THE ROYAL SOCIETY

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Royal Society submission to the Migration Advisory Committee's Call for Evidence on EEA workers in the UK labour market

Summary

- Research and innovation is a global enterprise and one that benefits everyone by creating and underpinning the industries and jobs that are of strategic value to the UK, and improving the quality of life for people in the UK and around the world. For the overall health of the research and innovation system, UK academia and business require the skills of not only successful leaders in research fields, but also early-career researchers, the technologists and technicians with specialist expertise that support them, and the students that learn from and work with them.
- The UK research workforce is truly international; 29% of academic staff in UK universities are non-UK nationals, with 17% coming from other EU countries and 12% from the rest of the world. The number of academic staff from other EU countries in UK higher education institutions (HEIs) increased by 94% from 2005/6 to 2015/16. This internationalisation of UK science is also reflected in the authorship of research papers; over half of the UK's research output is now the result of an international collaboration.
- EU workers represent a greater proportion of the workforce in HEIs in England and Scotland than in Wales. 20 institutions account for over 50% of the EU nationals working as academic staff in UK HEIs.
- International mobility varies across career stages, with mobility during the postdoctoral period being particularly common and thought to be important for researchers' career development. Both short-term and longer term moves are common and important to the practice of science, as is outward mobility from the UK.
- HEIs and research institutes recruit globally as a matter of course in order to access the best talent. International recruitment of researchers is not as prevalent in industry, particularly for smaller companies, but is commonplace for particular roles. Some companies recruit international talent by drawing on the pool of foreign researchers already in UK academia.
- As an attractive destination country for top international talent, the UK benefits from mobility through access to additional skills and expertise. Foreign researchers are also a fundamental part of the UK's training infrastructure for research, as training skilled people is one of the key roles of the UK academic research system.

Introduction

1. The Royal Society is the National Academy of Science for the UK and the Commonwealth. It is a self-governing Fellowship of many of the world's most distinguished scientists working across a broad range of disciplines in academia and industry. The Society draws on the expertise of its Fellows and Foreign Members to provide independent and authoritative scientific advice to UK, European and international decision makers. The Society is also a Designated Competent Body for the Tier 1 (Exceptional Talent) visa route.

2. International mobility is fundamental to the practice of science[1] and the Society has a longstanding interest in immigration policy. We therefore welcome the opportunity to respond to the Migration Advisory Committee's call for evidence on EEA workers in the UK labour market. This submission builds on the Society's past work on immigration policy[2].

3. Over the past year, we have commissioned new evidence and analyses[3] to deepen understanding of international researcher mobility. This research may be useful to the Committee and this submission covers some of the key findings.

4. Research and innovation is global and it benefits everyone by underpinning the industries that are of strategic value to the UK and creating jobs and a better quality of life for people in the UK and around the world. The UK is a world leader in research and innovation, with a highly diverse, broad and efficient research system. With less than 1% of the world's population, 4.1% of researchers and 2.7% of global R&D expenditure, we produce 15.2% of the world's most highly cited research papers.[4] The UK research base provides the foundation for new ideas and discoveries, fuelling economic growth and the creation of high-value jobs and skills.

5. Science is a global endeavour and it is crucial that researchers are able to move to and from the UK in support of their work; the international nature of science will not change. In a survey of national Academy Fellows and grant holders, 91% reported that mobility was very important to their careers.[5] Since the UK voted to leave the European Union, the Government has recognised this and repeatedly stated that Britain will always welcome highly-skilled individuals from across the world. This will be crucial to supporting the Government's objective for the UK to be one of the best places in the world for science and innovation. For the UK to prosper as a knowledge economy, its international networks and relationships will be of vital importance.

6. For the overall health of the research and innovation system, UK academia and business require the skills of not only successful leaders in research fields, but also early-career researchers, the technologists and technicians with specialist expertise that support them, and the students that learn from and work with them.

