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ERA Country Report 2024
Montenegro

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ERA Country Report 2024: Montenegro

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ERA Country Report 2024

Montenegro

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Key takeaways

- While Montenegro has not committed to any ERA Action, the recently published Strategy for Scientific Research Activity presents a great ambition to integrate ERA Priorities into national policies. Almost all objectives of this strategy have explicit links to ERA Actions.

- Guided by its recently adopted Research Infrastructure Roadmap, Montenegro is investing in its Research Infrastructures (RIs) – which are expanding and increasing their activities. Open Access to RI is also an important theme in this roadmap. In June 2024, the Science and Technology Park Montenegro officially opened.

- Montenegro's involvement in Horizon Europe was relatively low in the last 18 months. The Ministry of Education, Science and Innovation is actively counterbalancing this by organising workshops and sharing information to increase capacity and awareness.

- While Montenegro's ambitions regarding alignment with ERA Priorities are clear, ERA Dashboard Indicators give a mixed view on their progress. Looking at open science and open access for instance (key priorities in its recently adopted national strategy), investments in Open Science remain low and the share of publications in open access has decreased. The number of open-access research datasets has slightly improved.

1. National context

Montenegro is an *Emerging Innovator* according to the European Innovation Scoreboard 2024, performing at 47.5 percent of the EU27 average. The country is among the associated countries with the smallest population (0.6 million). It has a GDP of EUR 7,453.33 million. Montenegro has 743 researchers (FTE) per million inhabitants, considerably less than the European average. Its innovation performance is improving at a rate below that of the EU27 and just below the Emerging Innovators' average (48 percent). SMEs of Montenegro are noted in the Scoreboard as very strong in introducing product innovations and business process innovations, yet relatively weak in direct and indirect government support of business R&D, design applications and new doctorate graduates (see Table 1).

Table 1 Structural Key Indicators

Indicator	EU27	Montenegro		
	2023	2023	Average 2018-2020	Average 2021-2023
GDP in current prices, per capita	35 790.00	9 600.00	7 453.33	8 113.33
Gross Domestic Expenditure on R&D (GERD) as a share of GDP	2.27	0.36	0.41	/
Size of the population (million)	448.80	0.62	0.62	0.62
Researchers (in FTE) per million inhabitants	4 681.34	743.38	748.22	/

Source: Annex 1

The main responsible institution for the development and implementation of national R&I policies is the Ministry of Education, Science and Innovation (MESI). This ministry recently (2024) adopted the Strategy for Scientific Research Activity in Montenegro[1], which has strong and explicit links to ERA objectives (see upcoming chapters for elaboration). In the same year, MESI formulated and published the Research Infrastructure Roadmap.[2] These documents, together with Montenegro's Smart Specialisation Strategy 2019-2024[3], comprise the key strategies of the national R&I system.

2. Status of the Implementation of the ERA Policy Agenda

Chapter 2 briefly summarises **new developments in Montenegro since the publication of the ERA Country Report 2023**. Montenegro is an Associated Country and has not indicated commitments to actions identified in the ERA Policy Agenda 2022-2024. Despite this, this chapter briefly presents developments in Montenegro towards the overarching ERA Priorities. The findings are based on qualitative desk research and interviews.

[1] Ministry of Education, Science and Innovation, Strategy for Scientific Research Activity in Montenegro 2024-2028 (2024).
[2] Ministry of Education, Science and Innovation, Montenegro Research Infrastructure Roadmap 2024-2028 (2024).
[3] https://fondzainovacije.me/wp-content/uploads/2022/03/StrategijapametnespecijalizacijeCrneGore2019-2024.pdf, accessed 16-01-2025.

ERA Priority 1: Deepening a truly functioning internal market for knowledge

In relation to **ERA Action 1:** *Enable Open Science, including through the European Open Science Cloud (EOSC),* Montenegro remains an active member of the EOSC Steering Board.[4] The ministry also provides financial support (through calls) to researchers for publishing papers in open access. Furthermore, it organises workshops for its employees on open access to Research Infrastructures (RI).

The Strategy for Scientific Research Activity in Montenegro[5], which was adopted in 2024 and will run until 2028, dedicates one operational objective (1.4) to the "Promotion of the implementation of the Open Science concept", referring to "open and free access to scientific publications, research data, meta data, open educational resources, software, source code and hardware." Two main activities are presented under this objective. The first one concerns supporting open access by establishing research activity on open science principles, which would lead to more open access journals (there were six in 2023) and more supported scientific papers in the open access journals (there were 18 in 2023). MESI has reserved EUR 160 000 for the years 2023-2025 for this objective. The second activity concerns an increased awareness of the importance of Open Access, operationalised through five workshops in 2024. Both actions are led by MESI, along with four universities.

