



House of Commons
Science and Technology
Committee

Leaving the EU: implications and opportunities for science and research

Seventh Report of Session 2016–17

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to the report*

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Science and Technology Committee

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Summary

The science and research community is understandably concerned about the implications and opportunities of the UK leaving the European Union. The Government has provided some helpful and welcome short-term reassurances in relation to underwriting EU funding for research and maintaining access to student loans, but the Government's strategy for communicating these recent announcements is insufficient. Speeches and high-level meetings with stakeholder representatives will not be enough to ensure that messages are received at all levels and by audiences around the world.

The consequences and opportunities for science and research of wider decisions relating to the UK's new relationships with the EU need to be fully fed into Government at the highest levels. The Government is meeting with stakeholders and assembling a high level forum on science and research, but we are not convinced that the needs of science and research are at the heart of the Department for Exiting the European Union's (DExEU) thinking and planning for Brexit. Science should have a strong voice as part of the negotiations. DExEU needs a Chief Scientific Adviser urgently. The Government should also involve the interim Chair of UK Research and Innovation (UKRI) as a bridge between the Department for Business, Energy and Industrial Strategy and DExEU.

Planning for exit negotiations is still underway, and there remains uncertainty about the future model of the relationship we will have with the EU. Nevertheless, the Government should now act to reduce uncertainty by setting out a vision for science. This should include commitments to raise science expenditure as a percentage of GDP (as we have previously urged).

It should also include measures to attract skilled researchers and students, to be taken forward in Brexit negotiations separately from immigration controls more broadly, and should include an immediate commitment to exempt EU researchers already working here from any wider potential immigration controls.

The Government must also seek to capitalise on the opportunities of Brexit, including in terms of setting regulations to facilitate accessing markets and research collaborations beyond the EU.

1 Introduction

1. The House of Lords Science & Technology Committee noted in April 2016 that the UK's membership of the European Union has a “wide-ranging influence” on UK science and research:

The UK's level of engagement with EU funding programmes, for instance, is considerable. EU membership also has significant bearing on scientific collaborations, the mobility of researchers, regulatory frameworks and research and development (R&D) undertaken by businesses, to highlight just some of the interactions between EU membership and the vitality, or otherwise, of science and research in the UK.¹

2. Before the EU Referendum, we reported specifically on the EU regulation of the life sciences, noting that the impact of the European Union in this area can be assessed in terms of “the balance between the benefits of harmonised and responsive regulation and the compromises needed to achieve this”. We concluded that “too often, the precautionary principle has been wilfully misused in the formulation of EU life science policy-making”, and that “whatever the outcome of the Referendum, it will be necessary to reduce large areas of unnecessary complexity and overlap in EU regulation”.² We noted that the UK was a significant net financial contributor to the EU overall, but a net receiver of EU funding for research,³ and that “if, despite the clear attractiveness of the UK as a research location, EU research funding was withdrawn after the exit negotiations, new funding could come from research collaborations outside the EU and from the Treasury reallocating funds previously sent to the EU”.⁴ We also concluded that “under current arrangements, the UK benefits significantly from access to EU science research budgets” and that “the EU can be an enabler of collaboration among member states, not least in the area of clinical trials: here, robust conclusions require large cohorts which cooperation between member states can provide”.⁵

3. On 23 June the UK voted to leave the European Union. We launched our current inquiry on 28 June, seeking written evidence on the following points:

- What the effect of the various models available for the UK's future relationship with the EU will be on UK science and research, in terms of: collaboration; free movement of researchers and students; access to funding; access to EU-funded research facilities, both in the UK and abroad; and intellectual property and commercialisation of research.
- What the science and research priorities for the UK Government should be in negotiating a new relationship with the EU.

1 House of Lords, EU membership and UK science, Second report of the Science and Technology Committee, Session 2015–16, [HL Paper 127](#), para 2

2 Science and Technology Committee, First Report of Session 2016–17, [EU regulation of the life sciences](#), HC 158, para 17

3 Science and Technology Committee, First Report of Session 2016–17, [EU regulation of the life sciences](#), HC 158, para 3

4 Science and Technology Committee, First Report of Session 2016–17, [EU regulation of the life sciences](#), HC 158, para 4

5 Science and Technology Committee, First Report of Session 2016–17, [EU regulation of the life sciences](#), HC 158, pp3–4

- What science and technology-related legislation, regulations and projects will need to be reviewed in the run up to the UK leaving the EU.
- The status of researchers, scientists and students working and studying in the UK when the UK leaves the EU, and what protections should be put in place for them.
- The opportunities that the UK's exit presents for research collaboration and market access with non-EU countries, and how these might compare with existing EU arrangements.
- What other measures the Government should undertake to keep UK science and research on a sound footing, with sufficient funding, after an EU exit.

In July we issued a supplementary call for submissions in the format of a 'risk assessment', to address risks and opportunities in terms of their causes, consequences, impact, mitigation and ways in which the effects could be measured.

