Positioning the UK within the global research landscape

The Policy Institute at King’s, Digital Science and Power of Numbers, in association with Universities UK

March 2017
About the Policy Institute at King’s

The Policy Institute at King’s College London acts as a hub, linking insightful research with rapid, relevant policy analysis to stimulate debate, inform and shape policy agendas. Building on King’s central London location at the heart of the global policy conversation, our vision is to enable the translation of academic research into policy and practice by facilitating engagement between academic, business and policy communities around current and future policy needs, both in the UK and globally. We combine the academic excellence of King’s with the connectedness of a think tank and the professionalism of a consultancy.

Cover illustration adapted from a Freepik graphic.
Summary

As in many other leading research nations, in recent decades research in the UK has become increasingly international and involves extensive collaboration with partners in the EU and worldwide. Research co-authored with international collaborators is more highly cited, on average, than that authored by solely UK-based researchers, and the disparity between the two has increased over time. However, the UK’s departure from the EU will inevitably change the nature of its relationships with other countries. While the extent and consequences of these changes are currently unclear, they are likely to affect two key dimensions of international collaboration: access to knowledge and skills, and access to funding and infrastructure.

The Policy Institute at King’s, Digital Science and Power of Numbers hosted a ‘policy lab’, in association with Universities UK, to explore the UK’s place in the global research landscape and how that position can be optimised through new approaches to international collaboration. Discussions covered how the UK can be positioned best to lead and participate in international research across all disciplines, what this means for future engagement with other countries and novel options that might be available to the UK. Participants included vice-chancellors and pro-vice-chancellors from universities, as well as research funders, people with experience from the private sector and international policy experts.

The policy lab considered four different potential futures, based on the dimensions of access to knowledge/skills and funding/infrastructure, and explored the policy mix which might be appropriate should the UK end up in each of these scenarios. Participants then considered the perspectives of different stakeholders and discussed

---

Key points

- **Ease of movement is a prerequisite for accessing the best global talent.** Clarity is needed on the status of EU researchers currently in the UK, while provision for longer-term access to knowledge and skills is important for the UK to maintain its global position in research.
- **But perceptions of the UK research ‘brand’ are also important.** To remain an attractive research partner, the UK’s research brand must be preserved, both in terms of pursuing research excellence and in maintaining an open and international outlook.
- **Maintaining access to EU Framework Programmes is considered to be the best option, but an early ‘plan B’ should also be developed,** based on optimising access to knowledge/skills and funding/infrastructure. The opportunity should be taken to consider the costs and benefits of different forms of international engagement.
- **Funding UK research domestically is not as straightforward as simply providing money.** While maintaining access to funding is important in absolute terms, providing this through a national channel would need a strategic, sector-wide approach, with a careful consideration of incentives, and is crucial for attracting talent.
- **Investing in unique infrastructure would strengthen the UK’s international offer.** This could encourage collaboration and attract talent to the UK.
- **Developing bilateral agreements is likely to be useful,** regardless of access to EU programmes. Under such agreements, collaboration could be facilitated (if necessary) by either also funding the other partner country or at least avoiding ‘double jeopardy’ through, for example, a coordinated application process.

---

strategies which might combine a coherent set of these policy options in order to optimise the position of the UK in the global research landscape.

Overall, participants were very clear that EU Framework Programmes (currently Horizon 2020) are a central pillar of research collaboration that offer significant benefits to the UK, and that ensuring continued access to them should be a priority for exit negotiations. This was the preferred option among all participants, but it was also clear that there are additional activities which could be undertaken to deepen and broaden collaboration beyond these networks. These additional and alternative ideas were developed by asking participants to consider different futures, in some of which access to EU programmes would be restricted or not possible. From these discussions a number of key ideas emerged, as summarised in the box on p. 3.

