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Executive summary

The UK supports the concept of the European Research Area (ERA) and welcomes the European Commission’s consultative approach to its development. This paper represents the UK’s response to the Commission’s consultation on the ERA Framework which was launched on 13 September 2011.

The UK considers that excellence should remain the main criteria for allocating research and innovation funds; that any new measures should be evidence-based and proportionate; and deliver demonstrable EU added value. Maintaining and enhancing the excellence of Europe’s research is central to the attractiveness of Europe as a place to do research. The UK’s view is therefore that the pursuit of excellence is the over-riding measure by which actions to support the ERA should be judged, and that achieving economic and social impact should be seen as the ultimate goal of funding research and training researchers in the ERA.

The UK recommends a practical, non-legislative approach to implementation, which builds on the best national policies.

The UK supports measures to promote researcher mobility and career development as a way of developing the European Research Area. We consider that future mobility programmes should better address industry/academia and inter-sectoral mobility, and ensure that the balance of funding between individuals and host institutions is equitable. We consider also that more could be done to promote mobility and skills development as part of pan-European collaborative research projects.

We see pan-European research infrastructures – from large facilities and computer systems to databases and museum collections – as forming the backbone of the European Research Area; they provide clear EU added-value by providing economies of scale and facilitating Europe-wide networks.

The UK recognises that global challenges call for global solutions, and that research often does not recognise geographical boundaries. The UK believes that international cooperation should not be treated as a separate activity but rather as part of a delivery mechanism of existing initiatives. But we consider that the nature of international cooperation should depend on the type of project.

We recommend that the Commission should build on the significant progress made in the last decade, for example the voluntary approach by member states to coordination of national research programmes with EU support from the Framework Programme.

The UK believes that the greatest benefits lie in aligning and coordinating member states’ national programmes on a voluntary basis rather than pooling resources under a “common pot” or other similar mechanism.

We suggest that the Commission should prioritise the issues which will make a real difference, taking into account the scale of the problem, how many member states are affected and so on. We believe that it is important to be realistic about what can be delivered by 2014 in a resource constrained environment.

Looking forward, greater synergy between Horizon 2020 and Structural Funding, including through the incentivising of funding different phases or partners of the same projects/ research
infrastructures from different EU funding sources, will boost participation by new Member States and Higher Education Institutions/ research centres in less advantaged regions, enhancing the quality of the research base across the ERA, and maximising the impact of EU funding overall.

What are the most important gaps to be filled for the achievement of ERA, and where the European Union should step up its efforts most urgently?

The UK has identified the following areas where further European Union actions could help to deliver ERA:

Researchers

- The UK’s Concordat to Support the Career Development of Researchers (www.researchconcordat.ac.uk) and its implementation strategy may offer a possible “Best Practice” model which could be applied more widely through the ERA.

- We suggest that surveys such as the UK’s CROS may provide a model for getting researcher feedback more widely across Europe.

- The EU should ensure good take up in all Member States of the HR Excellence in Research agenda.

- We encourage the EU to develop ways that Member States can take advantage of the potential opportunities to interact with EURAXESS-LINKS members with whom they have an affiliation.

- We encourage further co-ordination and mutual support between EU actions and those of other European organisations, such as the European Science Foundation and Science Europe.

- We suggest that a greater understanding at EU level of the measurable benefits of researcher mobility would be valuable. We would also be concerned to ensure that where mobility is supported through funding that the excellence of the research - and the individuals - should be over-riding factors.

Cross border operation of research actors

- We suggest that policy advisory bodies for ERA-Nets and JPIs should either include members who have responsibility for making policy in the relevant country, or that they consult properly with such policy makers so that they are fully mandated to take decisions.

- An “ERA-Net Light” mechanism has been suggested in several fora and we believe it is an idea that warrants further consideration. Funding to bring together consortia for bid development should also be considered.

- An overview is needed of existing coordination instruments, in particular in the “grand challenge” areas to assess what needs to be done, and which activities will bring the most added value when forming the ERA jigsaw puzzle.
• We suggest that participants in comparable initiatives are brought together to share experiences and exchange ideas. We consider that this could lead to more agile implementation.

Research Infrastructures

• The Commission could add value by disseminating information and encouraging access to Research Infrastructures (RIs).

• Introducing actions in the I3s to stimulate strong links to industry and other users will tap this currently under developed potential.

• Linking RIs to the International Dimension of the ERA, provisions to enable third country RIs to join I3s would bring benefits to European RIs and increase the influence of Europe on global strategy.

• The UK supports current initiatives to develop evaluation standards for the assessment of European RIs which can then be implemented at a national level in the creation of roadmaps and other national plans.

• Projects such as MERIL, which is creating a database of all RIs of European relevance, should be maintained on a permanent basis to ensure that researchers can easily find RIs relevant to their work.

Knowledge Circulation

• Knowledge transfer can be optimised by increasing awareness amongst researchers about Intellectual Property rules and stimulating the development and implementation of national strategies and policies on knowledge transfer.

• Researchers should be encouraged to expand their links to an interested community of potential ‘users’ as part of their contract with the Commission.

• The development of a Knowledge Transfer/Exchange Programme, which focuses on sharing existing scientific evidence and translating research into application, would be beneficial.

• Establishing an eCommunity or virtual Platform for Science Policy Interface experts to provide a mechanism to rapidly respond to policy questions and share Science to Policy best practice.

• Activities at the Science Policy Interface could be improved by raising the “policy literacy” of the scientific community and “scientific literacy” of policy making community through education, training, in-house and external secondments, awareness raising, reward mechanisms, etc.

