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European Research Area

Progress Report 2014
{SWD(2014) 280 final}

1. INTRODUCTION

The European Research Area: key driver of knowledge generation

The objective of the European Research Area (ERA) was endorsed by the March 2000 European Council and is anchored in the 2007 Treaty of Lisbon. Its aim is to achieve a “unified research area open to the world, based on the Internal Market, in which researchers, scientific knowledge and technology circulate freely and through which the Union and its Member States strengthen their scientific and technological bases, their competitiveness and their capacity to collectively address grand challenges”¹.

In 2011, the European Council called on those involved at EU, Member State and stakeholder level to address the remaining gaps and complete ERA by 2014 in order to create a genuine single market for knowledge, research and innovation.

The 2012 Communication on 'A Reinforced European Research Area Partnership for Excellence and Growth' (hereafter ERA Communication)² identified five priorities for action: more effective national research systems, optimal transnational co-operation and competition, an open labour market for researchers, gender equality and gender mainstreaming in research, and optimal circulation, access to and transfer of scientific knowledge including via digital ERA. Complementing this partnership, in 2012 the Commission also adopted two further Communications entitled 'Towards better access to scientific information: Boosting the benefits of public investments in research'³ and 'Enhancing and focusing EU international cooperation in research and innovation: a strategic approach'⁴.

The ERA principles are fully integrated in the Europe 2020 Innovation Union flagship initiative to foster Growth and Jobs.

Building on the 2013 ERA Progress Report, the present report summarises progress made towards completing ERA and the accompanying staff working document *Facts and Figures* (hereafter '*Facts and Figures*') provide a more detailed analysis.

Given the internal market dimension of ERA and its impact on investments in research and innovation, the present report also responds to the Strategic Agenda for the Union in times of Change, agreed by Member States at the June 2014 European Council meeting, in particular to its priority "A Union of jobs, growth and competitiveness".

2. KEY FINDINGS FROM THE SECOND ERA PROGRESS REPORT

The 2014 Progress Report provides an overall picture of progress made in the ERA priorities in all Member States and some Associated Countries⁵. The 2013 Progress Report presented an overview of the political context, steps taken and first achievements. The 2014 Progress Report presents the new and updated measures adopted at national level, and for the first time

¹ COM(2012)392 final

² idem

³ COM(2012) 401 final

⁴ COM(2012) 497

⁵ Namely Switzerland, Norway, Iceland, Serbia, Montenegro and Turkey

presents and compares them with the implementation of ERA actions at national level by research funding and research performing organisations.

2.1. More effective national research systems

Improving the quality of research and innovation strategy development and the policy-making process is one of the three reform axes identified by the European Commission in its Communication on “Research and innovation as sources of renewed growth”⁶ to raise the quality of public spending on research and innovation. The *Facts and Figures* show that national research systems have become more aligned to the ERA priorities. Virtually, all Member States, have adopted a national strategy on research and innovation.

There are still big differences between Member States in the way research funding is being allocated. While competitive project-based funding occurs in all Member States, the extent of it varies significantly between countries.⁷ Peer review is practiced in all Member States. However, there is an absence of agreed standards on the core principles of international peer review.

Linking institutional assessment of performance with institutional funding is also a powerful tool for promoting competition in research and increasing the effectiveness of national expenditures. Indeed, while 12 Member States report they have policies in place to allocate institutional funding on the basis of performance, this seems to be more widely implemented in practice, namely by the funding agencies in 16 Member States⁸.

2.2. Optimal transnational cooperation and competition

Jointly addressing grand challenges

Transnational cooperation at programme level between Member States is increasing and forms part of the national strategies of 16 Member States. Joint Programming Initiatives (JPIs) are increasingly helping to align national programmes and activities to common agendas at EU level addressing societal challenges. Several Member States have started to develop national action plans, roadmaps and strategies in the domain of the JPIs they participate in, with a view to strengthening their commitment to the Strategic Research Agendas of JPIs.

Strategic attention to international cooperation is also increasing on the political agenda. Nine Member States have made specific provision for fostering scientific international cooperation.

