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# European Research Area

## Progress Report 2016

Country Snapshot  
**Iceland**



Research and  
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## **EUROPEAN COMMISSION**

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## COUNTRY SNAPSHOT

## Progress of Iceland towards ERA Roadmap

	Indicator		Performance				Growth				
	Name	Reference year	Score	Cluster	Lead/Gap (Δ %)	EU-28	Reference Period	CAGR	Trend (2005–2015)	Lead/Gap (Δ % pt)	EU-28
Across Priorities	<b>1 – Adjusted Research Excellence</b>	2013	40.2	2	-9	44.4	2010–2013	1.2%		-5.1	6.4%
	<b>2A – GBARD to transnatl coop (EUR/researcher)</b>	2014	6,927	1	176	2,507	2010–2014	:			7.8%
	<b>2B – Roadmap for ESFRI projects</b>	No national roadmap in place									
	<b>3 – EURAXESS job ads per 1 000 researchers</b>	2014	42.6	2	-9	47.0	2012–2014	:			7.8%
	<b>4 – Share of women among Grade A HES</b>	2014	26.3%	2	12	23.5%	2007–2014	7.1%		3.8	3.4%
	<b>5A – Research institute–private collaboration</b>	2012	9.7%	2	33	7.3%	2008–2012	:			3.5%
	<b>5A – Higher education–private collaboration</b>	2012	8.4%	3	-30	12.0%	2008–2012	:			1.3%
	<b>5B – Share of papers in Open Access (Total)</b>	2014	56.4%	2	8	52.2%	Not computed				
	<b>6 – Collab papers w/non-ERA per 1 000 researchers</b>	2014	62.2	2	23	50.7	2005–2014	9.9%		5.8	4.1%
	Headline Composite	2016	55	2	10	50	Not computed				
Priority 1	<b>Adjusted Research Excellence <sup>(c)</sup></b>	2013	40.2	2	-9	44.4	2010–2013	1.2%		-5.1	6.4%
	GBARD as share of GDP <sup>(c)</sup>	2014	0.969%	1	44	0.671%	2008–2014	1.5%		2.0	-0.5%
	European Innovation Scoreboard	2015	0.572	2	10	0.521	2008–2015	-0.1%		-0.8	0.7%
	GBARD as share of government expenditures	2014	2.14%	1	54	1.39%	2005–2014	0.4%		1.2	-0.8%
	R&D tax incentives as share of GBARD	2013	6.2%	3	-46	11.4%	Not computed				
	Share of GBARD allocated on project basis	2014	19.1%	Not computed			2009–2014	0.0%		Not computed	
	Patent applications per 1 000 researchers	2013	17.4	3	-42	29.8	2005–2013	-1.6%		-0.3	-1.2%
	Researchers per 1 000 active population <sup>(c)</sup>	2014	11.14	1	51	7.40	2005–2014	-2%		-4.9	2.4%
	Publications per 1 000 researchers <sup>(c)</sup>	2014	458	3	-5	481	2005–2014	8.1%		6.5	1.6%
Priority 1 Composite	2016	63	2	26	50	Not computed					
Priority 2	<b>A – GBARD to transnatl coop (EUR/researcher) <sup>(c)</sup></b>	2014	6,927	1	176	2,507	2010–2014	:			7.8%
	A – Collab papers w/ERA per 1 000 researchers <sup>(c)</sup>	2014	121.5	2	85	65.7	2005–2014	8.6%		5.0	3.6%
	A – Public-to-public partnerships (EUR/researcher) <sup>(c)</sup>	2014	:			512	2012–2014	:			42.1%
	A – Co-invention rate w/ERA partners <sup>(c)</sup>	2011–13 <sup>(R)</sup>	11.8%	3	-9	13.0%	2007–2013 <sup>(R)</sup>	0.3%		0.8	-0.5%
	<b>B – Roadmap for ESFRI projects</b>	No national roadmap in place									
	B – Participation in developing ESFRI projects	2016	4.8%	3	-77	20.7%	Not computed				
	B – Participation in operational ESFRI landmarks <sup>(c)</sup>	2016	0.0%	4	-100	30.2%	Not computed				
Priority 2 Composite	2016	48	3	-4	50	Not computed					



