UNIVERSITY OF LEEDS

University of Leeds response to the open consultation "Government review of the balance of competences between the UK and the EU: call for evidence - research and development"

1. Introduction

1.1. The University of Leeds is recognised internationally for the quality of its teaching and research, and continues to be ranked within the top 100 universities in the QS world rankings. Leeds is one of the largest universities in the UK with an annual income of €646m and over 30,000 students (over 6900 from overseas).

1.2. In 2011/12 its annual research income exceeded €147 m of which 7.96% was derived from EU awards. The University of Leeds is currently successfully co-ordinating 102 FP7 projects and is a partner in a further 138 FP7 projects. A further 16 FP7 grants are under negotiation. It has hosted/is currently hosting 55 Marie Curie Individual Fellowships and Integration Grants and is currently co-ordinating 14 FP7 Marie Curie Initial Training networks. Leeds total income from FP7 is in excess of €116m.

1.3. As a result of our engagement in EU Framework Programmes, we welcome the opportunity to respond to this consultation on the balance of competencies between the UK and EU in relation to Research and Development. Our response represents a synthesis of views obtained from academics within the Universtiy.

2. Executive Summary

2.1. EU Funding streams are seen as a key source of research income by the University, with added benefits in terms of international collaborations, and improved international visibility. It is recognised that the UK gets a significant return for its investment from the EU R&D budget.

2.2. The University approves of the focus on excellence and is supportive of the potential link with the structural funds. The increase in bottom-up opportunities for academic freedom, especially via the expanded FET programme is similarly welcome.

2.3. The most common negative perception with EU R&D funding is the bureaucratic nature of the application and management processes. A streamlining of the rules for different schemes and genuine simplification of these processes will make Horizon 2020 appealing to more leading academics for reasons beyond it being a relatively secure source of funding.

2.4. Investment in, and lobbying for, an optimal share of the budget for ERC and Marie Curie has been seen as essential by the University and current figures for the expected budgets assigned to these actions are viewed very positively.

2.5. UK and EU funding should be seen as being complementary – both must be seen as being independently relevant funders, but neither reliant on the other for funding specific areas.

Response to the Consultation Questions

3. *Where has EU action had a **positive impact for the UK** on research, technological development, innovation or space? What evidence is there for this? Has EU action encouraged national action in any areas?*

3.1. The overwhelming consensus amongst academics is that the EU has been hugely positive on their research and for the UK. The most common opinion is that the creation of EU communities in several research areas which, of course, includes a significant UK contingent, has been particularly beneficial. The Euratom community was cited as a good example, having created a very close R&D community since FP4. Similarly, EU research programmes in transport, starting with FP2, have been major boosters to innovative R&D. The UK has been a significant beneficiary of that work, winning a very significant proportion of the available funding.

3.2. Many recognise the need for research to be bigger – in terms of grand challenges, ambition, innovation and being international in scale. EU collaborations are seen to be facilitated by a central EU Framework fund, and international cooperation from national funders is more problematic.

3.3. The Framework Programme has allowed the UK to lead several international collaborations and to be at the forefront of the international community. These collaborations have been key in competing with other major R&D powers – an example being in observational climate science with the African Monsoon Multidisciplinary analysis (AMMA) where Europe leads in an area normally dominated by the US. Similarly, in atmospheric / environmental science, the two major EU-led activities are undoubtedly the best in the world. These are the European Centre for Medium-Range weather Forecasts (ECMWF) based in Reading, UK, and the METEOSAT weather

satellite.

3.4. European networks can sometimes be considered as 'forced' collaborations, but in the majority of cases, such consortia are recognised as broadening scientific excellence by combining different approaches as well as widening the scope of impact and dissemination.

3.5. EU fellowship schemes – most notably the ERC – have seemingly been used as the basis for new or amended fellowship schemes within the UK. advanced investigator style grants within EPSRC and Wellcome Trust appear to be modelled on the ERC schemes.

3.6. An obvious positive impact is that the UK benefits from EU research funding (16% total budget) more than all other member states except Germany. We consistently get more money out than is invested. UK partners are very well represented in successful EU FP7 projects – 41% awarded projects contain a UK partner.

