

EUROPE, THE UK AND SCOTLAND – SCIENCE AND INNOVATION SUBMISSION TO HOUSE OF LORDS BREXIT & DEVOLUTION INQUIRY

1. Introduction

The Royal Society of Edinburgh has made a joint submission with the British Academy and the Learned Society of Wales which addresses many of the key issues posed in the Committee, such as the type of Brexit that is negotiated and agreed, including the issue of whether a separate deal could be negotiated for different parts of the UK.

We believe though that it may be useful for the Committee to receive more detailed evidence on various aspects as they apply to EU funded research, in terms of the potential loss of a significant pool of research funding, with respect to any impact on cross-Europe collaboration on research and ultimately the economy.

This submission will highlight the success of the UK in being awarded EU research funding, particularly in Higher Education Institutions (HEI). It will also set out the degree to which the universities rely on non-UK nationals in staffing the universities. Many of the issues raised in this paper will apply to higher education throughout the UK, though where appropriate relevant information relating specifically to Scotland will be deployed.

2. The Current situation

The UK contributes to Horizon 2020, the Structural funds and the European Fund for Strategic Initiatives. It also draws funds from all these sources, being most successful in accessing Horizon 2020 Funds. 14.2 % of the funding for university research comes from the EU sources.ⁱ

Table 1
Statistics for UK participation in Horizon 2020 ⁱⁱ

	UK Performance in H 2020		UK % of EU funding available		Rank by member state	
	Overall	HEI	Overall	HEI	Overall	HEI
EU Funding / € M	2635	1700	15.3	25.3	2	1
Participants	5428	3186	13.3	22.9	1	1

Table 1 summarises data from the Department of Business Energy Innovation & Skills from September 2016. It shows that the UK currently receives 15.3% of the funding (€ 78 bn over the term of the programme) provided by Horizon 2020 (2nd in Europe to Germany). Of the funds awarded to Universities 25 % goes to the UK (1st, see also Figure 2, below)). Although some of this money goes to individual researchers (23 %), the majority (77 %) is awarded for collaborative programmes. The UK performs well in all sectors (Figure 1) apart from Research Institutes – because we have few of them compared with other countries (This also inflates our University figure since significant amounts or research in other major countries (France (CNRS), Italy (CNR), Spain (CSIC), Germany (Max Planck, Leibnitz, Fraunhofer) is carried out in research institutes.

The UK also performs well from most funding streams, being most successful in the Excellence Pillar (first 4 entries in Figure 2).

The Department of Business Energy Innovation & Skills statistics also show that 30 UK Universities (5 in Scotland) are in the top 132 ranked by funding from the EU. The top 30 UK Universities attract € 1.4 billion (82 %) out of the total higher education Horizon 2020 funding to the UK (€ 1.7 billion).

Within that top 30, the 5 Scottish Institutions attracted € 180 M or 13 %. This compares with Scotland having 8.3 % of the UK population in 2015.

The UK contributes about 12 % of the funds spent in Horizon 2020, so is awarded significantly more than it pays in.ⁱⁱⁱ

3. Important aspects of EU membership for science and innovation

The EU and especially Horizon 2020 provide four important advantages to UK scientists.

3.1 Funding

As indicated in Figure 1 and the preceding narrative, the UK receives more funding from Horizon 2020 than it puts in, mainly through the higher education sector.

3.2 Collaboration

Because of the large critical mass of funding available from the EU (€ 78 bn), it is possible to fund large projects at all technology readiness levels. Apart from the large facilities such as The Institut Laue-Langevin (ILL) and Conseil Européen pour la Recherche Nucléaire (CERN), and individual grants covering the European Research Council (17 %) and Marie-Sklodowska Curie Actions (MSCA, 12 %), the majority of Horizon 2020 funds are spent on Societal Challenges (40 %) and Industrial Leadership (24 %), which cover Technology Readiness Levels 3-8 and profoundly enhance industrial competitiveness, especially through demonstrator projects. Typical collaborations involve funding of € 10-20 M with 10-20 groups from industry and academia. However, some collaborations, for example those set up to tackle Grand Challenges like climate change, antimicrobial resistance, the circular economy etc. will be much bigger. It is possible to put these teams together only by involving scientists from many different countries and sectors and because the Horizon 2020 budget (€78 bn) has the critical mass to support them. Figure 2 shows that the UK contributes approximately as much as it receives in these streams.

3.3 People

Apart from the Principal Investigators of the teams described above, UK science is heavily dependent upon people from the EU (16 %) and outside the EU (12%). They vastly enhance our research environment by “widening the gene pool”, introducing different ideas and cultures and carrying out research at the highest level. Without young researchers from outside the UK, we would not be able to run the projects we currently run. Not only do they contribute while they are in the UK, but those who return to their own or another country often become collaborators and ambassadors for UK science.