4. We held oral evidence sessions in June and July, hearing from a range of witnesses including the Minister for Universities, Science, Research and Innovation (Jo Johnson MP). By September we had received over 270 written submissions, including from over 40 universities, from higher education groups, businesses and learned societies. We also received many submissions from researchers and students, both on an individual basis and acting collectively as departments or interest groups. Several of the submissions were in a 'risk assessment' format. We are grateful to everyone who provided evidence.

5. We completed our inquiry with a final evidence session in October, with the Parliamentary Under-Secretary of State at the Department for Exiting the European Union (Robin Walker MP), alongside the Science Minister. This provided an opportunity to explore more recent developments, including government announcements in relation to support for research and the creation of the new Department for Exiting the European Union (DExEU).

6. Our inquiry builds on a considerable body of previous analysis. Given the wealth of detailed information available elsewhere, our report focuses specifically on the actions that the Government has taken in this area since June (Chapter 2), and the overarching priorities that the Government will need to consider when framing its Brexit negotiation position if it is to secure a positive outcome for science and research from leaving the EU (Chapter 3). In Chapter 4 we discuss the need for a new vision for science and research in the context of Brexit, and the extent to which structures are in place to ensure that the 'voice' of science and research is fed into DExEU.

7. Our report addresses the high-level issues of funding, people, collaboration, regulation, innovation and infrastructure. An Annex to our report summarises supporting material under those headings from the many written submissions we received. We intend to monitor and continue to scrutinise the Government's approach to negotiating Brexit and how this addresses the particular risks and opportunities for science and research as the process continues over the months and years ahead.

2 Short-term responses to uncertainty

8. As Innovate UK told us during our Science Budget inquiry:

The strength of our globally respected research base is an unparalleled strategic asset for the UK and we must continue to invest in it. With 0.9% of the world’s population, and 3.2% of its R&D spend, we produce 15.9% of its most important research output. The UK is home to 4 of the top 6 universities in the world. The output of this engine of new knowledge discovery is a constant source of potential commercial advantage.⁶

Any discussion of the risks and opportunities for science and research of leaving the EU must begin with this as its starting point—UK science and research is a national asset that can either be nurtured and strengthened by appropriate stewardship and vision, or be compromised by neglect during the UK’s exit from the EU.

The Government’s initial reassurances

9. After the Referendum the Government moved quickly to provide initial reassurances to the sector that “nothing changed overnight” in terms of the UK’s rights and obligations as a member of the EU.⁷ In a speech at the Wellcome Trust on 30 June, the Science Minister said it was “business as usual” for UK researchers and businesses applying for EU funding through the ‘Horizon 2020’ Framework Programme,⁸ which the European Commission told us provided €1.2 billion to UK-based organisations for research project bids submitted in 2015 (16% of the total funding allocated in that period).⁹ The minister also confirmed that EU students currently studying in the UK or beginning their studies in the autumn would remain eligible for student finance throughout the duration of their courses, and it was subsequently announced that this would also apply to those starting courses in the 2017/18 academic year.¹⁰

10. Despite these statements, we heard over the summer from several universities that there were concerns that funding bids involving UK partners might now be looked upon less favourably in the EU’s research funding review process. Bias within the evaluation process is a theoretical possibility at least, because Horizon 2020 proposals are not judged ‘blind’—the identity and location of partners is known.¹¹ Nevertheless, the European Commission assured us that “experts are briefed to evaluate proposals with United Kingdom-based participants without taking into consideration any speculation on the consequences for the Horizon 2020 action of a withdrawal of the United Kingdom from the EU”.¹² In July, Carlos Moedas, the EU Commissioner for Research, Science and Innovation, told the EuroScience Open Forum in Manchester that “Horizon 2020 projects will continue to be evaluated based on merit and not on nationality”.¹³

6 Science and Technology Committee, First Report of Session 2015–16, *The science budget*, HC 340, para 1

7 Speech by Jo Johnson MP at the Wellcome Trust 30 June 2016, [Leading the world in a new age of global science](#)

8 Speech by Jo Johnson MP at the Wellcome Trust 30 June 2016, [Leading the world in a new age of global science](#)

9 European Commission ([LEA 287](#))

10 [“Funding support for EU students”](#), Department for Education press release, 11 October 2016

11 European Commission ([LEA 287](#))

12 European Commission ([LEA 287](#))

13 [“Europe’s voyage towards an open global research area”](#), Carlos Moedas, European Commission, 25 July 2016

11. There was also concern that collaborators would pressure UK researchers to withdraw from multi-national research projects. We received examples of this happening. For instance, the University of Liverpool told us that it was “aware of five instances where Liverpool researchers have had to surrender the lead partner role in a current Horizon 2020 consortium under preparation due to partner pressure”.¹⁴ Scientists for EU collected 40 examples of “Horizon 2020 disruption”, including UK partners stepping down from a coordinating role or being asked not to take part in a consortium.¹⁵ In our separate inquiry into Regenerative medicine, Ian Trenholm, the Chief Executive of NHS Blood & Transplant, told us that his organisation’s researchers have been asked “Who is going to lead the group? Well, it can’t be you because you are the British people”.¹⁶ Jo Johnson told us that 132 emails had been received in response to a request from the Department for Business, Energy and Industrial Strategy (BEIS) for evidence of the impact of Brexit on research programmes, and that two-thirds of these related to funding issues (although these may overlap with the earlier examples submitted to Scientists for EU).¹⁷ In response to such concerns, Commissioner Moedas urged the European scientific community “to continue to choose their project partners on the basis of excellence”,¹⁸ and BEIS corresponded with those who provided examples of being asked to withdraw from research consortia.¹⁹

