



August 2007

BUSINESSEUROPE'S RESPONSE TO THE EUROPEAN RESEARCH AREA GREEN PAPER

SUMMARY

BUSINESSEUROPE agrees that a stronger, more effective and better-connected public research system, including universities and other types of public research organisations (PROs), is necessary to meet the economical, social and environmental challenges facing European society.

BUSINESSEUROPE believes that a change of emphasis for the European Research Area (ERA) is needed in the current definition and implementation of this policy concept, so that it can be recognised as a powerful building block in developing effective and affluent knowledge-based societies.

The EU should use the resources at its disposal to create a critical mass of activity around core themes that allow us to compete successfully on the international stage. To achieve all of this, ERA's priorities should be expressed in terms of ensuring:

- adequate numbers of people, trained to be skilled in the knowledge economy and understanding the value and application of research in achieving these skills and in meeting social and economic objectives;
- more effective mechanisms for ensuring that knowledge generated is put to good use, including straightforward access to public research resources and results;
- policy formulation by public authorities based on the effective and informed working of governments and institutions across the entire EU;
- excellent, diversified research institutions embedded in the social and economic life of where they are based, interacting routinely with the world of business and engaging in durable public/private partnerships;
- research infrastructures of a scale that is equal to current and foreseen priorities and as far as possible unrestricted by national and other boundaries;
- public research programmes designed to ensure a proper balance of attention to Europe's current, medium and long-term priorities; and
- a European Research Area that is open to the rest of world in order to make Europe more attractive, to improve mobility and to provide capacity, and to deal with key challenges going beyond the ability of individual regions.

We believe that ERA has a key role to play in underpinning future European development. Emphasis on the wider parameters to support flexibility of approach to knowledge-intensive activities, greater strength-in-depth at regional and local levels, and more effective translation of research findings to address large-scale market and social objectives, may achieve far more



than continued focus on European-wide harmonisation of research programmes and infrastructures.

Obtaining the market conditions and regulations to sustain a healthy mix of new, growing and large companies, generating wealth in and for Europe across all important sectors, is a precondition for making ERA a visible success and achieving the sustained funding that research requires.



INTRODUCTION

The Commission's Green Paper on the European Research Area (ERA) addresses important questions for Europe, as the basis of economic prosperity and well-being becomes increasingly knowledge-oriented. BUSINESSEUROPE is supportive of much of the Commission's analysis and agrees with many of the proposals that are made, including the need for urgency. In this paper, we offer general remarks and suggest an alternative rationale and directions for ERA. The Appendix responds in more detail to questions set out in the Commission's Green Paper.

For considered reasons, the Green Paper concentrates on research, and mainly on reform of the public research system. BUSINESSEUROPE agrees that a stronger, more effective and better-connected public research system, including universities and other types of public research organisations (PROs), is necessary to meet economical, social and environmental challenges facing European society. However, we believe that the process of policy development and implementation must reflect a more unified view of the connections between research, education and innovation, and in particular aim to improve knowledge exchange and raise standards across the board.

Within its perspective on research, there is still a tendency for many stakeholders to interpret ERA narrowly in terms of the mechanisms for funding research activities at Europe level, with an assumption that there is a single rationale for these activities, approaches, career structures, etc., across the public and private sectors. We need to dispel this notion and instead to explain the importance of ERA solidly in terms of underpinning future European development. The vision should be presented in ways more likely to command general public support; based on addressing common challenges rather than processes; with clear explanations of how these outcomes can realistically be achieved. Presenting such a vision will be a major challenge but is necessary in the run up to the forthcoming mid-term review. We encourage Commission Services to recognise that a change in outlook is needed and to consider how this might be achieved.

The European Union's continued expansion makes differentiated approaches to institutional governance, management and resourcing more and more important. ERA should be a mechanism that enables actors who wish to move quickly to do so, helps those held back to become stronger, and exemplifies successes, while removing consideration of national boundaries from the processes of developing critical mass in research. It cannot be a philosophy based on further centralisation of funding and approach. ERA's qualities should be assessed in terms of encouraging good approaches to develop, be recognised and widely copied.

Many aspects of research, education and innovation, and many of the global challenges that Europe faces, have moved on since the 2000 Lisbon European Council endorsed the objectives of ERA. Change will continue to happen and the capacity to respond effectively is very important for Europe's future. This will depend on the ability of teams like those in Commission Services to interpret what is happening and clearly set out possible responses. Although the Green Paper mentions some of the developments that have happened since 2000, it does not really try to articulate possible responses. It is important that the connections and working procedures between parts of Commission Services, with national governments and with key international organisations, statistical offices and foresight activities, are adequate for this task. We are not convinced that this is currently the case.

We feel that development of ERA should be guided by these objectives:

- Encouraging much more sense of added value for Europeans as a whole from research by focusing more on its impact on economic competitiveness and quality of life, based on a



clear vision of European development that is meaningful to citizens at large and relevant in terms of the actions of individual companies, institutions and other actors;

- Enabling Europe to attract and achieve the critical mass of activities, skills and funding for research, education and innovation required to ensure competitiveness on a global scale;
- Developing the forms of coordination that bring together all policies and actions that have impact on research, education and innovation, but with emphasis on coherency rather than harmonisation of policy;
- Stringent efforts to reduce administration and bureaucracy to the absolute minimum level required, and then focusing this administration on better meeting user needs;
- Achieving wider appreciation of the growing range of knowledge-intensive activities, including but not only research, that are of importance for innovation and economic and social well-being;
- Ensuring that a strong business case exists for the European Research Area and is recognised.

Good steps have been taken by DG Research in establishing the Seventh Framework Programme; introducing an independent European Research Council; enabling the development of strategic research agendas via Technology Platforms (ETPs); and mapping out the Joint Technology Initiatives (JTIs). It is now time to consolidate these initiatives and let them thrive according to the characteristics outlined above.

We believe that Commission Services need to consider how to best focus their own efforts, for example on:

- Supporting the development of a shared vision of Europe in the 21st century, with credible explanation of how initiatives like ERA help citizens, businesses and other stakeholder to address their day-to-day priorities;
- Coordinating very well a few initiatives that clearly demonstrate impact for Europe as a whole, such as better knowledge exchange and mobility, key European needs such as energy, and a small group of lead market initiatives, while continuing to find ways to step out of the management of these activities;
- Achieving the common effort needed among different policy organisations to support effective policy formulation and implementation in the face of continued major change; and
- Ensuring that regulatory and demand side measures in Europe develop in ways that will support, rather than stifle, the translation of knowledge generated through research into European well-being.

QUALITIES THAT SUPPORT INNOVATION

The Green Paper is concerned with improving the effectiveness of European research. Focusing on matters that are to a large extent within the responsibility of national governments, it outlines steps such as establishing a European internal market to enable researchers, knowledge and technology to move around more effectively; achieving better coordination of research activities, programmes and policies; strengthening research institutions; and achieving more coherent funding and implementation of initiatives. Although the main objectives of ERA were agreed at the March 2000 Lisbon European Council, the Commission argues that much



remains to be done, particularly to overcome excessive policy and programme fragmentation, with slow progress a consequence of limited action by national governments.

