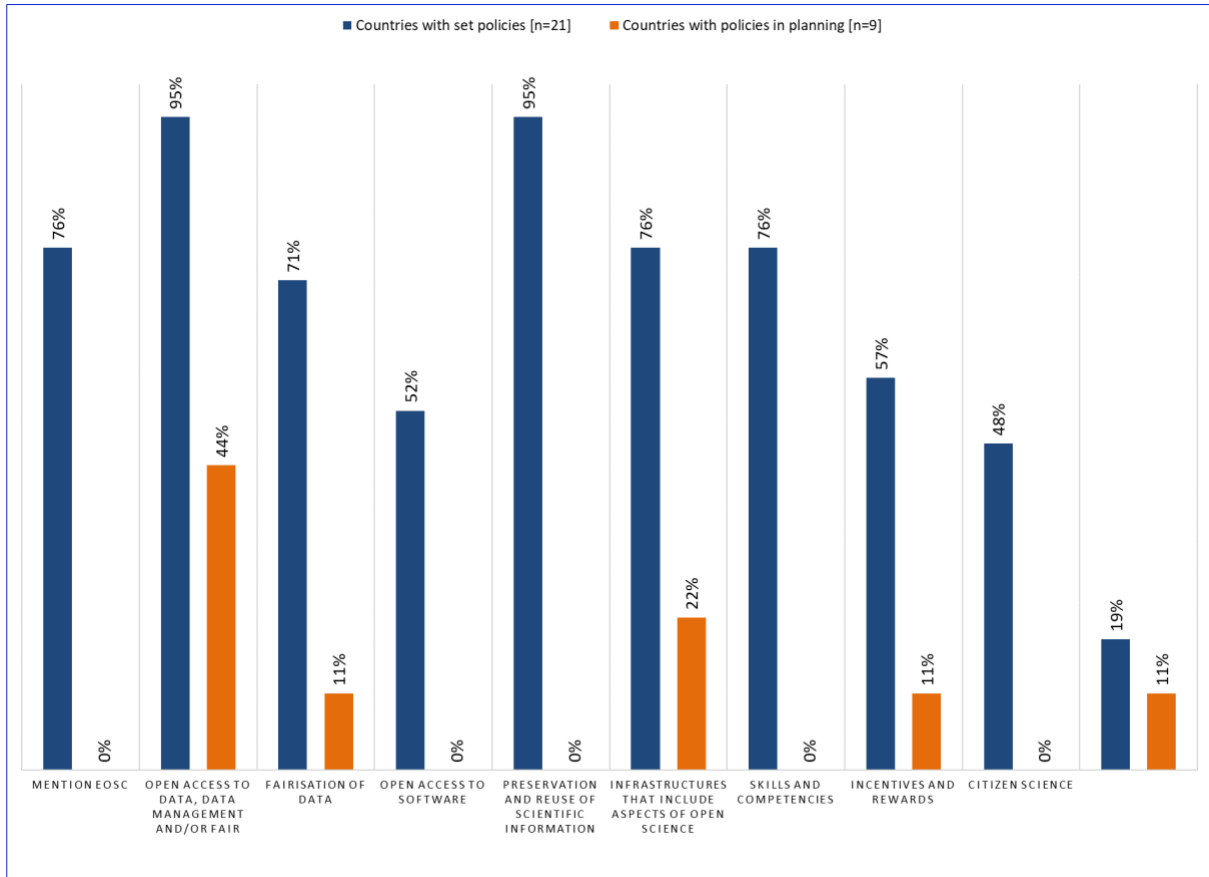


Figure 3.3. Distribution of policies per Open Science areas and countries with regards to policy status (in place or in planning) (Source: Survey on National Contributions to EOSC 2021)

Regarding the measures to ensure implementation, 20 out of 21²⁰ (95%) countries have indicated at least one of the proposed measures (Action plan, Concrete objectives, Indicators to monitor progress, and associated financial planning) as included in their EOSC-relevant policies. Out of the 20 countries that indicated that they have measures for implementation in place, 5 countries had 1 measure, 7 out of 20 countries 2 measures, 5 out of 20 countries 3 measures, and 3 out of 20 countries have included all 4 measures in their policies (Table 3-3). Concrete objectives are the most frequently included measure, selected by 95% (19) of the countries, while Indicators to monitor progress have the lowest frequency of 30% (6 countries). Action plan was indicated by 65% (13 countries) and associated financial planning by 40% (8 countries) of the countries (Table 3-4, Figure 3.5).

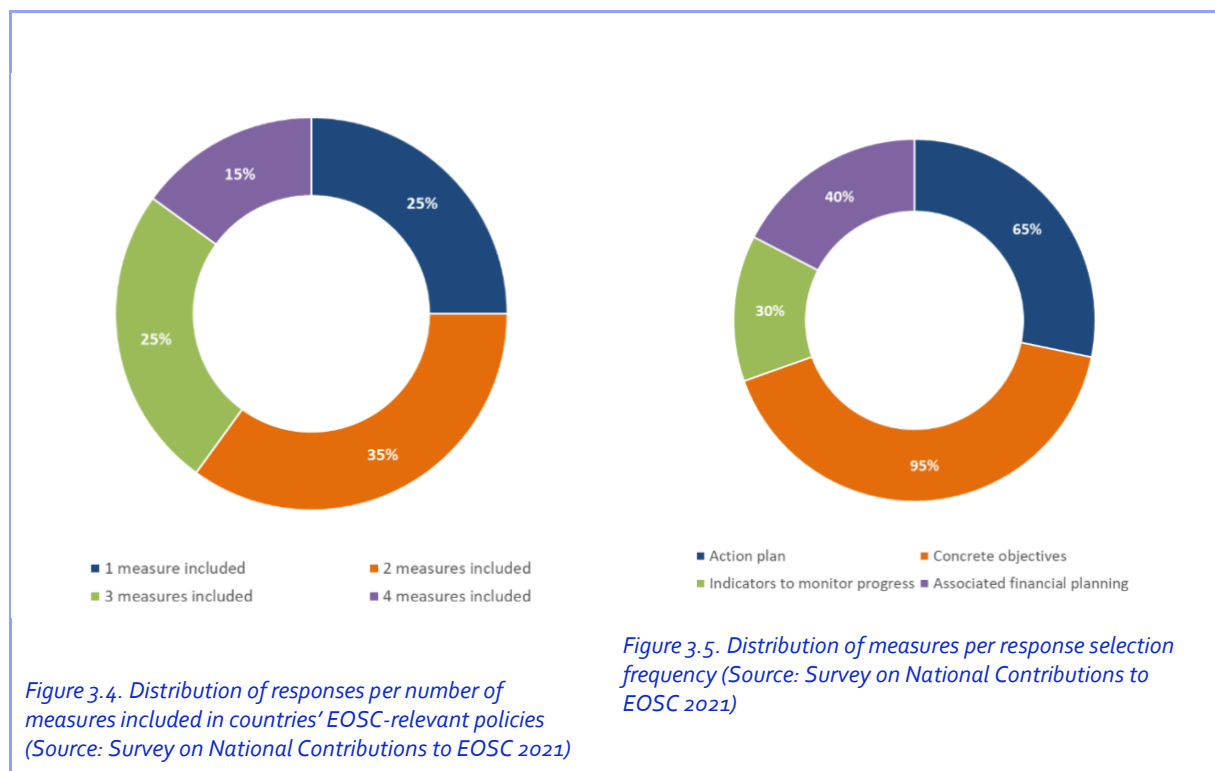
²⁰ Data for countries having policies in place was taken into consideration.

