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Progress Report 2018

Country Profile
CYPRUS

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Directorate-General for Research and Innovation
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Country profile: Cyprus

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
Priority 1	Adjusted Research Excellence Indicator (AREI)	2016	37.1	2	-18	45.0	2013-16	3.2%	0.0	3.2%	
	GBARD as share of GDP	2016	0.33%	3	-48	0.64%	2014-16	-3.4%	-1.0	-2.4%	
	EIS Summary Innovation Index (SII)	2017	0.386	3	-23	0.504	2015-17	-0.9%	-2.9	1.9%	
Priority 2	A - GBARD to transnatl coop (EUR/researcher)	2016	2 774	2	-26	3 739	2014-16	-2.6%	-6.5	3.9%	
	A - Collab papers w/ERA per 1 000 researchers	2016	339	1	380	71	2014-16	18.8%	15.5	3.3%	
	A - Public-to-public partnerships (EUR/researcher)	2016	5 316	1	853	558	2014-16	23.1%	22.4	0.7%	
	B - Roadmap for ESFRI projects	No national roadmap in place									
	B - Participation in ESFRI Projects and Landmarks (combined)	2018	18%	3	-48	35%	2016-18	201.5%	186.5	15.0%	
	<i>B - Participation in developing ESFRI Projects</i>	2018	28%	2	-5	29%	2016-18	:	:	18.6%	
<i>B - Participation in operational ESFRI Landmarks</i>	2018	14%	3	-64	37%	2016-18	98.0%	86.7	11.3%		
Priority 3	EURAXESS job ads per 1 000 researchers	2016	114.0	1	171	42.1	2014-16	20.1%	25.1	-5.0%	
	Open, transparent, merit-based hiring process	2016	61%	3	-7	65%	2012-16	9.4%	1.9	7.5%	
	Share of doctoral students from EU countries	2016	10.6%	2	49	7.1%	2013-16	44.8%	40.9	3.9%	
Priority 4	Share of women among Grade A in HES	2016	13%	4	-45	24%	2014-16	-4.7%	-5.7	1.0%	
	Gender dimension in research content	2014-17 ^(R)	0.88	3	-17	1.05	2011-14 to 2014-17 ^(R)	10.4%	7.9	2.5%	
	Share of female PhD graduates	2016	60%	1	25	48%	2013-16	6.3%	5.8	0.4%	
Priority 5	A - Firms coop with univ, gov, res inst	2014	7.1%	4	-53	15.0%	<i>Not computed</i>				
	A - Firms coop with univ	2014	<i>Not computed</i>				2012-14	13.3%	12.6	0.7%	
	A - Firms coop with gov, res inst	2014	<i>Not computed</i>				2012-14	-4.5%	-8.6	4.0%	
	A - Share of public R&D funded privately	2015	0.7%	4	-91	7.0%	2013-15	-4.8%	-3.6	-1.2%	
	A - Public-private collab papers per capita	2017	21.1	3	-49	40.9	2014-17	14.8%	14.3	0.4%	
	B - Share of papers in Open Access (Total)	2016	45.8%	2	-7	49.3%	<i>Not computed</i>				
	<i>B - Share of papers in Open Access (Gold)</i>	2016	39.5%	2	-7	42.7%	<i>Not computed</i>				
	<i>B - Share of papers in Open Access (Green)</i>	2016	26.0%	2	1	25.6%	<i>Not computed</i>				
	B - Share life science papers with OA dataset(s)	2017	1.9%	3	-27	2.6%	2013-17	-10.7%	-13.3	2.6%	
Priority 6	Collab papers w/non-ERA per 1 000 researchers	2016	102	1	88	54	2014-16	9.8%	5.4	4.4%	
	Share of doctoral students from outside EU	2016	3.7%	3	-73	13.9%	2013-16	40.7%	36.9	3.8%	
	Share med & high tech product export	2017	54%	2	-4	57%	2015-17	-10.5%	-10.9	0.4%	
	Share Knowledge intensive service export	2016	70%	2	1	69%	2014-16	3.5%	2.9	0.6%	

Note: (:) = missing data, more notes and flags can be found in the Annex.
^(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

Cyprus' best performances came in Priority 2a (Transnational cooperation). Here, the country's scores positioned it either above (Cluster 2) or well above (Cluster 1) ERA average. Two of these scores were several times above the EU-28 benchmark, although for the remaining indicator it was below instead. Findings on short-term score changes for this Priority were also split between growth at a rate well above EU-28 trends and a gap to EU-28 trend.