EEA migration trends

EEA workers in UK research and innovation

7. The UK research and innovation workforce across academia and industry is truly international. 29% of academic staff in UK universities are non-UK nationals, with 17% coming from other EU

[1] The Royal Society (2015) The role of the EU in international research collaboration and researcher mobility. https://royalsociety.org/topics-policy/projects/uk-research-and-european-union/role-of-eu-researcher-collaboration-and-mobility/

[2] See for example: https://royalsociety.org/topics-policy/publications/2017/consultation-response-royal-society-commons-home-affairs-committee-immigration/

[3] RAND Europe (2017) International mobility of researchers: a review of the literature (see: https://royalsociety.org/topics-policy/projects/international-researcher-mobility/international-mobility-researchers-review-literature/);
RAND Europe (2017) International mobility of researchers: a survey of academics in the UK (see: https://royalsociety.org/topics-policy/projects/international-researcher-mobility/international-mobility-researchers-survey-academics-in-UK/);
Opinion Leader (2017) The role of international collaboration and mobility in research (see: https://royalsociety.org/topics-policy/projects/international-researcher-mobility/role-of-international-collaboration-mobility-in-research/)
RAND Europe (2017) Supplementary report on the International mobility of researchers in industry (see: https://royalsociety.org/topics-policy/projects/international-researcher-mobility/international-mobility-researchers-industry/)

[4] Elsevier (2013) International comparative performance of the UK research base – 2016. https://www.elsevier.com/__data/assets/pdf_file/0018/507321/ELS-BEIS-Web.pdf

[5] Opinion Leader (2017) The role of international collaboration and mobility in research (see: https://royalsociety.org/topics-policy/projects/international-researcher-mobility/role-of-international-collaboration-mobility-in-research/)

countries and 12% from the rest of the world.[6] This internationalisation of UK science is also reflected in the authorship of research papers; over half of the UK's research output is the result of an international collaboration.[7] A third of UK start-ups were founded by non-UK nationals and 51% of UK start-up employees come from outside the UK.[8]

8. The Higher Education Statistics Authority (HESA) holds rich data on the research workforce in UK higher education institutions (HEIs), which sheds further light on the roles played by these individuals. Looking at academic staff in UK HEIs over the period 2006/7 to 2015/16 shows an increasingly international picture. The proportions of academic staff from other EU countries and from the rest of the world both increased in this period. The total academic staff body increased in size by 18%, but the number of UK nationals only increased by 12% (a decrease in the overall percentage share from 74% to 69%). The number of academic staff from other EU countries increased by 94% in this period (an increase in the overall percentage share from 10% to 17%). The number of academic staff from outside the EU increased by 40% in this period (an increase in the overall percentage share from 10% to 12%).[9]

9. Other sources of data provide some additional information on EEA migrants in the UK research workforce. The Royal Society funds a number of grants programmes, including our flagship fellowship schemes to support early career researchers based in UK HEIs. Of the research fellows currently supported by these early career schemes, 51% are British, 38% are from other EEA countries and 10% are from the rest of the world. In the last round of applications (2017) for the largest of these schemes, our University Research Fellowships (URF), 49% of applications were from nationals of other EEA countries. The URF programme is often used by universities to attract researchers from overseas as well as support home-grown talent. Looking back over the last five years for the URF the proportion of applications from nationals from the EEA rose from 36% in 2013 to 49% in 2017 respectively.

10. HEIs are only one part of the wider landscape of UK research and innovation. The Society has recently undertaken some research on the UK's research infrastructures, in partnership with the Science and Technology Facilities Council and UCL, which we expect to publish shortly.[10] Research infrastructures are facilities, resources and services used by the research community to conduct research and promote innovation, and include organisations like the Met Office and the Diamond Light Source. Our survey of UK research infrastructures found that 32% of their staff are from overseas, with 23% from other EEA countries and 9% from the rest of the world. Although these figures are not based on a complete analysis of the workforce in UK research infrastructures, they indicate that research infrastructures tend to be more reliant on workers from elsewhere in the EEA than the workforce in HEIs (see 7).

11. For industry, information on the composition of the research workforce is more difficult to access than for academia. In September, we published a short Supplementary Report on

[6] Higher Education Statistics Agency (see https://www. hesa.ac.uk/stats-staff, accessed 04 September 2017)

[7] The Royal Society (2016) UK research and the European Union: The role of the EU in international research collaboration and researcher mobility (see: https://royalsociety.org/topics-policy/projects/uk-research-and-european-union/role-of-eu-researcher-collaboration-and-mobility/)

[8] European Start Up Monitor (2015) The European Startup Monitor represents more than 2300 start-ups with more than 31,000 employees in all 28 European Member States. Data from 13 countries surveyed.

