



## GOVERNMENT REVIEW OF THE BALANCE OF COMPETENCES BETWEEN THE UNITED KINGDOM AND THE EUROPEAN UNION

### RESEARCH AND DEVELOPMENT

**TO:** [balanceofcompetences@bis.gsi.gov.uk](mailto:balanceofcompetences@bis.gsi.gov.uk)

**FROM:**

*On behalf of the University of Oxford*

#### **Impact on the national interest**

1. EU funding streams have proved vital to research excellence, innovation and the creation of economic value; helped demonstrate and support UK excellence in R&D; and provided irreplaceable inward investment in UK universities.

The UK has been the largest recipient of FP7 funding, is represented in more FP7 projects than any other European country and has been by far the most successful Member State in attracting Marie Curie fellows from across Europe and globally into the UK – with around 2,953 projects funded compared to the next best, Germany, with 1,588 projects.<sup>1</sup> These highly competitive awards bring the best young researchers from Europe and around the world to the UK, greatly enhancing our capability and capacity.

Here at Oxford, in FY 11/12 the European Commission was our third largest source of funds (behind the Wellcome Trust and the Medical Research Council); Commission funding totalled £32.2m. To December 2012

- The University of Oxford had received well over £90 million for projects funded through the European Research Council (ERC), making Oxford the second-largest recipient of ERC grants in Europe.
  - Through the various FP7 Marie Curie career development schemes the University of Oxford has so far been able to train nearly 300 doctoral and post-doctoral researchers (more than any other European institution)
2. The EU provides a unique and highly regarded platform for international collaboration. European Commission initiatives help UK engagement with partner countries or international bodies, both within and outside the EU.

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<sup>1</sup> Draft Russell Group Submission to the R&D Review

3. EU collaboration is helping to provide world-class major research facilities in key areas.

As described in our recent submission to the House of Lords Science and Technology Committee Inquiry into scientific infrastructure, 'access to cutting edge research infrastructure is vital to maintain the UK's world-class research performance and for experimental development of new or improved products or services.' The EU is helping to plan, finance, deliver and operate facilities of a kind and scale beyond the capacity of single nations.

There will be opportunities for future facilities to be based in the UK, bringing both capital investment and attractors for other inward investment, especially from industry, into the country.

4. The UK is a key contributor to and a positive influence upon the European Research Area (ERA), and will benefit further from well-targeted efforts to enhance the ERA. As a particular example, ERANet+ actions leverage national investment in research with EU funds to provide resources for world-leading research at low cost to the UK.

The ERA initiative is about creating 'a European internal market for research, where researchers, technology and knowledge should freely circulate; effective European-level coordination of national and regional research activities, programmes and policies; initiatives designed for implementation and funding at European level' (European Commission, 2007a).

The final report of the High Level Panel on the Socio-Economic Benefits of the European Research Area (June 2012) found significant benefits from ERA for research, and benefits for economy and society as below<sup>2</sup>:

**Benefits for research**

*Benefits from efficiency gains:*

- larger pool of selection
- gains from specialization
- visibility and critical mass

*Benefits from reduction of efficiency losses:*

- reduction of excess duplication

**Benefits for economy and society**

*Direct effect on socioeconomic growth*

- more R & D investment from the corporate sector
- faster growth of young innovative companies
- increase in productivity in services
- addressing Societal Challenges

In his foreword to the report, Robert-Jan Smits, Director General DG Research and Innovation, made a number of observations about benefits of actions at EU level. These resonate with our experience:

- Europe-wide schemes mean 'Stronger competition [which] leads to funding the best research, therefore boosting excellence'
- Cross-border cooperation allows critical mass, a networked specialisation of research teams, better knowledge sharing and transfer, and better visibility of research results
- Solutions to societal challenges are tested across Member States

<sup>2</sup> June 2012 report - [http://ec.europa.eu/research/era/pdf/high-level-panel-report\\_en.pdf](http://ec.europa.eu/research/era/pdf/high-level-panel-report_en.pdf)

- Large-scale and virtual facilities not only improve access to state-of-the-art research infrastructures by all researchers concerned, but also foster connectivity in science between all countries and regions.
5. When we asked Oxford researchers for “*specific examples of the ‘impact or effect’ (negative or positive) of EU actions on R&D*”, many responded with personal case histories. One colleague summed it up for many:

The lessons I took from this experience included the opportunities to work with colleagues from many disciplines, many nations and many cultures. As we developed the proposal, we all grew in competence and in our ability to develop and hold to a much bigger vision than would have been possible had we sought UK funding alone. In the end, we were able to conceive of how to manage and delivery a project on the scale of many countries’ national research budgets.