Concerning **ERA Action 3:** *Reform the assessment system for research, researchers and institutions,* a law has been proposed in 2024 to shift the system of licensing scientific institutions based on better monitoring and KPIs. MESI has not approved or adopted this initiative yet.

The Euraxess Montenegro platform is regularly communicating scientific traineeships, staff exchanges, workshops and webinars, thus contributing to **ERA Action 4:** *Promote attractive research career, talent circulation and mobility.* In response to the ongoing *brain drain*, the *Scholarship Programme for Excellence in Doctoral Research in Montenegro* has been established in September 2024 to develop an attractive scientific environment for young researchers, increase PhD mobility and stimulate exchanges with EU Member States. The scholarship is awarded for three years. For 2024, MESI has reserved funds amounting to EUR 0.5 million (EUR 1.5 million for the period 2024-2027).[6] This programme can be regarded as the implementation of operative objective 2.1 (support to hiring young researchers) of the aforementioned Strategy for Scientific Research Activity in Montenegro.[7]

MESI stated in the interview that no substantial interventions were necessary for **ERA Action 5:** *Promote Gender Equality and foster inclusiveness***,** as more women than men are active in the science sector in Montenegro. Nevertheless, within the ministry, they are actively promoting new measures to make sure women have a big enough voice in science policy. Also, special attention was being given to gender-sensitive issues while drafting the Strategy for Scientific Research Activity in Montenegro. One of the activities in this strategy is the regular

[4] https://ec.europa.eu/transparency/expert-groups-register/screen/expert-groups/consult?lang=en&groupID=3756, accessed 6-12-2024.
[5] Ministry of Education, Science and Innovation, Strategy for Scientific Research Activity in Montenegro 2024-2028 (2024).
[6] Ministry of Education, Science and Innovation, Scholarship Programme for Excellence in Doctoral Research in Montenegro (2024).
[7] Ministry of Education, Science and Innovation, Strategy for Scientific Research Activity in Montenegro 2024-2028 (2024).

monitoring of gender-sensitive statistics. The first report on this monitoring will be published in 2025.[8]

In line with **ERA Action 8:** *Strengthen research infrastructures,* Montenegro's main research infrastructure, Innovation and Entrepreneurship Centre (IEC) Technopolis, is expanding and launched in the past period a pre-acceleration programme. In addition, the Science and Technology Park Montenegro opened in June 2024 (although officially already in 2019) and remains active in initiating projects and services.[9]

In addition, in October 2024, Montenegro has adopted its Research Infrastructure Roadmap 2024-2028.[10] This strategy is closely aligned with ERA, as its primary aim is facilitating Montenegro's integration into ERA through "engagement with international bodies and pan-European research infrastructure networks". Currently, the government of Montenegro realises that its RI are not fully adequate (considering for instance the lack of modern equipment) and that it does not have updated data on RI. Montenegro is therefore aligning its selection and monitoring procedures of RI with the strategic directions of ERA. It also has reserved EUR 270 000 in the period 2024-2025 for the purpose of purchasing equipment and tools for RI. Underlining these ambitions, one of the operational objectives (i.e. 1.3 of the Strategy for Scientific Research Activity) is dedicated to 'Strengthening the Research Infrastructure'. It is also collaborating with other Western Balkan countries to exchange expertise and use RI efficiently. Lastly, MESI has organised a training on Open Access to RI in 2024, funded by the European Commission (DG Joint Research Center) and in partnership with Montenegrin universities.[11]

Recent developments in international partnerships include the agreements (end of 2024) with Bahrein and Italy on large R&D projects. In addition, two scholarship programmes with Albania were established in 2024.[12] These all exemplify Montenegro's alignment with **ERA Action 9**: *Promote International Cooperation.*

ERA Priority 2: Taking up together the green transition and digital transformation and other challenges with impact on society and increasing society's participation in the ERA

A few developments have taken place related to actions **ERA Action 11**: *An ERA for green transformation* and **ERA Action 12:** *Accelerate the green/digital transition of Europe's key industrial ecosystems*. For instance, although its results do not (yet) show on the European Innovation Scoreboard (see Chapter 3), the Program for Encouraging Innovations in Energy Efficiency in Industry was launched in Montenegro in 2023 (and the second edition is coming up). The EC contributed EUR 1.5 million in 2024 to support the programme (topping up the EUR 2.2 million from the national budget).[13]

[8] Ministry of Education, Science and Innovation, Strategy for Scientific Research Activity in Montenegro 2024-2028 (2024).
[9] https://ntpark.me/en, accessed 23-12-2024.
[10] Ministry of Education, Science and Innovation, Montenegro Research Infrastructure Roadmap 2024-2028 (2024).
[11] Ministry of Education, Science and Innovation, Strategy for Scientific Research Activity in Montenegro 2024-2028 (2024).
[12] Information provided through interviews with MESI representatives.
[13] https://fondzainovacije.me/en/programi/program-for-encouraging-innovations-in-the-function-of-energy-efficiency-in-industry/, accessed 16-01-2025.