3.7. EU funding was acknowledged to be a good source of funding for international PGRs, where national funding often restricts access to non UK or non EU students. Marie Curie ITNs are particularly popular.

3.8. The EU is frequently seen to fund areas that are not covered sufficiently at a national level. Specific examples noted include:

- Pest control, where EU funding provided coordinated help to the UK to combat the potential invasion of *Drosophila suzukii* from mainland Europe.

- EU funding for carbon capture and storage (CCS) has seen the development of consequence and risk-assessment tools for carbon dioxide transport systems (pipelines) that far outweigh any UK-funded developments.

- Without EU funded research in many areas of transport research (e.g. Transport models, policy and decision-making, speed management and safety, advanced driver assistance systems) and with only a patchwork of national research programmes, Europe would in many areas almost certainly have been completely outclassed by North America and Japan.

- Positive impact on plant research. Plant/agriculture research in the UK is pretty much exclusively funded by the BBSRC, where it also competes with a lot of other research areas. In contrast, animal/biomedical research has a range of funders, including charities, which are also very limited for plant research. The EU, at least at this level, appears to recognise the importance of plants/agriculture/food and so provides a very valuable additional source of funding for plant researchers in the UK. We have

extremely good plant research in the UK and it is very rare indeed for a successful EU research consortium NOT to contain at least one UK group.

3.9. Examples of EU funding influencing UK include:

- Pest control, where EU funding provided coordinated help to the UK to combat the potential invasion of *Drosophila suzukii* from mainland Europe. Such research has since contributed to FERA and DEFRA knowledge on invasion routes.

- Investigating potential supplies of e-tech elements for new technologies - in the case of the NERC Security of Supply of Minerals programme, the prior EU programme made a major input to the NERC plans.

- For development of Carbon Capture and Storage, EU funded research developed ahead of major UK Research Council programmes and informed the development of UK based research

- Initial EU support of QIPC (Quantum Information Processing and Communication) helped encourage EPSRC to recognise the leading role of the UK in the subject. It certainly helped towards the UK QIP IRC and the current Grand Challenge in Quantum Technologies.

3.10. The inclusion of more 'blue-sky' thinking and bottom-up research is welcome. The ERC is seen as key in this area and is not fully replicated at a national level. The expansion of the FET (Future and emerging Technologies) scheme in Horizon 2020 is also welcome.

4. *Where has EU action had a **negative impact for the UK** in these fields? What evidence is there for this? Has EU action prevented potentially useful national action in any areas?*

4.1. The vast majority of responses could not think of any negative impacts. Most negativity is related to issues with the administration and participation rules that may prevent a section of the UK academic community from being willing to participate.

4.2. Too much of the fund bypasses actual research costs and goes towards administration both generally and within individual projects. UK funding may be better value for money in terms of research costs funded.

4.3. In some areas, (e.g. transport research), the established nature of EU funding makes it less essential at a national level. This leads to UK industry having less funding

available to it. Similarly, some research councils (e.g. EPSRC) are seen to leave out areas as 'the EU will fund it'

5. *How, and where, has UK engagement with partner countries or international bodies, both within and outside the EU, been helped or hindered by EU involvement?*

5.1. The EU has had a major positive impact on collaboration with other centres of excellence within Europe, and helps the EU to improve its performance compared with the USA and Japan, by creating a critical mass of European researchers. Without EU funding, this would not have been possible to anything like the same extent.

5.2. The EU acts as a facilitating body for UK engagement with other EU countries, as well as associated states such as Switzerland and Norway. Collaboration with EU partners and international organisations would be extremely difficult without the EU.

5.3. Participation in EU projects has been of value in establishing links with organisations with which academics would not normally have done, both within the EU and further afield (e.g. BRIC countries) – especially via schemes such as Marie Curie IRSES and collaborative projects involving ICPC countries. Other EU networks have been instrumental in bringing in large numbers of non-EU international partners – one example cited 22 African partners joining an existing EU climate network.

5.4. EU mobility schemes within Marie Curie have been seen to increase international cooperation and the focus on longer-term relationships with Fellows' previous place of employment is a good driver of this.

5.5. Becoming research leader in the EU has frequently been viewed as raising academics' status with "Third countries" more so than would be achievable at a national level. This is due to the raised level of research that comes as a result of international consortia. Large integrated projects and the Horizon 2020 Societal Challenges are deemed to be the best way to get UK recognition on an international scale.

