



SCOTLAND'S PLACE IN EUROPE:

Science and Research



Scottish Government
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- 05** FOREWORD
- 06** SCOTLAND'S PLACE IN EUROPEAN SCIENCE AND RESEARCH
- 07** THE VALUE OF INTERNATIONAL RESEARCH COLLABORATIONS TO SCOTLAND
- 08** SCOTLAND'S PARTICIPATION IN EUROPEAN RESEARCH
- 09** EUROPEAN RESEARCHERS IN SCOTLAND
- 10** SAFEGUARDING THE FUTURE OF SCOTTISH SCIENCE AND RESEARCH IN EUROPE

Foreword



Since 2015, the Scottish Government has had a clear Economic Strategy focused on inclusive growth. The success of this Strategy, and therefore the prosperity of the people of Scotland, very much depends on science and research, creating new knowledge and new innovations, and contributing to both public service improvements and economic benefit. The UK's possible departure from the European Union (EU) and the vital platforms which the EU provides for science and research fundamentally threatens this progress.

The development of new scientific approaches has always depended on a free exchange of ideas between researchers regardless of geographical and political boundaries. International collaboration is a key driver of academic success and research excellence. We know that on average the impact of scientific papers is greater when there is international co-authorship. For example, scientists at the University of Glasgow recently worked with researchers in Milan on a ground-breaking study linking head trauma with the likelihood of dementia. Such life-saving work is only possible through the networks of collaboration and information exchange within which Scotland participates.

The *Times Higher Education (THE) World University Rankings 2019* demonstrates that nine of Scotland's universities are in the global Top 200 for International Outlook. It is no surprise therefore that Scottish research organisations have been successful in participating in EU programmes for research & innovation. Our international outlook means Scotland is proud to be a destination of choice for students and academics from all over the world. Continuing international collaboration is critical to maintaining and strengthening Scotland's excellence in research as well as meeting our economic policy goals and improving public services. Brexit and the related hostile immigration policies of the UK Government should not be allowed to stymie Scotland's scientific and economic progress.

The UK Government does not have a credible plan to ensure that our valuable science and research can be maintained and enhanced following Brexit. This is an existential threat to our sector. The Scottish Government is the only administration in the UK which has had a consistent plan since 2016 to resolve these issues. Our plan, to stay in the European Single Market and Customs Union, is the only solution, short of remaining a full EU Member, which would break the current impasse which has brought us to the brink of a no-deal Brexit. As set out in this paper, Scotland has much to offer the world when it comes to science and research.

I can assure you that the Scottish Government will do everything it can to continue to bolster our academic strengths through its existing valuable partnerships and new collaborations across Europe and beyond.

Richard Lochhead

Minister for Further Education,
Higher Education and Science

Scotland's Place in European Science and Research



This paper is one of a series of policy papers flowing from the Scottish Government's *Scotland's Place in Europe* publications which set out the implications of Brexit for Scotland and constructive alternatives.

The Scottish Government believes that Scotland's future is best served by continued membership of the European Union (EU) in line with the wishes of the people of Scotland as expressed in the 2016 referendum. However, if Brexit becomes inevitable, our interests, as described by the First Minister in her speech at the Royal Society of Arts on 15 October 2018, are best protected by remaining inside the European Single Market and Customs Union.

Scotland has always been an active partner in European research and innovation programmes, including in the current programme, Horizon 2020. The impact of reduced participation in such programmes would go beyond funding. International partnerships and collaboration are a key factor in research excellence. Scotland has recognised this in its warm welcome to researchers and students from Europe and beyond.

The Scottish Government continues to engage with universities and other research organisations in Scotland to assess and plan for the impact of Brexit on science and research.

The Scottish Government's overarching aim is to ensure that the value of Scotland's partnerships with Europe on science and research, and the contribution that EU citizens make to science and research in Scotland, are fully recognised in the negotiations between the UK and EU. We want to see that the benefits which Scotland derives from European research and innovation programmes are maintained both in the short term and beyond.

The aim of this paper is to demonstrate how important international collaboration is to science and research in Scotland, and to clarify the benefits that continued participation in European programmes such as Horizon 2020 would bring to Scotland.

This paper will help inform the evidential basis for the Scottish Government's engagement with both the UK Government and the European Commission as negotiations on future science and research collaboration between the UK and EU continue.

The Value of International Research Collaborations to Scotland

International collaborations are a key factor in academic success and research excellence. Scottish universities and other research organisations recognise that and are therefore international in their outlook.

The fact that research with international partners has greater impact was highlighted in a key report for the UK Government: *International Comparative Performance of the UK Research Base, Elsevier, 2016*.

“Scientific research and innovation are crucial for tackling the many shared challenges we face [...] To meet these challenges for everyone’s benefit, science needs to flourish and that requires the flow of people and ideas across borders to allow the rapid exchange of ideas, expertise and technology”

Letter by 29 European Nobel Prize-Winning Scientists to the Prime Minister, 19 October 2018

This research success may be partly explained by the even more impressive ranking of Scottish universities for international outlook covering staff, students and research. Here Scotland really excels, with nine universities in the global top 200.

This outlook includes active engagement by Scotland in European research and innovation programmes, including Horizon 2020. As the evidence quoted above shows, the impact of reduced participation in such programmes goes well beyond the funding aspects alone. A reduction in European research collaborations and researcher mobility between Scotland and the rest of Europe is likely to lead to a weakening of our research productivity and excellence.

It also showed that international collaboration goes hand in hand with researcher mobility, and that such mobility increases the value of research. Researchers in the UK who had worked in other countries were found to be the most productive amongst their peers.

Scotland’s research excellence was confirmed again recently in the *THE World University Rankings 2019*. Three universities in Scotland are in the global top 200 for research volume, income and reputation, and four in the global top 200 for research influence (based on citations).