• European research collaborations could also be improved by involving EU data centres to capture and store project data and research results to ensure they are available to the research community after the project has closed.
The Commission might consider how the ERA could be used to promote and share ideas and best practice in engaging and involving the public in research, and what part it can play in promotion and dissemination.

International dimension of ERA

The Commission should look at ways of internationalising the current Framework Programme and the upcoming Horizon 2020. Efforts should be made to embed an international approach in new and existing initiatives rather than developing standalone mechanisms.

Managing and monitoring the ERA partnership

The ERA-watch reports could be developed in more detail to cover monitoring and evaluation of progress of ERA initiatives.

Researchers

Research is about people: the most important factor attracting top quality people into research careers is the quality of the research being undertaken; excellence in research is of paramount importance. The question we need to answer is “What will be the tangible effect of the ERA from the point of view of an individual researcher on the ground?”

Supply of well-qualified researchers

What needs to be done to ensure:

a) that the European research sector produces and retains enough leading researchers?

We have to bear in mind that many of the key issues in this area lie firmly in national competence, in particular the roles of national education systems in encouraging STEM subjects at school and undergraduate levels. Action taken when people have reached doctoral level can only have a limited, if important, effect on overall researcher numbers.

In a national context, the UK has found that the prerequisites for producing and retaining excellent researchers are the ability to attract new blood into research, to provide an environment and infrastructure where excellent research can flourish and provide an appropriate level of resource for those who undertake research. Increasingly it is also recognised that attention to transferable skills and career development can be a route to improving the employability and impact of researchers (in the wider economy as well as in research performing organisations).

The UK produces nearly 17,000 doctoral graduates each year and the unemployment rate, at 3.4% is lower than for undergraduate or masters degrees. Just under half of doctoral graduates find jobs in university or HE-related research. We therefore believe that this level of production is broadly in step with the demand. We would anticipate that similar analyses of employment figures across the ERA would provide a good indicator that supply is meeting demand.

The retention of leading researchers is related to the availability of academic and research posts as well as the attractiveness of the research base. In recent years the number of new appointments to academic posts has been around 5,000 and demand for these is high from researchers UK-trained in the UK, in other, EU MS and overseas researchers. What do Researchers Do? produced by Vitae (http://www.vitae.ac.uk) shows that 3 years post-graduation 19% of UK-trained PhDs are in research posts in HE and 22% in teaching posts.
A strong indicator of successful progression into a permanent academic post is the holding of a personal fellowship awarded through rigorous competition. In recent years the UK research councils and other funders such as the National Academies and the Wellcome Trust have recognised that awarding personal fellowships to key individuals is increasingly important to accelerate the careers of future scientific leaders.

The UK’s **Concordat to Support the Career Development of Researchers** (www.researchconcordat.ac.uk) and its implementation strategy may offer a possible “Best Practice” model which could be applied more widely through the ERA. Certain sectors (e.g. in the pharmaceuticals field) may also offer good examples which might be generalised.

b) that researchers have adequate high-quality skills for the labour market (both academic and in industry)?

The quality of the research skills provided to UK doctoral candidates is assured by the implementation of rigorous standards by universities and through the audit processes of the Quality Assurance Agency.

In addition transferable skills and career development have become a standard part of the development of doctoral candidates and research staff in the UK. The development of researchers’ skills has undergone a significant cultural change in recent years and whilst the experience of the UK is probably not unique, we believe it is relevant to the ERA as a whole. In 2002 we identified some serious problems in the supply of people with the requisite high quality skills. 1 The problem was not seen in the overall number of first degree and postgraduate research students rather there were deficits in key disciplines such as physics, mathematics, chemistry and engineering. Other identified problems included: the financial attractiveness of the PhD, deficiencies in transferable skills and a lack of preparedness of PhD graduates for careers in business or academia. Once recruited, research staff faced a lack of a clear career structures and uncertain career prospects, unsatisfactory training and increasingly uncompetitive salaries.

The UK government response was sustained and targeted investment through its Research Councils UK and a basket of measures to address the identified problems. The instruments have included strategic funding from the Research Councils including support for the UKGRAD and Vitae Programmes to improve transferable and career development skills, boost the capability of the Universities to deliver such skills and provide better career information. Eight years on a significant cultural change has been achieved and the universities are well-equipped with the Researcher Development staff, knowledge and resources to carry this agenda forward without specific strategic actions by government2.

The key message for the ERA is that the application of appropriate instruments and funding in a consistent manner over a period of several years supported by clear expectations and practice sharing measures can achieve a sustained cultural change. Even in a period of fiscal constraint, targeted encouragement to improve the skills of researchers for all areas of employment could be undertaken and sustained; in allocating government funding care should be taken not to compromise quality through restricted resources.

**Attractiveness of researchers’ careers**

Is Europe attractive to leading researchers from third countries? If not, what could be done to make it the preferred destination?

We find it difficult to see evidence that it is Europe *per se* that attracts researchers (as opposed to individual Member States or, more clearly, institutions). As ever, the possibility of doing excellent

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1 SET for Success – Roberts 2002
2 Hodge report on implementation of the Roberts agenda
research is a key driver, as well as a perception that time spent in European research establishments has positive long term effects on career prospects.

In this context the UK has been visibly successful in attracting researchers from both third countries and indeed other EU countries. Examples include the doctoral level where 29% of those currently studying in the UK are from third countries and 13% are from other EU member states. There are also significant numbers of early career researchers, academic post holders and research fellows from third countries.

The attractiveness of the research base of the UK may hold some lessons for other MS or the EU. There is no single reason for this but, in addition to the obvious attraction of the English language, recognised factors, include: significant and sustained government investment in the research base; a plurality of funding sources, including a strong charity sector and industrial funding; a highly competitive funding environment promoted by peer review by funders and the RAE/REF which brings about a selectivity of funding based on excellence; autonomous universities and a long history of openness in the job market.