Based on information provided through interviews of the ministry, 90 percent of innovation is happening in ICT. A lot of this is related to education. For instance, EUR 6 million was allocated to digital equipment for primary education. Next to that, according to the interviewees, the digital transformation is proceeding rapidly in the agriculture and tourism sector.

Lastly, MESI and the Ministry of Public Administration have supported the establishment of a European Digital Innovation Hub (EDIH) in Montenegro under the Digital Europe Programme (DEP). The government has dedicated EUR 450 000 to the launch of this hub, which is topped up by EUR 650 000 of European funds.[14]

Aligning with **ERA Action 13:** *Empower Higher Education Institutions,* the Internationalization Strategy of the University of Montenegro (2021–2026)[15] aims to promote the recognition of Montenegro's R&I landscape. It has strengthened international partnerships and visibility of the university, improved its position on international rankings, increased mobility of staff and students, sped up digitalisation processes and helped establish memberships in the Ulysseus alliance.[16] Challenges regarding the implementation of the strategy include administrative procedures, language barriers and limited capacities of staff.[17]

Among the efforts toward **ERA Action 14:** *Bring Science closer to citizens,* MESI has organised in September 2023 and 2024 Science & Innovation Days, which are directed towards citizens. These events present trends in science and facilitate trainings. A budget of EUR 100,000 was assigned to the event in 2024. The Ministry also organises Scientific Achievement Awards, with the aim of increasing recognition and visibility of research and innovation work towards the public. Three awards are given each year in the period 2023-2025.[18]

ERA Priority 3: Enhancing access to research and innovation excellence across the Union and enhancing interconnections between innovation ecosystems across the Union

Regarding **ERA Action 16:** *Improve EU-wide access to excellence*, Montenegro has been active in stimulating access to the Horizon Europe (HE) Programme. It has joined the Sustainable Blue Economy Partnership in late 2024, as a result of the implementation of Montenegro's Smart Specialisation Strategy 2019-2024.[19] In addition, a portal has recently been launched within the MESI website, dedicated to publishing all information and updates related to HE.

Throughout 2024, several calls have been published to increase participation in HE, including the "Call for Travel Grants" to support networking and project application submission under HE[20], the "Call for Preliminary Review of Project Applications under the EU Framework

[14] Ministry of Education, Science and Innovation, Strategy for Scientific Research Activity in Montenegro 2024-2028 (2024).
[15] https://www.ucg.ac.me/skladiste/blog_19379/objava_128673/fajlovi/Internationalisation%20Strategy%20of%20UoM%202021-2026_1_.pdf, accessed 16-01-2025.
[16] https://ulysseus.eu/welcome-guide/montenegro/, accessed 16-01-2025.
[17] Information provided through email correspondence with representatives of the University of Montenegro.
[18] Ministry of Education, Science and Innovation, Strategy for Scientific Research Activity in Montenegro 2024-2028 (2024).
[19] https://fondzainovacije.me/wp-content/uploads/2022/03/StrategijapametnespecijalizacijeCrneGore2019-2024.pdf, accessed 16-01-2025.
[20] https://www.gov.me/clanak/poziv-za-dodjelu-grantova-za-putovanja-radi-umrezavanja-i-prijave-projekta-horizont-evropa, accessed 23-01-2025.

Program for Research and Innovation Horizon Europe"[21], a call for a study visit to Bremen, Germany[22], and a call for a study visit to Barcelona, Spain.[23]

In June 2024, the Ministry organised a free four-day training session for preparing and implementing HE projects. Due to significant interest in these trainings, the Ministry organised three additional free one-day workshops on the same topic in November 2024. Participants were given detailed guidance on preparing all sections of project proposals, including the financial components and funding options. The Ministry plans to continue these activities in 2025.[24]

Additionally, the Ministry rewards Montenegrin institutions that achieve full membership ("beneficiary status") in projects under the HE, with implementation agreements coming into effect in 2024. Nevertheless, there was a low number of HE project applications/participations in 2024. The Ministry believes this is caused by a lack of capacity.