Participants recognised both the complexity of the challenges faced in redefining the UK’s international relationships as well as the centrality of science and technology in maintaining a robust and innovative economy, and society, following departure from the EU. Collaboration in research and development can also facilitate cooperation in other aspects of international engagement (for example, trade) and the UK’s strong networks in both public and private sectors foster influence and ‘soft power’. Clearly, however, collaboration cannot be a unilateral undertaking – the UK’s international engagement in research will depend on the policies and actions of partner researchers, institutions, businesses and governments. The focus of the policy lab was on how an environment might be created in which such collaboration can flourish. This briefing note summarises the discussions that took place during the day. We hope that the thoughts and ideas it sets out are useful both to those who must negotiate the UK’s exit from the EU and to those within the research sector who must work within that new environment to maintain the eminence of UK research.
Introduction

As the UK prepares to leave the EU, it must redefine its relationships with other countries and reflect on its position on the global stage. Universities in the UK are part of a global research network, employing researchers from around the world and participating in research collaborations with countries across the EU and beyond. A change in the UK’s international positioning presents substantial uncertainty for the research sector, with potential implications for the nature, scale, quality and value of research. To think through these issues and explore potential future policy responses, the Policy Institute at King’s, Digital Science and Power of Numbers hosted a policy lab in December 2016, in association with Universities UK.

A policy lab is a one-day intensive workshop which brings together stakeholders with different backgrounds and perspectives to explore in detail the issues around a particular policy challenge. The approach aims to encourage rapid, creative thinking to develop responses which are novel, but also practical and grounded in the existing evidence base. In this instance, participants were drawn from universities (including vice-chancellors and pro-vice-chancellors), research funders, people with international policy expertise and representatives from the private sector. A full list of participants is provided in the online Appendix.

To encourage novel ideas and avoid constraining thinking to established mechanisms of collaboration, the policy lab took a broad perspective, considering ‘how the UK can lead and participate in world-leading research across all disciplines and what this means for future engagement with other countries’. A briefing pack was provided to participants (see Appendix), which set out the current situation, key dimensions of international collaboration and a framework for discussions at the workshop. The first part of the workshop itself was spent looking at the existing evidence base around international collaboration, before moving on to consider four alternative potential ‘futures’ and the policy mix which might be appropriate in each. Participants then reflected on these options from the perspective of different stakeholder groups, identifying where support, opposition or other consequences might make particular actions more or less appropriate. The final session of the workshop brought together the ideas from the day to create a strategy based on a coherent set of policy options. The full agenda is provided in the Appendix.
The UK in the global research landscape

Policy lab participants were sent a briefing pack prior to the workshop, which set out the scope, structure and aims of the day (see Appendix). To ensure that discussions were grounded in evidence, the pack contained facts and figures which set the scene and located the UK in the current global research landscape (summarised below).

Research is an increasingly international endeavour and like in other leading research nations, the proportion of the UK’s output which involves international partners has increased steadily over the past 30 years – by 2015 less than half of the UK’s research output was solely domestic. An increasing share of these collaborations have been with other EU member states. Papers co-authored by UK researchers and international partners tend to have a higher citation impact than those authored by solely UK-based researchers, and the disparity between the two has increased over time.

In January 2017, after the policy lab had taken place, the UK government published its white paper on the UK’s ‘exit from and new partnership with the European Union’. This document highlighted the UK’s strengths in research and acknowledged its international nature. Some of the key points around science and innovation are summarised in the box below.

While collaborations can vary in their scope and aims, two dimensions seem to be key in driving the advantages that they can bring: access to funding and infrastructure; and access to knowledge and skills.

---

White paper: The UK’s exit from and new partnership with the EU

- A High Level Stakeholder Working Group on EU Exit, Universities, Research and Innovation has been established, comprising senior representatives of UK research and innovation funders, Higher Education Institutions, national academies and learned societies and business.
- The government has emphasised that while the UK remains in the EU, UK researchers should continue to bid for EU research funding, committing to underwrite the payment of such awards following departure from the EU, if necessary.
- Similar assurances have been given to EU undergraduate and postgraduate students, confirming their eligibility for student loans and home fee status for courses starting in the 2017-18 academic year. Plans for subsequent years are not mentioned.
- The white paper highlights the UK’s active role in Horizon 2020, as well as EU space programmes and nuclear fusion research, and notes that the government would ‘welcome agreement to continue to collaborate with our European partners on major science, research and technology initiatives’.
- Specific reference is made to nuclear energy research. In leaving the EU the UK will also leave the Euratom Community, which provides a legal framework for civil nuclear cooperation, including in research. The paper emphasises the importance of international collaboration in nuclear research and development and commits to ‘seeking alternative arrangements’ for this.

