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REPORT FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT

The European Research Area: time for implementation and monitoring progress

{SWD(2017) 21 final}

The European Research Area: time for implementation and monitoring progress.

1. INTRODUCTION

In 2014, two years after the adoption of its Communication on 'A reinforced European Research Area (ERA) partnership for Excellence and Growth'[1], the Commission reported that Member States and research stakeholders had made good progress in delivering the ERA. However, more efforts were needed to make ERA work, notably through the implementation of necessary ERA reforms in Member States and Associated Countries[2].

The ERA evolves around six priorities:

- More effective national research systems;
- Optimal transnational co-operation and competition, including 'optimal transnational cooperation and competition' and 'Research Infrastructures';
- An open labour market for researchers;
- Gender equality and gender mainstreaming in research;
- Optimal circulation, access to and transfer of scientific knowledge, including 'Knowledge circulation' and 'Open Access';
- International cooperation.

In May 2015, the European Council reaffirmed its commitment to a fully operational ERA and endorsed the ERA Roadmap 2015-2020, a living document to guide Member States in structuring their implementation of the ERA priorities at national level. It called on Member States to implement the ERA Roadmap through appropriate measures in ERA national action plans (NAPs) and strategies. Monitoring of ERA Roadmap implementation would be integrated into the ERA Progress Report 2016, on the basis of headline indicators proposed by the European Research and Innovation Advisory Committee[3].

To date, 24 Member States and five Associated Countries have adopted an ERA national action plan 2015-2020, and it is expected that all Member States will have their action plans approved in the near future. As the drivers of national ERA policy reforms, these NAPs give a rich insight into all forthcoming ERA strategies and corresponding policy measures in the Member States and Associated Countries.

The present ERA Progress Report 2016 summarises the state of play of ERA and the progress on ERA implementation over the period 2014-2016[4]. For the first time progress on ERA has been measured for each country on each priority, on the basis of the ERA Monitoring

[1] COM(2012)392 final
[2] COM(2014)575 final
[3] Doc. 9351/15. A description of these indicators is included in the statistical ERA Monitoring handbook which is part of the accompanying Science Metrix study. The compound average annual growth rates of these indicators are presented in table 1.
[4] Policy developments have been described over the period mid 2014 (cut-off date for the 2014 ERA Progress Report) till mid-2016 (cut-off date for the 2016 ERA Progress Report. However, indicators are only available after some delay. Therefore most of the indicators in this report refer to previous years.

Mechanism, a set of 24 core indicators jointly defined by Member States, research stakeholders and the Commission.

The report also provides a first insight into the development of the ERA priorities, their link to the ERA Roadmap 2015-2020 and the main areas targeted in the ERA NAPs. The table at the end of the document provides the growth rates on the headline indicators.

An accompanying Staff Working Document and the report "Data gathering and information for the 2016 ERA monitoring" by Science-Metrix[5] provides quantitative data on a set of indicators with additional policy relevant qualitative information.

[5] (Web reference to be included at the moment of publication).

2. KEY FINDINGS

2.1. More effective national research systems

Objective:
Effectively designed and efficiently functioning national research and innovation (R&I) systems deriving maximal value from public money.

Deliverables:
Better alignment of national policies with shared European priorities, applying the core principles of international peer review for funding organisations, finding a satisfactory balance between competitive and institutional funding and invest in wider education and innovation systems.

Research excellence has increased with an annual growth rate of 6.4 % over the period 2010-2013 for the EU-28 average[6]. Almost all countries have national strategies for R&I, single overarching strategies as well as multiple strategies by different government bodies.

However, R&I funding remains an issue as outlined in the previous progress report (2014). Further streamlining of funding procedures would help reduce fragmentation, increase the return on research funding while facilitating collaboration across borders and sectors. The criteria and processes for funding mechanisms would benefit from further fine tuning. National R&I funding commitments need to be clear and explicit, and be laid out long term. This will provide a predictable environment sought by both the public and the private sectors.

ERA NAPs are predominantly focusing on how to improve the legal frameworks for national R&I systems; developing long term national strategies for R&I; creating new funding mechanisms with competitive elements (such as the example of Finland and Netherlands to strengthen university research profiles); and find complementarities between national and EU funding including public-private partnerships. While ERA NAPs put more emphasis on developing overall strategies, frameworks and evaluation mechanisms, less attention is being paid to the exact level and mechanisms for funding.

