Towards a Common Strategic Framework for EU Research and Innovation Funding

Institute of Physics response to a European Commission Green Paper

A full list of the Institute’s submissions to consultations and inquiries can be viewed at www.iop.org

20 May 2011
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Dear Sir/Madam,

Towards a Common Strategic Framework for EU Research and Innovation Funding

The Institute of Physics is a leading scientific society promoting physics and bringing physicists together for the benefit of all. It has a worldwide membership of around 40,000 comprising physicists from all sectors, as well as those with an interest in physics. It works to advance physics research, application and education; and engages with policy makers and the public to develop awareness and understanding of physics. Its publishing company, IOP Publishing, is a world leader in professional scientific communications.

The Institute welcomes the opportunity to respond to the European Commission's Green Paper, ‘Towards a Common Strategic Framework for EU Research and Innovation Funding’. Detailed comments are provided in the attached document, in response to the questions posed in the Green Paper.

If you need any further information on the points raised, please do not hesitate to contact me.

Yours faithfully,

Professor Peter Main
Director, Education and Science
Towards a Common Strategic Framework for EU Research and Innovation funding

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?

The main need for change in EU funding is in simplifying the application/reporting processes; the average length of a proposal could be reduced by at least 50% with no change to the information content. There is a widely held view that unless you are an expert in completing the EU application paperwork then the ability to succeed with a project is greatly reduced. At the moment, FP7 grant proposals require much repetition, paraphrasing, and restatement of EU research objectives. There should be greater focus on achieving milestones and outcomes as opposed to time keeping and other administrative requirements.

Furthermore, given how oversubscribed EU funding schemes are (including the ERC), it is unhelpful that full proposals with all financial details are required at the initial stage. This results in many of the best scientists in Europe devoting weeks of effort to a process that is frequently a waste of time. What is needed is a 'phase I' proposal that concentrates on scientific quality and, where appropriate, innovative impact, and which is followed by the full details only when the chance of success has risen to something reasonable.

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

It is essential that there continues to be a good supply of curiosity-driven research to provide the seed corn for the future, supported by strong management and the flexible use of resources. Too strong a focus on economic deliverables on the typically long timescales of an EU project will severely limit creativity and novelty in research, compromising long-term economic competitiveness.

The Framework Programmes have an essential role to play in coordinating and driving world-class research in Europe. The Framework Programmes should also offer a flexible framework for industry, large and small, to test the monetisation route of new invention and discovery in order to facilitate innovation and therefore economic growth.
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?

EU funding has the potential to bring together partners from different nations that otherwise would not have been able to collaborate. This is important as it is increasingly unlikely that single (especially smaller) nations can fund and carry out research projects whose fruits can be picked solely by that nation.

Leverage is important, but can be a barrier if the requirement for additional funding is too firm. In addition, insisting on leverage can cause a negative overhead that makes EU funding disadvantageous.

On the issue of overheads, the proportion funded by FP7 is neither appropriate nor acceptable. The current regime requesting matched funding and giving very small overheads makes it extremely difficult for UK universities to participate. In the UK, FEC is an approach to costing research projects that was introduced in a consistent manner across the entire higher education sector from 2005, in response to various reviews that revealed substantial losses for publicly funded research. We recommend that the EU adopts a similar approach.

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?

An important feature of joint funding is that it should be targeted towards the best proposals from the best research groups. Artificial requirements to include specific groupings can be both money- and time-consuming and it is important to fund the best research.

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

To serve the needs and aspirations of all of Europe, there needs to be a wide spectrum of project size. In addition, quality should remain the most important criterion and should not be comprised substantially by issues concerning the size of projects.

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?

There needs to be a focus on requirements to achieve objectives rather than regulations that may or may not secure progress. For instance, a strength of FP7 is the reliance on consortia to provide new and innovative solutions. However, in some cases, the requirement for numbers of members and the bureaucracy associated with the management of the consortium can be overwhelming and act as a barrier to entry to some projects.

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1 http://www.rcuk.ac.uk/research/Pages/tcfec.aspx
In addition, there is a need for greater promotion of the benefits of participation, the provision of clear advice on the application process, and a reduction in bureaucracy, which will encourage more businesses, especially SMEs, to apply.

Lessons could be learned from UK schemes such as the Knowledge Transfer Partnerships (KTP), in which a key requirement is for the board of the company in question, firstly to affirm that the problem or issue to be addressed is a high priority, and then to pass a resolution to enable follow-through in the company, if the project is successful.

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

Outcomes and impact may only appear some decades later, which makes it difficult to define completely. However, it should include the normal outputs (e.g. publications, citations, patents, licenses, etc.), training of early career researchers, other indications of knowledge/technology transfer, prizes/awards, etc.

In addition, critical assessment by expert panels should be undertaken in at least a small sample of projects.

There is also need to create a scheme to evaluate the uptake of research outcomes by industry in Framework Programme projects.

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?

There is a need to support and fund the best research wherever it is undertaken, so long as it is evaluated by robust peer review. Efforts to help developing nations should not be derived from the EU research and innovation budget but from a regional development budget.

