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EUROPEAN RESEARCH AREA

Progress Report 2018

Country Profile

MONTENEGRO

Research and Innovation

EUROPEAN COMMISSION

Directorate-General for Research and Innovation
Directorate A — Policy Development and Coordination
Unit A2 — Research and Innovation Strategy

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COUNTRY SNAPSHOT

	Indicator	Performance					Progress since ERA monitoring 2016				
	Name	**Reference year**	**Score**	**Cluster**	**Lead/Gap (Δ %)**	**EU-28**	**Reference Period**	**CAGR**	**Lead/Gap (Δ % pt)**	**EU-28**	**Trend (2007-18)**
Priority 1	**Adjusted Research Excellence Indicator (AREI)**	**2016**	**12.8**	**4**	**-72**	**45.0**	**2013-16**	**-2.3%**	**-5.5**	**3.2%**	
	GBARD as share of GDP	2017	:	:	:	0.63%	2014-17	:	:	-1.7%	
	EIS Summary Innovation Index (SII)	2017	:	:	:	0.504	2015-17	:	:	1.9%	
Priority 2	**A - GBARD to transnatl coop (EUR/researcher)**	**2016**	**:**	**:**	**:**	**3,739**	**2014-16**	**:**	**:**	**3.9%**	
	A - Collab papers w/ERA per 1 000 researchers	2016	*101*	2	43	71	2014-16	*-5.4%*	-8.7	3.3%	
	A - Public-to-public partnerships (EUR/researcher)	2016	:	:	:	558	2014-16	:	:	0.7%	
	B - Roadmap for ESFRI projects	**National roadmap implemented in 2015, ESFRI projects identified, investment needs identified**									
	B - Participation in ESFRI Projects and Landmarks (combined)	**2018**	**0%**	**4**	**-100**	**35%**	**2016-18**	**:**	**:**	**15.0%**	
	B - Participation in developing ESFRI Projects	2018	0%	4	-100	29%	2016-18	:	:	18.6%	
	B - Participation in operational ESFRI Landmarks	2018	0%	4	-100	37%	2016-18	:	:	11.3%	
Priority 3	**EURAXESS job ads per 1 000 researchers**	**2016**	***3.1***	**3**	**-93**	**42.1**	**2014-16**	**:**	**:**	**-5.0%**	
	Open, transparent, merit-based hiring process	2016	:	:	:	65%	2012-16	:	:	7.5%	
	Share of doctoral students from EU countries	2016	:	:	:	7.1%	2013-16	:	:	3.9%	
Priority 4	**Share of women among Grade A in HES**	**2016**	**:**	**:**	**:**	**24%**	**2014-16**	**:**	**:**	**1.0%**	
	Gender dimension in research content	2014-17[R]	0.70	3	-33	1.05	2011-14 to 2014-17[R]	22.1%	19.6	2.5%	
	Share of female PhD graduates	2016	68%	1	42	48%	2013-16	:	:	0.4%	
Priority 5	**A - Firms coop with univ, gov, res inst**	**2014**	**:**	**:**	**:**	**15.0%**	*Not computed*				
	A - Firms coop with univ	**2014**	*Not computed*				**2012-14**	**:**	**:**	**0.7%**	
	A - Firms coop with gov, res inst	**2014**	*Not computed*				**2012-14**	**:**	**:**	**4.0%**	
	A - Share of public R&D funded privately	2015	0.2%	4	-97	7.0%	2013-15	-83.5%	-82.2	-1.2%	
	A - Public-private collab papers per capita	2017	:	:	:	40.9	2014-17	:	:	0.4%	
	B - Share of papers in Open Access (Total)	**2016**	**44.3%**	**3**	**-10**	**49.3%**	*Not computed*				
	B - Share of papers in Open Access (Gold)	**2016**	**35.8%**	**1**	**18**	**30.2%**	*Not computed*				
	B - Share of papers in Open Access (Green)	**2016**	**14.6%**	**4**	**-55**	**32.5%**	*Not computed*				
	B - Share life science papers with OA dataset(s)	2017	0.0%	4	-100	2.6%	2013-17	:	:	2.6%	
Priority 6	**Collab papers w/non-ERA per 1 000 researchers**	**2016**	***17***	**4**	**-69**	**54**	**2014-16**	***-31.9%***	**-36.3**	**4.4%**	
	Share of doctoral students from outside EU	2016	:	:	:	13.9%	2013-16	:	:	3.8%	
	Share med & high tech product export	2017	:	:	:	57%	2015-17	:	:	0.4%	
	Share Knowledge intensive service export	2016	:	:	:	69%	2014-16	:	:	0.6%	