Overall Conclusion

The analysis shows that most countries have made progress in the field of research excellence and almost all of them have adopted national strategies for R&I. Several Member States are redefining their National R&I strategies based on a broad concept of innovation, encompassing education, R&I to achieve greater efficiencies. A first inventory of the ERA NAPs shows a more holistic strategic approach to R&I will be strengthened in the future. A necessary condition, however, is to ensure more stable funding mechanisms of government investment.

2.2. Optimal transnational cooperation and competition

Jointly addressing grand challenges

[6] Staff Working Document, table 1

Objective:
Working together in a better way to address the grand challenges that face us all is central to Europe's ability to respond to a dynamic and changing world.

Deliverables:
Ensuring that ministries and research funding organisations work more closely together to achieve better alignment with the themes and priorities of the Joint Programme Initiatives, mutual recognition of evaluation procedures, common terminologies and procedures for implementing R&I programmes, better integration of calls and promoting a more international perspective.

The findings[7] show one of the highest growth rates among all ERA headline indicators, with an annual growth rate of 7.8 % over the period 2010-2014 for national GBARD allocated to EU-wide transnational public R&D[8]. While this result is an indication of the increasing internationalization of science in general, the even much higher growth rate of the complementary indicator on national contributions to Joint Programming (Art 185 initiatives, JPIs and ERA-NETs) (42% between 2012-2014) underlines the increasing importance governments attribute to the more policy driven joint programming process.

The main challenges identified are that national and international funding arrangements would benefit from further harmonization, which can also facilitate international researcher mobility. In addition, Joint Programming Initiatives (JPIs) addressing grand challenges could benefit from being more explicitly linked to the smart specialization strategies of the partners involved, and vice versa. The assessment of the societal benefits of research needs to be more robust to facilitate improved research management, as well as to better communicate the value of research to the public, demonstrating return on investment[9].

Most ERA NAPs focus on a broad range of measures and activities of Member States and Associated Countries to strengthen their participation in Joint Programming. The NAPs aim to better align national and Europe-wide R&D programming that are responding to the main challenges identified.

Overall Conclusion

The analysis shows substantial progress in most Member States concerning their participation in the JPI's over the last years. Referring to past trends and measures implemented and/or planned in the NAPs, it can be assumed that the volume, quality and impact of Joint Programming will continue to grow substantially. This will especially be the case when an EU policy framework and additional financial means from EU budgets continue to act as a catalyst for Member State action.

[7] Findings throughout this report refer to the Science-Metrix Report "Data gathering and information for the 2016 ERA Monitoring.
[8] Staff Working Document, table 2a
[9] Science Metrix report, section 3.2.2

Research Infrastructures

Objective:

High-quality, accessible Research Infrastructures are at the heart of the knowledge triangle and key to Europe's ambition to lead the global movement towards Open Science. Member States have developed a collective approach through the European Strategy Forum on Research Infrastructures (ESFRI), Horizon 2020 and the European Research Infrastructure Consortium (ERIC) legal framework.

Deliverables:

Ensuring that the ESFRI roadmap and the national R&I roadmaps are compatible with each other, facilitating access to research infrastructures to Member States which are unable to invest in large infrastructures and careful examination of the planned financial contributions.

The findings show that many Member States have developed and implemented national roadmaps for research infrastructures, using the overall European Strategy Forum on Research Infrastructures (ESFRI) Roadmap as a reference to define their priorities. However, these national roadmaps would benefit from a clear and consistent approach to outline the costs associated with research infrastructures. Furthermore, the long-term sustainability of research infrastructures, including the funding of operational costs, should be considered from the inception phase of the project. National funding mechanisms and decision-making processes should also be further coordinated to speed up infrastructure development. Moreover, regional research capacity disparities should, to a certain extent, be addressed through the selection of locations for research infrastructures. Private sector inclusion in research infrastructure projects, from the very start, could help to catalyse private sector involvement in R&I more broadly.

Many national roadmaps highlight the importance of a coordinated approach to research infrastructures at European level. Concrete measures are being taken to strengthen national involvement in pan-European facilities, to establish stable funding mechanisms and to monitor the implementation of prioritized projects. The roadmaps also emphasize the need to evaluate the current situation to ensure optimal implementation. Some roadmaps also include planning at national level on e-infrastructures, the horizontal elements that enable networking, processing, data management and open access.