---

Access to funding and infrastructure

The proportion of university funding obtained from international sources increased to around 16% by 2014-15 (see Figure 1), with the largest portion (around £836 million) coming from EU government bodies.\(^3\) The UK is one of the largest recipients of EU research funding and indicative figures suggest that it receives a greater amount than it contributes to the programmes.\(^4\) Currently, the UK’s share of the European Commission’s total Horizon 2020 funding is 15.6%, while in the ‘Excellent Science’ pillar, which includes European Research Council grants, the UK receives 20.5% of the total.\(^5\) Reliance on EU funding does, however, vary by both institution and discipline, with fields as diverse as information technology, archaeology and chemistry among those receiving the greatest proportion of their funding from EU sources. In addition to UK and EU funding, UK universities received a further £392 million from non-EU sources in 2014-15.

Figure 1. University research income, 2014-15

Access to knowledge and skills

The UK researcher population is increasingly international and highly mobile, with non-UK nationals comprising 28% of the academic workforce\(^6\) (45% of those on research-only contracts) and 21% of academic staff having worked abroad for two or more years during the period 1996-2011.\(^7\) Half of the post-graduate research student population, which is an important part of the research workforce and may indicate potential future demographics, is now made up of non-UK nationals.

Figure 2. Research workforce in UK universities

---

The UK is expected to leave the EU in 2019. Relationships with other countries will change as a result, affecting many sectors, including research. However, the nature of these changes is not yet clear and depends on the outcome of the UK government’s negotiations with both the EU and other countries. Future deals for research might cover areas such as access to EU funding programmes, bilateral or multilateral science and technology cooperation agreements, and facilitating collaboration at the institution or programme level. However, science policy does not exist in isolation and the research community’s ability, capacity and desire to work internationally may also be affected by policy decisions around immigration, industrial policy, education, trade and other areas.

This complexity means that it is not possible to forecast the precise effects of leaving the EU on UK research and what this will mean for the UK’s international position. It is likely, however, that the coming years will bring changes in relation to the two dimensions of access to knowledge and skills and access to funding and infrastructure. Focusing on these dimensions allows us to conceive of four different ‘futures’, where the net change on each is either positive or negative (Figure 3).

Different responses might be appropriate in each of the four potential futures to preserve the UK’s current strengths, mitigate any negative consequences and capitalise on any new opportunities.
How can the UK respond to these changes?

A range of actions, policies, principles and messages shape the extent and nature of the UK’s participation in international research. These policy ‘ingredients’ may relate directly to scientific research or may concern other policy areas which indirectly influence research activity. The appropriateness, potential impact and feasibility of the policy mix will vary according to the specific challenges of the future we end up in.

The policy lab participants were divided into four groups, each of 5-6 people, to consider the likely policy mix for each of the four hypothetical futures. The groups were asked to focus on optimising the UK’s position in the scenario, by exploring policy options within the constraints of access to knowledge/skills and access to funding/infrastructure which characterised that particular future. Participants did not necessarily agree with the scenario they were asked to consider, in terms of either its favourability or likelihood, but were required to develop options which might help to maintain the UK’s status as a world leader in research in such circumstances. Future 2 was clearly identified as the best case scenario by participants, with access to both knowledge/skills and funding/infrastructure increasing, while Future 3, in which access to both would be restricted, was considered the least favourable. The ideas proposed by the four groups are set out on the next page.
More access to knowledge/skills, less access to funding/infrastructure