In responding to the questions raised, we have reflected on the following points:

- The qualities that support effective research, education and innovation are very interdependent; and better knowledge transfer through people, institutions, networks and physical environments is a top priority.
- We can now recognise the extent to which excessive separation in the past of research and education from considerations of use and impact, combined with too many acceptance of low quality across the board, have contributed to the European paradox. Equally, we can see the need for careful reform. Misguided attempts to give (for example) public institutions “more of a business focus” can backfire, making knowledge transfer less, rather than more, effective.
- Although fragmentation of research is a stumbling point, more leverage can perhaps be found in other areas, particularly since the main rationales for ERA go far beyond improving the research system. Achieving greater flexibility and strength-in-depth at regional and local levels, combined with initiatives designed to translate research findings into new large-scale market opportunities important to European interests, may achieve better outcomes than concentration on the European-wide harmonisation of research programmes and infrastructures.
- It is not clear from the Green Paper whether there are good examples where fragmentation is considered particularly egregious by the research community itself, and this makes it difficult to assess the real importance of some of the actions proposed. Many of Europe’s problems seem to be linked more with the “thinness” of the ecosystem rather a complete lack of truly world-class institutes.

In the recent ERA cycle, aggregate research investment has been used as a key indicator. However, public sector and private sector investments in R&D, grouped together in the Barcelona target of 3% of GDP, are very different animals, making this aggregate misleading. The first is a conscious decision to allocate tax revenues in a certain way; is best seen as a decision on the input side of the economy; and is (more or less) under the direct control of governments. Many governments now understand this point and know how to respond, even if their action may be slower than is desired. By comparison, private sector investment is (as far as governments are concerned) almost entirely dependent on economic outcomes. It is the result of historic patterns of industrial growth in the area; of multiple decisions being made today by companies in different sectors to respond to global market developments; and of the on-going success or (more important for Europe today) failure of new companies in sectors requiring large on-going research investments to grow to world-scale based in Europe and thereby figure significantly in the aggregate expenditure data.

There is now a much wider recognition that the structure of industry in Europe is not the same as that in the United States, with fewer large companies in those sectors that invest a high proportion of turnover in R&D. Surveys of business investment trends also show that larger European companies in these research-intensive sectors tend to be most likely to invest in R&D outside Europe (typically in the US), and that the growth and survival of innovative smaller companies remains problematic in Europe. At the same time, new types of knowledge-intensive firms are emerging, important for Europe, which depend on activities that are not captured in current measures of R&D, particularly in services. Obtaining the market conditions and regulations that sustain a healthy mix of new, growing and large companies, generating



wealth in and for Europe across all important sectors, is a pre-condition for making ERA a visible success.

However, ERA policies currently focus strongly on the 'PUSH' side of the equation - generating research activity and encouraging collaboration, facilitating researcher movement, creating infrastructure, and very much on traditional ideas of what constitutes research. It is important and necessary to deal with these points, but we must also consider the 'PULL' side and the 'BARRIERS': creating markets, creating intelligent customers (public and private, corporate and individual); creating demand for research, innovation and education; and ensuring that at least some of these "high-tech" start-up companies grow to world scale while remaining based in Europe. These are the real drivers of aggregate research investment and overall innovation activity in the economy. Undue emphasis on the 'PUSH' side merely encourages a belief that people are interested mainly in funding.

Increasingly, there is recognition that the 'PULL' side deserves more attention: partly because of its potential and partly because this lies outside the standard envelope covered by government science and innovation policies influenced by both 'statist' and free-market philosophies. A future aim of the ERA should be to seek coherence between the research push and demand pull policies that affect the research, innovation and education ecosystem across the EU, particularly as many of the challenges we seek to face do not fall neatly with the responsibilities of either the public or the private sector. This depends, among other points, on the working relationships that exist between different parts of Commission Services and between ministries in national governments.

A CHANGE IN EMPHASIS

For the reasons set out, we feel that a change of emphasis is needed for ERA to be seen as a true guiding force for Europe. Research, innovation and education can no longer seem to lead separate lives. ERA must therefore develop to project value by visibly underpinning development of rewarding knowledge-based societies, not as something seen as separate from general public priorities. Ideally, this will be captured within an overall vision that is accessible to the public, not as an initiative seen to be of interest primarily by the research community itself. Such an approach will become more open to, and supportive of, a diverse range of systems, players and requirements across Europe, rather than trying to encourage "one size fits all" solutions. The subsidiarity principle remains valid, but requires real commitment to actions leading to common benefit by national governments.

Much can be achieved by facilitating greater differentiation, for example among teaching and research-based universities (providing national governments do not use this as an excuse to cut funding); by encouraging greater focus on working with representative user communities; and by enhancing the sense that research and innovation in all forms serve complementary roles. Some governments have evidently not invested sufficiently in their national research and education systems: but correcting this is primarily their responsibility, even though it affects Europe's overall development. European budgets should not be used to absolve governments of this responsibility. Institutional and programme quality are also not as high as they should be. This is not just because of insufficient funding, so standards must be raised.

We need to learn how to tap better into the diversity of resources that exists throughout Europe, by ensuring that the linkages exist that bring together the right nodes and by building an effective *ecosystem* for research, innovation and education. Critical to achieving this is the way we seek to motivate and handle the people who work in these areas. Europe needs to attract engaged people from everywhere, who have the skills and experience to apply, and to educate others to apply, maths, science, technology and engineering, and also in design, marketing, knowledge transfer, social sciences, entrepreneurship and the management of innovation.



People who choose these challenging pathways must believe that their choice will not present additional burdens if they remain in Europe, and they must believe that society will respect them for this decision. An effective ecosystem is one that encourages the public sector, private sector organisations *and* individuals to invest in research, innovation and education, and demonstrates to each of them that this investment can pay off.

Greater attention should be given to achieving effective focus, rather than seeking to define the approach or being too concerned about efficiency to the detriment of effectiveness. This requires freedom and flexibility for people to devise novel approaches as circumstances dictate, as well as a critical mass of resources. It cannot escape notice that businesses, as well as individual people, achieve this by working together, competing or collaborating as appropriate, without necessarily "harmonising" their policies and actions.

The way forward is inevitably constrained by the opportunities that exist for market growth today. With public procurement accounting for about 16% of European GDP, this is potentially a large driver of research-led innovation. By using public procurement more effectively, governments across the EU can themselves become more open to novel solutions: identifying challenges and communicating these to the market early, engaging with potential suppliers to discuss solutions (rather than specifying technologies), engaging in open and transparent competitive pre-commercial procurement of new technology (and technology demonstration), and seeking whole life value rather than solutions with the lowest up-front cost. EU policy should look to ensure that this potential demand pull is facilitated and supported effectively across Europe.