Note: (:) = missing data, more notes and flags can be found in the "Annex: Methodological notes".
[R] = rolling averages (e.g. average scores across 2007–2010, 2008–2011… 2014–2017) have been used to measure performance and growth due to pronounced short-term fluctuations.
Refer to the "Annex: Guide to reading the quantitative results tables (country snapshots)" for guidance in interpreting the data presented above. Further information on the presented indicators is available in the 2018 ERA Monitoring Handbook.

COUNTRY NARRATIVE

Summary

Findings on Montenegro could not be obtained for half the indicators comprised in this study when processing available datasets for the country. In those 14 indicators where scores could be computed, Montenegro's scores generally fell well below ERA average (Cluster 4). Nevertheless, the Associated Country also obtained a few scores well above (Cluster 1), above (Cluster 2) and just below (Cluster 3) ERA averages.

The overall assessment of Montenegro implementation of its national action plan is mixed progress**.** Montenegro has achieved substantial progress in enhancing the optimal circulation and transfer of scientific knowledge. Some of the measure taken could be transferred in other countries as well. Nevertheless, a significant focus in the future should be given to enhance labour market openness and international cooperation.

1. More effective national research systems

Montenegro's score on the Adjusted Research Excellence Indicator (AREI) was 13, slightly more than a quarter of the EU-28 benchmark. Montenegro's gap to the 28 Member States has widened since the last ERA monitoring exercise, with yearly average decreases that are six percentage points below the overall trajectory of the EU-28.

Montenegro has made some progress in making their national research system more effective by strengthening the evaluation of research and innovation policies and by seeking for complementarity between monitoring mechanism used at EU and national levels. Since 2017 the Ministry of Science is developing a Strategy of Scientific Research Activity for 2017-2021[1] and a Smart Specialization Strategy which should be adopted in 2018. Furthermore, the Ministry of Science published a call awarding grants for innovative projects in 2018 that are in line with the thematic priorities established by the Strategy of Innovation Activities (2016-2020)[2]. In both strategies and call for awarding grant a specific focus is given to achieving integral cohesion between EU and national level policies and instruments. Finally, as was indicated in the national action plan, in 2018 a workshop was organised with an aim to discuss the possibility to establish Science and Technology Park in Podgorica.

2. Optimal transnational co-operation and competition

a. Transnational cooperation

Montenegro made a strong showing on propensity to produce collaborative papers together with researchers from other ERA countries. At 101 such papers per 1 000 researchers (in 2015 whereas 2016 was the reference year for other countries in this exercise), Montenegro's performance was well above the EU-28 score of 71 and above the ERA average (Cluster 2). The country has lost some of this lead in performance since the last ERA monitoring exercise, however, with a CAGR almost nine percentage points below the EU-28 trend.

Only a slight progress has been achieved regarding jointly addressing grand challenges. There is no information available about the improved Montenegro's participation in EUREKA programme and alignment of the Montenegrin strategies, measures and programs with the jointly developed strategies at European level. Moreover, there has been only a minor improvement in Montenegro's participation in H2020 programme**.** Only a conference on 'Increasing Montenegrin capacities for participation in Horizon 2020'[3] was organised. At the event the EU representatives and the Ministry of Science of Montenegro have debated and agreed on the need for an intervention that would boost the capacities of scientific research institutions and facilitate access to EU funds for SMEs.

