

**From Challenges to Opportunities:
Towards a Common Strategic Framework for EU Research
and Innovation Funding**

**RESPONSE FROM IRELAND
TO THE EC GREEN PAPER**

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Executive Summary

Ireland welcomes the proposal for a simplified and integrated European framework which will provide complementary supports across the research and innovation cycle from conception to commercial application. It sees this approach as combining effective existing mechanisms (such as the Co-operation and People Programmes) and new mechanisms developed during the current Framework Programme (such as Joint Programming) in a coherent system with other EU mechanisms (such as components of the Competitiveness and Innovation Framework Programme and the Structural Funds). A period of well-managed transition will be needed in progressing in a measured way from the existing system for research and technological development to a common strategic framework for research and innovation. No further large new measures are seen as necessary at this time, but rather a period of consolidation.

There is an opportunity for the Member States of Europe to consolidate their efforts, maintain their strengths and develop, from largely existing mechanisms, a fully complementary set of funding instruments for European research and innovation. Increasingly, in Member States and across the EU, there is a drive towards supporting not only academic research and technological development, as in the past, but also in fostering both better development and greater use of the outputs of those activities. The instruments of the Framework Programme were not developed with this breadth of objectives. A substantial effort will be required in ensuring that the overall system is suited to the support of the full research and innovation cycle including eco-innovation, non-technological innovation and close to market innovation. Consultation, communication and application to the task will be needed to successfully make that transition to an inclusive and coherent strategic framework and it will take time.

In this context, Ireland advocates the following key priorities in building a common strategic framework for research and innovation to meet the socio-economic goals of the European Union:

- ***Fostering Co-operation:*** Ireland strongly supports the continuation of the Co-operation Programme, which provides an open, robust and inclusive competitive mechanism to fund, across higher education institutions and the public and private sectors, both (i) small, strategically and scientifically important projects by small groups of researchers and (ii) large consortia. Its budget should be maintained as the research undertaken under Co-operation Programme funding will strengthen European research and complement Joint Programming and other initiatives. Ireland would welcome additional support for bottom-up activities through the Co-operation Programme.
- ***Developing Researchers:*** Ireland advocates both continuing and growing the Marie Curie Actions to facilitate mobility through flexible mechanisms which sustain researchers at all points in their careers and which encourage them to develop diverse career paths. Marie Curie Actions should be extended to include the funding of structured education and training through doctoral programmes and doctoral schools.

Good policy practices from Marie Curie supporting doctoral training and researcher career development should be mainstreamed across the common strategic framework including, and as a priority, the European Research Council. The exchange of industrial and academic expertise and experience can help to foster innovation so mobility schemes across the strategic framework should more actively engage with the private sector.

- **Mainstreaming Innovation:** Ireland strongly endorses the provision of supports which are characterised by speed both of evaluation and of allocation of funding; flexibility in rules and procedures; openness to the re-orientation of projects and the re-direction of resources; trust in accounting procedures; and continuity - across the full innovation cycle including technology demonstration, diffusion and deployment. European research and innovation should be enabled to achieve its maximum impact in this way, in publications, patents, training, products and services for socio-economic and public good. Measures should be put in place for supplementary support of commercialisation of outputs arising from European research, facilitating exploitation by industry and, in particular, assisting SMEs.
- **Commercialising Outputs:** Ireland recommends that, as a principle, where an innovation or idea emerges from EU funding, a supplement should be made available, through a competitive process, to enable commercialisation to take place. Funding could be used, for example, up to the point of market validation and initial commercial deployment. Funding supplements to aid such proof of concept and similar commercialisation activities should be available for Marie Curie grant holders and for holders of collaborative grants under the Co-operation Programme.
- **Supporting SMEs:** SMEs are the means by which the greatest proportion of innovation is achieved in Europe but they are finding it difficult to access finance from Europe which is readily accessible by larger enterprises. Ireland proposes that there should be targeted supports which are specifically SME-friendly. In addition, the current financial mechanisms should be reviewed in order to assess their suitability to fund the full range of research and innovation activities across the full set of participating organisations, enabling SMEs as well as larger enterprises.
- **Addressing Grand Challenges:** Ireland acknowledges that addressing grand challenges through concerted efforts by Member States could lead to more effective, and faster, solutions than any Member State is likely to achieve alone. The tool of Joint Programming should be implemented and tested at this stage as one mechanism to address grand challenges. In particular, Ireland sees merit in addressing the challenge of active and healthy ageing as it is relevant globally and is a horizontal theme across sectors such as health, information technology, food and environment. The outcomes from established mechanisms such as the Co-operation and People Programmes will complement Joint Programming activities, and vice versa.
- **Promoting Inclusiveness:** The mechanisms and funding instruments of the common strategic framework must not lead to the exclusion of researchers from particular Member States, institutions or companies. In particular, participation in and access to the results of Joint Programming Initiatives and Knowledge and Innovation Communities (KICs) should remain as open and inclusive as possible.

- ***Implementing Consistently:*** Consistent implementation of the rules of the common strategic framework will be vital. Ireland would welcome the appointment of an Ombudsman for Research and Innovation, in addition to the recently appointed steering group of senior officials from the Commission departments and agencies. The Ombudsman would provide a decision in cases where there are significant differences in interpretation and understanding and would be a unique decision maker able to resolve such issues with clarity and finality.

The aim in all these priority measures is to establish a strong mechanism to support education, research, innovation and entrepreneurship through a balanced and accessible support framework across academia, the public and private sectors throughout Europe. These priorities are expanded upon in individual responses to the questions in the Green Paper, and additional issues addressed.

This contribution by the Irish Government, based on a wide stakeholder consultation, represents a considered reply to the 27 questions posed by the Commission in its Green Paper. As such, it should be regarded as a first stage in defining the guiding principles, structure and content of the common strategic framework.

The next, more substantive phase of the development of a common strategic framework must seek agreement on the content and specific thematic priorities and/or grand challenges to be addressed. It must also set out a clear transition from the current Framework Programme to the common strategic framework incorporating effective parts of the Competitiveness and Innovation Framework Programme (CIP) and including the European Institute of Innovation and Technology (EIT).

Without pre-empting Ireland's position in the negotiation of the structure and content of the common strategic framework, which will be informed by the national research prioritisation exercise which is currently underway in Ireland¹, we support the grand challenges of the 21st century identified at European level (such as health; food; agriculture; water; energy; climate change and the marine environment) and the opportunities for novel solutions using current and future technologies (with ongoing support for enabling technologies such as ICT, biotechnology and nanoscience and for underpinning policy research). The challenge for Europe will be to manage the transition from the current thematic priorities to a system including broader innovation objectives and achieving support for the full span of the research and innovation chain from basic research to commercial products and services under a common strategic framework for research and innovation.

¹ Ireland's national prioritisation exercise is based on a structured national stakeholder engagement and will identify priority areas to be underpinned by publicly performed research and development.

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In this section, each question in the European Commission Green Paper is taken in order and followed by the national response for Ireland². The responses to individual questions also provide greater detail on the priorities identified in the Executive Summary.