Three particular types of projects are described below to illustrate some of the benefits of EU R&D projects.

(1) **FASTPASS**, funded under the FP7 Security program, is led by the Austrian Institute of Technology, with the Oxford Internet Institute as one of the partners. The aim of the research is to establish and demonstrate a harmonised, modular approach for Automated Border Control (ABC) gates. The researcher explained

By bringing together key stakeholders across the supply chain, such as system component producers, research institutions, governmental authorities and end-users, FASTPASS addresses the major challenge of border control across Europe, to ensure legitimate travellers enjoy a speedy border crossing, while Border Guards can utilise the range of technological identification to secure against illegal immigration and other threats.

EC funding provides the scale of funding (€11m) over an extended timeframe (48 months) to enable this multi-faceted research programme to be undertaken, engaging researchers and end-users in collaborative development across Austria, Germany, UK, Finland, Poland, Latvia and Greece. Each element of this research could be funded separately at a national level, however it is through the direct collaboration and integration of these elements and with these stakeholders, throughout the life of the projects, that accelerates the knowledge and implementation required to develop a global standard.

(2) **SEALINKS** is a very different kind of project at Oxford. Funded under the ERC Starter Grant program where the applicant defines the research, SEALINKS focuses on the study of prehistoric maritime activity, and exploration of the specific developments that resulted in the transition from occasional seagoing to regular seafaring and then planned, long-distance voyaging. The Department observed

The ERC Starter Grant Program enables talented researchers to develop research programmes over extended time periods (up to 60 months), and provides significant funding (>€1m) for the time investment of the applicant and the development of a research team. This enables the applicant to bring together a number of disciplinary areas around a central theme of the applicant’s choosing.

Funding available in the UK cannot provide for this level of research activity to early career researchers developing as global leaders in their field.

(3) **INSTRUCT** is major European collaboration of structural biologists that integrates expertise, technology platforms and education to deliver high impact science. It provides structural and cell biologists from industry and academia with the opportunity to further their research. Oxford's participation is through the Division of Structural Biology (STRUBI), also part of the Wellcome Trust Centre for Human Genetics. The Division includes the Oxford Protein Production Facility (OPPF) and the Oxford Particle Imaging Centre (OPIC). Instruct is a dynamic international hub of structural biology that integrates the infrastructure of expertise, technology platforms and education to deliver high impact science. It provides structural and cell biologists from industry and academia with the opportunity to further their research. Instruct is a European wide initiative, which was initially made possible through funding from the European Commission and the Roadmap Programme established by the European Strategy Forum on Research Infrastructures (ESFRI). The results include coordinated, cost-effective national investment in infrastructure, both in the UK and in its partner European countries; collaborative meetings and forums; technical developments (incl. the SPINE sample holder and cryo-pin, which allowed the automation of crystal loading); and close to 400 publications to date.

6. The EU has gone to considerable lengths to consult on policy instruments and specific programmes, hold open calls for researchers to serve on advisory bodies and to peer review proposals and to publicly evaluate particular initiatives (incl. the R&D Framework Programmes and the work of the ERC). The opportunities have been (and are) there for UK officials and researchers to take part and exert influence. Oxford, as a founding member of the League of European Research Universities (LERU)<sup>3</sup>, is also able to have its voice, and the voice of other leading research universities, heard through the Commission's interaction with LERU (the other UK members of LERU are Cambridge, Edinburgh, Imperial College and UCL).
7. From our perspective, we see no valid basis on which to argue that the EU has had a negative impact on R&D in the UK. We are not aware of the EU arbitrarily preventing potentially useful national actions or acting inappropriately in relation to R&D, innovation and space; we accept that each Member State will not always be able to 'get what it wants' and has to make some compromises at EU level.

### **Future opportunities and challenges**

8. Oxford has, both directly and especially through LERU, argued for continued significant investment in R&D and innovation at EU level.

LERU had very strongly supported the R&I budget of €80 billion proposed by the European Commission in 2011 for Horizon 2020, Europe's flagship R&D programme for 2014-2020.<sup>4</sup> A circa €70 billion package has been agreed by the Council and the European Parliament, for Horizon 2020.