The conclusion is that significant progress has been made to link the national decision-making processes on Research Infrastructures to priorities defined at European level. However, the coordinated funding for implementation and operation could be given more attention[10].

[10] Science Metrix report, section 3.2.4.

Overall Conclusion

The analysis of national roadmaps for research infrastructures demonstrates that significant progress has been made in linking the priorities at national level to those defined in the framework of ESFRI. This growing alignment increases the coherence of the European research infrastructure ecosystem and fosters the competitiveness of ERA. However, in order to further strengthen the effectiveness of public investments in research infrastructures, a strategy to ensure long-term sustainability should be agreed between Member States.

2.3. An open labour market for researchers

Objective:

A truly open and excellence-driven ERA in which highly skilled and qualified people can move seamlessly across borders to where their talents can be best employed.

Deliverables:

Governments and stakeholders should consider how the rules for national funding schemes could better support the principles of openness, transparency and merit-based recruitment and remove legal barriers to open recruitment of researchers in research performing organisations and define new ways to researcher career development.

The findings show the number of research vacancies advertised through the EURAXESS job portal has increased with an annual growth rate of 7.8 % over the period 2012-2014 for the EU-28 average[11].

The report shows that EURAXESS usage varies widely across countries. The benefits of open, transparent and merit-based recruitment policies are also more important for early stage researchers compared to established researchers, where other criteria seem to have more influence in hiring and promotion decisions[12]. Results show that policy efforts aimed at increasing the portability of grants ('Money Follows Researcher' model) can contribute to a further improvement of international researcher mobility.

Heterogeneity in social security coverage remains and discourages mobility from countries with more protective systems. In order to improve recruitment as well as working conditions it is important to further develop human resources procedures. Pension right transferability and language competency for teaching requirements are flagged as two salient topics. To address the first issue the Commission has launched a pan-European supplementary pension fund for researchers called the Retirement Savings Vehicle for European Research Institutions (RESAVER) in 2016.

Regarding the second issue legal barriers for recruitment seem to have been removed in most countries. The major remaining issue for recruiting established foreign researchers seems to be the national language requirement for teaching.

[11] Staff Working Document, table 3
[12] Science Metrix report, section 3.3

Many ERA NAPs focus on promoting EURAXESS in order to increase researcher mobility, both across borders and sectors. The promotion of the Human Resources Strategy for Researchers and more focus on tenure tracks also serves this purpose. Furthermore, ERA NAPs highlight the importance of open, transparent and merit-based recruitment procedures and the challenges related to social security for mobile researchers.

Overall Conclusion

The results show that more attention is being paid to open, transparent and merit-based recruitment procedures at national level. The further promotion of the EURAXESS portal as a repository of researchers' rights is key in this regard.
Potential measures to further facilitate the international mobility of researchers include equal access to national research funding programs for foreign researchers, and increasing the portability of research grants. Additional measures include the further development of human resources procedures in research performing institutions. Pension right transferability and language competency for teaching requirements are evolving topics.

2.4. Gender equality and gender mainstreaming in research

Objective:

To foster scientific excellence by fully utilising gender diversity and equality and avoiding an indefensible waste of talent.

Deliverables:

Developing policies on gender equality, paying special attention to area's where women are underrepresented, promoting approaches to gender mainstreaming and incorporating gender perspectives in research.

The report shows that the share of women in Grade A positions in the Higher Education Sector has increased by 3.4 % compound annual growth rate in the period 2007-2014 in the EU-28[13] This reached 23.5 % for the EU-28 in 2014. Progress has been observed in almost all Member States.

The analysis also shows that one of the main challenges the countries are facing remains the glass ceiling impeding women to reach higher positions. This is reflected in the fact that one third of researchers are women, while at higher level positions the share of women drops below one quarter. Although data shows the situation is improving, the pace remains slow.

The ERA NAPs show a significant improvement in fostering gender equality in R&I[14] compared to the state of play reported in the 2014 ERA Progress Report. The monitoring of gender equality implementation is ongoing or planned. This indicates a growing interest and commitment at national level to the attainment of gender equality in national research and higher education systems. The extent and quality of actions for gender equality vary between Member States. The integration of the gender dimension in research programs remains a challenge in many Member States.

