

**ERA Framework Public Consultation:
Areas of untapped potential for the development of the European Research Area**

*Document accompanying the on-line public consultation questionnaire
on the ERA framework*

Research and innovation are at the heart of the Europe 2020 agenda which aims to get Europe out of its current economic difficulties, and transform it into a smart, sustainable and inclusive society. For the first time, the Treaty empowered the European Union to achieve the European Research Area.

Legally speaking, the Union is now committed to "promote scientific and technological advance" (Art. 3 TEU) and to "strengthening its scientific and technological bases by achieving a European research area in which researchers, scientific knowledge and technology circulate freely (...)" as an overall objective (Art. 179 TFEU). The EU may propose legislation to realise ERA, in addition and complementary to proposals for Framework Programmes.

A recent important *political* development is the endorsement by the Heads of State and Government of Europe 2020's Innovation Union Flagship initiative in the European Council conclusions of 4 February 2011¹. This sets out the directions that EU research and innovation policy must take to help solve the grand challenges of our times. In particular, the European Council concluded that:

"Europe needs a unified research area to attract talent and investment. Remaining gaps must therefore be addressed rapidly and the European Research Area completed by 2014 to create a genuine single market for knowledge, research and innovation."

This constitutes an endorsement at the highest political level of Innovation Union commitment No. 4, in which the Commission announced that it will propose in 2012 a European Research Area (ERA) Framework and supporting measures to remove obstacles to mobility and cross-border co-operation.

The topics which must be taken into account from both an issue-specific and overall governance policy perspective in developing the ERA Framework include²:

- quality of doctoral training, attractive employment conditions and gender balance in research careers;
- mobility of researchers across countries and sectors, including through open recruitment in public research institutions and comparable research career structures and by facilitating the creation of European supplementary pension funds;
- cross-border operation³ of research performing organisations, funding agencies and foundations, including by ensuring simplicity and mutual coherence of funding rules and

¹ http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/119175.pdf

² The ERA specific topics should be seen in connection with a number of other relevant commitments in the Innovation Union Flagship Initiatives.

³ Cross-border operation covers any research initiative by research actors (research performing organisations, funding agencies and foundations and researchers) with a transnational character within the EU, e.g. research programme coordination between a few Member States, coordinated calls between a few Member States, etc.

- procedures, building on the work of stakeholders, funding agencies and their representative organisations;
- dissemination, transfer and use of research results, including through open access to publications and data from publicly funded research;
 - opening of Member State and Associated Countries operated research infrastructures to the full European user community;
 - completion or launch by 2015 of the construction of 60% of the priority European research infrastructures currently identified by the European Strategy Forum for Research Infrastructures (ESFRI), increasing the potential for innovation of these;
 - consistency of EU and national strategies and actions for international cooperation in science and technology.

Furthermore, in order to ensure an effective overall ERA policy, consideration should be given to the structures and processes to design, implement and monitor policy actions in a coordinated manner between Member State/Associated Countries⁴ and the EU and with other policy areas, so that research is firmly rooted in society and responsive to its needs.

Significant progress in these areas has already been made in the eleven years since the introduction of ERA as a political goal. This is especially the case since the launch of the ERA Partnership initiatives in the context of the Ljubljana process following the ERA Green Paper (2007) and the ERA Vision 2008 (through the Framework Programmes for Research and Technological Development, the Open Method of Coordination, national activities, etc.). Progress has been uneven, however, between the different areas, as described further in this text. Visible progress can for example be observed in the area of research infrastructures, where a clear roadmap, clear ownership by Member States and EU legislation has led to the setting-up of new pan-European research infrastructures, despite scarce resources.

In spite of the good progress, the EU has not yet fully realised its research and innovation potential. This has consequences at a time when the Union needs to muster every means it can to create knowledge-based growth and jobs. The research and innovation gap in Europe compared to our major competitors is a result of many factors, including especially inefficiencies linked to under- or un-exploited cross-border synergies (i.e. insufficient co-operation, co-ordination and various systemic failures which lead to significant underperformance in the European research system as a whole).