Country profile: Iceland

	Indicator	Performance					Growth				
		Name	Reference year	Score	Cluster	Lead/Gap (Δ %)	EU-28	Reference Period	CAGR	Trend (2005-2015)	Lead/Gap (Δ % pt)
Priority 3	<b>EURAXESS job ads per 1 000 researchers</b> <sup>(c)</sup>	2014	42.6	2	-9	47.0	2012-2014	:			7.8%
	Open, transparent, merit-based hiring process <sup>(c)</sup>	2012	49.0%	2	0	49.0%			<i>Not computed</i>		
	Share of doctoral students from EU countries <sup>(c)</sup>	2013	11.5%	2	56	7.4%			<i>Not computed</i>		
	Priority 3 Composite	2016	66	2	5	63			<i>Not computed</i>		
Priority 4	<b>Share of women among Grade A in HES</b> <sup>(c)</sup>	2014	26.3%	2	12	23.5%	2007-2014	7.1%		3.8	3.4%
	Gender dimension in research content <sup>(c)</sup>	2011-15 (R)	1.25	2	28	0.97	2005-2015 (R)	3.2%		3.7	-0.5%
	Share of women among heads of HES institutions <sup>(c)</sup>	2014	40.0%	1	99	20.1%			<i>Not computed</i>		
	Share of women researchers <sup>(c)</sup>	2013	44.4%	2	34	33.2%	2005-2013	1.5%		0.8	0.8%
	Share of women among PhD graduates <sup>(c)</sup>	2012	52.5%	2	11	47.3%	2005-2012	-1.2%		-2.4	1.2%
Priority 4 Composite	2016	71	1	54	46			<i>Not computed</i>			
Priority 5	<b>A - Research institute-private collaboration</b> <sup>(c)</sup>	2012	9.7%	2	33	7.3%	2008-2012	:			3.5%
	<b>A - Higher education-private collaboration</b> <sup>(c)</sup>	2012	8.4%	3	-30	12.0%	2008-2012	:			1.3%
	A - Share of public R&D funded privately <sup>(c)</sup>	2013	7.9%	2	-3	8.1%	2009-2013	:			0.9%
	A - Public-private collab papers per capita <sup>(c)</sup>	2014	187.3	1	453	33.9	2008-2014	1.2%		1.3	-0.1%
	<b>B - Share of papers in Open Access (Total)</b> <sup>(c)</sup>	2014	56.4%	2	8	52.2%			<i>Not computed</i>		
	<b>B - Share of papers in Open Access (Green)</b>	2014	51.7%	1	16	44.7%			<i>Not computed</i>		
	<b>B - Share of papers in Open Access (Gold)</b>	2014	21.7%	3	3	21.0%			<i>Not computed</i>		
	B - National Open Access policies adopted								<i>Not computed</i>		
Priority 5 Composite	2016	61	2	49	41			<i>Not computed</i>			
Priority 6	<b>Collab papers w/ non-ERA per 1 000 researchers</b> <sup>(c)</sup>	2014	62.2	2	23	50.7	2005-2014	9.9%		5.8	4.1%
	Share of doctoral students from outside EU <sup>(c)</sup>	2012	23.9%	2	-6	25.5%	2005-2012	9.5%		6.0	3.5%
	Licence & patent rev. from abroad, share of GDP <sup>(c)</sup>	2013	0.90%	2	42	0.64%	2006-2013	:			9.6%
	Co-invention rate w/non-ERA partners <sup>(c)</sup>	2011-13 (R)	15.0%	2	52	9.8%	2007-2013 (R)	-11.6%		-13.9	2.3%
Priority 6 Composite	2016	76	1	38	55			<i>Not computed</i>			

## **COUNTRY NARRATIVE**

Based on the Headline Composite indicator, Iceland is on its way towards achieving the European Research Area (ERA), falling in Cluster 2 and surpassing the EU-28 average by 10 %. Note that this composite score relies on the core high level 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 Secretariat, 2015). As such, it provides only a partial view of all the relevant and complementary dimensions captured by the indicators listed in the above table. The reader should be careful in extracting conclusions on overall performance, acknowledging the presence of variability across all the dimensions within and between priorities.