[13] Staff Working Document, table 4

[14] Three objectives have been defined : 1. Remove barriers to the recruitment and career progression of female researchers, 2. Address gender imbalances in decision making processes and 3.Strengthen the gender dimension in research programmes.

Overall Conclusion

The analysis shows that the majority of Member States have made progress in setting up or planning more systemic strategies for gender equality in R&I. The measures described in the ERA NAPs will continue to support institutional change through gender equality plans to act as a catalyst for Member State action. The high number of planned measures creates expectations of significant progress in the coming years. The actual improvement will depend on the capacity of Member States to maintain and reinforce the institutional change strategies adopted so far in the long term.

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

Knowledge transfer and open innovation

Objective:
Removing barriers to the wider use of knowledge to increase growth and competitiveness for Europe by fully implementing knowledge transfer policies.

Deliverables:

Promoting effective knowledge transfer mechanisms, establishing policies and procedures for intellectual property management.

The analysis confirms that substantial economic benefits can be derived from the transfer, uptake and actual use of the results of research. It can even be seen as a fundamental step to address grand challenges (priority 2a) and enhancing social prosperity. Despite these benefits of knowledge circulation, Europe is not yet ready to tap into the region's potential to capitalise on the investments in research and the potential these have for growth[15].

The report shows an average annual growth rate of 3.5 % over the period 2008-2012 for innovative firms cooperating with public or private research institutions, and 1.3 % for innovative firms cooperating with higher education institutions[16].

The general obstacle to knowledge transfer is the lack of attention and support to the market uptake of research results. This issue remains underdeveloped both at EU and national level. One main obstacle is low private sector employment of researchers and the limited experience researchers have outside of academia. This is particularly true for young researchers.

Technology and innovation centres are very important tools to ensure that knowledge circulates optimally. The core businesses of these centres are to match industry needs with research activities and support the commercialisation of research.

[15] "Boosting Open Innovation and Knowledge Transfer in the European Union" by the Independent Expert Group report on Open Innovation and Knowledge Transfer: Debackere et al., 2014
[16] Staff Working Document, table 5a1 and 5a2

Most ERA NAPs are looking at the main challenges like IP management and possible legislation in this respect. The development of tools for public-private cooperation in this area is also targeted, as well as training programmes for entrepreneurship.

Overall Conclusion

The analysis shows that knowledge transfer is extremely diverse in Europe. There is a need to consider how to integrate the funding into each interlink of the knowledge chain and ensure that research is brought to the market more often. Representatives from research organisations came up with several proposals like joint industry-academic events; joint industry-Research Performing Organisation (RPO) calls for application and training; and career development initiatives integrating doctoral students with private industry. This will build trust and intensify public-private collaboration and promote intersectoral mobility.

Open Access to publications and data

Objective:

Open Access to scientific publications and data promotes wider and faster circulation of scientific ideas, increasing the benefits to both science itself and to society as a whole. It is a key part of the wider move to Open Science.

Deliverables:

Promoting Gold and/or Green Open Access in line with the Commissions 2012 Recommendation on access to and preservation of scientific information, consider aligning and coordinating negotiations with scientific publishers to support a transition to new and more balanced business models.

The analysis shows that 24 Member States have adopted policies in support of Open Access in 2016[17]. The majority of these measures have been adopted since 2012, and some countries that were among the early adopters have since complemented their policy with further measures. The Open Access movement has evolved very rapidly, passing the 50% 'tipping point' in recent years. For the publication year 2014 approximately 52% of EU-28 publications were available in Open Access[18].

However, Open Access policies and practices are very diverse and can vary both between countries and Research Funding Organisations. To reach full Open Access there is a need to further develop publishing models and reward systems, as well as federate infrastructures to share and reuse research data.

Perceived obstacles to further progress include the cost of switching to open access, diversity of copyright laws across national contexts, opacity of the legal aspects of rights ownership, private sector concerns about obligations to share data, Researchers are also concerned about

[17] Science-Metrix report: Data gathering and information for the 2016 ERA monitoring, table 25
[18] Staff Working Document, table 5b

the consequences of open access publishing on the assessment of the impact of their work and therefore on career progression.