The test for action should always be whether the activity adds some real and sustainable value for Europeans, for example providing a feed-in to better policy decisions; enabling economic activity that would not otherwise occur; developing expertise and technologies to ensure that the EU can better compete globally while also addressing its own priorities more effectively.

The EU should use its resources to create a critical mass of activity around the core themes that will allow us to compete successfully on the international stage with Japan, the USA, China and others. Critically, we must become more open to radical as well as incremental innovation and guard against risk aversion. Resources do need to be managed appropriately but should not default to supporting low risk 'safe options' when this diminishes the potential to take a world lead. There is circularity to this problem: low rewards breed complacency which breeds risk aversion. It is simply untrue that Europeans themselves are inherently risk averse: we are simply not rewarding risk-takers appropriately.

Anything which adds more layers of management and bureaucracy to the European research system, and makes the EU less agile and competitive on the international stage, should be avoided. Similarly, we should avoid initiatives unless it is clear that 'grass roots' support exists, or can quickly emerge. Instead, we should be encouraging reforms that give actors themselves the means to demonstrate the value of success. This, more than anything, will encourage more taking of calculated risks. Policies that support research, education and innovation should provide these incentives by reflecting excellence and user need, not by aiming to meet social cohesion objectives.

As a central part of the current ERA concept, the Framework Programme still causes problems for those who might potentially engage. The main problems arise because of bureaucracy involved in securing finance and managing multi-party, multi-country collaborations. However, ERA is about much more than the Framework Programme.

The Commission should focus even more strongly on ensuring that process associated with the Framework Programme are efficient and as clear and easy to understand as possible, with



minimum reporting requirements and with real efforts to reduce complexity from the perspective of the participants. At the same time, more effort should be made to encourage flexible initiatives on a pan-national basis. All these initiatives must be more clearly designed around the needs of users – for example, adapting rapidly to help EU businesses gain competitive advantage in the development of innovative new technologies; supporting large scale demonstration projects; and working to implement research findings that improve the quality of life of EU citizens; as well as progressing the frontiers of knowledge.

Greater effort also needs to be put into publicising the outputs of public research to EU citizens, to explain the results and show who has benefited.

A BUSINESS VISION FOR ERA

The Green Paper contains Commission Services' Vision for ERA. We suggest an alternative form of words, intended to establish a clearer link to the competitive needs of Europe for ERA.

With growing awareness among all its citizens of the benefits offered by the shift to more knowledge-oriented societies, the European Research Area is seen as a main pillar supporting Europe's capacity to generate, transform and use knowledge. Through ERA, Europe is better able to address current and future social and economic goals and challenges; has better informed and educated citizens; gains more benefit from the opportunities presented by the single market in Europe and by global developments beyond; and can reinforce the quality and success of its institutions and businesses. Besides the pursuit of scientific excellence and learning, ERA ensures that European research fully supports the dissemination of knowledge and underpins development that aims towards greater sustainability along each of its three axes. This has been achieved by ensuring that:

1. *Adequate numbers of people are trained to be skilled in the knowledge economy and understand the value and application of research in achieving these skills and in meeting social and economic objectives. Those who choose to work in research recognise that a diverse range of rewarding career opportunities is available to them, that working conditions and mobility are notable by the absence of financial and administrative obstacles and other forms of discrimination, and that trans-disciplinary approaches are the norm. Appointment is based on merit, and movement between disciplines and between the public and private sectors is rewarded, such being seen as the normal features of a successful research career.*
2. *Effective mechanisms exist for ensuring that knowledge generated is put to good use, including straightforward access to public research resources; simple, cost-efficient systems that protect Intellectual Property Rights without limiting opportunities to create value; emphasis on the efficient cooperation between public research, industry and civil society; and opportunities for lifelong learning that give the public at large access to the frontiers of knowledge, the means to discuss its generation and understand its use, and the curiosity to learn more;*
3. *Policy formulation by public authorities is based on the effective and informed working of governments and institutions across the entire EU; conversant with the benefits available to knowledge economies; understanding how these benefits can be realised; bringing together research, education and innovation by themselves using trans-disciplinary and cross-functional approaches; and using their own purchasing power as tools to stimulate learning and innovation.*
4. *Excellent, diversified research institutions are embedded in the social and economic life of where they are based, interact routinely with the world of business and engage in*



durable public/private partnerships. Such partnerships act both to strengthen the institutions themselves and to catalyse the development of specialised economic clusters, which continuously seek to attract a critical mass of human and financial resources from across the world and achieve outcomes that are clearly recognised to benefit the European citizen. ERA encourages progressive re-structuring in ways that reflect the changing dynamics of effective innovation ecosystems in a global setting, and ensure the continued interdependence of research, education and innovation.

5. *Research infrastructures are of a scale that is commensurate with current and foreseen priorities and as far as possible unrestricted by national and other boundaries. Public electronic communications infrastructures are of the high standard required to enable these infrastructures to be fully networked and accessible in Europe and globally, encouraging virtual team working where this makes sense..*
6. *Public research programmes are designed to ensure a proper balance of attention to Europe's current, medium and long-term priorities. Priorities are established through joint foresight involving the scientific community, society and industry, and are implemented in ways that ensure the efficient participation of each community, encourage learning through competition, and aim always to improve quality. National, regional research and European programmes constitute simple, transparent and coherent systems of research funding based on a wide mixture of public sources (national, regional and European) and associated private sources (including philanthropy and civil society organisations). No one source of funding is seen to be inferior to others for reasons of quality or efficiency, but each source has clear objectives which are not diluted for reasons of convenience.*
7. *The European Research Area is open to the rest of world in order to make Europe more attractive and improve mobility and also provide the capacity, where required, to deal with key challenges going beyond the capacity of individual regions up to and including global priorities such as health and the environment.*

Two important concerns cut across all dimensions of the ERA:

- *Effective balance is always sought between competition and cooperation, and success is assessed in terms of the quality of the outcomes that are achieved, and the extent to which these meet Europe's own requirements and global commitments.*
- *Full benefit is derived from Europe's diversity of interests and experiences. Countries and regions, businesses and institutions build on their own strengths by progressively developing specialisation in certain fields, and citizens can obtain services and goods tailored to their individual requirements. Each group is able to access other specialist knowledge and resources throughout Europe and the world, through mobility, knowledge sharing, the development of virtual networks and communities, and a pervasive sense that this approach provides greater "added value" than going it alone.*

ANNEX TO BUSINESSEUROPE'S RESPONSE TO THE EUROPEAN RESEARCH AREA GREEN PAPER

RESPONSE TO SPECIFIC QUESTIONS RAISED IN THE ERA GREEN PAPER

ELEMENTS OF THE EUROPEAN RESEARCH AREA VISION

- 1. Are these the essential elements that the European Research Area should provide? Are there other elements which should be taken into account in the vision?**

Response: The essential elements described are: realising a single labour market for researchers, developing world-class research infrastructures, strengthening research institutions, effective knowledge sharing, optimising research programmes and priorities, and international cooperation in science and technologies. These elements are essential for the ERA to become a viable option.