[1] http://www.poreskauprava.gov.me/ResourceManager/FileDownload.aspx?rid=301437&rType=2&file=STRATEGY%20OF%20SCIENTIFIC%20RESEARCH%20ACTIVITY%20(2017-2021).pdf.

[2] http://www.mna.gov.me/en/news/189074/The-Ministry-of-Science-publishes-a-Call-for-awarding-grants-for-innovative-projects.html.

[3] https://eeas.europa.eu/delegations/montenegro/42423/increasing-montenegrin-capacities-participation-horizon-2020_nb.

Initiative the Western Balkan Countries INCO-NET enhances integration of the Western Balkan countries (WBC) in the European Research Area. The project, which started in 2008, is supported by the European Commission under the 7th Framework Programme for Research and Technological Development. The core objectives of WBC-INCO.NET includes supporting bi-regional dialogue on science and technology, identifying RTD potential and priorities and enhancing participation of researchers from Western Balkan countries in European projects[4].

b. Make optimal use of public investments in research infrastructures

Montenegro has yet to participate in ESFRI Projects or Landmarks. This abstention placed the country well below ERA average, in Cluster 4, on the three indicators included in this priority.

Note that large countries are generally advantaged on this priority since the indicators are not normalised to account for differences in the size of countries.

Even though Montenegro has not participated in ESFRI projects or Landmarks, qualitative data shows that one of the long-term objectives in the field of the national research infrastructure is to create a unique institutional framework in the form of the Centre of Excellence (CoE). Additionally, the main objective of the Roadmap is to define and present the priorities and potentials of Montenegro in the field of research infrastructures (RI). By its content, the Roadmap is complementary to the Strategy for scientific research activities in Montenegro for the period 2012-2016 and to the other strategic and legal frameworks in the area of science and research up to 2020 as well[5]. Thus, Montenegro expects to achieve scientific excellence through interdisciplinary research, involving international research partners and partners from the industry[6].

Additionally, Montenegro Ministry of Science has already undertaken activities of upgrading the national research information system (Science Network of Montenegro).

3. An open labour market for researchers

Montenegrin institutions posted 3 EURAXESS academic job ads per 1 000 researchers in 2014, a fraction of the EU-28 score of 42 such ads (calculated for 2016). The country placed in Cluster 3 on this indicator (noting that there was no fourth cluster this indicator due to the distribution of scores).

Qualitative data shows that the main challenge for establishing a more dynamic and open labour market for researchers in Montenegro rests in financial circumstances of HEIs, given that they are the main research institutions in the country, and offers limited number of academic positions[7]. The recruitment practices are to a large extent aligned with the best EU practice, yet the function is narrow and rigid.

Nevertheless, there is not enough of data to sufficiently assess Montenegro progress in establishing an open labour market for researchers. No information regarding the establishment of multi-actor workgroup, obtaining EU assistance in policy planning and systematically ensuring monitoring and evaluation of labour market conditions for researchers indicated in NAP is present.

4. Gender equality and gender mainstreaming in research

Montenegro obtained arguably its best showing for its high share of female PhD graduates, at 68 %. This score was well above the EU-28 benchmark and the ERA average, placing the country in Cluster 1. In fact, Montenegro had the highest share of female PhD graduates among ERA countries. The country performed below the EU-28 benchmark and the ERA average (Cluster 3) for its researchers' inclusion of gender dimension in research content. Montenegro's score was two-thirds that of the Member States overall. On this last indicator, yearly average increases

[4] https://www.zsi.at/en/object/project/960.
[5] Montenegro Ministry of Science (2015) Montenegrin Research Infrastructures Roadmap 2015- 2020.
[6] Montenegro Ministry of Science (2015) Montenegrin Research Infrastructures Roadmap 2015- 2020.
[7] National Roadmap on the European Research Area (ERA) accessed from: https://era.gv.at/object/document/2763/attach/ME_ERA_Roadmap.pdf.

have been of almost 20 percentage points above the EU-28 trajectory. They have helped the country to close some of its prior gap in performance to the EU-28.