12. We also heard, however, that there could be other cases where UK partners were simply not invited to join a research consortium in the first place. As Joe Gorman—a UK researcher based in Norway—put it, “if you are not invited to the party you don’t even know there is a party”.²⁰ Jo Johnson agreed that this effect could be difficult to monitor:

It may be, as many have led us to understand, that this is not something that we will actually ever find; by its nature, you might not understand when an institution has not received a call because they are a UK institution. It is harder to get data on that sort of phenomenon. We have not received any really significant concrete evidence of discrimination at this point, but we are very vigilant and we are not complacent about that.²¹

Treasury guarantees

13. On 12 August the Chief Secretary to the Treasury announced a range of further assurances in relation to the EU funding that the UK currently receives.²² On European Structural Investment Funds (ESIF), the Treasury stated that “all multi-year projects administered by government with signed contracts or funding agreements in place, and projects to be signed in the ordinary course of business before the Autumn Statement, will be fully funded, even when these projects continue beyond the UK’s departure from the EU”. The Treasury’s announcement also explained that in the medium term “the

14 University of Liverpool ([LEA 222](#)) para 14. Similarly, the University of Leicester ([LEA 179](#)) para 3, told us it was aware of seven cases “either of research consortia breaking up, or researchers being unwilling to submit bids including British researchers”. Keele University ([LEA 213](#)) para 13 provided a named example of this, and Sheffield Hallam University ([LEA 90](#)) para 18 told us it was aware of three examples.

15 Scientists for EU ([LEA 261](#))

16 Oral evidence taken on 19 October 2016, [HC 275](#), Q189

17 Q190

18 [“Europe’s voyage towards an open global research area”](#), Carlos Moedas, European Commission, 25 July 2016

19 Q190

20 Joe Gorman ([LEA 75](#))

21 Q191

22 [Letter from the Chief Secretary to the Secretary of State for Exiting the European Union on EU funding](#), 12 August 2016

Treasury will work with departments, Local Enterprise Partnerships and other relevant stakeholders to put in place arrangements for considering those ESIF projects that might be signed after the Autumn Statement but while we still remain a member of the EU”.²³

14. Scientists for EU queried how projects agreed after the Autumn Statement will be reviewed:

Given that we are still in the EU and playing by EU rules for this period, it begs the question of why we would suddenly need this extra layer of national bureaucracy. It is not clear who will make these assessments and what will be the success rates. This poses a new risk as potential applicants may wonder how long approvals will take and whether it is worthwhile developing ERDF [a component of ESIF] proposals.

15. For other funding, including Horizon 2020, the Autumn Statement cut-off does not apply.²⁴ The Treasury Minister stated that:

The Treasury will underwrite the payment of such awards, even when specific projects continue beyond the UK’s departure from the EU. The UK will continue to be a world leader in international research and innovation collaboration, and we expect to ensure that close collaboration between the UK and the EU in science continues.

16. This announcement was welcomed by many groups. The University of Portsmouth explained that its Institute of Cosmology and Gravitation currently had two large European Research Council grants running to 2019 and 2020, and that “the Government announcement offers these projects, and the staff employed on them, valuable assurances about their research”.²⁵

17. We asked the Treasury about how the decision to underwrite EU funds was taken, and what level of financial commitment it involved. They explained that:

The EU budget operates a dual budgeting system of legal “commitments” (in which the Commission signs a contract to pay the recipient funding, subject to meeting the funding criteria) and “payments” in which the funding is finally paid. Payments relate to a specific commitment and can be made several years after the commitment is made. A payment is only made when the recipient of the funding has met certain expectations under the terms of the funding agreement.

HM Treasury’s funding guarantee relates to the value of payments still to be made after the UK has left the EU for which there has been a commitment while the UK is still a member [...] It is not yet possible to say how many of these outstanding payments the UK will need to supplement, on departure from the European Union. This will ultimately depend on agreement reached in exit negotiations following the Article 50 process.²⁶

23 [Letter from the Chief Secretary to the Secretary of State for Exiting the European Union on EU funding](#), 12 August 2016

24 Q170

25 University of Portsmouth ([LEA 251](#))

26 HM Treasury ([LEA 286](#))

18. We asked Jo Johnson whether it was likely that the Treasury would actually need to step in to make these payments, given that they are based on the EU’s “legal commitments”. He told us that “there was strong demand from the stakeholder community for this reassurance,”²⁷ and noted that “irrespective of whether it is required or not, it is there”.²⁸ Robin Walker MP, a DExEU minister, added that:

One of the real benefits of the Treasury guarantees [...] is that it sends the message to firms, to universities and to others to keep on bidding [...] The Article 50 process will take some time, and during that time we will be paying into the EU budgets. It is very important that we get out the value that we are due and that we continue to meet all our rights and responsibilities through that time.²⁹

19. Jo Johnson also assured us that if expenditure were required to meet this guarantee, this would be “new, additional money beyond the £26.3 billion that the Government have already committed to science for the [Spending Review] period in question”,³⁰ but was not able to tell us how much money this was expected to be:

We do not know whether there will be any shortfall, but there will be no dipping into the [science budget] ring fence. That is the commitment that has been made to the community.³¹

20. The Government has provided helpful reassurance to the science and research community by promising to underwrite the payment of EU grants extending beyond the point at which the UK leaves the European Union. However welcome this announcement is, it does not appear to represent a significant new financial investment, given that the EU itself apparently has a legal commitment to honour these payments. In Chapter 4 we note that the forthcoming Autumn Statement provides an important opportunity for the Government to demonstrate its commitment to making science and research a lynchpin of our economy after Brexit by taking steps towards increasing science spending as we have previously urged.

Communication strategy

21. Jo Johnson told us that the Government was “out of the traps extremely early, providing initial reassurance to the sector”, but acknowledged in July that “it is not enough just to put out a couple of initial statements. We realise we have to keep going and make sure that we continually reinforce the positive messages that we have started sending out”.³² He told us then that the Government wanted to put in place:

a comprehensive communications strategy to send out those kinds of message around the world—that we are more open and outward-looking

27 Q174
28 Q176
29 Q204
30 Q180
31 Q203
32 Q129

than ever before, and that we want to forge international collaborations with European partners and countries beyond the European Union, now more than ever.³³

22. In October we asked the Science Minister to update us on this communications strategy. He told us that there had been “public official communications that have been aiming to provide important reassurances on key areas of uncertainty”, citing announcements relating to loans and fees for EU students and the Treasury’s guarantees on payment of EU funding as “the key detailed crunchy elements of our comms strategy”.³⁴ Alongside these, the Minister highlighted a “drumbeat of reassuring speeches” from Ministers “around the importance that we attach to our ability to continue to attract talent from around the world to sustain our science base”.³⁵ He told us that he had held roundtable meetings with community representatives, including the university mission groups, to “reassure them that we are on the case, listening to their concerns and trying wherever we can to address them”.³⁶

23. However, when we asked whether these messages were filtering down through the system following high-level meetings, he told us that “it is up to those representative bodies to decide how they communicate with their members. I imagine that they do”.³⁷ We were also concerned by comments in the media that a “Government source” had described a recent report from the life sciences community as “basically the industry whining about Brexit, and it was not very constructive and has gone straight into the hopper”.³⁸ Jo Johnson told us that he did not recognise this quote.³⁹

24. The level of interest in our call for evidence—both in scale and the variety of organisations and individuals responding—demonstrates that there are many different audiences for a Government communications strategy, both at home and around the world. It is disappointing that this was not reflected in the Government’s oral evidence to us. **There is more to be done to spread the messages of recent Government announcements before the communications strategy can be described as ‘comprehensive’. In this context, the communication of the policy is as important as the policy itself.**

25. **In the light of continuing uncertainty about the risks and opportunities for science following exit from the EU it is vital that the Government has a comprehensive communications strategy for this critical area. At the heart of such a strategy should be a clear understanding of the different audiences with which the Government should communicate, their existing levels of understanding, and the different forms of communication that will be most effective for each group.**

26. *We recommend that the Government present to us a genuinely comprehensive strategy for communicating its messages of ongoing support for science and research in the context of its plans for leaving the EU and the negotiations to follow. The strategy*

33 Q119

34 Q200

35 Q200

36 Q200

37 Q201

38 [“Ministers snub life sciences industry’s report on Brexit”](#), Daily Telegraph, 22 October 2016

39 Q196

should be much more than a collection of high-level meetings and speeches within the UK, and should include an analysis of key audiences in other countries, such as researchers who could be encouraged to work here.

3 Securing the best outcome for science and research from the Brexit process

What matters most to science and research?

27. It was clear from the written evidence we received that the science community's hopes and fears for the future revolve around five key issues:

- Funding—in particular the need either to secure ongoing access to sources such as the Horizon 2020 Framework Programme and its successors (as called for by over 38,000 signatories to a parliament e-petition),⁴⁰ or to develop appropriate domestic funding mechanisms at a similar level if access cannot be negotiated. It was suggested that there was a need to map the complex EU funding environment,⁴¹ and a need to understand current 'exposure' to changes in EU funding by subject and university.⁴²
- People—specifically the attractiveness of the UK to EU researchers (as well as those further afield) as a place to live, work and study, and the need to provide guarantees for those already working here (see below). We also heard that there were opportunities for improving the support the current visa system provides for short-term visits, and a particular interest in maintaining participation in the ERASMUS study abroad programme.⁴³
- Collaboration, leadership and influence—for UK researchers to be part of multinational projects, since “science is a global enterprise”,⁴⁴ and to continue to influence the EU's research agenda and strategic direction.
- Regulation—ensuring that those regulations which facilitate research collaboration and access to the EU market for life science and other research outputs are retained, and those which hinder innovation are revised. And taking advantage of opportunities to set regulations which facilitate collaborations and trade beyond the EU. We also heard particular concerns about the implications for medicines licensed through the European Medicines Agency and whether Brexit could lead to delays in patients accessing novel treatments.⁴⁵
- Facilities—concerns about the ability of UK researchers to continue to access EU research facilities in other countries, and the need to protect the future of those that are currently hosted in the UK. We were told, however, that “they all have different legal bases [...] A very complex and variable geometry sits behind these relationships”.⁴⁶

40 Petition, [“We require any Brexit deal preserves access to EU collaborative R&D programmes”](#), accessed 9 November 2016

41 Scientists for EU ([LEA 261](#))

42 Royal Academy of Engineering ([LEA 279](#)) para 2.7. Some information by discipline was provided by Research Councils UK ([LEA 235](#)) Annex 1

43 See for instance Universities UK ([LEA 275](#)), Russell Group ([LEA 180](#)) para 3.6, Loughborough University ([LEA 109](#)) para 2.4

44 Royal Society ([LEA 177](#)) para 3

45 Association of Medical Research Charities ([LEA 228](#)). See also our report on EU regulation of the life sciences (footnote 2).

46 Q206 [Gareth Davies]

Further detail on each of these issues is included in the Annex to this report, providing an agenda which the Government can use to explore them in greater depth.

28. We also heard that many of the priority issues for the science community are interlinked. As Professor Ian Diamond Chair of the Universities UK Policy Network, explained:

there is no point having a regulatory framework if you do not have the talent; there is no point having the talent if you do not have access to the grants.⁴⁷

The Campaign for Science and Engineering wrote that “part of ensuring that the UK is a destination of choice for scientists of all nationalities (including British nationals) to build a career is to ensure this is a place where they can participate in the best science. Access and retention of talent therefore cannot be divorced from access to funding, regulation and ability to collaborate with the rest of the world, including Europe”.⁴⁸ Kevin Baughan, Chief Development Officer at Innovate UK, told us:

We cannot really look at each of those parts individually. We need a strategy and a plan that allows us to move the whole ecosystem forward, because together they take worldclass science and turn it into jobs and growth; and together they allow businesses to export, to compete in wider markets and to build broader partnerships.⁴⁹

29. The Government will need to address all of the priority issues for the science community listed in this report—funding, people, collaboration, regulation and facilities—as a coherent whole rather than a list of separate considerations.

People

30. Witnesses emphasised the importance of people in the context of science and research, in particular the future mobility of researchers and the uncertainty faced by those already in the UK.

Movement of researchers

31. Our counterparts in the House of Lords concluded before the Referendum that researcher mobility was “of critical importance to the UK science community, including academia, business and charities”, and that “researcher mobility must be protected if UK science and research is to remain world-leading”.⁵⁰ Similarly, the Francis Crick Institute told us that international scientific talent was “the lifeblood” of the Institute, and was typical of many of our written submissions when they emphasised that “high quality science needs the very best minds, both from the UK and around the world [...] We must be able to recruit and retain the very best scientists, whatever country they come from”.⁵¹

47 Q6

48 Campaign for Science and Engineering ([LEA 267](#))

49 Q86

50 House of Lords, *EU membership and UK science*, Second report of the Science and Technology Committee, Session 2015–16, [HL Paper 127](#), para 171

51 Francis Crick Institute ([LEA 146](#)) para 2.3

32. Professor Philip Nelson of Research Councils UK told us that “the biggest risks to the research base in the UK are around the people involved”.⁵² We received written examples of researchers considering rejecting UK job offers and citing the Referendum result as the reason.⁵³ Dr Sarah Main of the Campaign for Science and Engineering (CaSE) effectively summarised much of our evidence:

It is not really a question of us allowing talented scientists and engineers to come here; it is about us fighting for them to come here. There is an international competitive market for these fantastically talented people [...] The UK Government can make a great contribution by stating extremely clearly, one, what its priority is for the place of science in our future, whether it wants the UK to remain a scientific superpower, for it to lead on its scientific strength and heritage, and, two, how it feels about the people that it wants to come here, because all of those wonderful achievements that we can all cite about the UK are done by people from a range of nationalities in this country. UK science is not done by UK nationals. It is done by many people.⁵⁴

33. It remains to be seen whether the Government will seek to apply existing controls on non-EU citizens to EU citizens or to introduce a new system, and the extent to which any controls include a ‘points-based’ or ‘employer-led selection’ system. Other countries have developed immigration systems which have to varying degrees adopted—like the UK—a hybrid mix of such approaches, including Australia and Canada which had been the focus of debate in the Referendum.⁵⁵ In September, the Prime Minister was reported as casting doubt on the scope for a points-based system when she said that “What the British people voted for on 23 June was to bring some control into the movement of people from the European Union to the UK: A points-based system does not give you that control.”⁵⁶

34. Dr Main from CaSE called for the dialogue on migration to become more “nuanced”, arguing that “it would be a mistake to interpret the leave vote as a blanket mandate to reduce immigration. There is nuance—and it needs to be drawn out in the public dialogue—by occupation and by contributions to the economy”. Professor Angus Dalgleish from Scientists for Britain made a similar point:

There is a massive difference between the freedom of movement of people and the freedom of movement of skilled labour. [...] The freedom of movement of people is not on; it is freedom of skilled labour that we want to maintain.