- 2. What should be the roles of EU, national and regional policies to establish such a European Research Area and take best advantage of the European dimension in the context of globalisation and national and regional specialisation?**

Response: Efforts at EU level should aim to ensure that the ERA delivers real results and benefits for the Union as a whole and the industrial sectors located within, while remaining cost effective and encouraging much greater national and regional efforts to reduce the impact of existing barriers. Critical to this is how research supported at the EU-level and at national and local levels by EU Member States, is translated into innovations that find a lead market within the EU and thereby demonstrates value to Europe's citizens.

The EU must use its scale more effectively to support co-ordinated actions on research, innovation and education and market creation if it is to compete successfully with the US, China and others. The best elements of national programmes that can be scaled to the whole EU should be taken forward, helping learning and helping to reduce duplication of effort. In order to build up EU's competitive advantage, EU, regional and national policies in support of research and innovation and other critical policies (e.g. on procurement, markets for innovative goods and services etc) should become more coherent and joined-up.

- 3. What EU initiatives could best leverage overall public and private efforts to realise the vision?**

Response: Public procurement is one lever that can encourage wider business investment in research and innovation. As major purchasers, governments across the EU, as well as the Commission itself, need to become demanding clients for innovative goods and services, acting as first customers and helping to create and build new markets, while also meeting their procurement needs.

Another starting point may be for the EU to define a number of "grand challenge" areas, difficult or costly for EU governments to address through the procurement of existing solutions. The approach, however, will be more effective if based on facilitating outcomes, rather than specifying approaches. ERA and procurement funds can combine in the identification, development and demonstration of innovative new solutions – working closely

with business and the knowledge base across Europe to accelerate the pull through of new ideas into appropriate procurement rounds.

REALISING A SINGLE LABOUR MARKET FOR RESEARCHERS

4. Is there a need for a more effective European framework to improve significantly the recruitment, working and geographical and inter-sectoral mobility conditions for researchers, including enforceable measures?

Response: From a business perspective, at least two elements of this question seem to require attention: to improve the appeal of relevant careers to young people, and to ensure that people can easily be recruited and move between jobs in different countries.

It would be useful if the single and open European labour market were established. This would help ensure both the circulation of knowledge and experience in Europe. However, undue concentration on the concept of “researcher” as a career may be unhelpful. We need to give a better demonstration of the appeal and variety of careers that result from a research training.

Mobility in research does exist to some extent, thanks to the success of existing schemes, directives and recommendations such as Marie Curie grants, the European Mobility Portal, the European “Network of Mobility Centres”, or the “Scientific Visa” directive. These go in the right direction and in general are based on voluntary approaches or on generic codes of conduct.

However, given the number of these mobility schemes, questions must be asked as to how effective and coherent they are. Too often at EU level, such schemes have limited appeal and add little value to the sectors they are meant to serve.

More can be done to remove legal, administrative and practical (e.g. language, exchange rates, domestic arrangements, pensions, barriers on return, reward and recognition systems etc.) barriers to geographical and inter-sectoral mobility in Europe, improving employment and working conditions for researchers, and to reconciling professional, private and family life. It has to be acknowledged though that mobility will only occur if relocation is more attractive than the recognisable difficulties associated with it. Rules will not overcome these barriers, but incentives may.

In particular:

5. How could the principles established in the European Charter for Researchers and the Code of Conduct for their Recruitment be effectively implemented, in order to develop fully the European dimension of research careers, including the trans-national opening of vacancies and funding opportunities for researchers?

Response: We continue to have concerns regarding the implementation of the Charter for Researchers and the Code of Conduct for their Recruitment. We certainly support the basic principles of the Charter, and recognise why improvement is needed in many public research institutions, but its full and literal implementation is neither possible nor desirable in industrial research settings.

Regardless of the intent, the definitions used in the Charter and Code seem to apply to all professionals in applied research, experimental development, innovation and a wide range of



support functions related to R&D. The implication that research offers a single, unified career path, requiring its own employment codes, is like to be divisive rather than helpful.

What matters is to encourage a greater number of people to follow courses in science and technology and to recognise that they have many varied and interesting career paths to follow. Some of these pathways may fall under the banner of “research”, but many do not. The Charter and Code fail to make this clear.

In view of Europe’s efforts towards “better regulation” it is difficult to justify a requirement to publish all vacancies on a European Researcher’s Mobility portal or to impose prescribed selection processes for selecting candidates. This would take too much time, resources and effort, things that (for example) most SMEs (by definition of their size) have little to spare.

The principles established in the Charter and Code must be seen in terms of good practices for employers to recognise, and for public authorities to support within academic research institutions and public research. We do not believe that they should become mandatory requirements, as the Green Paper now seems to suggest.

In particular, we are strongly opposed to making adherence with the Charter a prerequisite for participation and funding in governmental programmes to support R&D. Policing such a requirement would further reduce the cost-effectiveness of participating in public programmes regardless of the Charter’s qualities and regardless of whether a company is in fact already in compliance.

6. Is there a need for a European framework to ensure portability of social security provisions for researchers across Europe?

Response: The current lack of portability of social security provisions and pension rights does present obstacles for those whose jobs involve mobility for large parts of their careers. These obstacles need to be overcome not only for researchers but for everyone moving in Europe.

As cross-border mobility becomes increasingly important in the typical career of the researcher and knowledge worker, so does the need for portability of social security provisions. This requires first and foremost efficient administrative co-operation between national social security institutions. We agree with the Commission that attempts to modernise and simplify the co-ordination of social security schemes are important steps in the right direction.

With respect to the portability of supplementary pension rights, it is important to stress that any initiative should be designed in such a way that it does not harm the development of supplementary pensions in Europe. It is essential to ensure an appropriate balance between the costs for pension providers and benefits in terms of mobility.

We can see that a strong case for pilot initiatives to address these issues, extended to society as a whole when shown to be successful. The emphasis should be on effective mobility, not on differentiating research from other types of career.



7. How could ‘flexicurity’ principles (e.g. combining labour market flexibility with employment security) be applied to the researcher labour market?

Response: Flexicurity is considered key to modernising European labour markets. This also includes the researcher’s labour market. The essence of flexicurity is that it does not seek to organise trade-offs between flexibility and security. The ultimate aim of flexicurity policies for researchers should be to increase their adaptability and employability in order to enable them to grasp new employment and career opportunities on a flexible and dynamic labour market.

An essential element for a well-functioning European labour market for researchers is flexibility through a variety of contractual arrangements, including fixed-term and part-time contracts. Fixed-term is particularly important as a lot of research involves work under short- or medium- term contracts that are linked to a specific research project. In addition, fixed-term contracts allow companies, funding agencies and governments the flexibility to adjust their research agendas. Contract research encourages people to move, go abroad or change labs, thereby increasing dynamism on the research labour market.