Montenegro has achieved some progress regarding gender equality and gender mainstreaming in research by maintaining the positive framework conditions, following the best EU practices in the field and monitoring the research and development on a regular basis. A specific measure was taken to address gender equality amongst researchers, as a cross-sectoral working group for drafting the Action Plan for Achieving Gender Equality in Montenegro 2017-2021 was established[8].

5. Optimal circulation, access to and transfer of scientific knowledge including via digital ERA

a. Knowledge transfer

Montenegro saw a small share of public R&D funded privately, at 0.2 %, compared to the 7 % EU-28 benchmark. The country fell in Cluster 4 on this indicator. The latest score was the outcome of marked yearly decreases since the last ERA monitoring report, with Montenegro's score dropping by nearly 85 % whereas for the EU-28 there was a decrease of only about 1 % over that same timeframe. Given the sharp and sudden drop in score seen in 2014 on this indicator, this trend might best be interpreted after substantiation with additional datasets from coming years.

Substantial progress has been achieved in strengthening collaborative research between public and private sectors and increasing optimal circulation and transfer of scientific knowledge. In 2016 Strategy for Innovation with Action Plan 2016-2020 was completed and adopted, Entrepreneurial-innovation centre 'Tehnopolis' in Nikšić was established[9]. Furthermore, annual call for co-financing scientific-research and innovation activities was announced[10]. Furthermore, an initiative to increase the number of start-ups was implemented and 4-helix Montenegro's Government Annual Plan for 2018 was developed[11]. Thus, the implemented activities revealed Montenegro's intention to move towards increased collaboration between industry and academia

b. Open access

Montenegro had a comparatively large share of scientific articles available in Gold OA, at 36 %. This score was above the EU-28 benchmark of 30 % and well above the ERA average, placing the country in Cluster 1. By contrast, Montenegro had a small share of papers available via Green OA routes, at only 15 %. This score placed the country well below both the EU-28 level and the ERA average (Cluster 4). On the headline indicator that combines all OA modalities (Total OA), Montenegro obtained a score of 44 %, below the EU-28 benchmark (49 %) and the ERA average (Cluster 3). No record of any life science papers with an OA dataset could be found for the country, putting Montenegro in Cluster 4 on this indicator.

Qualitative data shows that concurrently only Montenegrin Journal of Economics is openly accessible and is compatible with Budapest Open Access Initiative[12].

6. International cooperation

Montenegro had a low propensity to publish collaborative papers together with researchers from outside the ERA. A count of 17 such papers associated with the country, per 1 000 researchers, was obtained in 2015, compared to the EU-28 score of 54—less than a third of the benchmark. This score resulted from a downward trend that averaged 32 % yearly, well below the slight growth measured for the 28 Member States (CAGR of just over 4 %). The starting year for

[8] Ministry for Human and Minority Rights (2017) Action Plan for Achieving Gender Equality (APAGE) 2017-2021 With the Implementation Program for 2017-2018.
[9] http://rbf2018novisad.talkb2b.net/members/details/91/Innovations+and+entrepreneurship+center+Tehnopolis.
[10] https://wbc-rti.info/mobile/object_view/17363.
[11] Horizon 2020 Policy Support Facility (2018) Overview of the policy on research and innovation in Montenegro.
[12] http://www.mnje.com/

calculating this CAGR had seen an exceptionally high score on this indicator, however, and future substantiation of this observation would therefore be desirable.

Regarding the international cooperation intermediate progress has been achieved. International cooperation was enhanced by implementing the project 'Strengthening National Participation in Horizon 2020'. However, no data is available to assess the progress regarding the mobility of researchers and amount of conducted joint activities, further alignment of policy dialogue and implementation of international cooperation at European and Montenegrin level.