The data confirm this statement. So far, Montenegro received EUR 4.45 million funds from the HE Programme. With that, it is ranked merely 16th of the 19 associated countries (it is listed on the 11th position based on contributions per inhabitant). The country has participated in 34 projects so far. It's main collaborators within HE are Spain, Italy, France and Germany (respectively 55, 47, 45 and 44 collaboration links). In total, collaborations with 50 different countries were established.[25]

Aside from HE, good connections have been established though Interreg projects[26], while the European Institute of Innovation and Technology (EIT) has launched a new hub in Montenegro's capital Podgorica in May 2024.[27]

Lastly, Montenegro's commitment to gaining access to EU excellence is emphasised by its many listed activities under Operative Objective 3.2 'Increasing participation in the European programmes for science, research and technology'. This includes the promotion of participation in HE (through public calls, projects and informative events: budget of EUR 3.6 million reserved) and in COST actions (through informative events: budget of EUR 20,799 reserved).[28]

ERA Priority 4: Advancing concerted research and innovation investments and reforms

Montenegro's Reform Agenda has been approved by the European Commission in October 2024.[29] The agenda is not primarily focused on R&I, but one of its subareas does propose a

[21] https://www.gov.me/clanak/poziv-za-prethodnu-provjeru-projektnih-prijava-u-okviru-eu-okvirnog-programa-za-istrazivanja-i-inovacije-horizont-evropa, accessed 23-01-2025.
[22] https://www.gov.me/clanak/poziv-za-studijsku-posjetu-bremenu-njemacka-u-okviru-ncp-wideranet-projekta, accessed 23-01-2025.
[23] https://www.gov.me/clanak/poziv-za-studijsku-posjetu-institucijama-u-barseloni-u-okviru-ncp-wideranet-projekta, accessed 23-01-2025.
[24] Information provided through email communication and interviews with representatives of MESI.
[25] Horizon Europe Dashboard, accessed 16-01-2025.
[26] https://www.interregeurope.eu/montenegro, accessed 16-01-2025.
[27] https://eit-ris.eu/the-european-institute-of-innovation-and-technology-launches-new-hub-in-montenegro/, accessed 16-01-2025.
[28] Ministry of Education, Science and Innovation, Strategy for Scientific Research Activity in Montenegro 2024-2028 (2024).
[29] https://www.eeas.europa.eu/delegations/montenegro/commission-approves-reform-agendas-montenegro-albania-kosovo-north-macedonia-and-serbia-paving-way_en, accessed 26-05-2025.

reform measure to “strengthen the mechanisms for research and innovation development support in Montenegro and to reinforce all the actors of the national ecosystem – researchers, innovators, scientific and research institutions, companies, clusters and non-governmental organisations.”[30] In addition, an upgraded legal framework for scientific and research activity is being drafted by MESI. These new laws will, according to the ministry, be in line with ERA policies.[31]

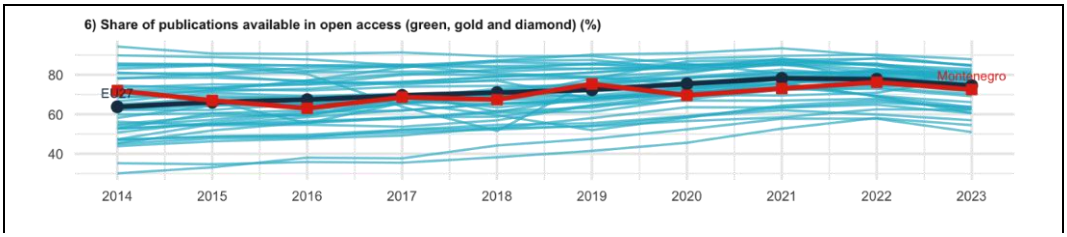
3. Contribution of ERA Actions to national performance in reaching ERA objectives

Although Montenegro has not committed to ERA Actions, there are multiple initiatives in line with ERA Actions. This chapter provides a qualitative assessment of how the joint ERA Actions contributed to Montenegro’s performance in achieving the ERA objectives as defined in the Pact for R&I during the period 2022-2024.