Scotland's Participation in European Research

Research and innovation at Scottish universities remains cutting edge in global terms. The Scottish Government provides around £500 million annually for science and research in Scotland at universities, research institutes and public bodies, including NHS Scotland, to support maintaining this status. Scottish universities (which play the biggest role in research) receive around 10% of their research income from the EU, to the value of around £105 million per year. EU funding for other research organisations and companies in Scotland is in addition to that secured by universities.

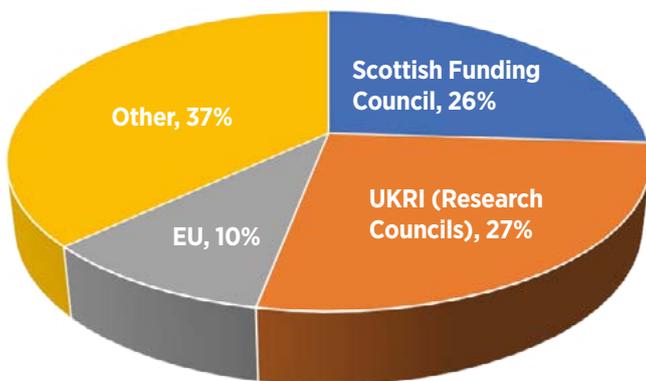


Figure: Sources of university research funding in Scotland 2016-17 (Percentage of £1.05 billion)

Participation in European research programmes gives Scottish universities and other organisations access not only to EU funding but also to collaborative networks, expertise, facilities and data that add immense value to their work. The case study shown on the right is a striking example of that.

The Scottish Government fully expects that any assessment of value for money regarding UK participation in European programmes needs to consider these non-financial factors.

Horizon 2020 Case Study: European Prevention of Alzheimer's Dementia (EPAD)

Project – an interdisciplinary research programme under Horizon 2020 involving public and private sector organisations across Europe, including the University of Edinburgh. This is a major pan-European initiative to create a novel environment for testing numerous measures targeted at the prevention of Alzheimer's dementia.

Aim – to understand better the early stages of Alzheimer's disease and prevent dementia before symptoms occur as part of a global effort in the fight against Alzheimer's disease.

Benefit – preventing the development of dementia in people at risk would be a fantastic step forward in our fight against Alzheimer's disease. The EPAD and its novel approach to trials should help speed up the drug discovery progress and bring us closer to this ambitious aim.

Impact – this project has numerous advantages over current approaches. These include an excellent pre-trial description of research participants to inform selection and reduce screen failure, the establishment of the highest possible quality study sites across Europe, the rapid decision making on the likely success of a drug (or combination of drugs) in subsequent confirmatory trials as well as access to a placebo group shared across Europe.



European Researchers in Scotland

Around a quarter of all full-time research staff at Scottish universities are EU citizens. Many more EU researchers work within the Scottish Government, at our research institutes, public bodies and in the private sector. Many UK researchers working in Scotland have partners, family members, colleagues or friends from the EU.

The continuing uncertainty over the UK Government's future immigration policy has been damaging, presenting a significant risk to Scotland's international collaborations and research excellence. The Scottish Government is keen for EU nationals to continue to study and work at universities and other research organisations in Scotland. We will continue to encourage them to do so.

“For decades, Scotland has welcomed people from across the EU and valued the role they play and diversity they bring to our economy and society. [...] That is why we will continue to make the case to the UK Government for continued freedom of movement for EU students, researchers and supporting staff, crucial to our international collaborations and the excellence of our universities.”

Derek Mackay, Cabinet Secretary for Finance,
Economy and Fair Work, speech at the 37th
Conference of Rectors and Presidents of European
Universities of Technology,
14 September 2018



Safeguarding the Future of Scottish Science and Research in Europe

As set out in *Scotland's Place in Europe*, we still firmly believe that the best way to continue existing collaborations, to guarantee EU funding, and to prevent reputational damage to Scotland is by maintaining our existing relationship with the EU.

Even if Brexit does proceed, the Scottish Government is determined to ensure that we maintain our international outlook and strengthen our European collaborations.

We want Scotland to remain an attractive place to study, live and work for international scientists and researchers. We're also doing what we can to support EU citizens already in Scotland.

As announced in our *Programme for Government*, the Scottish Government will, for example:

- make provision for an advice and support service, including on the new settled status scheme, and meet the settled status fees for EU citizens working in our devolved public services; and
- challenge misconceptions on immigration in Scotland, building on the success of the 'We are Scotland' social media campaign.

The uncertainty around the Brexit negotiations has been hugely damaging to Scotland's interests and is already inflicting reputational and financial blows. UK researchers' participation in Horizon 2020 projects, particularly where acting as a lead coordinator, has reduced since 2016.

We welcome the UK Government's guarantee to support current and future UK participation in the current Horizon 2020 programme in the case of a no deal scenario. However, we do not believe this will be enough to prevent the negative effects of Brexit on Scotland's universities and other research organisations.

In the longer term, we wish to be as fully involved as possible in the future research and innovation programme, Horizon Europe.

We will also encourage Scottish organisations to strengthen their European partnerships in other ways, for example, through networks such as CESAER (see box) and LERU (League of European Research Universities.)

European collaboration Case Study: CESAER

Network – The Conference of European Schools for Advanced Engineering Education and Research (CESAER) is the European association of 51 leading doctorate-granting specialised and comprehensive universities of science & technology, one of which is the University of Strathclyde.

Activity – The association champions excellence in higher education, research and innovation, and training, influences debate, contributes to the realisation of open knowledge societies, and delivers significant scientific, economic and societal impact. CESAER is acknowledged as a key research stakeholder organisation for engagement with the European Commission and other key decision makers in the EU.



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