Open Access to research data has also been developing in the last years but is at a less advanced stage. Important technical and financial barriers impede a transition to effective storage and reuse of data, while the lack of data specialists and the insufficient level of data skills among the population of researchers is a bottleneck for effective implementation.

Member States adopted on 27 May 2016 Council Conclusions on the transition towards an Open Science System. In particular they called for making open access to scientific publications the option by default for publishing the results of publicly funded research and supported a transition to immediate open access as the default by 2020.

The ERA NAPs are mainly focusing on development and support to Open Access to publications, in particular creating e-infrastructures, strategies and action plans to support Open Access to publications.The main emphasis is still on soft measures supporting open access to data and publications while there is less attention on regulatory aspects.

Overall Conclusion

Open Access to research results (publications and data) is being supported by a growing number of universities, research centers and funding agencies across Europe in recent years. However, as the number of policies and initiatives has increased, this has resulted in a very diverse ecosystem in Europe. As a next step, more coordination and policy convergence across national borders could be useful, based on best practices. In the case of open research data policies, much still needs to be done and Horizon 2020 provides a useful reference model.

2.6. International cooperation

Objective:

To ensure that Europe as a whole is able to take maximum advantage of the best R&I opportunities in a global setting.

Deliverables:

Defining national strategies for internationalisation to foster stronger cooperation with key third countries, better coordination of objectives and activities of the EU, Member States and Associated countries towards non-EU countries and international organisations, better uptake of the results of multilateral EU and intergovernmental projects and better use of bi- and multilateral agreements between EU Member States and international partner countries.

The analysis shows a substantive annual growth rate of 4.1 % for co-publications with non-ERA partners in the years 2005-2014[19]. This was slightly higher than the growth rate in the same period for co-publications with ERA partners where the growth rate was 3.6 %.

Main findings show that international collaborations with third countries are developing, although Western European nations are leading the way and a gap is opening with the other ERA countries. In addition, international recruitment is advancing as well, although once again Western Europe is leading the charge on this front, and pulling away from the other countries. A broader focus geographically of human resourcing will be important to address the disparities in the research environment.

Most ERA NAPs are focusing on the development of strategies to facilitate intra-EU cooperation, information measures and measures to increase outreach and networking. There is a growing recognition among Member States of the relevance of international cooperation and for joint action in particular vis-a-vis the emerging science nations.

Overall Conclusion

Analysis shows that many Member States experience substantial progress concerning their international cooperation capacities over the last years. It seems that the added value from joint approaches in international cooperation between the Member States and the EU as one strategy element beside the existing bilateral cooperation is no longer questioned. Especially smaller Member States underline the need for and the added value of joint approaches in particular vis-a-vis the large existing and emerging science nations.

3. CONCLUSIONS

The report confirms that ERA has made strong progress over the last years. All headline indicators show progress over time according to the EU-28 averages, although large disparities, both in performance levels as in growth rates between countries, exist. (See overview table of the growth rates).

That institutional contexts vary between countries indicates that there is still much room for further progress on all priorities. The EU and its Member States still have not fully implemented ERA as envisaged in the 2012 Communication. Further work is needed by different actors. ERA 'top-scores' can be used as potential benchmarks for countries lagging behind.

The ERA NAPs that have been published by Member States and Associated Countries are a clear proof of political ownership on all ERA priorities and show a high level of ambition to make further progress on ERA.

The Commission’s policy agenda on Open Science, Open Innovation and Open to the World will also open up ERA to future challenges, like digitalisation and global networks. This

[19] Staff Working Document, table 6

reconfirms that the ERA concept evolves over time. New challenges arise and it is up to governments to define how to take advantage of opportunities . There are new barriers to tear down. A successful ERA will lead to Open Innovation, Open Science and Open to the World.

At the same time focus should now turn towards reinforced implementation to deliver on all ERA priorities. This is the responsibility of Member States, with monitoring and policy support from the Commission.

The ERA Stakeholders' Organisations sustained their efforts towards the implementation of ERA priorities[20]. Their commitment was underlined by the signing of a new Joint Statement by the Presidents of the five organisations represented in the ERA Stakeholders' Platform and Commissioner Moedas in June 2015. In addition, the ERA Stakeholders' Platform welcomed new members in 2016, thereby broadening its spectrum of actors. EIRMA, ERF-AISBL, ERRIN, EU-LIFE and TAFTIE were granted observer status after they adopted ERA action plans.