Part-time work is also important. It allows researchers to better combine work and family life and makes it possible to respond to personal needs and preferences. Conducting research on a part-time basis might be particularly relevant to attract or retain women in research careers.

In order to enhance employment security, effective life-long learning should be put in place so as to provide researchers with the necessary knowledge and skills appropriate to a flexible and knowledge-based economy. In addition to specialised knowledge in a specific research area, researchers also need to acquire multi-disciplinary as well as soft skills that will enable them to cope more easily with change such cross-border mobility or moving from one research environment to another (e.g. from a public to a private research environment). In short, effective life-long learning policies should help to improve the employability and adaptability of researchers.

Finally, social protection systems need to be designed that they allow for smooth transitions on the labour market and which facilitates inter-sectoral mobility.

8. How could we increase the numbers and quality of researchers in Europe by attracting young research talents, ensuring real equal opportunities for men and women and exploiting the experience and expertise of end-of-career researchers, for example in advisory and training roles?

Response: It is particularly important that we attract research talent (young or otherwise) to come into Europe from outside, to ensure that we are able to access the skills and knowledge from overseas systems, to help create access to global research networks and to form the basis for potential collaborative work in the future.

At the same time, 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. Effective STEM careers advice must also be provided– demonstrating the wide range of career opportunities available to those with STEM qualifications.



9. **Should joint approaches be developed to increase the coherence and impact of the various schemes aiming at networking European researchers abroad as well as foreign researchers in Europe? Similarly, is there scope to increase the coherence and impact of European and national schemes for international mobility of researchers (for example by jointly developing international ‘Fulbright-like’ fellowships)?**

Response: Joint approaches encompassing all researchers currently based in Europe (including those in business) would be valuable, but, again, opportunities should be taken to network around addressing major research and innovation challenges at the European level.

10. **How could the specific education and training needs of researchers be addressed at all stages of their careers, starting with post-graduate and doctoral curricula, building on the Bologna process for higher education?**

Response: It is clear that there will be benefits when employers “know that a PhD is a PhD” (etc.) wherever a candidate has studied. However, too much attention to standardisation may result in homogenisation and a lack of breadth, depth, applicability or innovation.

A broad framework for graduate and post-graduate qualifications would appear to be a sensible option, plus opportunities to engage in continuing professional development accredited at EU level and on a lifelong basis. Standard qualifications should include some attention to key transferable skills (such as team working, knowledge transfer mechanisms and the like), but the emphasis should remain on depth of understanding. Courses should be short enough that graduate transfer into the labour market while still young enough to expect to progress across a range of jobs during their careers.

The example of the new UK/Irish Institute for Knowledge Transfer, established to support continuous professional development, networking and the sharing of best practice among knowledge transfer professionals from universities, business and the public sector, can be extended across the EU. A similar structure could be envisaged to support professional researchers in their training and career development. If established, this should be open to all researchers across Europe.

The status of research and innovation training must also be raised. Young researchers at postgraduate level should be considered as young professionals rather than still being considered as “students” or “still in education”; and their courses should not artificially condition them towards believing that certain career pathways are superior to others. Careers in research should be seen as one part of a wide spectrum of fulfilling opportunities presented by the knowledge economy.



DEVELOPING WORLD-CLASS RESEARCH INFRASTRUCTURES

11. How could the EU, on the basis of identification of needs by ESFRI, effectively decide on pan-European research infrastructures and their funding – the latter involving the Community (including possible synergies with EU cohesion policy instruments), Member States, industry, the EIB and other financial institutions?

12. Should a European legal framework be developed to facilitate, in particular, the emergence and operation of new forms of research infrastructures of pan-European interest, including electronic infrastructures? What other policy and legal changes are necessary to encourage the private sector to invest more in research infrastructure?

Response: Europe needs to establish and maintain world-class public research infrastructures in order to compete on a global scale. For research of a more fundamental nature requiring the most complex and costly facilities, this must inevitably be considered on a global scale, not just European. In other areas of research, there are typically too many scattered and fragmented facilities.

In general, there are too many separate institutions and too many substantially similar facilities. As research equipment and systems become more complex, more activities could be considered as requiring a more centralised “facility” and approach. (Care must be taken not to take this argument too far. Situations can and do change in both directions – recall for example attitudes towards establishing centralised or decentralised IT infrastructures.) The problem currently is that some facilities are poorly managed and maintained and are not clearly specified or promoted resulting in low efficiency in both scientific and economic returns. It must be recognised that facilities often require properly manned teams of people to maintain and operate them effectively and efficiently. Such people are not necessarily researchers, but still highly qualified scientists, engineers, technicians and managers.

The EU could use its coordinating position to support the consolidation, identification and promotion of facilities in Europe.

13. Is there a need to define common and transparent principles for the management of, and access to, infrastructures of European interest?

Response: There should be clear and transparent principles for access to research infrastructures that have been funded at the European level. Long-term agreements should be established to ensure that facilities can be operated, maintained and updated as appropriate so that they remain viable tools to meet the research and innovation needs of the EU.

14. How can the longer-term continuous improvement of research infrastructures be ensured, e.g. through S&T programmes associated with them and European electronic infrastructures?

Response: Infrastructure policy should start with the identification of priority challenges for the EU. This should be followed by identification of the infrastructure needed to meet those challenges. New infrastructures should then be sited where there are the research and exploitation skills and expertise to use them most effectively.



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.

The sense that businesses in the EU are ‘under investing’ in research infrastructures needs to be explored in more detail. Businesses operate on the global scale and the EU must make itself attractive to one-off research infrastructure investments that could be placed 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.

15. Should a global forum on research infrastructures be created, involving third countries and international organisations, where Europeans could speak with one voice (as they did in the ITER project on nuclear fusion research)?

Response: 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.

STRENGTHENING RESEARCH INSTITUTIONS

16. How can the resources of European research institutions be strengthened in the most cost-effective manner, in order to enable them to achieve excellence and compete on a world scale?

Response: The Green Paper implies that research should become more concentrated in centres of research excellence and in certain universities. This would be better framed in terms of creating appropriate critical mass and better linkages between research activities and the needs of industry and society, rather than focusing purely on academic excellence and institutional size.

European institutions will only be strengthened to compete globally if there is clear understanding of what is to be achieved. Many current activities seem neither to extend fundamental knowledge nor support the application of existing knowledge to meet the needs of society and national economies. Often, such programmes would be better if integrated into a larger whole, with the challenging problems tackled rather than avoided. It is the vast area of average research that needs to be challenged and reformed in all institutions and agencies, with the recognition that some areas of work should be discontinued. The notion that European public research is of a uniformly high standard is a myth.

Universities and other research institutions could be strengthened considerably by employing more mid-career researchers on a permanent basis to operate them and liaise with other research user communities (to engage with the needs of business in particular). In most instances, facilities are under staffed and the people who are involved have their “own” research programmes, projects and plans that preclude them from engaging with others.