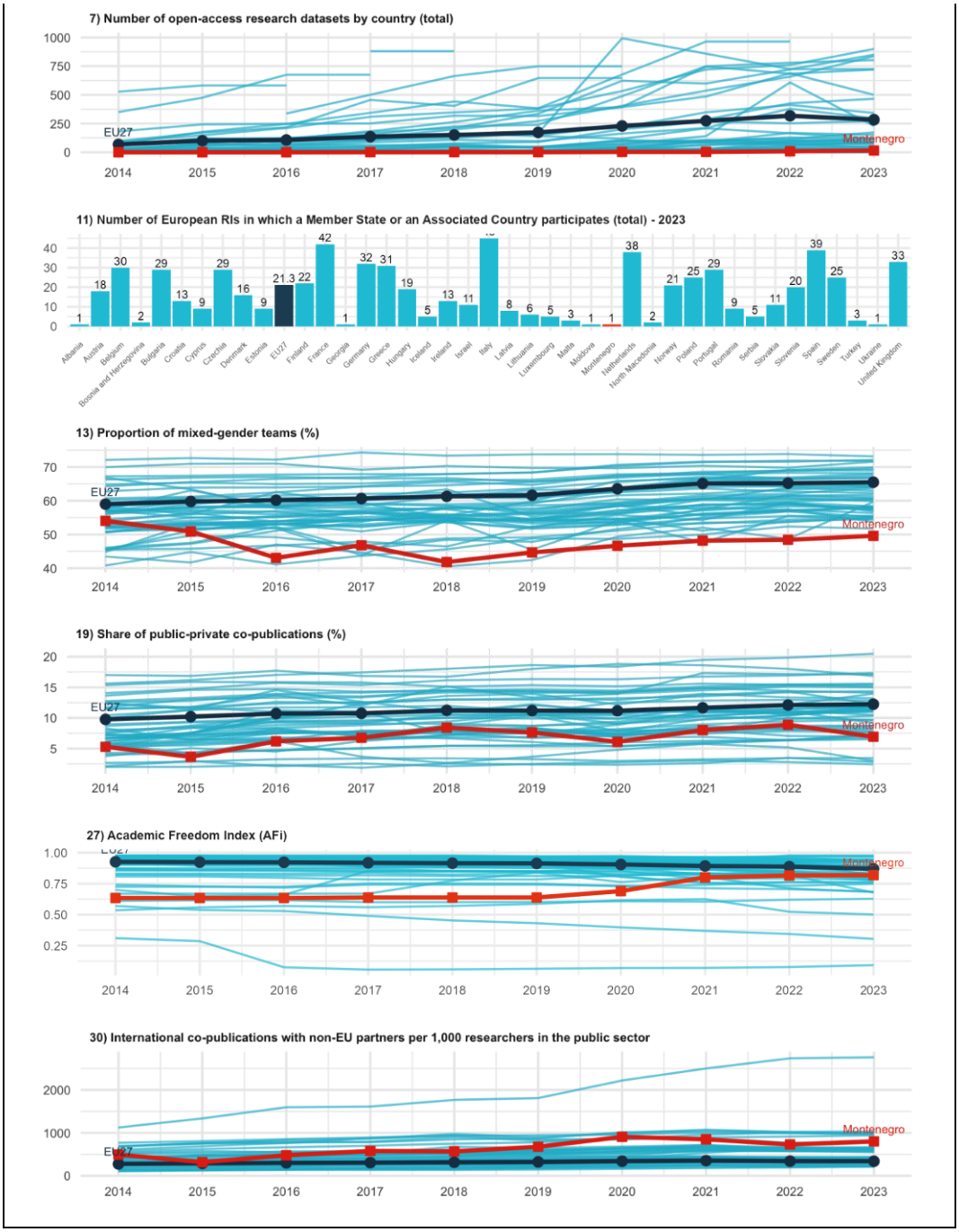
ERA Priority 1 is addressed through a range of initiatives focussing on ERA Actions 1, 3, 4, 5, 8 and 9 which aim to, among others, stimulate open science, increase research access and talent mobility, foster gender balance and strengthen RI. With the adoption of the new Strategy for Scientific Research Activity, and the subsequent implementation of its objectives and actions, significant improvements have been made. This is exemplified by the financial support to open access publications, the Scholarship Programme for Excellence in Doctoral Research, the monitoring of gender-sensitive statistics and the approval of the Research Infrastructure Roadmap 2024-2028.

Nevertheless, the ERA Dashboard Indicators do not fully reflect this progress yet. As depicted in Figure 3-1 below, the share of open access publications (ERA Dashboard Indicator 6) and the share of public-private co-publications have decreased in 2023. Furthermore, the country investments in open science (ERA Dashboard Indicator 9) remains unsubstantial. The indicators do show an increase in the number of open-access research datasets (ERA Dashboard Indicator 7), in the proportion of mixed-gender teams (ERA Dashboard Indicator 13), in the Academic Freedom Index (ERA Dashboard Indicator 27) and in the number of international co-publications with non-EU partners (ERA Dashboard Indicator 30). These increases confirm the developments presented in Chapter 2 of this report.

Figure 3-1 ERA Dashboard Indicators for Priority 1



[30] Ministry of Education, Science and Innovation, Strategy for Scientific Research Activity in Montenegro 2024-2028 (2024).
[31] ibid.