Working together to deliver on Europe 2020

1. How should the Common Strategic Framework make EU research and innovation funding more attractive and easy to access for participants? What is needed in addition to a single entry point with common IT tools, a one stop shop for support, a streamlined set of funding instruments covering the full innovation chain and further steps towards administrative simplification?

Ireland advocates the *continuation of the most effective measures of the Framework Programme* into the new strategic framework and the incorporation of measures to support innovation across a wider range of activities. New mechanisms such as Joint Programming will require time to be integrated into and evaluated as part of the framework if they are to be successful. A period of transition will be needed in going from the current system to a strategic framework encompassing innovation, in all its forms, as well as research and technological development.

A common, simplified and strategic approach to research and innovation funding at EU level must ensure *complementarity between programmes* such as the Framework Programme, the Competitiveness and Innovation Framework Programme (CIP) and Cohesion and Structural Funds. The framework which is developed over time should capture the best parts of the existing mechanisms and reject those which are not judged to be working.

This streamlined approach for research and innovation must be based on a *comprehensive and coherent suite of instruments*, with the same basic principles and procedures across the system, so that the full innovation cycle can be addressed. The measures to support that cycle include training, education, infrastructure, knowledge exchange, research, development, demonstration, deployment, dissemination and policy development. Financial mechanisms should not be overlooked as measures within the framework which will have to be structured so that they meet needs across the full range of research and innovation activity as appropriate.

Ireland advocates a strong degree of continuation of the positive aspects of the Seventh Framework Programme (FP7) into the new framework to enable us to build on European strengths. This is a time to consolidate and reap the benefits of existing mechanisms. *Strategic research – within thematic priorities* – should continue to contribute in large measure to creating a scientific, technological and socio-economic basis for decisions in the many fields of European and national policy, such as sustainable development. The knowledge, ideas and skills derived from research and innovation are also important tools to support teaching and learning in the higher education system, underpinning future innovation and social development.

² The national response has been informed through a national consultation process led by the Advisory Council for Science, Technology and Innovation (ACSTI) and managed by Forfás, Ireland's policy advisory board for enterprise, trade, science, technology and innovation.

In *improving the administrative aspects* of the framework, it is Ireland's view that:

- Open access and inclusiveness should be continued and fostered in the new framework;
- The administrative burden on projects should be reduced across the board, particularly those hindering participation by SMEs. This point will be addressed in further detail later in this response;
- Simplification should take place in the pre-proposal and proposal stages as well as after project approval, and multiple evaluations of projects should be avoided;
- Good practice must be exchanged between support mechanisms and the use of successful administrative tools (such as the Participant Portal and the Electronic Proposal Submission Service (EPSS)) should be broadened across the funding framework (including the non-Framework Programme elements). This should take place in good time, ahead of the implementation of any new framework;
- Transparency and equity in the evaluation process for applications should be maintained at the highest standard; and
- Ex-post evaluations should inform future funding policies.

2. How should EU funding best cover the full innovation cycle from research to market uptake?

The current Framework Programme has a number of disparate objectives, for example: funding excellence in research; supporting innovation in industry (including collaborative and pre-competitive research); developing and maintaining good research infrastructure; creating mobility and greater movement of skills across Europe; and developing and implementing better policy approaches to research and innovation, sectoral development and competitiveness.

In seeking to cover the full innovation cycle from research to market uptake, it is necessary not only to address the objectives above but also to acknowledge that *the current Framework Programme was not established to cover the full range of innovative activity*. There must be a clear recognition that measures suited to supporting scientific research and technological development, as fostered in the Framework Programmes, are not sufficient for the full range of activities now being put forward as part of the innovation cycle. Additional objectives must be addressed through different mechanisms, including those which extend support close to the point of market uptake and those which aim to meet societal needs. Public procurement and demand led innovation should also be used to drive research in appropriate areas. To develop and maintain a world-class knowledge and skills base for innovation, funding will be required at all levels from fundamental science to the development of marketable products and services in the common strategic framework.

Ireland sees a strong need to *mainstream innovation to ensure that it can permeate all areas of the European Research Area (ERA)*, to the appropriate degree in each mechanism. Innovation should not be confused with industrial development or be taken to mean industrial innovation alone. Innovation in academic research and development must also be supported and can be a precursor to good education and training and to the public good, enhancing quality of life and benefiting society through more than economic goals as well as to direct commercial outputs. Business innovation is multi-faceted and encompasses the development of many research-based products, processes and services, with the overall aim of meeting market needs. The value of business innovation which is not of a direct technological nature should also be recognised and supported e.g. innovation through new business models.

Supports for innovation, and for business innovation in particular given the commercial limitations of time to market, need to be characterised by:

- Rapid decision making;
- Flexibility in grant administration to take account of changes which reflect research or market movements;
- Accountability, without excessive bureaucracy;
- Staging of projects to allow for them to be reviewed and stopped if they are not performing, to enable their redirection where changes in conditions have made them less relevant, or if they are exceeding expectations, to enable researchers to develop and capitalise on new findings; and
- Professional project management in consortia, to ensure delivery and the delivery of realistic exploitation plans, enabling outputs to be achieved, used and have real impact.

The routes from research and innovation to commercialisation are often not direct. In addition, the timeframe for research, development, demonstration and deployment varies from one field of research to another. Research, innovation and commercialisation therefore all have different patterns and timeframes. These must be supported through *instruments which are flexible* and accommodate a variety of timeframes.

Ireland recommends that, as a principle, there should be the option to apply for a *funding supplement to facilitate the commercialisation of an idea or innovation* which emerges from a framework grant or any other EU funding, supplements being allocated through a competitive process. This happens in many national programmes³ and, to some extent, in the ERC Proof of Concept grants⁴. To ensure good use of funds, supplements would be provided only while identifiable progress is being made and until the project becomes commercially viable, requiring close monitoring. Funding could be used, for example, up to the point of market validation and initial commercial deployment. Funding supplements to aid such proof of concept and similar commercialisation activities should also be available for Marie Curie grant holders and for holders of collaborative grants under the Co-operation Programme. These additions to the funding system would help Europe to better mirror the “cradle to grave” approach of other countries, notably the US and parts of Asia, in supporting actors from research to commercial exploitation.

Given the broad understanding of the concept of innovation, a major challenge to capitalising on innovation is *management capability*. Funding to support the management of projects, directed at addressing this deficit, could increase the commercial returns from funded research.

Higher education is a key formative component for future innovators and entrepreneurs and it is also from within this domain that much new knowledge will emerge to feed into the innovation process. Higher education and research need to become more innovation oriented and innovation aware, and this needs to be reflected in the training of research students and researchers. (See also the response to Question 23)

Likewise, research and innovation provide knowledge, ideas and skills which feed back into teaching and learning in higher education institutions. Appropriate funding measures should be

³ For example, FIRM *plus* 2010 is an Irish funding initiative in the food sector which has been developed to ensure maximum value for money is gained from R&D investments by encouraging researchers to apply their research findings up to a pre-competitive level. It provides an opportunity for research projects, recently completed or near completion, to be brought to the stage at which funding for commercialisation of the outputs can be sought.