Research Infrastructures

For the development and implementation of research infrastructures, 22 Member States have adopted National Research Infrastructure Roadmaps. Five of them have been updated since 2013. However, national roadmaps do not consistently indicate the links with the European

⁶ COM(2014) 339 final

⁷ Facts and Figures report, Section ‘Competition for public funding’

⁸ Furthermore, almost 70% of institutions represented in the 2014 ERA Survey belong to organisations whose funding is subject to an institutional assessment

Strategy Forum on Research Infrastructures (ESFRI) Roadmap and the financial commitments to the development of Research Infrastructures identified by ESFRI and other world-class Research Infrastructures.

Completion and launch of the construction of at least 60% of the ESFRI Roadmap Projects by 2015, is within reach⁹. The latest prioritisation of the ESFRI Roadmap Projects was endorsed by the Competitiveness Council in May 2014 and will allow Member States and the Commission to give additional support towards reaching this objective.

The entry into force of the European Research Infrastructure Consortium (ERIC) Regulation in 2009 allowed for the joint establishment and operation of seven research infrastructures of European interest. The prospect of reaching about 15 ERICs by 2015 indicates that momentum is building up.

2.3. Open Labour Market for Researchers

While the number of doctoral candidates in the EU continues to grow, evidence suggests they are not equipped with the right skills to work outside academia.¹⁰ The implementation of the 2011 principles for innovative doctoral training by Member States and institutions helps researchers acquire new skills and enhances their employability, particularly outside academia. With 45% of researchers in the EU in the private sector, only 10% of doctoral candidates report receiving training in intellectual property rights and entrepreneurship.¹¹ Some Member States have made use of available structural funds to co-finance the new doctoral education structures. Furthermore, open recruitment enables research institutions to hire the best researchers at all career stages, and fosters effective geographical mobility. The research impact of mobile researchers is nearly 20% higher than that of those who never moved abroad¹².

Evidence shows that openness and innovation go hand in hand, i.e. countries with open and attractive research systems¹³ are strong performers in terms of innovation.

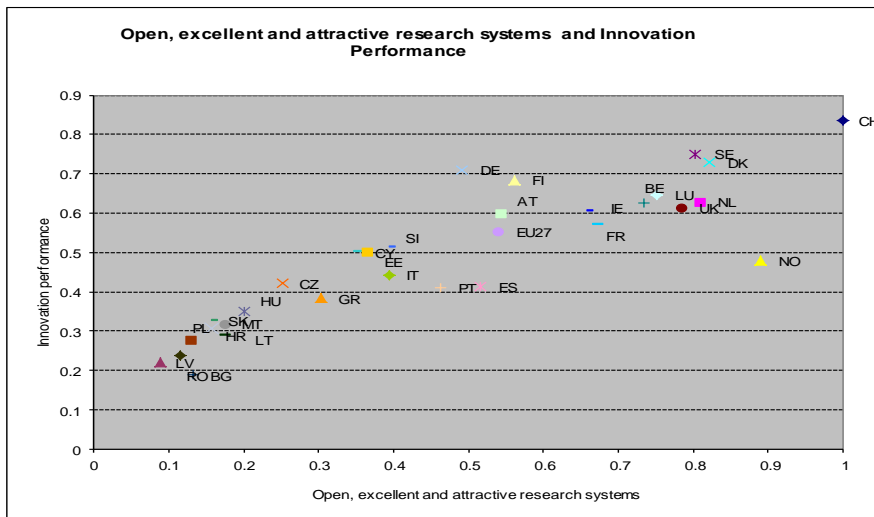
⁹ According to commitment 5 of the Innovation Union Flagship initiative

¹⁰ MORE II study http://ec.europa.eu/euraxess/pdf/research_policies/more2/Final%20report.pdf

¹¹ MORE II study. It is increasingly accepted that today's doctoral candidates are trained not only for an academic career but will increasingly build a career outside academia. This requires the ability to adapt to another environment, the development of new skills as well as receiving the right training.