Table 3-3. Distribution of responses per number of measures included in countries' EOSC-relevant policies

Number of measures included in countries' EOSC-relevant policies	Number of countries including the measures
1 measure	5
2 measures	7
3 measures	5
4 measures	3

Table 3-4. Distribution of measures per response selection frequency

Measure	Number of countries including the measure in their EOSC-relevant policies
Action plan	13
Concrete objectives	19
Indicators to monitor progress	6
Associated financial planning	8



3.1.2 EOSC Financial investments

For the survey question that determined the link of the Policies analysed in the previous subsection and the financial contributions to the EOSC at national level, total of 32 countries provided an answer. From 32 countries, twelve countries (35%) have partially linked policies to the financial contribution. Of the 12 countries where a link is not established, 6 (18%) plan to develop the links in the future. Eight (24%) of the countries have the financial contribution to the EOSC linked with the policies and actions. As for the 20 countries that have

indicated having policies in place, 50% (10 countries) have the partial link, and 35% (7 countries) have the link established (Figure 3.6).

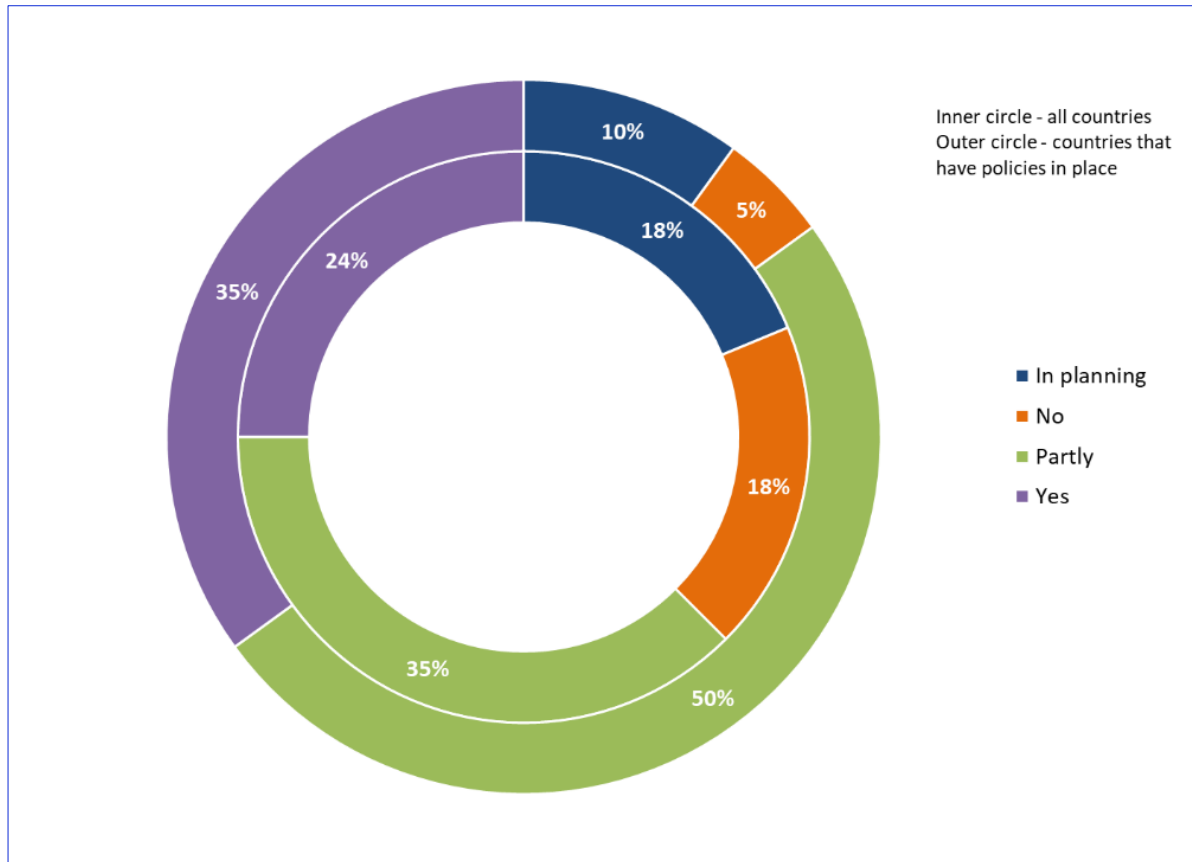


Figure 3.6. Distribution of responses on the link of policies and financial investments (Source: Survey on National Contributions to EOSC 2021)

Taking into consideration answers provided by countries (29 countries provided the answer), the total estimated national EOSC financial contributions for 2020 amounts to EUR 206 million. The distribution of the contribution per country shows the range of investment from zero million euros to 46.5 million euros (Table 3-5).

Table 3-5. Distribution of national contributions per groups and countries

Amounts	Number of countries
0 – 4.9 million EUR	19
5 – 9.9 million EUR	3
10 – 19.9 million EUR	4
> 20 million EUR	3

Considering the estimations of allocations to the EOSC Association members including the Mandated Organisations in 2020, investments amount to EUR 105.66 million i.e., 51% of the total EOSC financial contribution for 2020. Estimated allocations to the non-members in 2020 amount to EUR 62.31 million i.e., 30 % of the total EOSC financial contributions for 2020.

As a source for the estimate of financial contributions 65% of the countries (22 countries) used input and/or calculation from the ministry, 29% (10 countries) input from RFOs, 21% (7 countries) input from RPOs, and 15% (5 countries) used existing documents in the process (Figure 3.7). 17 countries had 1 input as a source for the estimate, 9 countries had 2 inputs, and 3 countries had 3 sources for the estimate.