### **1. More effective national research systems**

Iceland performs quite well in this priority, falling into Cluster 2 and surpassing the EU-28 average by 26 % based on the priority composite. Iceland's share of researchers is 51 % higher than that of the EU-28, with 11.14 researchers per 1 000 active population. While Iceland surpasses the EU-28 average in terms of researchers, it falls slightly short of the average (5 % below) in terms of the number of publications per 1 000 researchers. Similarly, patent applications in Iceland fall 42 % below the EU-28 average, thereby placing Iceland in Cluster 3.

Despite significant financial pressures leading to some reductions in R&D intensity since 2002, and some reduction in funding for higher education and research organisations (OECD, 2014), Iceland's commitment to R&D is evident in its budget appropriations, where it surpasses the EU-28 average by 44 %, as well as in its actual spending on research, surpassing the EU-28 average by 54 %. Evidence was also found describing the difficulties faced by higher education organisations in reallocating funds outside the predefined categories considered in block grants received from the government (Bennetot Pruvot, Claeys-Kulik, & Estermann, 2015).

Iceland falls behind in terms of allocating tax incentives for R&D out of the national budget; it has a 46 % gap relative to the EU-28 average.

### **2. Optimal transnational co-operation and competition**

Overall, Iceland's performance in this priority falls into Cluster 3 and is just 4 % below the EU-28 average, according to the priority composite. Relative to the EU-28, Iceland's performance was stronger in Sub-priority 2a and weaker in Sub-priority 2b. The country participates in regional cooperation initiatives; for instance, in 2012 Iceland participated in a flagship project in the area of procurement of health care innovation, together with Norway, Finland, Sweden and Denmark (European Commission, 2014).

#### **a. Jointly addressing grand challenges**

Iceland's performance relative to the ERA average for the headline indicator of share of GBARD allocated to transnational cooperation was ahead of the EU-28 average by 176 % in 2014. Collaboration with other ERA partners also surpassed the EU-28 average for co-publications per 1 000 researchers. In 2014, Icelandic researchers co-published 121.5 papers, surpassing the EU-28 average by 85 %. Although Iceland's co-invention activity with its ERA partners lagged behind the EU-28 average by 9 % in 2013, trends between 2007 and 2013 suggest Iceland may be catching up to the EU-28 average with a growth rate that surpassed the EU-28 average by 0.8 percentage points. These findings corroborate Iceland's observed strengths in terms of indicators on public-private co-publications and international scientific co-publications (European Commission & Directorate-General for Research and Innovation, 2015).

#### **b. Make optimal use of public investments in research infrastructures**

Iceland does not have a national roadmap for research infrastructures in place, although since at least 2014 there have been plans for a Working Group for Research Infrastructures to be formed under the auspice of the Science and Technology Policy Council, with a mandate to update the roadmap for infrastructures (OECD, 2014). Currently, Iceland remains absent from participation in operational ESFRI landmarks (100 % behind EU-28). However, in 2014 Iceland reported a participation of 4.8 % in the development of ESFRI projects. The development of research infrastructures is supported through the Infrastructure Fund established in 2013 (OECD, 2014).

### **3. An open labour market for researchers**

Based on the composite indicator for Priority 3, Iceland surpasses the EU-28 average by 5 %, falling in Cluster 2. Iceland's labour market is on par with the EU-28 average of 49.0 % in terms of an open, transparent and merit-based hiring process. In 2014, there were 42.6 job ads per 1 000 researchers posted on EURAXESS, 9 % less than the EU-28 average of 47 job ads.