1. Objective of this consultation

The consultation aims to reinforce the Commission analysis of the key issues related to the topics listed above as well as to gather views on their importance, in order to respond to the request by the European Council. The outcome of the consultation will help the Commission to decide on those issues, which should be addressed as priorities when preparing the ERA Framework, which will set out the focussed, proportionate and effective measures to be taken to realize ERA.

In keeping with its better regulation strategy, the Commission is undertaking an *ex ante* Impact Assessment ahead of tabling its proposals for an ERA Framework and accompanying

⁴ Associated countries are countries that are associated with the EU Seventh Framework Programme for Research and Technological Development.

measures. Such an impact assessment requires a detailed analysis of the key issues and their underlying causes, for which this consultation forms an important input. Based on this analysis the options for measures needed to complete ERA will be identified and assessed.

Completing ERA will require the support and effort of all Member States and Associated Countries and their stakeholders. This public consultation therefore aims at gathering from stakeholders, views and evidence on the key obstacles which have to be tackled to achieve a well-functioning ERA.

The Commission's proposal for an ERA framework and any accompanying measures are expected to be ready by mid 2012 with the aim having the necessary measures adopted and in force by 2014.

2. Progress made and key issues still to be tackled

The following recalls relevant ERA policy initiatives, summarises the progress so far and describes on the basis of the best available data and analyses key issues which have to be tackled to complete ERA. Each section corresponds with a number of detailed questions in the associated on-line questionnaire.

2.1 Researchers

Recent progress

Researchers⁵ are at the core of the European S&T system. Having a well-trained and competitive labour force is a pre-requisite for the development of a well-balanced knowledge-based economy. The EU will need at least one million new research jobs to reach the R&D target of 3%. The required number of researchers will even be higher, as many researchers will retire over the coming decade.

Several EU initiatives and instruments have been deployed with a view to addressing the issues instrumental to enhance researchers' careers and mobility. These include the 'European Charter for Researchers' and the 'Code of Conduct for the Recruitment of Researchers' (2005) and the 'European Partnership for Researchers' Initiative' (2008). As a consequence, Member States/Associated Countries have engaged themselves in a constructive dialogue on several key issues: open recruitment, portability of grants, social security provision, attractive employment and working conditions as well as training and skills for researchers. Other major achievements are the establishment of the EURAXESS network and portal (which provides information in support of researchers' mobility and promotes job opportunities) and the adoption and ratifications of the Scientific Visa Package, facilitating the admission of non-EU researchers and thus making the EU a more attractive location for research. Some Member States and Associated Countries are deeply committed to the "Human Resources Strategy for Researchers" initiative supporting the implementation of Charter and Code at institutional level.

Key issues

⁵ The definition of a researcher will be as wide as possible, enlarging on the existing Frascati definition and the definition found in the Scientific Visa Package (Dir. 2005/71/EC) amongst others.

Available evidence from the MORE 2010 survey⁶ shows however that some obstacles to attracting and retaining the best talents remain: a) employment conditions and career prospects in the European research sector⁷ may not be sufficiently attractive and b) to a certain extent, cross-border, transnational and inter-sectoral mobility of researchers is asymmetric and still hampered in Europe.

Regarding employment conditions and career prospects, the underlying factors most often cited⁸ are: variable and uncertain career prospects; the researcher profession not formally and sufficiently recognized; highly variable salaries in different countries; the persisting one-to-one doctoral candidate-supervisor relationship and weak emphasis on the role of mentorship; inadequate gender balance especially in senior positions⁹; low funding levels of universities; and insufficient autonomy and human resources' policies of universities.

For mobility, the issues most often cited by researchers are a lack of suitable positions, including a lack of open recruitment procedures, and of incentives to move between the academic and the private sector, financial issues such as difficulties associated with the portability of grants. Mobility is also hampered by the lack of sufficient support services for mobile researchers, administrative barriers concerning social security rights and the portability of pensions¹⁰, as well as issues related to the implementation of legislation (e.g. immigration rules for third country researchers).