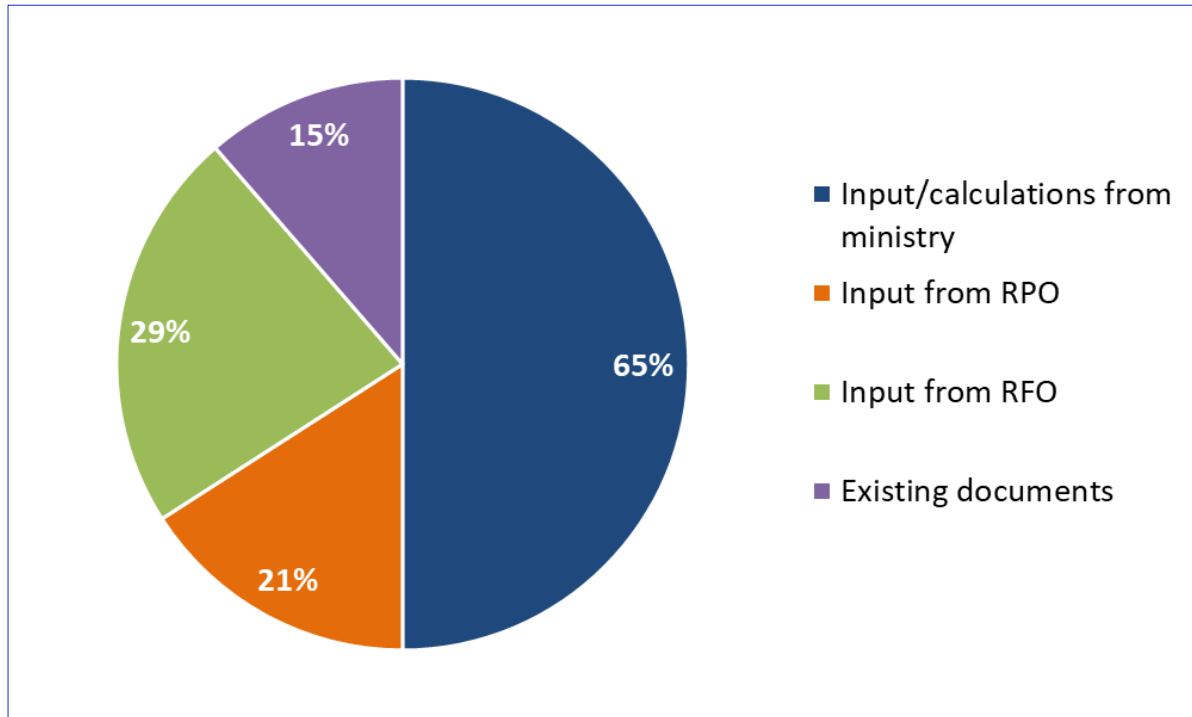


Figure 3.7. Distribution per source for the estimate of financial contribution (Source: Survey on National Contributions to EOSC 2021)

Regarding the levels of government contributions included in the estimates 74% of the countries (25 countries) indicated contributions at the national level, 41% (14 countries) direct governmental investment at the institutional level, 15% (5 countries) at other level, and 6% (2 countries) at the regional level (Figure 3.8). Furthermore 11 countries indicated that contributions were considered only at national level, 3 countries indicated only direct governmental investment at institutional level, 9 countries indicated national level and direct governmental investment at institutional level, 2 countries indicated national and other level, 1 country national, regional, and other level, 1 country national level, direct governmental investment at institutional level and other level, and 1 country stated contributions at all levels.

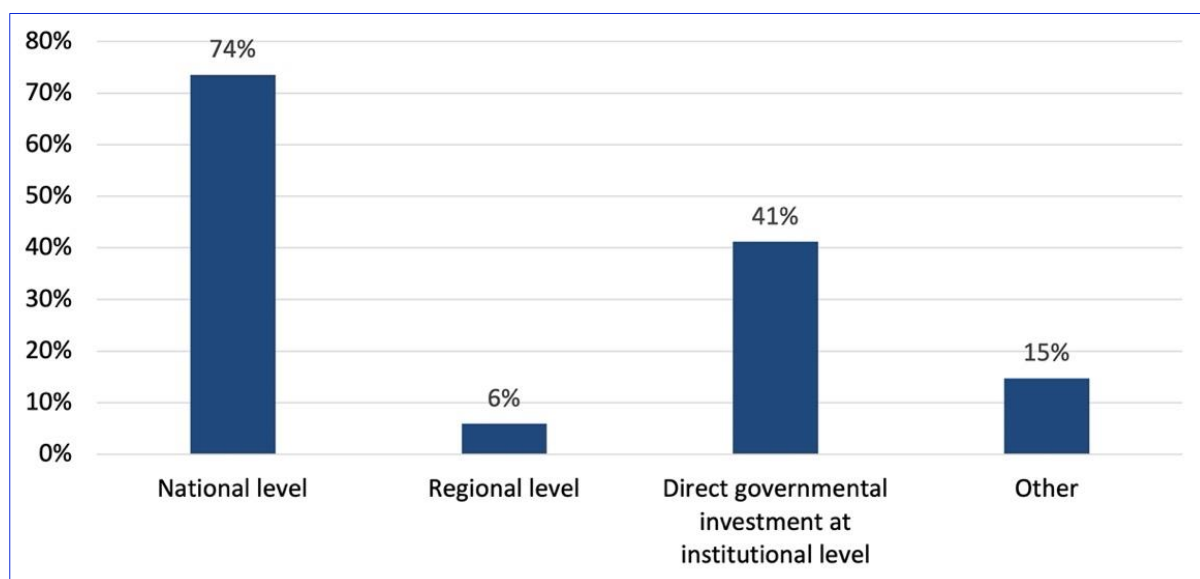


Figure 3.8. Levels of government contributions included in the estimates (Source: Survey on National Contributions to EOSC 2021)

To accomplish more granularity to overall funding data, countries were asked to provide more detailed information whether the EOSC-relevant activities, service-related activities and/or Infrastructure related activities were considered in their funding. Analysis of countries' responses per each activity is presented below²¹:

1. EOSC – relevant activities (Table 3-6, Figure 3.9)

Table 3-6. Distribution of selected responses related to activities connected to data considered in national contributions

Activity	Number of countries	Percentage of countries
FAIRisation of data	14	41%
Provision of making FAIR data searchable with the EOSC	9	26%
Open data from government and non-profit organizations (Public Sector Information Directive)	6	18%

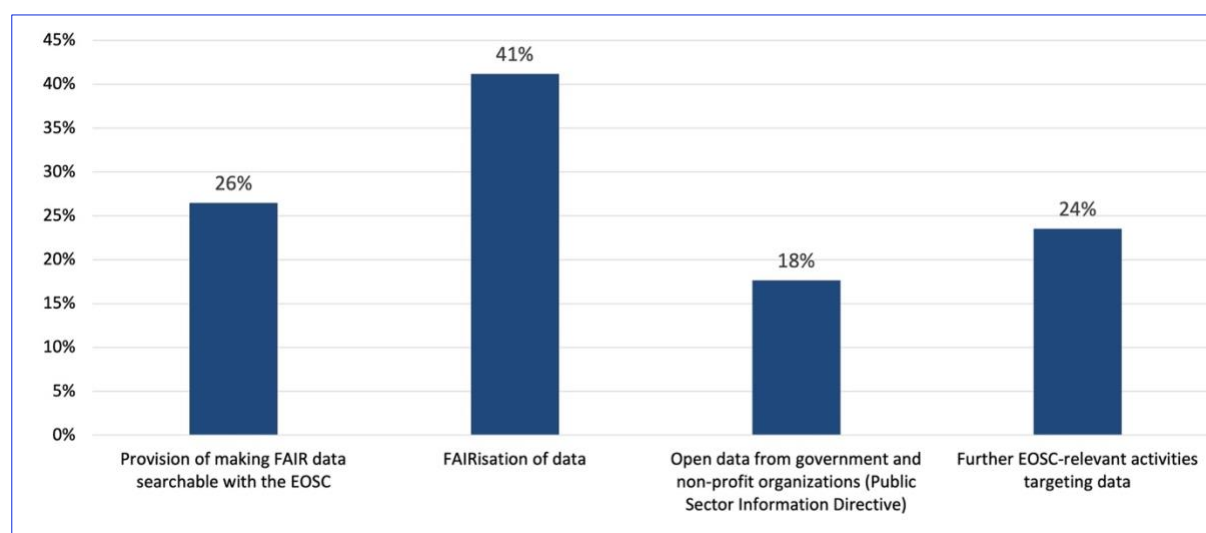


Figure 3.9. Distribution of selected responses related to activities connected to data considered in national contributions
(Source: Survey on National Contributions to EOSC 2021)

Service-related activities (Table 3-7,

2. Figure 3.10)

Table 3-7. Distribution of selected responses related to activities connected to services considered in national contributions

Activity	Number of countries	Percentage of countries
Services provided by computing- and data centres	16	47%
Services provided by national network (NREN)	14	41%
Further EOSC-relevant activities targeting services	8	24%
Support for the private sector to participate in EOSC-relevant activities	2	6%

²¹ All countries have been considered within the analysis. Numbers and percentages relate to the share of the countries that have provided response "yes" to any of the offered options. Financial estimates were not considered as provided sample was minor.

