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**Results of the Public Consultation on the Green Paper  
“The European Research Area: New Perspectives”**

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## Executive Summary

The ERA Green Paper consultation generated a **substantial response from those with a stake in European research**, including individuals, universities, research performing and funding organisations, public authorities at national, regional and European level, NGOs, industries and businesses, associations representing commercial and non-commercial interests, chambers of commerce, European technology platforms and others, such as trade unions.

This report synthesises the response to the consultation based on the 685 replies received by the 31 August 2007 deadline for the on-line questionnaire and the 145 free-format contributions received by the final closing date of 31 December 2007. One of the chapters summarises the contributions to the consultation received from EU Member States and Associated Countries and European bodies (European Parliament, European Economic and Social Committee, Committee of the Regions). Altogether, the response to the ERA Green Paper constitutes an essential part of **the basis on which to take the next steps towards realising the European Research Area**.

### The ERA vision

Stakeholders express **strong overall support for the ERA vision** set out in the Green Paper and for action on all six ERA dimensions which it singles out. The free-format contributions draw attention to **strong interdependencies between the ERA dimensions** such as the importance of researcher mobility for knowledge sharing, or joint infrastructures for the emergence of European and global research communities and institutions, the importance of researchers' careers in relation to strengthening research institutions and of international cooperation for infrastructures of global relevance. These contributions also draw attention to **crucial interactions between research, education and innovation**. Industry, in particular, considers that, in focusing on challenges to public research systems, the Green Paper did not pay enough attention to the **central role of research-innovation linkages and of private R&D within ERA**.

Most stakeholders place **“knowledge sharing”** and **“infrastructures”** on top in terms of importance, the former being considered the most important by universities, research funding organisations and NGOs and the second most important by industry and governmental bodies. However, the **“researchers”**, **“international cooperation”** and **“infrastructures”** dimensions are deemed to be in that order the three most important in terms of **need for action at EU level**. Of the six dimensions, all groups of stakeholders concur that it is not primarily at the EU level that actions for **“research institutions”** are needed but rather at national level.

A majority of respondents **endorse the use of various mechanisms to promote ERA** such as financial incentives, increased EU budget, reinforced coordination and guidelines. But there is generally **little demand for binding legislative actions at European level**. Respondents prefer flexible and adaptable, bottom-up cooperation schemes, networking, voluntary legal frameworks, the exchange of best practices and the establishment of guidelines. However, there is **significant support for ‘considering’ legislative actions** to improve conditions for the acquisition, preservation and transferability of researchers' supplementary pension rights and for a **new non-binding legal framework** for the creation and operation of new pan-

European research infrastructures. While respondents do not welcome regulatory action for public-private partnerships, **sustainable bottom-up partnerships among industry and institutions** are nonetheless deemed to be very important, both for knowledge sharing and for strengthening research institutions.

### Realising a single labour market for researchers

**Less than half of the respondents declare that they are fully aware of the European Charter for Researchers and the Code of Conduct for their Recruitment** (“Charter and Code” – C&C) issued in 2005 by the European Commission as a common but voluntary framework for Member States. The highest proportion of aware on-line respondents is found among those replying on behalf of universities. The majority of those who are aware, especially individual respondents and higher education institutions, favour more action to speed up their implementation, notably through the introduction of a **C&C label**. Many respondents underline that a mandatory C&C would be difficult to implement in industrial R&D organisations. Free-format contributions from industry express concerns regarding the degree of flexibility with which the C&C should be enforced in the private sector and in particular in innovating SMEs.

Most replies point out that there is firstly, a **lack of information on the status of mobile researchers** (who seem concerned about their statutory pension rights, health insurance and unemployment benefits), and that, secondly, to achieve truly seamless mobility of researchers, further progress needs to be made on the transferability of supplementary pension rights across Member States. **65% of the respondents favour the setting-up of a “European researchers’ pension fund”**. However, it is worth noting that large commercial organisations and associations representing commercial interests are mostly opposed to this concept.

Opinions are divided on the potential benefits of applying **flexicurity** principles to the labour market for researchers. A large majority of respondents support the principles of giving **retired researchers** new opportunities via mentoring, training and advisory roles and of removing barriers to the **employment and advancement of women researchers**. Working conditions which enable a better work/life balance are considered important for increasing the recruitment and retention rates of women in research careers. **Young people** should also be offered more and better information about scientific careers.

A majority of respondents favour European and transnational fellowship programmes and EU-wide dissemination of best national practices to increase the effectiveness of Member State and Community efforts to **attract the European “scientific diaspora” and the best non-EU talent**. Contributions also suggest that the status of research and innovation training should be raised and that there is a need for better status, remuneration and well-defined career pathways for researchers.

### Developing world-class research infrastructures

Two thirds of the on-line respondents agree that **action on research infrastructures should be taken at the EU level** and over four fifths agree that **there is need for a common approach to the infrastructures identified by the European Strategy Forum for Research Infrastructures (ESFRI) in the 2005 Roadmap, as well as for EU leadership**. Free-format submissions express support for the ESFRI and suggest that it has done much to galvanise a pan-European approach to research Infrastructures.



Most respondents consider that the current situation does not facilitate the creation and operation of new infrastructures and that **a new legal EU framework or guidelines should be developed** covering issues such as **access, conditions of use and intellectual property rights**. Most stakeholders agree that an international forum is needed to create research infrastructures addressing global needs, preferably with a mixed EU/MS representation from the ESFRI.

Concerning the mechanisms for the support of specific S&T programmes for the **long-term improvement of research infrastructures**, almost 60% of the on-line respondents prefer the use of **EC Treaty Article 169** over the Framework Programmes or Member State research programmes. Many stakeholders express concern about the lack of private-sector investment in public research infrastructures, often considered to be “public goods”.

### Strengthening research institutions

Stakeholders suggest that a diverse **ecosystem of strong, complementary and autonomous universities and research-performing organisations (RPOs)** can be a competitive advantage for Europe. Replies highlight the need to ensure the capacity of research institutions to build stronger **bottom-up partnerships of appropriate critical mass based on scientific excellence**. They also point out the necessity to increase the openness of research institutions to the needs of end users and society as a whole. Free-format contributions confirm that successful public-private partnerships should develop in a “bottom-up way” and on a voluntary basis.

Furthermore, stakeholders suggest that Europe needs **a wide spectrum of universities to build and sustain the knowledge-based society**, from – at one end of the spectrum – those competing at the leading edge of international research and education with an unrivalled capacity or potential for flexible response to many modern issues, to – at the other end – those most deeply engaged with their communities in satisfying local demands, training programmes and market-driven consultancy and advice.

The need for **increased funding** is stressed by both RPOs and higher education stakeholders. They also stress the need to avoid regulatory approaches, to define incentives that ensure the quality of the bottom-up initiatives, to share good practices and experiences, and to ensure that funding allocation on a competitive basis is one such incentive.

### Sharing knowledge

**Developing communities of knowledge** where the differing worlds of research, industry and civil society can engage in processes and networks of communication is deemed a *condicio sine qua non* for a well-articulated European Research Area. **Cultural differences** between the business and scientific communities and a **lack of incentives** for inventors or users remain major obstacles to efficient knowledge transfer. **The knowledge gap** between scientific communities and civil society, followed by **lack of incentives** and the **use of technical language**, are highlighted as the main factors hindering efficient knowledge transfer to civil society. Beyond dissemination of scientific knowledge by the media, there is broad agreement on deepening public engagement in research via interactive approaches and increasing transparency on the use of scientific results in policy making.

Over 70% of respondents call for **open access to scientific raw data** from publicly funded research and 84% call for immediate and improved access and dissemination of **publicly**

**funded peer-reviewed scientific publications**, though industrial respondents stress the need for limitations due to legal conformity, commercial sensitivity, etc. Scientific publishers underline the added value that they bring to the scientific process and the fact that they are open to new models of knowledge dissemination.

Respondents generally favour the promotion of common principles at European level, such as on the need for research institutions to have **IP management systems and policies** in place or for royalties to be shared with researchers. The measures suggested as being most pertinent include financial incentives for research institutions, model contracts and the development of a European Charter.

### Optimising research programmes and priorities

Most of the stakeholders recognise the need for **better coordination of Member States' research programmes**. They suggest a **differentiated approach** to coordination of different types of research, based also on principles such as subsidiarity, variable geometry and European added value. Procedures should be flexible and transparent. The benefits of coordination should compensate its extra administration and management burdens.

80% of the respondents agree that addressing resource-intensive and complex scientific challenges requires **cross-border cooperation** between public authorities. The identification of future research challenges and opportunities through **foresight** and evaluation of publicly funded research proposals by peer review is suggested by respectively 88% and 81% of the respondents to be the most important areas for closer EU-wide collaboration. The **preferred ways for public authorities to organise transnational cooperation** include: “concentration of efforts in European-level programmes” (74%); “joint public programmes with variable geometry” (72%); and “ERA-NET type loose and bottom-up coordination” (70%).

The **opening-up of programmes** is more agreeable to respondents in the case of basic (74%) than applied research (66%). However, in both cases, the preferred way to achieve this is: “the networking of research activities via ERA-NET type of activities”. In the case of basic research, those preferring the “limited opening-up of programmes” favour “joint public programmes with variable geometry” for transnational collaboration.

The **best placed stakeholders** to define research issues requiring a transnational approach are “high-level civil servants”, “EU Research Ministers” and “industry”. “Industry” and “variable geometry groups” are considered to be relatively more important by those preferring the “limited opening-up of programmes based on bilateral agreements” compared to those preferring the “full opening-up of programmes”. Industry is always considered to be a less ‘best placed’ stakeholder than “high-level civil servants” and “EU Research Ministers”.

### Opening to the world: international cooperation

More than four fifths of respondents support the idea of the **EC and Member States working together to define common European priorities**, to ensure coordinated and efficient use of instruments and resources, to enhance coherence of programmes and to promote exchanges and synergies. 65% mentioned that S&T agreements between the Community and third countries provide a useful framework for international S&T cooperation. However, 52% also think that these agreements need to be made more effective. **A more strategic approach** would need to differentiate according to regions and topics, take into account third countries

interest on the basis of mutual interest and benefit, and would build synergies with other EU external policies such as development aid and the European Neighbourhood Policy.

A large majority of respondents favour **Europe taking a more active approach to define the global S&T agenda** in multilateral fora, with 75% expressing the wish that Europe should **“speak with one voice”** and 69% being of the opinion that this could be achieved through placing emphasis on a small number of high-priority global-research-related themes. “Opening to the World” also means providing the ground for Europe to be able to “speak with one voice”, where appropriate, while respecting new global challenges and new global players.

## 1. INTRODUCTION

The publication of the Green Paper “The European Research Area: New Perspectives”<sup>1</sup> by the European Commission launched a broad institutional and public debate on possible actions to give renewed impetus to achieving an open, competitive and attractive European Research Area, which would meet the needs and expectations of the scientific community, business and citizens. Stakeholders were invited to contribute to the debate by responding to the issues raised in the Green Paper, particularly via an on-line questionnaire, though other *ad hoc* forms of response were also encouraged. The on-line questionnaire stayed open from 1 May 2007 until 31 August 2007 and 685 responses were received from a wide range of individuals and organisations, including universities, research performing and funding organisations, public authorities at national, regional and European level, NGOs, industries and businesses, associations representing commercial and non-commercial interests, chambers of commerce, technology platforms and others, such as trade unions. In addition, 145 free-format contributions (position papers, opinions, etc.), almost all coming from organisations, were received by the final 31 December 2007 deadline for input to the consultation. These were analysed together with the on-line responses.

The results of the consultation form part of the solid basis needed to both develop and legitimise further ERA policy actions. Those who contributed by completing and submitting the on-line questionnaire and/or free-format contributions (all listed in the Annex), represent a great part of the Europeans with a stake in European research. Even if in some countries and for some categories of respondents the sample is small, the response pattern permits valid assertions to be made about the concerns, desiderata, intentions and expectations of most types of stakeholder.

In the process of the consultation, a preliminary synthesis of responses was presented at the high-level conference “The Future of Science and Technology”, held in Lisbon, 8-10 October 2007, a key stakeholder event jointly organised by the Portuguese Presidency of the European Union and DG Research of the European Commission. This conference brought together nearly 500 representatives of Member States, industry, academia and civil society. Reflecting both the priorities of the Portuguese Presidency and the focus of the Green Paper, the conference programme included plenary sessions on “Challenges for science and technology in Europe”, “Promoting and attracting human resources in research”, “Increasing private investment in R&D”, “Boosting public investment in research”, “A vision for the future of S&T in Europe” and parallel sessions on “Universities and S&T Development – regional and international dimensions”, “ERA rationale”, “Governance issues and links with the Lisbon Strategy”, “Science in society”, “Research Institutions”, “Research Infrastructures” and “International Cooperation”. The sessions were supported by the work of expert groups which also contributed to analysing the results of the consultation and prepared draft policy options papers as a basis for discussions<sup>2</sup>.

The conference offered insight into some key issues: the inextricable links between research, education and innovation; the central role of researchers in ensuring success in R&D in Europe; the need to have better-functioning research institutions; the potential for Member

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<sup>1</sup> COM(2007) 161 of 4.4.2007

<sup>2</sup> Conference presentations and supporting documents at:  
[http://ec.europa.eu/research/conferences/2007/fst/presentations\\_en.htm](http://ec.europa.eu/research/conferences/2007/fst/presentations_en.htm)

States to work together to achieve success in challenges requiring critical mass, for example through the joint programming of public research or creating research infrastructures of global interest and relevance; the interconnectivity between these different areas; and finally the importance of Member States in bringing about change to enhance the performance of R&D in Europe, in partnership with the European Commission.

The full set of results from the on-line replies can be found on the ERA webpage [http://ec.europa.eu/research/era/progress-on-debate/stakeholder-consultation\\_en.html](http://ec.europa.eu/research/era/progress-on-debate/stakeholder-consultation_en.html). All references to the results included in this report are aggregated at question level and refer to the actual number of respondents who replied to each specific question by choosing at least one of the available options. All results should be interpreted with caution and in the precise context of the consultation, given that the limitations of the method employed curtail the extent to which the quantitative analysis can be deepened. Moreover, the qualitative aspects clearly complement the purely quantitative elements. The comments on the open questions and the free-format contributions and opinion papers provide a wealth of additional views and ideas.

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The structure of the report which follows mirrors the Green Paper. Following this Introduction, Chapter 2 presents the main facts and figures of the public consultation. Chapter 3 summarises the contributions of the EU Member States, Associated Countries and EU bodies. Chapters 4 and 5 synthesise the responses received on the overall ERA Vision and the six ERA dimensions. Finally, Chapter 6 sheds some light on the next steps that take full account of the consultation results.

## 2. FACTS AND FIGURES

The on-line public consultation generated 685 responses: 474 (69%) were received from individuals and 211 (31%) from those responding on behalf of their organisations, universities, research performing and funding organisations, NGOs, industries and businesses, associations representing commercial interests and trade unions (Figure 1). In addition, 140 free-format contributions, almost all coming from organisations (position papers, opinions, etc.) were received up to 31 December 2007 and analysed together with the on-line responses.

The on-line respondents responding on behalf of their organisations declare that their role in the organisation (more than one response possible) relates to strategy-and policy-making (53.1%), Science and Technology (research, design, development, engineering, technology transfer, intellectual property management etc. 48.8%) and operational aspects (production, logistics, marketing etc. 6.6%). 20% of these come from Higher Education Institutions (HEIs), 16% from other public sector research performers (PSRPs) or most usually RPOs (Research Performing Organisations), 6% from governmental bodies, 12% from commercial organisations (half of which are SMEs), 4% from associations with commercial interests, 20% from NGOs and 4% from Research Funding Organisations (RFOs). 58% of the organisations' activities are reported to be national, 55% international and 52% European, with regional and local activities following behind (33% and 20% respectively). More than 60% of the Higher Education Institutions are from the UK, France and Italy and more than 50% mention ICT and socioeconomic sciences and humanities as key areas of activity. Two thirds of the respondents are male.

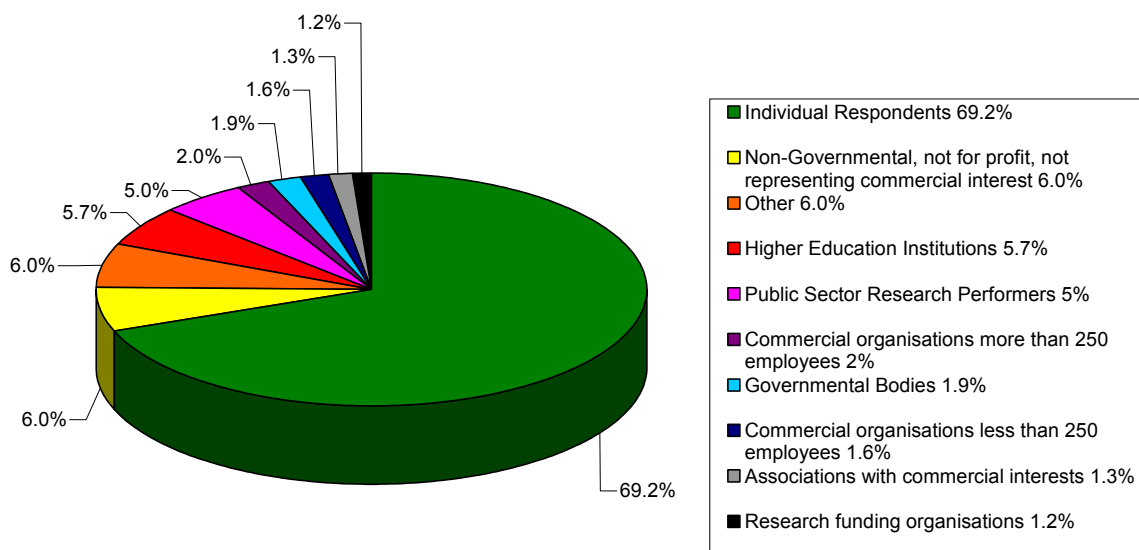
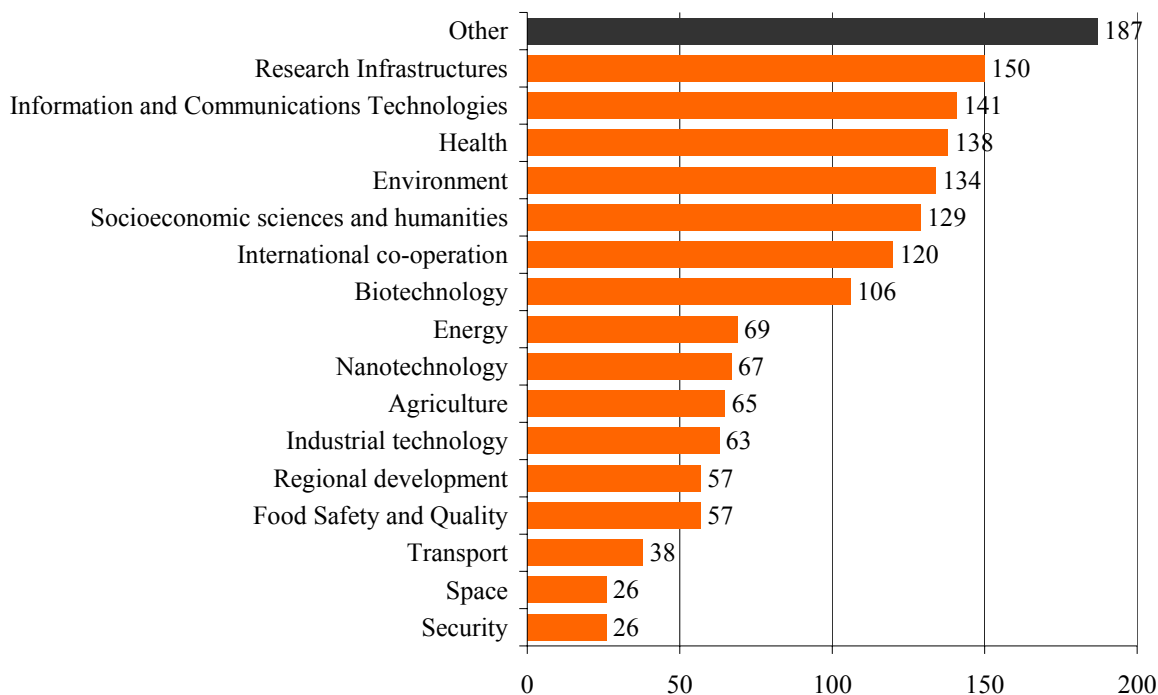


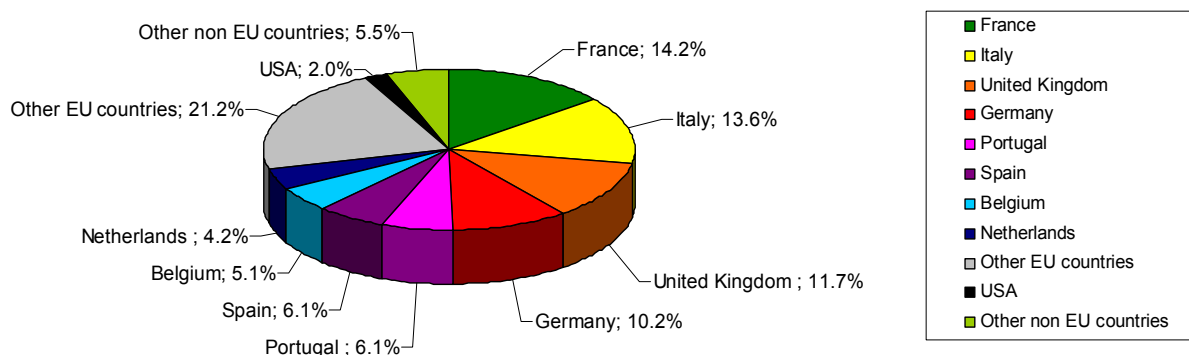
Figure 1 Responses to the on-line questionnaire – Types of stakeholder

Respondents' areas of research activity or interest include, in decreasing order, research infrastructures, ICT, health, environment, socioeconomic sciences and humanities, international cooperation and biotechnology (Figure 2).



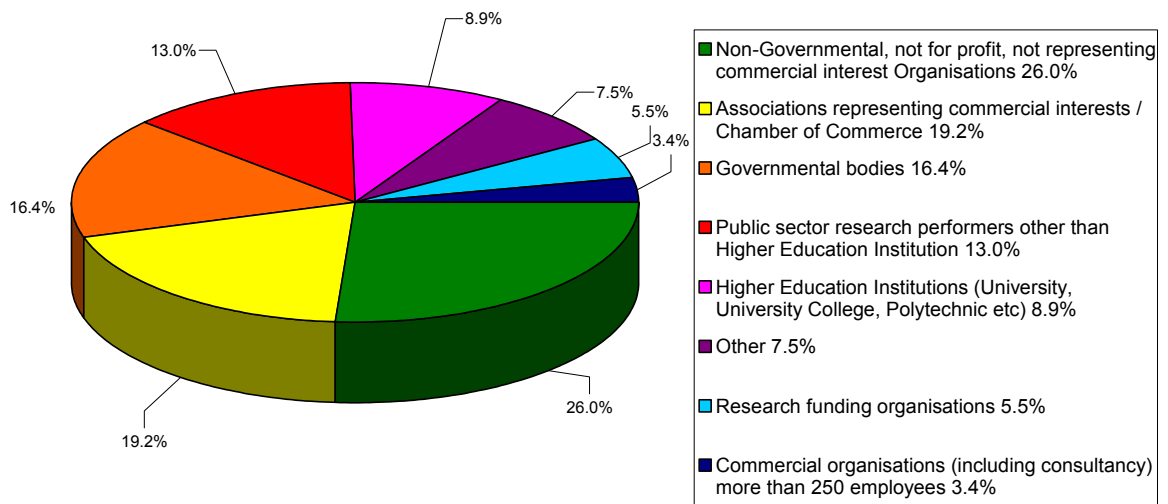
**Figure 2 On-line respondents – Main field of activity**

More than 60% of the responses come from France, Italy, the UK, Germany, Portugal and Spain. All Member States, apart from one of the new Member States, are the origin of at least one response, while the US ranks twelfth in number of responses (14). The ranking by national origin of the reported organisations is different than the ranking of the countries of residence of the representative respondent, with Belgium and the Netherlands replacing Portugal and Spain in the group of the top six countries on this latter count (Figure 3).



**Figure 3 On-line respondents – Country of origin**

The largest share (26.0%) of the free-format contributions come from NGOs and associations representing the interests of researchers in specific fields. 16.4% come from governmental bodies many of which are the product of national consultations. 13.0% come from RPOs and 5.5% from RFOs; 8.9% come from HEIs. The private sector contributes with 3.4% from large companies and 19.2% from associations representing commercial interests, including European Technology platforms. Last but not least, 7.5% come from other stakeholders, including trade unions (Figure 4).



**Figure 4 Free-format contributions – Types of stakeholder**



### 3. THE CONTRIBUTION OF MEMBER STATES, ASSOCIATED COUNTRIES AND EUROPEAN BODIES

#### 3.1. Summary of Member States' and Associate Countries'<sup>3</sup> position papers<sup>4</sup>

##### The ERA vision

Virtually all of the responses received from the Member States (MS) strongly emphasise the need to consider the role of industry and links to wider innovation and education policy. Italy in particular points out the importance of both public and private participation in developing the ERA. Many responses highlight the importance of basic research as a precondition for building the ERA and welcome the creation of the ERC.

Belgium sees the EU as a catalyst which should create the necessary political consensus to remove problems and barriers to transnational cooperation, fill identified gaps and act where benefits of scale can be realised. The Czech Republic considers that the EU should set common framework conditions while respecting national diversity and reducing bureaucracy. Estonia sees the goals of the ERA as aligning closely with its national objectives of research, development and innovation strategy. The Netherlands is in favour of coordinating large-scale facilities and international mobility at EU level, but feels that other proposed activities could interfere with the autonomy of research institutions.

Denmark considers it fundamental for European research and the ERA to be open to cooperation with the best scientists in the world. Germany, Sweden and Switzerland highlight the need for European research policies to uphold the principle of excellence. Switzerland considers that increasing competition between European scientists is the key issue for the ERA rather than addressing fragmentation. Spain raises issues related to the existing and new instruments of the Framework Programme and to the planned externalisation of the management of the Framework Programme.

Germany considers the Framework Programme to be the key instrument for implementing the European Research Area. Ireland highlights the importance of subsidiarity, and looks in the first instance to the OMC as the mechanism for implementing the ERA. Similarly, Poland underlines the importance of both European and national efforts, and Spain emphasises the essential role of the MS and the regions and sees an increasing role for them in the future of the ERA through the OMC. Finland considers that the coordination of activities occurring at EU level should be on a voluntary basis and open to implementation with various, alternating

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<sup>3</sup> Associate Countries (AC) for EC Framework Programme 7: Norway, Iceland, Liechtenstein, Switzerland, Israel, Croatia, FYROM, Serbia, Turkey, Albania and Montenegro; AC for Euratom Framework Programme 7: Switzerland.

<sup>4</sup> Based on responses of AT, BE, CZ, DE, DK, EE, FI, FR, IE, IT, NL, PL, RO, SE, UK, ES, NO, CH and TR. Some National assemblies have also contributed (Danish and Swedish Parliaments, Czech Senate). The responses of CZ, IE and SE were based on consultation with their own national stakeholders; the responses from the Portuguese Parliament, EL and BG, received after the deadline, are published with all other contributions on [http://ec.europa.eu/research/era/progress-on-debate/stakeholder-consultation\\_en.html](http://ec.europa.eu/research/era/progress-on-debate/stakeholder-consultation_en.html)

configurations. The UK sees effective national research systems as an essential basis for a successful ERA.

France and Sweden emphasise the need to look at the overall governance of the ERA. France in particular sees the building of a shared vision defined by all the actors as a prerequisite, including objectives and with common ‘pilotage’. Inspired by the Green Paper consultation, Austria has embarked on a year of intense discussion with its own stakeholders – the Austrian Research Dialogue – on the future of research and the Austrian knowledge-based economy.

### **Realising a single labour market for researchers**

The Czech Republic wants to minimise legislative barriers and harmonise social security in this area. Estonia supports the creation of a single labour market for researchers while wishing to ensure that this does not lead to the deterioration of research in less developed regions. France also considers it necessary to create a single market for all research workers, including teachers, engineers and technicians and for all research funding to include resources to support new researchers. Spain believes that the researchers’ Charter and Code should be made compulsory in the form of a Directive and that the removal of barriers to mobility should also be enforced in all MS by regulation. Finland believes that social security practices across the EU should be clarified in general, not just for researchers. Poland would consider arrangements concerning the coordination of social security at the EU level including the possibility for scientists to take on the role of prime payers, as well as a legal framework covering scientists’ rights, duties and salaries.

Sweden considers the lack of portability of supplementary pension rights and the reservation of academic positions for national and/or internal staff as the main obstacles to a single labour market for researchers. Austria emphasises the lack of researchers, particularly women, in some fields. Denmark, Norway and Spain also put special focus on the promotion of women in science. Austria and Italy emphasise the need to focus on exchange rather than brain drain or gain. Italy would like to see a European-level database of all researchers and more emphasis on interdisciplinary training.

Denmark, Germany, Ireland and UK instead stress the OMC approach in this area based on spreading best practice and voluntary implementation of instruments like the Charter and Code. Finland believes that compulsory EU legislation in this area could have highly asymmetric impacts in different Member States given the diversity of national employment legislation and practices. Belgium also does not favour compulsory measures but believes in strengthening existing tools like the Charter and Code. At the EU level, the Netherlands considers the priority to be to continue measures aimed at promoting the training of researchers and the improvement of researchers’ career prospects, through improving mobility.

Poland points out the importance of investment in research infrastructures for creating attractive conditions for researchers in all EU MS. Turkey highlights the problem of obtaining short-term visas to attend scientific meetings as a barrier to creating the ERA. Switzerland believes that scientific visas should be implemented throughout the whole European Research Area, including the Associated States, as well as on a global scale.

### **Developing world-class research infrastructures**

Ireland, the Netherlands and Sweden strongly endorse a greater EU role during the development of large-scale, costly or essential research infrastructures. Belgium wishes to see a greater EU financial contribution so that larger countries are not the only ones able to host major infrastructures. Similarly, Austria and Turkey support common European investments in large-scale projects in a regionally balanced way so that infrastructures are fully accessible across the ERA. Poland emphasises the great potential of the large numbers of highly qualified research personnel in less developed countries within the EU that could be realised with improved infrastructures. Finland is open to considering a greater EU funding role.