⁴ http://cordis.europa.eu/fp7/dc/index.cfm?fuseaction=UserSite.FP7DetailsCallPage&call_id=389

supported with the aim of *joining up the three sides of the innovation triangle* — education, research and innovation/entrepreneurship. One mechanism aimed at doing this is the European Institute of Innovation and Technology (EIT). It will be important that initiatives being developed under the three EIT Knowledge and Innovation Communities are accessible to researchers, students and industry outside of the consortia if their benefit is to be maximised Europe-wide.

3. What are the characteristics of EU funding that maximise the benefit of acting at the EU level? Should there be a strong emphasis on leveraging other sources of funding?

Research and technological development is a key activity underpinning the competitiveness of companies, fostering socio-economic stability and growth, and ensuring the protection of society and the environment. It is becoming increasingly difficult for individual countries and individual researchers to achieve the critical mass of people, knowledge, infrastructure and skills to address the complex and interdisciplinary challenges which face us today.

Ireland welcomes the opportunities for enhanced co-operation between Member States and more widely. It also values the co-ordination of national and European policies, increasing the mobility of individuals and ideas in a global environment. Through such measures, European research and innovation can maximise its impact and become more and more competitive in a global environment. Certain areas, such as smart specialisation, may lend themselves to the combined use of Framework Programme, CIP and Cohesion funds and may provide synergies across a number of areas of global interest e.g. marine, health and environment. While additional sources of funding should be leveraged where possible, the key focus must be on optimising the use of national and European funds towards national and European goals.

4. How should EU research and innovation funding best be used to pool Member States resources? How should Joint Programming Initiatives between groups of Member States be supported?

Ireland is committed to working with other Member States to tackle grand challenges such as active and healthy ageing. Key to that type of initiative will be the incorporation of the valuable learning from other European activities such as the ERANETs. ERANETs have been a useful mechanism to promote the alignment of the research priorities of Member States and should continue into the common research framework, where appropriate and without creating fragmentation. Development of an ERA-NET Plus initiative could help to create further opportunities for joint programming between countries. If European, national and regional policies can be better aligned, the scope for and potential impact of joint programming could be greatly improved and may also incentivise more national governments to assign portions of their internal budgets towards joint programming activities.

While the drive towards large integrated initiatives has many merits, it must supplement and not replace other mechanisms. There is an opportunity for areas to be addressed by Joint Programming Initiatives to be complemented by activities supported under, for example, the Co-operation Programme, and *vice versa*. Ireland believes that strategic research based on thematic areas and awarded competitively, as currently happens in the Co-operation Programme, should continue to form the bulk of research activity in the framework. It should be explored how the outputs of the Co-operation Programme and the Joint Programming Initiatives can best inform one another where their aims are complementary.

Leadership by the Member States should remain at the core of the Joint Programming Initiatives, in order to ensure real commitment and genuine partnership amongst Member States and with the European Commission. The facilitatory role of the Commission should be maintained in the process, with a view to good co-ordination and streamlining, broad access and transparency, particularly in the early stages. As the activities develop, the best means should be established by which instruments within the common strategic framework can financially support additional activities identified by the Member States. The use of flexible mechanisms will ensure the optimal participation.

In particular, participation in and access to the results of Joint Programming Initiatives and Knowledge and Innovation Communities (KICs) should remain as open and inclusive as possible.

5. What should be the balance between smaller, targeted projects and larger, strategic ones?

The balance between small and large, targeted and strategic activities should be based on optimising the synergies between national and European research to achieve European and national goals, without compromising on the criterion of excellence. In all cases projects should be endorsed on merit and approval should not be contingent on having the “right” mix of partners e.g. geographically. Both large and small projects can provide (different but complementary) experiences for researchers to develop key skills and for their research to produce valuable outputs.

It is not always beneficial to a project to be undertaken through large consortia due to their attendant difficulties in administration and co-ordination. Where large consortia are formed, competition is often reduced, as most or all potential participants/competitors for funding are included. Smaller projects and consortia can lead to greater competition between researchers, thereby raising the overall standard of research. In addition, it should not be the case that partners are included in a project only because there is a requirement (e.g. geographical) where they do not contribute appropriately to the overall excellence of the project.

Ireland views as essential the continuation of support for consortia carrying out small or medium-scale (€3-10 million) research projects which are more bottom-up in nature. Provision was made for bottom-up activities in the FP7 specific programmes but only implemented in some thematic areas, such as Future and Emerging Technologies in the ICT programme. Ireland would welcome more support for bottom-up activities through the Co-operation Programme.

Proposals are evaluated on criteria such as scientific innovation, ability to undertake the research, and other criteria which are input-driven. These should be expanded to incorporate the diverse aspects of broader research and innovation, as appropriate to the funding aims. These include, for example, deployment of findings, scientific trials, needs evaluation, fast-track demonstration and market feedback, which are output-driven.

To provide an opportunity to balance short term, targeted outputs with longer-term strategic objectives, the Commission should consider ring-fencing a proportion of funding for larger, strategic projects that incorporate SMEs and research institutions, particularly those that can bring capability in applied research and innovation. These ring-fenced projects would have an opportunity to demonstrate an improved path to market and enhanced outputs of jobs and new

products. In addition to the balance between large and small projects, there should be a suitable balance between research and, for example, pilot demonstration activities.

6. How could the Commission ensure the balance between a unique set of rules allowing for radical simplification and the necessity to keep a certain degree of flexibility and diversity to achieve objectives of different instruments, and respond to the needs of different beneficiaries, in particular SMEs?

Consistent implementation of the rules is vital. Issues of variations in interpretation should be addressed, as well as genuine differences in procedures, rules, terminology and definitions. While the recent appointment of a steering group of senior officials from all the Commission departments and agencies indicates a willingness to address these issues, Ireland would, in addition, welcome the appointment of an Ombudsman for Research and Innovation who would provide a decision in cases where there are significant differences in interpretation and understanding. This would be of value to the research community, which does not currently have a unique decision maker to whom to bring such issues, and to the Commission in resolving such issues with clarity and finality.

The publication of the Commission's communication on "simplifying the implementation of the research framework programmes", and the recent implementation of simplification measures are welcome. The transition to a common strategic framework offers an opportunity to rationalise the number of funding instruments and rules. Each funding instrument with its associated rules represents an overhead to participating organisations and, particularly where those organisations are small (such as SMEs) that cost can prove to be prohibitive. Clear structures and substantial simplification of participation rules for all research and innovation funding will strengthen the overall innovation system and enable a more efficient use of funds and instruments, ensuring better participation by currently under-represented academic and industry groups.

Further simplification can best be served by the implementation of a more trust-based approach founded on good practice in Member States, including increasing the tolerable risk of error. For example, the detail required in the auditing process should be reduced as part of new trust-based measures, while maintaining the necessary level of oversight. There should also be more trust placed in organisations with excellent track records.

Ireland supports a reduction in the variety of rules for payment. However, while a uniform reimbursement rate for all activity types would be a welcome simplification, this should not lead to an overall reduction in funding. A single flat rate for determining indirect costs for all types of organisations and funding schemes would be a welcome development. The calculation of "real" indirect costs is a significant administrative burden for small organisations and does not incentivise organisations to reduce their indirect costs. While the removal of the obligation to recover interest on pre-financing would be a welcome simplification, it would need to be accompanied by firmer rules on the timing of pre-finance distribution from co-ordinators to partners.