2.2. Cross-border operation of research actors¹¹

Recent progress

Europe faces a series of major societal and global challenges where research can play a key role in providing solutions but which cannot be solved within national borders only. Under FP6 and FP7, approaches have been developed at EU level to foster transnational cooperation based on national funding. Initiatives like the ERA-NET scheme, those based on Article 185 TFEU, the Joint Technology Initiatives (Article 187 TFEU) involving national funding, the EU integrating actions for research infrastructures or the recent Joint Programming process have demonstrated that mobilisation of national efforts and pooling of resources is possible to tackle common challenges and to strengthen competitiveness. Following Council conclusions concerning joint programming of research in Europe in response to major societal challenges (2008) a dedicated High Level Group for Joint Programming (GPC)¹² identified and substantiated the first list of joint programming themes. Ten themes for joint programming

⁶ RTD – More "Study on mobility patterns and career paths of EU researchers"
http://ec.europa.eu/euraxess/pdf/research_policies/MORE_final_report_final_version.pdf

⁷ Both public and private.

⁸ MORE 2010 Survey.

⁹ European Commission, "She Figures 2009", Statistics and Indicators on Gender Equality in Science.

¹⁰ It is worth noting that the European Commission is addressing some of the mobility issues such as supplementary pensions of researchers in several ways. There are preparations underway for the setting up of pan-European pension funds for researchers, and there will be a White Paper on pensions as well as a revision of the Directive 2003/41/EC on the activities and supervision of institutions for occupational retirement provision (IORP Directive) aimed at making cross-border pension solutions easier.

¹¹ Cross-border operation covers any research initiative by research actors (research performing organisations, funding agencies and foundations and researchers) with a transnational character within the EU, e.g. research programme coordination between a few Member States, coordinated calls between a few Member States, etc..

¹² See for more information on its mandate and composition the website of the Council:
<http://www.consilium.europa.eu/policies/era/gpc.aspx?lang=en>

initiatives were identified, four of which have been launched, and six initiatives will be launched during 2011. Voluntary common approaches were developed to a number of horizontal matters, usually referred to as “Framework Conditions”, essential for effective development and implementation of Joint Programming in Research¹³. In addition to the instruments coordinated at EU level, bilateral or multilateral arrangements between Member States have also been developed to foster cross-border cooperation through various funding arrangements (for instance NordForsk¹⁴, DACH¹⁵, Lead agency agreements).

Key issues

The level of EU funding and national funding explicitly coordinated between different countries and/or available for cross-border cooperation remains relatively modest in Europe both in absolute terms and compared to funding allocated on a purely national basis. An average of 4.5% of the national research spending of EU Member States is formally trans-nationally coordinated mostly in inter-governmental settings like for example ESA, EUREKA or CERN. Furthermore, no specific process exists to date whereby Member States/Associated Countries exchange information systematically on possible national programmes or initiatives which might be suitable for cross border operation.

Structured cross-border operation of national programmes and coordination with European policies and programmes could help to mobilise critical mass of human as well as financial resources and to reduce fragmentation where it exists. Aggregate bibliometric data¹⁶ suggest that the scientific impact of research carried out within cross border cooperation is higher than that in purely national projects.

National project funding schemes are in general not designed to provide for cross-border research. Today cross-border research relies in most cases on the EU Research Framework Programme. It should therefore be considered how to achieve the appropriate degree and intensity of cross-border operation of national programmes and other national funding sources, acknowledging that Member States have competence over their own national systems. Cross-border collaboration must have clear added value.

2.3 Research Infrastructures

¹³ http://ec.europa.eu/research/era/docs/en/voluntary_guidelines.pdf

¹⁴ NordForsk is an independent Nordic research institution under the Nordic Council of Ministers for Education and Research.