This is reflected in post-referendum polling conducted for the think tank British Future, which found that:

Only 12% of people, for instance, would like to see a reduction in the numbers of skilled workers coming to Britain; nearly four times as many people (46%) would like to see more of it, with 42% saying that it should stay

52 Q84

53 See for instance Professor Jonathan Bamber ([LEA 41](#))

54 Q39

55 [The UK’s points-based system for immigration](#), Briefing paper 7662, House of Commons Library, July 2016

56 [“No 10 rules out points-based immigration system for Britain”](#), The Guardian, 5 September 2016

the same. Among people who voted Leave in the referendum these numbers remain broadly the same: 45% would like to see an increase, just 15% a reduction and 40% say that the numbers should stay as they are.

The same is true of international students coming to study at Britain's universities, who made up over a quarter of immigration flows to the UK last year. Only a fifth of people (22%) would like these numbers to be reduced, less than the 24% who would be happy for them to go up. The majority (54%, including 50% of Leave voters) would rather the numbers stayed the same.⁵⁷

35. Professor Dalglish argued that controls on immigration and attracting research talent were not mutually exclusive, citing Canada and Australia as examples of countries that “operate very strict point limitations” but “do not have any trouble attracting the best scientists in the world to them”. Scientists for Britain later wrote that

science is now so globalised that borders are less of a barrier to talented researchers wishing to live, work and collaborate with colleagues around the world, and as such, we would argue that UK science would still be able to excel in the event that ‘the single market and associated free movement’ is not the outcome of exit negotiations. We would, however, urge our own government to recognise the importance of researcher mobility to science, and recommend that any future arrangements should ensure that scientists and students from around the world are still encouraged to visit, study and work in the UK.⁵⁸

36. Given that there was such agreement on this between groups who campaigned previously on opposite sides of the referendum debate, we asked Robin Walker whether the Government could commit to ensuring appropriate researcher mobility. He told us that:

We want to create an immigration system that allows us to exert control, which people have asked for, over the overall numbers, but also to encourage the brightest and the best to come here [...] Our job is to conduct the negotiations in a way that gives the UK the powers to control the system going forward, but within that we absolutely recognise the need to continue to attract talent and the value that people in the research community bring to our country”.⁵⁹

37. We understand that the Government is not yet able to offer firmer guarantees regarding future immigration rules for researchers but remind them that this is essential in order to continue to attract top-quality researchers to the UK. We recognise that planning for exit negotiations is still underway, but there is clear agreement that researcher mobility is a crucial component of the UK's successful research and science sector. The issue should be treated separately from discussions about immigration control more broadly, with firm commitments provided as soon as possible.

57 British Future, [What next after Brexit? Immigration and integration in post-referendum Britain](#), August 2016, p10

58 Scientists for Britain ([LEA 89](#))

59 Q181

Certainty for existing EU research staff

38. A common theme in our evidence was that reassurances to EU researchers already working in the UK would be needed in order to avoid a ‘brain drain’. We received submissions from individual researchers who told us they were “seriously considering” leaving the UK,⁶⁰ and a group of postdoctoral researchers told us that 18% of them were now actively seeking jobs in other countries.⁶¹ Professor Ottoline Leyser, representing the Royal Society, noted that there were 31,000 nonUK EU citizens working in research in academia in the UK, and believed that “those people are all feeling very anxious and unwelcome”:

There has been a lot of discussion about nonUK EU nationals currently working in the UK and what guarantees can be provided to them. [...] I think it is absolutely not the way we should be proceeding—to use people’s lives as bargaining chips in a broader political landscape. I do not think that is a constructive way to arrive at a negotiation table either.⁶²

39. The Prime Minister wrote to Sir Paul Nurse following the Referendum acknowledging that:

Our research base is enriched by the best minds from Europe and around the world—providing reassurance to these individuals and to UK researchers working in Europe will be a priority for the Government.⁶³

40. ***The Government should deliver on the Prime Minister’s early reassurance to EU researchers currently working in the UK, that certainty for them will be a Government priority, by making an immediate commitment to exempt them from Brexit negotiations on any reciprocal immigration controls for workers already in post.***

The scope for a bespoke model

41. The House of Lords Science and Technology Committee’s report in April explained that a several pre-existing Brexit ‘models’ exist, some of which allow non-EU members to continue to benefit from EU funding streams.⁶⁴ These models are based on the precedents that other countries have established. The models have differing requirements in relation to free movement, access to markets, the ability to influence EU science programmes and to benefit from their funding—existing models involve some trade-off between such benefits and a range of rights and obligations.

