Brexit: Status, Achievements, Challenges and Opportunities for Scientific Research

Opening Statement from Professor Mark WJ Ferguson, Director General, Science Foundation Ireland and Chief Scientific Adviser to the Government of Ireland, to the Seanad Special Select Committee on the UK's withdrawal from the European Union.

9th October 2019

Introduction

I would like to thank the Chair, Senator Neale Richmond, and the Committee members for inviting Science Foundation Ireland to address the Committee.

For brevity, I structure my remarks by way of an update to the comprehensive evidence I provided to the Committee on 8th June 2017, surrounding the background, challenges, strategy and opportunities for scientific research following Brexit.

Achievements

Science Foundation Ireland (SFI) has strengthened its bilateral research collaborations with the United Kingdom. Below I provide examples of these collaborative schemes, where SFI pays the costs of the researchers in Ireland and the UK agency pays the costs of the collaborating researchers in the UK.

SFI collaboration with United Kingdom Research & Innovation (UKRI), Engineering and Physical Sciences Research Council (EPSRC). SFI has two partnerships with EPSRC:

(1) The SFI – EPSRC Partnership Programme

This programme provides the opportunity for Ireland / UK collaboration though supporting joint research and technology development in all areas of EPSRC's remit which covers; chemistry, engineering, information and communications technologies, materials, mathematical sciences and physics. This collaborative programme was established in 2018.

To date, three grants have been awarded with a total contribution from Science Foundation Ireland (for Irish based researchers) of €1.4m and a total contribution from EPSRC (for UK based researchers) of £1m.

(2) The SFI / EPSRC Partnership Programme in the Centres for Doctoral Training

This programme allows for the joint training of PhD students registered in Irish Universities and associated with the 16 SFI Research Centres and those registered in selected UK Universities. The students funded by Science Foundation Ireland are registered in Irish Universities, supervised by a Principal Investigator in one of the Science Foundation Ireland Research Centres, to conduct cutting edge research projects in areas such as materials science, data science, engineering, medical devices etc. These students are also fully integrated into world class Centres for Doctoral training cohort training programmes in the UK Universities and may be also co-supervised by Investigators in the UK.

This programme was established in 2017. Seven grants have been made to date. The total commitment from Science Foundation Ireland under this programme (over eight years) is €38.5m (to fund the Irish based students) and the total commitment from EPSRC as partner is £41m (to fund the UK based training programme).

SFI also has partnerships with other UK funding agencies, Biotechnology and Biological Sciences Research Council (BBSRC), The Royal Society and the Wellcome Trust.

(2) SFI partnership with the Biotechnology and Biological Sciences Research Council (BBSRC)

This SFI / BBSRC partnership supports collaborative research and technology development in all areas of the BBSRC's legal remit, including bioscience for health, agriculture, food security, industrial biotechnology and bio-energy. To date, 14 awards have been made under the programme, with a total commitment (over five years) from Science Foundation Ireland of €6.6m, to support the Irish based researchers and a commitment from the BBSRC of £6.2m, to support the UK based research collaborators.

(3) The Royal Society / SFI University Research Fellowship partnership

This programme is for outstanding scientists in the Republic of Ireland who are in the early stages of their research career and have the potential to become leaders in their field. The scheme provides the opportunity to build an independent research career and awards are made in all fields of the natural sciences, which includes but is not limited to biological research, chemistry, engineering, mathematics and physics. These are amongst the most prestigious basic science awards in the world. To date, Science Foundation Ireland has made a total of 13 awards to outstanding researchers, all based in the Republic of Ireland and all awarded these prestigious Royal Society University Research Fellowships. The SFI Commitment to date, under this programme over five years is €6.6m.

(4) SFI – Wellcome Research Partnership

This Partnership award funds biomedical and clinical research and is jointly funded in Ireland by Science Foundation Ireland and the Health Research Board. To date, 26 grants have been awarded, with a total commitment from Science Foundation Ireland of €5m, to fund the Irish based research and a total commitment from the partner of €7.8m.