The Commission's proposal to move from cost-based funding to results-based funding is worthy of further consideration. This offers the possibility of a quantum step in simplification. However there are a number of possible pitfalls:

- a) The Commission indicates that the move to results-based funding would involve a "shift of the control efforts from the financial side to the scientific side". If this shift

were to replace one complex administrative burden with which we are familiar, with another complex administrative burden with which we are not familiar, the proposed simplification step would actually lead to increased complexity. Scientific control will require much more subtle interpretation than financial control, and the mechanisms for this will have to be developed in collaboration with the research community.

- b) The move to results based funding could introduce a new level of uncertainty. Up until now, organisations knew that if they incurred expenditure in relation to a project, and reported this correctly, they were guaranteed reimbursement for this expenditure. In the new scenario, if payment is dependent on satisfactory results, there is the possibility that expenses will be incurred, but that they will not be reimbursed due to the perception of the Commission project officer that the end product of the project is not as required. This could be a significant discouragement to the involvement of SMEs. Decisions on payment will have to take into account the unpredictable nature of scientific discovery.
- c) One of the options considered in the Commission's communication on simplification is "the publication of calls with pre-defined lump sums per project in a given subject area and selection of the proposals promising the highest scientific output for the specified lump sum", with one of the award criteria being the resources that the consortium is willing to invest itself in addition to the Commission funding. Ireland does not support this proposal as it would mean that many SMEs and smaller institutions without or with insufficient core funding would be unable to compete for such projects.

It is important that the gains in simplification in one part of the framework are not confounded by losses in simplicity in other parts. Reducing the time to grant, reviewing the issue of overheads, and ensuring streamlining within the framework and within the broader research and innovation system of the European Research Area and the Innovation Union will benefit researchers and the ERA. The operation of the framework can be improved by avoiding late publication of work programmes, by ensuring there is sufficient information available prior to calls, by providing sufficient time between the call and the submission deadline (in some cases more than three months) and by reducing the time to award contracts and start projects.

The language, documentation and process associated with consortium agreements should be simplified by reducing the complexity of the negotiation process and increasing the number of default positions associated with an agreement. The overall emphasis should be on a lighter process especially for smaller projects driven by SMEs. For example, default rules which favour the SMEs could allow them to opt into and out of different phases of the project, according to its relevance to them. The funding mechanisms could also allow for refunding "at-own-risk" project starts by SMEs to facilitate a faster time-to-market or time-to-demonstrator. Evaluation is an important part of the application process but also a key tool to determine the impact of any project and to feed into the development of funding policy. There can be not just research-related learning but also learning which is relevant to the successful operation of the research and innovation system. Attention should be given to post-project evaluation with the objective of improving the fitness for purpose of the rules governing the common strategic framework.

7. What should be the measures of success for EU research and innovation funding?
Which performance indicators could be used?

Clarity should be at the core of any measurement system. Throughout the funding system, we must be clear about the outputs, outcomes and impacts of research, what we mean by these, how and when we will measure them and what, if anything, they imply. Findings around outputs and impacts whatever form they may take (from public good to education to economic benefit for example) should be used to guide the implementation of funding policies. Evaluation is also an important part of the project and learning from project implementation should inform future policies as well as research findings informing future research.

A broad range of metrics are required to capture the broad range of outputs and outcomes of research and innovation under a common strategic framework including measures of excellence in:

- Publishing and citations;
- Exploitation of intellectual property, including patenting and licensing;
- PhD graduates entering academic and non-academic employment;
- Technology and skills transfer (to and from research, innovation and education); and
- Commercialisation and market uptake, new products, services and companies.

The metrics should be linked to the goals and answer the following questions:

- Has this project delivered on its stated objectives?
- Are the results of the project being sustained after the lifetime of the project has been completed?
- Has this funding represented good value-for-money for Europe?

While Ireland acknowledges that the recent development in the Innovation Union Scoreboard aim to provide evidence for future policy making and to seek to identify impacts of the investment in research and development, it will be important to avoid significant additional changes in the data being collected and used, and to continue in the long-term to monitor performance through the Innovation Union Scoreboard. However, best practice sectoral-specific performance indicators should also be used as appropriate. We note the work being done in this regard by the European Science Foundation⁵.

8. How should EU research and innovation funding relate to regional and national funding? How should this funding complement funds from the future Cohesion policy, designed to help the less developed regions of the EU, and the rural development programmes?

Without compromising on the criterion of excellence, measures to enable greater participation by Member States with less developed research and innovation systems will be very important to ensure that European research can grow most effectively towards meeting our socio-economic and competitiveness goals. Cohesion and Structural Funds should be used to assist relevant Member States, as appropriate, in building their research, innovation and infrastructural capacities.

⁵ ESF Member Organisation Forum on Evaluation of Publicly Funded Research (<http://www.esf.org/activities/mo-fora/evaluation-of-publicly-funded-research.html>). Sectoral examples include, for example, those within the Buxton Hanney “payback framework” which is employed in a number of countries to measure the economic, academic and societal impact of health research.

Within the Framework Programmes, provision should be made to facilitate learning between States, for example through the provision of training and education in skills relevant to excellence in innovation and research. One area of importance is structured doctoral training undertaken through high quality research concurrent with acquiring the skills (including those which are generic, disciplinary and transferable) both for that research and to ensure that the graduate is equipped for employment in a range of sectors. These ideas are developed further in the section on *Strengthening Europe's science base and the European Research Area*.

As noted above, with the aim of ensuring that the best researchers all contribute to European research goals and to addressing global challenges, Joint Programming should complement and not replace the funding of topics, such as those under in the Co-operation Programme. In addition, the role of the social sciences and humanities in contributing to global and societal challenges should be supported.

Tackling societal challenges

9. How should a stronger focus on societal challenges affect the balance between curiosity-driven research and agenda-driven activities?

Measures to address global and societal challenges should retain an appropriate level of flexibility and breadth in order for them to be adapted to new and altered situations and problems. While Ireland welcomes Joint Programming Initiatives, we would caution against aligning the European research agenda from 2014 onwards too closely with current societal challenges. If European research focuses itself too narrowly, Europe may not be well-placed to capture new opportunities in global research, development and deployment. In addition, if all our efforts go to societal and global challenges, we may lack the resources and expertise to address other important areas of research which could bring substantial socio-economic benefits themselves. To be ready to tackle any future challenges, it is essential that Europe maintains, and grows as appropriate, its competence in all the basic sciences, mathematics and engineering and in other key skills of relevance to innovation.

Both “bottom-up” (or “curiosity-driven”) and “top-down” (or “agenda-driven”) activities are present in the current support framework. For example, two of the Specific Programmes (Ideas/ERC and People/Marie Curie) are almost exclusively bottom-up while the Co-operation Programme is almost exclusively top-down. Different schemes within the Capacities Programme operate differently but, in general, the Research for the Benefit of SMEs scheme is bottom-up, while the other schemes are top-down. This combination makes for a well-functioning and balanced system which currently retains some bottom-up but directed activity (for example, where a thematic area is selected and researchers are encouraged to apply for funding for curiosity-driven research). Ireland greatly values bottom-up directed activity in particular as it is characterised by dynamism, innovation and the generation of fresh ideas.