France considers that presently a mechanism for coordination of funders and operators is missing. Italy considers that the major obstacle to the establishment of new infrastructures is the high long-term commitment needed in terms of funding and human resources. Spain sees collaboration between the EU and other intergovernmental bodies as the main problem to be solved in order to develop the infrastructures on the ESFRI list and considers the ESFRI list itself as partial and containing obvious gaps. Spain supports scientific cohesion criteria as part of a transparent, competitive process for the location of research infrastructures.

Belgium, Finland, France, Germany, Ireland, Norway, Poland and Spain welcome the idea of a European legal framework and a governance structure for new infrastructures. Netherlands does not consider this essential. The UK maintains the central role of MS in defining requirements and constructing infrastructures but envisages the EC playing a significant role as a broker and facilitator during the “identification of needs” stage.

The Czech Republic considers that infrastructures for social sciences and non-applied natural sciences should be funded nationally. Estonia, France, Ireland and Norway emphasise the continuing importance of access to research infrastructures. Italy and Spain consider that networks of medium and smaller-scale facilities are as important as new large-scale infrastructures. Poland suggests considering EU support for building new ‘satellite’ or auxiliary infrastructures in less developed countries within the EU to conduct preparatory research for larger research facilities.

### **Strengthening research institutions**

MS see action in this area as very largely a matter for the national and local levels. Austria has found that moving towards more autonomy is a fundamental cultural change that will happen gradually. Spain has recently passed a law giving more autonomy to its universities. Estonia emphasises the importance of sustainable funding for institutions. Germany and Switzerland consider funding based on excellence and autonomy of research institutions to be crucial. The Netherlands suggest that the ERA will primarily develop if MS make the financing of national research institutions more competitive. The UK considers that there would be benefits of comparability and compatibility between national systems, with the Bologna process as a model. Poland would also wish to learn from the experiences of non-European countries as well.

Belgium sees critical mass as key for institutions and wants to see universities and research centres merge and specialise with more Community funding for Networks of Excellence. Spain favours the creation of a “European Centre of Excellence” label built on the experience of existing national exercises. Ireland wants to limit further proposals for European centres of excellence (real and virtual) until current initiatives have been assessed. Turkey agrees with the creation of “virtual research communities” by pooling and integrating activities and resources from different locations and disciplines within and beyond Europe. Switzerland

considers the added value of virtual centres unproven. Germany considers that in order to be successful, the networking of research institutions to form centres of excellence must be developed on the initiative of the institutions.

Sweden would explore supporting the development of a number of comprehensive, research-intensive world-class universities at European level. Switzerland would support a European university ranking established by the EU. Finland emphasises the importance of links between research institutions and industry. Finland does not support the idea of developing common principles for the funding and assessment of research institutions because of the different types of mission performed by different research institutions.

### **Sharing knowledge**

Voluntary guidelines are more welcome to MS than legislative solutions in this area – e.g. Netherlands considers that measures at European level should: be voluntary and supported by all stakeholders; build on national instruments; and contribute to the cross-border exchange of knowledge.

Most responses stress the importance of knowledge transfer between the public sector and industry. Austria stresses the importance of knowledge transfer across national borders and the development of an entrepreneurial mindset in universities. Belgium and Spain see cultural and legal differences as the main hurdle for transfer of knowledge between the public sector and industry. Estonia emphasises the importance of raising private sector skills, the potential of mobility for knowledge transfer and of strengthening science in society. Finland and Poland see open access publication as pivotal to knowledge transfer and Finland considers that it should be promoted not only at EU level but also internationally. Switzerland's National Science Foundation has recently introduced the principle of open access which is already in place at CERN. Italy and Spain stress the importance of knowledge transfer to SMEs as the group which can use it most effectively.

France raises concerns about too much openness resulting in third countries taking unfair advantage of the knowledge of the ERA.

Poland and Spain want to take advantage of the possibilities opened up by ICTs, especially open databases in this area. Finland and Sweden express the need for better dissemination from the Framework Programme. Finland and Sweden also see great potential in the European Technology Platforms (ETPs) for knowledge transfer. Turkey agrees and would like to integrate its national TPs with the ETPs.

### **Optimising research programmes and priorities**

MS stress the importance of striking a careful balance in this area. Too much coordination and cooperation is seen as potentially reducing positive competition and diversity. But these MS are open to using OMC to align practice in various areas such as coordination of national and regional strategies, peer review, quality assessment and financial accountability and common foresight activities.

Belgium, Denmark, Finland, Germany and Norway are open in principle to reciprocal and gradual opening of funding programmes but under conditions of balanced reciprocity. Belgium draws a distinction between opening up fundamental research and strategic, industry-oriented research programmes. The latter should take into account economic return.

Estonia believes that participation in joint programmes with other MS is necessary and that countries must seek to specialise. Austria similarly believes that pooling resources and avoiding parallel structures is essential, in particular for smaller MS, but also for larger.

Spain, Switzerland and the UK emphasise the importance of ERA-NET and that bottom-up collaboration remains the most effective way forward. Turkey believes that ERA-NET is the best tool for well-coordinated research programmes but invites the Commission to consider broadening the range of organisations eligible to participate. Ireland and Italy want to see a careful roll-out and monitoring of current EU initiatives in this area such as ERANET, ERA-NET+, Article 169s and JTIs before going further.

Poland is concerned about growing disparities between the development levels of Western and Central-Eastern parts of the ERA and wishes to see more support for the integration of convergence regions with the ERA and to help researchers from the new MS obtain funding from the ERC.

Finland wants to see more effort to ensure that research funded by the EU and intergovernmental organisations such as CERN and ESO are complementary. Switzerland wishes to see the work of the existing intergovernmental organisations reinforced.

### **Opening to the world: international cooperation**

Germany, Ireland, Italy, Netherlands and Spain support a more coherent approach with respect to third countries. Italy believes that the definition of strategic priorities for S&T cooperation should be a core element of EU external policy. Germany suggests that a strategic dialogue forum on international cooperation possibly under the umbrella of CREST, should be set up for the purpose of drawing up and implementing an internationalisation strategy for the European Research Area.

Belgium anticipates bodies similar to ESFRI being set up with representatives of the MS, the research community and the third countries coming together to agree on specific, common objectives. Finland agrees that the coordination of Member States' international research cooperation should be improved, but this should be voluntary and follow the principle of variable geometries. Finland believes that the bilateral science and technology agreements of the EU should be framework agreements from which the agencies of the Member States would be able to benefit directly and that more attention should be paid to reciprocity of funding.

Austria and others emphasise the need to develop differentiated strategies taking into account the status of prospective partner countries. Smaller MS might benefit from a more coordinated European strategy for the large emerging markets of China and India. Estonia actively supports the participation of its researchers and institutions in EU and international collaborative projects. Poland sees an effective system of mobility and exchange of researchers as an important way to build scientific relationships with neighbouring countries.

France believes that a more coherent approach will be very difficult to achieve. Collaborative evaluation and analysis should be a first step. Spain sees a constant exchange of information through OMC mechanisms as the basis to increase consistency at EU level. The UK considers it important to understand existing structures before planning new ones. Ireland and the UK consider that the Framework Programme provides mechanisms to achieve many of the objectives in this area. Switzerland considers that safeguarding the current variety of

approaches in this area and exchanging information on specific relationships and niche strategies could be more rewarding for the European Research Area than strictly streamlining international S&T policy.

Turkey believes it to be very important that enlargement countries should enjoy specific opportunities in the form of specific calls under FP7 that would support integration of researchers in these countries among themselves and with their European counterparts.

### **3.2. Summary of opinions by the European Parliament and advisory bodies**

The key points in the opinions issued by the European Parliament (EP), the European Economic and Social Committee (EESC) and the Committee of the Regions (CoR) include:

#### **The ERA vision**

The European Parliament and advisory bodies support the need for concerted action at European and national levels on all six axes of the Green Paper. The European Economic and Social Committee highlights in particular the need for a European internal market for research and innovation, but not for ‘excessive standardisation’. The Committee of the Regions stresses the important role of regions and cities for developing the European Research Area.

#### **Realising a single labour market for researchers**

The European Parliament, EESC and CoR support action in this area. The EP makes particular reference to developing an information system, increasing mobility (including inter-sectoral), promoting women and improving the teaching of sciences. EESC considers that contract conditions, salaries, portability of social security and “family integrity” are the key obstacles to better careers and mobility. This is supported by a similar assessment from CoR.

#### **Developing world-class research infrastructures**

Both EP and EESC stress the importance of involving relevant research institutions, including intergovernmental organisations, and industry. EP considers that the ESFRI roadmap should be completed and it would welcome a legal framework as envisaged by the Commission. It notes that planning and budgeting should include, from the outset, the operation, maintenance and improvement and the related R&D needs of infrastructures. CoR considers that the structural funds have an important role to play in funding research infrastructures.

### **Strengthening research institutions**

The EP highlights the importance of the “Knowledge potential” and “Regions of Knowledge” programmes as means to support research institutions across Europe. EESC calls for balanced modernisation of universities and public research organisations, including increased autonomy, a sufficiently large share of basic funding but also competitive extra funding, whole-project funding, multi-annual budgets, and less red tape for scientists. However, EESC voices reservations on evaluating research institutions according to “measurable criteria”, which it believes cannot be really objective in research. CoR supports initiatives to modernise research institutions, provided that a ‘one size fits all’ approach is avoided, particularly as regards critical mass. In general bottom-up approaches are preferred.

### **Sharing knowledge**

Both EP and EESC support open access to research publications and, with some nuances, to publicly funded research results. EP highlights the importance of open innovation for industry and recalls the important role played by the Joint Research Centre (JRC). CoR supports the idea of a Charter establishing common principles for the management of IP by public research organisations. EESC considers that the European Research Area should be complemented by a European Knowledge Area with particular reference to education, training and knowledge management. It is in favour of the principle of a grace period for IPR.

### **Optimising research programmes and priorities**

The EP is in favour of the mutual opening of national programmes, beginning with frontier research, and of their evaluation by international panels. Both EP and EESC favour bottom-up approaches based on the open method of coordination and on “variable geometry”. EESC rejects any “detailed top-down coordination of European research” as it considers it indispensable to maintain a sufficient plurality of approaches in research. Similarly, the CoR accepts the principle of coordination of programmes and priorities but it “rejects centralised research planned at European level”. Like the CoR, the EP stresses the role of regional and local authorities, which needs support from the Framework Programmes and cohesion policy. The EP also calls for further development of initiatives such as COST and EUREKA and asks for the greater involvement of public bodies in establishing long-term priorities for public R&D funding, with specific reference to European Technology Platforms and Joint Technology Initiatives. CoR would favour the further development of the “social platform” concept. Finally, it recommends the development of sufficiently thorough benchmarking between research policies at regional level.

### **Opening to the world: international cooperation in S&T**

The EP calls for alignment of EU S&T cooperation policy with external and development policies and programmes. It also calls for stronger action in favour of developing countries and considers that neighbouring countries, particularly from the Mediterranean, should take part in the ERA. In general terms, the CoR also favours the improvement of international cooperation in S&T, notably through close cooperation among Member States in this area.

#### 4. THE EUROPEAN RESEARCH AREA VISION

##### The context of the European Research Area

The analysis of the replies to the on-line questionnaire indicates that the developments deemed most likely to affect the ERA in the next 10 years are (by decreasing importance): Public investment in research in Europe; Globalisation of research; Emergence of new scientific and technological powers; Private investment in research in Europe; and Specialisation in research activities at European rather than national level. However, private investment is considered to be one of the top three developments by research funding organisations, industry and business.

Free-format contributions highlight the fragmentation of efforts and policies, going hand in hand with inadequacy of overall resources, due to vast disparities in R&D investment levels across EU countries. The fragmentation of markets appears as a major concern for commercial organisations. Higher education institutions argue that there has been too little discussion about EU-level action to address the causes of fragmentation. In this regard, contributors agree that the Green Paper reveals a sense of urgency on the need to identify actions to overcome fragmentation and ensure that Europe makes the most of globalisation in S&T.

Some contributions challenge the Green Paper on the grounds that it does not sufficiently address: regional initiatives and regional cooperation, in particular in relation to the financing of research infrastructures; basic and frontier research; the role of research of relevance to innovation and industry; the role of research performing organisations; the activities of national science academies and research councils; the status of a research career amongst young people – often linked to limited responsibilities and poor salaries; the problem of brain drain within Europe due to the existing socioeconomic inequalities in Member States and regions; and the vital links between research policy and education and innovation policies.

##### The essential dimensions of the European Research Area

All six of the ERA dimensions in the Green Paper are considered important by the respondents to the on-line questionnaire (Figure 5). Overall results from the 685 replies position “Sharing knowledge” as the most significant area contributing to the ERA Vision, closely followed by “Developing world-class research infrastructures”, “Strengthening research institutions” and “Optimising research programmes and priorities”. This order is mainly driven by the ranking suggested by the 474 individual respondents, while the responses of those representing their organisations present a different pattern. “Sharing knowledge” is considered the most significant dimension by HEIs, RFOs and NGOs and second most important by industry and governmental bodies. The dimension “Developing world-class research infrastructures” is considered most important by RPOs and governmental bodies (*ex-aequo* with “Knowledge sharing”), while large commercial organisations and associations representing commercial interests consider that the most important ERA dimension is the “Optimisation of research programmes and priorities”.

The free-format contributions underline the need for key research infrastructures, and for the promotion of more efficient and complementary European research and graduate education, doctoral and postdoctoral training, capable of building synergies with robust and ongoing national programmes. Research institutions are among both the subjects of and the



respondents to the consultation. There is a call for recognition of the vital role of universities, particularly comprehensive, research-intensive universities, as entrepreneurial institutions with unrivalled capacity or potential for flexible responses to complex societal issues, and in acting as powerful attractors of the best talents. Research performing organisations consider that their role in furthering ERA has been inadequately reflected in the Green Paper and highlight the need for specific actions to support stronger and sustainable cross-border cooperation between them. It is also suggested that the relationship between universities and RPOs should probably be discussed much more deeply, to obtain a more complete vision of the ERA ecosystem.

Importance of ERA Areas	r1	r2	r3	r4	r5	r6	r7	n/o	votes	score	rank
Sharing knowledge	287	155	99	49	32	22	16	16	685	5156	1
Developing world-class research infrastructures	259	169	96	63	21	26	14	28	685	4999	2
Strengthening research institutions	237	178	125	46	25	22	17	26	685	4964	3
Optimising research programmes and priorities	183	180	133	59	43	29	20	29	685	4611	4
Opening to the world: international cooperation in S&T	156	164	123	81	54	54	14	30	685	4318	5
Realising a single labour market for researchers	179	124	137	82	50	39	24	41	685	4284	6
Other	110	22	10	5	2	3	13	65	239	1481	7

Scoring criteria: rank 1 = 10 points, rank 2 = 8, rank 3 = 6, rank 4 = 4, rank 5 = 3, rank 6 = 2, rank 7 = 1; n/o = no opinion

Figure 5 The relative ranking of the importance of the six ERA dimensions

Position papers insist on the high EU added value expected from the ERA and highlight the importance of realising a more ambitious vision for the ERA. A contribution from a regional government highlights the importance of ERA dimensions for achieving common goals, preventing duplication and fostering joint efforts. This would require some kind of harmonisation of national research policies. RPOs suggest that “*developing excellent education and training, at all levels, in science and technology*” and “*encouraging high-risk research with the potential for radical innovations*” should be added to the ERA dimensions. In relation to this, an institution highlights the need for “*long-term funding opportunities to support ambitious and risky research programmes and the development and maintenance of research infrastructures.*”

Many free-format contributions draw attention to strong interdependencies between the ERA dimensions, providing a “*relevant framework for future developments.*” One organisation insists on “*sharing knowledge, through more open and easy access infrastructures resulting from new developments and/or innovative uses of communication channels and technologies.*” Knowledge sharing is considered to be highly dependent on researchers’ mobility within and between sectors of activity. Mobility is a challenge for institutions, which suggest that joint implementation of infrastructures is the best way for the emergence of European and global research communities. World-class research infrastructures have to support strong European institutions performing joint programmes. Joint programming and funding approaches could enhance linkages with expatriate researchers and attract the scientific diaspora. Optimising research programmes and priorities is also judged important for international cooperation on global issues and challenges. Research institutions wishing to achieve a particular critical mass and specialisation are particularly concerned with the careers

of researchers. Maintaining critical mass by pooling specialists in specific areas appears to be an important issue, and RPOs would like to be given the means to engage the best researchers in the world.

Research funding organisations would like to see the bottom-up process being used to identify new research themes and democratise the process of “optimisation” of research programmes and priorities. One RFO suggests that high-risk research should be added as a seventh dimension. Many contributions suggest that it is important for the ERA vision to include also demand-side elements. Business Europe suggests that *“the EU must have vision and ambition. The EU should focus on using its resources to create a critical mass of activity around core themes, which will allow it to compete on the international stage with Japan, the USA, China and others. Critically, the EU must be open to radical as well as incremental innovation and should guard against risk aversion: resources need to be managed appropriately, but should not default to supporting low-risk “safe options” where the potential for the EU taking a world lead is diminished.”*

**The expected levels and focus of European, national, regional actions**

Concerning the level of expected actions (EU, national or regional) for each ERA dimension, the replies to the on-line questionnaire show different ranking orders to those emerging from the previous question about the importance of the ERA dimensions. Both types of response, from individuals and those replying on behalf of organisations demonstrate similar pattern of expected levels of action. “Realising a single labour market for researchers”, “Opening to the world” and “Developing world-class research infrastructures” are the top three areas of expected European-level action, followed by “optimising research programmes and priorities” (Figure 6). Individual respondents, RPOs and NGOs suggest that “realising a single labour market for researchers” is the most expected for EU action, while governmental bodies, RPOs and large businesses opt for “developing world-class research infrastructures”. All groups of stakeholders consider that EU level actions for “research institutions” are not necessarily needed.

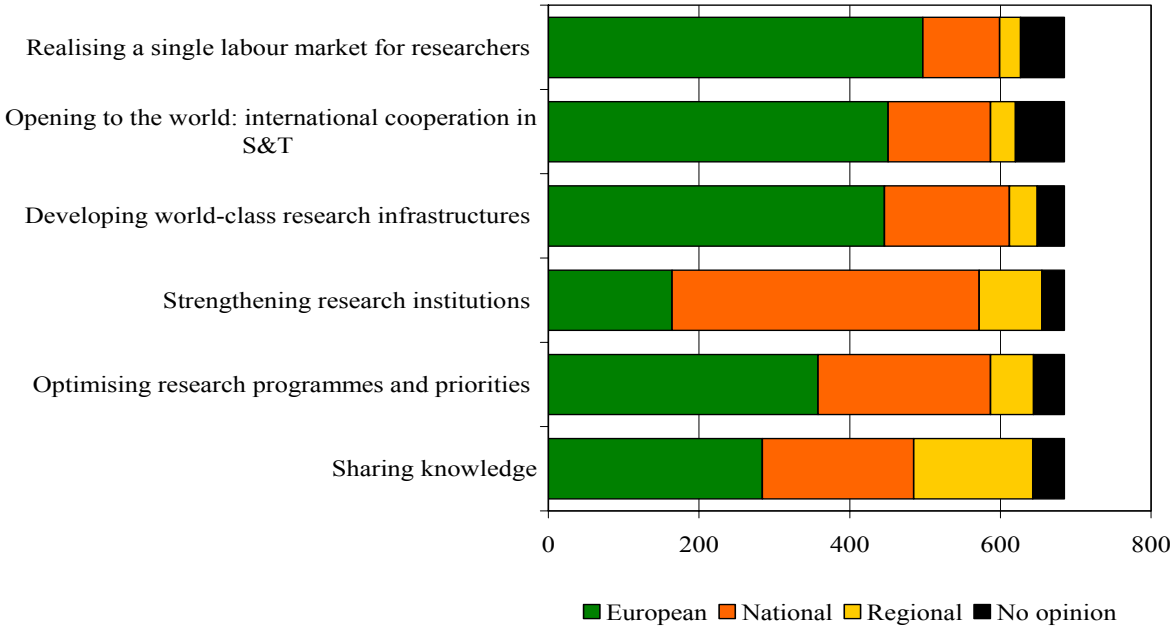


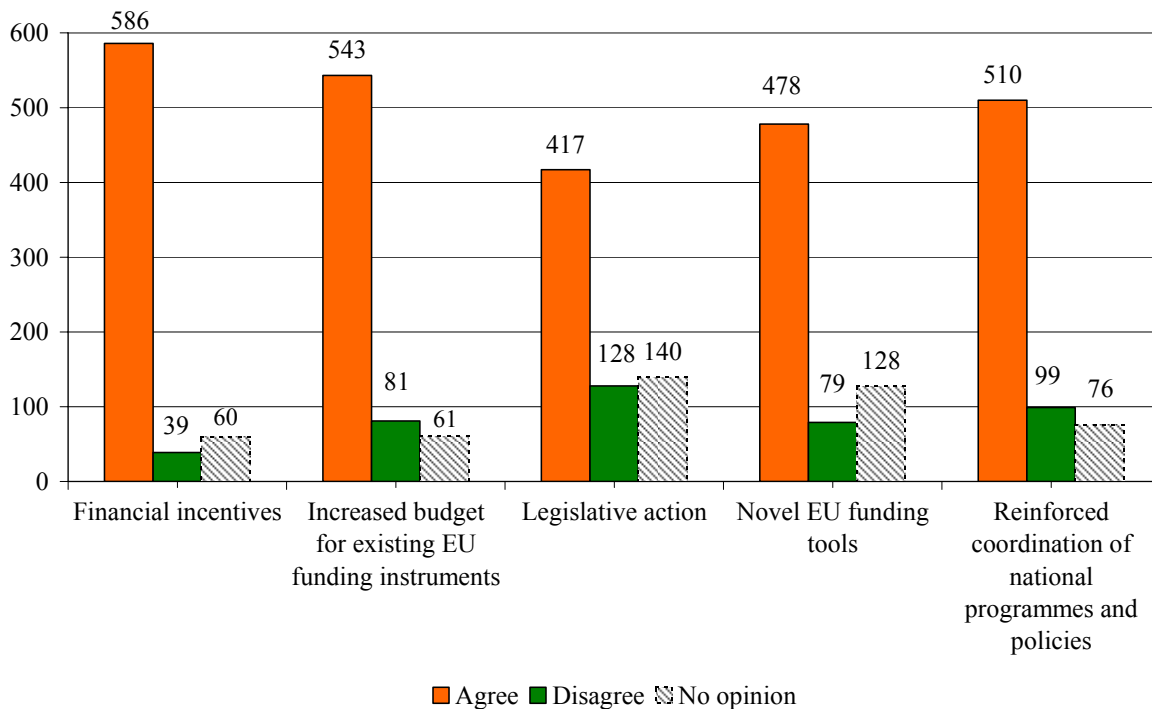
Figure 6 The expected level of action (EU, national and regional) for each of the six ERA areas

Free-format contributions provide further insight. One of the most significant remarks about the roles of EU, national and regional policies in establishing the ERA is that *“European-wide structures and schemes should constitute a balanced mix of approaches respecting and facilitating bottom-up research activities, combined with strategic guidance and coordination where this serves European policy objectives.”* In this regard, two universities suggest that *“the EU should be more active in encouraging light-touch regulation to help remove barriers to business-university collaboration”* as well as in promoting *“the establishment of open access repositories, and supporting academics in using them.”* Governmental bodies emphasise that national S&T policies should be in synergy with the European policies but not copy them; complementarities and alignment are considered crucial.

In countries where the research and innovation system is relatively more developed, it is argued that the EU must not adopt an approach of enforcing coordination; instead it is recommended that the EU applies its instruments (including structural funds) to strengthen weak Member States through provision of training and education and new infrastructures. Some NGOs endorse the view of the EU as a major “promoter” of European research by spreading best practices and experiences from the more economically advanced Member States to the smaller and newer Member States. In doing so, the EU is expected to create a framework for establishing the necessary political consensus to remove problems and barriers concerning transnational R&D cooperation, formulating guiding principles, stimulating cross-border cooperation of entities, and setting up community initiatives in those fields where a gap is recorded and/or where scale benefits can be realised. Finally, associations representing commercial interests argue that the ERA should deliver real results and benefits for the community as a whole, and that the EU should use its scale more effectively to support coordinated actions on research and market creation to compete successfully with the US, China and others.

### **EU initiatives to best leverage overall public and private efforts towards the ERA**

In the replies to the on-line questionnaire, the proposed European level mechanisms to increase public and private efforts to realise ERA are endorsed by a majority of respondents. Results show financial incentives to be the most widely accepted, followed by an increased budget for existing EU actions, reinforced coordination of national programmes and policies, novel EU funding tools and legislative action. Financial incentives are considered the most important by all groups of stakeholders apart from HEIs and PROs, which consider them only second to an increased budget for existing EU actions. This latter option is the second choice of all types of stakeholders apart from government bodies, which place in second place novel EU funding tools. Legislative action is placed in final or penultimate place by all types of stakeholder.



**Figure 7 EU initiatives to best leverage public and private efforts towards the ERA**

The free-format contributions shed further light on the type of EU initiatives that could best leverage overall public and private efforts to realise the ERA vision. Many organisations feel that, as expressed by the UK Higher Education Sector, *“it is vital that the progress and contribution of existing EU initiatives is properly evaluated before new ones are introduced.”* The demand for inventory, monitoring and assessment of existing practices and tools, including what ERA WATCH is current doing, is reiterated in relation to the various ERA dimensions. Governmental bodies and non-governmental non-profit bodies highlight the need for, on the one hand, more EU-level efforts aimed at decreasing the administrative burden and legal hurdles linked to the calls for research proposals and the running of research projects and, on the other hand, more actions fostering inter-regional cooperation.

## 5. THE DIMENSIONS OF THE ERA VISION

### 5.1. Realising a single labour market for researchers

#### 5.1.1. An EU framework to improve the conditions of researchers

#### Awareness and implementation of the C&C: voluntary versus mandatory actions

Less than half of the respondents to the on-line questionnaire declare that they are sufficiently aware of the European Charter for Researchers and the Code of Conduct for their Recruitment (“Charter and Code” - C&C) issued in 2005 by the European Commission as a common, albeit voluntary framework for Member States, funders and employers of researchers to take account of the European dimension of research careers, including the transnational opening of vacancies and funding opportunities for researchers. However, the analysis by type of stakeholder reveals that the Charter and Code obtains a better score awareness in higher education institutions, public sector and research funding organisations and that governmental bodies are among the stakeholders that are least aware of the Charter and Code. The C&C are always less known in the private sector.

Three fifths of those responding positively consider that, due to their voluntary nature, the Charter and Code will not become a genuine factor for European research careers. Nonetheless, a number of individual respondents express preference for the C&C to be voluntary rather than mandatory and incentives for compliance are also recommended. It is also underlined that a mandatory, C&C would be difficult to achieve in industrial R&D organisations.

**Table I Responses to the statement “The voluntary nature of the C&C means that its principles are unlikely to be adopted with sufficient rapidity to become a genuine factor for European research careers” by types of stakeholder**

Category of Stakeholders	Agree (%)	Disagree (%)	No opinion (%)	Number of respondents replying on behalf of organisations
Higher education institutions	47.6	42.8	9.5	21
Governmental bodies	75.0	25.0	0.0	4
Public sector research performers other than higher education	47.6	38.1	14.3	21
Research funding organisations	66.7	33.3	0.0	6
Non-governmental, non-profit bodies	68.7	18.7	12.5	16
Commercial organisations, 250+ employees	57.1	14.3	28.7	7
Commercial organisations, <250 employees	60.0	0.0	40.0	5
Associations representing commercial interests	50.0	50.0	0.0	2
Other	73.7	15.8	10.5	19
<b>All respondents replying on behalf of an organisation</b>	<b>55.4</b>	<b>30.7</b>	<b>13.9</b>	<b>101</b>

Table I shows that, in general, stakeholders agree that the voluntary nature of the Charter and Code could be a brake on the effectiveness of its implementation, but this trend is less clear for higher education institutions, public sector performing research and associations representing commercial interests. The strongest agreement comes from the governmental bodies.

The great diversity of research patterns throughout Europe makes implementation of the Charter and Code difficult. Various suggestions are made in order to translate the voluntary principles into concrete implementation. For example, one stakeholder proposes that a concrete measure could be to make research funding from the EU research programmes conditional on recognition and implementation of the principles of the Charter by the institutions receiving EU funding.

There is strong support for the principles of the Charter and the Code in the stakeholder free-format responses. One stakeholder argues: *“The European Charter constitutes a positive initiative, which it would be advisable to prolong by more concrete measurements of coordination.”* However, there are divergent viewpoints regarding whether these principles should be mandatory or linked to eligibility for funding support. Serious concern is expressed regarding the degree of flexibility with which the Charter and Code should be enforced in the private sector and in particular in innovating SMEs, for *“it would be difficult to imagine that SMEs would follow the same rules as big research laboratories.”*

### **Recognition of the profession and salary conditions**

Of the main concerns that could be addressed if the Charter and Code were binding (or, at least, if more specific guidelines at European level applied), funding and salary levels come first, closely followed by the recognition and rewarding of mobility, recruitment and working conditions. A number of respondents raise the substantial problems for mobile researchers, including the lack of harmonisation of pension schemes within Europe, non-competitive researcher salaries and the comparatively low professional status of researchers. A number of individual respondents comment on the difficulties linked to mobility, e.g. moving families, in terms of work permits for partners and children needing to adjust to different education systems. Some respondents also identify the potential for a mobility requirement to discriminate against those with disabilities. Others argue that working conditions should ensure access to childcare and also take into account the special circumstances of single parents.