17. How can research actors be better encouraged to create world-class virtual centres of excellence, such as in the context of the proposed European Institute of Technology, the FP7 'networks of excellence' and national and regional initiatives, and to share structures that pool the research management capabilities of several institutions?

Response: The drive for such concentration must come from the research actors themselves. To the extent that it is not happening, this may be because the incentives are inappropriate or inadequate, or because the need does not exist. The best way to encourage change is to set clear objectives and give people clear incentives to achieve these, rather than to mandate particular ways of working. The example of the proposed European Institute of Technology has demonstrated both the strengths and the weaknesses of current approaches and thinking, and the solution now foreseen seems much more likely to work than the original proposal.

It is very important that European governments develop flexible ways to fund substantial amounts of trans-national research without handling this through the Framework Programme. We believe that the Framework Programme, at least within its current remit, has probably grown as large as it should. The way forward is for greater flexibility rather than more centralisation of budget. In this respect, the JTIs proposed by the Commission in the domains of nanoelectronics and embedded systems are particularly noteworthy, as they use the best elements from the Framework Programme and the intergovernmental EUREKA approach to combine Community funding and national funding with industry resources into single trans-national programmes.

18. Is there a need for a European regulatory initiative to facilitate the creation of public-private partnerships?

Response: An EU level public-private partnership (PPP) regulatory initiative to facilitate their creation in the research, innovation and education sphere is not necessary at this time. In order to allow flexible PPP arrangements to develop across Europe, the priority should instead be on opening up markets to competition and enforcing transposition of the new EU procurement directives in member states. From a PPP point of view focus should be on clarification of how to proceed with a PPP rather than legislating for it. This would go some way to overcoming the significant barriers which still exist about the role of the private sector in delivering public services and would demonstrate the wider economic and social benefits that they can bring.

The development of PPPs across the EU Internal Market is at different stages – some countries, for example Spain, are making major strides in the use of PPPs in healthcare and other areas. Some other EU Member States have delayed implementation of the new procurement directives. Transposition of these directives is fundamental to the successful use of competition.

Spreading good practice in PPPs is highly desirable. UK experience has shown that opening up services to competition offers opportunities for increased value for money and increased service quality.

In the context of PPPs, a one size fits all legislative approach is not appropriate. While we do believe that PPPs are the way to proceed, we believe that a specific regulatory initiative to facilitate the creation of R&D and innovation oriented PPPs would unnecessarily complicate even more, an already complex situation.

19. How can the EU and Member States best stimulate the emergence of European and global virtual research communities, exploiting fully the potential of computing, information and communication infrastructures?

Response: Research actors from both the private and public sectors will only be encouraged to take part in the creation of virtual centres of excellence and research communities if there is a real need and a benefit from undertaking such work. The centres must be needs-driven, not policy driven.

While funding and other resources including facilities/infrastructure and management expertise should be available to research groups with a demonstrable need to establish virtual centres, this should not detract from or duplicate existing national and regional activities. As with other ERA interventions, they should also pass the 'added value at the European level' test. In ideal circumstances, there should be no need to establish defined funding streams for virtual centres and communities, they should just be considered as part and parcel of normal research and innovation operations – standard project funding criteria should not exclude their establishment.

EU and the Member States can stimulate virtual research communities by being enablers, providing the necessary structures, and catalyzing the process with financial impulses where necessary.

20. Should action be taken to develop: (i) principles for autonomy and for the management of research by research institutions, notably universities; (ii) shared criteria for the funding and assessment of research institutions, notably universities, giving stronger weight to linkages beyond academia, as well as to output and performance factors?

Response: The quality of publicly funded research is assessed too strongly on the basis of academic metrics based on numbers of papers and citation rates, and other important criteria such as the quality of linkages with business, informing policy or changes of practice in the public and private sector, and educational standards are generally not considered. It will of significant value when European institutions develop and agree simple and effective mechanisms for measuring the broader output value of research. A number of the other objectives in ERA, such as greater mobility between public and private research, are likely to follow from this.

SHARING KNOWLEDGE

21. Is there a need for EU-level policies and practices to improve and ensure open access to and dissemination of raw data and peer-reviewed publications from publicly funded research results?

Response: Improved knowledge exchange is one of the most important aspects of the Green Paper. In explaining this further, it is important to be clear about the different meanings of the word "Open" in terms such as "Open Innovation," "Open Source," "Openly Retrievable" and "Open Access".

To secure excellence in European Research, the broadest possible access to the state of the art knowledge needs to be provided to researchers be they in the public or the private domains. For smaller and younger companies in particular it is a major challenge to find out what is going on and what could be beneficial to the further development of their activities. It

can also be difficult for them to learn of opportunities to capitalise on what they know. The development of powerful and adequate literature search tools and integration of such strategies using these tools as part of the research curriculum is a necessity.

Sharing knowledge is at the heart of Open Innovation, and should be encouraged. Knowledge that is generated through public investment should be available in ways that will maximise the benefit for the community that paid for it. Open publication and open-access databases have a part to play in this process. But general principles aimed at making everything open, in the sense of “free of cost” or “free from protection”, will be counterproductive. Sometimes, dissemination will be more effective because proper care has been taken to preserve the potential value of the knowledge.

22. What should constitute a European Framework for knowledge sharing between research institutions and industry based on identified good practice and models?

Response: We strongly support the EU Commission in fostering co-operation between universities and industry. Finding adequate knowledge is one thing, but converting it into innovation is another, and very different skills are required along the way. Unfortunately, once the knowledge has been found, other problems are tending to appear, often related to Intellectual Property Rights.

At some risk of over-generalising, there are reports that the negotiation of IPR rights is becoming a serious problem in parts of the United States, of growing concern in some parts of Europe but still largely non-existent in Asia. At the same time, American and Asian institutes are often making a more deliberate effort to work together with industry than is the case in parts of Europe. The challenge is to find the right balance of approach, supported by the institutional attitudes and professional skills, to encourage better knowledge flows. The US Bayh Dole Act has had positive outcomes in many respects, but has also (perhaps inadvertently) misaligned the private interests of university technology transfer offices with broader public interests, including innovation and economic growth.

Always bearing in mind that cooperation is a means to an end (rather than the primary objective), a wide variety of models for cooperation has developed between industry and academia. Furthermore, different sectors require different IPR approaches. The key questions are about “who can make use of this knowledge and on what terms?” Whereas broad non-exclusive licensing is common in ICT because of standardisation, it is rare in the world of pharmaceuticals. In short, one size does not fit all. We need approaches that encourage useful knowledge transfer but do not try to “strait-jacket” the process.

Agreements on the use of intellectual property also have to be efficient for both sides, in order to continue the successful and effective co-operation between the industry, universities and public research institutions. Different approaches may be necessary to find suitable solutions in all cases.

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 need for more people, particularly in public research, who are adequately trained in handling these arrangements.

Within research cooperation, the framework for knowledge sharing is, in principle, laid down in the cooperation agreement. If the partner is suitable and cooperation therefore works,

knowledge sharing is straightforward. Practice depends far too much on the field of science to apply strict models.