[9] Higher Education Statistics Agency (accessed 26 October 2017 via Heidi Plus: https://heidiplus.hesa.ac.uk)

[10] Yet to be published.

international researcher mobility in industry.[11] The report found that companies do not use a common definition of 'researcher' and do not always have data on the nationalities of their staff, so a clear understanding of the role played by EEA nationals in the industry research workforce is difficult to establish. Companies estimated that between 10-50% of their staff were from overseas, but did not consistently distinguish between EEA and non-EEA workers.

Variation across regions, institutions and disciplines

12. Data from HESA show how academic staff in UK HEIs from other EU countries are geographically spread across the UK. In 2015/16, 17% of academic staff in England were from other EU countries, compared with 18% in Scotland and 11% in Wales**.** In Northern Ireland, 31% are from other EU countries, likely predominantly the Republic of Ireland. There is also variation between regions within England. In 2015/16 in London, 22% of academic staff in HEIs were from other EU countries and in the East of England 19% were. In the North West and East Midlands, only 13% were from other EU countries and in Yorkshire and the Humber, 12% were. Across the UK, the distribution of academic staff from non-EU countries follows a broadly similar pattern to the distribution of academic staff from other EU countries, with the exception of the high number of EU staff in Northern Ireland.[12]

13. At the institutional level, academic staff from other EU countries are relatively concentrated. 20 institutions account for over 50% of the EU nationals working as academic staff in UK HEIs.[13]

14. The Society's research on UK research infrastructures[14] also found variation across disciplines. 17% of staff were from the EEA in infrastructures whose main discipline was 'biological sciences, health and food', whereas 29% were from the EEA in infrastructure whose main discipline was 'physical sciences and engineering'. The proportion of staff from outside the EEA varied from 5% in 'ecosystems and earth science' to 13% in 'social sciences and humanities'.

Types of people and types of mobility

15. The data discussed thus far show the proportion of workers from the EEA and beyond in parts of the UK research and innovation system, but they do not give a clear picture of the roles played by these individuals and the drivers of and barriers to their mobility.

16. Both short-term and temporary movement to the UK, as well as longer term moves for permanent employment, are important to the health of UK research and innovation. For example, the UK is the most attractive destination for researchers funded by Marie Skłodowska-Curie Actions, which support researchers to spend time in another EU country. 5,736 researchers chose the UK in the EU funding period 2007–2013. The UK is also a popular destination country for holders of other EU funding; in the UK, 65% of recipients of ERC Starter Grants are foreign nationals, compared with 31% in France and 36% in Germany.[15] It is important that the UK's immigration policy continues to support this type of movement.

[11] RAND Europe (2017) Supplementary report on the International mobility of researchers in industry (see: https://royalsociety.org/topics-policy/projects/international-researcher-mobility/international-mobility-researchers-industry/)
[12] Higher Education Statistics Agency (accessed 26 October 2017 via Heidi Plus: https://heidiplus.hesa.ac.uk)
[13] Higher Education Statistics Agency (accessed 26 October 2017 via Heidi Plus: https://heidiplus.hesa.ac.uk)
[14] Yet to be published.
[15] The Royal Society (2016) UK research and the European Union: The role of the EU in international research collaboration and researcher mobility (see: https://royalsociety.org/topics-policy/projects/uk-research-and-european-union/role-of-eu-researcher-collaboration-and-mobility/)

17. For researchers, international mobility takes a range of different forms; international experiences can vary in terms of their duration, purpose, the number and frequency of moves, and when moves occur in a researcher's career. A survey on international mobility, commissioned by the Society from RAND Europe showed that the postdoctoral period is an important time for mobility, with significant increases in the number of researchers having spent time overseas, particularly for longer stays, between the early and mid-career stages.[16] A recent survey of the population of over 600 Italian academics in the UK—the second largest national group—found that 56% were senior researchers or lecturers and 29% were Professors and 48% of respondents had been in the UK for over ten years.[17]

18. For research and innovation, outward mobility of researchers from the UK is also crucial. UK-born researchers benefit from being able to work abroad themselves to develop their expertise and networks and often choose to bring these back to the UK. For example, RAND Europe's survey of academics in the UK showed that both brief and long-term stays overseas are commonplace; 33% of respondents said they had worked outside the UK for a period of less than three months and the same proportion had worked outside the UK for a period of over three years.[18] 72% of active UK researchers have trained or worked as researchers abroad.[19]

19. Finally, The Society notes a particular gap in the evidence around technicians and technical roles. This response also does not cover students as the Society notes that the MAC have been commissioned separately to look at this group. However, both of these groups are important to the health of UK research and innovation.