5.6. Joint Programming via JTIs (Joint Technology Initiatives) and ERA-Nets are not seen as being the best model to facilitate international engagement. These schemes are a sensible approach in theory, but the huge variation in rules of each JTI (IMI excepted) and the complicated funding mechanism whereby each partner within the network undergoes a separate process with their national funder prevents consistency and smooth running of the schemes. The ENIAC JTI with TSB as the UK funder is a particularly relevant example. ERA-Nets and JTIs are largely seen as being less financially rewarding than other areas of FP7.

6. *What benefits or difficulties has the objective of a European research area (ERA) delivered for the UK?*

6.1. The primary benefit is the access to knowledge from elsewhere in Europe and collaborations raising the profile of the work of researchers outside the UK-US axis. This largely relates to the scientific communities formed that are mentioned in response to Q1. Access to greater research facilities is an added benefit of this.

6.2. Another major benefit is mobility of researchers, especially via the Marie Curie scheme. This has been particularly beneficial to the UK, who is by far the most common host of individual fellowships. The UK also attracts excellent researchers via ERC fellowships and is again the most prevalent host nation for these grants as well as for nationality of grant holders.

6.3. The purpose of the ERA is to create a homogeneous research area to compete with other world research powers. The nature of this is to ensure the spread of knowledge and expertise throughout member states. As a result, this potentially hinders the UK becoming a dominant international force in research areas in which it is at the forefront. This is, however, countered by the influx of researchers and excellent research into the UK and the fact that the UK also obtains more research funding than the contribution it makes to the budget.

7. *How has the EU sought to coordinate the policy instruments at its disposal across different policy areas to create an enabling environment for researchers and innovators? How successful has this been?*

7.1. In many cases, the EU has provided an enabling environment. For example, the process by which the Sustainable Nuclear Energy Technology Platform was established has been open, consultative and collegiate. This means that all the interested parties are fully bought into the aims and objectives that will form the basis for Horizon 2020. Another example cited is the enshrining of legal requirements into UK law in industrial safety has enabled the uptake of research and technology outputs by UK industry.

7.2. Many areas (e.g. Transport) demonstrate an EU community has contributed to white papers and policy objectives, which may in turn directly affect the UK.

7.3. The EU is not considered an 'enabling environment' in all areas – many areas under the NMP and ICT themes have been subjected to forced 'clusters' between similar projects whereas top-down research dictates the direction of research when these are not the best approaches to roadmap for the future.

8. *What could the EU most helpfully do to promote scientific and technological progress and innovation?*

8.1. Top-down research priorities discourages innovation by being too prescriptive. Although the responsible expenditure of tax-payers money, and the pursuit of a

defined EU strategy is required, there should be more academic freedom within the defined topics to allow for an innovative solution. Horizon 2020 appears to be more flexible in this regard.

8.2. The European Commission commitment to simplification – providing it genuinely makes the application and management processes easier for those running projects – is welcome as the current complexity, variation in rules and 12-month time-to-grant often prevents some leading academics from being willing participants and in particular acts as a disincentive for leading academics who are best placed to lead a project.

8.3. Terminology in the Social Sciences, Arts and Humanities needs to change as all guidelines are written for STEM subjects. This is extremely off-putting for academics in these areas and immediately creates the impression that EU funding is not for them. With the increased role across all societal challenges, as well as the SSH-led Inclusive, Innovative and Responsive Societies, reference to 'science' and 'beyond state-of-the-art' are inappropriate particularly in the Arts and Humanities areas.

8.4. A commitment to infrastructure, beyond the specific 'Research Infrastructures' scheme. Projects should include a higher investment in these, without being at the expense of research costs, in what is the most difficult financial climate for a generation.

8.5. One simple mechanism would be to ensure that the public outputs from all projects (the deliverables) had a permanent home on an EU website or archive. Currently there is not obligation on projects to make these outputs available much beyond the lifetime of the projects. This is a substantial waste public funding in that the results from that funding are not permanently available. It is also a small step towards encouraging innovation.