For employment in public research institutions, the Charter and Code may be useful while in the business sector, the worldwide market and competition for experts may prevent companies from following their principles. As an organisation expresses it: *“Business interests run businesses; their chief aim is to deliver the bottom line rather than to promote the position of researchers in the labour market.”*

From the overall results, a large proportion of respondents (80%) believe that a “Charter and Code label” should be awarded to employers and funders who are successfully engaged in applying the principles. Indeed, a ‘label mechanism’ would help speed up implementation of the Charter & Code and is considered preferable to coercive legislation. Some stakeholders recommend that the Open Method of Coordination policy-making approach and the Bologna Process structures could be used for Charter and Code implementation rather than regulatory mechanisms. The substantial administrative burden and costs associated with implementing and monitoring the C&C are also commented on, in particular in relation to decreasing interest and commitment. Nonetheless, a Foundation believes that *“a more aggressive and coordinated approach is required if the ERA is to create the necessary working environment for the research community to thrive on. Initiatives such as the C&C will only be valuable if their implementation is monitored and assessed across Europe.”*

Table II shows the breakdown by type of stakeholder and confirms the general trends: the label is better accepted by governmental bodies, the higher education institutions, public

sector research performers other than higher education, research funding organisations and non-governmental bodies and less encouraged by large commercial organisations and/or associations representing commercial interests.

**Table II Responses to the statement “In order to advance the concrete implementation of the principles of the C&C, a European “C&C label” should be awarded to employers successfully engaged in applying it” by type of stakeholder**

Category of Stakeholders	Agree (%)	Disagree (%)	No opinion (%)	Number of respondents replying on behalf of organisations
Higher education institutions	65.0	20.0	15.0	20
Governmental bodies	100.0	0.0	0.0	4
Public sector research performers other than higher education	76.2	4.8	19.0	21
Research funding organisations	66.7	33.3	0.0	6
Non-governmental, non-profit bodies	100.0	0.0	0.0	16
Commercial organisations, 250+ employees	42.8	2.8	14.3	7
Commercial organisations, <250 employees	75.0	25.0	0.0	4
Associations representing commercial interests	50.0	50.0	0.0	2
Other	68.4	15.8	15.8	19
<b>All respondents replying on behalf of an organisation</b>	<b>73.7</b>	<b>14.2</b>	<b>12.1</b>	<b>99</b>

### 5.1.2. Social security across Europe

#### Legal status for mobile researchers

The majority of respondents (74.6%) have a mobility experience but most of them did not spend more than three months in another EU country to do some research work (45.3%). A small majority are fellowship holders and only one third may be considered to be “posted” workers as they keep their contract in their country of residence. Only one third respond to this question, perhaps because they do not seem fully aware about their real status during these periods. Some of the researchers think they are fellowship holders because they obtain money from European organisations e.g. *Marie Curie fellowships*. However, this money is often given to the host organisation which signs an employment contract with the researcher. The researchers are then considered to be salaried workers even if they originally obtained an EU programme fellowship, which may have misled them in this question, as confirmed by the following quote: “*Grants should be inclusive of all compulsory pension and social security contributions, and researchers should be recruited by their host organisation so as to clarify their labour market position and to guarantee pension and social security.*”

The limited period of time (one or exceptionally two years) for which a worker, including researchers, posted to another EU country can be subject to the legislation of his or her country of origin can be prolonged based on Article 17 of Regulation 1408/71<sup>5</sup>. Only 6.8% of the respondents to this question (61.8% of total respondents) used this possibility and more than two thirds of those used this possibility for 1 to 3 times. This may be due to the fact that only a few host organisations know about this system and that researchers may not be

<sup>5</sup> Two or more Member States may by common agreement provide for exceptions to the general rules on determining the applicable legislation in the interest of certain categories of persons or of certain persons.

considered to be “*certain categories of persons*” allowed to remain within the social security system of their country of origin. The remarks reveal that the application of bilateral agreements on social security signed between different countries is still unknown. Most often, it is up to the researcher to provide this information to the local social security administration. According to the respondents, the lack of information on this existing legislation also reduces the share of researchers who can benefit from this system. A Director of a research institute highlights: “*I tried to defend the interests of personnel we had delegated from another MS. The problem re-occurred regularly and in almost all cases we had to go to high levels in the Foreign Ministries to solve it.*”

### **Problematic issues related to social security for mobile researchers within the EU**

The on-line consultation reveals a lack of information on the rights of migrant researchers: they are worried firstly about matters such as statutory pension rights, followed by health insurance, unemployment benefits and family benefits (parental leave). Among the responses to the open questions, pension rights seem the main concern, as most of the researchers will have to claim their pension benefits from different systems, in the different countries they have lived and worked in. According to the respondents, even if the actual European legislation allows for the aggregation of periods completed under different systems, the procedures to obtain the pension is still very long and too much time is needed due to communication obstacles between the different social security administrations. Less than 10% of the respondents are of the opinion that “accident at work” coverage is problematic.

### **Acquisition, preservation and transferability of supplementary pension rights<sup>6</sup>**

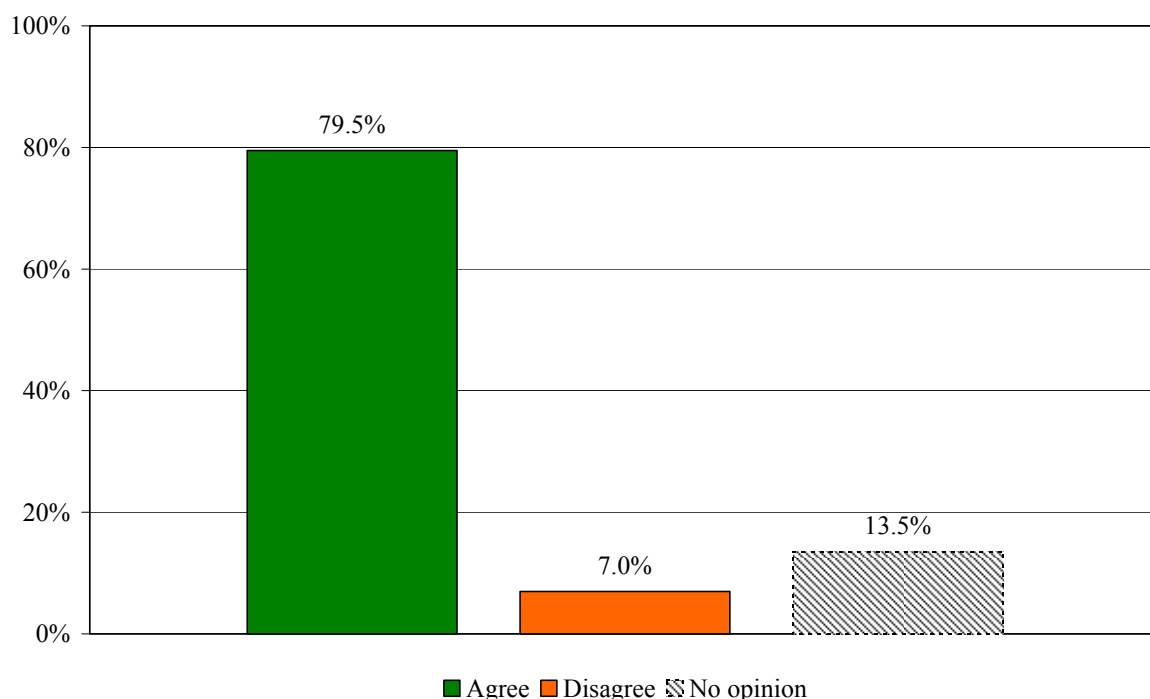
In the question on supplementary pension rights, the prevailing options include common rules throughout the EU and setting up a “European researchers’ pension fund”.

A large majority (79.5%) of the on-line respondents agree that common rules should apply throughout the EU on the acquisition, preservation and transferability of supplementary pension rights (Figure 8). Out of the comments, the most relevant themes are: the need to ensure a proper pension, to reduce the paperwork involved and to organise transferability of pension rights. Vesting periods and pension deficit should be reduced and compensation in salary for pension gaps is voiced as a solution. Over 65% out of the 66% of the respondents to the question agree that researchers would be well served with a European researchers’ pension fund to secure their pension rights. Even if several comments showed that respondents would find it difficult to judge this option (because they would need more information to fully understand it), this principle is generally regarded as a potential positive step.

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<sup>6</sup> Common rules applied throughout the EU on the acquisition, preservation and transferability of supplementary pension rights (known as “supplementary” pensions) may be set up unilaterally by an employer or as a result of a collective agreement or a contract agreed individually or collectively between the employer(s) and the employee(s). In general, employers and/or employees pay contributions to a pension institution, which invests them. The assets held by the pension institution are used to pay retirement benefits to the members of the scheme, in order to meet researchers’ needs as highly mobile workers.





**Figure 8 Responses regarding common rules throughout the EU for the acquisition, preservation and transferability of supplementary pension rights**

**Table III Responses to the statement “Common rules should be applied throughout the EU for the acquisition, preservation and transferability of supplementary pension rights” by type of stakeholder**

Category of Stakeholders	Agree (%)	Disagree (%)	No opinion (%)	Number of respondents replying on behalf of organisations
Higher education institutions	86.2	69.0	6.9	29
Governmental bodies	40.0	20.0	40.0	5
Public sector research performers other than higher education	88.0	4.0	8.0	25
Research funding organisations	100.0	0.0	0.0	5
Non-governmental, non-profit bodies	71.4	0.0	28.6	21
Commercial organisations, 250+ employees	62.5	0.0	37.5	8
Commercial organisations, <250 employees	71.4	0.0	28.6	7
Associations representing commercial interests	33.3	66.7	0.0	3
Other	74.0	7.4	15.5	27
<b>All respondents replying on behalf of an organisation</b>	<b>76.9</b>	<b>16.9</b>	<b>6.2</b>	<b>130</b>

The analysis by type of stakeholder (Table III) highlights that most categories strongly support the application of common rule. However, two points are striking: on the one hand, most of the stakeholders have no opinion (5 types of stakeholders). This could be linked to the lack of information available as mentioned several times, both in the open-ended question and in the free-format contributions. On the other hand, while the majority are in favour of such a framework, respondents replying on behalf of associations representing commercial interests and governmental bodies seem less convinced.

Respondents to the on-line questionnaire are mostly (65%) favourable to the setting up of a “European researchers’ pension fund”. When looking at the breakdown by type of

stakeholder, it is worth noting that large commercial organisations and associations representing commercial interests are mainly opposed to such a step. Comments suggest that the two options, common rules and European researchers' pension fund, are not mutually exclusive but they can coexist next to each other. Respondents point out that there are differences amongst the EU Member States in standards, both for social security, revenue and research level. Therefore, it is important to opt for a solution which takes these differences into account.

The majority of the free-format opinions point out that to achieve truly seamless mobility of researchers, further progress needs to be made to foster portability of social security provisions and pension rights between Member States: *“Vesting periods for portability of pensions should be abolished. Supplementary pension rights obtained should follow the researcher from country to country and from employee to employee.”* Higher education institutions assess that the issue of portability of pension schemes requires the European Commission and Member States *“to devote considerable political will to resolve this issue.”* However, it is recognised by a university that the added value of the creation of a European framework for portability of social security provisions *“would make it easier for both individuals and institutions to compare what a move from one country to another would mean economically both in the short and long-term perspective.”*

**Table IV Responses to the statement “Researchers would be best served by setting up a European researchers’ pension fund” by type of stakeholder**

Category of Stakeholders	Agree (%)	Disagree (%)	No opinion (%)	Number of respondents replying on behalf of organisations
Higher education institutions	58.6	31.0	10.3	29
Governmental bodies	60.0	40.0	0.0	5
Public sector research performers other than higher education	75.0	12.5	12.5	24
Research funding organisations	60.0	40.0	0.0	5
Non-governmental, non-profit bodies	62.0	19.0	19.0	21
Commercial organisations, 250+ employees	12.5	50.0	37.5	8
Commercial organisations, <250 employees	71.4	28.6	0.0	7
Associations representing commercial interests	33.3	66.7	0	3
Other	50.0	30.8	19.2	26
<b>All respondents replying on behalf of an organisation</b>	<b>57.8</b>	<b>26.6</b>	<b>15.6</b>	<b>128</b>

Higher Education Institutions also pinpoint the problems of transferring pension rights within the EU when the researcher arrives at the end of his career. Governmental bodies say this should be eliminated by creating a European legal framework on pension rights, especially on the long waiting periods before being eligible to join a pension scheme. This point of view is confirmed by public sector research performers who would like to see new measures to eliminate those barriers. Non-governmental bodies are in favour of creating a “special researchers status” in this field even from doctoral level, not only for confirmed researchers. All other organisations are for simplification of the administrative formalities, provision of more information and better cooperation between administrations.

### 5.1.3. Attracting and making the best of the researchers

#### **Flexicurity principles and the labour market for researchers**

Just under half of those responding to the question (48.1%) on flexicurity believe that its principles could enhance the attractiveness of European research careers. There is a similar level of support for the development of common standards in its implementation. However, support for advancing flexicurity via fora bringing together the key stakeholders is slightly lower.

Free-format contributions provide a variety of viewpoints on flexicurity. Some argue that, in view of national divergences (discussed in the Commission Member State Employment Committees' paper, May 2006, regarding Denmark, Holland and Sweden), *“flexicurity should not be forced upon the Member States through binding common principles or prescriptive routes.”* An organisation comments that the concept of flexicurity is not sufficiently well defined or its benefits readily identified; on the other hand, a research network suggests that flexicurity could make scientific careers more attractive.

From the perspective of the Confederation of European Business: *“The ultimate aim of flexicurity policies for researchers should be to increase their adaptability and employability in order to grasp new employment and career opportunities on a flexible and dynamic labour market.”* This is an essential element for effective life-long learning policies to help improve the cross-border and cross-sector employability and adaptability of researchers. Industry warns that binding/enforceable measures at European level may smother the labour market for knowledge workers in the EU. The best people are interested in research jobs worldwide and are available on the labour market only very briefly (1-2 weeks) until they are hired. Since EU-level measures may introduce additional steps that could slow down processes, Europe risks losing the flexibility and attractiveness that are essential to retain the top candidates.

An association argues that policies of fostering and retaining talent are critical in successful ERA implementation. However, for this to occur, most of the association members stress the importance of flexicurity principles, being at the same time concerned by the impact of its implementation on future careers as well as on the working environment.

#### **Attracting young talents to a research career**

Three quarters of the on-line respondents agree that the lack of information on careers in research is a major barrier towards greater up-take, with a relatively much smaller proportion of respondents, however, believing that information on careers is good but that the careers themselves are unattractive and not competitive with other options. As to how information could be improved, just under two thirds of respondents (60%) agree that the role of career advisors could be enhanced; whether parents need more information is less clear with nearly half agreeing this can have positive effects, one third disagreeing, and 18% of the respondents stating they have no opinion.

A number of stakeholder organisations favour more active engagement of scientists with the public and particularly with schools: *“the concept of research should be introduced at an early age.”* The JetNet “Youngsters and Technology Network” in the Netherlands is cited as an example of successful engagement with schools, while science festivals are a prime example of engagement with cities.

About a quarter of respondents provide additional comments regarding attraction and retention issues. These include a plea to establish genuine career paths for researchers, along with competitive remuneration and family-friendly workplace policies. Honesty about career opportunities available in particular fields of research is also considered important, and a number raise the problems of partners/spouses with dual careers finding satisfactory employment opportunities for both. In relation to support for mobility of families, an organisation recommends greater provision of international schools in Europe. This initiative is seen as one way of substantially reducing the disadvantages often experienced by children of mobile researchers when changing national education systems.

The disenchantment regarding employment opportunities for young researchers is commented on by a number of free-format contributions. An organisation suggests that the Commission should investigate why some countries regard scientists highly and others do not, and use the outcomes in the development of appropriate policies. Some free-format contributions suggest that it is not enough to attract young talents, but it is also important for researchers to *“acquire multidisciplinary as well as soft skills that will enable them to cope more easily with change such as cross-border mobility or moving from one research environment to another.”*

Several stakeholder organisations comment that the Green Paper is much more focused on the supply side of skilled in Science, technology, engineering and maths (STEM) workers needed for innovation than on the demand side. This is clearly emphasised by an industrial confederation as follows *“Currently ERA policies focus firmly on the “Push” side of the equation generating research activity and collaboration, facilitating researcher movement, increasing infrastructure. All of these are important and necessary, but the “Pull” side must also be addressed: creating markets, creating intelligent customers (public and private, corporate and individual) and creating demand for innovation. These are the real drivers of research investment and innovation in the economy.”*

### **More women in research, in particular in more senior positions**

Working conditions enabling a better work/life balance are considered important for increasing the recruitment and advancement of women in research careers by a large number of respondents (88%). As to the idea of benchmarking recruitment and funding of researchers at institutional level, the results are less clear with nearly half agreeing this can have positive effects, one third disagreeing and 20% of respondents stating they have no opinion. The proportion of those that disagree with this suggestion is higher among the men (38%) than among the women (25%). Comments added by respondents confirm the often ‘hidden’ or subtle discrimination of women in the scientific world and plea for more effective changes than a ‘benchmarking’ effort.

The removal of discrimination barriers for both the employment of women as well as their advancement to senior positions is recommended by a number of respondents. An RFO recognises that: *“The provision of strong support for women’s research careers and the identification of obstacles to women’s research careers continue to remain an important priority today. Clear, practical measures are needed to develop and expand their career.”* However, just under half of all respondents (and two-thirds of the male respondents) is not supportive of positive discrimination in recruitment regarding women.

A number of the stakeholder responses identify obstacles to the participation of women in research careers and suggest model initiatives which could help the reconciliation of family and professional life: for example, the Project Juno Code of Practice in the UK aimed at

advancing the careers of women in physics and the Nusslein-Vollhard programme within the Max-Planck Society. Incentives such as employment packages including childcare facilities are also discussed. Attention is also drawn to the pressure on researchers to demonstrate mobility as a factor in the underrepresentation of women scientists.

### **The potential of end of career researchers**

Just over two-thirds of respondents consider that greater use of “end of career researchers” for mentoring and advisory functions could be facilitated through the provision of new job opportunities/incentives targeted at this group. However, less than half are supportive of legal changes which enable later retirement. Also some respondents are concerned that retaining end of career researchers could impede the creation of positions for younger researchers. A number of stakeholder organisations also provide support for the more effective utilisation of end of career researchers in specific roles such as mentoring. Scientists from outside Europe are also considered to be an obvious source for increasing the talent pool.

### **Attracting the European scientific diaspora and best world talents**

Countries such as China and India have developed a wide range of policies and initiatives aimed at the strategic management of their scientific diaspora for national economic growth and development. Over half of the respondents (58.6%) agree that joint programming and funding approaches along with sharing of information throughout Europe, would enhance linkages with expatriate researchers. About half of the respondents are also supportive of initiatives which would better enable non-European researchers based in Europe to keep in touch with other fellow nationals.

Approximately three fifths of respondents agree that mobility and recruitment of researchers irrespective of nationality would be enhanced through the exchange of good practice regarding fellowship programmes aimed at re-attracting researchers. Similar support is provided for fellowship and funding programmes that entail a transnational dimension and are not limited by the nationality of the applicant. There is also support for joint funding in a number of stakeholder responses. However, it is recommended that attention is also given to researchers from poorer economies and that the movement of researchers is not unilateral.

### **Education and life-long training**

Transnational networking of doctoral training programmes is considered by around two fifths of respondents as one way of accelerating the development of high quality, industry relevant researchers. The development of common standards and exchange of good practices regarding these programmes is also considered important.

In relation to life-long training, just over half of respondents agree with the proposal to raise awareness amongst stakeholders on the importance of this issue. Around half agree with the proposal for a European-wide exchange on good practice. And slightly less than half are supportive of establishing common standards regarding life-long training across Europe.

Fewer than 15% of respondents provide additional comments on life-long training, standardisation of training and acquisition of transferable skills (e.g. project management and communication). Whilst some advocate standardisation of doctoral training and research programmes in Europe, others comment on the importance of maintaining national diversity arguing that the introduction of common standards could stifle innovation rather than raise the

quality of education and research. Some also recommend much greater linkage between the number of PhD places and industry demand, and others express concern about common standards increasing an already heavy administrative burden for researchers. It is also mentioned that mobility could be detrimental to career prospects on return to the home country.

Many stakeholders who submitted position papers mention that education is not adequately present in the ERA Green Paper although it is seen as a pre-requisite for spreading scientific knowledge and attracting young people to science, and therefore could have been the seventh axis of the ERA vision.

According to the UK Higher Education Sector, there is a need for engagement with the ERA agenda at the earliest stages, i.e. at school level. It is also important that effective and reliable information is available through careers services when young people are making their initial career choices. The opportunities to be mobile and experience the advantages that a period spent living and working abroad offer, could also be highlighted at an earlier stage. This argument is supported by a European Industry Council as follows *“The Bologna model should be used for building researcher education with a strong ERA scope. An opportunity could be European wide programmes that aim at supply of world-class researchers in areas prioritised by European research initiatives such as European Technology platforms.”* One comment concludes: *“the EU must also grow its own quality researcher base and this must start at the earliest stages. Schools should provide a stimulating environment for learning STEM (science, technology, engineering and maths) subjects and should take every opportunity to bring those with relevant practical experience into teaching and demonstration roles.”*

The importance of operating in a global context and increasing collaboration between public and private sector R&D organisations have made the concept of a conventional career path in science obsolete. In this regard, a range of the stakeholder organisations comment explicitly on the importance of Early Career Researchers acquiring transferable/soft skills to enhance their employability. These skills include project and financial management; knowledge and data management, working in a multicultural environment, etc. The new UK/Irish Institute for Knowledge Transfer is suggested as a model for the provision of such training and could be made open to all researchers across Europe.

### **Researchers: main highlights**

Less than half of the respondents declare that they are fully aware of the European Charter for Researchers and the Code of Conduct for their Recruitment (“Charter and Code” – C&C) issued in 2005 by the European Commission as a common but voluntary framework for Member States. The highest proportion of aware on-line respondents is found among those replying on behalf of universities. The majority of those who are aware, especially individual respondents and higher education institutions, favour more action to speed up their implementation, notably through the introduction of a C&C label. Many respondents underline that a mandatory C&C would be difficult to implement in industrial R&D organisations. Free-format contributions from industry express concerns regarding the degree of flexibility with which the C&C should be enforced in the private sector and in particular in innovating SMEs.

Most replies point out that there is firstly, a lack of information on the status of mobile researchers (who seem concerned about their statutory pension rights, health insurance and unemployment benefits), and that, secondly, to achieve truly seamless mobility of researchers, further progress needs to be made on the transferability of supplementary pension rights across Member States. 65% of the respondents favour the setting-up of a “European researchers’ pension fund”. However, it is worth noting that large commercial organisations and associations representing commercial interests are mostly opposed to this concept.

Opinions are divided on the potential benefits of applying flexicurity principles to the labour market for researchers. A large majority of respondents support the principles of giving retired researchers new opportunities via mentoring, training and advisory roles and of removing barriers to the employment and advancement of women researchers. Working conditions which enable a better work/life balance are considered important for increasing the recruitment and retention rates of women in research careers. Young people should also be offered more and better information about scientific careers.

A majority of respondents favour European and transnational fellowship programmes and EU-wide dissemination of best national practices to increase the effectiveness of Member State and Community efforts to attract the European “scientific diaspora” and the best non-EU talent. Contributions also suggest that the status of research and innovation training should be raised and that there is a need for better status, remuneration and well-defined career pathways for researchers.

## 5.2. Developing world-class research infrastructures

### 5.2.1. An EU lead and a common approach

#### The lead and the approach needed to develop the infrastructures suggested by ESFRI

In 2005, the European Strategy Forum for Research Infrastructures (ESFRI) produced a roadmap for new and upgraded pan-European research infrastructures. Over four fifths of the respondents (Figure 9) agree that a common approach is needed to develop pan-European research infrastructures. An overwhelming proportion of those in agreement state that this should be done at the European level.

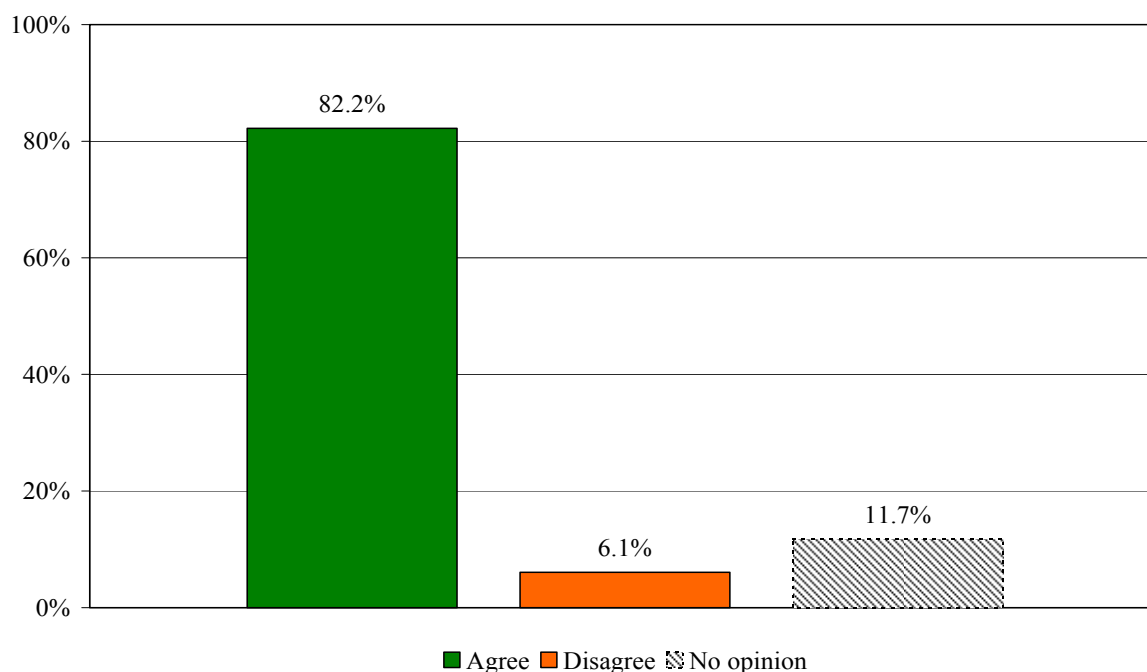


Figure 9 Need for a common approach to develop the infrastructures identified by the ESFRI

Table V Responses on the need for a common approach to the development of research infrastructures by type of stakeholder

Category of Stakeholders	Agree (%)	Disagree (%)	No opinion (%)	Number of respondents replying on behalf of organisations
Higher education institutions	85.7	2.9	11.4	35
Governmental bodies	100.0	0.0	0.0	8
Public sector research performers other than higher education	93.8	3.1	3.1	32
Research funding organisations	85.7	14.3	0.0	7
Non-governmental, non-profit bodies	78.3	8.7	13.0	23
Commercial organisations, 250+ employees	76.9	0.0	23.1	13
Commercial organisations, <250 employees	85.7	0.0	14.3	7
Associations representing commercial interests	50.0	0.0	50.0	2
Other	82.8	6.9	10.3	29
<b>All respondents replying on behalf of an organisation</b>	<b>85.3</b>	<b>4.5</b>	<b>10.3</b>	<b>156</b>



Table V shows the distribution of responses from those respondents who were replying on behalf of an organisation. While the numbers in some categories are small, the pattern of responses suggests that there is a high level of agreement with this statement among HEIs, RPOs and RFOs. Strong agreement is also expressed with the view that a common approach is needed to develop the infrastructures identified by the ESFRI. A higher than average level of agreement is noted among respondents replying on behalf of public sector research performers other than higher education, governmental bodies, higher education institutions, research funding organisations and large commercial organisations.

On the need for a common approach to develop the ESFRI roadmap, the most common theme running through the majority of the free-form contributions is again one of support for the European Strategy Forum for Research Infrastructures (ESFRI) and the 2005 Roadmap. Most welcome this initiative and think that it has done much to energise and galvanise a pan-European approach to thinking about the need for research infrastructures. Typical of such comments is the following: *“A step towards better planning and developing of research infrastructures at European level has indeed been achieved with the creation of the European Strategic Forum on Research Infrastructures (ESFRI) and the establishment of a coordinated European Commission Roadmap.”*

Some query the fact that, while ESFRI is run by Member States, certain Member States have done little to establish ways in which they could interact at national level with the ESFRI and that the “ESFRI process” is not seen as transparent: *“The ESFRI mechanism is presented as being a success of the ERA, even though there are no results at present which enable an assessment of its efficiency. Indeed, the process which led to the first roadmap was extremely complicated and not very transparent.”*

Concerning the lead in developing this common approach, more than four out of five respondents signal a clear preference for leadership to be taken at European Union level. A total of 60 respondents state that leadership should be taken at some other level and provide further information about the level they considered appropriate. These responses range from “a combination of local/national”, “regional”, “research foundations” to “discipline specific bodies”, with the most common written in response being “EU/Member States”. Focusing on those respondents who were replying on behalf of an organisation, Table VI shows that agreement for leadership at EU level is highest among higher education institutions, public sector research performers other than higher education institutions, research funding organisations and larger commercial organisations.

A number of the free-form responses raise issues about the role of the ESFRI, particularly its status as a “Member State” organisation (organised by Member States, not the European Commission, and reflecting the views of Member States). Most agree that this was the most appropriate type of structure for the strategic development of research infrastructures, because it was the Member States that would be called upon to provide the majority of funding. Others point to other European bodies which produced their own infrastructure roadmaps (e.g. CERN), arguing that a way should be found to ensure no duplication of effort arises between the activities of these bodies and the ESFRI.

**Table VI Responses to statements about the level of leadership for a common approach to the development of research infrastructures by type of stakeholder**

Category of stakeholder	Leadership should be at European Union level	Leadership should be at Member State level	Leadership should be at intergovernmental organisation level	Leadership should be at other level	Number of responding organisations (100%)
Higher education institutions	28	18	15	3	39
Governmental bodies	6	1	1	2	13
Public sector research performers other than higher education	25	16	10	3	34
Research funding organisations	6	3	4	3	8
Non-governmental, non-profit bodies	19	10	6	2	42
Commercial organisations, 250+ employees	10	4	5	2	14
Commercial organisations, <250 employees	6	5	3	0	11
Associations representing commercial interests	1	1	1	0	9
Other	20	9	8	4	41
<b>All respondents replying on behalf of an organisation</b>	<b>147</b>	<b>122</b>	<b>114</b>	<b>34</b>	<b>211</b>

Another common theme evident within the free-form submissions concerns the situation of small and medium-scale research infrastructures. Some feel that ESFRI had focussed unduly on large-scale facilities and had paid insufficient attention to the need to develop smaller research infrastructures in those fields of scientific exploration where small-scale research infrastructures were typical. A number of submissions raise this issue about the size of research infrastructures in relation to their funding, with funding for smaller research infrastructures being more problematic and the fragmentation/inefficiency of having a disparate collection of small-scale research infrastructures across the ERA. The following quotes exemplify such views: *“The Green Paper does not pay sufficient attention to the importance of having both a procedure of the ESFRI type and of preserving (and developing) under the Research Framework Programmes the funding necessary to enable the networking or construction of smaller infrastructures or databases”* or *“Whilst a variety of small or medium-size infrastructures are properly the responsibility of individual EC Member States, the importance of infrastructures for frontier research and their enabling effects on the regional scientific community, institutions and industry, strongly argue in favour of a well-distributed set of major infrastructures in Europe.”*

Related to issues about the size of research infrastructures, there are suggestions in some of the submissions that a distinction could be made between ‘hard’ and ‘soft’ research infrastructures (i.e. between physical-equipment-based research infrastructures and those relying more on electronic/digital databases), with different selection procedures involved. A significant number of submissions refer to the fact that research infrastructures will become increasingly dependent upon electronic communications, and that the development and implementation of grid-based technologies should be seen as integral to the construction of new research infrastructures and the updating of existing ones.