A further factor potentially influencing the attractiveness of the UK is the attention paid to the management of, in particular, early career researchers. This has resulted from significant investment by government and Research Councils UK in transferable skills and career development. Perhaps the most obvious result of this is the UK Concordat to support the career development of researchers which is in effect the UK implementation of the EU Charter and Code. We would like to draw attention to the national online surveys of research staff (CROS) and principal investigators/research leaders (PIRLS) which have been carried out in support of the Concordat and which have contributed significantly to our ability to review its implementation. These have been developed collectively but with ownership lying with the universities. The aggregate results of CROS\(^1\), in particular, allow us to determine impact of policy interventions such as the Concordat. We would suggest that surveys such as the UK’s CROS may provide a model for getting researcher feedback more widely across Europe. The interplay between the Concordat, government funding and existing employment law (including the UK implementation of the fixed term working directive) and the acknowledgement by the EU that 38 UK HEIs meet the HR Excellence in Research criteria has been effective. The UK sees this interplay of existing legislation and policy as a strong example of how priorities can be implemented without new primary legislation at UK or EU level.

We are supportive of the work done by DG Research and the Steering Group for Human Resources and Mobility (SGHRM) and support its continuing agenda. We believe that it is crucially important that Member States support the EU in maximising the value of the tools that have been developed. In addition to the career framework we support the attention to Innovative Doctoral Training and effective implementation of the HR Excellence in Research agenda – regarding the latter we would encourage the EU to ensure that take up in other MS approaches of what has been achieved in the UK as this will significantly strengthen the HR attractiveness of Europe. We observe the growth of the EURAXESS-LINKS networks in key areas of the world and the moves by the EU to develop these further. We also observe that these networks are likely to become increasingly valuable at MS level and we encourage the EU to develop ways that MS can take advantage of the potential opportunities to interact with EURAXESS-LINKS members with whom they have an affiliation. We note the co-operative approach that has been developing between the SGHRM and the actions of the ESF and EUROHORCS (now Science Europe) with regard to research careers.

**Is recruitment of public sector researchers transparent and open?**

We observe that other countries’ job markets are not as open as the UK and that there are examples in Europe where foreign nationals may be treated less favourably than home domiciled researchers. In our view this is a potential barrier. We are pleased that the EU has made progress in developing a

‘European Framework for Research Careers’ and we support its plan to use this structure to categorise jobs in the EURAXESS jobs portal (though we would not favour proposals to give any one portal quasi-statutory monopoly status across Europe).

Recruitment of researchers in the UK benefits from a very open employment market. UK universities are autonomous bodies and employment is essentially governed by a single body of law covering employment in all areas of the economy. In parts of the UK (Northern Ireland) additional rigorous equality legislation requires all vacancies to be publically advertised. University jobs are typically advertised on jobs.ac.uk and the national press. This openness is reflected in the first principle of the Concordat. (Principle 1: Recognition of the importance of recruiting, selecting and retaining researchers with the highest potential to achieve excellence in research). The Concordat also offers guidance on recruitment and selection: e.g. recruitment and selection procedures should be informative, transparent and open to all qualified applicants regardless of background. The 2011 CROS\(^4\) survey of researcher staff indicates good progress in improving the openness and transparency of recruitment.

The Universities and Colleges Employers Association (UCEA) provides UK higher education institutions with a framework for discussion, advice and guidance on a range of pay and employment matters.

It is, however, important to recognise that recruitment-related issues may not be easily amenable to purely legal approaches as they may be rooted in institutional cultures and behaviours which are hard to change in the short term. In this, as in other areas, we need to be careful about imposing solutions (e.g. barring internal appointments) which may aggravate other issues (insecurity of tenure, family responsibilities) which make research careers less attractive to particular groups.

**Transnational and inter-sectoral mobility of researchers in Europe**

**What actions could promote and facilitate the mobility of researchers (both inter-sectoral and transnational)?**

Mobility is not an end in itself: the end is to facilitate the undertaking of excellent research. Mobility is a vital tool but must always be seen in this wider context. We need a better understanding of long term issues and need to avoid simplistic views that, for example, addressing pensions and social security issues will inevitably result in more mobility.

We also need to be careful about reinforcing a culture of “obligatory mobility” which already exists in some disciplines and which makes research careers unattractive to important groups (e.g. women, couples with young families).

The UK Department for Business Innovation and Skills recently commissioned a report from Elsevier – (International Comparative Performance of the UK Research Base – 2011)\(^5\). This report indicates that the UK researcher population is highly mobile internationally and that researchers who have returned after an extended time abroad are significantly more productive in terms of articles published than those who have never left the UK.

Mobility for an individual researcher is likely to be influenced by the interplay between factors such as rules of the job market, work-life balance issues, the availability of posts and funding, and the ability to travel. In this context a nuanced approach is likely to be necessary. Some key issues (e.g. language skills, dual career families, schools, housing, visas and pensions) are not researcher-specific or involve policies “owned” by non-research related ministries. **We suggest that a greater understanding at EU**

\(^4\) ibid
level of the measureable benefits of researcher mobility would be valuable. We would also be
cconcerned to ensure that where mobility is supported through funding that the excellence of the
research - and the individuals - should be over-riding factors.

In practical terms there may be an issue over how mobility is supported. Funding schemes do not
necessarily match the ways in which connections are made and collaborations managed. Fixed-term
contracts are a pan-European issue. For example, there appears to be a need both (i) for support for
very short term mobility (of under 3 months) and (ii) for periods of over 36 months not currently provided
in the Marie Curie schemes, or necessarily in national level funding schemes either. In a recent
consultation researchers reported that projects often last for four years.