9. *Where might future EU level action be detrimental to your work in this area?*

9.1. The most popular point relates to Commission action in the mechanics of the grant process. The administration aspects take up too great a proportion of the funding available and it is still an aspect that puts many excellent researchers from participating in EU-funded streams.

9.2. The policy on top-down research is seen as being too prescriptive, in terms of the research's 'expected impact;' and even as far as the geographical spread of the consortium and unrealistic proportions of SME involvement when the target for their participation is shown to be well under the rate stated as preferable in the documents establishing the programme.

9.3. Various EU policies in specific areas have been noted as being a risk – e.g. transport of genetically modified organisms across borders – and it is agreed that EU and UK funded research should be complimentary.

10. *Where might action at national rather than EU level be more appropriate / effective?*

10.1. The general feeling is that the two should be complementary rather than being mutually exclusive. The exclusive emphasis from UK Research Councils on UK-focused research and impact is considered by some to be detrimental to international relevance & communication, and EU funding allows for a wider research focus.

10.2. Greater synergy with regard to match-funding is also suggested – Government and Industry to offer funds up as experience has shown (especially in STEM areas) that the more that is offered, the greater the effect. EPSRC has specifically been singled out as a Research Council that could be more complementary to Horizon 2020.

10.3. Matching support from national sources would be appreciated for UK researchers who get prestigious ERC awards - who are graded as 'A' but are still unfunded by the ERC. This is an approach taken by many EU countries.

10.4. UK funding is recognised as being more appropriate in cases where the focus and scope is more suited to a national priority. Some smaller-scale research is best done in close physical proximity and needs to be started with minimal administrative obstruction (as is not the case with EU funds and time-to-grant). This may 'prime' future research for a more international context. It is largely agreed that most research is now internationally relevant.

10.5. More national equivalents to ERC fellowship schemes will ensure UK researchers stay in the UK. The UK does well with the ERC but should not rely on it alone to attract or maintain excellence.

10.6. National action is required to ensure that training and standards of excellence are maintained within the UK community so that UK scientists continue to be competitive within the EU.

11. *How could EU and national policies and funding streams interact better?*

11.1. Many responses to this are replicated from the above – coordination of national funds to complement Horizon 2020, eligibility of full funding for EU PGRs and a better coordination of funders within JTIs. With an increase in the importance and prevalence of Joint Programming Initiatives, this will be essential in ensuring future success. Interaction of Marie Curie ITNs and the UK DTCs would be encouraged, with utilisation of a common credit transfer scheme.

11.2. Conversely, there were many suggestions that the two should not fully interact, most notably in the Social Sciences. Disparate activity can often reveal new findings and separate streams reduce the chances of ephemeral trends dictating future science

directions.

11.3. The UK could organise itself much better to identify in advance strategic areas where involvement in research would be advantageous and then organise to secure that involvement and subsequent ability to exploit the research (as seen in the Netherlands, Sweden and Germany).

11.4. A similar strategy was noted around reciprocal UK agreements and removal of all barriers to 'double jeopardy' in UK Research Council grant review. For example, we were successful in leading a major collaborative project proposal with six countries (scoring near maximum in review) but the UK Research Council vetoed funding for our involvement in its own second peer review, due to lack of funds, leaving the other countries to progress the project on the basis of our ideas without our involvement.

12. *What impact would any future enlargement of the EU have on this area of competence?*

12.1. Generally, it is considered that enlargement will have little effect. The basis of EU R&D funding is mostly on excellence and this is concentrated in a minority of current EU member states. The token inclusion of a new Member State improving proposal's chances of being funded has been proven a myth within FP7. The general trend of the movement of excellence is a 'brain drain' towards the UK, France and Germany.

12.2. Positive examples include conservation biology where the enlargement of the EU towards south-east Europe involves bringing in areas (e.g. Turkey and the Balkans) with substantial biodiversity and relatively little biodiversity conservation expertise. This is likely to lead to mutually advantageous academic collaboration. The expansion of comparative research in comparative policy research would also benefit from expansion

12.3. The concern is if the budget is "diluted" to take into account more members who contribute lower amounts to the MFF. The emphasis on excellence should ensure that this is not the case.

12.4. We believe that EU funding should evolve not to focus on new member states, but on bilateral S+T agreements with Third Countries that will involve them in truly international consortia.