¹⁵ D-A-CH is a cooperation between funding research organisations in Germany, Austria and Switzerland (FWF-Fonds zur Förderung der wissenschaftlichen Forschung, the Swiss National fonds-SNF and the Deutsche Forschungsgemeinschaft-DFG).

¹⁶ E.g. European Commission, DG Research and Innovation based on OECD, "Measuring Innovation: a new Perspective" (2010); ASSIST project – Regular collection of bibliometric indicator, CWTS-Leiden university using Web of Science data.

Recent progress

Several EU measures have been adopted to ensure that Europe effectively develops and maintains pan-European research infrastructures of strategic interest. The setting-up of the European Strategy Forum on Research Infrastructures (ESFRI) in 2002, the ESFRI Roadmaps and the financial support provided through the EU Framework Programmes have been crucial in this respect. Integrating activities were able to unlock the isolation of national scientific communities and increase transnational access to research facilities, and in this way to promote a better exploitation and use of costly research facilities. Other measures like the EU Regulation on the European Research Infrastructure Consortium (ERIC) and coordinated approaches between research and regional policies are essential building blocks in the decision making process for pan-European research infrastructures.

ESFRI published its first European Roadmap for Research Infrastructures in 2006. Updated in 2010, the Roadmap gives priority to the creation and/or upgrade of 48 priority projects. 10 of the projects are in the implementation phase and further 16 are proceeding towards the implementation phase until end of 2012. The ERIC regulation entered into force in 2009 and the first ERIC status was awarded recently by the European Commission.

Key issues

Despite these achievements, some issues still need to be addressed for Europe to keep world class research infrastructures and face future challenges such as:

- the exponential growth of research data;
- the sub-optimal exploitation of the scientific, innovation and societal potential of existing research infrastructures (priority setting, management and funding issues);
- and the sustainability of the competitive edge of research infrastructures as well as the development of new research infrastructures of pan-European interest (uncertainties linked with long-term commitment and availability of funding also after the construction phase, which includes operation and upgrade of the research infrastructures to maintain and further develop their impact on research and innovation).

2.4 Knowledge Circulation

2.4.1. Knowledge Transfer

Recent progress

Improving knowledge transfer between universities, public research organisations and industry is essential for ensuring that publicly-funded research results contribute to economic output from (new) businesses and can effectively support innovation and the development of new services and products. Likewise, knowledge transfer has an increasing importance for research and especially in all fields of trans-disciplinary and cross-border research.

Knowledge transfer takes place via networking, informal flows and circulation of researchers between public and private institutions as well as collaboration and contractual arrangements between public research institutions and industry, licensing and spin-offs.

The Commission adopted a Recommendation (2008) providing guidelines to help Member States/Associated Countries to develop more effective and coherent national intellectual

property policies, accompanied by a Code of Practice (2008) providing guidelines for public research organisations to enhance their knowledge transfer practices. Following a Council Resolution (2008) on the European Commission's Recommendation and the Code of Practice proposals, CREST (now ERAC) established a working group on knowledge transfer to ensure an active implementation and take-up of the recommendations.

Key issues

The monitoring report from this working group on the implementation of the Recommendation and Code shows that Member States/Associated Countries are in different phases of (partial) implementation. Strategic and comprehensive approaches/strategies for knowledge transfer in Europe are not yet common and in some cases there is still a lack of awareness. Evidence suggests that the amount of public research actually used by industry in Europe is lower than what it should be, compared for example with the USA¹⁷, and the level of cooperation between industry and the public research sector is inadequate and/or insufficient¹⁸. The insufficient exchange of human resources between the sectors may be an important factor: only 5-6% of industrial researchers have career paths crossing both sectors¹⁹. This leads to a situation of sub-optimal transfer of knowledge from research into new products, processes and services, and to European businesses having fewer opportunities to innovate. There could be reason therefore to improve cooperation between industry, universities and public research organisations, also by improved research training, professional development and mobility and putting researcher careers more into the attention of the private sector, including SMEs.