¹² Facts and Figures, section 'Open, transparent and merit based recruitment of researchers'

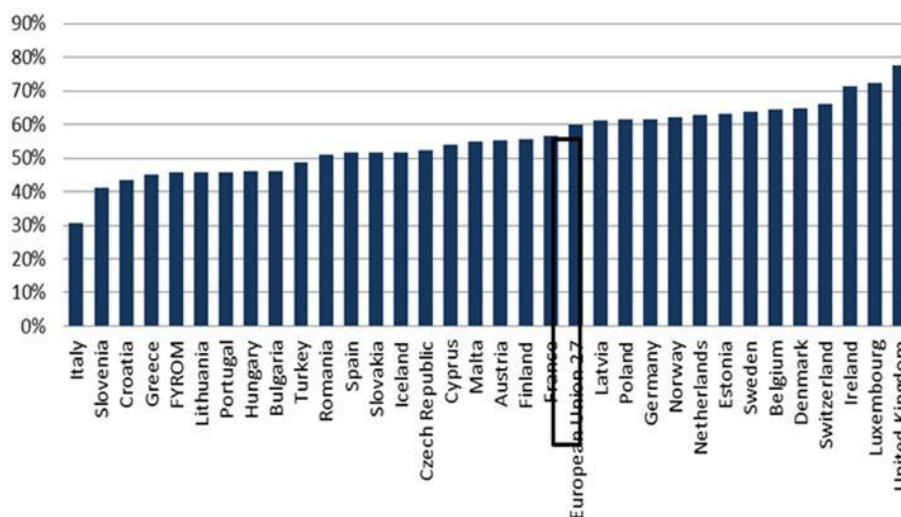
¹³ Based on the following three Innovation Union Scoreboard indicators: international scientific co-publications, scientific publications among top 10% most cited, non-EU doctorate students.



Source: DG Research and Innovation calculations based on Innovation Union Scoreboard 2014

Member States¹⁴ agreed to set up a working group in cooperation with stakeholders in order to develop a practitioner's toolkit on open, transparent and merit-based recruitment based on good practice. Data shows that a few Member States, such as Austria, Italy and Poland, have introduced national legislation stipulating that any vacancy in a public research institution must be published on an international research jobs website, e.g. EURAXESS Jobs¹⁵. More than 40,000 research jobs in over 7,500 institutions were posted on EURAXESS Jobs in 2013, with collaborations between leading online research job portals. However, there continue to be wide disparities in open recruitment practices across Member States. See chart below.

Share of university-based researchers satisfied with the extent to which research job vacancies are publicly advertised and made known by their institution, Europe, 2012 (%)



Source: MORE2 Study

¹⁴ In the course of a European Research Area and Innovation Committee (ERAC) mutual learning seminar organised in 2014.

¹⁵ jobs.euraxess.org

2.4. Gender equality and gender mainstreaming in research

Gender issues in research and innovation have gained increased recognition on policy agendas at national, European and international levels, as well as within research organisations. 'Supply side' initiatives, targeting individual women scientists, are progressively complemented by 'demand side' policies targeting institutional change in research organisations with longer-term structural effects. Specific laws and/or national strategies on gender equality in public research have been adopted in over half of Member States. The *Facts and Figures* shows significant correlations between measures taken at research performing organisation level, including gender equality plans, and the existence of national laws, strategies and/ or incentives to foster institutional change¹⁶.

However, the pace of change is too slow and there are still many disparities among countries. The persistence of gender bias in careers, of gender imbalance in decision-making roles, and the lack of a gender dimension in research programmes remain common challenges. There is a need for more joined efforts and systemic strategy aiming at longer-term institutional change in the European research system.

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

Open access to publications and data

Open access to research results publications and data is backed by a growing number of universities, research centres and funding agencies across Europe. The stakeholder organisations have been very active through the ERA Stakeholders Platform set-up in response to the 2012 Communication. So far 20 Member States have taken specific measures to support open access to research publications but only five have specific provisions on open access to research data. Particular attention has been given by Member States, in the framework of ERAC, to the re-use of research data, where a number of real and perceived barriers still exist, including those of a legal, technical, financial, trust-related and socio-cultural nature.

However, national policies, initiatives and practices are still fragmented and some of them do not properly reflect the EU definition of Open Access¹⁷.