Regarding inter-sectoral mobility we are aware that, although there are many funding schemes in place
to encourage university-business collaboration, there are still real and potential barriers to exchange of
people. Some of the issues restricting such mobility are time constraints (or conflicting priorities) and
bureaucracy (or perceptions of bureaucracy), whereas others may be cultural - a perceived distinction
between “pure” science and “profit driven”, “targeted” research. People exchange is an important
vehicle for effective knowledge exchange and is part of an effective university-business interface. The
UK wants our universities to look again at how they work with business across their teaching and
research activities, to promote better teaching, employer sponsorship, innovation and enterprise. It has
therefore commissioned a report examining how to improve the effectiveness of this interface. The
report is due at the end of 2011.

What needs to be done to enable researchers to move to and from other career paths in a
flexible manner?

A key enabling factor is a good supply of quality information on the job market and the destinations of
researchers. The UK has developed a significant body of data published in the Vitae What do
Researchers Do? series (http://www.vitae.ac.uk). These data describe the typical career paths of
dothoral graduates and is based on a longitudinal cohort study of graduates from selected graduation
cohorts. The data covers all EU and UK domiciled doctoral graduates from UK universities and we have
plans to extend this to overseas-domiciled graduates. We note that the ESF Member-Organisation
Forum on Research careers is also addressing career tacking and mobility issues career and is already
co-operating with the DG Research.

As noted above, cultural issues may affect the ability and willingness of researchers to move between
sectors. These issues may be compounded by differing views of what matters for career progression;
researchers with a background in industry may find it harder to build up the “currency” of published
papers required to be taken seriously in academia while academic researchers may be seen as
impractical by industry. Again some sectors (e.g. pharmaceuticals)) appear to be better than others at
making and sustaining these links. There may be a role for linkages to the Knowledge Transfer part of
the ERA agenda (role of patents/spin outs etc) in promoting more flexibility. Flexible rules allowing
researchers to keep a foot on both sides of divide for longer or to go from one side to another on a part
time basis without risking their “core” job might also help. It may well be the case that instruments which
work well for cross-border mobility are les well adapted to inter-sectoral mobility. On the positive side,
the existence of specific subject communities with a clear common focus through e.g. one specific
journal or set of conferences means that people are still part of their community wherever they move
(e.g. fusion energy).

Cross-border operation of research actors

The reasons for promoting and supporting trans-boundary co-operation and co-ordination are many,
including: the increasing internationalisation and cost of research; avoiding unnecessary duplication of
effort; building critical mass; addressing common and trans-boundary issues; and developing a
common evidence base to underpin policy development. The UK supports the better coordination of
national research programmes and agrees that EU funding can play an important facilitating role here
e.g. for funding the costs of coordination in JPIs. While the benefits of collaboration are obvious we
should also bear in mind that the some level of competition between member states helps raise standards overall. Excellence in research as established through [joint] peer review is paramount. Cross-border collaboration must have clear added value benefits for research.

**What conditions or mechanisms would support further progress in research collaborations carried out through existing mechanisms?**

Regarding collaboration among research providers, the Framework Programme provides an effective common pot mechanism, funding a broad range of activities and should remain as the key EU mechanism for collaborative research funding.

The UK considers that beyond the Framework Programme the greatest benefits lie in aligning and coordinating Member States’ national programmes on a voluntary basis. Actual mechanisms should be flexible and designed collaboratively by member states and may span the range from improved communication and alignment of programmes to managed joint calls in specific areas. Pooling of resources under a true “common pot” principle is rarely appropriate except in very small scale initiatives and the virtual common pot, where each member state funds its own participation in recognition of the very different funding modalities across Europe has proved to be a workable approach. This flexible alignment can lead to economies of scale, enhanced networks, reduced fragmentation and, importantly, reduced timescales.

There should also be a role, as appropriate, for countries outside Europe to take part in joint programmes addressing global challenges. EU funding can play an instrumental role in facilitating this through support for coordination costs for programme management, conferences and governance structures and activities.

The UK would like to highlight the excellent work by Member States in developing a number of Joint Programming Initiative themes. In some instances these have taken a refreshing approach, for example considering food security, agriculture and climate change synergistically and addressing European cultural heritage in the context of climate change. Such interdisciplinary and multidisciplinary approaches should be built on in the future, informed by rigorous like-for-like evaluations where possible.

Voluntary guidelines have been developed by Member States for these JPIs and these have been useful in providing an open and flexible framework. Any redrafting of these guidelines should not result in them becoming more restrictive or didactic. Current and future JPIs should address genuinely large scale challenges and other mechanisms such as ERA-Nets should remain to coordinate more focused research, which may nonetheless complement JPI activity. The UK considers that JPIs should be driven by Member States with the Commission playing a facilitating role. The UK would welcome clarification of how the Commission views this relationship. EU-level coordination funding is therefore considered critical to the success of co-ordination actions from initiation and at a range of scales, but member state groupings should ensure that they consider early on the long term sustainability of these partnerships.