In a second set of priorities, Cyprus's performances were more varied, including some results below the ERA average (Cluster 3) together with Cluster 2 and Cluster 1 positions. This set included Priority 3 (An open labour market for researchers), Priority 5b (Open access) and Priority 6 (International collaboration). Scores for Cyprus in these priorities were often below EU-28 benchmarks. However, it is worth noting that on the headline indicators specifically, Cyprus strongly outperformed the Member States overall for Priority 3 and Priority 6, priorities in which Cyprus has also made notable progress since the last ERA monitoring exercise.

On Priority 1 (More effective national research systems), Priority 2b (Make optimal use of public investments in research infrastructures), and Priority 4 (Gender equality and gender mainstreaming in research), Cyprus tended to position more below the ERA average than above. Priority 4 findings include a Cluster 1 position, but also a score that positioned the country well below ERA average (Cluster 4), and this was on the headline indicator. All findings save one were below EU-28 scores. Trends for Cyprus since the last ERA monitoring exercise were mixed for Priority 1 and Priority 4, in both absolute terms and relative to changes for the EU-28. For Priority 2b, however, Cyprus showed clear increases, well above EU-28 trend.

Cyprus recorded its weakest performances in Priority 5a (Knowledge transfer). Scores here positioned the country in Cluster 3 and Cluster 4, and they were well below EU-28 benchmarks in all cases. On two indicators (including the headline for Priority 5a), Cyprus has made notable progress since the 2016 monitoring exercise, though for the two others Cyprus lost ground.

To the extent that data was available, below the country profile also analyses progress with the implementation of the ERA National Action Plan. Cypriot NAP was published in July 2017. As a result, the assessment of its progress is limited. Cyprus did not have sufficient time to achieve major progress and the data is scarce.

1. More effective national research systems

Cyprus performed above ERA average (Cluster 2) for the headline indicator, the Adjusted Research Excellence Indicator (AREI), and below ERA average (Cluster 3) on the two complementary indicators included in this Priority. All three scores were below the EU-28 benchmarks, with a particularly large margin (48 % lower than the Member States overall) for GBARD as a share of GDP.

Whereas the AREI score for Cyprus has seen yearly increases on average in the recent period, keeping pace with changes for the EU-28, Cyprus lost ground to the Member States on the other two indicators.

The R&I system in Cyprus is relatively young but is constantly evolving and improving. A new governance system on research and innovation has been approved on 9 October 2018 by the Council of Ministers. The new system includes the establishment of a National Research and Innovation Council as the advisory body for the development of a research and innovation strategy. Moreover, a Chief Scientist was appointed by the President of the Republic to coordinate and promote research and innovation policy and to operate the governance system. Additionally, each Ministry will appoint a coordinator for R&I. The creation of a new governance system was deemed necessary as the previous system was proven to be rather inflexible at strategy level and has been inactive for the past few years.

Cyprus does not have a dedicated national strategy for R&I but instead uses the Smart Specialisation Strategy (S3CY) as its main guiding document in R&I. One of the main tasks of the newly appointed NBRI[?] is the preparation of a comprehensive long term strategy for research and innovation.

Another issue that Cyprus faces is a low public spending on R&D coupled with a limited involvement of a private sector. For this reason, Cyprus directed its public funding to priority areas. As regards the evaluation of national R&I funding schemes, the National Monitoring and Evaluation Mechanism, which was established in 2015, foresees the monitoring and evaluation of all funding schemes that are included in the Action Plan of the S3CY. Continuous and rigorous monitoring of public funding is necessary to improve the effectiveness of the R&I system and ensure that scarce resources are purposefully invested. To this end, Cyprus is in the process of developing a monitoring and evaluation mechanism for its major research programme RESTART 2016-2020.