- Focus on centres of excellence
- Collaborate with external, better resourced partners
- Use alternative sources of income for research
- Deprioritise funding for high-cost research
- Mixed funding of talent, eg joint university-industry funded posts
- Focus on the ‘big ticket’ researchers to attract private/charitable funding
- Increase researcher mobility to leverage better funded environments
- Increase internationally funded fellows
- Leverage talent/prestige to get an international research centre based overseas
- Focus on global challenges to partner for greater impact

More access to knowledge/skills, more access to funding/infrastructure

- Invest in future-proofing the research ‘supply chain’
- Build up strong international networks, particularly with under-invested countries
- Focus on building demand-side incentives (eg engagement)
- Invest in an infrastructure ‘honey pot’ to attract talent
- Encourage national and international mobility of early career researchers
- Develop ‘exit strategies’ for early career researchers who leave academia
- Encourage researcher mobility between HEIs
- Headhunt to ‘relocate’ talent to the UK
- Invest in strengths
- Invest in weaknesses to broaden research base

Less access to knowledge/skills, less access to funding/infrastructure

- Focus on small number of strategic priorities and areas of excellence (both subjects and research centres)
- Invest in unique infrastructure – small number of globally-attractive destinations
- Explore other sources of funding – eg industry
- Use other funding streams more creatively to support research
- Invest in young researchers and PhD students to develop talent
- Attract small amount of overseas talent into focus areas
- Build UK research brand to increase public support – ‘win hearts and minds’

Less access to knowledge/skills, more access to funding/infrastructure

- Buy into particular programmes which encourage/require international collaboration – bilateral and multilateral
- Fund collaborations based outside the UK
- Work on maintaining/building prestige of UK system, eg awards
- Build industrial collaboration to access talent in private sector
- Set up ERC-like funding programme to attract talent to UK
- Develop appropriate cross-border intellectual property regimes
- Be more ‘open’ in other ways in science to encourage collaboration
**Future 1**

In a scenario where the UK has good access to skills and knowledge but a decrease in the funding and infrastructure available, potential responses focus on identifying new, alternative funding sources and better targeting existing resources, and in particular, on using the strong pool of talent available in the UK to facilitate these aims.

**Key ideas**

Retargeting the funding that is available currently might include supporting less high-cost and/or high-risk research, or prioritising funding centres of excellence in which the UK has a strong track record. Focusing on supporting ‘big ticket’ researchers who have an established reputation internationally might attract both international funding and additional support from, for example, private or charitable funders. Other potential ways of replacing lost resources include diverting other sources of university income to research activities, developing more jointly funded posts (eg university-industry) and encouraging researcher mobility to take advantage of better resourced localities.

**Future 2**

In a scenario where the UK has both good access to skills and knowledge and an increase in the funding and infrastructure available, potential responses focus on investing for the future so that the UK’s research base is strengthened in a sustainable way. Such an environment would also provide opportunities to ensure that the UK is optimally placed to take advantage of developments elsewhere in the global research landscape.

**Key ideas**

An immediate future rich in both talent and resources would allow the UK the luxury of focusing on the longer term. Investing in young researchers and training would help ‘future proof’ the research supply chain, while similar investments in infrastructure might act as a ‘honey pot’ for both top global talent and international collaborations. Investing in current strengths could increase the impact of research and further advance the UK’s reputation in these areas, while investing in currently weaker or emerging areas would broaden the UK’s research base and potentially open up future opportunities.

Building strong international networks, particularly with emerging research powers, and encouraging the mobility of researchers between countries, sectors and institutions could strengthen the UK’s future position in the changing global research landscape. Establishing networks and promoting mobility in this way may lead to a research base which is more resilient and responsive to emerging trends and global challenges.

**Future 3**

In a future where the UK has less access to skills and knowledge, and also less access to funding and infrastructure, potential responses aim to strategically focus on core areas of expertise and differentiate the UK in the global research landscape.