**Which specific factors can facilitate or hamper the cross-border operation of national research programmes jointly implemented by funding agencies, research-performing organisations including universities?**

There have been several studies that have included information on the barriers and enablers to national programme coordination\(^6\)\(^7\). Whether these are actually barriers, and if so, whether addressing them at a European level is appropriate, is debatable. For example, the fact that national policy for science and innovation is based on improving national scientific and technological capacity to address national

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\(^7\) “Drivers, barriers, benefits and Government support of UK international engagement in science and innovation”, Technopolis (2005)
priorities (policy level) is considered a barrier. Examination of national priorities across Europe will show that there are actually many common European priorities, but they are nuanced for relevance to individual systems which are the result of different climates, infrastructures, cultures and histories. The UK should therefore continue to develop policies that relate to UK requirements, but with reference to commonalities around Europe in order to share and benefit from relevant and comparable experience. Other barriers lie in national legislation and/or within national competence e.g. the transfer of funds to non-residents; insufficient volume of high quality proposals from national applicants (programme level); the programme does not have any explicit criteria that encourage transnational activities (programme level); the source of funding for the programme does not allow or encourage the use of programme funds for transnational activities (programme level); the administration of international science and technology activities is controlled by another department or agency (policy level).

In addition to these (see above) we consider the following as being highly relevant: availability of EU-level coordination funding; over-complex programmes/administrative burden; unwieldy governance; imposing a lowest common denominator can all hamper cross-border operation of research programmes.

These conditions will be variable across countries and so opportunities to incentivise change to remove barriers should be considered rather than a centralised top down approach.

There is still an issue about the right organisations being represented on ERA-Nets and JPIs. FP7 brought in stricter rules to ensure that participants in such activities are mainly from research funding organisations. However, there are still instances where research institutes that have no authority over the direction or funding of a national programme are participating in these activities. This can be a major obstacle in some countries fully participating in coordination activities, particularly where the intention is to have a joint call. This is not to say that researchers do not have a role to play, e.g. in an advisory capacity, and it is of course for countries to decide on their representatives. However, we suggest that policy advisory bodies should either include members who have responsibility for making policy in the relevant country, or that they consult properly with such policy makers so that they are fully mandated to take decisions.

Many research funding organisations have difficulties in finding the internal resource to participate in EU coordination of national programmes, particularly when this requires applying to FP7 for funding through a CSA, delivering work packages, and sorting through the complexities of EU project management and reporting. It also needs to be recognised that many such organisations or their personnel will be involved in EU funding mechanisms for the first time. It may be that a relatively low level of funding is needed to support coordination between funders e.g. to provide costs of travel and subsistence, which would be facilitated by a more simple funding mechanism. An “ERA-Net Light” mechanism has been suggested in several fora and we believe it is an idea that warrants further consideration. Funding to bring together consortia for bid development should also be considered.

Are there actions, other than funding, needed at EU level to resolve issues related to the Cross Border operation of Research Actors?

Funding is the main lever here - for coordination as much as for research itself. Although funding is often the key, providing much needed support for coordination activities, there is also a need to focus funder coordination activities in areas where there will be the most added value. Organisations are not able to participate in every initiative (though it is not necessarily the case that all countries have to participate in all activities, and can set their own priorities) and there seems, at times, to be potential for coordination fatigue with, in addition to ERA-Nets and JPIs, related initiatives such as the European Innovation Partnerships, KICs, etc. An overview is needed in particular “grand challenge” areas to assess what needs to be done, and which activities will bring the most added value when forming the ERA jigsaw puzzle.

Several recommendations were made in the ERA-NET Plus Review carried out for the European Commission in 2010, which are relevant to this debate including the need to address the risk of creating “outsiders” where strong research teams might be excluded because their funders have not joined an
action (particularly important when Community funding has been added to a joint call pot), and issues relating to European Commission funding rules needing to be used during evaluation processes, again where Community funding is involved with national money.

In addition we suggest that participants in comparable initiatives are brought together to share experiences and exchange ideas. We consider that this could lead to more agile implementation.

It also needs to be clear that joint funding of research does not have to be considered the “be all and end all” of coordination. There are a variety of other activities, including alignment of national programmes, common research agenda setting, information sharing, joint foresight, and smaller bilateral/multilateral activities within larger networks that can provide significant EU added value.

Research infrastructures

All research programmes and disciplines now have a component that requires research infrastructure (RIs). Large collections and data centres are increasingly required across all areas of research, with significant growth being seen in the biological and social sciences. Large machines, such as accelerators, contribute both to our fundamental understanding of the nature of the universe and also to our ability to develop the new materials of the future. An increasing number of these RIs need to be delivered at European or global level for reasons of resource. Even those at national level benefit enormously from working with their counterparts in other countries. World class infrastructure will attract world class talent: for the ERA to compete with research in other parts of the world it is essential that the strong position of the Research Infrastructure sector in Europe is maintained and developed. The Commission could add value by disseminating information and encouraging access to RIs.

How can the potential of existing Research Infrastructures (RIs) be better exploited?

Existing RIs serve their national communities and, increasingly, international research communities. The access component of the Infrastructure programme is now embedded in the Integrated Infrastructure Initiatives (I3s), which create European clusters of infrastructures in the same discipline to coordinate access and service improvement, and ensures that researchers from other countries are able to have the use of facilities that are not available in their home country, so that all researchers can access the best facilities for their project. The I3 tool has proved very effective and in FP7 has been extended to a wider range of disciplines. However, the limited budget means subjects scoring 13 - just short of the 13.5 out of 15 required for funding but fully justifying an award in terms of their research merit - go unsupported. The programme only grants one award per subject, so those without an award gain no benefit at all. Rather than creating a new mechanism, a more efficient deployment of resources to ensure every discipline with a core RI component has an effective I3 would greatly increase the exploitation of existing RIs. Ensuring that all RI sectors have a common data policy and are working closely with the e-infrastructures of the same discipline is vital to the delivery of this benefit. The UK considers that exploitation includes industrial access to RIs and taking research outcomes through to economic return. Introducing actions in the I3s to stimulate strong links to industry and other users will tap this currently under developed potential. Linking RIs to the International Dimension of the ERA, provisions to enable third country RIs to join I3s would bring benefits to European RIs and increase the influence of Europe on global strategy.