2.4.2. Open Access to publications and data

Recent progress

Open access to publications is not an end in itself, but a gateway to the exploitation of research results, primarily by researchers themselves, but also by other parties such as innovating SMEs. A growing number of national initiatives to facilitate open access to publications are being taken at national and EU level. Based on Council Conclusions (2007) an Open Access Pilot was launched in FP7. In 2010, an EU call for proposals to facilitate Member States/Associated Countries networking on open access was published by the Commission. In this context, work on setting up repositories for publications has progressed well and significant coordination initiatives are underway regarding the interoperability of institutional (university-based) or subject-based repositories, in particular via the EC-funded project OpenAIRE. A Commission Communication/Recommendation on scientific information is foreseen end 2011.

ESFRI and related European Commission services have stimulated the emergence of pan-European scientific data repositories, such as SHARE (for health and ageing), CESSDA (social sciences archives) and ELIXI (bio-informatics). At national level, many bottom-up

¹⁷ As measured by the number of public-private co-authored research, for which the figures for the US are double of those for the EU, Innovation Union Competitiveness Report 2011, I-203.

¹⁸ Innovation Union Competitiveness Report 2011, I-203-207. Different indicators only describe one specific aspect of the more complex reality of public-private cooperation in R&D.

¹⁹ Innovation Union Competitiveness Report 2011, I-207.

initiatives exist, which are mainly led by funding bodies, universities and/or libraries, but there are few national co-ordination and national strategies to date.

Key issues

Current evidence suggests that 10-20% of research articles are available in open access²⁰ mode. As result most scientific information generated by public funding is only accessible for a fee (fees have increased and library budget decreased). This limits the dissemination, visibility and use of research results. As a consequence, the speed of scientific progress and innovation may be impeded.

2.5 International dimension of ERA

Recent progress

Science is increasingly global. In 2008, the Council invited the Member States and the Commission to establish a Strategic Forum for International Science and Technology Cooperation (SFIC). The creation of this Forum was an important step to increase the coherence of the international S&T activities of the Member States and the EU. Coordination of international S&T activities towards third countries is supported by the Capacities programme of FP7.

Key issues

The European Union is confronted with a number of trends which have a direct impact on its science, technology and innovation policies, such as:

- the need for global STI cooperation to address key societal challenges which require a large-scale effort;
- increased globalization of science, technology and innovation (STI) activities, including for SMEs;
- the need to access knowledge globally to remain competitive; and
- the emergence of new STI powers (BRICS, Korea, Singapore, etc.).

Member States' international cooperation activities are, however, primarily determined by their own national policies, and so far the EU and its Member States have not developed common strategies and priorities for international STI cooperation. This has made it difficult to develop joint actions with synergetic potential beyond what the EU and its Member States are doing on their own.

As a consequence, the EU and its Member States have not yet been able to bring their combined weight together to address global challenges which lie beyond the scope and resources of individual Member States and Member States or the EU as such. It has been difficult for them to act together to contribute to the establishment of a level-playing field in relation to third countries (removing barriers access to market, facilitating standardisation, IPR protection, access to procurement, scientific diplomacy, common reference frame in international policy negotiations etc.).

²⁰ Open access refers to the practice of granting free online access to research publications and/or data.

Evidence demonstrates the loss of attractiveness of the EU²¹ as an international research partner, potentially resulting from Europe's fragmented research landscape, as well as missed opportunities to access new markets and knowledge.

Consequently, the question is how the European Union could strengthen the excellence of its research base and increase its global economic and industrial competitiveness, continue to be an attractive research location for people, companies and investment, and could be in a position to engage in effective international cooperation, speaking with a coherent voice and shaping or leading major international cooperation initiatives, in particular to tackle global societal challenges.