Knowledge transfer and open innovation

Member States are continuing to develop and render operational national knowledge transfer strategies. This is done mostly through: improved recognition and professionalisation of knowledge transfer activities, a strengthened role for knowledge transfer offices, and through measures to facilitate interaction and development of strategic partnering and joint research

¹⁶ Facts and Figures report, Section 'Gender equality and gender content in research'

¹⁷ Open access can be defined as the practice of providing on-line access to scientific information that is free of charge to the reader. In the context of R&D, open access typically focuses on access to 'scientific information', which refers to two main categories: Peer-reviewed scientific research articles (published in academic journals); Scientific research data (data underlying publications and/or raw data).

agendas between academia and industry, including SMEs. This enables a better uptake of research results in the market. Although there are strong policy support mechanisms for knowledge transfer in place in most Member States, this is not reflected by financial backing in half of the Member States.

Digital ERA

Infrastructures to guarantee access to and uptake of knowledge by all for Open Access to publicly funded research results are not appropriately developed across Europe. In the interests of resource efficiency, Member States should accelerate efforts to join forces and implement joint strategies building on existing work so as to make the most of the current investments in institutional, national and disciplinary-based data infrastructures.¹⁸ This could also include efforts to encourage non-commercial Open Access publishing options.

2.6. Cross-cutting issues: mainstreaming of international dimension in all ERA priorities

It is important that in ERA's further development an international dimension is mainstreamed across all of its priorities. This way Europe will cement its place as a global research powerhouse, attract and retain the best researchers, maintain its competitiveness and enable future cooperation with global research partners.

2.7. ERA Compliance

There is no single path to achieve ERA. The pace and level of ERA implementation very much depends on the national context and is fostered by targeted policies at Member States level.

Implementation of ERA varies between research performing organisations. The *Facts and Figures* show data for organisations that are grouped together according to their 'compliance' with the ERA actions¹⁹ proposed in the 2012 Communication. Two main clusters have been identified: the 'ERA compliant' organisations, having already implemented most of the ERA actions, and the 'limited ERA compliant' organisations, which have not implement the ERA actions or only in a limited way. The analysis reveals that ERA compliant institutions predominate in most Member States, with the exception of seven countries (where the proportions are similar or where limited ERA compliant organisations predominate). Small organisations²⁰ appear to be less ERA compliant than big organisations²¹.

Moreover, the level of implementation of the different ERA actions varies between both groups. For example, the graph below shows that within the group of ERA compliant organisations, almost 90% of them frequently include minimum requirements when they publish their vacancies, while this is done by less than 50% of organisations with limited ERA compliance. The analysis presented in the *Facts and Figures* also shows that even ERA

¹⁸ COM(2012) 401 final

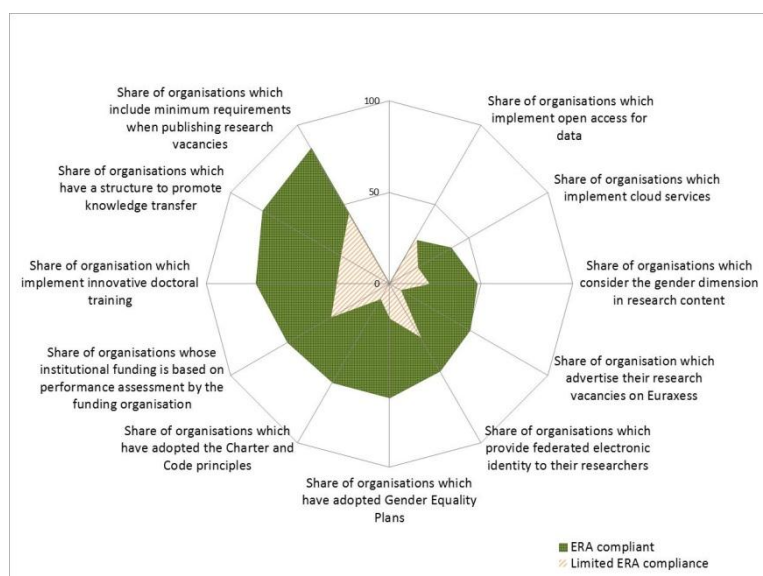
¹⁹ The actions considered are not correlated. Only actions differentiating the implementation of ERA were included in the analysis.

²⁰ i.e. below 300 researchers for universities and 100 researchers for research performing institutions

²¹ Facts and Figures report, Section 'Why ERA?'

compliant organisations should make more effort. For example, only 50% of the ERA compliant organisations frequently advertise their vacancies in EURAXESS.