An example of current Montenegro's international cooperation activities would include previously mentioned INCO-NET initiative and SEE-ERA.NET. The later focuses on networking of EU bilateral research programmes with South-Eastern Europe. SEE-ERA.NET is financed by the European Commission and managed by a consortium of 17 institutions from 14 European countries[13].

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Ministry for Human and Minority Rights (2017) Action Plan for Achieving Gender Equality (APAGE) 2017-2021 with the Implementation Program for 2017-2018.

Montenegrin Research Infrastructures Roadmap 2015- 2020.

National Roadmap on the European Research Area (ERA).

[13] http://www.see-era.net/start.html.

ANNEX: METHODOLOGICAL NOTES

	Indicator	Data availability	Flag							
	Name		**Exception to ref. year**	**Exception to ref. period**	**Break in time series**	**Definition differs**	**Estimated**	**Provisional**	**Potential outlier**	**Confidential**
Priority 1	**Adjusted Research Excellence Indicator (AREI)**	Available								
	GBARD as share of GDP	Unavailable								
	EIS Summary Innovation Index (SII)	Unavailable								
Priority 2	**A - GBARD to transnatl coop (EUR/researcher)**	Unavailable								
	A - Collab papers w/ERA per 1 000 researchers	Available	2015	2013-15						
	A - Public-to-public partnerships (EUR/researcher)	Unavailable								
	B - Roadmap for ESFRI projects									
	B - Participation in ESFRI projects and landmarks (combined)	Available								
	B - Participation in developing ESFRI projects	Available								
	B - Participation in operational ESFRI landmarks	Available								
Priority 3	**EURAXESS job ads per 1 000 researchers**	Available	2014							
	Open, transparent, merit-based hiring process	Unavailable								
	Share of doctoral students from EU countries	Unavailable								
Priority 4	**Share of women among Grade A in HES**	Unavailable								
	Gender dimension in research content	Available								
	Share of female PhD graduates	Available								
Priority 5	**A - Firms coop with univ, gov, res inst**	Unavailable								
	A - Firms coop with univ	Unavailable								
	A - Firms coop with gov, res inst	Unavailable								
	A - Share of public R&D funded privately	Available				2011, 2013-14				
	A - Public-private collab papers per capita	Unavailable								
	B - Share of papers in Open Access (Total)	Available								
	B - Share of papers in Open Access (Gold)	Available								
	B - Share of papers in Open Access (Green)	Available								
	B - Share life science papers with OA dataset(s)	Available								
Priority 6	**Collab papers w/non-ERA per 1 000 researchers**	Available	2015	2013-15						
	Share of doctoral students from outside EU	Unavailable								
	Share med & high tech product export	Unavailable								
	Share Knowledge intensive service export	Unavailable								

Additional note: For the indicator *Share of women among Grade A in HES* the definition differs for 2014 and 2016 (reference population = Academic staff)

ANNEX: GUIDE TO READING THE QUANTITATIVE RESULTS TABLES (COUNTRY SNAPSHOTS)

Each profile table shows the given country's performance score and growth for all indicators used in this study. Given that specific targets were not established for each of the 24 ERA Monitoring Mechanism (EMM) indicators for each country, it is impossible to report on a country's level of compliance in achieving the ERA priorities, or the ERA policies/actions, that each of these indicators intends to measure ([14]). Instead, the level of performance in the country snapshots is compared to the EU-28 (lead/gap analysis) and ERA averages (performance clusters). These references might represent unrealistic targets for some countries, especially the smaller ones. However, care was taken to use normalised indicators (except for Priority 2b), usually by incorporating the size of a country's population or economy in the denominator of an indicator. Additionally, the EU-28 and ERA averages might in some cases be lower than the level of performance which would be optimal towards achieving the ERA; for instance, gender equality might not have been reached in all relevant aspects at the EU- and/or ERA-wide level. That said, the main goal of these comparative analyses is to help situate countries relative to the core of the EU and ERA, so as to inform decisions on the most appropriate targets and on how to achieve them.