42. Switzerland is an example of a country that is not a Member State, nor a member of the European Economic Area; it is, however, an Associated Country and a participant in the single market. Switzerland participates in the EU’s fundamental principle of freedom of movement via a bilateral agreement. However, while Switzerland currently participates in Horizon 2020, it will lose its current membership from 2017 unless it resolves a disagreement with the EU over freedom of movement, arising from a referendum vote to

60 Professor David Dobson ([LEA 29](#)); see also Professor Frank Krauss ([LEA 23](#)), Professor Carlton Baugh ([LEA 6](#))

61 UCL Institute of Neurology Postdoc Committee ([LEA 28](#))

62 Q79

63 [Letter from the Prime Minister to Sir Paul Nurse](#), 18 July 2016

64 House of Lords, EU membership and UK science, Second report of the Science and Technology Committee, Session 2015–16, [HL Paper 127](#), para 225–235

limit immigration and prioritise Swiss nationals for jobs. Given this history and ongoing negotiations, we asked Professor Martin Vetterli, President of the National Research Council of the Swiss National Science Foundation, if there were any pitfalls that the UK science community and its negotiators should be aware of when seeking a good deal for science. He warned that:

At least the Swiss tried to avoid the sin of arrogance. Even though Swiss science is very good, that is not how we went to Brussels.

43. Professor Dalgleish from Scientists for Britain was confident that the UK could develop its own model:

There are three or four models, and one of them people can fit into and have all the same privileges as everybody else without being a member of the European Union. I personally think that Britain and its science is so big that it will probably warrant its own model in that regard. [...] The UK is far too important to fit into an ordinary model [...] we should basically be able to craft our own model, because, as is rightly said, we are the leaders.⁶⁵

44. Professor Ian Diamond also argued that the UK needed “an enhanced model to those that exist at the moment”. He suggested that an arrangement on more favourable terms than Norway (an Associated Country) could be achieved given the significance of UK science to Europe:

I am not completely convinced that European science would have the vision, the drive and the imagination without Britain at the table [...] it is incredibly important that we maintain a model that enables us to be able to influence as well as to receive [...] We certainly need a model that is similar to those of the associate countries at the moment, but, in addition, I believe very strongly that we need to make sure that we have some influence over the future direction of European science.⁶⁶

45. Jo Johnson told us in July that it was too early for the Government to set out which model it wanted to pursue:

It would be premature for me to alight on a particular structure, because we are at an early stage today. [...] Obviously, science is an extremely important national interest but there are many others that will be taken into account in determining our answers to these questions. There is a spectrum of relationships in the Horizon 2020 programme [...] We are a very big science power, we are a very big economy, but it is not for me now to define before this Committee what our eventual negotiating position might be, because it is going to take us some time to get to that answer.⁶⁷

65 Q9
66 Q8
67 Q134

Opportunities

46. Jo Johnson emphasised that the development of the Government’s post-Brexit industrial strategy provided fresh opportunities for science:

The Industrial Strategy presents an enormous opportunity for science and innovation in this country. We are very clear that we want science and innovation to be at the very heart of industrial strategy, as a means for us to improve our economic performance and make this a country that works for everyone.⁶⁸

47. Our written evidence highlighted other particular areas of opportunity where the Government might seek to maximise the benefits for science and research that leaving the EU could bring. We discuss these below. Others were discussed in the ‘risk assessment’ submissions we received.⁶⁹

Revising VAT rules to stimulate university-business collaboration

48. The Campaign for Science and Engineering (CaSE) drew our attention to an opportunity to support business-university research collaboration through a change to VAT rules, as recommended by the Dowling Review.⁷⁰ CaSE explained that:

The primary issue is that publicly-funded research institutes are restricted to 5% commercial activity if they opt not to pay VAT or face costly tax bills to co-locate their researchers with industry colleagues.⁷¹

We heard from UCL that “previous explanations for this state of affairs have been the requirements to comply with EU legislation [...] The UK’s withdrawal from the EU therefore poses an important opportunity for the Government to address this issue [...] The Government could also consider introducing additional incentives to actively promote university-business co-location”.⁷²

Regulatory reform

49. Several witness highlighted the opportunity for the UK to “create a distinctive, attractive environment for research and innovation”⁷³ and become “a global leader in scientific regulation”.⁷⁴ UCL also suggested that discussion on how regulation could be changed to enable scientific progress “could be conducted in such a way to make the UK an exemplar for public dialogue and engagement with science”.⁷⁵

50. In our EU regulation of the life sciences report, we noted that there were areas where the EU should improve the regulation system, including “its complexity and cost,

68 Q188

69 See for instance UCL ([LEA 258](#)), the Association of Medical Research Charities ([LEA 228](#)), the University of Bristol ([LEA 210](#))