Other actions to improve Cyprus' R&I system include the introduction of a scheme, which supports private R&D investment, and the plan for setting up a national knowledge transfer office (European Commission, 2017c). The Action Plan of the S3CY includes specific actions – including those implemented through the RESTART programme – to develop an innovation culture among the business sector and to promote further participation of SMEs in R&I activities as well as to nurture links between business and academia. Additionally, the Action Plan of S3CY foresees the creation of a Technology Transfer Office (TTO), which will be complemented by Units within the major academic and research institutions.

More specifically, the National Policy Statement on the Entrepreneurial Ecosystem was introduced in 2015, which includes the more targeted approach for the use of resources from Structural Funds, the introduction of tax incentives and the strengthening of intellectual property rules. The House of Representatives approved a revision of the Income Tax Law that came into effect on 1 January 2017 to improve incentives that foster investments in start-up and innovative companies in Cyprus. Furthermore, a start-up visa scheme was approved by the Council of Ministers in February 2017 to attract start-ups from non-EU countries to relocate to Cyprus. A legislative amendment in July 2018, empowered public universities to utilize and exploit their scientific know-how and their research findings for the benefit of the economy and the society at large, and to establish or/and to participate in legal entities for the above mentioned purposes.

Having said that, the most important development is the ongoing effort to upgrade and restructure R&I governance structure. Overall, Cyprus is moving in a positive direction for building a strong R&I system. The outcomes of the measures introduced recently are yet to be seen.

2. Optimal transnational co-operation and competition

a. Transnational cooperation

The Cyprus research system's best performances were recorded for this Priority. While the score for the headline indicator, GBARD allocated to transnational cooperation, positioned the country in Cluster 2 and was below EU-28 benchmarks, the scores for the complementary indicators were very strong. For these two indicators, the country was positioned in Cluster 1, and its scores were several times higher than the EU-28 benchmarks. Most notably, public-to-public partnerships were supported at the level of more than 5 300 € per researcher in Cyprus, compared to about 560 € for the EU-28. Take note however that the Cypriot figure is based on a provisional 2016 data set.

The complementary indicators saw annual increases on average since the last ERA monitoring exercise, at levels that were quite above the EU-28 trends. Notably, the number of research articles authored with researchers from other ERA countries has gone up almost 19 % yearly on average, compared to 3.3 % annual increases at the EU-28 level. On the headline indicator, a decrease was found instead, widening Cyprus' gap to the EU-28.

Cyprus recognises the benefits provided by transnational cooperation and seeks to improve cross border cooperation in order to reduce the fragmentation and duplications of efforts while using already limited resources more efficiently. Cyprus currently participates in 4 Joint Programming Initiatives, 3 initiatives under the Article 185 (including PRIMA) as well as 10 ERA-NET and ERA-NET COFUND projects. Furthermore, Cyprus is actively participating in the EU-Mediterranean policy dialogue, which allows countries to address regional challenges.

b. Make optimal use of public investments in research infrastructures

Cyprus showed sustained participation in ESFRI developing projects, with a rate of participation measured at 28 % in 2018. This score placed the country above ERA average (in Cluster 2) and just below the EU-28 benchmark. The country had a much lower participation rate in active ESFRI Landmarks, though. Accordingly, its 18 % score on the combined indicator positioned it below ERA average (in Cluster 3), and notably behind the EU-28 benchmark of 35 %.

Average annual increases for this set of indicators were observed for Cyprus since the last ERA monitoring exercise. In 2016, Cyprus participated in no developing Projects, and had a 3.4 % rate of participation in Landmarks. Having tripled its score, Cyprus' growth trend on the combined indicator is therefore markedly above the EU-28 trend.

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.

Cyprus as a small country with limited capacity in investments cannot solely rely on national research infrastructures. It is important to gain access to large research infrastructures across Europe and increase the emphasis on e-infrastructures (Directorate General for European Programmes, Coordination and Development, 2017). Having said that, Cyprus is also dedicating efforts to strengthen its national research infrastructures. The necessity to fund research infrastructures in the priority sectors is recognised in its S3CY. This funding will be distributed through the Research Promotion Foundation on a competitive basis. Additionally, institutional funding is also provided to the main Research Organizations.