Climate change, food security, ageing, etc. are all being addressed through the current top-down thematic schemes (such as the Co-operation Programme) and through bottom-up research. The Joint Programming Initiatives and Knowledge Innovation Communities provide newer mechanisms to address these topics and others. This combination of top-down and bottom-up research is working well for Europe currently. The balance between top-down and bottom-up need not be overly affected by the decision that European research should have a specific focus on societal challenges.

The societal challenges defined in EU2020 largely address the physical and life sciences, not the challenges arising from social and cultural cohesion, democracy and participation, and gender equality. The tackling of existing and newly arising societal challenges by European policymakers and civil society requires a sound scientific basis which only robust social science, law and humanities research can deliver, funded through specific measures of the common strategic framework. The inclusion of ethical, legal and social issues should not only be restricted to these specific measures but also be an integral part of research and innovation projects as appropriate.

Ireland notes the trend towards an increased focus on incorporating elements of social science and humanities (SSH) research within science and technology programmes within the European framework. The effectiveness of this inclusive approach towards support for these areas, in comparison with targeted distinct programmes in SSH, should be monitored on an ongoing basis.

While global challenges are, by definition, of relevance to the majority, there will also be issues which are of keen relevance to a smaller part of the research community and society. The framework should retain sufficient flexibility and room for bottom up and/or smaller initiatives to be undertaken through co-operative research programmes.

10. Should there be more room for bottom-up activities?

It is important that bottom-up activities remain a significant and strong part of the EU funding system. Ireland would welcome more support for bottom-up activities through the Co-operation Programme. The research and innovation environment produces both knowledge and people (graduates and researchers). If the emphasis is placed on a relatively small number of top-down activities, the spectrum of PhD graduates and researchers will be reduced and we may place ourselves in a less competitive situation in terms of the knowledge and people we can offer in the mid- to longer term. In addition, even though an area may itself be narrow in focus, it may require a wide range of skills (for example, given Europe's ambitious renewable energy targets, the energy research sector needs experts in mathematics, fluid dynamics and aeronautical and marine engineering, amongst other disciplines).

Ireland welcomes the excellence in bottom-up research as being nurtured through the ERC, the Marie Curie People programme and Research for the Benefit of SMEs. With the stated aim of supporting innovation in all its forms (not just scientific endeavour) and enhancing competitiveness, it is imperative that the common strategic framework recognises that the vast majority of SMEs in Europe do not have scientific capability within their skill set and hence funding for bottom-up research needs to be expanded comprehensively to encompass innovation in its many faceted forms. The Research for the Benefit of SMEs activity is a coherent vehicle for these differing forms of innovation, being highly impact-focused.

Bottom-up activities allow new Member States, SMEs and countries with smaller or less-developed research bases to engage in and benefit from trans-national co-operative research, in a manner complementary to top-down, programmatic approaches which will build capacity in specific areas of importance. It is important that co-operative activities complement Joint Programming and the European Innovation Partnerships in facilitating the innovation value chain but that complementarity should not be their sole reason for existing as they have much more to contribute to the European research and innovation area.

11. How should EU research and innovation funding best support policy making and forward-looking activities?

A key role of European research and innovation funding is to support EU policies, and their cohesiveness, by providing, on a multi-annual basis, the knowledge and intelligence necessary to support evidence-based policy making, to define standards and help develop regulation, and to sustain forward-looking activities (foresight studies). This should remain a priority and be developed to improve sectoral policies, and to support economic competitiveness and societal goals.

Policy research in the humanities, law and social sciences is central to achieving societal goals and to the inclusiveness of European research and innovation for its citizens. Innovation often appears very distant from citizens as there is often no or poor communication with society prior to, during and after the new developments take place.

Already in FP7, new mechanisms are being introduced to improve the policy advice emerging from research projects and to ensure that it is brought to policy makers in a timely and usable manner. In the current FP7 Environment Programme, for example, participants are required to provide an annual/regular policy guidance document⁶ to inform policy makers of the relevance to and implications of their research for the evolution and improvement of policies. This mechanism should be continued and strengthened on the basis of experience and best practice gained from FP7.

Evidence-based policy-making should be facilitated by the use of the latest technologies, for example: open data initiatives; frameworks to structure information and enable its use; and semantic web based data interpretation methods; and other technologies to enhance interaction between the research, policy and social science communities. The route from research to evidence to policy should be clear and transparent.

12. How should the role of the Commission's Joint Research Centre be improved in supporting policy making and addressing societal challenges?

Priority should be given to reformulating the activities of the Joint Research Centre (JRC), drawing on experiences to date and on the views of its stakeholders, with the aim of optimising the use of the current budget. Value for money and efficiency of delivery should be at the core of all its activities, undertaken both with and on behalf of the Member States and the Commission. As a matter of urgency, JRC services which duplicate those provided commercially by industry should be terminated and the budget of the JRC reduced accordingly.

The role of the JRC should be subject to a requirement to fully support the common strategic framework for European research. The JRC should be measured on its effectiveness in enabling greater strategic coherence, visibility and alignment across EU, national and regional R&D programmes, and in carrying out and communicating foresight and future planning exercises. It is potentially very valuable in central data holding and analysis but needs to connect more effectively, or more visibly, to EU policy.

⁶ For example, EPOCA: Ocean Acidification “Special Introductory Guide for Policy Advisers and Decision Makers (2010)” (www.epoca-project.eu/index.php/what-do-we-do/outreach/rug/oa-the-facts.html).

Clear and challenging targets should be set, and adhered to, for the engagement of the JRC with Member States. Greater effort is required by the JRC in connecting with Member States and communicating with the research community.

The expertise of the JRC should be available directly to Member States and not only the Commission. The JRC has the potential to assist Member States in dealing with existing issues and should work with Member States to produce and act upon joint agendas.

13. How could EU research and innovation activities attract greater interest and involvement of citizens and civil society?

The Science in Society (SiS) programme of activities should continue in the new framework and broadened to support initiatives which aim to increase interest in science, technology, engineering and mathematics (STEM) among students, teachers and members of the public. A good example of such an initiative in Ireland is the Discover Science and Engineering (DSE) programme. DSE is collaborating with similar initiatives in other Member States in the Fibonacci for Primary Schools project. Increased support for these initiatives would contribute to Europe's continued growth and development as a society – one that has an active and informed interest and involvement in STEM. Much more can be done with the existing mechanisms under SiS, such as the EU Contest for Young Scientists, to bring demonstrations of good science and innovation to the public.

The SiS Work Programme should also continue to provide support to the Euroscience Open Forum (ESOF) biennial meeting. This is now established as the pre-eminent, multi-disciplinary European science meeting and one of its objectives is to strengthen the links between science and society. It also serves as a showcase for European science, research and innovation.

Outreach should be encouraged as a component of large scale projects, in particular those addressing societal challenges. There are national examples of good practice in involving citizens⁷ which can be adapted to European needs, as appropriate. This could be established as a principle across all EU research and innovation projects above a stated budgetary size.