The IP Charter

In this context, the idea of developing a European charter for the management of intellectual property from public research institutions and universities (IP Charter) to be used as a frame of reference and raise awareness about the professional and fair management of intellectual property in the European Research Area, as agreed by the Competitiveness Council on 25 June 2007, raises some potential concerns.

In our opinion, the proposed IP Charter should concentrate on highlighting out the issues that need to be addressed in a collaboration agreement and what the possible approaches and solutions exist, rather than prescribing (or seeming to prescribe) specific approaches, licensing models or other solutions. This is the approach followed in the Handbook on Responsible Partnering endorsed by industry, universities and the European Commission. A toolkit with best practices could also be useful.

Therefore, the proposed IP Charter should not be binding, as the Competitiveness Council has fortunately recognised. Adherence should also not be made a prerequisite for participation and funding in governmental programmes to support R&D.

State Aid Rules

As we stated at the time, we very much welcome the recent modernisation of the European Rules on State Aid for Research, Development and Innovation (R&D&I). Regarding IPR arrangements in the case of cooperation between an undertaking and a research organisation, these new rules (while probably not going far enough in some respects) are a significant and welcome step forward.

To foster fruitful collaborations between academia and industry, we believe that Member States also need to adapt their national programmes and make good use of the newly clarified and relaxed conditions under which contributions from research organisations to collaborative R&D project do not constitute State aid. Furthermore, Member States should be better aware that even if constituting State aid, such contributions from research organisations are allowable as long as the combined aid from direct aid government support and the contributions of research organisations to the project does not exceed the applicable maximum aid intensity.

The Role of Public Research Organisations

The key role of non-academic PROs (RTOs) and similar institutions in translating research outputs for the benefit of wider communities should be better recognised and supported by ERA policies. Particularly as technical complexity and pressures of time-to-market grow, the availability of strong institutions cultivating the “middle ground” between discovery and innovation is important feature of the innovation ecosystem. One spokesperson has described this in terms of Europe’s “Missing Mezzanine”, emphasising the fact that the direct movement of knowledge from university to marketplace is often an unrealistic objective in today’s economies.



23. Are there specific R&D-related issues, such as the grace period, joint ownership regimes and the research exception that need to be looked at from a European perspective?

Response: The question of grace period is being discussed in the context of international discussions on patent law harmonisation (SPLT). We can accept introduction of a grace period in Europe when there is a framework in place for international harmonisation, including adherence by the US, based on a true first-to-file system.

Regarding joint ownership of IP, as parties can define their relationship in their contracts, there is no need for EU legislative measures in this respect. If any harmonisation initiative were to be undertaken, the following basic principles would need to be clearly reflected:

- In developments for industry, research institutions should not insist on having IP-rights in their own name and receiving royalty payments in addition to the project fee.
- If basic research funded by public money leads to protectable subject matter in the end, which can be commercialized in different fields of industry, research institutions should own their IP and license it to industry. Basic research usually is funded from public money. Even so we believe royalties should remain with the institution. This, because public funding is money coming from the community spent for the benefit of the community.
- If protectable matter is created by cooperating institutions in basic research, the lead institution should be the owner of the IP and cooperating institutions should have their share in the royalties.
- If industry is cooperating (or funding completely or in part) with a research institution in basic research, resulting IP may still remain property of the research institution, and the contributing industry shall have a license, with exclusivity for their particular field. Research institutes must understand and make concessions to industry thinking in terms of competition.
- Regarding the research exemption, in the patent laws of the EU Member States, it is generally accepted that the rights conferred by a patent do not extend to acts done for experimental purposes relating to the subject-matter of the patented invention. In view thereof, there is no need for EU legislative measures in this respect.

However, any harmonisation initiative should not lead to less clarity as for example happened in the case of the “Bolar type provision” in Art. 10 (6) of Directive 2001/83EC as amended by Directive 2004/27EC.

24. What conditions should be created to promote innovative approaches in the way that science and technology is communicated, taught, discussed and valued by Europeans, and taken up for evidence-based policy-making?

Response: Public acceptance for innovative products is absolutely necessary. To be accepted one needs to understand. In most cases the idea needs to be “translated” to bring to the attention and understanding of the normal citizen.



This task can be fulfilled by the media be it highly scientific periodicals, journal or magazines for the interested layman (e.g. Scientific American, etc.) or features in the general press (e.g. Neue Züricher Zeitung, die Zeit, the Economist, etc.).

It can also be filled by organisations that try to bring science to the citizen e.g. interactive centres where the average person can come in contact with science to find out that these “difficult things“ play a major role in daily life and contribute to our daily life’s quality.

Sharing knowledge via open literature publications is appropriate in certain circumstances, but is actually effective only at spreading information within the academic research community. Researchers typically find it very difficult to communicate their outputs in a timely and effective manner to others who may be interested outside their own specialist field.

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.

Coupled to all of this, a cost-effective and efficient patent system in Europe with a common judicial system for patent enforcement is also a key factor to promote innovation and technology dissemination. In this context, lower patent application and prosecution fees for SMEs and publicly funded research teams could be considered.

OPTIMISING RESEARCH PROGRAMMES AND PRIORITIES

25. Should common principles be developed and used for peer review, quality assurance and joint evaluation of European, national and regional research programmes?

Response: Common approaches to the quality assurance of research across the EU would be valuable. Businesses and policy makers, for example, must be assured that the research on which they base their new products, services, policies etc. is underpinned by rigorous procedures and that, if required, the research can be replicated independently. Peer review, in particular, must be made more open.

The EU should seek and reinforce more uniform principles of funding research and development. This should be based on voluntary measure. One of the main goals must be to reduce bureaucracy. Peer reviews, quality assurance and joint evaluation are means to increase uniformity, but they can add to bureaucracy.

Peer review should include not only academic peer reviewers, but others with appropriate expertise from industry and business. How such people are to be rewarded for peer review tasks has to be considered.

Should these programmes be opened to participants from other Member States, and how?

In order to achieve real European research programmes, the national R&D programmes should gradually open to participants from other countries. The ability to implement fully national research programmes must however be maintained.



26. Is there a need for shared principles for the accountability of public research funding, which would enhance simplification of rules and procedures and increase its effectiveness and efficiency?

Response: There should be shared principles for the accountability of public research funding. Accountability and credibility is essential for ERA to receive the full support of all concerned, in particular where private sector funding or other input is sought. The EU should actively monitor and demonstrate where its publicly funded research has had an impact in terms of knowledge creation, economic competitiveness and improved quality of life.

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.

27. What participative processes need to be put in place to enable public authorities to jointly identify and decide upon major societal issues requiring a pooling of resources and capacities?

Response: Demand for research and innovation that help solve societal challenges and problems should be the objective for European funded research and development.

Participative processes are already in places which are focusing on societal challenges facing Europe. European Technology Platforms (ETPs), Eureka clusters, Joint Technology Initiatives (JTIs) are all contributing in this regard.