In terms of the mechanisms used by the ESFRI to decide on pan-European research infrastructures, the principal of scientific excellence is strongly supported. Some submissions support the idea that EU Structural Funds could be used to develop research infrastructures, while others warn against any focus on methods of funding which may divert attention from the need for development to be driven by the excellence of the scientific ideas and the scientific needs. Typical of such comments is the following: *“The key factor in deciding which infrastructures should be built and by whom should continue to be scientific quality; while there may be cases in which it would be appropriate to use funding from such sources as the Structural Funds to assist in the construction of a facility, the availability of such funding should not drive the decision-making process.”*

In response to a question about the potential sources for the main part of funding for research infrastructures identified in the ESFRI roadmap, the EU Framework Programme funding is most highly ranked as the source which should provide the greatest amount of funding. Free-form responses raise the issue of sustainability of research infrastructures and the funding problem. A number of suggestions range from an increase in the EU contribution to 20 % of the total cost (not simply the preparatory costs, but all capital costs), the use of Structural Funds, to the development of a centralised mechanism to allocate funds from Member States. Examples of such responses are: *“The EU should provide a larger financial contribution than at present, otherwise only the big countries will have these infrastructures installed on their territory. There should be a balance between big and small countries, which could be achieved through greater involvement of the EU and the strengthening of cooperation mechanisms.”* *“The use of these (structural) funds is a national responsibility, but not all governments attach appropriate importance to research infrastructures (and to R&D in general).”*

#### 5.2.2. EU action for the creation and the operation of research infrastructures

##### **The current situation is not sufficient for the creation and operation of infrastructures**

In response to the question “What action is required at the European level to facilitate the creation and operation of these new infrastructures identified by ESFRI”, there is a clear measure of agreement that a new European legal framework should be developed to support the creation and operation of new forms of research infrastructures, and that guidelines should also be established to facilitate such activity. Figure 10 shows that well over half of respondents disagree with the statement that the current situation is sufficient for the creation and operation of new forms of research infrastructures. Of those stating that they feel that some other action is required to facilitate the creation and operation of new forms of research infrastructure (43 respondents), typical statements include: reducing bureaucracy, implementing networking to exchange information, increasing the funding available for research infrastructures and establishing a central agency for research infrastructures.

Examination of the responses to these questions for respondents who reply on behalf of an organisation (Table VII) shows a preference for guidelines over a new legal framework. Multiple responses are permitted to these questions (in other words, respondents could state that they are in agreement with the need for a new legal framework and could also indicate that they agree that guidelines should be drawn up). The extent of this can be seen from the fact that there are 53 responses from Higher Education Institutions, but only 33 HEIs responding to these questions. Nonetheless, a clear preference for guidelines over a legal framework is apparent from most types of organisation, with the exception of governmental

and non-governmental, non-profit bodies where views on the need for a new legal framework and for guidelines are fairly evenly split.

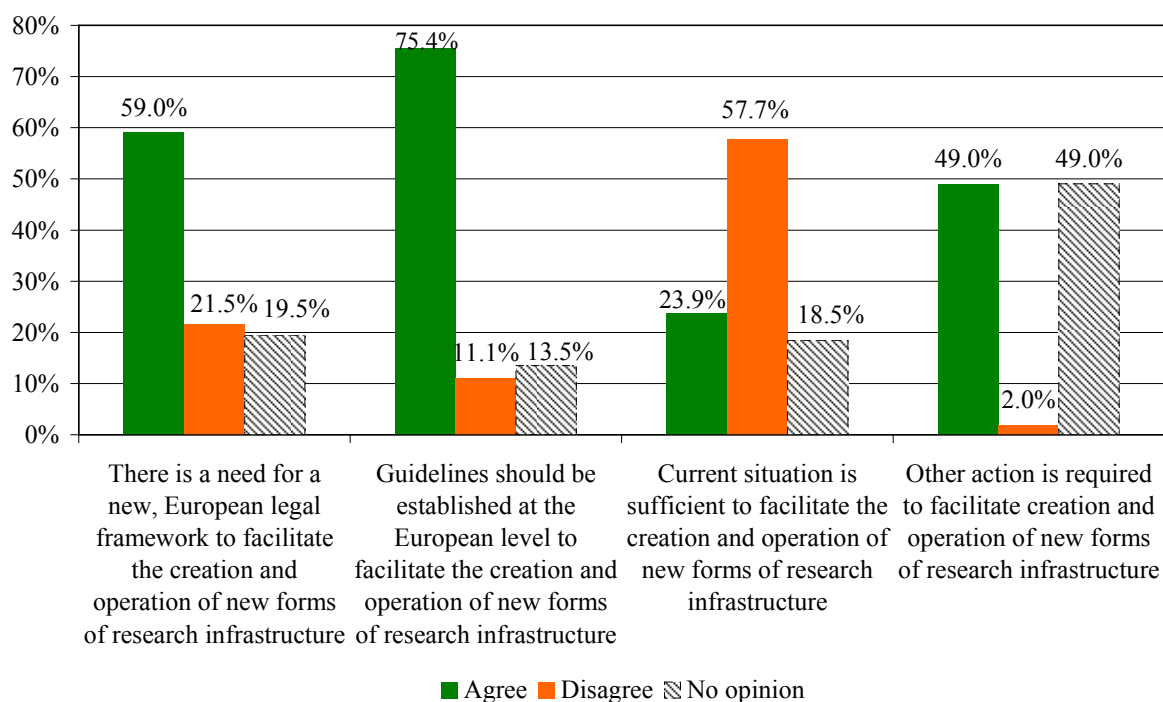


Figure 10 Responses on the need for actions required at European level for new research infrastructures

Table VII Responses to statements about the EU actions to facilitate the creation and operation of new research infrastructures by type of stakeholder

Category of stakeholder	Need for new European legal framework	Guidelines should be established	Current situation is sufficient	Number of respondents replying on behalf of organisations
Higher education institutions	13	29	11	33
Governmental bodies	5	7	3	8
Public sector research performers other than higher education	14	28	3	31
Research funding organisations	3	6	1	7
Non-governmental, non-profit bodies	17	18	2	24
Commercial organisations, 250+ employees	4	7	4	12
Commercial organisations, <250 employees	4	5	1	6
Associations representing commercial interests	0	1	2	3
Other	19	23	4	29
<b>All respondents replying on behalf of an organisation</b>	<b>79</b>	<b>124</b>	<b>31</b>	<b>155</b>

The question about the issues that a legal framework or guidelines should address, and views on how these should operate to facilitate the creation and operation of the infrastructures identified by the ESFRI, generated a diverse pattern of responses. Strong support is given to the three broad categories, “costs of access”, “ownership of intellectual property” and

“provision of training and support”. The small proportion of respondents who state that some other issues should be addressed, raise questions about the interpretation of these questions, particularly the status of Intellectual Property Rights and ownership of IPR by a publicly funded body. Almost a quarter of the 49 respondents who suggest “Other issues”, state that they feel that access should be free.

The free-format contributions are generally supportive of the need for a new legal framework governing the foundation and operation of research infrastructures. An industrial association highlights that *“An efficient and dedicated legal structure at European level should also be developed, in order to facilitate the management and operation of pan-European-interest research infrastructures, including electronic infrastructures. This legal framework should address issues like the financing and coordination of research infrastructures, access rules, how to handle bioethics issues and regulatory aspects of innovation such as Intellectual Property Rights (IPR).”* Contributions also stress the need for flexibility in the development of such a framework, given their diverse nature. Some references are also made to the various instruments which could be used for this purpose.

### A forum for global EU infrastructures

Almost two thirds of respondents replying to this question “How can infrastructures that serve a global function best be developed and how Europe should be involved?” agree with the statement that there should be an international forum to coordinate the effort of creating research infrastructures addressing global needs. Of those expressing this view, nearly three quarters agree that European views in this forum should be represented through the OECD Global Science Forum. However, the greatest support is for a mixed EU/Member State representation from the ESFRI.

**Table VIII Responses to statements on the development of infrastructures that serve a global function and European involvement**

	Agree (%)	Disagree (%)	No opinion (%)	Total number responding
An international forum is needed to coordinate the effort of creating research infrastructures addressing global needs	65	19	16	513
<b>Of those agreeing:</b>				
European views in this forum should be represented at the level of:				
Member States, through:				
The OECD Global Science Forum	74	18	9	258
The G8	29	57	14	213
European Commission (representing EU Member States)	72	21	7	230
Mixed EU/Member State representation from ESFRI	87	8	5	271

Most of the free-format contributions addressing this issue are supportive, stressing the need for Europe to “speak with one voice”. Others point to existing fora, particularly the OECD Global Science Forum as the appropriate setting for a European discussion about the development of research infrastructures though some pointed out that this excludes countries such as China and India. One government *“welcomes the establishment of a broader platform*

for large-scale research facilities alongside the ESFRI and the OECD Global Science Forum, including with non-OECD countries such as China and India.”

Some argue against the idea of a global forum, on the basis of it being overly bureaucratic and duplicating such bodies that already exist for this purpose: “Setting up such a forum would duplicate the work already being done by the OECD’s Global Science Forum which offers the most promising basis for international coordination of research infrastructure needs and can if necessary create dedicated sub-groups to deal with specific issues or the needs of individual sectors.” Others support the idea but warn about the difficulties it could generate if internal disputes surface within such a forum. An association representing commercial interests highlights: “While it would be an ideal to strive for, the task of establishing a global forum on research infrastructures should not be underestimated. Even within one country there are often fragmented policies and funding streams that can lead to duplicate, redundant or incomplete infrastructure projects. Seeking consensus across the EU and internationally about research priorities will be a major challenge.”

### 5.2.3. Funding research infrastructures

#### Public research funding and the long-term improvement of research infrastructures

Concerning the ways in which public research funding could contribute to the long-term continuous improvement of research infrastructures, respondents were asked to rank the importance of specific S&T programmes (at both European and Member State level) that might be required to support the improvement of research infrastructures. The mean rankings for specific S&T programmes (at both EU and Member State level) required to support the improvement of research infrastructures indicate that programmes to develop instrumentation, databases and communication between infrastructures are regarded as of almost equal importance. Specific S&T programmes (at both EU and Member State level) required in standardisation and calibration receive less support.

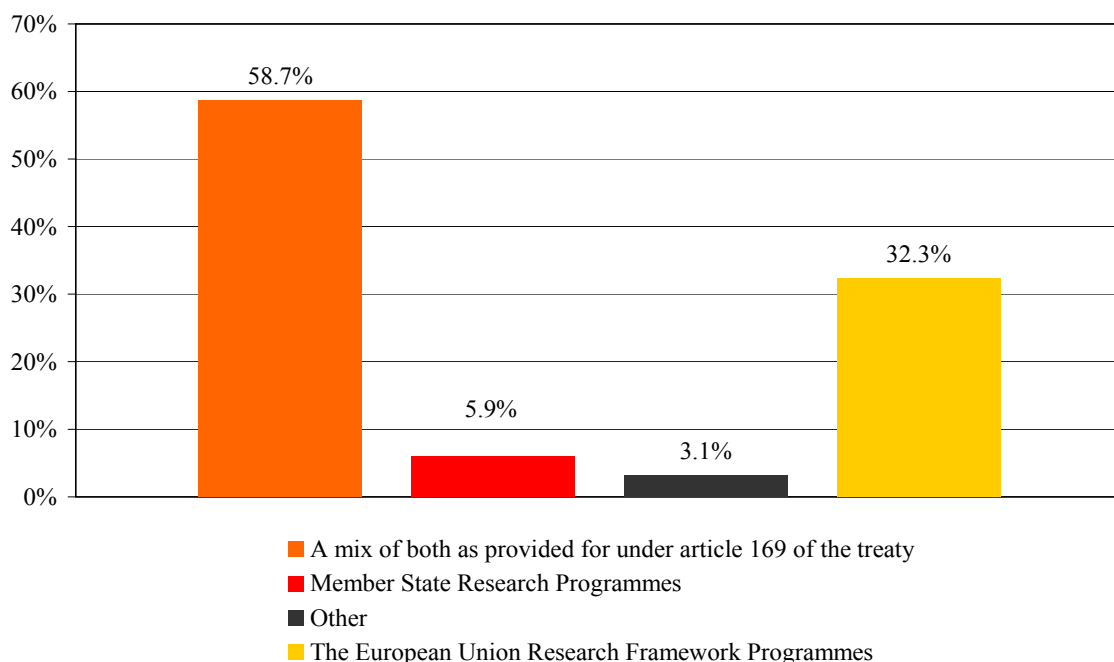
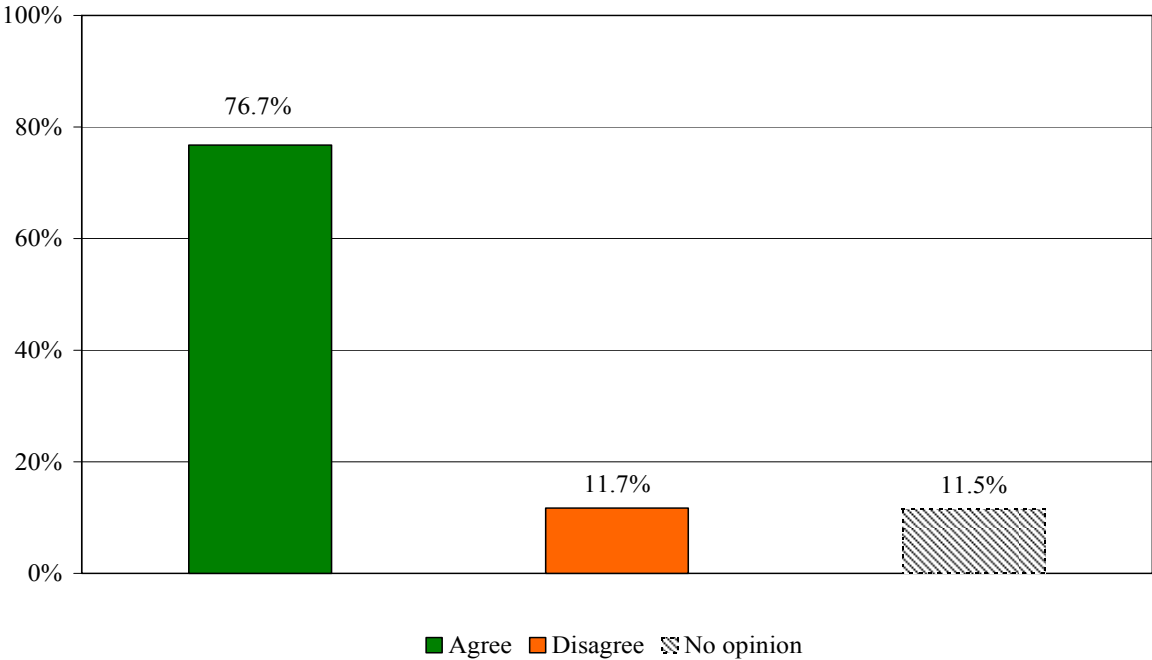


Fig. 11 Mechanisms for the support of specific S&T programmes for the long-term improvement of infrastructures

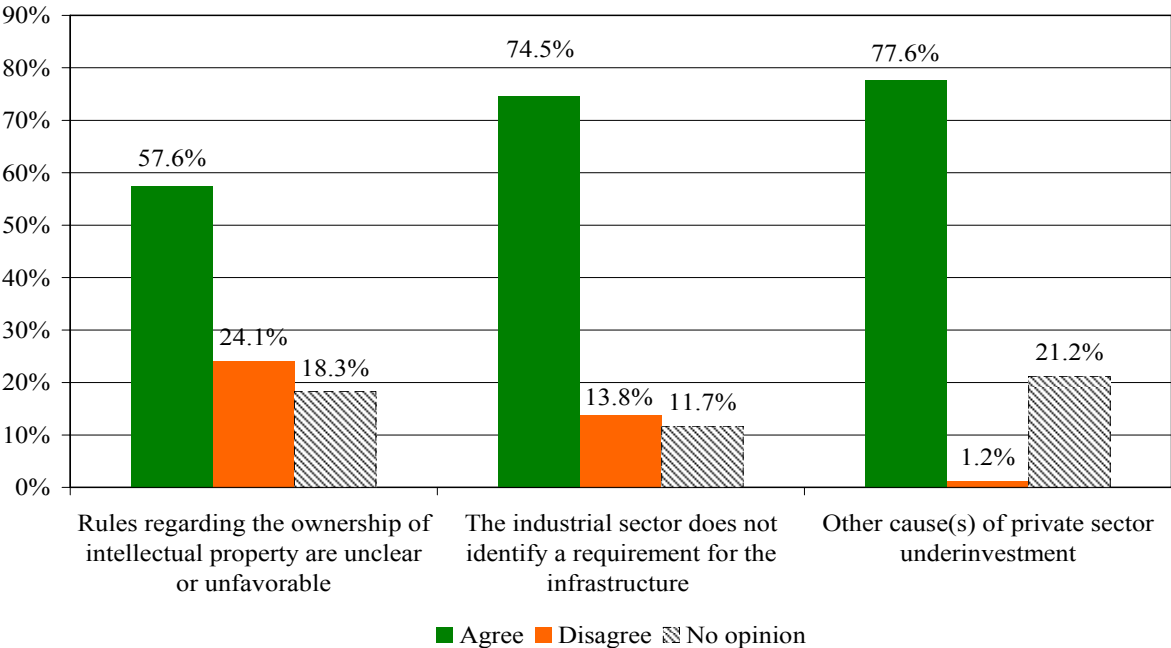
Concerning the mechanisms for the support of specific S&T programmes for the long-term improvement of research infrastructures, there is a clear preference for the use of Article 169 of the EC Treaty. Almost 60% select this mechanism in preference to the Framework Programmes or Member State research programmes (Figure 11).

**Private research investment in research infrastructures**

Respondents strongly agree with the statement that there is a lack of private sector investment in research infrastructures (Figure 12). Figure 13 presents the perceptions of the causes of such underinvestment.



**Figure 12 Responses to the statement “There is a lack of private sector investment in research infrastructures”**



**Figure 13 Responses on the causes of private sector underinvestment in research infrastructures**

Nearly three quarters of respondents replying to this question state their agreement with the view that the private sector does not acknowledge a requirement for research infrastructures. A considerable number of respondents (73) give their view regarding the reasons for underinvestment by the private sector. Many of these responses stress the lack of any framework for public-private sector partnership. Some question the view that the private sector should identify a need for research infrastructures, given that these are essentially “public goods”.

This question is not addressed by most of the free-format submissions. Those that did mention the use of public procurement policy as an inducement for the private sector to become involved in the funding and/or operation of research infrastructures. Others state the obvious, that the private sector would only become involved if profits could be foreseen and risks minimised. An industrial association highlights: *“The private sector will only invest in new infrastructure when it sees a likely return and where the risk of investment (the risk of failure) can be balanced appropriately with the potential gains from success... Business operates on a global scale and the EU must make itself attractive to one-off research infrastructure investments that firms could place almost anywhere in the world. EU-level incentives for private research and innovation infrastructure investment should be considered where there is high potential for spill-over effects from this investment to the EU economy.”*



### **Research Infrastructures: main highlights**

Two thirds of the on-line respondents agree that action on research infrastructures should be taken at EU level and over four fifths agree that there is need for a common approach to the infrastructures identified by the European Strategy Forum for Research Infrastructures (ESFRI) in the 2005 Roadmap, as well as for EU leadership. Free-format submissions express support for the ESFRI and suggest that it has done much to galvanise a pan-European approach to research infrastructures.

Most respondents consider that the current situation does not facilitate the creation and operation of new infrastructures, and that a new model legal EU framework or guidelines should be developed covering issues such as access, conditions of use and intellectual property rights. Most stakeholders agree that an international forum is needed to create research infrastructures addressing global needs, preferably with a mixed EU/MS representation from the ESFRI.

Concerning the mechanisms for the support of specific S&T programmes for the long-term improvement of research infrastructures, almost 60% of the on-line respondents opt for the use of EC Treaty Article 169, in preference to the Framework Programmes or Member State research programmes. Many stakeholders express concern about the lack of private sector investment in public research infrastructures, often considered to be “public goods”.

### **5.3. Strengthening research institutions**

#### *5.3.1. Towards excellence and competitiveness*

##### **Striking a balance between competition and cooperation**

Most stakeholders highlight that the ERA needs strong research institutions, able to initiate and perform world class scientific partnerships and raise the bar of excellence. Increasing the links between research institutions and the business sector and ensuring inter and trans-disciplinarity to better address the needs of society were also highlighted. Advancing towards excellence and competitiveness of research requires a political and administrative framework in which research institutions can effectively develop and possess the necessary autonomy, and an incentivising framework that stimulates competition among them and ensures strong collaborations based on shared goals of excellence. Diversity and complementarity of research institutions can be a truly competitive advantage for Europe. In this context, RPOs propose to develop a new instrument for bottom-up networking of RPOs, concentrating cooperation on common programmes, similar to the ERA-Net or ERA-Net+ scheme for research funding organisations.

The need of both strong universities and strong RPOs in the European research system is pointed out by several stakeholders. Embodying the knowledge triangle, referring to their responsibility in the training of new researchers and their involvement in the social, cultural and economic strategies at regional level, universities' contribution to this agenda enlarges the research process and also helps develop the skills and competencies that research and innovation require. In addition to 'core' skills in the academic disciplines, universities and RPOs have also to offer ongoing professional skills development and the necessary entrepreneurialism that promotes the exploitation of knowledge for commercial success and public benefit. Stakeholders suggest that the need for more initiatives that stimulate regional innovation and competitiveness and that draw on the "triple helix" model of cooperation between government, business and higher education institutions and RPOs should be incorporated into the ERA vision.

Achieving excellence is the suggested goal for better-funded research institutions, with greater autonomy and accountability. Most respondents agree on improvement of links between research institutions, better coordination of national and regional research financing instruments and enhancement of links between research institutions and the business sector, and to a lesser degree, civil society. Concerning the question of funding, the consultation brings out a strong support for competitive funding, without forgetting core funding. Better-funded higher education and research institutions guarantee an independent broad research agenda, as well as creating strong milieus for research on important human and societal problems like health or environment. Competition for funding is essential as a means whereby new centres of excellence can develop at the expense of established ones that have lost their edge. It is only by enhancing the internal competitive environment that European research institutions will compete with the best globally. The consultation also revealed the a consensus that core institutional funding for research in higher education should be awarded through a selective quality-based process.

##### **More funding, for increased excellence**

Although 66% of the on-line respondents suggest that there is a need for shared criteria at European level for funding of research institutions, the impression emerging from the free-

format contributions is that the EU should not develop any new principles or rules. Nevertheless, some accept that the EU could develop initiatives to introduce a system of harmonised analytic bookkeeping for universities at European level. Harmonisation should be introduced over a sufficiently long period in order not to harm the universities. The methods to ensure this continuity must be discussed by the different actors; they need to be flexible and not necessarily involve the creation of new legal entities.

The need for shared criteria at European level for research institutions' research activities receives support from one third of the respondents to the on line questionnaire. It is remarkably higher for respondents from new EU countries and significantly lower in the case of respondents replying on behalf of an organisation (especially those working at European and international level and working as scientists), and respondents from non-EU countries. On the contrary, some stakeholders express a clear negative opinion on this issue: *“It would not be beneficial with such shared European criteria. Funding and assessments schemes of universities and research institutions are deeply embedded in the cultural and national context, including each national government’s organisation of the public sector. At European level, it is more beneficial to deal with the issue of funding of research institutions and universities as a question of identifying best practices, in relation to which the full context of the cultural and national setting can be taken into account when reviewing the funding practice.”*

The evolving roles of universities and RPOs have also to be taken into account. To develop more effective management one would need to organise both evaluation and assessment to contribute to the strengthening of research institution, develop guidelines on some topics at EU level (e.g. evaluations, effective indicators), ensure better complementarity between research institutions, attract funds from industry and ensure the financial sustainability of the European research system.

### 5.3.2. *Autonomous, accountable, well performing research institutions*

#### **Autonomy, accountability and strategic management of research institutions**

Enhancing the autonomy of research institutions is highlighted as a core necessity and is promoted by institutions and stakeholders in the free-format contributions, but less by the respondents on behalf of organisations in the on-line responses. Autonomy of research institutions is also linked to the need to increase their accountability. The need for coordination or shared principles at European level does not appear clearly through the responses. However, the need to share good practices and exchange experience at European level seems relevant to the majority.

Some stakeholders support the idea of developing best practices as a way of increasing performance: *“Spreading models of best practice and not through the introduction of binding criteria.”* The responses to the on-line questionnaire outline that it is not desirable to implement an audit mechanism at European level. Instead, the strengthening of institutional autonomy should lead to more performance- and market-linked output. Some stakeholders assess that coaching would be more helpful and effective to increase the output and performance of research institutions rather than evaluation.

Increased university autonomy is very much highlighted in the public consultation. Autonomy is reckoned to be a prerequisite for universities' excellence and competitiveness. Increased autonomy could facilitate the creation of diversity and specialisation in the broader S&T base.

In addition, the most supported aspects are the needs for greater flexibility and better management at all institutional levels. Stakeholders suggest that European universities should become more autonomous, in particular with regard to budgets, but also in hiring staff, remuneration, training design and student selection. For universities, this crucial question requires a radical change in the relationships between the governments and the higher education institutions, avoiding the traditional top-down micro-management. The four aspects suggested in the on-line questionnaire for autonomy seem relevant and crucial to the stakeholders: defining and implementing their missions and strategic goals, managing their human resources in all aspects, deciding their own management and decision-making structures and managing their financial resources are all supported.

Some stakeholders underline the relevance of a deeper analysis of the concept of autonomy: *“It may be helpful to initiate a Europe-wide debate that can inform the development of a clear set of broad principles that can help define what is meant by HEI autonomy, particularly what this might mean in practice, given that the concept is open to numerous interpretations.”* A clearer definition of the principles that might underpin autonomy would help institutions and policy makers understand how their systems may need to be reformed and allow progress towards this to be benchmarked.

Concerning RPOs, there is a general consensus that they should have the necessary autonomy, that more actions should be implemented in a bottom-up way and that an excellence-rewarding system would be the best approach. Responses show also that the issue of autonomy is different for RPOs than for universities. In fact, although a number of RPOs claim that they have quite a lot of accountability and transparency, notably the sub-group of RTOs which are accountable to their industrial clients, many RPOs consider that their autonomy, accountability and transparency need to be further developed. The most pressing issue seems to be not to add any new rules or to replace old red tape by new bureaucracy. In this respect, the role of the Commission, and to a larger extent of the EU, should be that of a facilitator and/or initiator rather than that of a regulator.

Governance is another important issue in this context. The governance problems in European universities have been repeatedly underlined, but also RPOs need to adjust their governance systems. The fundamental problem in enhancement of research institutions is to create governance architecture to enable them to change, notably in a globalised research system. Industrial respondents have suggested that industry should be more involved in the decision processes and boards defining the strategies of RPOs and universities.

Concerning the need for shared principles at European level for the management of research institutions, the highest number of respondents agree to the option of fostering inter and trans-disciplinary research, followed by management of human resources. Analytical accounting systems and accountability receive lower support. Even the idea of developing “accountability of different components within research institutions towards a single point of central leadership” does not receive the approval of 50% of the respondents, especially from respondents replying on behalf of an organisation and those working in “strategies and policies”. In general, individual respondents support these ideas more than respondents replying on behalf of their organisations, and, within those replying on behalf of their organisations, scientists more than those in strategic or policy positions.

The need to increase the professionalism of university management is stressed by some stakeholders, and more generally, strengthening the management of research across Europe is also a key priority which goes hand in hand with greater autonomy. A national HE sector

proposes the creation of a European network for research managers to facilitate strategic cooperation between themselves.

The free-format submissions provide additional information. Most of them express two basic ideas: concern about the need to share central procedures for management and concern about increasing rules and consequently bureaucracy. A majority of stakeholders reject the idea of additional regulations, as excessive regulation creates bureaucracy. The EU should not intervene directly in the financing and management of universities. There should not even be any common principles governing autonomy and management of research by research institutions, notably universities.

### **Assessment of research institutions: beyond academic outputs?**

A great majority of respondents (76.8%) agree with the idea that the comparison between the amounts of public R&D funding received and the research outputs produced by an institution should be taken into account when assessing its research activities. However, several stakeholders express concern about simplistic assessment of outcomes, pointing out that public research funding should not always be linked to outcome of research. Sometimes, the search for more economic output may not properly reflect the successes and can even threaten the funding of basic research as well as the funding of certain disciplines (e.g. social sciences and humanities). The research outputs of universities in Arts, Humanities and Social Sciences are fundamental to the European understanding of civilisation.

Stakeholders suggest that citation indexes and h-indexes provide particular measurements of researchers' productivity, but the overall evaluation of the global activity of research institutions is far more complex. Citation indices may be biased and several criteria have to be considered, spanning from training to research and technology transfer. The results should be assessed in a balanced way in terms of economic enhancement and of services rendered to scientific institutions or to society at large. If Europe is to strengthen its innovative capacity, there is a need to give room to research that is not bound to delivering tangible results. Linking the funding of research institutions only to 'performance factors' would therefore be a step in the wrong direction, and harmful to European innovation in general. The unique reference to the merits of output-based funding may be simplistic. This is a notion which needs to be examined with extreme caution, as it can give rise to a number of negative and harmful consequences.