How can the next generation of Research Infrastructures of pan-European interest be best realised?

In building the ERA, the creation of the body the European Strategy Forum on Research Infrastructures (ESFRI) and the instrument the European Research Infrastructure Consortium (ERIC) have been significant steps in ensuring that Europe has in place the right mechanisms to facilitate the realisation of the next generation of pan-European Research Infrastructures. ESFRI has identified the RIs which
member states collectively see as vital for each discipline; the Framework programme has provided resources to help develop the cases and consortia; and the ERIC regulation provides a legal framework within which new infrastructures can be formed. The UK does not consider that Europe needs further statutory action in the RI sector to facilitate new RIs. Their natural development time can be long given the need for the development of the science case, the proving of the core technologies, the negotiation of the partnership and the provision of the funding. Time is needed to enable the current arrangements (ESFRI and ERIC) to have their full effect and for Governments to identify the necessary funding which is unlikely to be fully available by 2014 given the current economic situation. If realising the ERA by 2014 means having the necessary toolkit in place then having ESFRI, ERIC and the FP funding mechanisms to support them suggests that this has already been achieved. (Many of the first generation ERICs are data centre clusters which emphasises that e-Infrastructures must been seen as full components of this programme whose implementation is vital to the ERA).

How could national, regional and pan-European research infrastructures best contribute to raising the quality of the research base across the ERA?

A strong RI sector is an essential component of a high quality research base since some types of research can only be done with infrastructure support. To maximise the benefit to researchers, all RIs should have staff dedicated to working with outside users to ensure that their use of the facility is as productive as possible. RIs are also significant training grounds for young researchers where, in addition to conducting their research, they learn about team work, international collaboration and the integration of technical and computing systems to deliver successful outcomes. RIs should be expected to have explicit programmes for the support of training.

RIs also have a long history of international cooperation and can serve as models for other disciplines which are seeking to develop international partnerships. The combination of cooperation and competition - inherent in initiatives such as the development of the detectors for the CERN LHC - is something from which others could learn.

Are there any other actions other than funding, required at EU level to maximise the contribution of Research Infrastructures to the ERA?

As commented above, the existing instruments need time to take their full effect in the RI sector. The UK supports current initiatives to develop evaluation standards for the assessment of European RIs which can then be implemented at a national level in the creation of roadmaps and other national plans. However, I3 consortia must still be able to include RIs which have not passed such evaluation, perhaps as associates, in order for them to be able to improve their quality through close working with high quality partners.

Links between awards made by the ERC and relevant RIs could be profitable if they eased access by ERC award winners to the necessary service time, but there is no evidence at present that this is a significant barrier. Projects such as MERIL, which is creating a database of all RIs of European relevance, should be maintained on a permanent basis to ensure that researchers can easily find RIs relevant to their work.

Knowledge circulation

Knowledge transfer

What conditions or mechanisms could support the transfer of knowledge generated by public research organisations and universities to business and society in Europe?

Over the last decade progress has been made with regard to knowledge transfer and management of IP from public research in Europe. However, there are differences between the more experienced...
Member States and those having developed a more recent interest in this area. The necessary legal framework appears to already be in place and the Commission’s recommendation (C(2008)1329) on the management of intellectual property in knowledge transfer activities, for example, appears to be an effective tool to achieve progress and voluntary harmonisation by means of promotion of best practice rather than centralised European legislation. The ERA framework should build upon achievements already made at the same time as seeking to address areas where progress has been slower. Making things more restrictive is not the way to achieve this goal. **Knowledge transfer can be optimised by increasing awareness amongst researchers about Intellectual Property rules and stimulating the development and implementation of national strategies and policies on knowledge transfer.** For example, the UK recently published a guide to Intellectual Asset Management for universities (www.ipo.gov.uk/ipasset-management.pdf) which encourages the adoption of strategies at an institutional level so that organisations develop and implement knowledge transfer strategies aligned with their institutional principles and business models. In this way, universities can optimise the benefits of the intellectual assets created by their staff and students.

Tools are available to assist universities and public research organisations in their dealings with businesses. The Lambert toolkit (http://www.ipo.gov.uk/whyuse/research/lambert.htm), for example, provides a set of model contracts (covering a range of typical IP scenarios), a decision guide and extensive educational resources and aims to help users conduct effective negotiations in public-private sector collaborative research. **Researchers themselves should seek to expand their links with an interested community of potential “users” in business etc. They should be encouraged to do this as appropriate as part of their contract with the Commission.**

EU funded research and innovation must deliver value over and above that of the national research programmes, with knowledge transfer playing a vital role in this. Evaluations of FP6 and previous programmes have focussed on planning and organisation so that there is currently a lack of understanding of the impact of the programme over time on, for example, policy, industry and the research community. The Commission’s on-going activities relating to the impact of FP7 and previous framework programmes are, therefore, important in highlighting where resources should be targeted in any future programme.

The impact of EU programmes, such as Horizon 2020, will depend on the active translation of research outputs as part of adequately funded knowledge exchange mechanisms. However we believe that the current lack of accessibility to project outputs is a barrier to their uptake and significantly reduces the potential impact of the programme. For research that underpins policy, effective processes are needed to allow systematic review of the evidence coming from EU funded projects so that it is in a form, and delivered to a timescale, needed by end users. In addition, the funding of EU research needs to be better connected to policy development and implementation processes to ensure outputs will be both timely and relevant. Specific initiatives could include:

- **The development of a Knowledge Transfer / Exchange programme, which focuses on sharing existing scientific evidence and translating research into application, would be very beneficial.** We do not believe that partnerships should be a substitute for effective communication. Therefore, engaging end-users through knowledge transfer is essential to increase the value and impact of the Framework Programme.