2.6 Managing and monitoring the ERA partnership, cross-cutting issues and next steps

Recent progress

Following the launch of ERA in 2000, some notable results were achieved by the Open Method of Co-ordination (OMC), steered by the CREST committee, and by instruments under successive Framework Programmes. The Ljubljana process based on a partnership approach (launched by research ministers in 2008), has given new impetus to efforts to build ERA, and has contributed to a number of changes. The ERA Vision 2020 (2008), the revamping of existing thematic ERA Groups, the creation of SFIC, and the revamping of CREST into ERAC (European Research Area Committee) in 2010 have changed the governance structure of ERA and contributed to the implementation of the partnership approach.

Key issues

But as stated by the Council in its progress report of 2010 on the realisation of ERA²²:

“Much progress has been made, but the fact that the same issues as at the start of the ERA in 2000 remain at the forefront of the policy debate shows that there is still a long time to go. The multiplication of initiatives and the fragmentation of efforts are slowing down the realisation of concrete results. Complementarity, prioritisation and efficiency should be at the core of European research policy. Better policy mixes are called for. More coordination between the different European policies and between European and national and regional and local policies is needed leading to greater coherence in European and Member States research policies based on the subsidiarity principle”.

This summarizes some of the problems of a more cross-cutting nature which are holding back completion of ERA and which need to be urgently solved to realise the high level of ambition for ERA as called for by the EU Heads of State and Government in 2011²³.

The issues to be tackled relate to governance deficiencies and to the underdevelopment of a clear and coherent research policy between the EU and the Member States with clear objectives and a monitoring system, as well as the links to innovation, education ("knowledge triangle") and cohesion policies. A lack of coherence and synergies between different ERA-

²¹ E.g. International collaboration index based on NSF Science and Engineering Indicators, 2010, Bruegel Policy Brief by Reinhilde Veugelers, "A G2 for Science?", April 2011.

²² <http://register.consilium.europa.eu/pdf/en/10/st16/st16191.en10.pdf>; full version to be found at <http://www.ewi-vlaanderen.be>.

²³ http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/119175.pdf

related initiatives and instruments also results in a lower impact than would otherwise be the case.

The systemic policy coordination links and interactions between Member States/Associated Countries as well as between the EU and Member States/ Associated Countries' research and innovation policies can be improved. Indeed, given that there is a general tension between the international nature of science and its largely national political framework, weak inclusion of a European perspective in national policies can give rise to the obstacles and challenges described in the previous sections of this document.

Furthermore, there is also scope for improving the involvement of stakeholders in EU research policy and in the implementation of ERA. The same is the case for public engagement and civil society, given the impact of EU initiatives on what kind of research is done, which technologies can be developed and how research is conducted. Related to public engagement is the issue of coordination with the frameworks for safety and ethical standards to realise responsible research and innovation.

Finally, gender equality has been promoted specifically in European research since 1999, but progress is slow towards achieving gender balance in ERA²⁴ and integrating gender dimension in research content. Striving for gender balance in research and innovation fully supports the aims of the Europe 2020 strategy, the Innovation Union, and the completion of ERA: delivering high levels of employment rates of women and men (75%), modernising universities and elevating productivity of research outcomes. To achieve attractive conditions for carrying out research and investing in R&D intensive sectors in Europe, full participation of women is required. This calls for sustainable ways of advancing gender equality through modernisation of research organisations, complemented by more effective policy at EU and national levels.

3. Practical issues

The Commission is seeking the views of all interested organisations and individuals on the key issues which need to be tackled to realise ERA as set out in this document and the questionnaire.

Organisations and associations that wish to provide in-depth views in addition to the questionnaire may submit written views (maximum 10 pages). Such responses will be published on the consultation site immediately following their submission. These responses should preferably follow the structure set out in this consultation document and in the questionnaire.

The deadline for contributions is **Wednesday 30 November 2011**.

The responses received will be analysed carefully by the Commission services. A summary of results will be published on the consultation web site, and it will be presented and discussed at a wrap-up event with stakeholders in the beginning of 2012.

²⁴ Statistics (SHE Figures 2009) show that women are still under-represented in research in several sectors and especially at senior level.