Greater interest and involvement by citizens and civil society may be achieved through their role in the identification of societal challenges and through good delivery of clearly understandable information on the research outputs and impacts as those projects progress. Their input will help to ensure the relevance of the work being undertaken. Research in the social sciences and humanities also offers many bridges through which to build links with civil society and the general public.

Strengthening competitiveness

14. How should EU funding best take account of the broad nature of innovation, including non technological innovation and social innovation?

As stated earlier, it is important that the pace of the common strategic framework matches the differing paces and patterns of research and innovation. This is also true when dealing with

⁷ For example, in Ireland, Science Foundation Ireland requires that certain portion of the funds for its industry-related programmes are directed to education and outreach activities.

different types of research (e.g. different disciplines) and different forms of innovation. Flexibility, adaptability and project staging will be key tools in achieving this.

The enterprise sector has a strong translational role to play in ensuring that significant socio-economic benefits result from research. In order to enable them to do this, the framework should provide support across the spectrum from conception to commercialisation. Innovation is driven by customer need and market opportunities and requires a completely different approach to the structure and functioning of basic research support programmes. For example, such programmes need a greater emphasis on market information, clearer responsibilities and greater dedication to exploitation, and a clear implementation plan. Such changes would be significant for the EU and would require new approaches, although the benefit would be to bring such programmes much more in line with the way in which industry in Europe operates, from research to the marketplace.

Non-technological and eco-innovation are important aspects of innovation which should occupy important positions in European research and innovation schemes. These forms of innovation could be incorporated in many programmes including the Research for the Benefit of SMEs programmes where companies are frequently equipped and eager to take up innovation opportunities outside of technological innovation. Barriers to the participation in the framework of the enterprise sector should be addressed. In particular, given that so much innovation in Europe is seen to come from SMEs, it is essential that they are facilitated to take part in European projects across all areas of research and innovation. Measures to enable SME participation have been mentioned in other places in this document (e.g. under Question 16) and should equally be applied across all relevant areas of research and innovation.

Enhanced linkages between the knowledge triangle of education/research/industry and entrepreneurship should be encouraged as a means of achieving a common strategic framework which will facilitate and allow all kinds of innovation to emerge. Closer collaboration between educators, researchers and business could be achieved through these linkages. Education would be better informed by research and *vice versa*. One area for exploration would be, for example, linkages between the Lifelong Learning Programme (operated by DG Education & Culture) and the support programmes under DG Research and Innovation.

15. How should industrial participation in EU research and innovation programmes be strengthened? How should Joint Technology Initiatives (such as those launched in the current Framework Programme) or different forms of 'public-private partnerships' be supported? What should be the role of European Technology Platforms?

Industry-academic partnerships should be fostered, where appropriate, to ensure that the drive towards sustainable socio-economic goals is maintained. It is however recognised that industrial innovation is often fast moving and, to date, research support mechanisms are not. Therefore, the support framework should foster the relationships which are most appropriate to the speed of exploitation, through relevant mechanisms including patenting, licensing and publishing. Specific measures should be put in place to accelerate exploitation (where appropriate) and might be specifically and solely for non-academic participation. Simple, workable administrative procedures will help industry, including SMEs, to participate and, in parallel with appropriate auditing, can guard against poor governance.

Efforts should continue to be made to create stronger bridges to increase and improve exchanges between academia and industry. Ireland has taken its own measures in fostering

partnerships between the education sector, the public sector and the business and venture capital communities to develop a world-class ecosystem for innovation to drive enterprise development and competitiveness, such as competence centres and innovation vouchers. Innovation Vouchers⁸ enable Irish industry to purchase research support, and we would welcome similar European activities.

Enterprise innovation and collaboration with the public sector could be further supported under measures such as those currently under the People Programme. The pioneering Marie Curie COFUND action of FP7 funds regional, national and international fellowship programmes and it should be expanded to include industry to support innovation across academia and industry by enabling mobility of expertise and experience.

Interim evaluations of FP6 and FP7 have highlighted specific issues with industry/ academia partnerships, primarily centred on the ownership of intellectual property; academic versus industry motivations for undertaking the research; *modus operandi* issues relating to the allocation of project time by participants (which impacts on timely delivery of results); and prohibitive costs for SMEs in leading projects. It is important that these be addressed in the next framework. Solutions, such as tendering for research provision, could be implemented to ensure value for money. This will solidify the “buyer-seller” model in existence at present in the FP7 Capacities Programme activity on Research for the Benefit of SMEs.

Collaborations between industry and academia can be enhanced through better communication, a common language and an understanding of industrial requirements. In order to facilitate this, provision should be made to cover the costs of academic researchers training in industry-relevant skills such as good laboratory, manufacturing and clinical practices (GLP, GMP and GCP).

Joint Technology Initiatives (JTIs) have been of particular benefit to industry-academic alliances. While not applicable to all JTIs, some negative comments on governance issues were made by ITRE⁹, reflecting their concerns about openness and transparency, involvement of big companies in the project selection process and insufficient documentation on governance. In guarding against poor governance and considering the substantial public funds allocated to JTIs, these issues should be carefully considered and addressed with the aim of improving, where required, the governance of currently active JTIs and, crucially, this should happen before any new JTIs are launched.

Actions within Europe to enable mobility of workers and streamlining of employment conditions for researchers are important elements of the environment for research and development in European industry as well as the academic research community.

⁸ Innovation Vouchers are designed to enable small enterprises to access knowledge and expertise to develop innovative solutions to business issues. The programme provides a voucher of up to € 5,000 to enable small enterprises to engage with a university, college or other publicly funded research organisations throughout the island of Ireland.

⁹ Evaluation of the European Research Area (ERA): Governance aspects IP/A/ITRE/ST/2008-13

16. How and what types of Small and Medium-sized Enterprises (SME) should be supported at EU level; how should this complement national and regional level schemes? What kind of measures should be taken to decisively facilitate the participation of SMEs in EU research and innovation programmes?

The administrative burden on SMEs should be reduced and a risk tolerant approach fostered to encourage this small but pervasive and essential part of the enterprise community. There should be a special focus on the obstacles faced by small innovative companies. To this end, the Commission should consider:

- i Expanding support for SMEs for technical assistance for the preparatory work on applications for funding;
- ii Building on successful aspects of initiatives such as the European Enterprise Network.
- iii Increasing the frequency of SME calls (e.g. Research for the Benefit of SMEs);
- iv Increasing targeted funding programmes which help to bridge the gap between research and commercialisation;
- v Ring-fencing a portion of every programme for projects that have SME participation;
- vi Reducing the size of the consortia required to fulfil the minimum criteria for participation;
- vii Reducing the administrative burden and simplifying the negotiation process associated with research projects, particularly for SMEs; and
- viii Permitting SMEs to participate in a project only for the parts that are relevant to them.

To expand on some of the above points, greater flexibility should be built into projects to facilitate the engagement of SMEs in European research. Within the current structure, project partners must all be named, their role identified and their involvement until completion of the project ensured. This rigidity is counter-productive and may deter SMEs in particular. For all programmes, it should be possible to introduce an additional partner rapidly through a fast-track process if a different focus is required in the furthering or exploitation of interim research outputs.