In addition, EU research and innovation funding should be consistent with regional innovation strategies and other published high-level research and technology policies. Help should be provided for nations without such policies to create them.

Tackling Societal Challenges

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

It is vital to maintain a balance that includes significant curiosity-driven research as well as agenda-driven research. Many of the technologies that have driven significant societal change/development originated in curiosity-driven research (e.g. liquid crystals which have allowed much of the mobile communications advances; the internet; MRI scanners, etc.). Even graphene, perhaps the newest possibility for breakthrough technology, came from curiosity-driven research.

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2 http://www.ktponline.org.uk/what-is-a-knowledge-transfer-partnership/
EU funding, particularly via the European Research Council (ERC), is well placed to support curiosity-driven research as many nations, such as the UK, are gradually shifting to funding more agenda-driven research.

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

Yes; please see answer to question 9.

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

The EU should lead the way to ensure that all its policies are at least based on the best science and understanding of likely technological trends.

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

There is uncertainty with regards to whether the Joint Research Centre’s programmes are appropriately peer reviewed and if the evaluation of quality feeds into funding decisions; this is something that needs to be looked at.

In addition, the JRC could be improved by updating its functions to include advising on technology trend and requirements.

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

This is a public engagement issue and it is perhaps important to emphasise activities in this area. For instance, the EU could take responsibility for annual publications or exhibitions on the content of the research programmes it funds.

**Strengthening competitiveness**

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

No comment.

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?

The Eurostars concept is particularly well suited to technology development and proliferation and should be greatly expanded. Eurostars is a good model of EU collaboration with direct relationship to commercial product development, i.e. partners from two countries, a typical 2-3 year project lifetime and a defined period to
develop a prototype. However, its funding pools are relatively small compared to the normal EU programmes and there is little harmony in funding amounts or policy in the participating countries.

Simplification and help to assess/increase the likelihood of success is essential if businesses are to get involved more.

In addition, road-mapping should be strengthened with real checks to see if all key industry players have inputted, as opposed to simply assuming that they have.

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?

There is a need for greater promotion of the benefits of participation, and the provision of clear advice on the application process. In addition, there is a need to reduce bureaucracy to enable SMEs to engage more fully in EU programmes.

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?

The EU should consider adopting something akin to the UK’s KTP process, which was mentioned in response to question 6.

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

No comment.

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?

They certainly need to be considered. For instance, we suggest a more creative approach to public sector procurement, directing a fixed proportion of EU expenditure to foster science-based businesses and support innovative solutions across member states.

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?

As this varies on a case by case basis, it is important to be flexible. Being too prescriptive can cause tension between evaluating research outputs and the effectiveness of knowledge transfer.
It might also help that codified IPR created by projects but unused after a period of time could be returned to a pot for use under ‘fair and reasonable’ terms. Alternatively, the US practice of being able to donate IPR to a university in return for a tax break could be encouraged to have a similar effect.

**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 ERC must maintain its strong focus on investigator-driven frontier research based only on scientific quality. The ERC has been uniformly praised, especially by academics, for its commitment to curiosity-driven research; this must continue. In addition, it is worth noting that the ERC has gained respect because it has no ‘social engineering’ component, and unlike every other FP7 initiative, is associated with a relatively low level of unnecessary bureaucracy.

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

The EU could provide support by focusing on funding excellent research and developing and retaining future research leaders.

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

These two objectives are not always linked. It is important to attract excellent researchers to work within the EU at places that are well-suited to developing careers; to that end, the Marie Curie networks have had a very positive impact on the scientific expertise, transferable skills, and overall confidence of students and postdoctoral researchers. It is important to support mobility where that is an implicit part of a proposal to achieve the first objective. But it is damaging to ‘require’ mobility, especially for early-career researchers who are also trying to balance their career development with personal situations; there is a need to ensure that there are a variety of mobility patterns so that parents with young children, or other caring responsibilities, are not disadvantaged or forced to spend extensive periods away from home.

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

It could help to have more flexible support available especially for early-career researchers to allow them to build their career taking into account restrictions that are sometimes referred to as the ‘two-body problem’. It is often women who compromise in such situations. It could be helpful to allow some funding within grants to be used flexibly to support caring responsibilities. In strengthening the role of women, initially, the barriers need to be recognised and mitigated.

In addition, the EU could look at the Institute’s Project JUNO\(^3\) as a means to address issues pertaining to the under-representation of women in science and innovation.

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and to encourage better practice for both men and women. For instance, applicant university departments could be requested to demonstrate their commitment towards developing an equitable working culture in which all students and staff, men and women, can achieve their full potential.

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

Support has to be tensioned alongside the need to carry out other research programmes.

While necessary and appropriate for some activities, the centralisation of infrastructures can unintentionally damage locally-based laboratory programmes – for the physical sciences, in particular, this is currently a major risk; in an environment of increasing budgetary pressure, laboratory-based subjects in universities across the EU will be under greater scrutiny by management.

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

FP8 needs to be supportive of projects (including with funding) that involve partners from outside of the EU, if it can be determined that part or all of the economic benefit will remain in the EU. This would allow competition issues within the EU, or where unique processes or intellectual property for a given project lie outside of the EU.

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?

No comment.
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