- **Establishing an eCommunity or virtual Platform for Science Policy Interface experts to provide a mechanism to rapidly respond to policy questions and share Science to Policy best practice.**

- **Activities at the Science Policy Interface improved by raising the “policy literacy” of the scientific community and “scientific literacy” of policy making community through education, training, in-house and external secondments, awareness raising, reward mechanisms, etc**
European research collaborations could also be improved by involving EU data centres to capture and store project data and research results to ensure they are available to the research community after the project has closed.

There is a real need to achieve greater impact from existing knowledge. Therefore, a European programme focused on Knowledge Exchange and Transfer to translate European environmental research into use would be welcome. These Knowledge Transfer instruments should also consider the needs of the audiences they wish to engage with and research outputs should be made more accessible to end-users. This could include a review of existing knowledge transfer activities to improve channelling this work to address the Grand Challenges.

Dissemination and the communication of outputs should not be viewed as a post-project activity. It should be integrated throughout the life of the project and should be financially incentivised. Also, knowledge gathered from contracted studies should be made available in an easily accessible way so end users can capitalise on this research. Increasing the role of end-users in projects, programme and theme planning would open up projects to those who will use and implement their results by creating a role for end-users on project steering or advisory committees with real power. There is also a role for smaller, shorter-term pieces of work and instruments to provide more responsive solutions to immediate problems, e.g. lighter-touch projects, with a single or a reduced number of contractors, and an emphasis on engagement and dissemination.

How should a strategic relationship between the public research sector and the private sector best be established and strengthened?

The UK has a good record of helping facilitate academic-business interaction in the field of IP, having developed a number of tools to aid the public research sector in collaborations with the private sector. People should be encouraged to commercialise their IP and we should look to find ways to help them do this. The provision of shared resources to enable agreements to be reached is one way of doing so. The Lambert tool kit, for example, provides a set of model contracts (covering a range of typical IP scenarios), a decision guide and extensive educational resources and aims to help users conduct effective negotiations in public-private sector collaborative research (www.ipo.gov.uk/whyuse/research/lambert.htm).

Open access to publications and data

The UK Government is currently in the process of formulating its policy position on a range of issues relating to transparency including expanded access to research findings. A number of initiatives are already underway in the UK: the Working Group on Access to Published Research Findings to be chaired by Dame Janet Finch expects to produce a report in the Spring of 2012 including recommendations on how the right environment for expanding access to research publications may be created and what business models may be most appropriate to achieve both commercial sustainability and improved access for information users.

The UK is considering how best to exploit the extensive body of data held by government departments. This ‘administrative’ data will be the subject of a study by a Task Force, to be chaired by Sir Alan Langlands and including the ESRC, the Office of National Statistics (ONS) and the Departmental Directors of Analysis Network (DDAN). The government will consider its recommendations with a view to opening up access to anonymised administrative data for possible use by the private and public sectors in support if the transparency and growth agendas.

Several consultations have most recently been initiated by the UK Government relating to providing greater access to and economic use of publicly owned data. A key consultation on Open Data, ‘Making Open Data Real: A Public Consultation’, focuses on enabling data that is collected or created in delivering public services being made available for new and potentially radical applications, to fuel the Government’s drive for innovation and economic growth. The UK Research Councils are committed to the guiding principle that the outputs of publicly funded research must be made available to the public.
and remain accessible for future generations. This guiding principle applies both to the published outputs of research and to the data generated from the research process.

Can open access (free online access) to scientific publications and data enhance knowledge circulation in the European Research Area?

Open access schemes promoting easier access to knowledge could provide a possible solution. e.g. IP model developed by the University of Glasgow in partnership with King’s College London and the University of Bristol (http://www.gla.ac.uk/businessandindustry/technology/easyaccessipdeals/). Other examples of good practice include the Economic and Social Research Councils (ESRC’s) ‘Research catalogue’ repository (http://www.esrc.ac.uk/impacts-and-findings/research-catalogue/index.aspx) and BBSRC/MRC/ Wellcome Trust’s UKPubMed in the life sciences http://ukpmc.ac.uk/.

Public engagement

What are the best approaches to encouraging public engagement with scientific issues as a means towards fostering a confident public comfortable with scientific progress?

In the UK we consider public engagement vital to realising the full potential of our significant investments in science and research. We have a proud tradition of engaging the public with research and have a full spectrum of national, local and individual initiatives to do so. The UK’s research funders underlined the importance they place on public engagement through the Concordat for Engaging the Public with Research. The aim of the Concordat is to create a greater focus on and help embed public engagement with research across all disciplines in the higher education and research sectors. The UK also has the National Coordinating Centre for Public Engagement alongside a network of Beacons - university-based collaborative centres working to support, recognise, reward and build capacity for public engagement.

The UK has a national centre for public dialogue in policy making involving science and technology issues. Known as Sciencewise-ERC, it is a national resource to support public bodies to commission and use public dialogue to inform their science and technology policies. Public dialogues run by Sciencewise-ERC bring together members of the public, policy makers and scientists to discuss and come to conclusions on the social and ethical issues raised by new science and technology. Recent dialogue projects include: geoengineering; synthetic biology; and animals containing human material. This approach allows public bodies to listen and respond to public concerns and aspirations and was set out in The Government’s Approach to Public Dialogue on Science and Technology. All Sciencewise dialogues are evaluated for their impact on expert and public participants and their impact.