Future trends

20. Science is a global endeavour and international collaboration is on the rise. In 1981, about 90% of research papers by UK-based authors included only UK-based authors, whereas by 2011, over half of the UK's research output was the result of an international collaboration.[20] The Society's commissioned literature review on international researcher mobility, produced by RAND Europe,[21] found that international mobility of researchers is becoming more common across the board and it is crucial that the UK remain an attractive destination for foreign talent. According to the survey of Italian academics in the UK undertaken since the UK's vote to leave the EU, 82% were considering leaving the UK.[22]

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[16] RAND Europe (2017) International mobility of researchers: a survey of academics in the UK (see: https://royalsociety.org/topics-policy/projects/international-researcher-mobility/international-mobility-researchers-survey-academics-in-UK/)

[17] Embassy of Italy in the United Kingdom (2017) The Impact of Brexit on the Italian Academic Community in the United Kingdom (accessed 4 September 2017, see: http://www.amblondra.esteri.it/Ambasciata_Londra/resource/doc/2017/06/the_impact_of_brexit_on_the_italian_scientific_community_in_the_united_kingdom_final.pdf

[18] RAND Europe (2017) International mobility of researchers: a survey of academics in the UK (see: https://royalsociety.org/topics-policy/projects/international-researcher-mobility/international-mobility-researchers-survey-academics-in-UK/)

[19] RAND Europe (2017) International mobility of researchers: a review of the literature (see: https://royalsociety.org/topics-policy/projects/international-researcher-mobility/international-mobility-researchers-review-literature/)

[20] The Royal Society (2016) UK research and the European Union: The role of the EU in international research collaboration and researcher mobility (see: https://royalsociety.org/~/media/policy/projects/eu-uk-funding/phase-2/EU-role-in-international-research-collaboration-and-researcher-mobility.pdf)

[21] RAND Europe (2017) International mobility of researchers: a review of the literature (see: https://royalsociety.org/topics-policy/projects/international-researcher-mobility/international-mobility-researchers-review-literature/)

[22] Embassy of Italy in the United Kingdom (2017) The Impact of Brexit on the Italian Academic Community in the United Kingdom (accessed 4 September 2017, see: http://www.amblondra.esteri.it/Ambasciata_Londra/resource/doc/2017/06/the_impact_of_brexit_on_the_italian_scientific_community_in_the_united_kingdom_final.pdf

Recruitment Practices, Training and Skills

Recruitment practices

21. It is the Society's understanding that HEIs and research institutes recruit globally as a matter of course to access the best global talent. They recruit the best candidate either on the basis of their existing right to work in the UK or once they have been awarded an appropriate visa, for example through Tiers 1, 2 or 5 of the Points-Based System. Other organisations in the sector that undertake recruitment directly will be better placed to provide details of these processes in their responses to this call for evidence.

22. The Society's own UK fellowship programmes are open to applicants of all nationalities. Some schemes have an explicit focus on recruitment from overseas, such as the Wolfson Research Merit Award, which aims to support UK institutions to attract top global talent to the UK as well retain talented senior researchers. Royal Society Research Professorships are our premier research award aimed at providing long-term support to world-class researchers based in a UK university or research institution. This scheme is open to both UK-based and international researchers who are leaders in their field and applications from those researchers wishing to relocate to the UK are strongly encouraged. Advertising and recruitment for these schemes is undertaken through a number of routes including dissemination through the Society's international networks, Nature, letters to senior leadership at UK research institutions and the Science and Innovation Network.

23. The Society's commissioned Supplementary Report on industry perspectives on the international mobility of researchers[23] found that, despite a notable presence of international staff in research roles in industry, most industry representatives did not indicate that they do much active recruitment internationally. Smaller companies in particular said that they only recruit candidates with an existing right to work on the UK. However, some stated that international recruitment is more likely in particular situations, for example if a head hunter is used for a particular role or if the company is interested in expanding into a particular overseas market. Companies also noted that they often recruit from the existing international talent pool in UK universities: "they draw on UK universities as a means to accessing the best researchers internationally without having to recruit directly across many countries".[24] They therefore benefit, at one step removed, from the ability of the academic sector to recruit these workers.