**Key ideas**

When resources and access to talent are limited, the UK could benefit from focusing on a limited number of strategic priorities and areas of excellence, aiming to attract a small amount of specific overseas talent and investing in unique infrastructure to differentiate the UK’s offering globally. It may be possible to draw on other sources of funding, either from other sectors (eg industry) or by repurposing other existing funding streams to support research. Developing home grown talent in focus areas may be important in sustaining excellence in the longer term, particularly if challenges in attracting or retaining non-UK researchers leave gaps in capacity and/or capability. This might include post-graduate training (eg PhD programmes) and a focus on particular skills through, for example, technical apprenticeships. Finally, a commitment to maintaining the UK’s research ‘brand’ and promoting the importance of research to the public could build support for greater investment.

**Future 4**

In a future where the UK has less access to knowledge and skills, but more access to funding and infrastructure, potential responses focus on drawing on talent in other countries and sectors, both by providing financial incentives and by ensuring that the UK is an attractive and flexible research environment.

**Key ideas**

The use of financial resources to promote collaboration with UK researchers might include directly funding collaborative work to be led in other countries or buying into particular bilateral or multilateral funding programmes which require or explicitly encourage international cooperation. The UK could also set up a large national research fund focused on research excellence in all disciplines (perhaps similar to the European Research Council). If awards were large enough, this financial incentive might attract overseas researchers to move to the UK, or encourage UK researchers based abroad to return. If such a fund were successful, it would also contribute to the prestige of UK research.

In addition to promoting a research environment rich in resources, maintaining an ‘open’ stance in relation to other aspects of science may help build or maintain the perception of the UK as an attractive research partner (eg through appropriate cross-border intellectual property regimes, involvement in international scientific governance, data sharing initiatives, etc). Finally, building industrial collaboration would provide opportunities to draw on talent in the private sector.
Perspectives and practicalities

While particular options within each of these futures may seem attractive for the UK, other stakeholders in the research community may have different interests and perspectives on the international research landscape and the UK’s role within it. These views will affect how feasible it is to implement policies and may reveal potential trade-offs and compromises that could ultimately represent more realistic outcomes.

The policy lab participants were divided into groups to consider the perspectives of different stakeholder groups: higher education institutions and academics in the UK and elsewhere, other countries, EU institutions and large businesses. Each group was asked to think about additional opportunities and threats for UK research, and to consider whether there were elements of the policy mix that might be either reinforced or undermined by the views of the stakeholders they were representing.

UK HEIs and academics

In addition to concerns about overall levels of access to knowledge/skills and funding/infrastructure, refocusing investment nationally could have differential costs and benefits across the sector, with a risk of fragmenting the HE landscape. For example, an investment in large scale infrastructure in one location would need to be accompanied by policies on access and asset sharing to distribute benefits more widely. Similarly, the creation of centres of excellence may result in talent clustering in particular institutions or in less-established researchers losing out to ‘big names’. Fostering unity among institutions would seem essential for representing the sector’s interests clearly and consistently in negotiations.

A shift in focus towards national-level research funding may, however, allow HEIs more autonomy in their research strategies and enable collaboration to be tailored to address their own priorities and involve the best partners, regardless of where they are based.

Finally, it is possible that a perceived global shift in the role of evidence in policy may undermine or necessitate a change in the way that universities engage with society. This highlights the importance of building public support and clearly demonstrating the value of research.

Non-UK academics

Until there is clarity on the legal status of non-UK researchers working in the UK, there may be concerns that uncertainty or speculation could lead to UK funders awarding funding preferentially to UK nationals, or EU funding agencies (or collaborating institutions) focusing on researchers in other EU countries. This may be particularly pertinent for longer term projects (which will still be in progress when the UK leaves the EU) and might affect both those currently in the UK and those considering moving. For this latter group in particular, the potential loss of access to prestigious European funding may be a strong disincentive to join a UK HEI.

Conversely, non-EU researchers may perceive a ‘levelling of the playing field’, particularly if there is a shift in focus towards bilateral research agreements worldwide, in place of European collaboration.