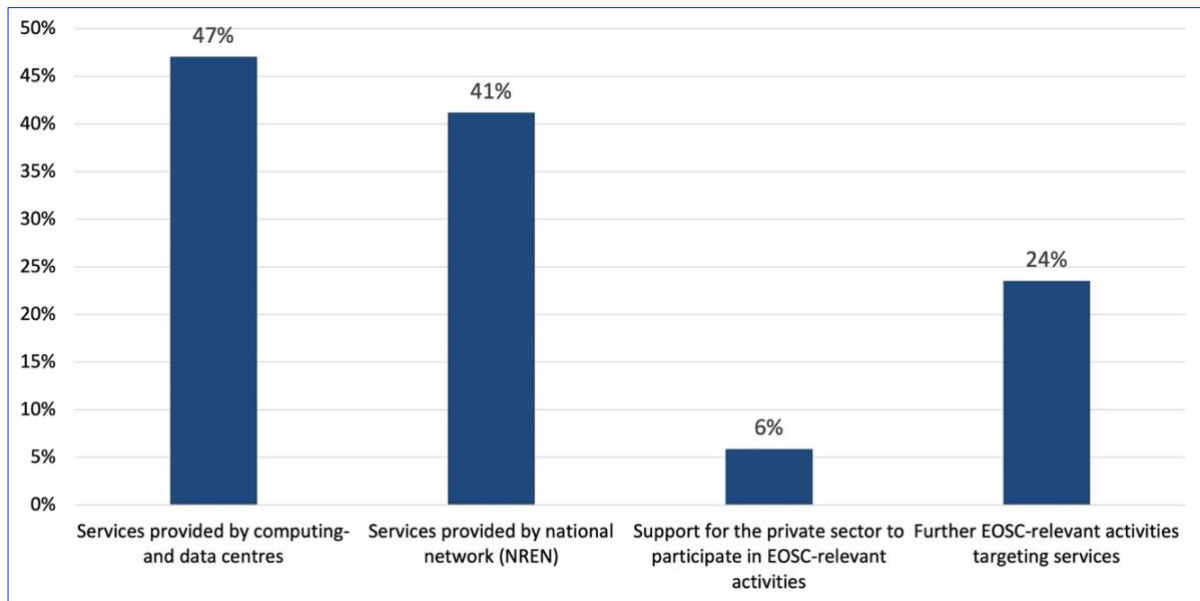


Figure 3.10. Distribution of selected responses related to activities connected to services considered in national contributions (Source: Survey on National Contributions to EOSC 2021)

3. Infrastructure related activities (Table 3-8, Figure 3.11)

Table 3-8. Distribution of selected responses related to activities connected to infrastructures considered in national contributions

Activity	Number of countries	Percentage
E-infrastructures like computing and data centres	18	53%
National Research infrastructures	13	38%
National contributions to international organisations contributing to the EOSC development, incl. European Research Infrastructures	13	38%
Further EOSC-relevant activities targeting infrastructures		24%

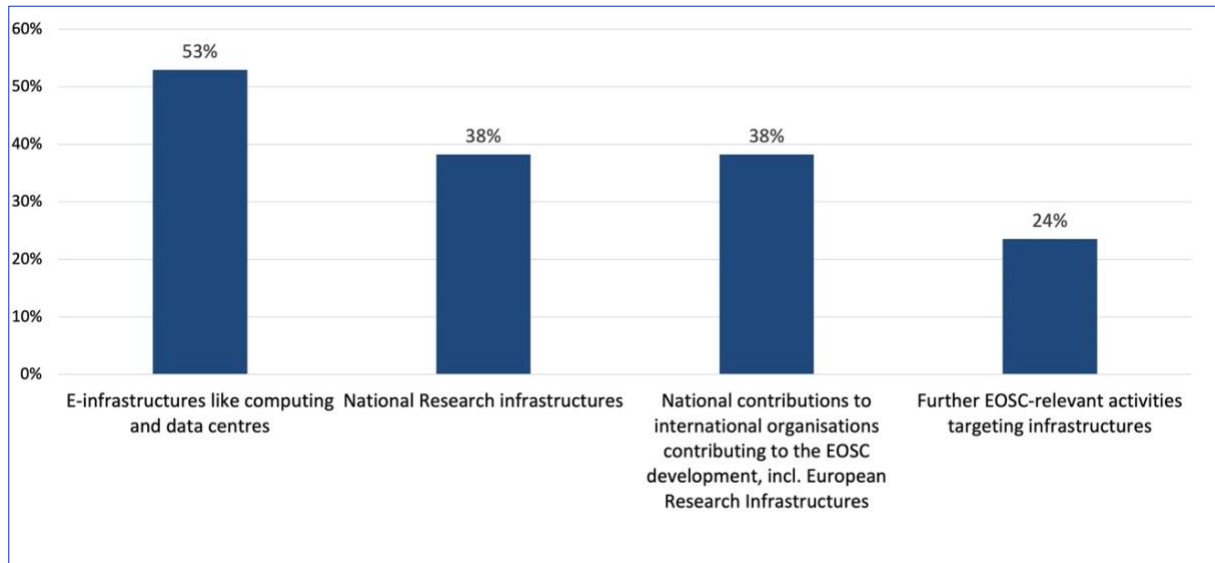


Figure 3.11. Distribution of selected responses related to activities connected to infrastructures considered in national contributions (Source: Survey on National Contributions to EOSC 2021)

Considering the responses for all available activities, the highest percentage relates to E-infrastructures like computing and data centres as activity that countries most considered within their funding (Figure 3.12).

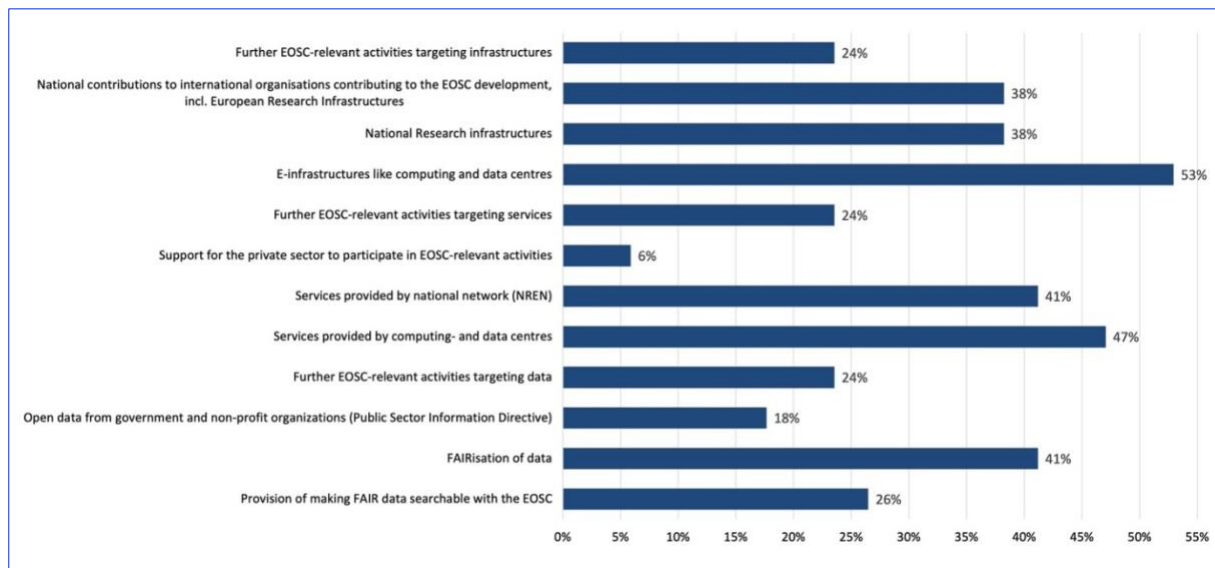


Figure 3.12. Distribution of selected responses related to all activities (data, services, and research infrastructures) considered in national contributions (Source: Survey on National Contributions to EOSC 2021)

2.3 EOSC Practices

This section provides detailed analysis of the survey answers related to Mandated Organisations, monitoring, and use-cases to capture progress in Open Science practices.