Recruitment Programmes

(5) SFI Research Professorship Programme

The Science Foundation Ireland Research Professorship programme aims to attract world-leading outstanding research talent to Ireland, supporting research in national strategy priorities by assisting Universities in the recruitment of world-leading researchers for professorial chairs or similar research leadership positions in target scientific areas. The programme provides support for active European Research Council award holders and also acts as a mechanism to support the recruitment of individuals who possess a strong industry background, as well as those suitable for senior roles such as SFI Research Centre Director. To date, 11 eminent SFI Research Professors have been recruited to Ireland, several from the UK representing a total commitment to this programme from SFI of €65m, over a five-year period.

Of particular note, is the recruitment of Professor Seamus Davis in 2018 from Cornell University in USA, under a joint appointment, 50% held at University College Cork and 50% at the University of Oxford in the UK. Professor Davis is leading a pioneering research programme to study quantum materials for quantum technology. His SFI Research Professorship award was supplemented by an SFI Infrastructure award to enable the purchase of key equipment and by a prestigious European Research Council Advanced Grant award, held jointly between the University of Oxford and University College Cork.

Science Foundation Ireland is actively promoting similar joint appointments between leading UK research intensive Universities, e.g. Cambridge, Oxford, Imperial College London and University College London and Irish Universities. Science Foundation Ireland also has a pipeline of Research Professor applications from outstanding researchers currently based in the UK.

(6) Science Foundation Ireland Future Research Leaders

The SFI President of Ireland Future Research Leaders programme is a recruitment driven programme designed to attract to Ireland outstanding new and emerging research leaders in all areas of SFI's legal remit. It is open to candidates with academic or industry relevant backgrounds with a focus on research excellence with impact. To date SFI have made 12 awards with a total commitment of €17.4m over a five years period.

The status of Ireland / UK collaboration in the EU Horizon 2020 research programme

To date, Ireland's performance in the large European Union Horizon 2020 research programme is on target. As of July 2019, Irish based researchers have won €768m, representing 1.74% of the total allocated Horizon 2020 budget. The national target is to win 1.56% (€1.25b) by the end of 2020 and juste retour is at 1.2%. The success rate for Irish applicants is 15.1%: slightly above the EU average. Approximately 70% of the funding won has been awarded to Higher Education Institutes and 30% to industries based in Ireland. Within these programmes, Ireland's major national collaborators are (as of July 2019); Germany (10.64%), Spain (10.3%), UK (10.01%), France (9.48%), Italy (8.75%), the Netherlands (5.4%). In the event that the UK is no longer a participant in Horizon Europe (the successor

programme to Horizon 2020, due to start in 2021), then Irish based researchers will need to find partners to replace the approximately 10% currently with the UK. To that end, Science Foundation Ireland is proactively encouraging workshops and collaborations with a variety of European countries, e.g. Germany, the Netherlands, Lithuania etc.

When analysed from an all-island of Ireland perspective, there is approximately €93.3m competitively won in projects between the North and South of Ireland. As of July 2019, this comprises 80 collaborative projects in which the Republic of Ireland has won €58.6m and Northern Ireland £34.7m. These successes are dominated by the Marie Sklodowska Curie action which is a programme funding student mobility between different countries in the European Union – in this case between Northern Ireland and the Republic of Ireland.

Challenges

In the event of the UK not participating in all, or some, of the major EU research programmes, post Brexit, there are two major challenges for the Republic of Ireland.

First, Irish researchers will need to replace current UK collaborators on new grant applications made to the successor Horizon Europe programme, post 2021. In aggregate, this represents about 10% of Irish collaborators. Finding new partners is possible and is manageable with appropriate investment. Science Foundation Ireland is seeking additional budget to stimulate Irish researchers to find collaborative partners elsewhere within the EU, within the next two years.