In addition to a measurement of performance in 2017 (or the most recent reference year for which sufficient data were available at the time of producing this report ([15])), the profile table also reports on recent changes in national performance, computed as a Compound Annual Growth Rate (CAGR). The CAGR aims to assess progress made since the ERA Progress Report 2016. Accordingly, it compares the latest available year in the 2016 report to the latest available year in this report. Growth since the last monitoring exercise is also compared to the EU-28 (lead/gap analysis) to inform individual countries on the extent to which their gap with the EU-28 level of performance is closing or widening. This information is intended to help individual countries better assess the extent to which new actions are required to achieve their respective targets.

The profile table is divided in two parts: performance and growth. For performance, the reference year for each indicator is noted. If the reported year for a given country and indicator is different from the reference year, the performance score in the snapshot is highlighted using a grey font in italics. The specific year which is reported appears in the column "exception to ref. year" of the appendix table at the end of the country profile. The appendix table also lists the years for which a flag is applied to the data. The performance section of the snapshot table also provides the EU-28 scores across indicators upon which the country lead/gap, in percent difference to the EU-28 score, is computed. Furthermore, the performance clusters from the main report have also been presented here; recall that countries more than one standard deviation above the unweighted ERA average (i.e. average across member states and associated countries for which data is available for each indicator) are in Cluster 1, the strongest cluster; those at or above the unweighted ERA average but within one standard deviation are in Cluster 2; those below the unweighted average but within one standard deviation are in Cluster 3; those more than one standard deviation below the ERA unweighted average are in Cluster 4, the weakest cluster.

For growth, the reference period used in computing the Compound Annual Growth Rate (CAGR) is also presented, alongside the actual CAGR. Again, exceptions to the reference period are highlighted by using a grey font in italics to display the actual CAGRs of the corresponding country and EU-28. Information on the specific years used in these cases are again available in the appendix tables. The lead/gap analysis for growth shows the percentage point difference between the country's CAGR and the CAGR of the EU–28 average. The CAGR measures growth relative to the latest available year in the *2016 ERA Progress Report*. Since there were retrospective corrections to the scores of countries on some indicators, growth was computed based on the updated time series. Trend lines over the longest available period for a given indicator are provided to inform on longer-term patterns of progress towards realising the ERA. Empty lines in the trend indicate either that data was missing for that year, or that the country's score was zero. For one indicator where short-term fluctuations were particularly pronounced (gender dimension in research content in priority 4), rolling averages (e.g. average scores across 2007–2010, 2008–2011… 2014–2017) have been used to measure performance and growth. In such cases, the CAGR

[14] A more in-depth assessment of progress of implementation of ERA policies was rather achieved in the text of country profiles (not the snapshot tables) accounting for quantitative (where available) and qualitative (especially) elements in relation to the objectives, baselines, targets, timelines and milestones established by individual countries in their National Action Plans (NAP).

[15] Refer to the 2018 ERA Monitoring Handbook for the extraction dates of the presented data.

measures the year-by-year percent change in the rolling average of an indicator between the starting and ending periods (e.g. between 2011–2014 and 2014–2017). These cases are highlighted by the addition of the superscript (R) to the reference year (performance) and period (growth) of the concerned indicators.

The lead/gap analyses, both for performance and for growth, have been colour-coded to help visually elucidate patterns in the findings. The colour scheme for the country profiles ranges from dark blue (weakest scores) to dark orange (strongest scores), as was applied in the main report. There is, however, a key difference to note. In the main report, the colouring compared the results of different countries along a single indicator, in these country profile tables the colouring compares the results of one country along several indicators, to highlight its relative strengths and weaknesses across indicators. More specifically, in each profile, blue always indicates that a country is below the EU–28 average, and orange always indicates that it is above, but the shade of blue and orange (dark or light) is relative to the country's own performance across indicators, rather than relative to the performance of other countries.