On the question relating to Mandated Organisations, 62% of countries (21 countries) answered that they have appointed a Mandated Organisation, 13 countries have stated not having a Mandated Organisation appointed out of which 7 countries (15%) have an appointment in planning (Figure 3.13).

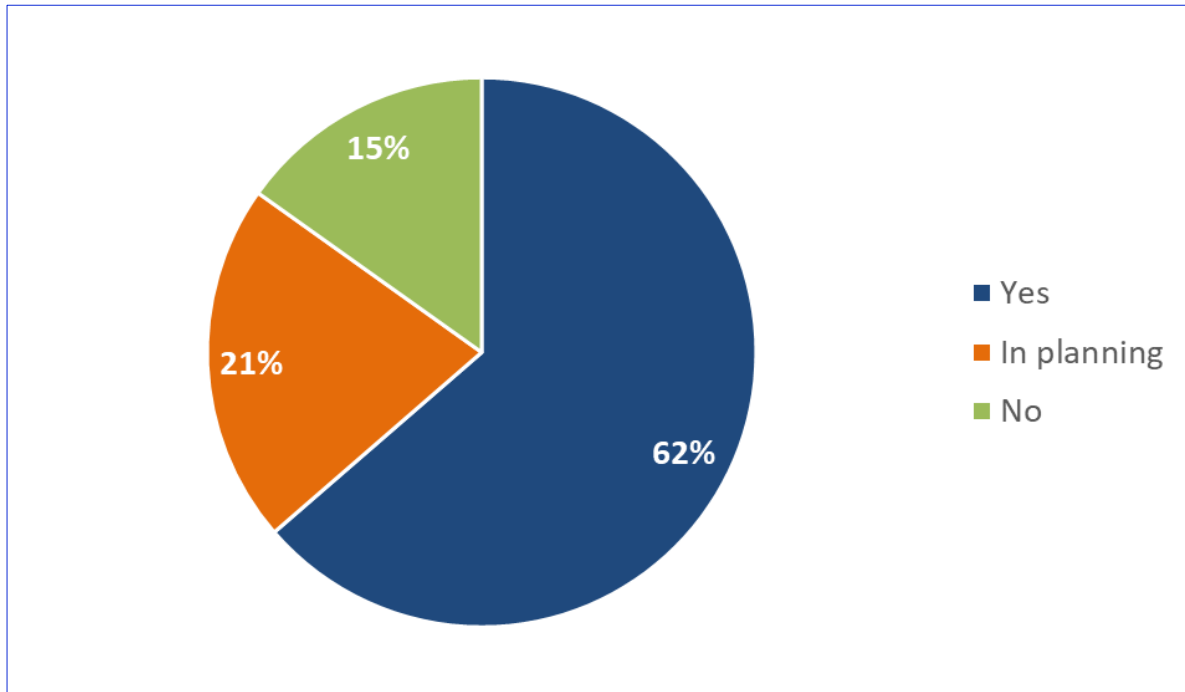


Figure 3.13. Appointment of Mandated Organization within the countries (Source: Survey on National Contributions to EOSC 2021)

With regards to monitoring, 56% of the members (19 countries) responded they have a Monitoring or Mapping exercise in planning. Of the countries that have monitoring in place the highest percentage (24%, 8 countries) have monitoring in place for Open Access to data, data management and/or FAIR and the same percentage (24%) of countries have other monitoring in place. The lowest percentage (6%) of countries (2 countries) relates to monitoring on open access to software, incentives and rewards, and not having a monitoring (Figure 3.14). If comparison was made between percentages of policies in place that address the specific Open Science dimensions (Figure 3.2) and percentages related to the monitoring of equal Open Science dimensions, high differences are present regarding the percentages of countries selecting specific response (Figure 3.15). Several countries responded they have other monitoring in place, and their input is summarised below (Table 3-9).

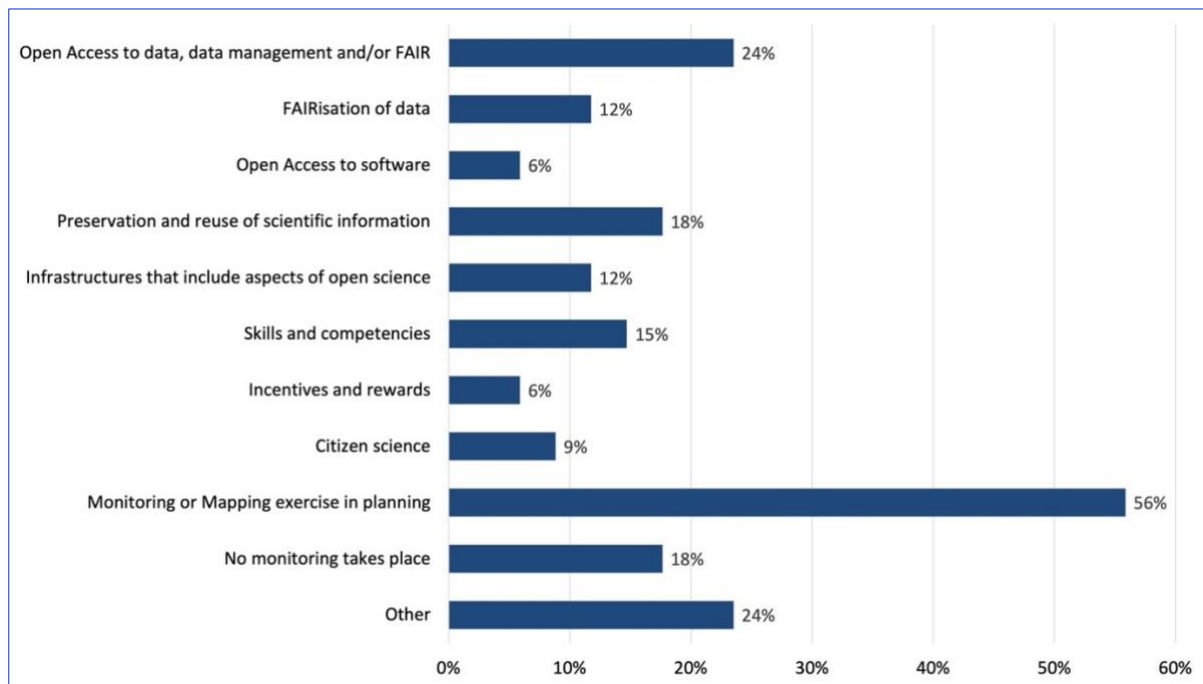


Figure 3.14. Monitoring per Open Science dimensions (Source: Survey on National Contributions to EOSC 2021)