The integration of the monitoring of the ERA Roadmap in the current progress report is a powerful tool to help Member States and Associated Countries define and implement the necessary ERA reforms at national level. Also streamlining with other reports on ERA priorities could be considered. Using the ERA Monitoring Mechanism as a backbone could further strengthen the quantitative foundation of ERA NAPs. The ERA monitoring process could further be strengthened by mutual learning exercises on the basis of a combination of the ERA NAPs and the complementary country snapshots for the next ERA Progress Report.

[20] Staff Working Document, annex 3.

Growth of countries across ERA Priorities

Country	Headline Indicators[21]						
	JRC Res Excellence (2010-2013)	GBARD transnat (2010-2014)	EURAXESS job postings (2012-2014)	Women Grade A (2007-2014)	Public or Private research insitutions co-op (2008-2012)	Higher educ-private co-op (2008-2012)	Non-ERA pubs per 1000 res (2005-2014)
EU-28	**6.4%**	**7.8%**	**7.8%**	**3.4%**	**3.5%**	**1.3%**	**4.1%**
AT	2.6%	3.4%	2.3%	*6.0%*	14.7%	1.7%	2.9%
BE	9.5%	1.0%	1.8%	*6.4%*	0.4%	-1.2%	3.0%
BG	0.6%	*16.0%*	-2.0%	5.5%	-9.3%	-1.7%	1.4%
CH	4.2%	:	4.6%	*-1.9%*	:	:	*1.4%*
CY	8.7%	0.7%	-1.4%	*4.6%*	11.2%	-6.5%	8.4%
CZ	1.9%	-3.4%	-39.1%	1.7%	-2.3%	2.3%	6.3%
DE	6.0%	*-1.1%*	8.5%	5.9%	:	:	0.0%
DK	8.4%	-3.7%	3.0%	*5.4%*	-7.2%	-4.6%	3.5%
EE	3.8%	25.7%	13.7%	3.2%	10.0%	8.8%	8.4%
EL	5.5%	*-12.6%*	-8.8%	4.3%	:	:	:
ES	5.9%	6.2%	21.3%	1.9%	13.1%	11.9%	9.1%
FI	5.6%	*-0.2%*	-29.4%	2.5%	-0.1%	-1.5%	8.9%
FR	6.2%	:	16.7%	*2.5%*	-1.6%	-2.9%	4.2%
HR	5.2%	22.5%	308.2%	*6.4%*	-2.2%	-0.1%	6.3%
HU	5.2%	3.8%	-29.4%	-0.7%	-2.6%	-2.3%	3.0%
IE	7.3%	5.7%	17.2%	*12.7%*	:	:	6.2%
IS	:	:	:	:	:	:	9.9%
IT	5.6%	*18.1%*	10.7%	2.1%	12.2%	0.2%	2.9%
LT	-0.6%	24.8%	-19.2%	12.3%	2.9%	9.3%	7.7%
LU	13.6%	35.2%	-26.0%	*8.6%*	-12.0%	-12.3%	13.8%
LV	4.1%	47.1%	72.3%	*2.8%*	0.1%	-9.8%	13.8%
MT	8.0%	-100.0%	:	*34.6%*	-0.6%	7.6%	16.4%
NL	9.1%	10.4%	13.4%	6.3%	:	:	5.4%
NO	7.1%	-3.9%	11.2%	5.4%	0.8%	0.3%	6.0%
PL	3.6%	76.8%	-4.7%	1.6%	-3.8%	-3.0%	3.0%
PT	4.7%	1.4%	31.0%	*2.0%*	3.5%	1.2%	11.1%
RO	1.3%	*9.5%*	-34.8%	*-1.1%*	22.9%	-4.0%	8.6%
RS	-1.5%	:	-12.1%	:	:	:	*4.6%*
SE	5.2%	*-2.5%*	17.0%	4.3%	8.9%	4.2%	3.8%
SI	-1.0%	*-18.4%*	21.2%	6.0%	:	:	5.3%
SK	4.0%	15.7%	111.8%	3.3%	-11.5%	0.1%	1.6%
UK	9.1%	11.0%	4.9%	:	:	:	5.7%

[21] A description of these indicators is included in the statistical ERA Monitoring handbook which is part of the accompanying Science Metrix study