Some stakeholders do not support pan-European assessments: in their view, the assessment of research institutions and universities should be done locally. The EU, where directly involved, could develop guidelines for such local evaluations. The outcome of the evaluation processes should be made public locally and should be transmitted to the funding agencies. The evaluation should also be local to prevent the use of too formal criteria and performance factors. Formalised measures are not able to enhance creativity and engagement. However, other respondents are in favour of some kind of harmonisation and suggest defining a common evaluation scheme for all players of the European Research Area. Sharing good practices and opening up evaluation committees to members from foreign institutions, could be the first steps towards the adoption of a common evaluation grid.

It is outlined that evaluation of output or the funding framework is not the only way to foster the excellence of research institutions. Especially RPOs recall that European research institutions could be strengthened by reinforcing networking and increasing specialisation maintaining critical mass, pooling specialists in specific areas and employing more mid-career

researchers on a permanent basis, providing the means to engage the best researchers in the world, increasing competitiveness of national research institutions and reducing bureaucracy. Clusters of excellence could be built upon existing institutions and ensure accountability, high-quality management and governance and transparency.

### 5.3.3. *European world-class (virtual) centres of excellence*

#### **Physical proximity and virtual networking**

The creation of European world-class virtual centres of excellence would be promoted through sharing of some research resources between research institutions especially at the European level, sharing of some research and knowledge management activities also at the European level and by the development of European sustainable partnerships between research infrastructures and industry. Connecting research institutions by mutually fostering potentials and skills on shared scientific purposes, is a necessity for their competitiveness on a global scale. However, the consultation shows that the concept of “virtual centre of excellence” is questioned, as regards both the words ‘virtual’ and ‘excellence’. Some stakeholders prefer real and physical centres that benefit from and enhance synergies of personal contacts between researchers, while others, in particular RPOs, believe that networking should be done with the most appropriate mechanisms, including, but not only focusing on virtual centres of excellence. It should not be driven by parameters such as the benefits of networking or the capability to adequately respond to the challenges of globalisation. It is also suggested that clusters of excellence should be built upon existing institutions by merging competences and a new FP instrument should be developed to support bottom-up institutional networking.

Concerning the way to promote the emergence of European and global research communities which take full advantage of the potential of computing, information and communication infrastructures, both “joint implementation of infrastructures” and “wide exchange of good practices” enjoy good support among respondents, and are deemed more relevant than “development of common standards”. Regarding sharing good practices, the need to be careful with the standards and to include data collection (with open access) in these policies are pointed out.

There is a general agreement on the need for a bottom-up process for the creation of centres of excellence (or other networks). Opinions converge on the fact that these centres must be needs-driven, not policy-driven, to remain sustainable. A large number of stakeholders insist on avoiding the institutionalisation of these structures, which should respond to specific needs and should come to an end, once those needs are satisfied. Networks should be fostered and encouraged as a response to specific research requirements and may or may not continue beyond the completion of a programme. Some stakeholders stress the importance of researchers and research teams needing to achieve tangible added value and benefits from the participation in any virtual centre and cooperation network. For example, participating in cutting-edge research is mentioned as a relevant incentive. Of course, this requires long-term funding, financially secure researcher training and attractive research career prospects. The EU added value and role should be that of a facilitator, not that of a regulator. The key is to ensure enough resources and the expertise needed for long-term projects, programmes and networks so that research groups from different institutions can establish working relations that are long enough to create confidence and thereby form tighter structures, including research management capabilities. Important aspects of networking are thus the benefits of such networking, the flexibility and dynamics to respond to changes in the global and

competition-oriented contexts, long-term funding, researchers' career prospects and often the physical context. To support this process, a forum covering the large research organisations and institutional networking based on the model of the ERA-Net scheme could be explored.

### **Sustainable bottom-up networks**

The dilemma between territorial concentration and / or networking is one of the most controversial issues in the stakeholders' positions, as well as the question of keeping a wide range diversity of institutions or focusing on a few research-oriented institutions. Some stakeholders, especially from the business sector, support an open approach based on the idea of an ecosystem for innovation, in which different types of knowledge-based organisations are acknowledged and supported for the different ways in which they interact with industry, the public sector and between each other. Stakeholders suggest that cooperation between public research institutions and the private sector has to be fostered, in order to exploit fully the innovation dimension of research activities. The relevant ways to develop the public-private partnerships have been very much discussed through the consultation. Most of the respondents think the framework of regional activities (e.g. French pôles de compétitivité) is the relevant one. The need of developing greater cooperation with the business sector is underlined by most stakeholders. However, trade unions are more cautious in regard to this collaboration, arguing that academic freedom and professional autonomy could be at risk, when private partners have an expectation of immediate results and use of research.

Some stakeholders state that, in the past, some of the most significant research breakthroughs have come from smaller institutions where there generally is more flexibility to try different approaches and strong practical links with business. Another approach to this issue can be linked to funding: while some degree of concentration of research funding is needed across Europe, this should not affect the ability to support new and emerging areas or the best research wherever it is found. A highly concentrated system could lead to ossification and it will also be important to consider the impact on the innovation system as a whole.

The analysis of the responses confirms the need for networking and highlights that a very important aspect in this context is the sustainability of the partnerships, including those of a public-private nature. Whatever networking concept may be applied, one should first define what the objectives of the partnership are and then set up the most appropriate implementation. The added value is the main criterion. Furthermore, only a framework should be set at EU level since such networking has to be fully bottom-up, set up by institutions in order to be successful.

The majority of respondents do not perceive any added value from any regulatory approach at European level. However, some stakeholders from industry point out that a "European regulation initiative to facilitate the creation of public-private partnerships", that could involve the EIB, might help implementation of their research efforts. Heterogeneity within Member States on regulatory or fiscal schemes creates difficulties for the private sector to build transnational partnerships within Europe. In that scheme, a European body could be useful to facilitate the comprehension of the systems and try to harmonise progressively what can be harmonised, e.g. by providing common guidelines on research in Europe and benchmarking progress. The industry underlines that these tools were very fruitful as technological platforms.

### **Institutions: main highlights**

Stakeholders suggest that the diverse ecosystem of strong, complementary and autonomous universities and research performing organisations (RPOs) can be a competitive advantage for Europe. Replies highlight the need to ensure the capacity of research institutions to build stronger bottom-up partnerships of appropriate critical mass, based on scientific excellence. They also point out the necessity to increase the openness of research institutions to the needs of end users and society as a whole. Free-format contributions confirm that successful public-private partnerships should develop in a “bottom-up way” and on a voluntary basis.

Furthermore, stakeholders suggest that Europe needs a wide spectrum of universities to build and sustain the knowledge-based society, ranging from those competing at the leading edge of the international research agenda and offering education at the frontiers of human understanding with an unrivalled capacity or potential for flexible response to many modern issues, to those most deeply engaged with their communities in satisfying local demand for graduate skills, training programmes and market-driven consultancy and advice.

The need for increased funding is stressed by both RPOs and higher education stakeholders. They also stress the need to avoid regulatory approaches, to define incentives that ensure the quality of the bottom-up initiatives, to share good practices and experiences, and to ensure that funding allocation on a competitive basis is highlighted as a relevant incentive.



## 5.4. Knowledge sharing

### 5.4.1. Knowledge sharing with industry and business

#### The main experienced factors hindering efficient knowledge transfer

Regarding the main factors hindering efficient knowledge transfer to industry, most of the 528 on-line respondents consider cultural differences between the business and science communities to be a ‘very’ (293) or ‘fairly’ (146) important barrier. All of the 57 responses that do not see this as a significant issue (not very/not at all important) are either individual or public sector responses. The ability to overcome cultural differences in order to align interests is also identified as a major issue in several free-format contributions, as a typical excerpt indicates: *“The basis for efficient knowledge exchange is an open and productive collaboration between enterprises and both public research organisations and universities. Improvements must be targeted on both sides. On the part of public research organisations and universities, these are, inter alia, the promotion of an entrepreneurial culture (...), the increase in transparency of external services/products offered, or the professionalization of technology transfer (...). Enterprises must improve their processing competence (...) and direct their human resources towards cooperation...”*

Similar statistics to those for cultural differences can be seen regarding the lack of incentives where 382 respondents of the 528 feel that this is an important issue. The distribution is fairly even amongst all stakeholder groups. Finally, the question of whether legal barriers hinder knowledge transfer is addressed and is the option which receives the least support. 166 respondents feel the issue is fairly important, and 136 very important, whilst 140 feel it is not very important (of 509 responses). Of the 345 individuals who respond, 206 feel that legal barriers constitute an issue. For most groups (industry, research institutions etc) the responses show an even split on the issue, whilst governmental bodies are the only stakeholder group where legal issues are not seen as a barrier by the majority of respondents. That said, a HE Association mentions that *“A more united view on the rules and practices concerning IPR would be welcome and is necessary to foster true and natural collaborations between different national systems.”* Other main barriers identified by respondents include the *“Lack of support for promotion of methods how to do it, of professionals and KT structures”*, the difficulty for industry to identify relevant research and the fact that much research has no immediate commercial application.

#### Principles for an EU framework on knowledge transfer

There is a global agreement (464 for, 23 against of which 18 came from HEIs) that *“Research institutions must have systems in place to manage intellectual property rights (patents, copyrights, etc.), e.g. a clear knowledge-transfer policy and management system”*. That all publicly funded research results must belong to the research institution which generated them, and not to the inventors, is a much more controversial issue, and opinions are divided with 181 for and 241 against. This bias against is largely due to individual respondents, 109 of whom agree with the principle, whilst 172 are against. The principle that research institutions must share royalties with the inventors (regarding R&D results owned by institutions) is strongly supported, with 379 for and only 49 against. Interestingly, large companies are evenly split amongst supporters and detractors of the principle.

The option *“Public authorities must have a non-exclusive, non-transferable, irrevocable, paid-up licence to practice (or have practiced on their behalf) innovations which directly stem from*

their funding” receives some slight support. However, both industry and public sector organisations are slightly against the proposal, with the majority of support coming from individual respondents. 143 responses highlight that they have no opinion on the matter.

Similarly, the concept that industry should refund the public contribution if they manufacture products outside Europe when financed to 100% has slight support, though in this case, only industry is against, with public sector bodies and individuals supporting the idea. The support is reduced where the research is only partly financed. Interestingly, the public sector responses are almost evenly split whereas industry does not support the idea.

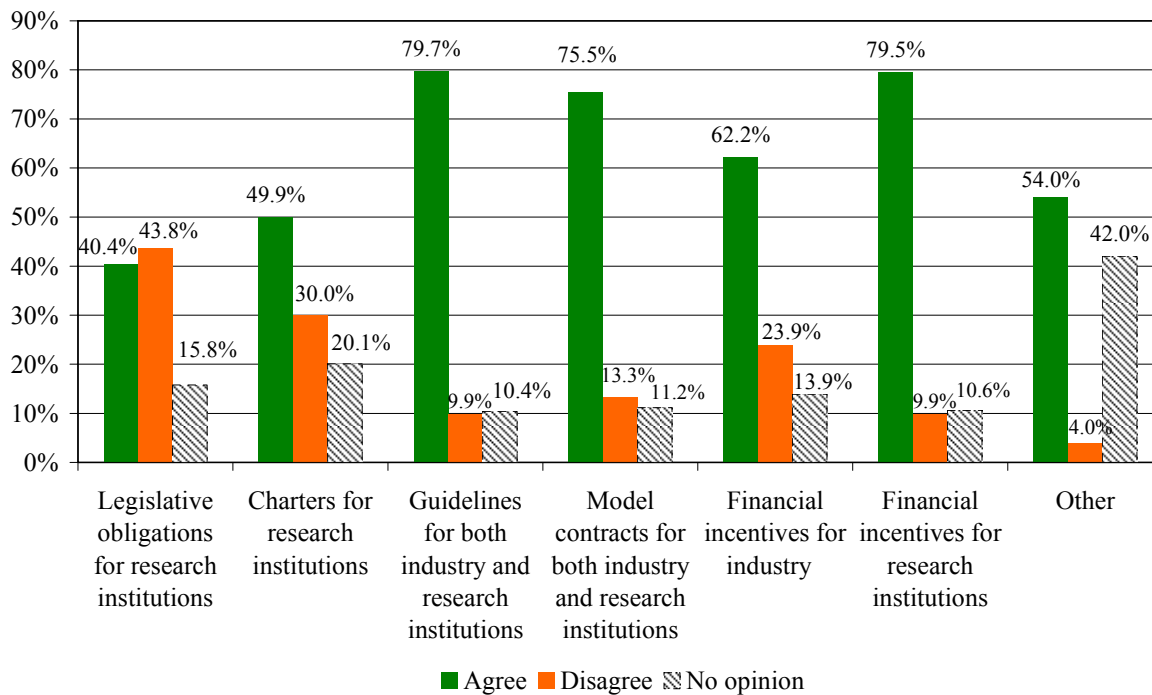
There is significant consensus that research institutions should be allowed to transfer ownership of (or grant exclusive rights to) publicly funded results to industry, with only governmental bodies and research funding organisations showing an even split. The principle that all net income from knowledge sharing should be used for research and education receive broad support (322 for, 87 against). A similar split is reflected amongst all stakeholders. Finally, the principle that “when transferring knowledge, research institutions must give preference to EU industry” is supported by 239 (161 against). Again, a similar split can be seen amongst all types of respondent.

The majority of free-format contributions focus on additional areas which need to be taken into consideration (e.g. academic freedom, traditional knowledge, etc.). One response, of a different nature, describes a new principle to be adopted: *“The principle that knowledge has value and hence access to knowledge has a price: this applies in particular to publicly co-funded research cooperation between public and private partners. It is not our argument that all knowledge should only be made available on commercial terms, rather that originators of knowledge need to improve their exploitation skills in order to judge, for example, when to publish in the public domain and when to exploit on a commercial basis.”*

In addition, a number of comments relate to the need to ensure that research institutions have the necessary flexibility to collaborate with industry and that this may differ by sector and case, so general rules should not be made mandatory. Indeed, one of the responses highlights: *“As a general principle, we believe that it should be left as much as possible to the project partners to agree on IPR arrangements, without additional boundary conditions from government programmes. To ensure that this is done equitably and efficiently, there is a need for more people, particularly in public research, who are adequately trained in handling these arrangements.”*

### **Public mechanisms to enact the principles of an EU framework for knowledge transfer**

Respondents consider that voluntary guidance (charters, guidelines) and support tools (model contracts) or financial mechanisms (incentives) are more appropriate than binding legislative obligations. Legislation is supported by individual respondents (132 for, 109 against), but not by organisations from either the public sector or the private sector. The European countries where support for legislation outweighs opposition include Austria, Denmark (where such legislation already exists), Estonia, Greece, Romania, and Spain (where the majority is significant, 20 for, 7 against). Although most other countries show an even spread, the majority of respondents from France, Germany, Italy and the UK do not support binding legislative measures.



**Figure 14 Responses on public mechanisms to enact the principles of an EU framework for knowledge transfer**

The UK government gives a clear input, saying that voluntary tools should be promoted over legislative approaches and proposes a number of additional actions that could be considered: *“The UK position is that voluntary guidelines are more welcome than legislative solutions such as a Bayh/Dole Act. Notably, during its presidency of the EU the UK initiated a CREST project which produced an IP tool kit for ‘European cross-border collaborations between industry and public sector research organisations and training of technology transfer professionals’, based on the Lambert principles which may provide a useful and practical way forward. More important issues include mechanisms to identify potential partners, enabling fast and flexible follow-up once the right partners have identified each other, and using mobility to improve knowledge transfer.”*

Furthermore, the main opposition to a Charter and financial incentives for industry comes from individual respondents, with the remaining support equally distributed amongst all categories of stakeholder. The free-format contributions highlight the importance of mobility as a key mechanism to promote knowledge transfer: *“The most important tool is researcher mobility between industry and academic research, which is crucial to creating the right kinds of connections. Universities and businesses shall work together to create common research agendas. Joint projects between academia and industry should make increasing use of the open innovation concept...”*

### **The creation of patent pools between research institutions**

Opinions are divided regarding whether *“the creation of patent pools between research institutions would bring substantial benefits”* (with 158 for, 120 against and 198 with no opinion). When the country breakdown is considered, it is interesting to note that respondents from certain countries are much more positive such as Portugal (15 for, 5 against), France (28 for, 14 against), and Bulgaria (7 for, none against). Others from the UK or the Netherlands have a tendency against pooling. Responses from most other countries are evenly split.

Interestingly, only those respondents who agree with the above statement substantiate their answers. The reasons given include: *“Patent pools, if constructed carefully and correctly, could represent a way of providing a single point of contact/party for negotiations which provides a transaction environment more similar to an industrial setting. However the value and feasibility of patent pooling is likely to differ significantly between fields and industry; any pooling system would need to take account of these variations.”* *“To make a common shared culture and promote wide-impact practices that could be thus more effective and better accepted.”* *“Single research institutions often are not able to fully cover a technology by R&D and patents. Thus, sharing of developments is already practised. Pooling of innovations or at least joint standards for exchange of rights of use are the steps which logically follow”.*

### **Public authorities promoting pooling of resources among research institutions**

Respondents suggest that patent pooling is not being promoted widely in many Member States and regions. Indeed only 127 responses say that this is the case whilst 194 do not feel it is so. The distribution is similar across all types of stakeholder. Again, considering countries where more than one response is received, the breakdown shows that only responses from France (28 for, 25 against), Germany (17 for, 9 against) and the Netherlands (7 for, 6 against) are more positive than negative. It is noticeable that government schemes to promote patent pooling are particularly well identified by German, French, and UK responses. Indeed, it appears that the main mechanism for promoting patent pooling in Member States is through financial incentives: *“Most research institutions are financed at least in part by the government which demands that the research institutions arrange things amongst them about aims and means of research programmes and the use of available resources. Knowledge sharing has been a mere side aspect of this for a long time, but has gained much more attention through the current high-tech strategy.”*

### **Intellectual property issues between research institutions and industry**

Responses clearly indicate that IP issues receive insufficient attention. Only a third of respondents, mainly individuals or public sector bodies, feel that this issue is sufficiently addressed. When looking at the responses on a country basis (where more than one response was received), it seems that only in four countries is there more support than opposition, Germany (22 for, 17 against), Belgium (10 for, 9 against), Finland (3 for, 2 against) and the UK (23 for, 22 against). Furthermore, responses from these countries account for almost one half of the responses stating that adequate mechanisms exist.

One proposal highlights that courses already exist for specialists, but that there is a gap in knowledge since researchers and administrative staff should also have a dedicated course. Other proposals given by several respondents in their free-format contributions include the good organisation of all the information (including best practices) on the web at European level, and the establishment of technology transfer organisations as well as professional research management offices within research institutions.

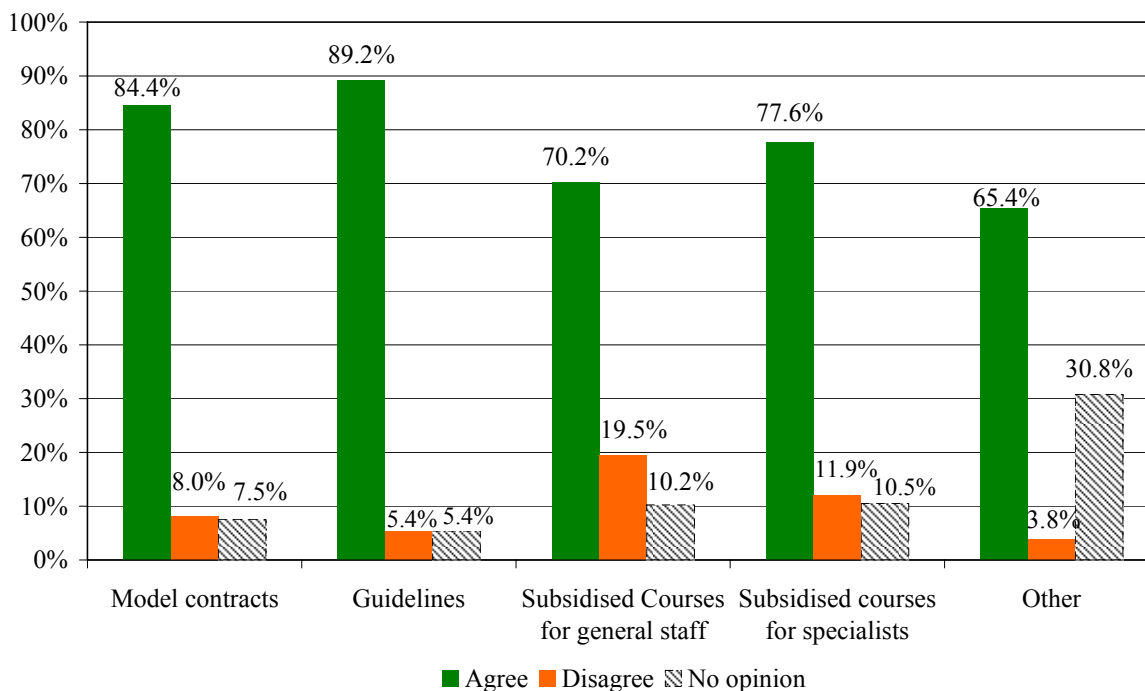


Figure 15 Responses on preferred mechanisms for delivery of IPR awareness schemes

### The grace period, joint ownership, the research exception and prior-use rights

The responses confirm that there is general agreement regarding the need for a grace period (160 for, 37 against), and for common rules regarding prior-user rights (201 for, 26 against), joint ownership (241 for, 15 against) and the research exemption (195 for, 31 against). It is striking to note that there is substantial agreement between commercial organisations on the one hand and individuals and non-commercial organisations on the other hand, regarding the grace period. Furthermore, there is no discernible trend against any part of the proposal on a country basis, with all countries having a majority in favour of such action.

It is important to note however, that many of the comments received called for the above issues to be addressed within the context of international harmonisation. Typical examples include: *“IPR-related problems, such as the grace period and the research exception, must be approached from the broader perspective of the worldwide harmonisation of the intellectual property system. Individual activities which remain limited to the EU area would not be productive.”* *“The Federal Government points out that the grace period is currently the subject of international negotiations.”* However, these calls for an international, rather than European, response, are not unanimous, with certain respondents highlighting previous calls for action, whilst others claim that the grace period could raise legal uncertainty: *“The Committee has on several occasions called for a grace period in order to reduce the tension between publishing as quickly as possible (researchers are judged by their publications) and applying for a patent.”* *“The grace period issue may well be less important than having the right partners who understand IPR issues. There are certainly potential problems with a grace period (e.g. the possibility that this would create incentives to patent as late as possible in order to maximise the life of the patent, with the risks that this entailed and that grace periods might create some legal uncertainty and could lead to more “wrecking” publications) which should not be overlooked.”*

Moreover, the low response rate regarding these questions (with about 30 % of all respondents expressing an opinion on these issues) indicates that these are much specialised issues, and several free-format responses highlight the lack of knowledge in these areas as a reason for not responding. Regarding other topics that should be addressed, some respondents call for: *“... the definition of patent infringement, the opposition procedure, cross-licensing, etc. are all concepts requiring common rules at European level. There would be a common IPR policy and market at European level that nevertheless preserves rights at national level. This would reduce the bureaucracy in going from national to international patents and keep a high level of competition.”*

Furthermore, three large Research Performing Organisations mention the need for *“... eliminating the negative practical effects of disparities between national legal regimes in IP contract law: the solution of choice would be a European regulation that creates an optional framework the parties can choose to govern their agreement instead of the diverse and incomplete national laws. An alternative could be the development of a model law.”*

#### 5.4.2. Access to scientific information

##### **Sharing raw data and publications resulting from publicly funded research**

A great majority of respondents (84%) welcome the concept of open access to scientific publications and also (71.8%) to raw data from publicly funded research. The stakes differ in the two cases as indicated in free-format contributions.

In terms of access to raw data, the majority of stakeholders, including publishers, agree with the need to make access to raw data more readily available. Some publishers have started to make free public availability of the data on which an article is based a condition for its publication (e.g. Nature). However, industry raises the issue of access to commercially sensitive data and one of the respondents states that *“...if it [the raw data] is quantitative there is a strong danger that it will be misinterpreted by those without specialist skills and if it is qualitative there is a danger of breach of confidentiality/data protection regulations”*.

In terms of access to peer-reviewed scientific publications, a large library emphasises that *“there are still significant barriers to access in researchers’ information channels”*, a situation which leads to *“unbalanced and ineffective knowledge sharing, so limiting the potential of the ERA.”* An industry association highlights that *“To achieve excellence in European research, the broadest possible access to the state-of-the-art knowledge must be guaranteed for all researchers, in private as well as in public... However [...] in many instances giving immediate and totally open access to the results of publicly funded research may not be in the long-term and best interests of EU citizens... Publicly funded research especially in cutting-edge areas of technology, can potentially give rise to valuable intellectual property rights which if properly managed by the relevant public research institution can give rise to tangible benefits (e.g. through the creation of revenue streams) which can be used to support general educational aims or increase further the scale and quality of the European science base.”*

Scientific publishers underline the added value that they bring to the scientific process and the fact that they are open to new business models provided that their costs are covered. One major publisher states that they are *“concerned at the possible development of a policy ... that requires researchers to post their accepted author manuscripts in a repository in a single specified time frame”*, and consider that *“such a one-size-fits-all policy would be detrimental*

*to journals because each journal's economic and usage profile is unique, and that such a policy would harm science and its beneficiaries.*" Many publishers also call for the Commission to collaborate closely with them, in order to find possible solutions to the question of researcher access to publications.

The issue of compatibility of existing intellectual property legislation and open access is also highlighted by several respondents. While publishers recall the economic importance of current copyright arrangements, a governmental research body questions their underlying principles: "... *current copyright law should be evaluated with a view to finding ways in which the law guarantees scientific authors the right to publish their research results under an open access regime....*" The preferences on where to store these raw data (regional, national and/or European level) overlap significantly with an overall majority favouring EU-level repositories. However, it is noted that "*The WEB is global, any differentiation between national, regional or EU is actually not very intelligent.*"

#### 5.4.3. *Public engagement in science*

##### **Most appropriate media for diffusing scientific knowledge to a wide public**

While there is widespread interest in websites and television, there is also significant interest in more interactive forms of communication. Yet those invoking interactive dissemination tend to do so along with, rather than instead of, conventional unidirectional mass media. What appears to be demanded is rather a range of media relevant to the particular topic at stake. There does not seem to be a significant difference between individual responses and responses from organisations.

Different types of stakeholders attach different levels of importance to interactive forms of dissemination of knowledge. Chambers of Commerce and, to a lesser extent, Governmental Bodies attach very low importance to the issues, while, at the other end of the spectrum, Research Funding Organisations attach uniformly high levels of importance to all options. Higher Education Institutions and Public Sector Research Performers display significant levels of interest, but also of disagreement regarding the various options. The greatest support for television programmes is shown by both RFOs and RPOs but conversely, is least popular with business and NGOs. There are greater levels of support shown by HEIs for the interactive forms of communication, along with NGOs and trade unions. Information Days are most popular with SMEs, while the highest levels of support for publications come from HEIs. One stakeholder suggests that it would be helpful to set up: "*Interactive centres where citizens can come into contact with science to find out that these 'difficult things' play a major role in daily life and contribute to quality of life.*"

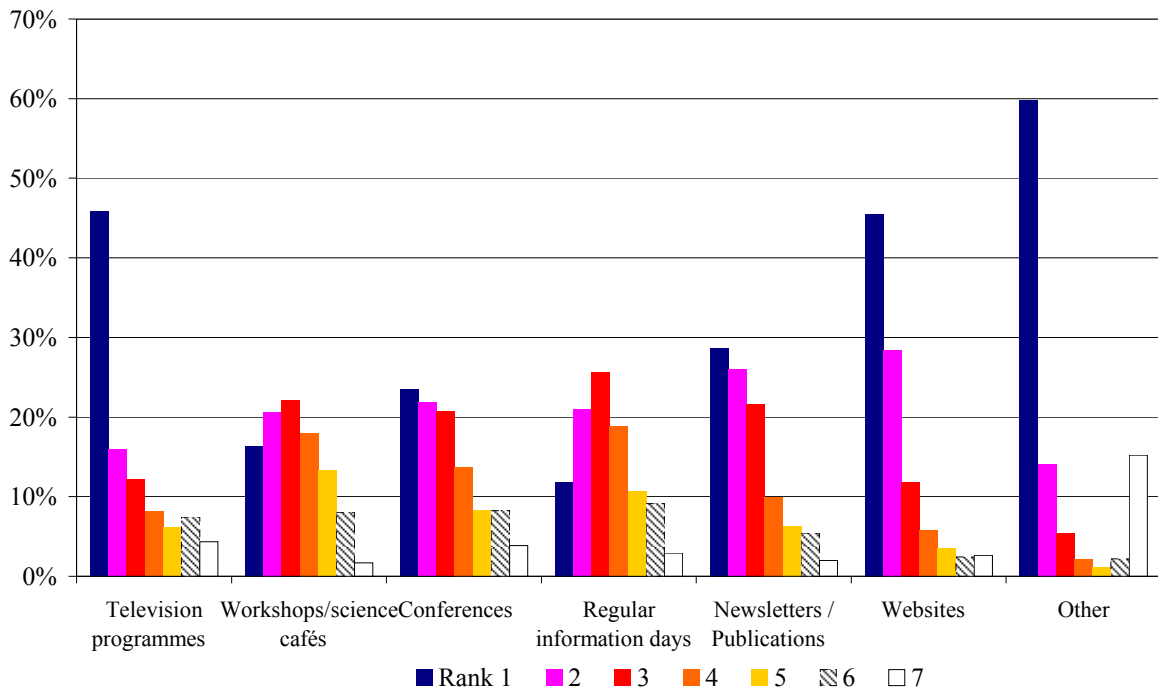


Figure 16 Most appropriate media for diffusing scientific knowledge to a wide public

### Factors hindering dissemination of knowledge and information to civil society

The knowledge gap is considered to be the most important factor hindering dissemination of knowledge and information to civil society. However, once overall answers of ‘very important’ and ‘fairly important’ are aggregated, all the responses, with the exception of the “lack of interest from civil society”, are accorded equal importance. This shows a widespread appreciation that the factors negatively affecting successful science communication are two-way, and reside as much in the incentives, structures and resources for such communication as in their perception by the public. The comments from individual respondents tend to offer more negative judgements regarding science understanding by the public, media and policymakers. Conversely, the organisational respondents are much more likely to attribute importance to knowledge-gap and technical-language issues, in particular HEIs, RFOs and NGOs. HEIs and RFOs attribute importance to the lack of adequate structures. Regarding the “lack of interest from civil society”, NGOs, RPOs and Governmental Bodies are strong defenders of this factor’s importance, while HEIs and RFOs are strong detractors.