Another important action is the ongoing process for the development of the national roadmap for research infrastructures. It includes mapping exercises for the existing RIs and identifying the needs for new RIs. At the same time, the needs and opportunities for R&I stakeholders to participate in ESFRI infrastructures have been identified. An evaluation of these needs was conducted and the implementation of the actions (for the 2016 ESFRI Roadmap) is expected before the end of 2018.

3. An open labour market for researchers

Cyprus' performances were dispersed in this set of indicators. On the headline indicator, a score of 114 EURAXESS academic job ads per 1 000 researchers positioned the country in Cluster 1 and put it at a strong lead over the EU-28 benchmark of 42 ads per 1 000 researchers. Cypriot researchers' satisfaction that hiring procedures were open, transparent and merit-based, however, was below EU-28 score (61 % versus 65 %). On this indicator, Cyprus' score positioned it in Cluster 3. Cyprus' share of doctoral students originating from other EU countries was nearly 11 %, comfortably above the EU-28 benchmark, and placing Cyprus in Cluster 2.

What is more, Cyprus has been increasing its lead to the EU-28 in recent years for the headline indicator and on the share of doctoral students from other EU countries. Yearly average increases in score there are 25 and 41 percentage points above EU-28 trend, respectively. Increases in researcher satisfaction for Cyprus that hiring is open, transparent and merit-based were substantive, at close to 10 %, but only slightly outpaced increases for the EU-28 as a whole.

In order to improve recruitment practices and create a satisfactory working environment, research performing organisations have started the process of developing human resources strategies for researchers (Directorate General for European Programmes, Coordination and Development, 2017). These strategies are being developed, evaluated and monitored in order to harmonise them with the Charter & Code. The Cyprus Institute of Neurology and genetics and the University of Cyprus have also been recognised by the European Commission with the HR Excellence in Research Award.

Cyprus is also promoting inter-sectoral mobility of researchers. The main tool being used is DIDAKTOR, an action under the RESTART 2016-2022 Funding Programme. Its main objective is to encourage the employment of post-doctoral fellows by businesses organisations (Demetriades, Robledo-Bottcher, 2018). RESTART 2016-2020 Funding Programme has another action, the 'Integrated Projects', which promotes inter-sectoral mobility not only between academia and businesses but also government and societal partners.

Regarding progress under Priority 3 in Cypriot NAP, there are some indications that actions related to this area are ongoing. For example, the Research Promotion Foundation, in addition to its main role of implementing research and innovation activities, also coordinates EURAXESS Network in Cyprus and promotes the Charter and Code.

4. Gender equality and gender mainstreaming in research

A marked split in Cypriot performances was found for the gender equality and gender mainstreaming in research indicators. The share of female PhD was high at 60 %, comparing to a 48 % score for the EU-28 and positioning the country in Cluster 1. On the headline indicator, however—the share of women among Grade A positions in higher education—Cyprus' score put it in Cluster 4 and notably below EU-28 benchmark.

Cyprus has seen moderate yearly average increases on the complementary indicators, outpacing the EU-28 trends by 6–8 percentage points. For the headline indicator, Cyprus has seen yearly decreases on average in the most recent period, which brought about a moderate gap to the EU-28 trend.

Cyprus is actively supporting gender equality. First, issues of gender equality are included in R&I in the national Programmes Restart 2016-2020. More specifically, under the Programmes RESTART 2016-2020, the operators must comply with relevant laws that relate to equality of opportunity between men and women and non-discrimination. Furthermore, it is recommended that the players would consider the equality of gender in relation to the research content of the work and composition of the research team of the project.

Second, gender equality as a horizontal policy is being considered and promoted throughout the preparation and implementation of the co-financed by ESIF Programmes over the period 2014-2020, including monitoring, reporting and evaluation actions. Furthermore, the competent Authorities for Gender equality are participating as members in the Consultation Committee for the design and strategic monitoring of the programming documents 2014-2020, as well as in the Monitoring Committee of the co-financed Programmes. The Evaluation Plan of the Programmes includes a thematic Evaluation on Gender mainstreaming to be commenced in 2019.