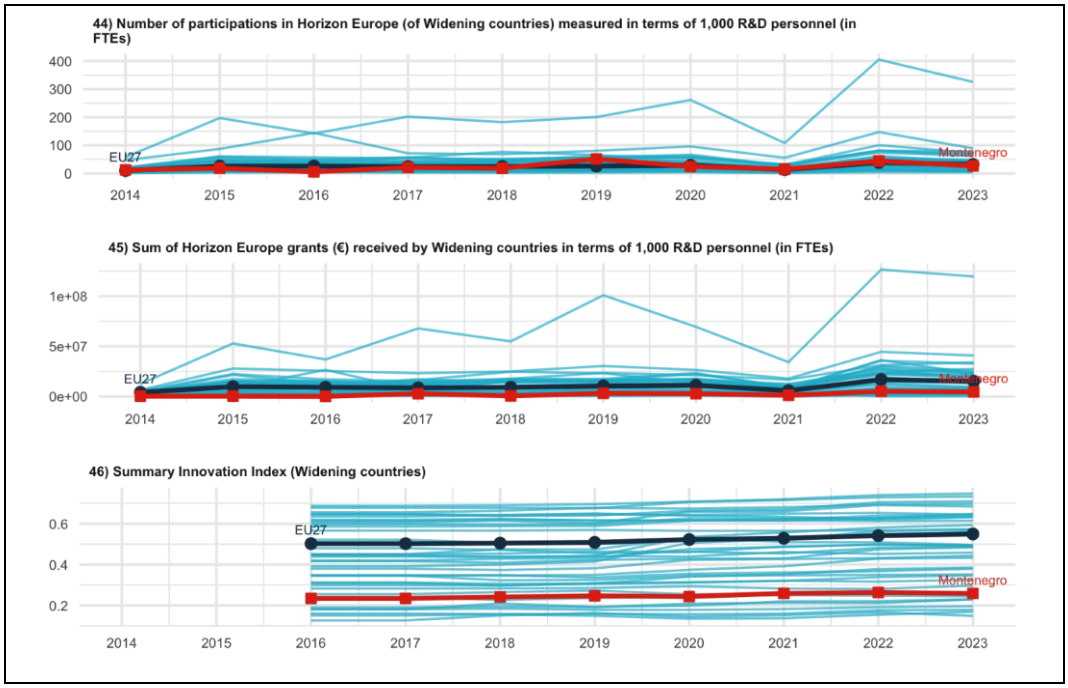
Source: see Annex 1

ERA Priority 2 is addressed through ERA Actions 11, 12, 13 and 14. Although the European Innovation Scoreboard shows that Montenegro's green transition is not yet generating results in most areas, the digital transition is operationalised significantly through the establishment of an EDIH (with EUR 1.1 million dedicated to this aim) and the investments in digital

equipment for education. The European Innovation Scoreboard also shows that steps in the digital transformation have been taken to a large extent, as the Scoreboard notes that there has been a significant uptake of individuals with above basic overall digital skills (in comparison with 2023). In addition, the broadband penetration has also been increased in 2024.[32] Other enabling factors towards the objectives in ERA Priority 2 include the implementation of the Internationalization Strategy of the University of Montenegro and the Science & Innovation Days and Scientific Achievement Awards, both organised by MESI to stimulate citizen engagement in science.

ERA Priority 3 is primarily targeted through initiatives in line with ERA Action 16. Many events have been organised by MESI to stimulate awareness and capacities for the HE Programme, and funds are allocated to promote the participation in HE and COST actions. Despite these efforts, there was a relatively low number of HE applications and participants in 2023 and 2024. The downwards trends of ERA Dashboard Indicators 44, 45 and 46 confirm this statement (Figure 3-2 below).

Figure 3-2 ERA Dashboard Indicators for Priority 3



Source: Annex 1

[32] https://ec.europa.eu/assets/rtd/eis/2024/ec_rtd_eis-country-profile-me.pdf, accessed 16-01-2025.

4. Effects of ERA Action implementation on the national R&I system

Although Montenegro did not commit to ERA Actions, this chapter presents a qualitative assessment of Montenegro's initiatives that are related to ERA Actions, and their effects on the national R&I system.

Overall, Montenegro's national R&I priorities, which are presented in its Strategy for Scientific Research Activity, have many synergies with ERA Actions. Although not formally committed to ERA Actions, the rationale of Montenegro's strategy, and the ambitions of its actions, are explicitly aligned with specific ERA Actions.

For instance, regarding **ERA Priority 1,** Montenegro's promotion of open science principles, and activities within this objective (including investments in open access publications) are inspired by the ERA open science concept. ERA Dashboard Indicator 7 confirms this progress, while Indicators 6 and 9 show that ambitions are far from being fully operationalised (presented in Chapter 3).

In addition, Montenegro's objective of supporting more young researchers through a variety of support programmes (Objective 2.1 of the Strategy for Scientific Research Activity) is explicitly aligned with ERA Action 4. Furthermore, the strategy's objective 2.4 (Promotion of Science for Society) has added the KPI of organised promotional activities for the STEM field among girls and woman, in order to foster alignment with ERA Action 5. ERA Dashboard Indicator 13 shows that progress regarding the gender balance is indeed being made.

