

# **REVIEW OF THE BALANCE OF COMPETENCES**

## **RESEARCH AND DEVELOPMENT CALL FOR EVIDENCE**

### **RESPONSE BY IMPERIAL COLLEGE LONDON**

#### **1. IMPACT ON THE NATIONAL INTEREST**

The principal point I wish to make is the enormous benefit for academia of the EU's funding programmes for research and development.

Obviously, many topics, e.g., climate change, benefit from being tackled on an EU rather than a national basis as their effects are not confined to national boundaries, whilst others, e.g., space research, are better addressed at EU level owing to the huge budgets required. However, the benefit to the UK of EU research and development programmes extends beyond these instances.

This benefit is not simply financial, important though this is as national funding for R&D could not hope to match the size of the €55 billion budget for FP7 and €70.2 billion budget for Horizon 2020. Rather, one of the key benefits of EU funding is the opportunity to broaden and deepen relationships with fellow researchers in Europe, both in academia and in industry, and to work collaboratively with the best investigators in the field regardless of where in Europe they are located. This opportunity helps core knowledge to develop more rapidly than it would if our researchers were able to work only with others in the UK. Multinational teams of excellent researchers thus enable the speedier translation of new knowledge into innovative practices and devices with the consequential economic and social benefits for both the UK and for the rest of the EU.

Such new discoveries are greatly helped by the fact that EU R&D programmes have for many years funding truly multidisciplinary and interdisciplinary research. Often such funding for multidisciplinary projects is unfortunately not available from UK national sources; for many years the UK Research Councils have been reluctant in practice (although reassurances were given otherwise) to fund such work, each preferring to concentrate their resources on core areas of their remit. Thus it would have been impossible without EU funding for UK academics to conduct multidisciplinary research on such a wide scale; this is important as key discoveries frequently emerge from work at the edges of several different disciplines.

A linked point here is the value of the European Research Council (ERC) to UK academics. This is the sole pan-European source of funding for truly innovative, high-risk/high-gain blue-skies research and has been a valuable source of such funding for UK academics. A further benefit to the UK of ERC funding is the ERC's strong focus on excellence as the sole evaluation criterion. This means that ERC grants are awarded only to the 'best of the best' and thus UK success in the scheme becomes a signal to other States, both within and outside the EU, of the high standing of UK universities. A positive 'snowballing' effect is achieved in the UK by our academics winning ERC funding – the prestigious nature of the award attracts top researchers to the UK as team members and thus the academic science

base here is further enhanced. The ERC Starting Grants (and now the new Consolidator Grants too) are enormously helpful in enabling talented young researchers to establish (or to consolidate) their own independent research teams – and to keep such promising talent within Europe rather than joining the ‘brain drain’ to the USA and elsewhere. In financial terms the relatively large size of individual ERC awards means they can be an important contributor to the research revenue stream of UK universities; for instance, in 2012 Imperial College London won more than €25 million in funding from ERC awards.

We have often also found that an initial collaboration in an EU project can lead to further research projects for us with some of the partners; these can be further EU collaborative projects or direct funding from industry to us for specific research programmes. Thus EU collaborative projects help UK academia to demonstrate their expertise to industry partners and thus win further research funding.

The Marie Curie individual fellowships are also beneficial to UK academic institutions. Their highly competitive nature helps to guarantee the excellence of the successful candidates; it is not uncommon at Imperial for Marie Curie fellows to win posts at the university once their fellowship is completed. This is mutually beneficial – the individual secures a position at a leading university to continue their research and Imperial secures an excellent researcher whom we have already been able to assess in depth during their two-year fellowship.

EU research and development funding is not only important to individual academic institutions within the UK; it is important to the UK as a whole by demonstrating the excellence of our academic science base to the world. In this context it is worth noting that the top three universities for winning FP7 funding are all based in the UK – Cambridge, Oxford and Imperial College London in order of success (source: Fifth FP7 Monitoring Report, published 2012).

## **2. FUTURE OPPORTUNITIES AND CHALLENGES**

The structure of Horizon 2020 and list of its priorities clearly offers many opportunities for an academic institution such as Imperial. The increased emphasis in Horizon 2020 on simplification and on a better balance of trust between institutions’ normal practices and procedures and the need to protect EU public funds are to be welcomed. Of course, we are yet to discover how these fine words translate into practice; past promises of simplification have simply meant simplification for the Commission and added complexity and bureaucracy for participants.

Horizon 2020 seems to be a good balance between funding innovative bottom-up research (Priority 1 Excellent Science), research and innovation projects with the prospect of improving the European economic and social situations (Priority 2 Industrial Leadership) and tackling broad issues of concern across the EU (Priority 3 Societal Challenges).

I am, however, somewhat sceptical how successful the innovation actions will be in the short term. This is because they are an entirely new concept, not only for participants but also, and crucially, for the evaluators and Commission officials. There thus needs to be a culture change for them to be successful; this will take time and I suggest that it will probably only be by the end of Horizon 2020 that we will be able properly to evaluate their success.

Experiences with the European Institute of Technology (EIT) introduced in FP7 have shown how long it can take for new ideas to translate into successful practice. The EIT's Knowledge and Innovation Community (KIC) concept is highly original – and is attracting much interest in North America and in Asia – but all KICs have had a slow start and real innovation output is only now beginning to come through.

Imperial is the Co-ordinating Centre for the Climate-KIC which won the bid in December 2009 but has required a substantial and continuing financial investment from the College owing to major problems with the allocation and timing of the KIC finance from the EIT. For instance, in 2013 the pre-financing is only 46% which means that partners are themselves pre-financing 54% of KIC activities. Moreover, they are having to do this through to the second or third quarter of the following year. This is because of the late timing of full grant payments by the EIT. Although financial and performance data have to be submitted by 31 March, the review by the EIT and response to questions raised takes so much time that KICs have not yet received the final payment for 2012. There is also a great need for simplification of all EIT processes; the current level of detail required (e.g., one main performance report document with 493 annexes) is clearly excessive. These financial and operational issues have created problems for partners and slowed down the innovative capacity of the KICs. I therefore think it is a wise choice to seek to consolidate the existing KICs in Horizon 2020 and to limit the number of new ones established – at least until all these operational issues are resolved by the EIT.

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