Third, the Department of Higher and Tertiary Education (DAAE) aims at the creation of the appropriate conditions for the provision of tertiary education and training in academic and professional programmes of studies to the larger possible number of people. Amongst its responsibilities, the Department of Higher and Tertiary Education is responsible for monitoring the creation of gender equality plans in educational and research institutions.

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

a. Knowledge transfer

Knowledge transfer appeared to be the Cypriot research system's main weak point. The country's score on public-private collaborative research articles positioned it in Cluster 3—just below the ERA average but only about half the EU-28 score. On the other indicators in this Priority, Cyprus' scores positioned the country in Cluster 4 in both cases. The country's share of public R&D funded privately, measured at 0.7 %, was a fraction of the EU-28 score of 7.0 %.

Short-term changes in scores showed both potential for catch up and deepening gap to the EU-28. Cypriot firms notably increased their cooperation with universities and higher education institutions (13.3 % average annual increases, compared to 0.7 % increases at the EU-28 level) but they decreased their cooperation with governments and research institutions (4.5 % annual decrease, compared to 4.0 % annual increases for the EU-28). The number of public-private collaborative papers per capita increased (by 14.8 % annually, compared to 0.4 % for the EU-28), but private funding of public R&D decreased (by 4.8 % annually, compared to a 1.2 % decrease for the Member States overall).

Cyprus faces some issues when it comes to sub priority 5a. Even though research performing organisation produce reasonably well research outputs, the innovation and exploitation of these research results is weak (Theocharous, Gampfer, Robledo Böttcher, 2017). Business-academia cooperation remains relatively low. Research was traditionally seen as the primary role of

academia rather than business. Currently, most of the investments come from large pharmaceutical companies and some SMEs and start-ups.

As a result, there are many ongoing changes regarding sub priority 5a that have not been concluded as of yet. As a result, it is not possible to assess the real extent of the progress. A Bill for the modification of the existing national legislation governing the operation of public universities has been approved by the House of Representatives. The aim of this Bill is to promote the commercialisation of research results by public research organisations.

Furthermore, there is a political decision to create a national TTO in Cyprus. The Research Promotion Foundation is a dedicated organisation that will lead the process. TTO is expected to provide support to the academic and research institutions in Cyprus in relation to the protection and exploitation of their research results and intellectual property. It is currently in the preparation stage that includes preparation of a business plan, consultations with relevant stakeholders, which will lead to the final decision made by the government.

b. Open access

For the share of its papers available in OA (overall, as well as in gold OA and green OA specifically), Cyprus showed scores close to or slightly below the EU-28 benchmark, but above the ERA average (Cluster 2). The country performed less well on the OA availability of life science papers datasets, where its score was further below the EU-28 benchmark and where it also fell below ERA average (Cluster 3). Furthermore, the score on this indicator has seen annual decreases on average, bringing about a gap of about 13 percentage points to the EU-28 trend; this gap between trends of Cyprus and the EU-28 since the last ERA monitoring exercise were the largest observed across all indicators and all priorities.

In regards to sub priority 5b, the Council of Ministers, in 2016, approved the National Policy of the Republic of Cyprus for Open Access. It is expected to further enrich the levels of scientific knowledge produced and the use of these results in the creation of innovations. Furthermore, it was drafted with an objective to improve alignment with European policies and strive for open and immediate access to research, in particular to publicly funded research (Directorate General for European Programmes, Coordination and Development, 2017). The Cypriot policy promotes Green Open Access and researchers are encouraged to use repositories. Three universities (University of Cyprus, Open University of Cyprus and Cyprus University of Technology) have already established repositories and are in the process of formulating institutional policies.

One of the actions proposed by Cypriot NAP was to organise workshops, seminars and other awareness raising events on open access. In 2018, Cyprus OpenAIRE National workshop 2018 was organised. It attracted stakeholders like researchers, policy makers, research funders, institutions, librarians and repository managers. It provided different stakeholders with an opportunity to discuss relevant topics such as policy development, infrastructures, data related issues among others.