Share of organisations implementing some of the ERA actions in the two most important groups of organisations



Source 2014 ERA survey

Finally, researchers in ERA compliant organisations tend to produce a higher number of publications and patent applications, which are recognised as contributing factors to growth and jobs.

2.8. ERA Completion

The ERA Communication identified four conditions for the completion of ERA: Member State reforms in all ERA priorities, speedy implementation of the priorities outlined in the Communication by research stakeholders, increased support from the Commission to national ERA policies and transparent monitoring.

Member States are the primary actors to introduce the ERA reforms at national level and support their implementation by research funding and research performing organisations. They are gradually introducing the ERA reforms into their annual National Reform Programmes (NRPs) with 19 NRPs presenting ERA actions in 2014, compared to only 11 NRPs in 2013. Within the European Research and Innovation Area Committee (ERAC), Member States have undertaken to work on a common reporting structure as of 2014 in the context of the European Semester for the years to come with a view to consistently addressing the ERA priorities. At the 2014 February Competitiveness Council Member States committed to developing an ERA Roadmap at European level by mid-2015 that would guide national implementation of the ERA reforms. Some Member States have started developing national ERA roadmaps to accelerate the implementation of ERA and ensure a globally competitive and attractive Europe.²²

²² The first of these roadmaps has been adopted by the Federal Government of Germany on 16 July 2014.

The stakeholder organisations are key players in progressing on the ERA priorities based on the Memorandum of Understanding and Joint Statement as well as through the Stakeholders Platform. They promote ERA among their members.²³ An example of endorsement of ERA objectives by stakeholders is the encouragement given by the Stakeholders Platform to its members to actively participate in the Human Resources Strategy for Researchers (HRS4R) process.

At European level, the Framework Programmes have been mobilised to implement ERA policy as well as to establish the ERA building blocks. The Commission supports Member States and research stakeholders in these efforts through numerous actions such as the ERA-Net Cofund scheme, Art. 185 initiatives, Joint Programming, EURAXESS and cross-cutting issues. For example, the Horizon 2020 Model Grant Agreement puts an obligation on the grant beneficiary to make every effort to implement the European Charter for Researchers and Code of Conduct for the Recruitment of Researchers²⁴. Additionally, the grant beneficiaries shall take all measures necessary to promote equal opportunities between men and women and to ensure gender balance at all levels²⁵.

The European Commission, in close collaboration with the Member States and with the contribution of the Stakeholders Platform, has developed the **ERA Monitoring Mechanism (EMM)**. The EMM is becoming an essential component in ERA policy-making. This enables us to monitor the degree to which Member States, research funders and institutions are supporting and implementing ERA.

The efforts of the ERA Partnership actors up to now have proven to be successful and the conditions for the completion of ERA are now in place. However, the completion of ERA, much like the internal market, is a gradual process. Commitment on the part of all ERA Partnership actors will be a key factor in speeding up the pace of implementation of ERA which currently varies at Member State, research funding and research performing levels. It depends very much on the quality of actions taken by those actors to effectively deliver on their commitments with tangible and measurable benefits for society.

3. FUTURE CHALLENGES

Implementation of ERA

Further implementation efforts are needed. The ERA Roadmap at European level will be developed by mid-2015. It will contain guidelines and key measures in order to address the remaining bottlenecks. It will be instrumental in guiding ERA implementation nationally, while acknowledging diversity of national research systems. Member States should pay greater attention to ERA when preparing national research and innovation strategies,

²³ See for example Science Europe Dec 2013 Statement on ERA: http://www.scienceeurope.org/uploads/PublicDocumentsAndSpeeches/120717_Science_Europe_ERA_Statement.pdf and LERU May 2014 briefing paper on 'An ERA for a change': http://www.leru.org/files/publications/BP_ERAOFCHANGE_FINAL.pdf

²⁴ Article 32 of the General Grant Agreement. http://ec.europa.eu/research/participants/portal/desktop/en/funding/reference_docs.html#h2020-mga

²⁵ Article 33 the General Grant Agreement

implemented by tailor-made ERA national action plans and initiatives. Different options might be considered to foster the development of ERA, including the legislative options if need be, based on the new ERA-related provisions in the Treaty on the Functioning of the European Union.