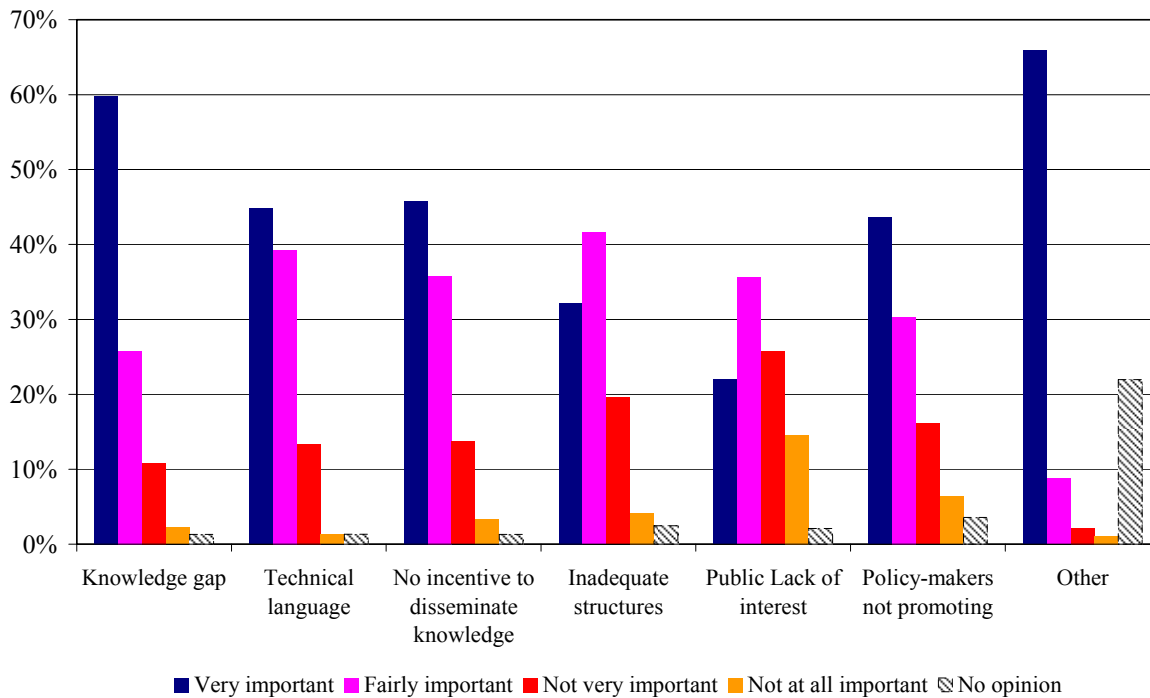
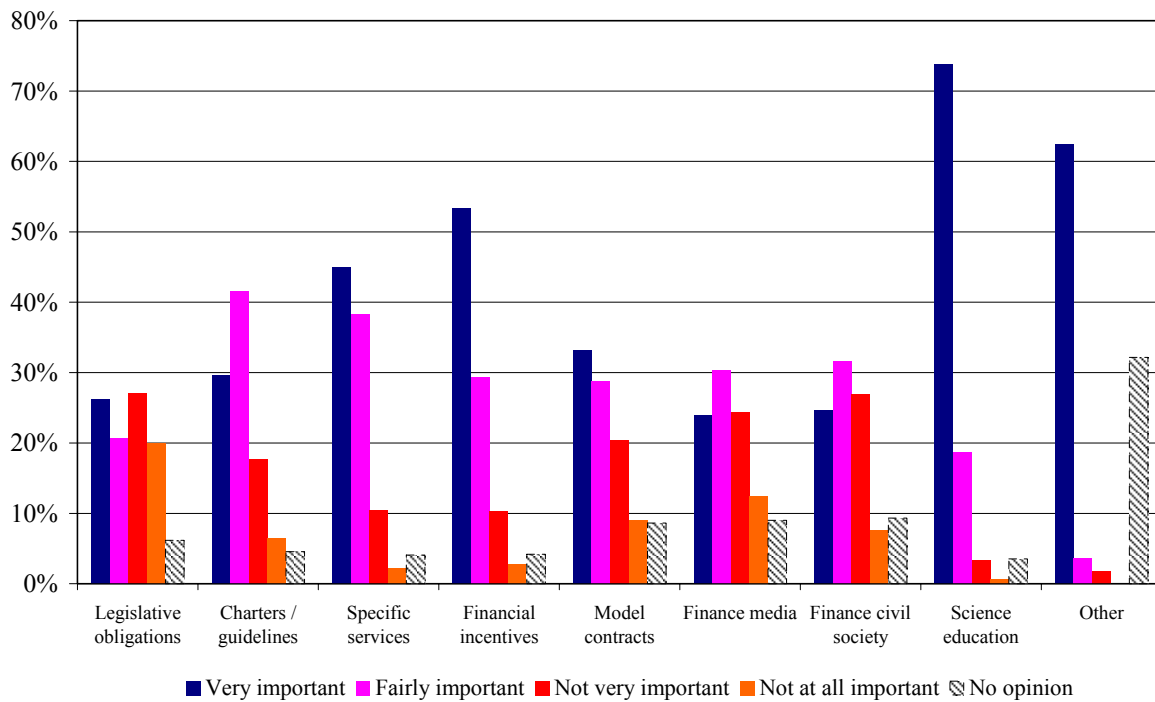


Figure 17 Factors hindering dissemination of knowledge and information to civil society

### Public mechanisms to promote and facilitate knowledge dissemination to civil society

Improving the quality of science education is considered to be the single most important public mechanism. It plays a crucial role in developing initial curiosity for science and research. Beyond the cardinal focus on education, there is a more complex set of responses regarding the other suggested options and the comments support a more hands-on, interactive approach to scientific knowledge and research, including meeting with scientists. Incentives rather than constraints should be used. Legislative obligations for research institutions represent the least favoured option. Financial incentives for research institutions receive significant levels of importance, followed by specific services and charters. The results evidence a logic of ‘both/and’ rather than simply ‘either/or’.

Where financial incentives are proposed for the media or for CSOs (Civil Society Organisations), these are likely to be suggested along with financial incentives for research institutions. Specific services and financial incentives for research institutions are generally deemed to be complementary, as are legislative obligations and charters. Organisational respondents attached significantly higher levels of importance to charters, specific services and financial incentives for research institutions and science education than those responding personally. Financial incentives both for research institutions and CSOs receive their greatest support from HEIs but their lowest from RPOs, a difference which raises questions about the extent to which HEIs, but not RPOs, have been subject to pressures of commercialisation and public transparency.



**Figure 18 Public mechanisms to facilitate knowledge dissemination to civil society**

### Engaging the public and stakeholders in research decision-making processes

The most frequent responses include increasing the transparency of how scientific results feed back into policy-making and ensuring multidisciplinary expertise in decision-making processes. They are the least intrusive for scientific communities, those which demand the least transformation of the status quo in the process of science. However, responses show that there is considerable debate over other possible mechanisms, such as the three other listed alternatives: Training Scientists in Societal Issues; CSO Expertise; and Ethics Expertise. All three of these receive significant support (nearly 50% ‘very important’ or ‘fairly important’ for both CSO and Ethics Expertise), but also strong levels (about 20%) of objection.

The analysis of different organisation types reveals three types of response. On the one hand, Chambers of Commerce and Governments tend to attach low overall importance to the issues. NGOs and RFOs display high levels of trust in the importance of all suggested measures, including those involving non-scientists on a systematic basis. Perhaps most significantly, industry, HEIs and RPOs all show higher levels than average of both support for, and objection to, all measures.

### Reinforcing dialogue with civil society and its organisations

The following graph highlights that none of the suggested options for reinforcing dialogue with civil society is perceived as being ‘very important’ by more than 30% of the respondents. There is also no clear stand-alone favourite answer, although the single most-recorded response for the ‘very important’ option is “Specific channels for consultation of civil society on research agendas and programmes”. The numbers of respondents who find options important and unimportant are roughly equal in 4 of the 8 listed alternatives: CSO as Partners, CSO Funding, CSO Assessment and also the relatively remote form of engagement of widescale surveys. The constant theme of the ‘both/and’ logic is also in evidence in these results, and is especially marked for the most controversial mechanisms. For instance, those in

favour of widespread surveys are more likely to consider citizen panels very important (61%) than vice versa (39%). Comments, such as “surveys are useful but only if followed up”, echo this feeling.

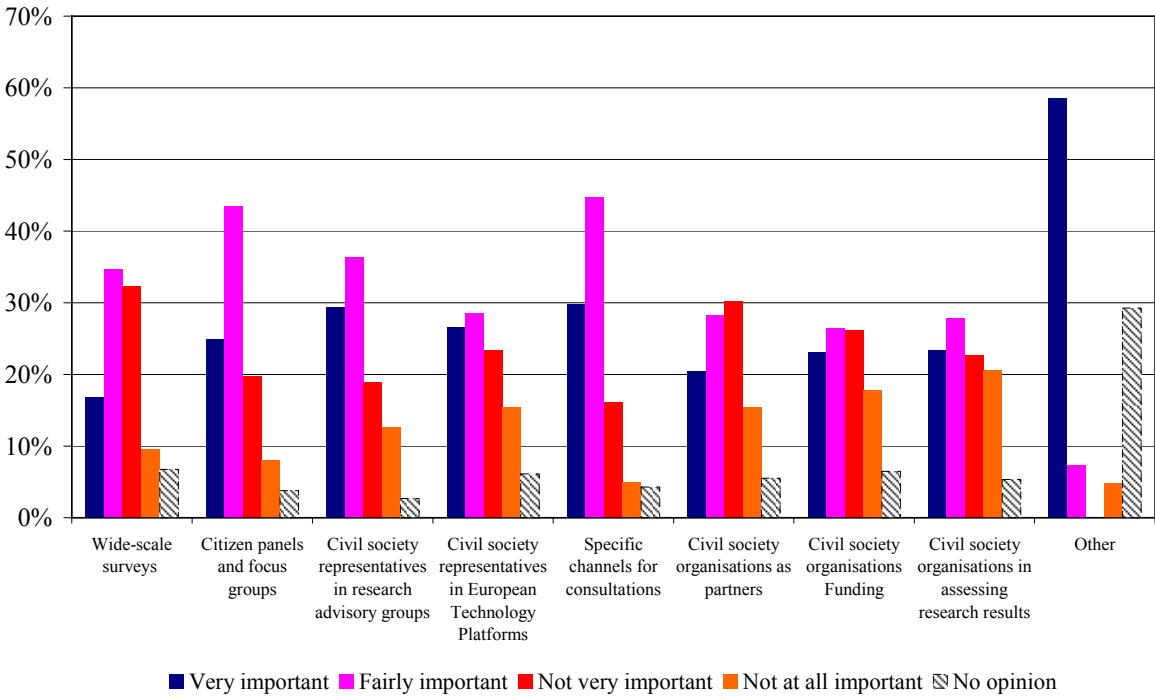


Figure 19 Ways of reinforcing dialogue with civil society and its organisations

Women respondents show higher levels of agreement than men for all the suggested measures except, notably, CSO assessment of results. The overall importance and level of interest in this issue is stronger for those answering in a professional capacity than for individual respondents. As regards the organisational answers, there is no simple correlation between types of organisation and openness to public engagement, but rather a much more complex situation in which different parties *within* institutions perceive different *forms* of engagement to be unimportant or important and worth exploring. It is significant that the types of organisations signalling higher levels of concern also tend to be those displaying the widest range of diverging opinions, with HEIs and RPOs evincing this trend most strongly.

**Intensifying dialogue between researchers and civil society: pros and cons**

Responses highlight that the major advantage is citizens’ better understanding of research. It is followed closely by the clarification of relevance of research for policy and higher societal relevance for research activities. This reflects an acceptance of the reciprocal advantages of greater public engagement, for society and for research. Again the responses evidenced a ‘both/and’ logic. 70% of those according Higher Social Relevance ‘very important’ also do so for Better Public Understanding, while the figure is only 57% vice versa. The answer that is most informative, however, is that which is most controversial, namely that such dialogue could Contribute New Ideas. The ‘both/and’ logic is even more marked for this response than for Higher Social Relevance. While only 44% of those considering Better Public Understanding very important attach equal significance to Contribute New Ideas, the converse figure is 75%. The comments also show that a significant number of respondents are in favour of such developments. There are interesting correlations between those choosing the

"Contributing New Ideas" element of this suggestion and the type of institution. NGOs and others are strongly in favour and RPOs largely against, while HEIs are divided.

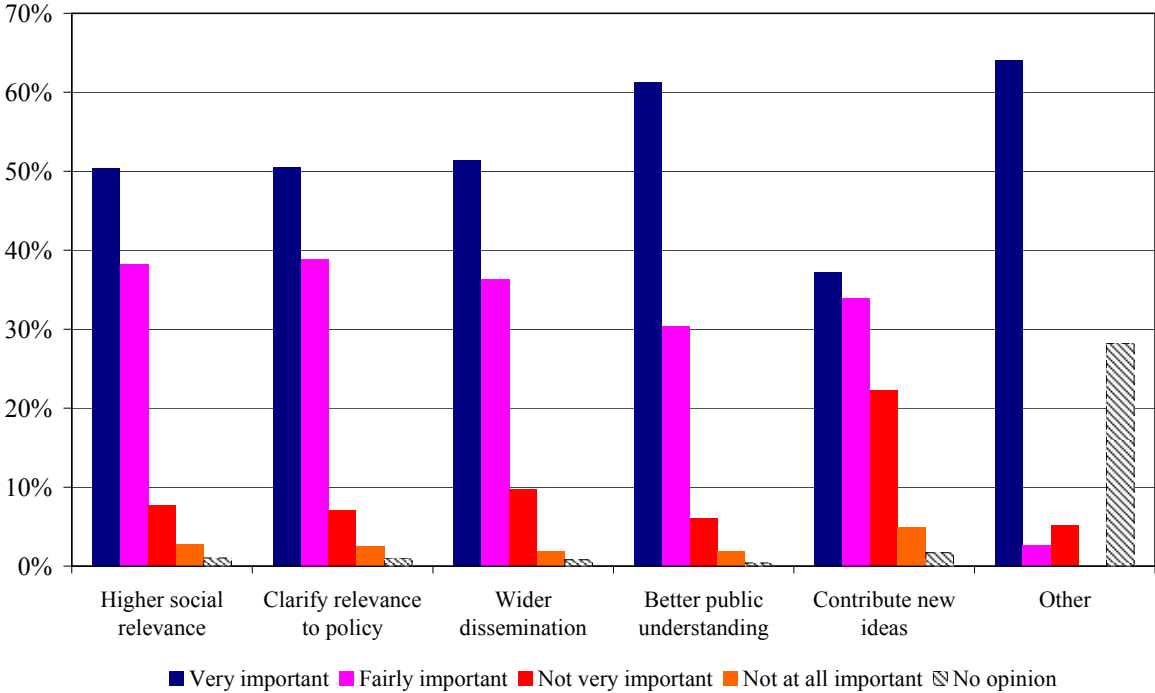


Figure 20 Perceived advantages from reinforcing dialogue with civil society

Concerning the possible disadvantages from more intensive dialogue with civil society, responses show a broad spectrum of opinion. The responses also display something of a consensus regarding the relative *unimportance* of these potential disadvantages, especially regarding the slowing down of Researchers’ Careers and the Loss of Competitiveness. These results seem to acknowledge that there is room for public engagement when defining successful careers and competitiveness. On the other hand, quantitative results and comments evidence concern about the losses from using funds, and other resources including time, that could have been used for research. Yet, the majority of the comments are positive, suggesting that the disadvantages associated with greater public engagement are relatively insignificant compared to the gains.

Some free-format contributions shed light onto the mutual engagement of science with society. They demonstrate that there is a broad consensus, across the types of organisation, regarding both the importance of science communication and the need to change the personal communication skills and the institutional incentives and structures for such engagement with the public.

However, there are also differences in the responses. First, it seems that for many of these respondents “science communication” remains dominated by a one-way model of telling the public about science. This is particularly visible in the responses from government and higher education. Conversely, business and NGOs strike a much more interactive stance on these issues, though here, too, there is a marked difference. A CSO argues that “*the best way for European citizens to understand research and use it to press for evidenced-based policy change is for them to take an active part in the research process, in particular in setting the research agenda.*” Similarly, “*the question [for policy] should not be what researchers want*

*from research, but what do citizens want from research and how can collaborative approaches be developed and sustained.”*

The responses from the business representatives also stress the importance of public engagement and the need for new approaches and resources for these initiatives. They highlight the need to provide express encouragement for science communication: *“researchers should be trained and encouraged as a requirement of public funding to learn how to communicate in ways that are more meaningful to wider audiences”*, which encompass first and foremost businesses.

These findings point to the fact that, even where broader engagement of science is accepted, differing sectors of society will have differing aims for such Public Engagement in Science (PES) initiatives and that support for PES merely sets the stage for a further debate about what it means for the actors considered.

#### *5.4.4. Scientific evidence-based policy-making*

The above responses reveal an important consensus around the importance of communication between the worlds of science and policy-making and on how research and technology interact with their wider environments. They provide useful insights into how policy-making works and how to develop knowledge communities where science and technology are seen as important in contributing solutions to the manifold issues faced by European societies. The analysis of the free-format contributions highlights that: *“One of the issues that the European Research Area should address is to educate and inform policymakers and the public more in general on scientific issues.”*

Any European framework to promote knowledge transfer between research institutions and industry needs to be clearly defined and easily managed. Too much prescription should be avoided to ensure that the European framework does not negatively impact on research institutions’ capacity to respond effectively to a rapidly evolving global research market. The European framework should be the result of a broad reflection by key actors from regional authorities, stakeholders, civil society and higher education.

The major conclusion to be drawn from analysing this question is that patent pools are welcome if they increase project visibility, contribute new knowledge areas of shared interest, enhance the marketability of a specific project, and make a difference in terms of results achieved.

Education and training have a key role to play in addressing the concerns of civil society and adults in general, and more particularly within schools. The latter play a crucial role in developing initial curiosity in relation to science and research, and equally in ensuring that this initial curiosity is sustained throughout schooling and into adult life. The media should also be engaged in the process of information dissemination. Incentives rather than constraints will make a major difference in encouraging key players to share knowledge.

There is an underlying sense of the importance of sharing information between sectors which do not necessarily have a tradition of working together and that do not always meet as equals in decision-making processes. Transparency must be a fundamental criterion in all processes. Opportunities for confidence-building and the development of mutual trust are therefore important, and are best created through appropriate education and training opportunities for key actors and stakeholders.

There is a general agreement on the value of structured and differentiated cooperation between research and civil society. However it is important to avoid a blanket-type approach which is expected to respond effectively to all needs. Rather, a targeted approach with key interlocutors from civil society, those who have a major stake in specific project outcomes, is important in ensuring that enhanced dialogue and cooperation makes a difference to project outcomes and impact. The distinction between research and technology is important in the debate on the links between science and civil society.

The analysis of the questions reveals a shared commitment to the importance of communication between the worlds of science and policy-making in the information provided by respondents. Respondents' focus is on the outcomes of such communication and the contribution it makes to addressing policy-making and broader societal challenges. The underlying message is that frameworks to support cooperation and dialogue should be useful, effective, and make an identifiable contribution to improved outcomes and results.

Any facilitating mechanisms which are intended to strengthen dialogue between research and policy-making need to promote the engagement of appropriate players in a process of communication which is reciprocal and ongoing and directed to providing policy-useful outcomes. A Research Funding Organisation suggests that *“Scientifically generated knowledge must be readily available for decision-making purposes. Of course, this requires the creation of fast and easy mechanisms for contacts between decision-makers and researchers.”*

A key determinant of success in supporting dialogue between the worlds of research and policy-making is transparency of approach in establishing methodologies for dialogue and sharing of knowledge. This is a key component in ensuring ownership of results and deepening confidence between both areas.

European frameworks are important when they support creativity and innovative outcomes. Too much prescription should be avoided however. Management frameworks which are incapable of meeting specific needs, which are perceived as complicated, and which can slow down research institutions' capacity to respond effectively to new challenges should be avoided.

Patent pooling is important if it brings about a qualitative improvement to project outcomes. Actions in the field of patent pooling should therefore be designed to ensure increased project visibility, actively lead to the creation of new knowledge, enhance marketability and improve results. Incentives to collaborate, which stress the positive added value in terms of outcomes, will achieve more than compulsion requiring people to work together.

Education has a key role to play in raising awareness of the importance of the sciences in the development of society and in supporting citizens' capacity to understand how scientific discoveries impact on their lives. The key objective should be to support the development of communities of shared interest which will enable dynamic communication between all the major players in the field of research policy-making and society at large.

### **Knowledge Sharing: main highlights**

Developing communities of knowledge where the differing worlds of research, industry and civil society can engage in processes and networks of communication is deemed a sine qua non for a well-grounded European Research Area. Cultural differences between the business and scientific communities and a lack of incentives for inventors or users remain major obstacles to efficient knowledge transfer. The knowledge gap between scientific communities and civil society, followed by lack of incentives and the use of technical language, are highlighted as the main factors hindering efficient knowledge transfer to civil society. Beyond dissemination of scientific knowledge, there is a broad agreement on deepening public engagement in research with interactive approaches and increased transparency on using scientific results in policy-making.

Over 70% of respondents call for open access to scientific raw data from publicly funded research, and 84% of respondents call for immediate and improved access and dissemination of publicly funded peer-reviewed scientific publications, though industrial respondents stress the need for limitations due to legal conformity, commercial sensitivity, etc. Scientific publishers underline the added value that they bring to the scientific process and the fact that they are open to new models of knowledge dissemination.

Respondents generally favour the promotion of common principles at European level, such as on the need for research institutions to have IP management systems and policies in place or for royalties to be shared with researchers. The measures suggested as being most pertinent include financial incentives for research institutions, model contracts and the development of a European Charter.

## 5.5. Optimising research programmes and priorities

### 5.5.1. *A differentiated approach to coordination*

#### **More efficient and effective coordination**

Most of the institutions and organisations which contributed with opinion papers recognise the need for better coordination of and between Member States' research programmes. This ranges from the definition of agreed common priorities (common vision) to the implementation and the common monitoring or evaluation of national and common programmes. Nevertheless, they also warn against a far-reaching European-level coordination of national and regional programmes and activities. They note the importance of a differentiated approach in relation to the different types of research. Additionally, several principles are mentioned as important to be respected, such as the principle of subsidiarity, variable geometry, the documentation of real European added value, as well as the right balance between collaboration and competition and between bottom-up research initiatives and top-down strategic guidance. In parallel, they plea for a review of existing initiatives to identify what works best in which cases, stress the need to ensure flexibility and transparency in procedures and to ensure that benefits of coordination compensate the extra administration and management burdens.

#### **An OMC, voluntary approach in establishing common principles**

Institutional and organisational contributions support, in general, the establishment of common principles for peer review, quality assurance and joint evaluation especially for joint programmes or for a framework for opening up programmes, EU programmes or programmes where EU institutions have, or are envisaged to have, a substantial funding share. In defining such principles the role of the European Research Council was highlighted. However, there is reluctance regarding the establishment of shared principles for accountability, research management and criteria for research assessment. The danger to set up overriding principles for national research funding is noted. A single algorithm is said not to be appropriate or workable. An OMC, voluntary, bottom-up approach is preferred as being important to respect different needs and traditions and ensure the necessary flexibility and customisation to programme specificities, particular contexts and research cultures.

#### **Need for simplification of public research instruments**

More than 80% of the on-line respondents agree that the rules and procedures are too complex at the EU Framework Programme level. 55% consider that the same applies at Member State level, while at the regional level views are rather split. The free-format contributions reinforce these results, as, for example, in the statement: *“Any action enhancing simplification of rules and procedures of EU research funding systems is to be welcomed. Transparency and similarity of national funding programmes might be one way to increase effectiveness and efficiency of the R&D systems.”* The need for more simplification of EU Framework Programmes and instruments is evident in the institutions and Member States' contributions to the ERA consultation. EU Framework Programmes and related tools should be made more efficient with maximum continuity, flexibility and minimum administration. Obstacles to cooperative research at both national and EU level should also be removed.

To reduce complexity, around 80% of the respondents prefer “a two-stage evaluation approach” and “common rules regarding accounting to promote cross-border cooperation”,



while “common rules for individual grants to promote grant portability” are also backed by more than 70% of the responses. The options “decreasing the detail required in research proposals” and “reducing the requirement for reporting” attract more mixed opinions. Institutional responses suggest that reporting requirements are important to set deadlines and conditions that help joint programmes to deliver results.

5.5.2. *Organising cross-border cooperation*

**EU Ministers and high-level civil servants best placed to define transnational research**

80% of respondents agree (only 6% disagree) that addressing resource intensive, complex scientific challenges requires cooperation between public authorities. Those who agree, rank “high-level civil servants” first closely followed by “EU Research Ministers” and “industry” (> 3.5 on a 1-6 scale of importance) when asked about the stakeholders best placed to define research issues the magnitude of which requires a transnational approach. “Variable geometry” groups, “EU civil society organisations” or “social partners” are considered to be of relatively medium importance (3-3.5 degree of importance).

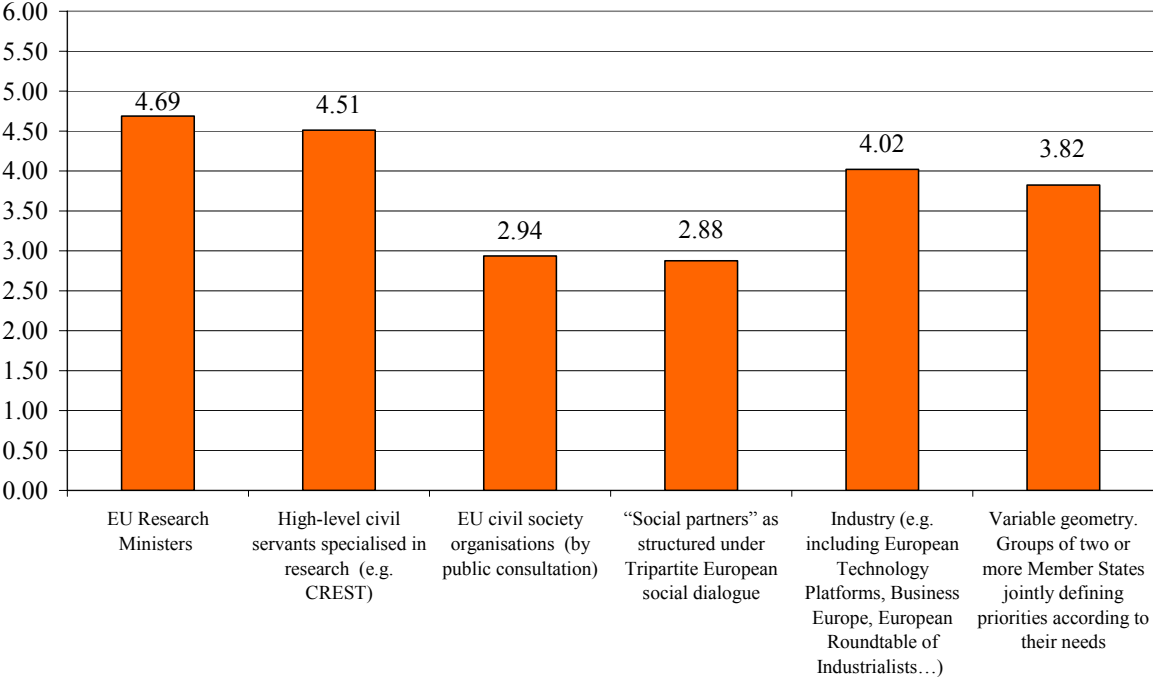
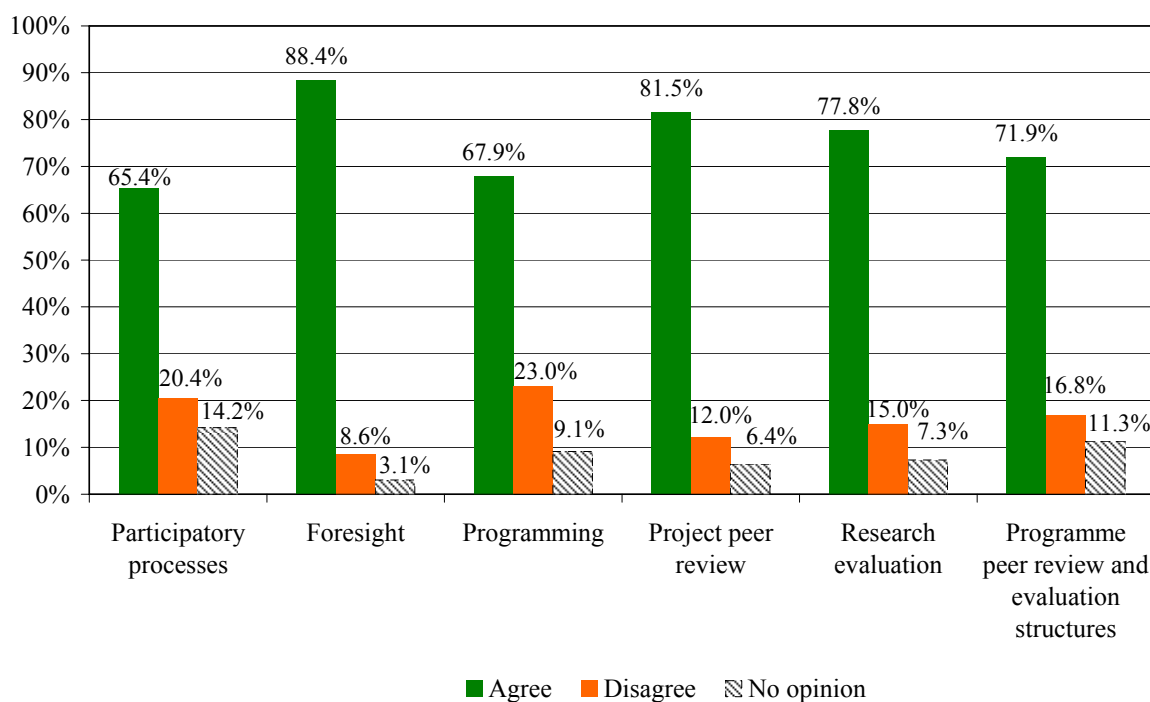


Figure 21 Stakeholders best placed to define transnational research issues

**Foresight, project peer review and research evaluation**

Regarding the areas proposed as candidates for closer working at EU level, “foresight” clearly takes first place (88% of respondents agree with this option). “Project peer review” and “research evaluation” follow in order of preference (81% and 76% respectively).