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8 These include: National Science and Engineering Week (www.britishscienceassociation.org/nsew/); British Science Association branches promoting local engagement activities throughout the UK; a network of over 27,000 STEM Ambassadors supporting enrichment & enhancement activities in schools to inspire the next generation (www.stemnet.org.uk/); the National Science and Engineering Competition for young people (www.britishscienceassociation.org/web/NSEC/); the Big Bang Fair (www.thebigbangfair.co.uk/home.cfm) – a national science fair together a with number regional events; the Science Media Centre (www.sciencemediacentre.org/pages/) – an independent press office for when science hits the headlines; a series of science festivals throughout the UK, including the British Science Festival (www.britishscienceassociation.org/web/BritishScienceFestival/); online initiatives such as I’m a Scientist, get me out of here (www.imascientist.org.uk/); and the annual Festival of Social Science (http://www.esrc.ac.uk/news-and-events/events/festival/index.aspx)

9 http://www.publicengagement.ac.uk/why-does-it-matter/concordat

10 http://www.publicengagement.ac.uk/

11 www.publicengagement.ac.uk/about/beacons

12 www.sciencewise-erc.org.uk/

on policy. Commonly reported impacts include public participants developing greater trust in public policy-making processes and participating policy makers reporting better relationships with stakeholders and public participants.

The UK also carries out research into public attitudes to science every three years through a national survey. This survey explores the public's attitudes towards science, as well as issues such as trust in scientists, where and how people get information about science and the extent to which the public want to be involved in science and research policy. This has been carried out since 2000 and, as such, trends measured form part of the evidence base underpinning wider activity. For the first time in 2011, a survey exploring young people's attitudes to science was carried out alongside the main survey.

In 2009 five expert groups, coordinated by BIS, developed action plans covering Science and Learning, Science and Careers, Science and Trust, Science for All (Public Engagement) and Science and the Media. These action plans were published in 2010. Through these a variety of organisations, from Government and public research funders to businesses and charities, committed to taking forward actions in their respective areas. These actions varied from promoting hidden science careers on an interactive map, to coordinating the training available to science journalists or assessing the motivations of business for engaging the public. More information can be found on the expert groups' website.

The Commission might consider how the ERA can be used to promote and share ideas and best practice in engaging and involving the public in research, and what part it can play in promotion and dissemination.

International dimension of ERA

The UK considers that international collaboration is not a separate activity and should be seen as part of the delivery mechanism of existing initiatives, and mainstreamed within other EU programmes where this makes sense, but recognising that not all research requires this approach. The nature of the collaboration should depend on the type of project; it may be more appropriate for collaborative research involving non-EU countries to address global challenges rather than close-to-market demonstration.

Collaboration with ‘third countries’ should be developed with full participation of relevant actors from member state funding organisations, recognising the depth of knowledge needed to ensure that due consideration is given to all issues.

Key international partners should also be fully engaged in discussions to ensure effective design of mutually acceptable policies and practices.

The European Commission should look at ways of internationalising the current Framework Programme and the upcoming Horizon 2020. Efforts should be made to embed an international approach in new and existing initiatives rather than developing standalone mechanisms.

Co-ordinated multilateral activity supported by national funding streams is the responsibility of individual member states and their respective funding organisations. The Commission should recognise individual sovereignty in these actions but may consider opportunities to allow Framework Programme funds to incentivise broader European participation in such initiatives, building on the many strong and productive multilateral partnerships already in existence. This approach can offer critical mass advantage for smaller member states.

16 interactive.bis.gov.uk/scienceandsociety/site/
Managing and monitoring the ERA partnership

The ERA Framework provides an excellent opportunity to clarify what the ERA will mean in practice and where EU-level action can add value. It is important, therefore, that it clearly articulates the role of the EU in supporting member states, who have main competence in this area.

The UK suggested approach to providing stronger bottom-up input by stakeholders would be through existing pan-European stakeholder groups, such as the European University association, LERU, Science Europe and so on. That approach draws on existing expertise and avoids creating a new layer of bureaucracy which does not add EU-level value. The ERA-watch reports could be developed in more detail to cover monitoring and evaluating progress of ERA initiatives.

The UK supports a broad range of success measures in line with the UK Research Excellence Framework. These could include both output and impact measures. The former category should include: registration of IP such as patents and licences; dissemination of results through refereed publications and conferences; adoption within standards; technology prototypes; and further research collaborations with the same partners. Indicators of success further down the line could include: cross-EU placements of post-grads in business; active European networks of businesses and academics following up FP themes; research funding attracted for follow-up projects, start-up firms and commercial exploitation; and impacts on EU and international policy development and implementation. Additionally, the opening-up of further related strands of research and innovation over a longer timeframe should be measured. The challenge is usually in tracking and capturing these indicators after projects are complete; attributing them to FP-funded projects; and maintaining a consistent record of them for ongoing analysis of impact – without creating additional bureaucracy.

The UK would like to see future funding concentrated on funding actual research programmes of varying scales. These should support evidence-based policy and demonstrate: an increased emphasis on dissemination and knowledge transfer (including across projects); a move towards open information and access to results as appropriate; a greater focus on innovation and the application of research outcomes; and links with business, education and wider society considered from the outset. Where appropriate, funded projects should have to indicate from the outset how they could deliver EU added-value and this could be factored into the assessment process.

Gender and ethics

The UK agrees that women should play an increasing role in the science and innovation agenda. However, much of the responsibility for this lies with member states, their institutions and society as a whole, and there is sufficient legislative protection in place which actively implemented provides suitable remedies. As with other issues concerning equality of opportunity, the UK does not support legislation in this area but considers that the EU could do more to develop the evidence base, especially in the area of working practices, and career development (including barriers to choice, support for return to work especially after maternity leave, and drop out rates).

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