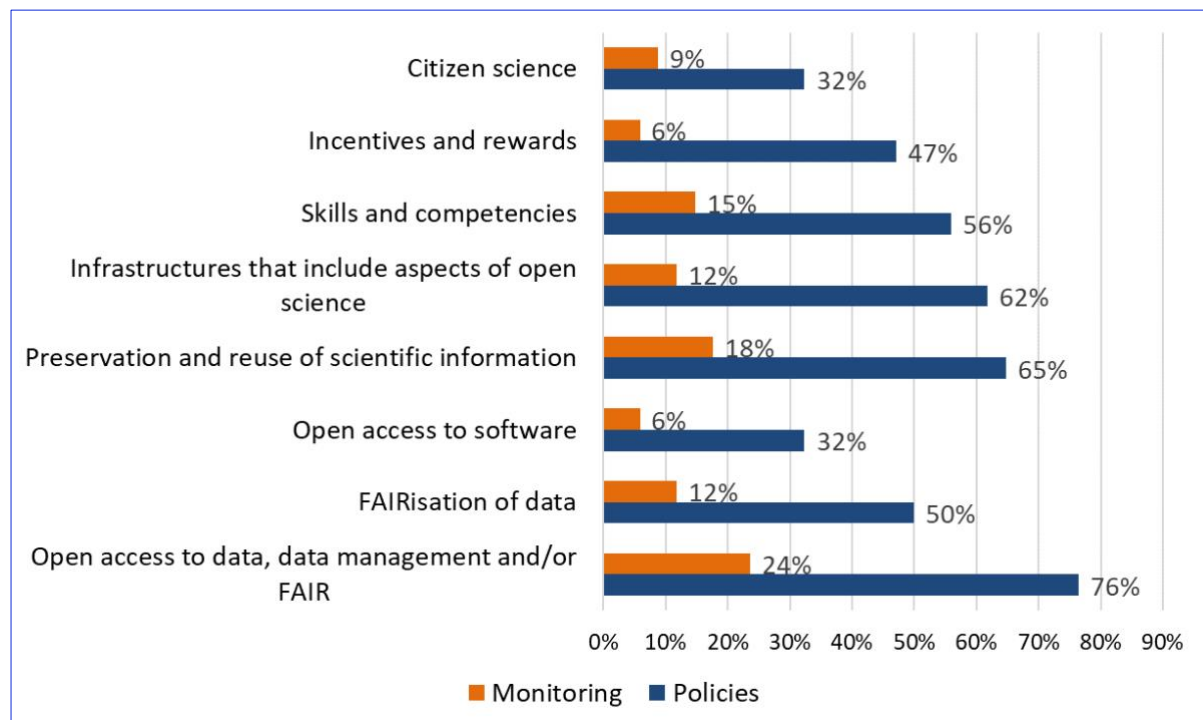


Figure 3.15. Monitoring vs policies per Open Science dimensions (Source: Survey on National Contributions to EOSC 2021)

Table 3-9. Description of other monitoring per country

Country	Descriptions
France	Monitor accessibility for disabled people to French scientific publication platforms
Greece	Open Access to publications
Netherlands	FAIR-based data access portals are being designed in several initiatives as an instrument to support future reuse of data; these will also be used as instruments for future monitoring or mapping exercises
Serbia	(1) Monitoring of repository openness (on the data level - Open Access to data) (2) Monitoring of the openness of research output (publications) at institutional level (3) Monitoring of the openness of research output (all kind) on the national level is in progress. Expected to be finished end of 2022
Sweden	Open access to scientific publications

Regarding the monitoring reporting, 18% of the countries (6 countries) indicated having periodic reports, while 15% of countries (5 countries) indicated mapping exercises and/or dashboards (Figure 3.16). In addition, several countries provided information and links to their monitoring exercises or national dashboards as summarised below (

Table 3-10).

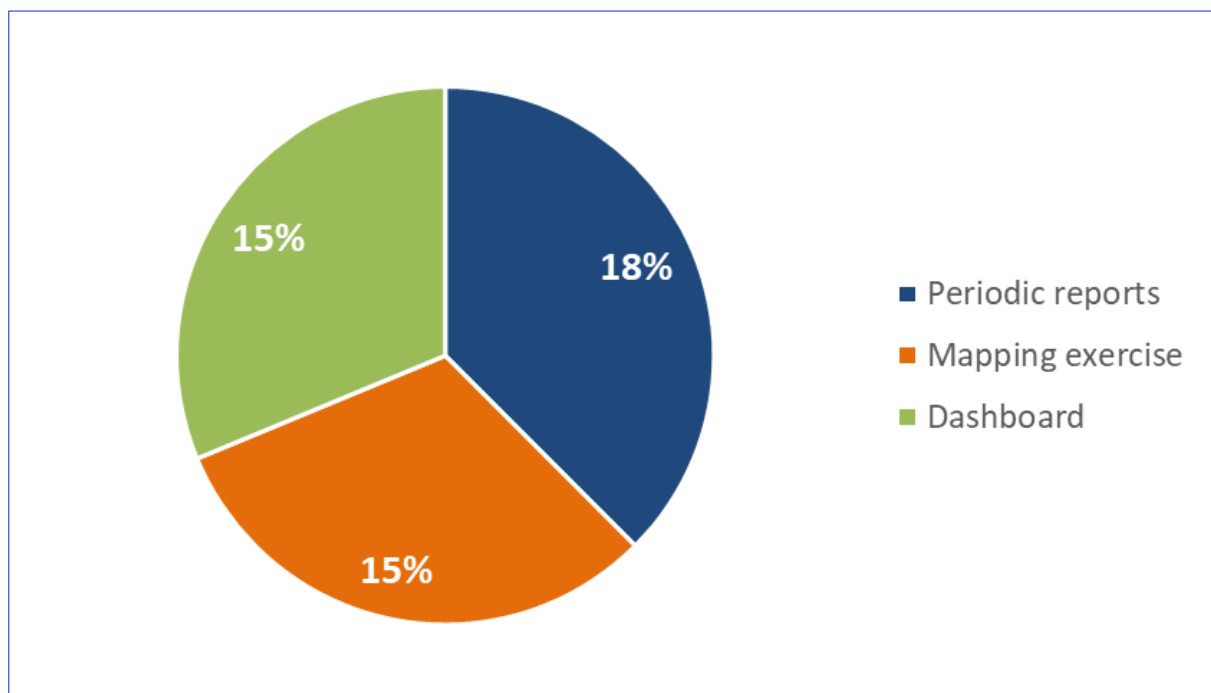


Figure 3.16. Monitoring reporting (Source: Survey on National Contributions to EOSC 2021)

Table 3-10. Description / links to monitoring exercises or national dashboards

Country	Descriptions
Bulgaria	https://www.mon.bg/bg/100193
Cyprus	A mapping exercise is currently running in the context of the Open Science Initiative implemented in Cyprus by the Deputy Ministry of Research, Innovation and Digital Policy: https://forms.office.com/pages/responsepage.aspx?id=tObRjayNjkCNjWdT6YAFMJgmr_MMdIJBg8YPngb42zdUNUo3NTIMNj11SkVGTIVMM1hGSow4S UxPQS4u
Faroe Islands	www.pure.fo
France	https://barometredelascienceouverte.esr.gouv.fr/
Greece	https://beta.monitor.openaire.eu/dashboard/gsri
Sweden	<ol style="list-style-type: none"> 1. Inventory on research data management (Association of Swedish Higher Education Institutions): https://suhf.se/app/uploads/2021/11/SUHF-Hantering-av-forskningsdata-status-Sammanstallning-enkat-varen-2021-211108.pdf 2. Statistics on open access to publications (National Library of Sweden): https://www.kb.se/samverkan-och-utveckling/oppen-tillgang-och-bibsamkonsortiet/oppen-tillgang.html 3. Mapping and analysis on the national work on open access to publications (now a yearly report, National Library of Sweden): https://www.kb.se/samverkan-och-utveckling/oppen-tillgang-och-bibsamkonsortiet/oppen-tillgang.html 4. Mapping and analysis on the national work on open access to research data (now yearly report from SRC): https://www.vr.se/analys/rapporter/vara-rapporter/2022-03-10-vetenskapsradets-samordningsuppdrag-om-oppen-tillgang-till-forskningsdata-2022.html
Turkey	https://aperta.ulakbim.gov.tr/search?page=1&size=20&q=