Currently, one of Montenegro's core aims and strategic objectives is strengthening international cooperation in science and research. Its implementation has a clear synergy with ERA Action 9. ERA Dashboard Indicator 30 confirms that there is already an increase in international cooperation (more specifically, in international co-publications). Lastly, Montenegro's Research Infrastructure Roadmap 2024-2028 is based on ERA Action 8, and the central aim of the roadmap is to advance integration into ERA.[33]

The most obvious synergy of **ERA Priority 2** with Montenegro's R&I priorities is related to ERA Action 14 (Bring science closer to citizens). MESI is facilitating various events and awards for citizen engagement, and dedicated various funds to this purpose, targeting a 15 percent increase in programmes and projects on the interface of science and society in 2028.[34]

Montenegro's promotion to participate in the COST programme (for instance through information events), one of the ERA pillars, exemplifies the correlation between Montenegro's R&I priorities and **ERA Priority 3.** However, considering ERA Dashboard Indicator 44, the access to European programmes and excellence is not (yet) increasing in all aspects.

[33] Ministry of Education, Science and Innovation, Montenegro Research Infrastructure Roadmap 2024-2028 (2024).
[34] Ministry of Education, Science and Innovation, Strategy for Scientific Research Activity in Montenegro 2024-2028 (2024).

Lastly, related to **ERA Priority 4,** the laws within the new legal framework for scientific and research activities within Montenegro will be based on ERA guidelines. The approval and adoption of this new framework is still pending.[35]

5. Conclusions

Montenegro recently adopted its Strategy for Scientific Research Activity and its Research Infrastructure Roadmap (both running from 2024 to 2028), and they both underline the country's commitment to a solid integration of ERA priorities. Not surprisingly, almost all (i.e. six) operative objectives of the aforementioned strategy are explicitly aligned with one or more ERA Actions. In turn, through the implementation of this strategy and roadmap, Montenegro has undertaken significant steps within ERA priorities areas in the past 1,5 years.

The below paragraphs present a concise but far from exhaustive summary of developments related to the ERA priority areas.

Regarding **ERA Priority 1**, MESI has organised various activities relating to open science, is actively supporting open access publications and talent circulation and mobility and has adopted a comprehensive RI roadmap.

Turning to **ERA Priority 2**, Montenegro is particularly successful in speeding up its digital transformation, for instance through investments in digital equipment and cyber security efforts supported by the Science and Technology Park in Podgorica. Furthermore, Montenegro is organising various events and programmes targeting citizen engagement. Its main university (University of Montenegro) is gaining European access and visibility through its Internationalization Strategy.

Considering **ERA Priority 3**, while Montenegro is pursuing more involvement in the HE programme through workshops and awareness portals and campaigns, the participation in HE in 2023 and 2024 was relatively low. Other European involvements, including Interreg and COST, do point at an increased access to European excellence.

Lastly, related to **ERA Priority 4**, Montenegro is in a process of reforming its R&I system and legal framework for scientific and research activity – in line with ERA guidelines. Adoption of these reforms are still pending.

In sum, while there are strong and explicit synergies with and commitments to ERA, and clear advancements are being made towards their objectives, on several aspects progress is still lacking. This last remark is confirmed by a number of ERA Dashboard Indicators, which show a downward trend in ERA-related R&I developments.

[35] Ministry of Education, Science and Innovation, Strategy for Scientific Research Activity in Montenegro 2024-2028 (2024).

6. References

Most of the references can be found as web links in the footnotes.

Ministry of Education, Science and Innovation, Strategy for Scientific Research Activity in Montenegro 2024-2028 (2024).

Ministry of Education, Science and Innovation, Scholarship Programme for Excellence in Doctoral Research in Montenegro (2024).

Ministry of Education, Science and Innovation, Montenegro Research Infrastructure Roadmap 2024-2028 (2024).

Horizon Europe Dashboard, accessed 16-01-2025.

Annex 1 – List of ERA Dashboard Indicators

The indicators used in the report are taken from the ERA Dashboard 2024. The full ERA Dashboard Report and the supporting Data Replication Package can be downloaded at https://european-research-area.ec.europa.eu/era-monitoring-reports. However, *GDP (in million €)*, *Size of the population (million)*, and *Share of female researchers, all sectors of performance (%)* were added to provide additional context and directly retrieved from the Eurostat website.

Additionally, EU and country averages are for 2023, except *Share of female researchers, all sectors of performance (%)* (2021).

Table 1 Structural Key Indicators:

Indicator number	Indicator	Source
/	GDP in euro per capita, current prices	Eurostat https://doi.org/10.2908/TEC00001
1	Gross Domestic Expenditure on R&D (GERD) as a share of GDP	Eurostat
2	Government Budget Allocations for R&D (GBARD) as share of GDP	Eurostat
4	Business Enterprise Expenditure on R&D (BERD) as a share of GDP	Eurostat
5.2	Expenditure on R&D procurement as a percentage of GDP	EC/European Innovation Procurement Observatory
/	Size of the population (million)	Eurostat, https://doi.org/10.2908/TPS00001
3	Researchers (in FTE) per million inhabitants	Eurostat
/	Share of female researchers, all sectors of performance (%)	Eurostat, https://doi.org/10.2908/TSC00005