**Figure 22 Areas of cooperation at EU level**

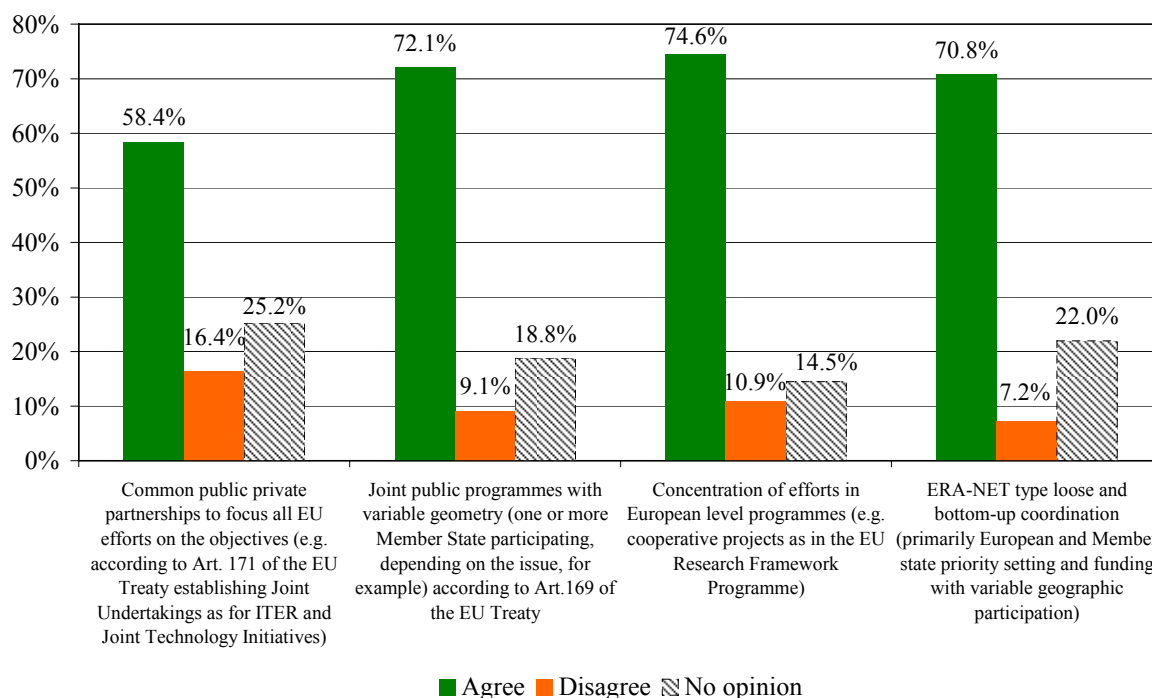
The free-format contributions support these results. As a mechanism for identification of priorities, joint foresight exercises are suggested by several entities and Member States involving the scientific community, society and industry (through ERA-NETs, OMC, and NoE for the actual research work). For example: *“The national players (research funders, research performers and governments) have to act in concert in implementing a common strategy developed through common foresight in order to increase their efforts to remove the institutional barriers faced by people and money, to implement schemes like ‘money follows researchers’ and ‘money follows cooperation’, to adopt common peer review systems which allow quality comparison across borders, to ease the sharing of research infrastructure, and to create common pot schemes for research funding.”* Other institutions agree that *“Foresight, technology assessment and benchmarking should also be used as tools for finding the future needs and solutions”* or that *“...Collaboration between programme managers and funders at national level will naturally lead to consideration of such issues as shared peer review and programme evaluation. Experience, peer reviews and quality assurance from the ERC could inform future developments in this area.”*

The respondents that agree that joint work is needed on the areas proposed, do not respond differently from the total respondents when asked about the stakeholders best placed to define research issues requiring a transnational approach, and even those who disagree with the areas proposed for working together, still consider the same stakeholders to be most important. “High-level civil servants” take first place, closely followed by “EU Research Ministers” and “industry”. However, those who agree with the most-chosen work areas (foresight, project peer review and research evaluation) rank the “variable geometry” groups slightly higher.

### **A variety of modes for transnational cooperation**

“Concentration of efforts in European-level programmes” is the most supported (74%) approach of how public authorities can organise transnational cooperation. Nevertheless,

“joint public programmes with variable geometry” and “ERA-NET type loose and bottom-up coordination” are also almost equally supported (72% and 71% respectively). The mode “Common public-private partnerships to focus all EU efforts on the objectives (e.g. according to Article 171)” receives 57% and is less agreeable in relation to the others.



**Figure 23 Modes of transnational cooperation**

As an institution stated: “*In recognition of the needs and expectations of the European Research Area, and working towards coherence between national and regional programmes and research priorities of European relevance, it is increasingly important to develop a partnership approach to programmes funded by FP7 and those funded nationally (particularly since national funding is estimated to represent approximately 90% of available research funds). To this end, the optimal use of instruments such as ERA-NETs (including ERA-NET+), Technology Platforms and Article 169 is essential.*” Other positive examples suggested in several free-format contributions include JTIs, Eureka and COST. They are all considered as worthy of analysing and further developing to adapt more to the ERA perspective, notwithstanding the need for regular and detailed evaluation.

Some contributions from national higher education bodies suggest support for more joint programming between national research programmes, eventually leading to joint programmes, but insist on the facilitating role to be played by the Commission, with Member States continuing to take the lead in defining priority topics on which to coordinate their joint activities. In similar lines, several Member States and organisations note that principles for funding and priorities with a European dimension should remain the responsibility of the Member States. They further point to the OMC on a voluntary basis as the more appropriate approach. Referring to participatory processes for setting up joint priorities, the role and experience of existing structures such as the ERC and ETPs is highlighted. There are even suggestions to expand the ETPs and JTIs into “social platforms” with the involvement of public organisations (universities, research organisations) and with long-term strategies. On ETPs one free-format contribution suggests that “*ETPs are able to build consensus amongst*

*stakeholders and could help public authorities, in some areas, to jointly identify and decide upon major societal issues requiring a pooling of resources and capacities.”*

Those that agree with the areas proposed for working together do not differ in their preferences concerning the modes of transnational cooperation in relation to the aggregate results. The three most preferred modes are “concentration of efforts in European-level programmes” together with “ERA-NET type loose and bottom-up coordination” and “joint public programmes with variable geometry”. Across most of the disagreeing groups, as with the agreeing respondents, the option “common public private partnerships” again attracts most of the negative responses.

### **Membership in intergovernmental research organisations (IGROs)**

When asked about whether the European Community should seek membership in intergovernmental research organisations (IGROs), on average 47% of the respondents do not respond or state they have no opinion (average 20%). Of those who do provide an opinion, Community membership of ESA, CERN and EMBL attract most of the positive responses, closely followed by ESO and ESRF. ILL seems to be the least known among the respondents as less than 50% provide an opinion (30% in agreement; 19% in disagreement). The free-format responses reveal much reluctance or clear disagreement on membership of the EC in IGROs. While membership with a consultative or an oversight role could be discussed, membership in executive bodies is clearly rejected while it is also noted that membership would require thorough reflection and discussion with the existing individual country members. Along similar lines, responses from the relevant intergovernmental organisations themselves (in particular EIROforum members<sup>7</sup>) confirm the necessity to reinforce cooperation but for the majority, the option of Community membership is not seen as appropriate.

For EIROforum members such collaboration and coordination need, however, to be well defined in view of the role the Community is expected to play and of the specificity of each EIRO. It is therefore opportune to define with these organisations the optimal model for cooperation and an appropriate status for the Community (including that of the Commission).

#### *5.5.3. Gradual and mutual opening-up of programmes*

### **Opening basic and applied research**

74% of respondents agree on the fact that national investigator driven (basic) research programmes should be open to the participation of persons from all EU Member States. Those agreeing clearly prefer “the networking of research activities and the mutual opening of national and regional research programmes via e.g. ERA-NET-type of activities” as the best way to achieve opening-up of basic research programmes. The “full opening of programmes to applications from all” is also preferred by the majority of the agreeing respondents but with more disagreements. The percentages of the positive and the negative responses are even closer regarding the option “limited opening of programmes based on bilateral agreements”, while there is clearly more disagreement than agreement in relation to the “unilateral opening of programmes to some or all EU Member States”.

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<sup>7</sup> EIROforum is a partnership of Europe’s seven largest intergovernmental research organisations. In EIROforum, these organisations pursue joint initiatives, combine resources and share best practices. The seven EIROforum members are: CERN, EFDA, EMBL, ESA, ESO, ESRF and ILL

Opening up of programmes attracts more agreement in the case of basic than applied research. Fewer (66%) respondents agree to opening up socially driven (applied) research while disagreement attracts around 18% of the responses. However, the options mostly chosen are not different from those in the case of basic research presented above.

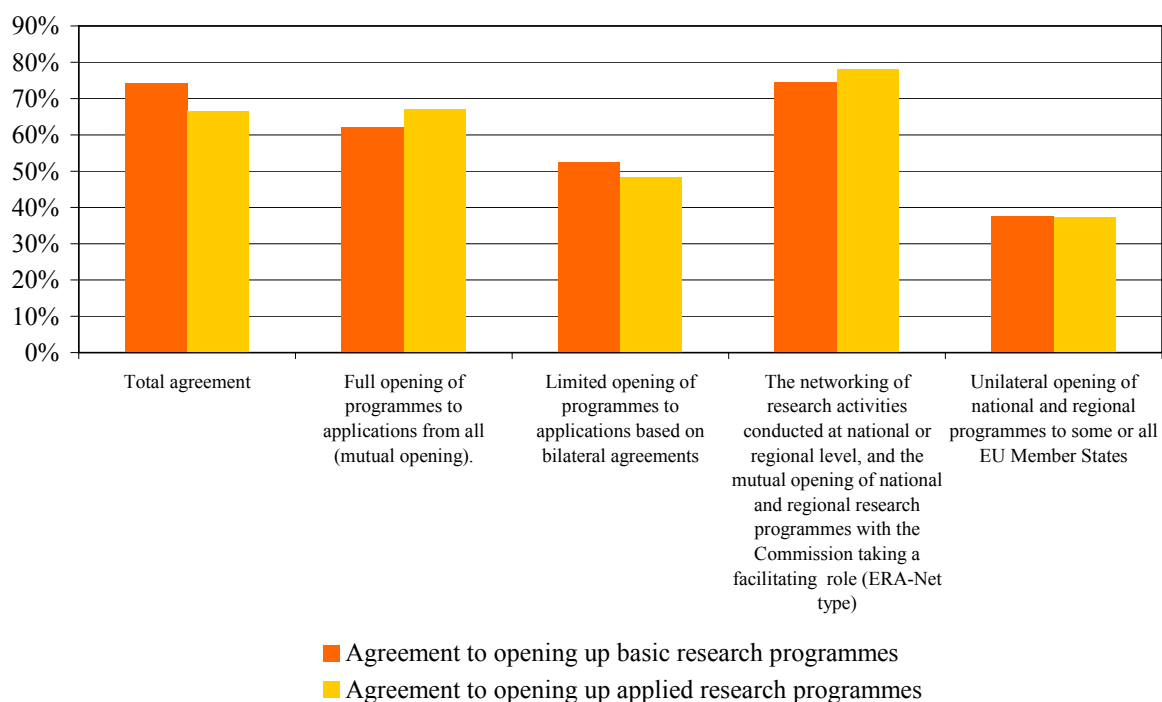


Figure 24 Opening up national and regional research programmes of basic or applied research

### A differentiated approach for different types of research

Agreement to opening up programmes is also evident in the free-format responses but these tend to be more cautious and to highlight certain conditions as well. For example, an Academy states that “*Research programmes must be opened step by step, initially through bilateral cooperation or possibly via ERA-NET networks... National programmes should be opened up to researchers from other countries only when that offers real added value nationally and at the European level.*” Similarly, others highlight that “*the national R&D programmes should gradually open to participants from other countries and that the ability to implement fully national research programmes must however be maintained.*” A Member State stresses the need for more consultation at European level regarding the possibilities of, and hindrances to, the mutual opening-up of national programmes for research projects to partners from other European countries. A differentiated approach is suggested in several contributions according to different research types, while the area of fundamental research is considered by some to be more appropriate (than industrial or applied research) for opening up national and regional programmes to participants from other Member States.

### EU Ministers and high-level civil servants should take the lead in defining transnational research issues

The respondents agreeing with the opening-up of either basic or applied research programmes consider “high-level civil servants” and “EU Research Ministers” as the best placed stakeholders to define transnational research issues. Those who agree with the “full opening of basic research programmes” rank relatively lower the “variable geometry groups”, while

those that select the “limited opening-up of programmes” rank higher the “variable geometry” as well as the “industry” stakeholders. There seems to be evidence of a specific cohort of respondents that prefer “limited opening-up based on bilateral agreements” (thus rejecting the “full opening-up”) with “industry” and “variable geometry groups” as relatively more preferred stakeholders for defining transnational research issues (always after “high-level civil servants” and “EU Research Ministers”) and in the case of basic research choosing “joint public programmes with variable geometry” as a mode for transnational collaboration.

### **Optimising Research Programmes and Priorities: main highlights**

Most of the stakeholders recognise the need for better coordination of Member States’ research programmes. They suggest a differentiated approach to coordination for different types of research, based also on principles such as subsidiarity, variable geometry and European added value. Procedures should be flexible and transparent. The benefits of coordination should compensate its extra administration and management burdens.

80% of the respondents agree that addressing resource-intensive and complex scientific challenges requires cross-border cooperation between public authorities. The identification of future research challenges and opportunities (through foresight) and evaluation of publicly funded research proposals by peer review is suggested by respectively 88% and 81% of the respondents to be the most important areas for closer EU-wide collaboration. The preferred ways for public authorities to organise transnational cooperation include: “concentration of efforts in European level programmes” (74%); “joint public programmes with variable geometry” (72%); and “ERA-NET type loose and bottom-up coordination” (70%).

Opening-up of programmes is more agreeable to respondents in the case of basic (74%) than applied research (66%). However, in both cases, the preferred way to achieve this is: “the networking of research activities via e.g. ERA-NET type of activities”. In the case of basic research, those preferring the “limited opening-up of programmes” favour “joint public programmes with variable geometry” for transnational collaboration.

The best placed stakeholders to define research issues requiring a transnational approach are “high-level civil servants”, “EU Research Ministers” and “industry”. “Industry” and “variable geometry groups” are considered relatively more important by those preferring the “limited opening-up of programmes based on bilateral agreements” compared to those preferring the “full opening-up of programmes”. Industry is always considered to be a less ‘best placed’ stakeholder than “high-level civil servants” and “EU Research Ministers”.

## 5.6. Opening to the world: international cooperation in S&T

### 5.6.1. Reinforcing coherence, coordination and synergies

#### A coordinated and efficient use of tools and resources for S&T cooperation is needed

The analysis of the on-line questionnaire shows that there is strong support (86% of respondents) for the European Commission and Member States to work together to define common European priorities for international S&T cooperation. Hence, it is not surprising that 89% also see a need for the EC and Member States to ensure a coordinated and efficient use of tools and resources. It is worth noting that 69% of respondents agree that making S&T cooperation more central to other areas of international relations is vital.

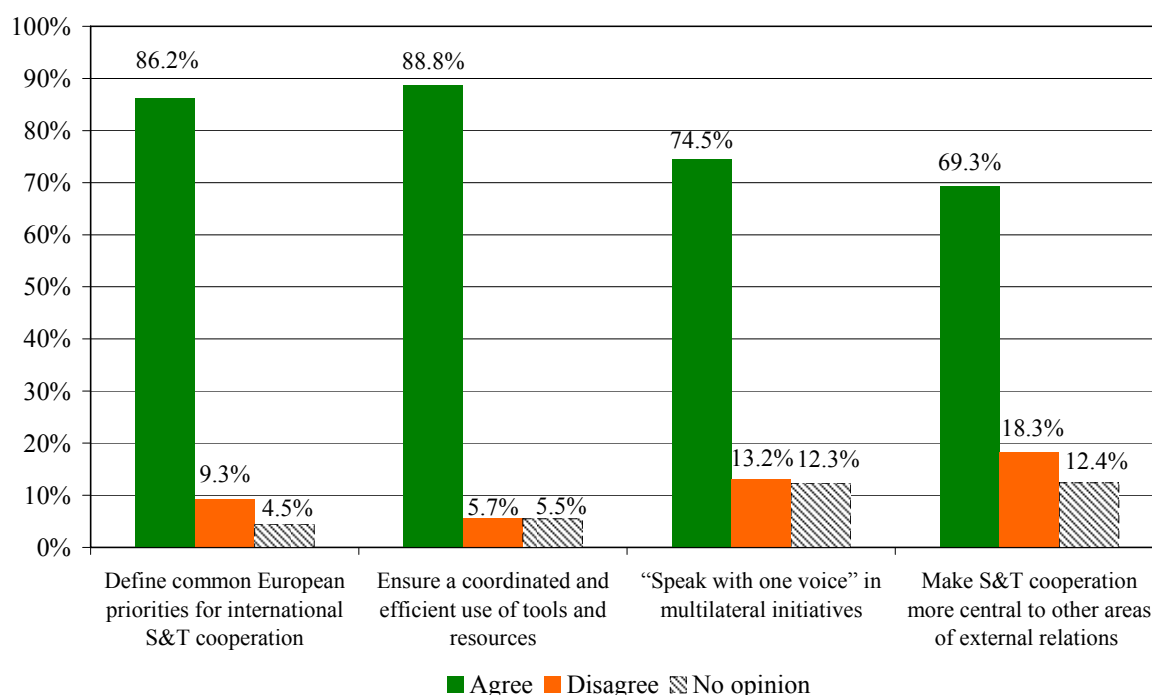


Figure 25 Objectives for closer cooperation between the EC and Member States

Some respondents propose that the Commission should perform a systematic study on possible research fields where common interests can be identified in order to clearly define the objectives. In this context, it is pointed out that priority-setting for international S&T cooperation could start with assessing the priority goals and mutual strengths of the parties involved.

#### Ensure joint responsibilities between EU Member States and the Commission

In addition, respondents suggest establishing tools for developing joint responsibilities (e.g. “roadmaps”) including mechanisms that promote the development of a “common position” of the EU, including Member States and the Commission. 84% of respondents agree that communication and coherence between national and Community programmes and policies for international S&T cooperation need to be enhanced and 70% of the respondents would prefer to use the existing coordination mechanisms and instruments (e.g. Member State

representatives; advisory groups; Programme Committees, Working Groups; ERA-Nets) to ensure joint responsibility.

Moreover, 57% of respondents to the on-line questionnaire support a dedicated joint forum to identify and agree international initiatives, and 56.5% prefer closer involvement of third countries and/or other stakeholders (e.g. civil society organisations) in setting up policies. Especially, the governments of Germany, Ireland, and the Netherlands support a more coherent approach with respect to third countries. Germany and the Netherlands even suggest setting up a high-level group or dialogue forum on international S&T cooperation for the purpose of drawing up and implementing an internationalisation strategy for the European Research Area.

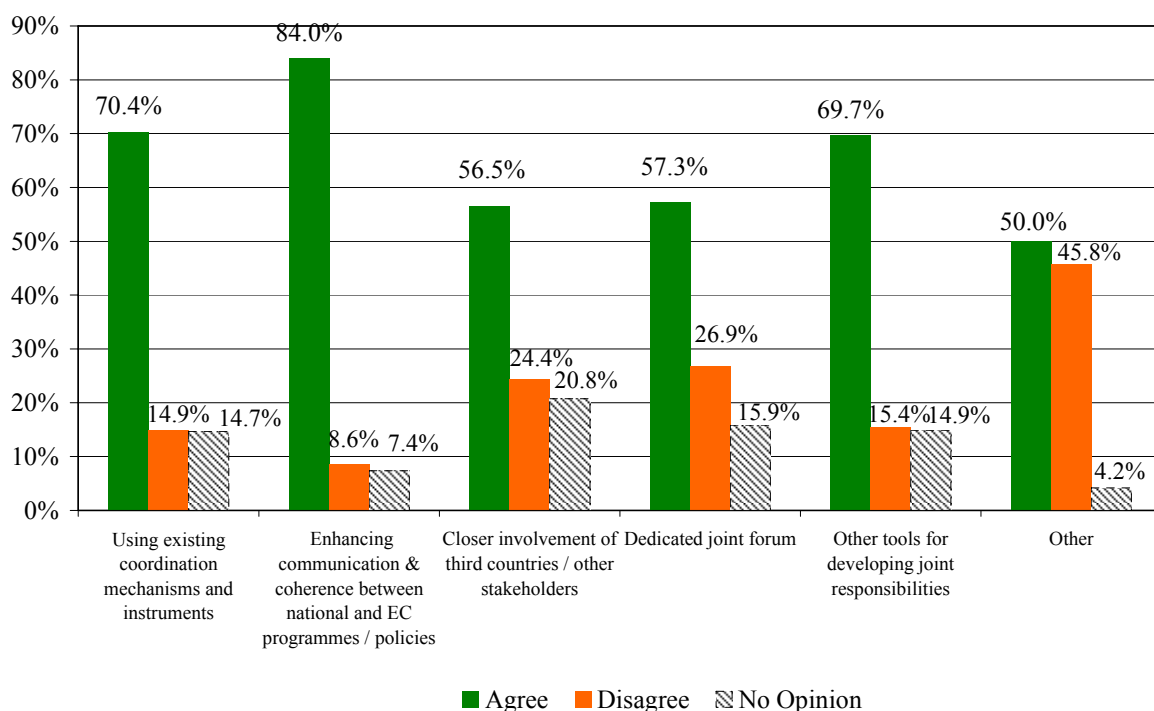


Figure 26 Instruments for closer cooperation between the EC and Member States

Most respondents call for a realistic strategy that sets challenging but limited and pragmatic goals to ensure efficient coordination and a strong “one-voice” policy. Some respondents suggest enhancing coordination between the different Commissions DGs (e.g. Research, Education and Culture, Enterprise and Industry, External Relations, Development). The EU Science Counsellors in Beijing express the need to create in order to support the EU to define common priorities and to “speak with one voice” “focal points” in third countries, which could become a common reference for all Member States in a particular area and a “gateway” towards Europe for third-country authorities.

### Flexibility is key to international S&T cooperation with third countries

In the free-form responses stakeholders from industry point out that flexibility is essential. Various respondents also refer to the principle of variable geometry that would leave Member States the choice of participating in European actions (e.g. ERA-Nets). Furthermore, respondents stress that there should be no obligation to include partners from a particular country for reasons of political and financial equity. A general model for the cooperation



between the EU and third countries is not deemed to be realistic because the conditions and requirements vary significantly among third countries. In this context, the Open Method of Coordination should be favoured to coordinate national policies.

In general, a broad majority of stakeholders of all categories express significant support for closer cooperation between the Member States and the Community, in particular in areas of global significance. Indeed, a Chamber of Commerce, for example, proposes that the European tools for cooperation with third countries should support coordination rather than provide financial assistance. Others point out: *“There is no possible coordination without a previous sharing of information.”*

In this context a closer involvement of third countries in terms of priority-setting or project development and a dedicated joint forum of Member States and the Commission to identify and agree on international initiatives are equally supported by stakeholders. In both cases the public sector research performers and governmental bodies show a high percentage of support.

#### 5.6.2. *A differentiated approach to international S&T cooperation*

#### **Differentiation into groups of countries is necessary to better tailor international S&T cooperation**

Respondents to the on-line questionnaire recognise that a clear differentiation into groups of countries namely neighbouring countries, developing countries, and industrialised/emerging economies is indispensable to develop the respective objectives. The Belgium Federal Science Policy Office, the Irish Government and the European Conference of Transport Research Institutes all point out that differentiation and flexibility need to be combined with a “bottom-up” approach since not every Member State may have the capacities to contribute to solving global or multilateral problems. By creating bodies similar to ESFRI or setting up a forum with representatives of the Member States, the research community and third countries, it would be possible to discuss and coordinate initiatives in the area of international S&T cooperation. Moreover, the majority (80% of the respondents to the on-line questionnaire) support programmes of mutual benefit, particularly to address global challenges for “industrialised and emerging countries”. This is also strongly expressed in the free-form responses.

For those countries where S&T agreements with the EC exist, the structures under these agreements should be used for this purpose. Furthermore, this might argue for the development of regional S&T agreements (rather than bilateral S&T agreements) in future, which could be used as the basis for developing new coordinated initiatives.

Some respondents stress the necessity of intensified cooperation with less developed regions and the support for those countries that cannot solve their problems on their own (some of these problems include global challenges such as energy and water supply, infectious diseases, ageing population). S&T capacity-building for developing countries to develop S&T infrastructures, skills and research resources is considered very important (75% of the respondents to the on-line questionnaire). The International AIDS Vaccine Initiative, for example, stresses that *“such collaboration must include a significant focus on strengthening their science and technology capacity, supporting their sustainable development in close liaison with development policy, and working with them as partners in global initiatives”*. In this context, a University Association points out that EU instruments should help to facilitate common approaches in areas of mutual interest and benefit for international S&T cooperation

between universities in industrialised and developing countries in addressing global sustainable development.

**Strengthen the international cooperation tools of the Framework Programme**

European research cooperation with partner countries should be organised through the EC Framework Programmes for Research, especially through calls for proposals targeting specific countries or groups of countries (80% of the respondents to the on-line questionnaire). This has to be coordinated with Member State actions. S&T cooperation through the Community and Member States’ bilateral S&T agreements and other external EU policies and programmes (e.g. the European Neighbourhood Policy) is judged less important (60% of the respondents to the on-line questionnaire). In the free-form responses stakeholders point out that a flexible and differentiated approach with regard to regions and topics is needed. The role of the new INCO-Nets that are focused on stimulating dialogue on research cooperation with specific world regions should be analysed in the near future in order to reveal potential for further developing a differentiated approach.

**Closer integration of neighbourhood countries is strongly supported**

Associating neighbourhood countries with the ERA is considered as an important step by 50% of the respondents to the on-line questionnaire. With regard to neighbouring and developing countries, the Federal Science Policy Office of Belgium stated: *“Research cooperation with neighbouring and developing countries should focus on solving societal problems.”*

Further to the European Neighbourhood Policy (ENP) respondents report that they have most contacts with Israel (53.5%) and Ukraine (45.5%). For Algeria, Egypt, Morocco and Tunisia the percentage of respondents is about 30%. In order to better integrate ENP countries into the ERA the importance of availability of funding is judged “very important” (see table IX), whereas the coordination of research programming and sharing of infrastructures is considered less important. The exchange and increased mobility of researchers in both directions is also considered important, but efficient “return” systems must be created. In general, a majority of stakeholders, including those from industry, supports closer integration of neighbouring countries into the ERA. However, the objectives for cooperating with neighbouring countries should be clear to all parties, taking into account both the strengths and weaknesses of the EU countries and those of the partners.

**Table IX Potential measures considered at least very important to enhance international S&T cooperation with ENP countries**

Measure	At least “very important” for...
<i>Available funding</i>	69%
<i>Exchange and increased mobility of researchers</i>	55%
<i>Coordination of research programming</i>	43%
<i>Sharing of research infrastructures</i>	42%

In this context, the League of European Research Universities points out that the European Commission and the Member States must work closer together regarding international S&T cooperation for the advancement of the European research systems. The Information Office of

the Steering Platform on Research for the Western Balkan Countries adds that the special position of the Western Balkan countries as candidate countries and potential candidate countries (but not being part of the European Neighbourhood Policy) needs to be considered more carefully.

### **Community S&T agreements are useful but need to be made more effective**

While in general knowledge concerning the existence of S&T agreements is rather limited (most of the public sector research performers are aware of one or more of such agreements, the majority of other respondents are not aware of any S&T agreement), 65% of respondents to the on-line questionnaire, nevertheless, mention that S&T agreements between the EC and third countries provide a useful framework for international S&T cooperation<sup>8</sup>. However, 52% also think that these agreements need to be made more effective. This position is supported in several free-form responses, for example by the Government of the Netherlands. The Belgium Federal Science Policy Office suggests “benefiting from the traditional cooperation bonds of the Member States with third countries for enhancing the effectiveness of bilateral agreements”.

On the question of how to achieve more effectiveness, the general number of answers was quite low, which makes it difficult to filter clear preferences for a certain measure. However, it is judged that important measures are the reciprocity of access to R&D programmes and the availability of funding. Targeted calls for proposals with third countries could be helpful based on light and rapid procedures. Some stakeholders (both from industry and academics) find that joint calls for research projects with industrialised countries and emerging economies would be an effective measure, recalling, however, that reciprocity should receive more explicit attention when opening up European research programmes to non-EU participants. In this context co-financing should be a guarantee for the commitment of non-EU countries and the periodic meetings in the context of the Communities’ bilateral S&T agreements could deliver an opportunity for jointly discussing and defining the priorities of the involved countries as well as the usability of the existing instruments.