Iceland's share of doctoral students from EU countries is quite high, surpassing the EU average by 56 % in 2013. To a large extent this positive performance reflects the strong stance of the Icelandic labour market for university graduates, at levels close to full employment (OECD, 2014). Similarly, there is a high degree of openness to recruit foreign researchers for permanent research and academic positions; EURAXESS Iceland plays a major role in advertising, internationally, research positions in both academic and non-academic organisations (Deloitte, 2014). In contrast, 'Iceland does not participate in the Scientific Visa Package arrangements for long term admission' (Deloitte, 2014, p. 7). While salaries for researchers are at par with other non-academic positions, the wage gap between women and men stands at around 10 % (Deloitte, 2014).

### **4. Gender equality and gender mainstreaming in research**

According to the composite indicator for Priority 4, Iceland performs very well with a lead of 54 % over the EU-28 average, falling into Cluster 1. The country has been closing some gender gaps since 2010 (European Commission & Directorate-General for Research and Innovation, 2016b). In regard to the gender wage gap, for example, Iceland has introduced a policy to bridge the gap via voluntary measures or through mandated advisory committees with monitoring responsibilities. Also found in Iceland are provisions to mandate workplaces over a certain size to develop gender equality action plans, including research and education organisations (Lipinsky, 2014).

In Iceland the share of women among PhD graduates was higher than the EU-28 average by 11 % in 2012; however, trends reveal the number of women among PhD graduates is on the decline, with an annual decrease of 1.2 % recorded in the 2005-2012 period. Women in the Icelandic research sector have a better representation than in the EU, with Iceland surpassing the EU-28 average by 34 % and 12 % for the share women researchers and women among Grade A in HES respectively. Iceland performs very well in terms of the share of women among decision-makers of higher education system (HES) institutions, surpassing the EU-28 average of 20.1 % by 99 %. Finally, the indicator on the inclusion of the gender dimension in research content shows a strong performance, with Iceland surpassing the EU-28 average by 28 %.

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

Overall, Iceland performs well in this priority, falling in Cluster 2 with a lead of 56 % based on the priority composite.

#### **a. Knowledge transfer**

The importance that Iceland grants to increasing interactions and linkages between research and higher education organisations with companies is supported by publicly funded research grants and technology transfer contracts, although the patenting activities of universities and public research organisations remains relatively low (OECD, 2014). In practice, the Icelandic research institutes perform better than the higher education sector in terms of establishing collaborations with industry. The indicator on research collaboration with the private sector involving research institutes surpasses the EU-28 average by 33 %, while the indicator related to the higher education sector lags behind by 30 %.

Iceland's share of R&D funded by private capital sits at 7.9 %, falling below the EU-28 average by 3 %. Iceland is very strong in terms of publications that result from collaborations between the public research sector and private enterprises, surpassing the EU-28 average of 33.9 % by 453 %.

Labour mobility between research organisations and the productive sector appears to be a good practice to promote knowledge transfer in Iceland (European Commission & Directorate-General for Research and Innovation, 2016a).

## **b. Open access**

Publishing in some form of open access outlet has been well received by the Icelandic research community, as the total share of papers published in open access surpasses the EU-28 average by 8 %. Publishing in green open access seems to be favoured, having a share of 51.7 %, compared to gold open access with 21.7 %.

## **6. International cooperation**

Iceland performs well in this priority, falling into Cluster 1 and surpassing the EU-28 average by 38 % according to the priority composite. Iceland has a strong co-invention rate (15 %) with non-ERA partners, surpassing the EU-28 average by 52 %. Similarly, the share of its GDP from licences and patent revenues obtained from abroad is high, surpassing the EU-28 average by 42 %. The number of papers published in collaboration with partners outside of ERA has increased annually by 9.9 % between 2005 and 2014, thereby giving Iceland a lead of 5.8 percentage points over the EU-28 average.

The strong ties between Iceland and international partners are reflected in the significant proportion of research funding coming from abroad. This represents about 20 % or more of total business R&D expenditure (OECD, 2015).