6. International cooperation

Cyprus performed very well on the headline indicator for the international cooperation priority. Its number of collaborative papers with non-ERA co-authors (per 1 000 researchers) was just above 100, compared to the 54 recorded for the EU-28. Scores on the two export indicators were close to EU-28 benchmarks and above ERA average (Cluster 2). Only for its share of doctoral students from outside the EU was Cyprus' performance notably below the EU-28 benchmark (3.7 % compared to 13.9 %), positioning Cyprus in Cluster 3.

Marked growth has been recorded for Cyprus' share of doctoral students from outside the EU, much above the EU-28 trend (40.7 % compared to 3.8 %); these annual increases seem to have been sustained steadily over the last several years, but at current trends it would be nearly a decade before Cyprus closed the gap to the EU-28. The country has also consolidated its lead to the EU-28 on the headline indicator with a positive growth trend moderately above the EU-28 trend. One indicator showed yearly decreases in scores on average, the share of medium and high technology products in exports (-10.5 % yearly average, which compared to 0.4 % growth at the EU-28).

On the national level, Cyprus encourages cooperation with third countries by signing Research, Innovation and Technology Cooperation Agreements and Memorandums of Understanding. They were concluded with countries such as the Israel, USA, Russia, China, Cuba and Egypt and are overlooked by joint committees (Directorate General for European Programmes, Coordination and Development, 2017). These committees include stakeholders from participating countries, which allows for a smoother and more efficient implementation of these agreements. Cyprus has included a number of schemes in the national funding programme RESTART 2016-2020 allowing for cooperation with countries with which Cyprus has concluded bilateral Research and Innovation Cooperation Agreements, but also with countries for which no agreements are in place.

Cyprus is also keen to attract international talent and encourage mobility of highly qualified third country nationals. A Cypriot government introduced a fast track procedure for their recruitment by using a start-up visa/permit, which came into effect in 2017 (Directorate General for European Programmes, Coordination and Development, 2017).

Important developments were the calls by the Research Promotion Foundation in 2018, for the implementation of joint projects with Israel and Russia, in the framework of the bilateral agreements with these countries. Moreover, Cyprus participates in the "Partnership for Research and Innovation in the Mediterranean Area" (PRIMA) as well as in the BLUEMED initiative offering a shared strategic framework for working towards a healthy, productive and resilient Mediterranean Sea.

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ANNEX: METHODOLOGICAL NOTES

	Indicator		Flag							
	Name	Data availability	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	Available						2016		
	EIS Summary Innovation Index (SII)	Available								
Priority 2	A - GBARD to transnatl coop (EUR/researcher)	Available						2016	2008	
	A - Collab papers w/ERA per 1 000 researchers	Available						2016		
	A - Public-to-public partnerships (EUR/researcher)	Available						2016		
	B - Roadmap for ESFRI projects									
	B - Participation in ESFRI projects and landmarks (combined)	Available								
	<i>B - Participation in developing ESFRI projects</i>	Available								
Priority 3	EURAXESS job ads per 1 000 researchers	Available						2016		
	Open, transparent, merit-based hiring process	Available								
	Share of doctoral students from EU countries	Available								
Priority 4	Share of women among Grade A in HES	Available	2015	2014-15						
	Gender dimension in research content	Available								
	Share of female PhD graduates	Available								
Priority 5	A - Firms coop with univ, gov, res inst	Available								
	A - Firms coop with univ	Available								
	A - Firms coop with gov, res inst	Available				2012				
	A - Share of public R&D funded privately	Available								
	A - Public-private collab papers per capita	Available								
	B - Share of papers in Open Access (Total)	Available								
	<i>B - Share of papers in Open Access (Gold)</i>	Available								
	<i>B - Share of papers in Open Access (Green)</i>	Available								
Priority 6	Collab papers w/non-ERA per 1 000 researchers	Available						2016		
	Share of doctoral students from outside EU	Available								
	Share med & high tech product export	Available								
	Share Knowledge intensive service export	Available								

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.¹ 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. 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 to 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 where data availability permits, 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, 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 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.

¹ 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).

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. 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.

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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