In addition, the Commission will launch a debate with Member States on the best possible level of coordination and alignment of national research strategies and pooling of funding in the domains of the societal challenges in order to increase impact at EU level. Possible outcomes could include defining a level of national funding to be spent within a coordinated European framework and measures to increase the number of countries committed to Joint Programming.

In order to deliver essential sustainable European Research Infrastructures, there is a need for further synchronisation of national and European roadmaps on research infrastructures and the related pooling of funding.

Finally, international cooperation should be enhanced as a cross-cutting priority of the ERA actions. As stated in the International Cooperation strategy for research and innovation in its approach towards EFTA countries, EU enlargement countries and countries covered by the European Neighbourhood policy, the focus will be on fostering integration into, or alignment with ERA.

Involvement of new stakeholders

National and European stakeholders should be properly involved in the development of national ERA action plans, and hence in the implementation of ERA, in order to ensure their full commitment to the values and benefits of ERA. The Stakeholders Platform is a good instrument, contributing to ERA policy-making and implementation. It could be expanded to include more research players. The future success of ERA will depend on the buy-in and active mobilisation of researchers and stakeholders, so that research reflects society's needs and challenges.

Maximising the benefits of research and innovation activities for society

There is a need for tighter integration of research and innovation objectives in many related policies at European and national levels. ERA is focused on maximising the potential of Europe's open research systems and fostering innovation. By concentrating on research sectors, Europe can provide the framework for regions to specialise in their areas of expertise. This pan-European approach to smart specialisation will lead to a more consolidated research strategy where the best minds are pooled together to produce excellent research. Cross-border regional approaches help spread excellence in research and increase ERA compliance.

Achieving a fully functioning ERA must be a key goal of future research and innovation policy initiatives. This should acknowledge the need for science to deliver sustainable solutions to societal challenges, the growing demand for research integrity and accountability, and the drive towards a new mode of conducting and sharing research, i.e. Science 2.0.

Continued support for ERA by the European Commission

The Commission will continue to support Member States and research stakeholders in their efforts to strengthen ERA, by providing information on existing good practices. It will set up a policy support facility under Horizon 2020 and organise mutual learning seminars. It will ensure that Horizon 2020 supports the functioning of ERA through both targeted and cross-cutting measures. A clear example of EU support to ERA is the forthcoming Retirement Savings Vehicle for European Research Institutions (RESAVER)²⁶, which, by removing barriers to researchers' mobility and ensuring safe and sustainable pensions for research professionals, will contribute to the establishment of a European labour market for researchers.

Strengthening ERA monitoring

The EMM is based on indicators and data gathering mechanisms, agreed with the Member States. ERA monitoring has proved useful in measuring progress made on the ERA policy actions. However, the exercise has its limits, given the voluntary nature of surveys, which limits the use of results for policy making. Further work is needed to identify and fine-tune essential indicators of progress in ERA and potentially expand the scope of EMM.

4. CONCLUSIONS

The report confirms that the ERA partnership has made good progress in delivering ERA. The conditions for the completion of ERA identified in the 2012 ERA Communication are now in place:

- Member States increasingly adopt measures in support of ERA, and reflect them in their national reform programmes.
- The Stakeholder Organisations continuously support the ERA agenda.
- The EU has embedded ERA in the European semester, provides substantial funding for ERA measures and promotes open recruitment, open access to publications and data as well as gender equality through the Horizon 2020.
- A solid monitoring mechanism has been established and is delivering data on levels of progress. It is an essential component in ERA policy-making.

The completion of ERA, like the internal market, remains a gradual process. However, more efforts are needed to make ERA fully operational and, more than ever, it is now up to Member States and research stakeholders to implement the necessary ERA reforms and make ERA work.

Complying with ERA is associated with increased performance:

- Open and attractive research systems are more innovative
- ERA compliant institutions produce a higher number of publications and patent applications per researcher.

There is no single path to achieve ERA. In particular:

²⁶ <http://ec.europa.eu/euraxess/index.cfm/rights/resaver>

- ERA tends to be more effective when national measures are in place and supported by research funding and research performing organisations.
- Small research organisations appear to be less ERA-compliant than big research organisations.