## **Summary**

Iceland performs well across priorities, especially in Priorities 2a, 4, 5 and 6. However, it has much room for improvement in Sub-priority 2b, due to its low level of participation in early phase ESFRI projects as well as landmarks.

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## ANNEX: METHODOLOGICAL NOTES

	Indicator	Data availability	Flag								
			Exception to ref. year	Exception to ref. period	Break in time series	Definition differs	Estimated	Provisional	Potential outlier	Revised	Eurostat estimate
Priority 1	<b>Adjusted Research Excellence</b>	Available									
	GBARD as share of GDP	Available						2014			
	European Innovation Scoreboard	Available									
	<i>GBARD as share of government expenditures</i>	Available						2014			
	<i>R&amp;D tax incentives as share of GBARD</i>	Available	2011								
	<i>Share of GBARD allocated on project basis</i>	Available	2013	2009-2013				2014			
	<i>Patent applications per 1 000 researchers</i>	Available			2011, 2013						
	<i>Researchers per 1 000 active population</i>	Available		2005-2013	2011, 2013						
	<i>Publications per 1 000 researchers</i>	Available			2011, 2013						
Priority 2	<b>A - GBARD to transnatl coop (EUR/researcher)</b>	Available	2013	No CAGR	2011, 2013						
	A - Collab papers w/ERA per 1 000 researchers	Available			2011, 2013						
	A - Public-to-public partnerships (EUR/researcher)	Unavailable									
	A - Co-invention rate w/ERA partners	Available									
	<b>B - Roadmap for ESFRI projects</b>	Available									
	B - Participation in developing ESFRI projects	Available									
	B - Participation in operational ESFRI landmarks	Available									
Priority 3	<b>EURAXESS job ads per 1 000 researchers</b>	Available		No CAGR	2013						
	Open, transparent, merit-based hiring process	Available									
	Share of doctoral students from EU countries	Available									
Priority 4	<b>Share of women among Grade A HES</b>	Available	2012	2007-2012							
	Gender dimension in research content	Available									
	Share of women among PhD graduates	Available									
	Share of women among heads of HEI	Available									
	Share of women researchers	Available					2011, 2013				
Priority 5	<b>A - Research institute-private collaboration</b>	Available	2010	No CAGR							
	<b>A - Higher education-private collaboration</b>	Available	2010	No CAGR							
	A - Share of public R&D funded privately	Available			No CAGR	2013					
	A - Public-private collab papers per capita	Available			No CAGR	2013					
	<b>B - Share of papers in Open Access (Total)</b>	Available									
	<b>B - Share of papers in Open Access (Green)</b>	Available									
	<b>B - Share of papers in Open Access (Gold)</b>	Available									
	B - National Open Access policies adopted	Unavailable									
Priority 6	<b>Collab papers w/non-ERA per 1 000 researchers</b>	Available				2011, 2013					
	Share of doctoral students from outside EU	Available									
	Licence & patent rev. from abroad, share of GDP	Available	2012	No CAGR							
	Co-invention rate w/non-ERA partners	Available									



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The European Research Area (ERA) Progress Report 2016 shows the state of play in ERA. A lot has happened in the European research landscape since the last edition in 2014. The ERA Roadmap at EU level was endorsed by the Council in early 2015. This called for top action priorities that will have the biggest impact on Europe's science and innovation systems. Member States were invited to draw up national action plans based on this approach. Last year almost all Member States and a number of Associated Countries have published their National Action Plans on ERA showing clear political ownership of ERA.

This analysis carried out in 2016 shows strong progress in all ERA priorities across the EU. This was possible because of a true partnership among the Member States and Associated Countries, the Commission and research stakeholder organisations. But we cannot be complacent. European strength in the field of Research and Innovation is needed more than ever to reinforce competitiveness but is also increasingly challenged to deliver on impacts. The Commission's policy agenda on Open Science, Open Innovation and Open to the World will open up ERA to future challenges, like digitalisation and global networks. There are new barriers to break down to create more wealth and security for our citizens.

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