Figure 3.1 Indicators for ERA Priority 1

Indicator number	Indicator	Source
6	Share of publications available in open access (green, gold, and diamond)	OpenAIRE
7	Number of open-access research datasets by country	OpenAIRE
8	Number of repositories by country	EOSC - Re3data
9	Country investments in EOSC and Open Science (in ranges of investment)	EOSC Observatory
10	Share of national public R&D expenditure committed to European research infrastructures	ESFRI
11	Number of European RIs in which a Member State or an Associated Country participates	ESFRI
12	Proportion of women of Grade A among academic staff/researchers	Women in Science - She Figures
13	(Corrected) Proportion of mixed-gender teams	EC_Scopus
14	(Corrected) Proportion of women in authorships of the top 10% most cited publications	EC_Scopus
15	Women in Digital index (0-100)	EC-Women in Digital Scoreboard

16	Proportion of women among doctoral graduates by narrow fields of STEM	Eurostat
17	Share of foreign doctorate students as a percentage of all doctorate students	Eurostat
18	New doctorate graduates per 1,000 inhabitants aged 25-34	Eurostat
19	Share of public-private co-publications	EC_Scopus
20	(Cumulative number of) Best practice examples and methodologies for knowledge valorisation	Knowledge Valorisation Platform
21	Number of PCT patent applications divided by GDP in million Euros/Dollars	OECD, Eurostat & World Bank
22	Share of innovating firms collaborating with HEI/PRO out of all innovative firms	Eurostat CIS (own calculations)
23	Business enterprise researchers as % of total researchers	OECD
24	Business enterprise researchers in full-time equivalent per thousand employment in industry	OECD
25	Patents by universities and public research organisations	EPO PATSTAT - Fraunhofer ISI calculations
26	% of scientific publications among the top-10% most cited publications worldwide	EC_Scopus
27	Academic Freedom Index (AFi)	V-Dem Varieties of Democracy
28	Average ranking score of top 10 universities by country and year	QS World University Ranking
29	Sum of ERC grants received by country in a given year per 1,000 R&D personnel (in FTEs)	EC-ERC
30	International co-publications with non-EU partners per 1,000 researchers in the public sector	EC_ScienceMetrix and Eurostat/OECD
31	Share of patents with foreign co-inventors	OECD
32	European and international co-patenting in EPO applications at national and EU level	Eurostat
33	Government budget allocations for R&D (GBARD) according to NABS as % total GBARD	Eurostat

Figure 3.2 Indicators for ERA Priority 2

Indicator number	Indicator	Source
34	Note: The ERA Dashboard Indicator 34 was removed from the Dashboard in January 2025. As a consequence, the indicator has also been omitted from the Country Report, while, however, keeping the original numbering of the indicators.	
35	Environmentally related government R&D budget, as % of total government R&D	Eurostat
36	National public and private investments as suggested in the SET Plan progress report 2021 (EUR million)	SETIS R&I data
37	% Patents on environmental technology	OECD
38	Share of innovative firms cooperating with higher education institutions or public/private research institutions	Eurostat CIS
39	Enterprises that purchased or licensed-in patents or other IPRs from public research organisations, universities or higher education institutions	Eurostat CIS

40	Direct government support and indirect government support through R&D tax incentives as a % GDP	OECD
41	Green bond issuance as a percentage of total bond issuance	Eurostat - EEA
42	Trust in Science	Eurobarometer 95.2
43	Increase in total R&D expenditure in widening countries, expressed as a percentage of GDP	Eurostat, OECD, UNESCO

Figure 3.3 Indicators for ERA Priority 3

Indicator number	Indicator	Source
44	Number of participations in Horizon Europe (of Widening countries) measured in terms of 1,000 R&D personnel (in FTEs)	Cordis - Eurostat
45	Sum of Horizon Europe grants (€) received by Widening countries in terms of 1,000 R&D personnel (in FTEs)	Cordis - Eurostat
46	Summary Innovation Index (Widening countries)	EC_EIS
47	Share of enterprises using public funds from different governance levels (local or regional, national, and EU) for R&I activities	Eurostat CIS
48	Number of Seal of Excellence projects on the InvestEU Portal per 1,000 R&D personnel (in FTEs)	EC - Invest EU
49	Number of collaboration networks of RPOs in Widening countries with other EU countries	Cordis - Horizon Dashboard
50	Average number of partners from non-widening countries per institution from a Widening country participating in the Horizon programme each year	Cordis - Eurostat
51	Share of patents registered by a Widening country together with partners from other EU countries	OECD
52	Share of innovative enterprises that cooperated with RPOs located in other countries	Eurostat CIS
53	Share of public R&D expenditures financed by the private sector	Eurostat

Figure 3.4 Indicators for ERA Priority 4

Indicator number	Indicator	Source
54	GBARD allocated to Europe-wide transnational, as well as bilateral or multilateral, public R&D programmes per FTE researcher	Eurostat

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