Given the importance of SMEs within research and for the sustainable economic development of Europe, Ireland would welcome increased rigour in the application of the definition of SMEs. This measure would help to avoid SMEs being created or used only as a tool for larger enterprises, and ensure that SMEs can engage on an equal footing with the rest of industry despite their size.

In addition, the definition of SMEs may be incomplete for the purposes of funding which is aimed at innovation as well as research. The Commission, working with the business and research community, should consider developing other criteria, in order to meet the needs of very small businesses.

Greater emphasis and weight should be placed on impact and application in the evaluation process of programmes where innovation is identified as a priority. This would provide an incentive to academic applicants to engage more closely with industry as a means of improving their capacity to understand and deliver impact.

17. How should open, light and fast implementation schemes (e.g. building on the current FET actions and CIP eco-innovation market replication projects) be designed to allow flexible exploration and commercialisation of novel ideas, in particular by SMEs?

As mentioned above, the administrative burden on SMEs should be reduced and a risk tolerant approach fostered to encourage this essential part of the enterprise community. Best practices should be mainstreamed across all SME-relevant programmes. In particular, an open, light fast implementation scheme should be considered to incorporate ongoing access to partial funds with clear outputs from each funding tranche required before the next funding is provided. Projects not suitable for exploitation should be ended in a timely manner. The potential to apply this to academic and public research centres should also be explored.

There should be the possibility of an easily accessible “top up” of project funding to facilitate commercialisation of activities from EU projects. This should be a supplementary support with a rolling deadline and a short evaluation time to allow for a fast reaction to the exploitation of novel ideas from research. The aim would be to ensure that as many ideas as possible from European research are exploited within Europe.

18. How should EU level financial instruments (equity and debt based) be used more extensively?

The Risk Sharing Finance Facility (RSFF) has proved to be of use to larger industry but many SMEs are struggling to avail of it. A parallel Risk Sharing Finance mechanism is needed for SMEs and Ireland welcomes proposals currently under discussion for loans aimed at SMEs.

Better oversight by the Commission is needed where finance is provided to intermediates to ensure that it is used for to meet relevant research and innovation goals and not provided for unrelated business development.

19. Should new approaches to supporting research and innovation be introduced, in particular through public procurement, including through rules on pre-commercial procurement, and/or inducement prizes?

Public procurement is the largest enterprise in Europe in terms of the combined budget across Member States and the EU. It is an increasingly important demand-side policy for releasing innovation potential and driving lead markets and should be encouraged in the EU funding context, provided it meets the criterion of being pre-commercial. In all cases, public procurement activities should be centralised and should meet environmental and carbon emission goals. A centralised pre-commercial procurement activity would have to ensure that such a concentration of funds would not reinforce barriers to SMEs wishing to access this market. The most transparent mechanisms should be put in place and the administrative aspects should be kept at a minimum level.

Pre-procurement research funding has the potential to support the development of practical solutions in Europe. Areas which are close to market and of significant public concern (for example, the practical provision of infrastructure systems for sanitation and clean water) could be identified by Member States as needing support funding for research which would bring benefits in the medium-term to European citizens. The possible provision of such a fund to

address practical global challenges should be explored as part of the development of the comprehensive strategic framework.

Prizes for the achievement of a research goal could be of use on a limited scale provided they are well marketed as a Europe-wide acknowledgement of achievement. The financial incentive should be a minimum of 10% of the investment required to achieve the goal. The offering of prizes could also serve as a benchmarking tool, identifying the level of interest in achieving the set goal and the perceived likelihood amongst the community that it is achievable.

20. How should intellectual property rules governing EU funding strike the right balance between competitiveness aspects and the need for access to and dissemination of scientific results?

Ireland notes the open access approach, by which research results should be disseminated within a fixed timeframe, but would point out that this is not a suitable measure across the board. Different areas of research have different gestation periods. For example, some areas of ICT are very fast to reach preparedness for dissemination without the potential loss of commercial opportunity while biotechnology may take much longer to reach that stage. Ireland encourages the Commission to ensure that it retains an appropriate flexibility in order to facilitate a wide range of technology transfer and commercialisation, not forgetting the publication of results.

Ireland generally supports the continued use of the current rules and mechanisms for intellectual property in Europe, for example the standard DESCA¹⁰ template for collaboration agreements.

The successful exploitation of intellectual property should be introduced as a key performance indicator for European research, the aim being to encourage the following:

- Clear statements of the pathways for commercialisation of intellectual property, to be delivered within a specified timeframe relating to the project;
- Identification of pre-existing intellectual property that has been generated from old projects that would be identified, categorised and made available for European exploitation; and
- Compilation of un-commercialised intellectual property into a database that would also be held by the Commission and made available for European exploitation.

The common strategic framework should, within a particular grant, allow funding of patents which are of joint benefit to multiple partners. Without such centralised funding, intellectual property may be lost since individual institutions may feel the value of the asset is reduced as a result of the interests of other parties in that intellectual property.

The European Patent is seen as an important initiative to increase the competitiveness and economic value of European research.

¹⁰ DEvelopment of a Simplified Consortium Agreement: DESCA* is a comprehensive, modular consortium agreement for the Seventh Framework Programme (FP7). Initiated by key FP7 stakeholder groups, and co-developed with the FP community, it offers a frame of reference which seeks to balance the interests of all of the main participant categories in FP research projects: large and small firms, universities, and public research institutes.

Strengthening Europe's science base and the European Research Area

21. How should the role of the European Research Council be strengthened in supporting world class excellence?

The principles of excellence should remain intact without dilution. Excellence should be the guiding principle for all research activity, central to projects and collaborations across the common strategic framework for both the public and private sectors. Through research excellence we can achieve the highest impacts in meeting economic, environmental, employment, social and development goals.

The mandate of the European Research Council (ERC) is appropriate and its budget should remain constant, allowing it to embed itself in the European research and innovation system and become part of the overall strategic framework. Priority should be given to ensuring optimal use of the budget, rationalising activities if and when required.

The ERC focuses on career support for outstanding emerging and established researchers. However, little attention is given explicitly to the large number of PhD candidates and researchers who are hired on to their teams. It should be ensured that all researchers directly and indirectly funded by the ERC are supported in their career development. The ERC can learn from the approach taken in the Marie Curie programme where each researcher has a personal development plan (PDP) focusing on their career development including appropriate disciplinary skills and complementary skills training.

Ireland would also welcome mechanisms to support research excellence for established researchers at a transitional stage in their careers in order to assist them in reaching their potential of entering the top echelons, and to provide for excellent researchers who may have taken significant periods out of their research career for family reasons. Appropriate measures should be put in place, and acted upon, as a priority action.

The ERC should also learn from the good practices in open and transparent recruitment, access to proper healthcare and other social rights, as illustrated by the Marie Curie Actions.

Measures should also be introduced to address any barriers to the success of excellent female researchers in obtaining EU funding. Ireland notes as one step forward the initiative recently taken by the ERC to improve the gender balance amongst expert evaluators.

22. How should EU support assist Member States in building up excellence?

There is great added value in taking action at a European level, combining resources and adopting a common partnership approach in certain areas, but we must continue to retain the flexibility which also allows Member States to pursue their own strategies and priorities as appropriate.