EU institutions

EU institutions may be keen to preserve the UK’s access to European research programmes due to (i) the increased global competitiveness associated with UK involvement (for example, the UK’s disproportionate success in the ‘Excellent Science’ pillar of Horizon 2020), and (ii) the opportunity for collaboration to build capacity in other member states with less-established research bases.
However, much will depend on the negotiation process between the UK and the EU, and any UK involvement in EU research and innovation programmes will require an as yet unknown financial contribution to the EU budget.

**Other countries**

Other countries may support efforts to preserve/enhance ease of movement of researchers, both to maintain access to UK talent and to ensure development opportunities for their own nationals to work or study in the UK. However, some may also consider restrictions on movement as an opportunity to retain researchers, who might otherwise have chosen to move to the UK, within their own research systems. EU member states and associated countries may have concerns about reduced competitiveness of European research globally and the potential fragmentation of the European science base. There may also be a threat to relationships which are primarily mediated through the UK – for example, third party countries accessing EU collaborations through UK partners, or European connections through the UK to research groups in countries where the UK has strong ties.

On the other hand, if the UK does not participate fully in EU Framework Programmes, the development of bilateral agreements may be incentivised and become more commonplace. It is also possible that a less connected or attractive UK research environment may enable other countries to attract talent overseas. For EU member states, the potential reduction in access to UK knowledge and skills (and overall decrease in the size of EU funding pots) may be tempered by a relative marginal increase in the funding available to them, particularly in programmes in which UK researchers do disproportionately well. There may also be a greater opportunity to influence the direction of EU research programmes, specifically the development of the next Framework Programme (FP9).

**Large business**

Partners in the private sector, in particular the R&D directorates of large businesses, are likely to be focused on access to knowledge and skills, so may be particularly supportive of efforts to encourage ease of movement of researchers – both between countries and between sectors. While the tax and regulatory environment will be important in facilitating and incentivising the role of the private sector in research, a conducive environment is not enough on its own without appropriate talent being available. Transaction costs of moving an R&D base from one country to another are large, so companies could adopt a ‘wait and see’ approach while relationships are established and new patterns of collaboration emerge.
Co-creating a coherent strategy

While the future landscape and appropriate responses to it are uncertain, as discussed above, it is possible to identify key ideas, dependencies and alternative options which are likely to be pertinent in any scenario. Some may be useful in informing the UK’s negotiations on leaving the EU, while others are actions which the research community itself might pursue at various points in time.

The policy lab participants were divided into three groups and asked to consider how the various policies, actions and messages discussed throughout the day could be combined into a cohesive strategy to prepare the UK for whichever ‘future’ emerges. For the most part, the groups chose to represent these strategies as timelines, with a series of decision points at which alternative paths could be followed as the outcomes of negotiations become clearer. The key elements which emerged from the groups’ discussions are summarised below.
In the short term, there are a number of immediate actions which could be taken to help preserve the UK’s existing position and prepare for likely changes. These focus primarily on the ‘softer’ aspects of research policy: building relationships, providing reassurances and managing perceptions. As positions and likely outcomes become clearer over time, the focus is likely to shift towards concrete strategic decisions on the use of resources and the most beneficial collaborations to pursue.

**Short term priorities**

**Developing a clear and coherent position**

The research sector is just one of many with a stake in the government’s Article 50 negotiations: the potential impact of the eventual deal agreed may outweigh the sector’s ability to influence the process. Despite this, there is scope to shape the direction of negotiations within these constraints, and the development of a small number of negotiating positions would help the sector maintain a clear and unified stance in doing so. Basing these positions on the two axes of access to knowledge/skills and access to funding/infrastructure could help maintain focus on the most important aspects of the research relationships currently grounded in the EU.

**Auditing the current situation to plan and advocate**

To inform and help develop these stances, it may be useful to carry out an audit of the current situation. This would highlight the UK’s areas of research strength and deficit (both current and potential, should international collaboration decrease). Importantly, it should also detail the benefits that UK research generates – socially, economically and culturally – for the public, government, research partners and wider international relations. Much of this analysis may exist in some form already, but bringing it together could strengthen the sector’s influence and promote a unified negotiating position. An audit of this kind would also support a number of other actions discussed here, by providing a benchmark of the current situation, evidence for informed advocacy and guidance on how to target resources most effectively.