Taking into consideration the use-cases and best practices, 56% of the countries (19 countries) responded of having use-cases in preservation and reuse of scientific information Open Science dimension, while 50% of countries (17 countries) have use-cases in following Open Science dimensions: open access to data, research data management and FAIR, infrastructures that include aspects of Open Science, skills and competences. The lowest percentage of 21% of the countries (7 countries) relates to best practices in incentives and rewards (Figure 3.17). Figure 3.18 shows the comparison of Use-cases and policies according to the Open Science dimensions.

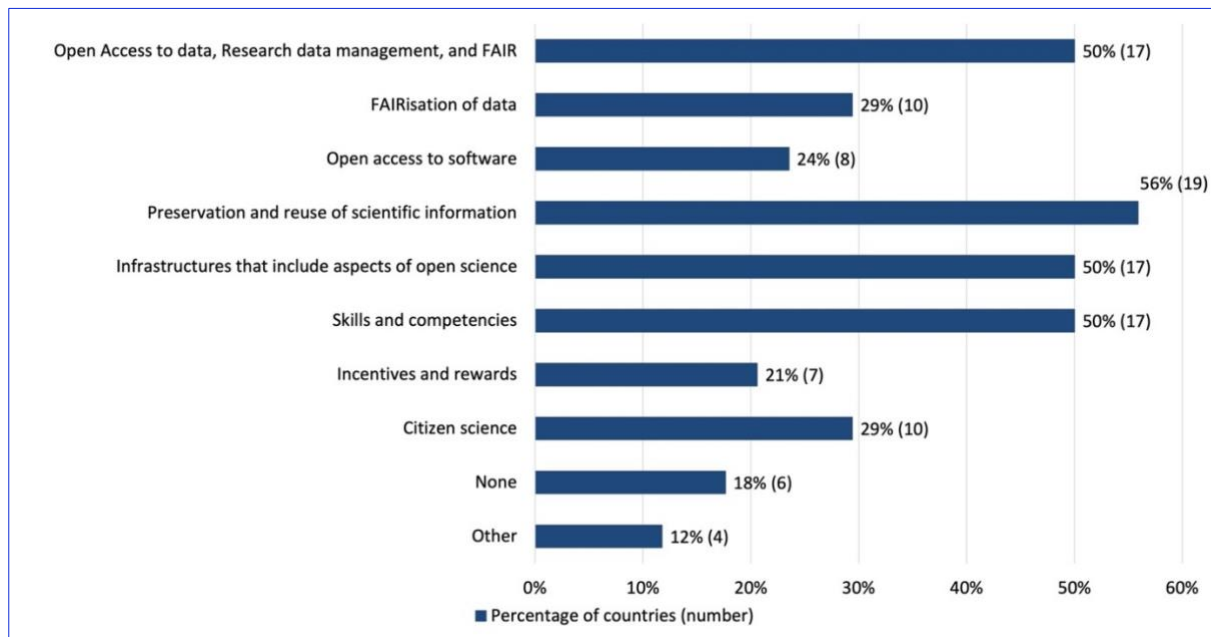


Figure 3.17. Use-cases / best practices per Open Science dimensions (Source: Survey on National Contributions to EOSC 2021)

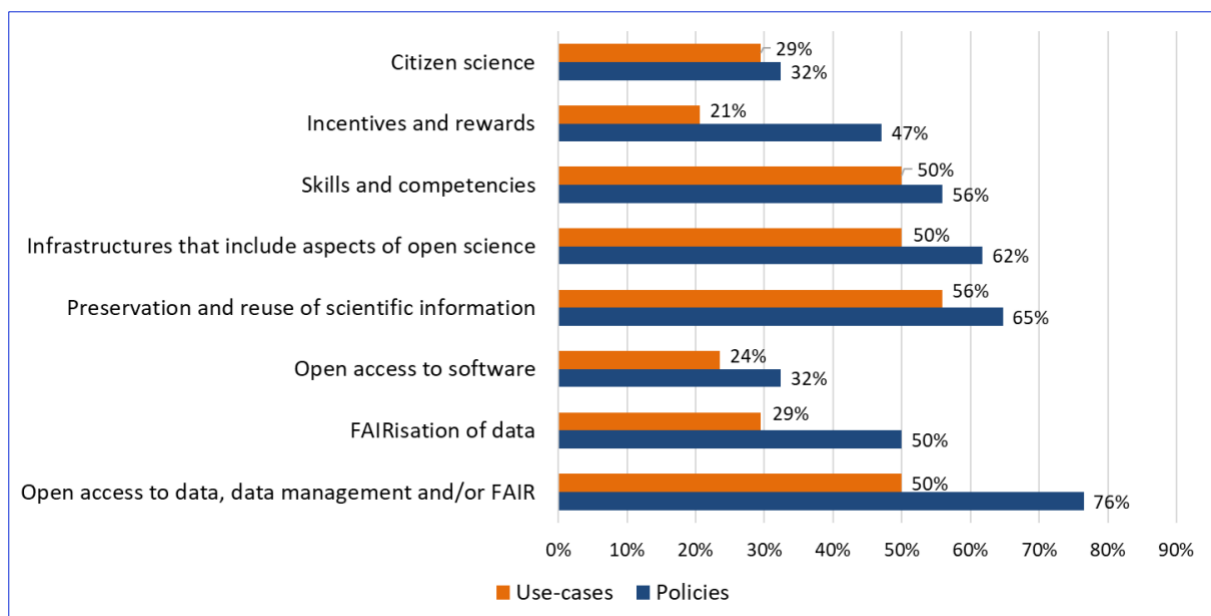


Figure 3.18. Use-cases/best practices vs policies per Open Science dimensions (Source: Survey on National Contributions to EOSC 2021)

To provide view on data comparison of responses on Survey questions related to policies, funding considerations, monitoring level and finally use cases / best practices, two examples are selected within the Open Science dimensions: a) FAIRisation of data, and b) Infrastructures that include aspects of Open Science. Comparison was made between 1) percentage of countries that stated having specific Open Science dimension addressed within their policies from total of respondents, 2) percentage of countries that stated to have considered specific Open Science dimension within their national financial contribution, 3) percentage of countries that indicated having monitoring related to specific Open Science dimension from total of respondents, and 4) percentage of countries that have indicated having a use-cases/best practices related to specific Open Science dimension (Figure 3.19 and Figure 3.20).