Participation in European collaborative research networks and projects provides prestige and motivation for participants, and facilitates them in forming lasting relationships, networks, and collaborations between research groups all over the European Research Area. There is a strong potential within Europe to enhance collaborative activities through skills training by creating poles of excellence in the form of graduate schools providing innovation training for current and future researchers and managers. Many European countries including Ireland have changed their

approach to doctoral education and training, introducing structured PhD programmes and doctoral or graduate schools. While the Marie Curie Actions (through the Initial Training Networks (ITNs)) do support structured doctoral training they do so only as a part of an extended transnational network. Ireland strongly recommends the introduction of support for doctoral programmes and doctoral schools (in which the international component is in the mobility of doctoral candidates rather than inter institutional engagement) which combine the best research with education and training programmes emphasising innovation and supporting PhD candidates in entering careers in diverse employment sectors. We would also support PhD programmes that target partnerships across industry, public research and academia.

The provision of infrastructure, its maintenance and access to it are all keys to building research excellence in Europe research. European mapping and strategy forums such as the European Strategy Forum for Research Infrastructures (ESFRI) encourage strategic, joined-up thinking by Member States and institutions in the development of research infrastructures of pan-European interest for the benefit of the European research community and wider public. Where infrastructure is funded from Europe, as opposed to by individual Member States in partnership, the allocation of funding should be on a competitive basis and physical, electronic and human infrastructure should all be included.

The Cohesion Funds are effective in enabling Member States to build capacity and operate in parallel with the Framework Programme, with its adherence to excellence. Regional centres should also be supported using Cohesion Funds.

23. How should the role of Marie Curie Actions be strengthened in promoting researcher mobility and developing attractive careers?

Ireland supports the continuation and growth of the Marie Curie Actions, although welcoming streamlining as appropriate. Good practices on doctoral training and researcher career development within Marie Curie should be embedded right across the common strategic framework for research and innovation.

In all of these measures, cognisance needs to be taken of national differences in the treatment of people in doctoral training, such as their status in Ireland as PhD students rather than employees, without any negative impact on the status of researchers in competing for EU funding.

Innovation could be further supported under the Marie Curie COFUND action (which funds regional, national and international fellowship programmes) by more explicitly targeting the private sector and promoting engagement in partnerships between academic research, public sector organisations and industry. Ireland sees COFUND as an appropriate mechanism to support innovation by enabling mobility of expertise and experience. Ireland would also welcome its extension to include the funding of schemes for structured PhD education and training programmes, which would encompass innovation and commercialisation training.

Actions within Europe to enable mobility of workers and equality and equity of employment conditions are important elements of the environment for research and development in European industry and public research organisations, as well as the academic research community. Full support of mobility is essential for researcher career development, especially development opportunities which enable them to enter the broad employment sector. Flexibility

within such mechanisms – in the length of time and the stage they are in their careers – is welcome.

24. What actions should be taken at EU level to further strengthen the role of women in science and innovation?

Best practice, as demonstrated for example in the Marie Curie Actions, Career Restart scheme¹¹, should be communicated to and adopted by the European Research Council (ERC) as an immediate priority (see also above, Questions 21-23).

Non-linear career paths are not served well by an over reliance on publications and citations as metrics of researcher excellence. Within initiatives such as the ERC, measures should be put in place to provide for excellent researchers who may have taken significant periods out of their research career in order to have children or care for a dependent.

While the move by the ERC to increase the proportion of female evaluators is welcome, innovative action is required if the proportion of female researchers funded by the ERC is to reach an appropriate level. In addition to addressing the issue of reliance on publications and citations as researcher metrics, consideration should also be given to making project grants flexible in length where time out of research is needed (“flexible no cost extensions”) across Marie Curie Actions, the ERC and other relevant instruments, such as the Co-operation Programme.

25. How should research infrastructures (including EU-wide e-Infrastructures) be supported at EU level?

Ireland welcomes the role of European funding in supporting the preparatory phase of infrastructure provision. By integrating the human capital and infrastructure strands in European funding better, Ireland sees an opportunity to provide better access to infrastructures, including e-infrastructures and libraries, for researchers and research-based SMEs across Europe. Sustainability and future planning will be essential for the provision of the infrastructures required into the future.

Expanded support for participation in, core support for, and access to research infrastructures should be a priority under the framework. E-infrastructures are especially welcome to underpin collaboration between geographically remote centres facilitating linking of datasets, information on cohorts, data collected via surveys to produce statistically significant information (e.g. in the area of population health sciences). We would also like to see this support extended, in conjunction with Cohesion Policy and Structural Funding, to support the design, establishment and maintenance of specialised distributed infrastructures of a truly pan-European nature and/or specific regional importance.

It will also be important to ensure that industry can fully benefit from infrastructures, both as a user of facilities, for example, for the development and testing of new equipment, and as a supplier to such facilities.

¹¹ The Marie Curie Actions have introduced a Career Restart scheme (CAR) to evaluate fellowship applications from researchers restarting their career after a break. This means that they are evaluated separately and the usual issues concerning their lack of competitiveness due to gaps in track record do not arise.

The work of the European Strategic Forum on Research Infrastructures (ESFRI) is valued by Ireland as a mechanism to facilitate co-operation between Member States and with the Commission for the provision of suitable research infrastructure, both physical and human.

26. How should international co-operation with non-EU countries be supported e.g. in terms of priority areas of strategic interest, instruments, reciprocity (including on IPR aspects) or co-operation with Member States?

Ireland believes that a coherent approach across Europe will help to build on the significant initiatives that have been introduced in recent years. These will need to continue to include both Member State initiatives underpinned by Commission support (e.g. INCO) and EU initiatives, which both operate in parallel with (often bottom-up) bilateral and multi-lateral co-operations. Good practice should be exchanged between initiatives.

In all cases, there must be a clear rationale for the engagement. In some activities within the Co-operation Programme, the involvement of third countries in joint activities has been *ad hoc*, with no clear justification for the choice of country, or the co-operation in a particular thematic area. Joint activities with third countries in particular should have clear, strategic objectives such as mutual learning or support for developing countries. Benefits will result where the policy aims are already naturally aligned and not where they are forced into alignment. Access should be governed by clear and simple rules for engagement in programmes, especially when a portion of the funding for research activities will come from a third country.

Global networking is important for the research community, facilitating the exchange of knowledge and expertise, but also in the innovation environment. Due consideration should be given to the full range of international co-operation activities which will be needed to support the innovation value chain including those needed to network businesses seeking to commercialise European research.

27. Which key issues and obstacles concerning the ERA should EU funding instruments seek to overcome, and which should be addressed by other (e.g. legislative) measures?

Under the Treaty of Lisbon the Framework Programme is an implementation tool for achieving the European Research Area (ERA). However there is a disjoint between the objectives of ERA and the current Framework Programme. For example, only the Marie Curie Actions demand that there should be open and transparent recruitment as a necessary condition for researcher mobility across Europe. It will be important to ensure that ERA objectives are an integral component of future EC funding mechanisms.

The need for other measures should be evaluated on a case by case basis. For example, it may be necessary to pursue immigration and similar issues through legislation.

ENDS