#### *5.6.3. A stronger presence on the world scene*

### **Better coherence between EU policies and those of regional or international organisations is needed**

Almost 80% of the respondents to the on-line questionnaire believe that Europe should take a more active approach to defining the global S&T agenda in multilateral fora. The need for Europe to contribute to S&T initiatives by other international organisations such as UNESCO, OECD, and the G8 as well as with regional organisations such as the African Union, ASEAN and Mercosur also gain ample support (70% of the respondents to the on-line questionnaire agree). Some answers from the free-form contributions show that there is a need to establish more coherence between the policy objectives of the EU and those of regional or international organisations. In this context, 80% of respondents to the on-line questionnaire are in favour of Europe taking a more active approach to define the global S&T agenda in multilateral fora. The Group of Leading Universities in Socioeconomic and Humanities proposes to bring

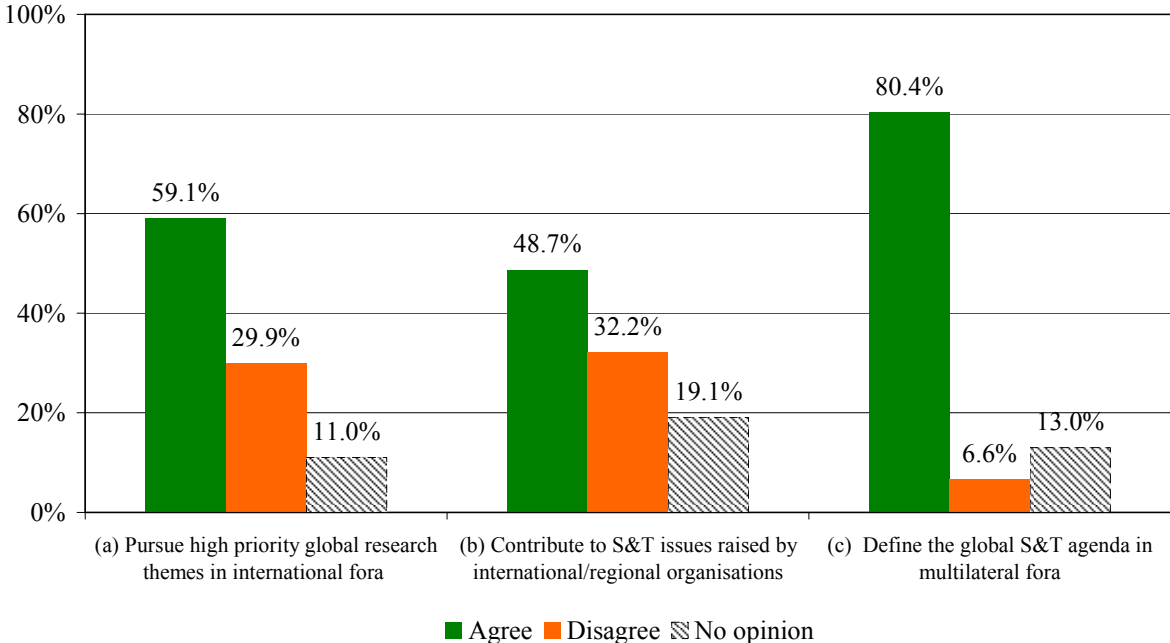
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<sup>8</sup> However, at the same time only 50% of respondents are aware of one or more S&T agreements which have been concluded between the EU and third countries

together internationally renowned scientists in advisory bodies in order to stimulate and to define global research programmes.

**“Speak with one voice” wherever appropriate**

Last but not least, almost 75% of respondents express the wish that Europe “speaks with one voice” in multilateral initiatives and 69% think that this could be achieved through placing emphasis on a small number of high-priority global research related-themes to champion in international fora.



**Figure 27 Promotion of the European agenda for S&T cooperation**

Nevertheless, also in the free-form responses some stakeholders, but also some Member States’ governments (e.g. Ireland, UK and the Netherlands) raise doubts that “speaking with one voice” is always the right approach. The answers from the free-form responses, however, clearly highlight the need to establish more coherence between the policy objectives of the EU and those of regional and international organisations.

### **Opening to the World: main highlights**

More than four fifths of respondents support the idea of the EC and Member States working together to define common European priorities, to ensure coordinated and efficient use of instruments and resources, to enhance coherence of programmes and to promote exchanges and synergies. 65% mentioned that S&T agreements between the EU and third countries provide a useful framework for international S&T cooperation. However, 52% also think that these agreements need to be made more effective. A more strategic approach would need to differentiate according to regions and topics, take into account third countries interest on the basis of mutual interest and benefit, and would build synergies with other EU external policies such as development aid and the European Neighbourhood Policy.

A large majority of respondents favour Europe taking a more active approach to define the global S&T agenda in multilateral fora, with 75% expressing the wish that Europe should “speak with one voice” and 69% thinking that this could be achieved through placing emphasis on a small number of high-priority global research-related themes. “Opening to the World” also means to provide the ground for Europe to be able to “speak with one voice”, where appropriate, while respecting new global challenges and new global players.

## Next steps

Taking into account the results of the ERA Green Paper consultation and building on ongoing work, five specific **new ERA initiatives** are under development and will be launched in 2008. These initiatives aim at establishing **durable partnerships** with Member States and stakeholders – including business, universities and research organisations – to develop the ERA jointly in their specific areas of focus:

- **A European researchers' passport for mobility and career development:** Improving the mobility of researchers will enhance the diffusion of knowledge throughout Europe, balance demand and supply for researchers at European level, help create centres of excellence and improve the skills of researchers in Europe. Improving career prospects for researchers in Europe will stimulate more young people to embark on a research career, help retain researchers in Europe and attract more talented non-European researchers. The partnership in this area should aim to accelerate progress in key areas including: social security, competition-based trans-national recruitment and portability of funding, employment and working conditions and training and skills agenda.
- **A legal framework for pan-European research infrastructures:** In order to stay at the leading edge of knowledge creation, Europe will need many new research infrastructures in the coming years. Many of these have already been identified through the ESFRI process. The role of the Member States will remain central to the development and financing of major new infrastructures. But national legal instruments are unlikely to provide an adequate basis for establishing future pan-European research infrastructures. The implementation of such infrastructures would therefore be facilitated by bringing forward a proposal to establish a legal framework for their construction and operation.
- **A The management of IPR in public research organisations:** Following the adoption of a Commission Recommendation in this area (as requested by Council) the aim of the partnership should be to facilitate and promote the optimal use of intellectual property created in public research organisations so as to increase knowledge transfer to industry and the socioeconomic benefits resulting from publicly funded research, including those from cross-border transfers. The Recommendation will include guidance in the form of a code of practice intended to promote professional management of intellectual property in the European Research Area within research organisations and to become a reference for cooperation and/or negotiation between research organisations and industry.
- **Move towards more joint programming and programmes:** The vast majority of public research in the EU is currently implemented independently by national or regional programmes and such diversity of the European research landscape can be a strength. The objective is to develop a more strategic and better structured approach to future joint programming between Member States. This would allow groups of willing countries or regions to combine their efforts and build critical mass for solving societal problems or improving competitiveness in areas of strategic importance in ways that would not be possible for individual programmes. . A Commission Communication will present an analysis of the framework conditions and criteria determining the success of joint programming taking into account the full life cycle of research programming (from foresight to evaluation), and propose a roadmap leading to agreement to specific joint programmes for participating countries and regions.

- **A policy framework for international science and technology cooperation:** One of the overriding features of the research landscape is the increasing globalisation of R&D. Cooperation based on mutual benefit with third countries is crucial to the Community's scientific, political and economic objectives. However, the efforts of the Member States and the Commission are often not well coordinated and lead to duplication of activities. It is therefore necessary to agree on and implement a policy framework at Community as well as Member State level to foster and facilitate coherent international S&T cooperation activities.

In addition, for the **research institutions** dimension of the ERA, the follow-up to the 2006 Communication on the **university modernisation agenda** will continue in 2008 with a possible mutual learning exercise under the fourth cycle of OMC and a series of expert groups. The role and needs of **research and technology organisations** is also being further examined.

Progress in these crucial areas, and others which could be developed in future, will require a sustained and joint commitment from the Member States and the EU. In complement to the above initiatives, the Council has agreed to strengthen the ERA dimension in the new cycle of the Lisbon Partnership for Growth and Jobs, which will run from 2008 to 2010. Member States are now invited to set out in their national reform programmes how their policies will contribute to developing the ERA. Furthermore, the Commission and Member States are currently exploring the ways and means to strengthen the governance of ERA, notably to ensure that progress in developing the ERA is regularly discussed and steered at the appropriate political level.

Alongside these developments, implementation of the Seventh RTD Framework Programme – the main funding instrument for EU research and one of the primary objectives of which is to help realise ERA – continues apace. Work is also on-going to enhance the conditions for investment in research and innovation in Europe, such as the European initiative on lead markets and more widely the implementation of the EU Broad-Based Innovation Strategy. Important thematic initiatives, such as the Strategic Energy Technology Plan, are also contributing to realising ERA in specific areas. Finally, the overall Lisbon Partnership will ensure that progress with ERA goes hand in hand with the development of the related innovation and education policies, both at Community and national levels.

## Annex:

### Institutions & organisations which participated in the public consultation

#### A THE EUROPEAN PARLIAMENT AND ADVISORY BODIES

- European Parliament
- European Economic and Social Committee
- Committee of the Regions

#### B CONTRIBUTORS TO THE ON-LINE CONSULTATION

##### HIGHER EDUCATION INSTITUTIONS

- Association of Universities in the Netherlands (VSNU) Netherlands
- Conservatoire National des Arts et Métiers (Association Régionale des Pays de la Loire) France
- Copenhagen Business School Denmark
- Coventry University United Kingdom
- École Centrale, Paris France
- ESSEC Business School France
- Finnish Social Science Data Archive/University of Tampere Finland
- Imperial College London United Kingdom
- Institute for Biodiversity and ecosystem Dynamics/University of Amsterdam Netherlands
- INT Management France
- Leeds Metropolitan University United Kingdom
- Loughborough University United Kingdom
- Norwegian University of Science and Technology Marine Area Norway
- TELECOM INT France
- Tilburg University Netherlands
- UMR 5245, Laboratoire d'Ecologie Fonctionnelle France
- Universidad Complutense de Madrid Spain
- Università Cattolica del Sacro Cuore Italy
- Università di Genova Italy
- University of Bedfordshire United Kingdom
- University of Camerino Italy
- University of Chester United Kingdom
- University of Exeter United Kingdom
- University of Glasgow United Kingdom
- University of Hertfordshire United Kingdom
- University of Padua Italy
- University of Salford United Kingdom
- University of Sheffield United Kingdom
- University of Sofia, Faculty of Physics Bulgaria
- University of Southampton United Kingdom
- University of Stirling, Scotland United Kingdom
- University of Stuttgart Germany



- University of Szeged (Regional Cooperation Research Centre of Life and Material Sciences) Hungary
- University of the Basque Country Spain
- University Politehnica of Bucharest Romania

### **GOVERNMENTAL BODIES**

- Bundesministerium für Wirtschaft und Arbeit Austria
- Czech Office for Standards, Metrology and Testing Czech Republic
- EU Member States S&T Counsellors in Beijing
- Metrology Institute of Slovenia Slovenia
- Ministero dell'Università e della Ricerca Italy
- Ministry of Education and Science Former Republic of Macedonia
- Mittatekniikan keskus (MIKES), Centre for Metrology and Accreditation Finland
- New South Wales Department of Primary Industries United Kingdom
- Niedersächsisches Ministerium für Wissenschaft und Kultur Germany
- NordForsk Norway
- Regione Basilicata Dipartimento Attività Produttive Italy
- Rice Research Centre Egypt
- Yorkshire Science United Kingdom

### **PUBLIC SECTOR RESEARCH PERFORMERS OTHER THAN HIGHER EDUCATION**

- Academy of Sciences of the Czech Republic Czech Republic
- Centre for Research & Technology Hellas (CERTH) /Institute for Solid Fuels Technology & Applications Greece
- Data Archiving and Networked Services (DANS) Netherlands
- DESY Deutsches Elektronen-Synchrotron Germany
- EIROforum
- Estação Vitivinícola Nacional/INRB, I.P. Portugal
- European Centre for Training and Research in Earthquake Engineering (EUCENTRE) Italy
- European Commission, Joint Research Centre, Institute for Reference Materials and Measurements
- FOM Institute for Plasma Physics Rijnhuizen Netherlands
- Fraunhofer Gesellschaft Germany
- Helmholtz Centre for Environmental Research Germany
- Institut Français du Pétrole (IFP) France
- Institut National de la Recherche Agronomique (INRA) France
- Institut Pasteur France
- Institute for Storage Ring Facilities Denmark
- IRTA (Instituto de Ricerca Tecnologia Agroalimentaria) Spain
- Istituto Nazionale di Fisica Nucleare Italy
- Istituto Nazionale di Ricerca Metrologica Italy
- Istituto Nazionale per la Fisica della Materia, Consiglio Nazionale delle Ricerche (INFN CNR) Italy
- Joint Institute for VLBI in Europe
- Laboratorio Nazionale TASC INFN-CNR Italy
- Leibniz-Institut für Molekulare Pharmakologie (FMP) Germany

- Max-Planck-Gesellschaft/Gesamtbetriebsrat Germany
- National Institute for Research Development, Bucharest Romania
- National Research Council (CNR), Institute for Industrial Technologies and Automation Italy
- Research Information Network United Kingdom
- SINTEF Fisheries and Aquaculture Norway
- TASC National Laboratory of the National Institute for the Physics of Matter (INFM) Italy
- WL/Delft Hydraulics Netherlands
- ZUMA (GESIS-Mannheim) Germany

### **RESEARCH FUNDING ORGANISATIONS**

- Agence Nationale de la Recherche (ANR) France
- Centre for Research & Technology Hellas (CERTH)/Institute for Solid Fuels Technology & Applications Greece
- Cyprus Research Promotion Foundation (RPF) Cyprus
- NordForsk Norway
- Re-Think, think tank de la Région du Piémont pour les politiques de recherche et innovation Italy
- Rice Research Centre Egypt
- The Research Council of Norway Norway
- The Wellcome Trust United Kingdom

### **NON-GOVERNMENTAL, NON-PROFIT BODIES**

- American Chemical Society Publications Division Unites States of America
- Campaign for Science and Engineering United Kingdom
- Civil Society BIOTRIN Czech Republic
- Comunidade Lean Thinking Portugal
- CONSEN EEIG Euro-Group A.E.I.E. France
- Dunkerque Technologies Belgium
- ES-SO, the European Solar-Shading Organisation Germany
- EURADIA (Alliance for European Diabetes Research) France
- EURASHE France
- EURODOC, the European Council of Doctoral Candidates and Junior Researchers
- European Academy of Sciences and Arts Austria
- European Acoustics Association
- European Association for Chemical and Molecular Sciences
- European Association for the Study of Diabetes (EASD)
- European Association of Nuclear Medicine (EANM)
- European Association of Research Managers and Administrators (EARMA)
- European Mediterranean Seismological Centre
- European Organisation for the Research and Treatment of Cancer (EORTC)
- European Plant Science Organisation
- European Platform of Women Scientists
- Federchimica Italy
- Finnish Union of University Researchers and Teachers Finland

– Fondation Fourmentin Guilbert	France
– Fondation pour la Recherche Médicale	France
– Fondazione Diritti Genetici	Italy
– Fondazione IDIS-Città della Scienza	Italy
– Institute e-Austria Timisoara	Romania
– Instituto Gulbenkian de Ciencia	Portugal
– IOP Publishing (Institute of Physics)	United Kingdom
– Joint Information Systems Committee (JISC)	United Kingdom
– Ligue des Bibliothèques Européennes de Recherche (LIBER)	
– Marie Curie Fellows Association	
– Research Network 1989	Germany
– Secteur CNE des Universités de la Communauté française de Belgique (CSC)	Belgium
– Sincrotrone Trieste SCpA	Italy
– Social Aid of Hellas	Greece
– Société française d’acoustique (membre de l’European Acoustical Association)	France
– SPARC Europe	Netherlands
STI Management	Netherlands
Technology Centre AIMEN	Spain
The Modern Humanities Research Association	United Kingdom
Vetenskap & Allmänhet, VA	Sweden

### **COMMERCIAL ORGANISATIONS WITH MORE THAN 250 EMPLOYEES**

– Alcatel-Lucent	France
– Electricité de France (EDF)	France
– European Aeronautic Defence and Space Company (EADS)	Netherlands
– Georg Thieme Verlag KG	Germany
– John Wiley & Sons Ltd.	United Kingdom
– Philips	Netherlands
– Sanofi-Aventis	France
– Schlumberger	France
– STMicroelectronics S.r.l.	Netherlands
– Telefónica Investigación y Desarrollo Sociedad Anónima Unipersonal	Spain
– Thomson Scientific Ltd.	United Kingdom
– Wiley-Blackwell	United Kingdom

### **COMMERCIAL ORGANISATIONS WITH LESS THAN 250 EMPLOYEES**

– Critical Software	Portugal
– Eutema Technology Management GmbH	Australia
– Hogrefe Verlag GmbH & Co KG	Germany
– Index Copernicus International S.A.	Poland
– INNOPOLE S.L.	Spain
– Lucius & Lucius Verlagsgesellschaft mbH	Germany
– PLANTA Angewandte Pflanzengenetik und Biotechnologie GmbH	Germany
– Posytron Engineering	Italy
– SIAT S.A.	Romania
– Textenso Limited	United Kingdom

## **ASSOCIATIONS REPRESENTING COMMERCIAL INTERESTS**

- Chambre de Commerce et d'Industrie de Paris France
- Danish Publishers Association Denmark
- ETP Plants for the Future
- Eucomed, European Association representing Medical Technology
- European Rail Research Advisory Council (ERRAC)
- European Water Supply and Sanitation Technology Platform
- Federation of European Publishers
- French Publishers Association (Syndicat national de l'édition/SNE) France
- German Chemical Industry Association VCI Germany
- International Association of Scientific, Technical & Medical Publishers Netherlands
- ManuFuture, European Technology Platform
- Puissance des connaissances France
- The Publishers Association United Kingdom

## **OTHER ORGANISATIONS**

- Advisory Council for Aeronautics Research in Europe
- Anatolian University Library Consortium (ANKOS) Turkey
- Association of Institutions for Feminist Education and Research in Europe (AOIFE)
- Centrale Générale des Services Publics (CGSP) Enseignement Belgium
- Centro EuroMediterraneo per i Cambiamenti Climatici (CMCC) Italy
- Commission of the Bishops' Conferences of the European Community (COMECE)
- Conseil wallon de la politique scientifique Belgium
- CSIRO PUBLISHING Australia
- Danish Fundamental Metrology Ltd. Denmark
- Doktorat.at Austria
- DRIVE for Growth partnership Ireland
- European Association of National Research Facilities (ERF)
- European Regions Research and Innovation Network (ERRIN)
- European Research Consortium for Informatics and Mathematics (ERCIM)
- European Respiratory Society Switzerland
- Evangelische Kirche in Deutschland (EKD) Germany
- Federacion de Jovenes Investigadores (FJI) Spain
- Ferrovie dello Stato Italy
- Hungarian Academy of Sciences Hungary
- Ile-de-France Regional Council France
- IMEW Germany
- IRCCS Galeazzi Orthopaedic Institute Italy
- Journal of Hepatology Italy
- Key Perspectives Ltd United Kingdom
- Landsorganisationen Danmark Denmark
- N8 Water Group United Kingdom
- National Institute for Marine Research and Development Romania

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- National Physical Laboratory United Kingdom
- Network for Women in Philosophy in Denmark Denmark
- Royal Society of Chemistry United Kingdom
- Swedish Association of Local Authorities and Regions (SALAR) Sweden
- TechnologieAllianz e.V. Germany
- Technologie-Lizenzbüro der Baden-Wuerttembergischen Hochschulen GmbH Germany
- World Summit On the Information Society (WSIS) Civil Society
- Young European Biotech Network

## C. FREE-FORMAT CONTRIBUTIONS & OPINION PAPERS

### HIGHER EDUCATION INSTITUTIONS

- A group of leading Universities<sup>9</sup> (joint statement)
- Centrale Nationale des Employés des Universités Communauté Française (CSE-CNE) Belgium
- Chalmers University of Technology Sweden
- Conférence des Présidents d'Université France
- European Law and Policy Research Group United Kingdom
- European University Association (EUA)
- Higher Education Researcher Development (UKHERD) United Kingdom
- Index Copernicus International S.A. Poland
- League of European Research Universities (LERU)
- National Oceanography Centre United Kingdom
- SHERPA University of Nottingham United Kingdom
- Higher Education sector United Kingdom
- University of Hertfordshire United Kingdom

### GOVERNMENTAL & PUBLIC SECTOR BODIES

- Belgian Science Policy, Commission for International Cooperation (CIC) Belgium
- Bundesministerium für Bildung und Forschung Germany
- Centre d'analyse stratégique, Prime Minister France
- Czech Senate Czech Republic
- Danish Agency for Science, Technology and Innovation Denmark
- Department of Enterprise, Trade and Employment Ireland
- Dutch Government Netherlands
- EU Member States S&T Counsellors in Beijing China
- Folkestone, Danish Parliament Denmark
- Generalitat de Catalunya Spain
- Ministerio de Educación y Ciencia Spain

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<sup>9</sup> Including Bocconi (Università Commerciale Luigi Bocconi, Milano); Central European University (Budapest); Deusto University (Universidad de Deusto, Bilbao); London School of Economics and Political Sciences; Mannheim University (Universität Mannheim); Sciences Po (Institut d'Études Politiques de Paris); Stockholm School of Economics (Handelshögskolen i Stockholm) and Tilburg University (Universiteit van Tilburg).

– Ministero dell'Università e della Ricerca	Italy
– Ministry of Education and Research	Estonia
– Ministry of Education and Research	Sweden
– Ministry of Education, Youth and Sports	Czech Republic
– Ministry of Research and Higher Education	Norway
– Ministry of Trade and Industry & Ministry of Education	Finland
– Polish Government	Poland
– Romanian Ministry of Education, Research and Youth	Romania
– Scientific and Technological Research Council	Turkey
– State Secretariat for Education and Research	Switzerland
– Swedish Parliament	Sweden
– UK Government	United Kingdom
– Wissenschaftsrat (WR)	Germany

### **PUBLIC SECTOR RESEARCH PERFORMERS OTHER THAN HIGHER EDUCATION**

– Academy of Science of the Czech Republic	Czech Republic
– Centre National de la Recherche Scientifique (CNRS/CSIC/MPS)	France/Spain/Germany
– Commissariat d'Énergie Atomique	France
– Deutsche Forschungsgemeinschaft (DFG, German Research Foundation)	Germany
– Deutsches Elektronen Synchrotron (DESY)	Germany
– European Heads of Research Councils (EUROHORCs)	
– European Intergovernmental Research Organisations (EIROforum)	
– Fraunhofer Gesellschaft	Germany
– German Aerospace Centre (DLR)	Germany
– Helmholtz-Gemeinschaft	Germany
– Institut de Recherche pour le Développement (IRD)	France
– Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER)	France
– Institut National de la Recherche Agronomique (INRA)	France
– Institut National de la Santé et de la Recherche Médicale (INSERM)	France
– Institut National de Recherche en Informatique et en Automatique (INRIA)	France
– Institut Pasteur	France
– Le Haut Conseil de la Coopération Internationale (HCCI)	France
– Max-Planck-Gesellschaft/Gesamtbetriebsrat	Germany
– Research Information network	United Kingdom

### **RESEARCH FUNDING ORGANISATIONS**

– Academy of Finland	Finland
– Biosciences Federation (BSF)	United Kingdom
– Cyprus Research Promotion Foundation (RPF)	Cyprus
– Danish Councils for Independent Research (DCIR)	Danish
– European Research Council	
– Royal Netherlands Academy of Arts and Sciences	Netherlands
– Scientific and Technological Research Council of Turkey	Turkey

- (TUBITAK)  
 – Scottish Funding Council United Kingdom

**NON-GOVERNMENTAL, NON-PROFIT BODIES**

- Alexander von Humboldt Foundation Germany
- American Chemical Society (ACS)
- Association l'Analyse Stratégique, la Prospective et l'Evaluation R&T (ASPERT) France
- Association of European Research Establishments in Aeronautics (EREA)
- Association of Learned and Professional Society Publishers (ALPSP) United Kingdom
- Association of Swedish Higher Education Sweden
- BIOTRIN Czech Republic
- Campaign for Science and Engineering in the UK (CASE) United Kingdom
- Commission of the Bishops' Conferences of the European Community (COMECE)
- Consortium of Research Libraries in the British Isles (CURL) United Kingdom
- Council of European Professional and Managerial Staff (EUROCADRES)
- European Association of Research Managers & Administrators (EARMA)
- European Ayurveda Association (EuAA) ANME EFCAM
- European Bureau of Library, Information & Documentation Associations (EBLIDA)
- European Conference of Transport Research Institutes (ECTRI)
- European Council for Maritime Applied Research & Development (ECMAR)
- European Materials Research Society (E-MRS)
- European Older People's Platform
- European Pharmaceutical Students' Association (EPSA)
- European Physical Society (EPS)
- European Platform of Women Scientists (EPWS)
- European Respiratory Society (ERS)
- Evangelische Kirche in Deutschland (EKD) Germany
- Federation of European Publishers (FEP)
- Fondation Mérieux France
- French Acoustical Society (SFA) France
- HBO-raad Netherlands
- Institute of Physics (IOP) United Kingdom
- International AIDS Vaccine Initiative (IAVI) Netherlands
- Ligue des Bibliothèques Européennes de Recherche (LIBER)
- Marie Curie Fellows Association (MCFA)
- Product Development Public Private Partnerships (PDPs) Netherlands
- Royal Astronomical Society (RAS) United Kingdom
- Society of College National and University Libraries (SCONUL) United Kingdom
- SPARC Europe United Kingdom
- Steering Platform on Research for the Western Balkan Countries Austria
- The Royal Society of Edinburgh United Kingdom
- UNICO United Kingdom

## **COMMERCIAL ORGANISATIONS WITH MORE THAN 250 EMPLOYEES**

- Electricité de France (EDF) France
- ELSEVIER United Kingdom
- ERICSSON Sweden
- Philips Research Netherlands
- QinetiQ leading international defence and security technology company United Kingdom

## **ASSOCIATIONS REPRESENTING COMMERCIAL INTERESTS**

- Advanced R&T for Embedded Intelligence & Systems (ARTEMISIA) Netherlands
- Association of the German Chambers of Industry and Commerce (DIHK)
- BUSINESSEUROPE (The Confederation of European Business)
- CBI The voice of Business United Kingdom
- Chambre de Commerce et d'Industrie de Paris (CCIP) France
- Confederation of Netherlands Industry and Employers (VNO-NCW) Netherlands
- DRIVE for Growth Ireland
- ETP Plants for the Future
- European Association of Research and Technology Organisations (EARTO)
- European Chemical Industry Council (CEFIC)
- European Confederation of Iron and Steel Industries (EUROFER)
- European Digital Technology Industry (EICTA)
- European Rail Research Advisory Council (ERRAC)
- European Road Transport Research Advisory Council (ERTRAC)
- European Steel Technology Platform (ESTEP)
- European Technology Platform Food for Life
- European Technology Platform for Global Animal Health (ETPGAH)
- European Technology Platform Nanoelectronics (ENIAC)
- European Technology Platform of the Waterborne Industries (WATERBORNE)
- European Technology Platform on the Future of Manufacture (MANUFUTURE)
- ETP Plants for the Future
- German Publishers and Booksellers Association Germany
- InnovaWood Ireland
- International Association of Scientific, Technical & Medical Publishers (STM) United Kingdom
- Networked European Software and Services Initiative (NESSI)
- Syndicat National de l'Edition (SNE) France
- The Publishers Association United Kingdom
- Trade Marks, Patents & Designs Federation (TMPDF) United Kingdom



## **OTHER ORGANISATIONS**

- BONUS for the Baltic Sea Sciences Finland
- Confédération Européenne des Syndicats Indépendants (CESI)
- Conseil Economique et Social, Région Wallone Belgium
- Danish Confederation of Trade Unions (LO) Denmark
- Danish Teacher Trade Union (DLI) Denmark
- European Free Trade Association (EFTA)
- EUREKA
- European Cooperation in the Field of Scientific and Technical Research (COST)
- European Regions Research and Innovation Network (ERRIN)
- European Trade Union Committee for Education (ETUCE)
- Marine Board, European Science Foundation (ESF)
- Swedish Association of Local Authorities and Regions Sweden  
(SALAR)

## Acronyms

ASEAN: Association of Southeast Asian Nations  
CERN: European Centre for Nuclear Research  
CoR: Committee of the Regions  
CORDIS: Community Research & Development Information Service  
COST: Scientific and Technological Cooperation  
CREST: Scientific and Technology Research Committee  
CSO: Civil Society Organisation  
EESC: European Economic and Social Committee  
EFDA: European Fusion Development Agreement  
EIB: European Investment Bank  
EIT: European Institute of Technology  
EMBL: European Molecular Biology Laboratory  
ENP: European Neighbourhood Policy  
ERA: European Research Area  
ERA-NET: European Research Area NETworking  
ERC: European Research Council  
ERRAC: European Rail Research Advisory Council  
ERTRAC: European Road Transport Advisory Council  
ESA: European Space Agency  
ESF: European Science Foundation  
ESFRI: European Strategy Forum for Research Infrastructures  
ESO: European Organisation for Astronomical Observation in the Southern Hemisphere  
ESRF: European Synchrotron Radiation Facility  
ETP: European Technology Platform  
ERAWATCH: Integrated Information system for ERA  
EURAB: European Research Advisory Board  
FP: Framework Programme  
GDP: Gross Domestic Product  
GIR: Groupe Interservice Recherche  
HEI: Higher Education Institution  
IA: Impact Assessment  
IGRO: Intergovernmental Research Organisation  
IISER: Integrated information system on the Career paths and Mobility flows of researchers  
ILL: Institute Laue-Langevin  
IMS: Intelligent Manufacturing Systems

INCO: International Cooperation  
IP: Integrated Project  
IPR: Intellectual Property Rights  
ITER: International Thermonuclear Experimental Reactor  
ITRE: Industry, Research, Energy (EP Committee)  
JTI or JETI: Joint (European) Technology Initiative  
KSH: Knowledge Sharing  
KT: Knowledge Transfer  
MERCOSUR: Mercado Comùn del Sur (Southern Common Market)  
MS: Member State  
NCP: National Contact Point  
NGO: Non-Governmental, non-profit, non-representing commercial interests Organisation  
NoE: Network of Excellence  
OECD: Organisation for Economic Cooperation and Development  
OMC: Open Method of Coordination  
PES: Public Engagement in Science  
PRO: Public Research Organisation  
PSRP: Public Sector Research Performer other than universities or PRO  
R&D: Research and Development  
RFO: Research Funding Organisation  
RPO: Research Performing Organisation  
RTO: Research and Technology Organisation  
SINAPSE: Scientific Information for Policy Support in Europe  
SME: Small and Medium-sized Enterprise  
SSH: Social Sciences and Humanities  
S&T: Science and Technology  
STEM: Science, Technology, Engineering and Maths