Indicators in bold are the Headline indicators that were selected as being the most relevant in monitoring progress in achieving the ERA by the European Research Area and Innovation Committee (ERAC). Within each priority, the Headline is followed by the two complementary EMM indicators identified by ERAC. Lack of data is identified by using a symbol (:) within the table cells.

Due to changes and discontinuities in data collection, some indicators have been updated, modified or replaced. A first modification was introduced for the complementary EMM indicators of Priority 2b (Make optimal use of public investments in research infrastructures). Here, findings are now provided on a combined indicator that better illustrates how level of engagement in ESFRI developing Projects and Landmarks are connected rather than independent.

For the headline indicator of Priority 5a, the underlying data coming from Eurostat was for the first time aggregated in a manner that made it possible to present a single metric (in terms of performance) merging both of its underlying dimensions ([16]); that is the share of product and/or process innovative firms cooperating with 1) universities or higher education institutions, or 2) with government, public or private research institutes. For growth, these two dimensions still had to be kept separated in this edition.

The indicators on the share of a country's peer-reviewed scientific papers that are available in Open Access (i.e. Total, Gold and Green OA) in Priority 5b have all been impacted by a revised definition of what constitute Green Open Access papers (see Section 3.5.5 of the Main Report for a description of this change). The indicator on the inclusion of OA policies in RIO policy repositories was discontinued since the new reporting guidelines for RIO policy reports no longer ask the experts to report on OA specifically. It has been replaced by a qualitative assessment of the NAPs and other information sources. A new indicator was also added to Priority 5b to fill a data gap in the 2016 ERA Progress Report; no data was available in 2016 for the share of research performing organisations (RPOs) making their research data available in OA. The share of research performing organisations (RPOs) making their research data available in OA has been replaced by the share of life sciences papers to which a country contributed and that have at least one open dataset in Figshare.

Due to discontinued data, the indicator on "Licence and patent revenues from abroad as a share of GDP" in Priority 6 has been replaced by two new indicators: knowledge intensive services exports as percentage of total services exports and exports of medium and high technology products as a share of total product exports; this modification coincides with a similar replacement in the 2018 European Innovation Scoreboard (EIS). Changes in the data for some countries also led to changes in EU28 aggregate scores the following two indicators: the share of doctoral candidates with a citizenship of another EU Member State (Priority 3) and non-EU doctorate students as a share of all doctorate students (Priority 6). Additional modifications in the approach used in computing EU-28 aggregate scores (e.g. imputation of missing data) led to some changes in the GBARD (EUR) allocated to Europe-wide transnational, as well as bilateral or multilateral, public R&D programmes per FTE researcher in the public sector (Priority 2a).

[16] The new aggregation provided by Eurostat enabled this change by removing duplicated count of firms falling in both types of partnerships.

Finally, the composite indicators combining findings from headline and complementary indicators within and across ERA priorities have not be computed in the 2018 ERA monitoring exercise. The rationale for these changes is detailed in the 2018 ERA Monitoring Handbook.

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The 2018 ERA Progress Report assesses the current state of the European Research Area (ERA) and the progress made on ERA implementation in 2016-2018. It is the second time in a row that progress has been measured at country level using the ERA monitoring mechanism.

Based on the overall evolution of the headline indicators, progress on ERA implementation continues, albeit at a slower pace than before. This trend calls for a renewed commitment to (i) further strengthening shared efforts at all levels; (ii) reforming national research and innovation systems; and (iii) realising a well-functioning ERA. The Commission has anticipated this need by proposing a number of programmes for the next financing period 2021-2027: these include regional funds, a European reform delivery tool, and the EU's next research and innovation framework programme — Horizon Europe, which includes a dedicated pillar to help strengthen the ERA.

Research & Innovation policy

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