**Securing existing international talent**

An immediate priority to address is the status of EU researchers (and students) currently in the UK. This is important not only for this group, but also for other researchers and students considering a move to the UK. While there are many factors which will affect the decision to work in the UK or elsewhere, the opportunity to obtain indefinite leave to remain (or for moves intended to be temporary, the legal right to live and work in the UK for the duration of the contract) is clearly a prerequisite. Related issues include whether a researcher moving to the UK will be able to also bring other elements of their overseas position – their funding, lab, etc.

**Building the brand**

In addition to its practical importance, clarifying intentions around the ease of movement of researchers in the longer term is also crucial in shaping perceptions of the UK research environment. Any perceived move to limit the openness or international outlook of the sector could impact on the ‘brand’ of UK research. There are several audiences for which this brand may be important, including current and potential collaborating countries, individual researchers and research groups, and the wider public. In terms of overseas collaborators, highlighting the UK’s research strengths and commitment to global challenges could help ensure that the UK remains an attractive collaborating partner. It may also build support among other EU member states for the UK’s continued involvement in EU Framework Programmes. Positioning research as part of the ‘Brexit success package’, by highlighting the importance of research to society and the economy, and in particular by emphasising its role in attracting inward investment, might help generate support both in government and among the public.

**Longer term developments**

**Formalising relationships with the EU...**

As the shape of the UK’s negotiations and their likely outcomes become clearer, potential strategies are likely to move more towards concrete agreements around funding programmes and formal cooperation. Workshop participants agreed that maintaining access to EU Framework
Programmes was the most favourable option. However, while continuing to participate in, and contribute financially to, Horizon 2020 and subsequent Framework Programmes might largely preserve current levels of access to knowledge/skills and funding/infrastructure, it is unlikely to afford the UK the same level of influence that it has had previously in shaping programmes’ direction and focus as an EU member state. For example, the UK has been particularly successful in winning funding under the ‘Excellent Science’ pillar of Horizon 2020, but may be unable to influence future discussions around the division of funds between this and other more redistributive funding programmes, in which the UK may be less well-placed. Whether EU institutions and other member states would accept an arrangement by which the UK participates in only selected programmes is unclear, but is likely to depend on other elements of the negotiated deal.

...and more widely

Regardless of the UK’s future position in relation to EU Framework Programmes, there is value in developing other mechanisms for collaboration, where resources allow. There are many possible forms for bilateral and multilateral agreements, so careful consideration of their relative benefits and the potential role of the UK in the longer term is needed in developing a coherent approach. Questions to consider might include:

- Is it best to focus on large, comprehensive bilateral agreements with one or two countries or multiple smaller agreements with pockets of excellence in different countries?
- Do we need to consider the balance between important existing research partners (eg the United States) and emerging research powers (eg China)?
- How ‘top-down’ does the relationship need to be – ie would researchers collaborate anyway, without a formal arrangement being in place?
- What are the costs and benefits of building complex multilateral funding agreements, such as the ESRC’s Open Research Area (which is in partnership with funders in France, Germany and the Netherlands) versus individual bilateral agreements?

An important consideration in developing such collaborations is the potential disincentive of ‘double jeopardy’, where research partners in each country need to apply to their own national funding agency to support the project. One possible approach to resolving this, in the absence of pooled international funding agreements and if resources allow, would be the development of particular funding programmes which commit to supporting both partners in a collaboration.