The ETPs have produced industry-driven Strategic Research Agendas, which already are having an impact on the Work Programmes of the Seventh Research Framework Programme. As they are now increasingly serving as pan-European references for national and even regional programmes, the ETPs are contributing to the ERA objectives.

The EUREKA initiative has also played an important role in shaping the ERA at the intergovernmental level, as a valuable complement to the Framework Programme at Community level. Arguably rather successful in its objectives, EUREKA has suffered from unpredictable funding, while Framework Programme budgets have continued to grow. This highlights again the need for Europe to develop flexible funding mechanisms that do not force attention to be either at Member State or at EU level, with nothing substantial in between.

The JTIs should go much further than the corresponding ETPs and the EUREKA clusters on selected specified topics. At the moment, for example in the ICT domain, Europe's R&D efforts are fragmented over activities in the Framework Programme, the ITEA and MEDEA+ clusters and many national and regional programmes. Making an end to this fragmentation has been one of the key objectives of the two JTIs that will focus on ICT (ARTEMIS and ENIAC) as proposed by the Commission.

We would raise a word of caution about inappropriate focus on major societal issues, because this runs the risk of a return to approaches based on "picking winners". Clearly, the ERA has a major role to play in addressing the challenges that affect the EU and its citizens, but these are not its only priorities. The ERA must also engage with business more effectively to identify challenges which, from their perspective, might require a pooling of resources and capabilities to address. ERA should have a strong user-focused research



dimension, encompassing skills development, knowledge transfer, infrastructure and a balance of research activity across the full spectrum from blue skies basic research to near market technology demonstration.

If the ERA does not support economic and business competitiveness in the EU by engaging more directly in the needs of business, the long-term impact will be an increase in societal problems as the EU declines as an economic power house.

Foresight, technology assessment and benchmarking should also be used as tools for finding the future needs and solutions. Better European foresight activities are needed for common priorities to be sought. Open-minded foresight would be useful as an eye-opener for both the public and private actors. Foresight includes also a benchmarking element, i.e. being informed about research and development activities, priorities and goals in other parts of the world. In order to make real innovation leaps, EU should be ready to take risks and invest also in new areas where there is not so much competition yet. Without being unduly judgemental about the quality that exists in individual European institutions, there is far more going on in these subjects that seems to inform the debate at European level.

28. On such societal issues of European or global dimension, how could principles and modalities be established and tested for joint programming of research, involving all stakeholders (research institutions, business, civil society etc.) and bringing together funding from EU, national, regional, business and philanthropic sources?

29. Should the European Community seek membership of intergovernmental research organisations?

Response: Yes, where appropriate. EU government-funded research is around one third of the OECD total, so establishing networks and collaborative activities which help tap into the other two thirds should be of value. Again, the focus of engagement could be around addressing challenging research and innovation problems facing Europe.

OPENING TO THE WORLD: INTERNATIONAL COOPERATION IN S&T

30. How can the European Commission and Member States work together to (i) define priorities for international Science and Technological (S&T) cooperation in close coordination with the other dimensions of external relations; (ii) ensure the coordinated and efficient use of instruments and resources; (iii) speak with one voice in multilateral initiatives?

Response: In terms of international cooperation for European Community funded research, focus on excellence should remain the first priority. A possible alternative priority could be to tackle objectives that can be most effectively managed by external cooperation. It is important to avoid S&T cooperative instruments being used for other political purposes, as this diverts resources from the overall goal of global leadership in the selected S&T areas where the EU has unique advantages.

Priority setting for international S&T cooperation should start with assessing the priority goals and mutual strengths of the parties involved. Each party should be willing to make a meaningful resource commitment to the project to demonstrate that the chosen area is indeed a policy priority. The combination of the parties should also result in a consortium that is noticeably stronger than its individual parts and is clearly capable of leading edge technology development. A realistic strategy that sets challenging but very limited and pragmatic goals will be needed to ensure efficient coordination and a strong one voice policy.



31. How can the European Commission and Member States work together to explore the potential of initiatives for international research programmes on issues of a global dimension, involving the Community, Member States and third countries?

Response: The global dimension should be addressed by working through the strategic priorities of the EU. Obvious examples in this context can be found in the field of Energy and Climate Change policies. For example, possible cooperation with the USA and China on carbon capture and sequestration in which specific facets of the technology development were split up amongst the partners could enable such a critical challenge be tackled more effectively (versus the alternative of each country duplicating the work). A similar case can be made for working with developing countries on second and third generation bio-fuels and bio-feedstock. Other areas requiring cooperation include where the threat or opportunity that is driving the need is emanating from a region outside the EU.

Whereas participants from any country can participate in the Framework Programme, and in some cases also non-EU participants can get EU funding, European R&D actors are not always equally welcome to participate in research programmes elsewhere. To achieve a level playing field, reciprocity should get more explicit attention when opening up European research programmes to non-EU participants.

32. How should S&T cooperation with various groups of partner countries be modulated to focus on specific objectives? Should complementary regional approaches be explored?

Response: Provided that fundamental principles such as a focus on excellence are not compromised technology development and innovation with other regions will need a reasonably flexible approach. In practice this means ensuring complete clarity on the individual project objectives but allowing considerable latitude for the technical experts to devise the most effective means of achieving that objective

33. How can neighbouring countries be best integrated into the European Research Area as part of the European Neighbourhood Policy?

Response: Creating a more seamless ERA which includes the European Union's neighbouring countries can be beneficial to both sides. Further improving the mobility of workers in both directions should be a priority. At the same time countries both within and outside the EU should be prepared to more clearly articulate their S&T priorities. Smaller or less developed countries will have to be very selective and realistic in choosing their areas of strength if they wish to develop world class capabilities in specific areas.

34. How can the EU's bilateral S&T agreements be made more effective? Are there alternative or complementary instruments that can be used, such as joint calls for projects, involving where possible the Member States?

Response: The EU's bilateral relationship with key countries needs to be taken to a different level if the ambitions of this green paper are to be realised. As with all initiatives a ruthless prioritisation will be needed if substantive progress is to be made. Jointly developed and funded calls would be an effective means of speeding this progress. Building on selective Member State programmes in this area would further strengthen this goal. As always there



would need to a careful balance between the desire to create critical mass and the need to avoid slowing progress.

35. How can common European agendas for S&T cooperation be promoted in multilateral organisations and agreements as well as with regional organisations?

Response: There is clear scope to create more coherence between the policy objectives of the EU and the many international organisations in which the Union (and more often) its Member States can participate. Organisations such as the United Nations, IEA and OECD articulate important goals for sustainability, resource use or poverty alleviation with one group of stakeholders whilst different groups are working on potential solutions. In addition to the prior points on climate change, groups such as the IEA could be leveraged to help direct multilateral efforts in multiple fields of energy production and use. The time has come to revise the principles and attitudes governing collective working of the Commission Services and national and international organisations, with a primary aim of obtaining better collective understanding and doing so more efficiently.