The second major challenge relates to continuing collaborations with the UK. As is evident from the earlier part of this paper, Science Foundation Ireland has established a number of major bilateral programmes with the UK funding agencies. This is a good thing to do, irrespective of the outcome of Brexit. In the happy event that the UK is still part of the European Union research programmes, this will stimulate researchers in Ireland and the UK to submit excellent proposals which will win funding under the Horizon Europe programme. In the unhappy event that the UK is no longer part of the EU programmes these bilateral programmes will be necessary to sustain the excellent research collaborations already in

existence between Ireland and the UK. However, there is a major challenge in this regard. Although the administrative programmes and collaborative agreements are in place, significant additional funding will be required to fund the Irish portion of these bilateral research collaborations. Currently, the Irish portion of these research collaborations is funded under the European programme, i.e. covered by Ireland's subscription to the EU and currently Ireland is on track to win back more funds from Europe than it contributes to the programme. This will be the first time in our history that we have done this and is a good result. However, post Brexit, funding for the Irish component of these Ireland/UK research collaborations will have to be found from Irish resources, in addition to Ireland's contribution to the EU budget. Science Foundation Ireland will require a substantial increase (€125m – calculated at 10% of €1.25b) in budget, in order to be able to fund the Irish component of these bilateral research collaborations. This is particularly true for collaborations with Northern Ireland. There is currently no North / South collaborative research programme. Science Foundation Ireland did have such a collaborative research programme, where it funded the researchers based in the Republic of Ireland and the Northern Ireland Executive funded the researchers based in Northern Ireland. This programme ceased to exist when the Northern Ireland Executive dissolved and has not been replaced as it is not a line item in the Northern Ireland budget and therefore cannot be allocated by the civil servants in Northern Ireland, absent a functioning Stormont Assembly. It is really important that we establish strong North / South collaborative research programmes, post Brexit.

North / South research collaboration proposals

Science Foundation Ireland has submitted a major bid to the Government for funds to establish North / South Ireland research collaborative programmes. A similar bid has been made to the UK Government to fund the Northern Ireland component of such research collaborations. These proposals include all-island of Ireland Research Centres, incorporating the two Universities in Northern Ireland and industries in Ireland, both North and South. It also includes funding for collaborative research programmes, challenge based programmes, e.g. to tackle climate change, joint training of PhD students and shared research infrastructure. Obtaining the funds to launch such a partnership programme with Northern Ireland is a priority for Science Foundation Ireland. There is widespread agreement on the

importance and priority of this programme between the Presidents of the Universities in the Republic of Ireland and Northern Ireland., the various administrative authorities in Ireland, Northern Ireland and the UK, industries and industry representative bodies in the Republic of Ireland and Northern Ireland and in the UK etc. Programmes are ready to go, all that is required is the funding to make it happen. Science Foundation Ireland has submitted a case to fund the Republic of Ireland component (€50m) of this major North / South research collaboration initiative.

Opportunities

Research collaboration with Northern Ireland. This is outlined in the paragraph above and includes all-island of Ireland Research Centres, collaborative research projects, shared PhD student training, Challenge Based Funding and Infrastructure funding.

Joint Appointments of outstanding researchers between leading Universities in the UK and those in the Republic of Ireland. As outlined previously, SFI have the first joint appointment Research Professorship between University College Cork and the University of Oxford. SFI is in detailed discussions, particularly with the University of Cambridge, about future joint appointments, which could bring substantial benefits to Ireland.

Recruitment of outstanding researchers, including outstanding stars as Research Professors, up and coming stars as Future Research Leaders, junior researchers and PhD students. Brexit has destabilised a number of leading researchers in the UK who are contemplating leaving. For these excellent researchers who are contemplating leaving, SFI would like them to think about relocating to Ireland, whether full time or as a joint appointment. There is an opportunity to recruit outstanding talent which will be of enduring benefit to Ireland in attracting other distinguished researchers and students, attracting industrial research investment, including co-funding, winning substantial non-Irish exchequer funding (e.g. EU) for the research, advancing important societal challenges such as climate change and enhancing Ireland's global reputation. I believe that this opportunity to attract outstanding individuals is time bounded and we need to take maximum advantage of this opportunity by deliberately funding and promoting such programmes now.

I hope this update provides a factual account of the current status. At a high level, Science Foundation Ireland has put in place all of the administrative programmes necessary to stimulate bilateral Ireland / UK research collaborations, and to attract outstanding talent to Ireland, all of which is extremely positive, irrespective of the final Brexit outcome; but which is absolutely required if the UK is not part of all, or some, of the EU research programmes post Brexit.

Professor Mark WJ Ferguson, 3rd October 2019