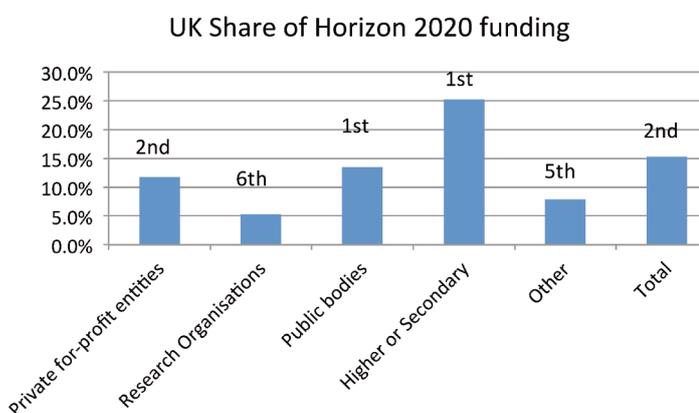


Figure 1. Percentage of EU funding won by different UK sectors. The number above each bar represents the UK's rank among EU countries [2]. It is also instructive to note how the UK performs in the different funding streams by country.

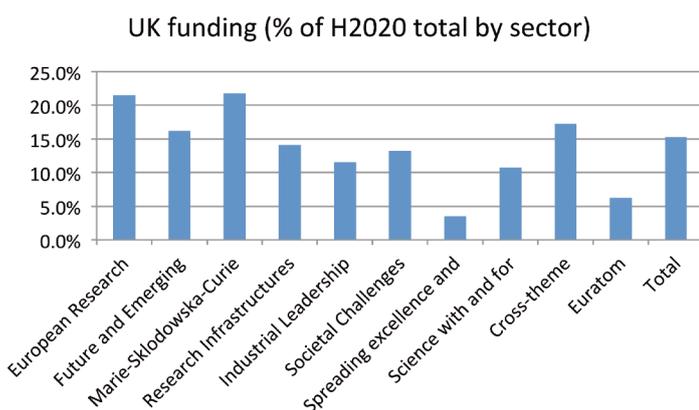


Figure 2. Percentage of EU funding won from different Horizon 2020 funding streams. [2]

The statistics in Table 1 and Figures 1 and 2 show that the work of UK academics and industrialists and the presence in collaborative programmes are amongst the most highly valued from any country by colleagues in Europe. They also show that the UK benefits greatly from EU funding. Both UK and EU industry are made more competitive by current EU funding.

16% of academic staff in UK universities are from other EU countries with 12% from non-EU countries. The figures for Scotland are even higher, across all disciplines at over 18% for EU nationals and 13% for non-EU. For biological, mathematical and physical sciences in Scotland they are higher still at 26% and 15% respectively.^{iv}

Programmes such as the MSCA, which include Training Networks enhance capacity building in all EU countries as well as providing significant cross-cultural awareness.

Many UK scientists chose to spend part of their formative years in the EU and beyond.

3.4 Regulations

As an example more than 100 EU regulations cover the chemical sector alone.[4] These regulations allow us to use the chemicals we need in everyday life with the assurance that, as far as is known, they are safe. Working in a uniform regulatory environment means that common standards are adopted and movement between countries does not require re-acquaintance with the regulatory framework. The EC is a large enough market to be very significant in world trade and so can impose many of its regulations on countries from whom it imports goods. In many cases EU regulations are becoming the “Gold standard” for the world.

4. Requirements for the end of the negotiating process

To remain competitive and retain the UK's very high status, the UK research and innovation community will require:

- Funding for research and innovation at least at the levels currently obtained from EU and UK sources
- Access to major international facilities for research, innovation and scholarship

- The ability to build multi-centred collaborations between academia and industry to tackle major problems and remain in the forefront of international research and innovation
- The ability to recruit the very best people to work in our academic and industrial centres with the minimum of bureaucracy and uncertainty
- The opportunity for UK scientists to work abroad for at least part of their career
- The involvement of UK scientists in peer reviewing grants which might involve UK participants.
- Regulations which are appropriate to research and innovation in a global economy.

5. Conclusions

The RSE is of the view that it is in the interests of research and innovation within the UK to seek to negotiate a position that enables UK based researchers to continue to collaborate with their research partners across the EU and access the funding streams. Of course this requires the agreement of the other 27 EU countries, which may be difficult to secure.

6. References

- i** University EU research funding gives £1bn boost to economy and creates jobs 10 June 2016, Universities UK, <http://www.universitiesuk.ac.uk/news/Pages/economic-impact-on-the-UK-of-eu-research-funding-to-universities.aspx>
- ii** UK Participations in Horizon 2020, September 2016 <https://www.gov.uk/government/statistics/uks-participation-in-horizon-2020-september-2016>
- iii** Evidence to the House of Lord's Select Committee, 5th December, 2015, M. Galsworthy and R. Davidson, <http://blogs.lse.ac.uk/brexit/2015/2012/2005/debunking-the-myths-about-british-science-after-an-eu-exit/>
- iv** Higher Education Statistics Agency, <https://www.hesa.ac.uk/news/23-02-2017/departmental-demographics-academic-staff>

Additional Information

For any further information please contact Bristow Muldoon, Head of Policy Advice & Parliamentary Affairs, The Royal Society of Edinburgh. 0131 240 2787, bmuldoon@these.org.uk.

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