Training home workers

24. The research system has a key role in training skilled people in the UK and in filling skills shortages, for example in industry,[25] as insufficient numbers of UK students are coming through the education system and taking up roles in science, engineering and technology.[26] Acute skills shortages also occur in emerging sectors, for example for software developers or

[23] RAND (2017) Supplementary report on the International mobility of researchers in industry (see: https://royalsociety.org/topics-policy/projects/international-researcher-mobility/international-mobility-researchers-industry/)
[24] RAND (2017) Supplementary report on the International mobility of researchers in industry (see: https://royalsociety.org/topics-policy/projects/international-researcher-mobility/international-mobility-researchers-industry/)
[25] CBI (2017) CBI/Pearson Education and Skills Survey: Helping the UK Thrive (see: http://go.international.ac.uk/cbipearson-education-and-skills-survey-2017-helping-uk-thrive)
[26] The Royal Society (2014) Vision for science and mathematics education. https://royalsociety.org/~/media/education/policy/vision/reports/vision-full-report-20140625.pdf

bioinformaticians.[27] The Society's 2017 Machine Learning report notes that the supply of talent in machine learning is critical to the future competitiveness of the UK in this space, and that the difficulties of recruiting machine learning specialists can be especially acute for start-up companies.[28] Among engineering, science, and hi-tech firms, nearly half (44%) report difficulties in finding experienced recruits with the right STEM skills, particularly high-level STEM skills.[29]

25. Training skilled people is one of the key roles of the UK academic research system; academic qualifications are a gateway to employment in a broad range of sectors, including financial services, heritage and culture, creative industries and information technology.[30] Foreign researchers are a fundamental part of the UK's training infrastructure for research and the research system needs to be able to recruit the very best of the global talent pool to continue to train excellent researchers.

26. For research, a time when home grown talent alone could substitute for a diverse, international workforce is not foreseeable. There is a global competition for top talent and the UK must choose an immigration system that can attract these people. To rely solely on the flow of researchers coming through the UK pipeline would have a detrimental effect on the sector's performance as a whole.

Economic, Social and Fiscal Impacts

27. Researchers from overseas strengthen UK research teams by expanding our skills base and bringing new perspectives and approaches to problem solving. Those who ultimately return to their home countries often remain friends of the UK, expanding our scientific networks and soft power. Mobile talent contributes to the creation and diffusion of knowledge and international mobility creates lasting connections between research institutions around the world.

28. The Society's review of the literature on international researcher mobility,[31] explored the impacts of this movement. It concluded that as a destination country, the UK derives benefits from mobility through access to additional skills and expertise. For individual researchers, mobility is associated with better international networks, more research outputs, higher-quality outputs and, for most, better career outcomes. For host countries such as the UK and their institutions, access to high-performing researchers is a benefit of mobility.

29. The UK's excellent research and innovation base, in turn, brings broad economic and social benefits to the UK, providing the foundation for new ideas and discoveries, and fuels economic growth and the creation of high-value jobs and skills in our knowledge-driven economy.

For further information, please contact Becky Purvis, Head of Public Affairs,
rebecca.purvis@royalsociety.org

[27] HM Government (2015) Tier 2 shortage occupation list. https://www.gov.uk/government/publications/tier-2-shortage-occupation-list

[28] The Royal Society (2017) Machine Learning: the power and promise of computers that learn by example (see: https://royalsociety.org/topics-policy/projects/machine-learning/)

[29] CBI (2015) Inspiring Growth CBI/Pearson Education and Skills Survey 2015 (see:http://news.cbi.org.uk/reports/education-and-skills-survey-2015/education-and-skills-survey-2015/)

[30] UK National Academies (2015). Building a Stronger Future: Research, Innovation and Growth. (see: https://royalsociety.org/~/media/policy/Publications/2015/building-a-stronger-future-research-innovation-growth.pdf)

[31] RAND Europe (2017) International mobility of researchers: a review of the literature (see: https://royalsociety.org/topics-policy/projects/international-researcher-mobility/international-mobility-researchers-review-literature/)