**Establish a cross-disciplinary research fund that is explicitly focused on international collaboration**

A programme of this kind focusing on funding international partnerships could be one facet of a new UK national research fund (or a part of UK Research and Innovation), particularly if access to European funding programmes becomes limited. Such a fund might have dual aims of replacing resources previously provided by EU Framework Programmes and, if prestigious enough, in attracting talent to the UK. In this second aim it could pursue a model similar to that of the ERC, which awards large grants to individual researchers across the physical sciences, life sciences, social sciences and humanities on the basis of research excellence. Established under the EU’s Seventh Research Framework Programme, ERC grants rapidly gained prestige and have become recognised as a marker of research excellence. Clearly, the ability of such a fund to attract international talent to UK institutions would also depend on the ease of movement for researchers, either on a temporary or permanent basis. It is worth noting however, that while the UK will undergo a material change in its relationships with other countries, it is not alone in facing uncertainty over its international role – providing certainty and a clear offer for researchers, both in the UK and overseas, may in itself be an attractive prospect.

**Maintaining the supply of knowledge and skills in the longer term**

Should movement of researchers become more restricted, ensuring a pipeline of ‘home grown’ talent will be essential. Investment in training and provision for the movement of researchers between academic and private sectors might facilitate this, while a consideration of priority research areas and skills gaps in the UK researcher population could be valuable in ensuring that quality is maintained in currently strong areas.
Investing in unique infrastructure to attract researchers to the UK

In research that requires highly specialised, costly or large scale equipment, collaboration is a common way to gain access to necessary infrastructure and share or recoup the costs of providing it. As such, investing in one or two large, unique infrastructure projects could both build international collaboration in the relevant field and attract overseas talent to the UK. Such an investment could be made nationally, if funds were available, or could involve UK institutions bidding to host international facilities which may already be collaborative projects with international commitments. Either way, it would be valuable to plan and coordinate such an investment nationally, to ensure fair and efficient access across the sector and encourage strategic international collaboration.

Maintaining an international outlook in the longer term

Throughout the period of exit negotiations and following the UK’s departure from the EU there is likely to be considerable uncertainty in the research environment, regardless of the clarity of the plans put in place. To counter this uncertainty it will be important to continue to build a strong and consistent brand for UK research, offering sustained research excellence, good access to funding and infrastructure, a conducive regulatory environment and an openness to collaboration. These perceptions might be fostered through maintaining a leading role in international scientific governance, a commitment to global challenges, sharing knowledge and data through international initiatives and working to build research capacity globally.

Concluding note

The variety of issues, perspectives and potential outcomes discussed during the policy lab highlighted the sophistication of the negotiations and decisions that need to be made across a range of sectors in the coming years. All the participants recognised the enormous challenge facing the UK in navigating these complexities and managing a successful departure from the EU. However, they also noted that effective science and technology policy is fundamental to achieving that success and driving a robust and innovative economy and society. The thoughts and ideas discussed in this briefing note can help those who are charged with overseeing this once-in-a-lifetime transition, as they work to secure a future in which the UK maintains its success and continues to enhance its position as a global leader in research.

Key points

- **Ease of movement is a prerequisite for accessing the best global talent.** Clarity is needed on the status of EU researchers currently in the UK, while provision for longer term access to knowledge and skills is important for the UK to maintain its global position in research.
- **But perceptions of the UK research ‘brand’ are also important.** To remain an attractive research partner, the UK’s research brand must be preserved, both in terms of pursuing research excellence and in maintaining an open and international outlook.
- **Maintaining access to EU Framework Programmes is considered to be the best option, but an early ‘plan B’ should also be developed,** based on optimising access to knowledge/skills and funding/infrastructure. The opportunity should be taken to consider the costs and benefits of different forms of international engagement.
- **Funding UK research domestically is not as straightforward as simply providing money.** While maintaining access to funding is important in absolute terms, providing this through a national channel would need a strategic, sector-wide approach, with a careful consideration of incentives, and is crucial for attracting talent.
- **Investing in unique infrastructure would strengthen the UK’s international offer.** This could encourage collaboration and attract talent to the UK.
- **Developing bilateral agreements is likely to be useful,** regardless of access to EU programmes. Under such agreements, collaboration could be facilitated (if necessary) by either also funding the other partner country or at least avoiding ‘double jeopardy’ through, for example, a coordinated application process.