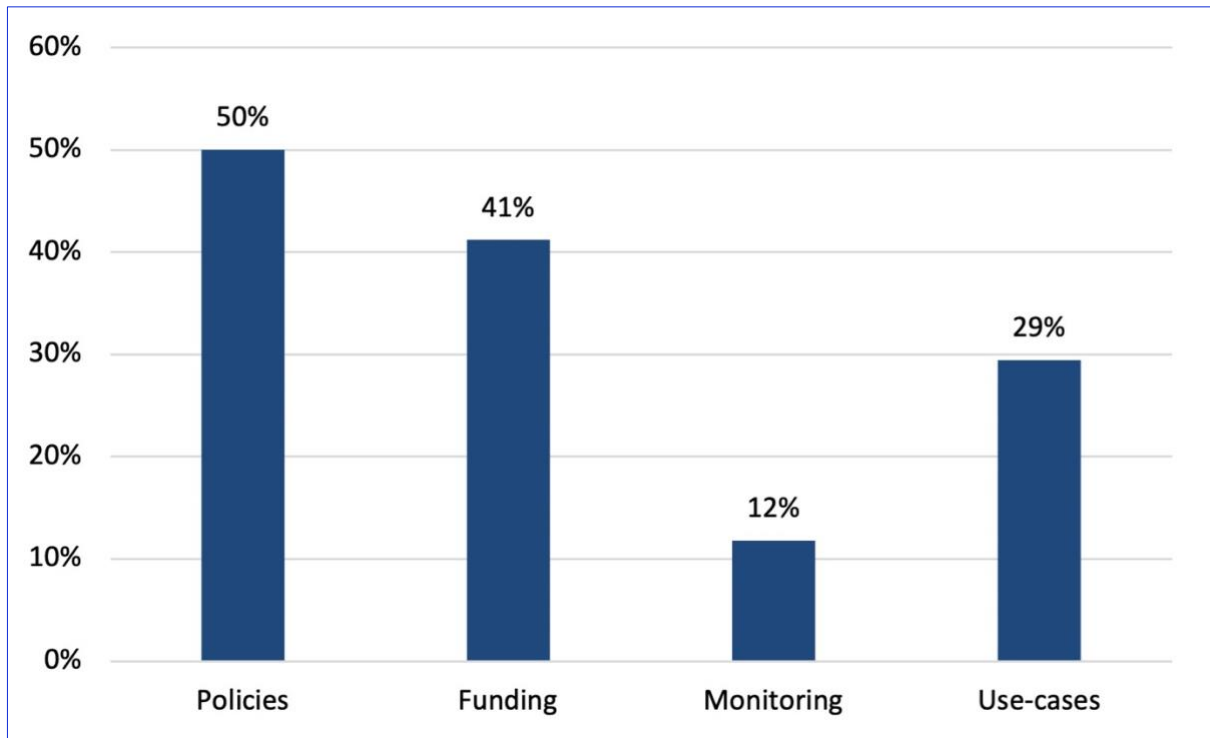


Figure 3.19. Policies vs funding vs monitoring vs use-cases/best practices for Open Science dimension: FAIRsation of data (Source: Survey on National Contributions to EOSC 2021)

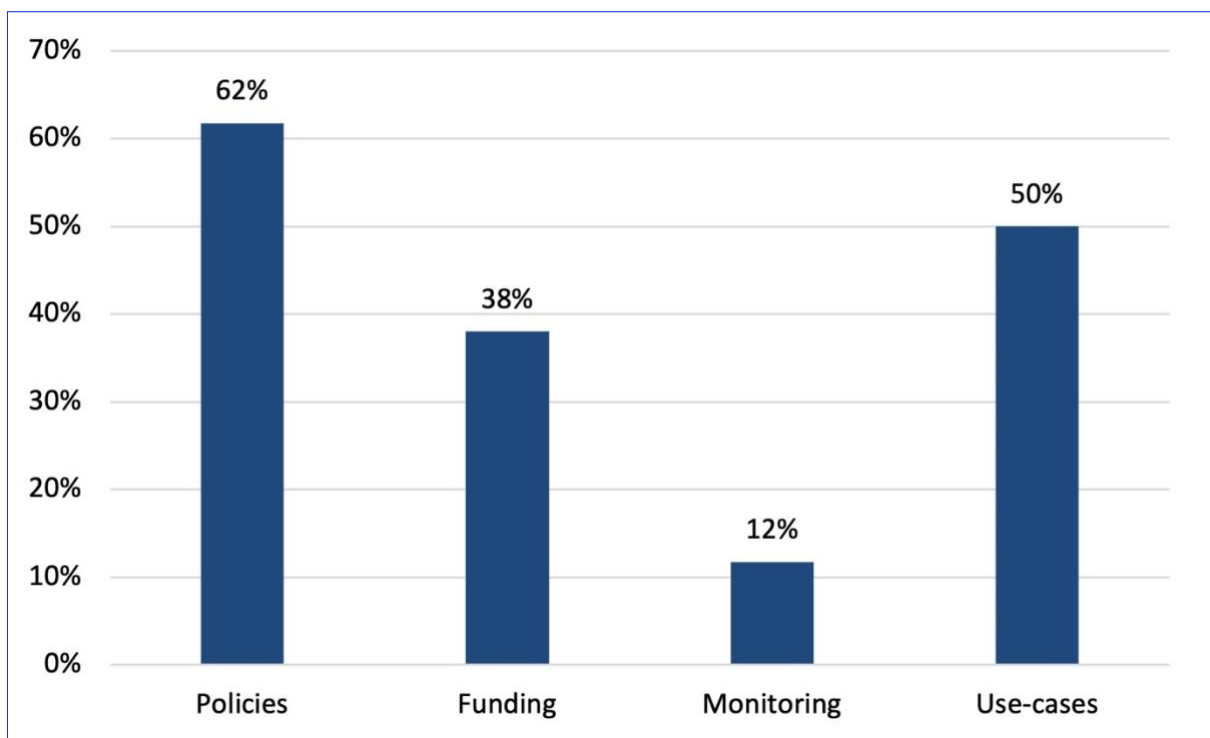


Figure 3.20. Policies vs funding vs monitoring vs use-cases/best practices for Open Science dimension: infrastructures (International organization including RIs) that include aspects of Open Science (Source: Survey on National Contributions to EOSC 2021)

As a final question in the EOSC Steering Board Survey, countries were asked to list their use-cases/best practices. These will be available in a separate document via the Use-cases catalogue and fact sheets.

4 Actionable recommendations

Based on the above analysis of the countries' responses to the Survey, the following can be considered by the countries and the EOSC Steering Board expert group in the continued work on aligning national and regional policies.

- Countries should update or develop and deploy policies to address open access to software as one of the increasingly important dimensions of Open science. Use-cases on how to make accessible source code developed by public funds would be favourable. It would enhance reuse of resources, tackle fragmentation of the European Research Area and potentially reduce costs and investments.
- The countries mainly indicated "Concrete objectives" as a primary measure for ensuring policy implementation. At the same time, "indicators to monitor progress" were not common among countries. Countries should consider defining indicators for their policy objectives to ensure the effectiveness and efficacy of implementation measures.
- The monitoring of financial contributions will benefit from a higher level of detail. This would ensure data are easier to measure and comprehend and thus lead to better understanding of the EOSC relevant investments. Furthermore, introducing defined indicators would ensure that data are specific and comparable.
- National monitoring should be prioritised by the countries. Furthermore, the countries should engage open discussions, sharing and exchange of experiences on monitoring among the EOSC-SB members.
- The survey shows that the countries' have reached different stages in their progress towards Open Science. The current data analysis shows that further knowledge exchange between the countries can leverage the efforts to develop and implement policies.
- Findings in this report should be further interpreted and contextualised by the EOSC Steering Board.

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