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<sup>3</sup> <http://www.leru.org/index.php/public/home/>

<sup>4</sup> <http://www.leru.org/files/general/LERU%20statement%20on%20Horizon%202020.pdf>

There are promising signs (though still no certainty) that the new program will start on time in January 2014. The proposed program has many elements of benefit to the UK. These include

- Strong investment in 'investigator-driven', excellent science through the ERC
- Erasmus+ to encourage transnational learning mobility with the aim of improve people's skills, personal development and employability
- The 'Fast Track to Innovation' pilot scheme, to increase the participation of industry, SMEs and first time applicants in Horizon 2020
- The expansion of the Future and Emerging Technology programmes, which promote high risk research, to all areas of research and innovation.

9. The promotion of strong research capabilities and capacities across the EU, and the development of a highly skilled workforce with a first-hand understanding of how R&D drives innovation, are essential to its ability to compete on a global scale. Growing such capabilities must be based on the criterion of excellence.

In the 2011/12 academic year, the University of Oxford supported approximately 670 STEM students on research or study abroad experiences with institutions in the EU. Although many of these opportunities have arisen through bilateral exchanges with universities and industries in the EU, EU-wide programmes such as ERASMUS contribute significantly and are critical to their success. The University values such study and research exchanges, as they encourage our scholars to develop new perspectives and approaches to their research and naturally widens and deepens our networks in the EU, positively impacting collaboration in R&D.

Our ability to attract the best and brightest PhD/DPhil students from across Europe is hampered by the rule that precludes us from using EU research grant funds to pay student fees.

10. We are aware of ongoing discussions between the UK Research Councils and the European Commission designed to ensure EU and national research funding mechanisms are aligned. Science Europe also has a major role to play in this area. We see no signs of moves by the EU to go beyond its 'competence' as a research funder or of unhealthy rivalries amongst the major research funders.

11. Our research community is a little wary of some approaches or rumoured developments at EU level, incl.

- Too much emphasis on 'Grand Challenges' (as one colleague observed, 'While meeting these broad challenges is important, it also encourages researchers to shoehorn everything under one roof, whether it fits or not. Inevitably, some potentially important initiatives do not qualify for funding within these prescribed challenges.')
- Any attempt to introduce legislation on the European Research Area
- Undue emphasis on the involvement of SMEs in research projects
- A tendency to evaluate projects more on financial competency than on scientific delivery. There should be much more emphasis on the scientific output at the end of a programme.
- The audit process is currently very cumbersome and compared with grants that are managed by UK funders, the EC is far more bureaucratic and inflexible.

12. Along with the Local Enterprise Partnership (LEP), we are looking at how to take advantage of the 2014-20 Structural Funds Programme. However we share the concerns expressed in the recent ARMA, AURIL and PraxisUnico Open Letter to the Rt Hon Michael Fallon, Minister of State for Business and Enterprise, which set out some of the issues with ERDF support which are compromising the university sector's engagement in local economic development.<sup>5</sup>
13. We would wish to see the proposed new 'Teaming' and 'Twinning' initiatives focus on the coordination of awards from structural funds with funding for research to ensure that newer Member States are able to build their research capacities in order to reach the level of excellence required to access research funding. We believe that *excellence* must be the principal criterion for the allocation of research funding.
14. Oxford and other members of LERU recently put forward a set of proposals in response to the European Federation of Pharmaceutical Industries and Associations consultation on "IMI2." The paper noted

The Innovative Medicines Initiative (IMI) should not put academic institutions in a position where their concerns about the risks will encourage non participation ... The unfavourable reimbursement rates and IP provisions... do not properly reflect respective input of collaborating participants....

LERU therefore requests that further consideration be given to these areas to provide a clear balance of rights and obligations amongst all collaborating participants and that IMI adopt financial and intellectual property rules which will be largely consistent with Horizon 2020.<sup>6</sup>

Several leading UK universities resolved not to take part in IMI1, in what otherwise be key strategic partnerships for the UK, due to the inequitable conditions.

15. We welcome indications that Horizon 2020 administration will be simplified; details are pending. The European Commission must be much more attuned to the burden and costs that its approach to administration and audit are placing on institutions. Through LERU, and especially the European Project Managers Group, Oxford has proposed to the Commission numerous ways to simplify administration.

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<sup>5</sup> <http://www.praxisunico.org.uk/news/detail.asp?ItemID=1518>

<sup>6</sup> [http://www.leru.org/files/publications/LERU response to IMI consultation 2013 June final.pdf](http://www.leru.org/files/publications/LERU%20response%20to%20IMI%20consultation%202013%20June%20final.pdf)