70 Professor Dame Anne Dowling, *The Dowling Review of business-university research collaborations*, July 2015, para 78

71 Campaign for Science and Engineering ([LEA 267](#))

72 UCL ([LEA 258](#)) para 49–51. See also Cancer Research UK ([LEA 224](#))

73 Campaign for Science and Engineering ([LEA 267](#))

74 UCL ([LEA 258](#)) para 52

75 UCL ([LEA 258](#)) para 53

its timeliness, its application of the precautionary principle and its consistency”. We highlighted the particular examples of GM and clinical trials regulation. Nevertheless, we were also reminded in that inquiry that there was a need to balance the opportunity for reform with the benefits that consistency in regulation bring. As we concluded previously:

By harmonising the procedures under which research is conducted, EU regulation can foster crossborder collaborations. These multiple state collaborations are evident at least in the conduct of clinical trials, for example, and setting up such trials through a system where permission needed to be sought country by country would likely introduce even more delay and bureaucracy than the current EU system.⁷⁶

51. In our current inquiry, Stuart Pritchard from the Wellcome Trust highlighted the issue of EU regulations beyond the life sciences that are in the process of being implemented, and that there was a risk of “legislative limbo”:

The data protection regulation [...] is not currently on the statute in the UK. It is in the process of being transposed. If we were to have a different set of regulations from those in the EU, it may well prevent us being able to participate in largescale health data research projects, for example, and that would extremely limit the work that the Wellcome Trust Sanger Institute in Cambridgeshire does as the largest genomics institute in Europe. [...] In terms of EU regulation, it is very much a scalpel rather than a sword that we need to have, in terms of unpicking where the UK should retain EU regulation and where there might be the need for change. One key area is what happens to things that are to some extent in legislative limbo. We could add to that, for example, the clinical trials regulation, which is not yet fully transposed.⁷⁷

52. The Higher Education Funding Council for England (HEFCE) also highlighted that European State Aid legislation currently limits the Government’s ability to invest in the private sector, and that opportunities would arise after Brexit:

There would then be scope for the UK government to look to tailor R&D schemes to benefit target sectors of the UK economy more effectively. There might also be benefit to universities, other public sector organisations and companies in easing the current EU procurement rules.⁷⁸

Visas

53. Several of the risk assessment submissions we received highlighted the scope for creating a new visa regime that prioritised researchers at all career levels. Dr Sarah Main also noted that improvements could be made to visa processes for short research visits as part of a wider review:

The visa systems that are in place for short research visits can be quite burdensome [...] It will be important, when we get down the line, in terms

76 Science and Technology Committee, First Report of Session 2016–17, [EU regulation of the life sciences](#), HC 158, para 17

77 Q70

78 HEFCE ([LEA 230](#)) para C

of process and operating a new migration system, that we recognise that science is a mobile endeavour and that accessing research facilities in the EU will require quite a lot of short visits. Looking at the visa system to allow it to cope with a much larger number of people wanting permission for short-term travel will be important.⁷⁹

4 The Government's vision for science outside the European Union

54. An overarching concern arising from the many written submissions we received was the need for the Government to develop a 'vision' for science and research in the context of Brexit. Dr Sarah Main from the Campaign for Science and Engineering argued that the Government should clarify "if and whether they believe that a science-research-intensive innovative future is one that they wish to develop in the UK".⁸⁰ Jo Johnson subsequently offered us the beginning of such a vision; he told us that:

British science wants to go from strength to strength in this new world. We want to support it in doing so. That means making sure that it is getting the best possible funding settlements available within the fiscal constraints that the Government find themselves in [...] It means making sure that we have a really strong pipeline of talent that will enable us to take advantage of the research the community is generating. It means making sure that we are still attractive to collaboration around the world; that we are open, that we welcome talent and that we continue to generate a spectacular return on the public investment in our science base. That is the vision for science.⁸¹

55. He added that the Government was seeking to reassure the science community that it was "committed to keeping Britain at the forefront of science around the world".⁸² Similar sentiments were expressed by the Prime Minister shortly after the Referendum:

The UK is rightly acknowledged as a world-leader in science and research [...] It is why I would like to use this opportunity to reiterate the Government's Manifesto and Spending Review commitments to protecting science and research funding in real terms [...] I would like to reassure you about the Government's commitment to ensuring a positive outcome for UK science as we exit the European Union.⁸³

56. However, some of our witnesses suggested that leaving the EU exposes a difference between the Government's recent level of ambition for science compared with the programmes that the European Union had developed. Dr Main told us that:

the EU has set for itself ambitious targets in terms of R and D activity, both monetary and collaborative in terms of addressing grand challenges and so on. The UK Government's ambition in recent years has not matched the level of the EU, so, moving forward, if the Government could set out a really ambitious programme for science [...] the rest will follow.⁸⁴

80 Q4

81 Q193

82 Q128

83 [Letter from the Prime Minister to Sir Paul Nurse](#), 18 July 2016

84 Q7

The voice of science in Brexit negotiations

57. Many of our witnesses highlighted the importance of ensuring that UK science and research has a voice in the Government’s Brexit planning and negotiations, in order to ensure that the issues raised during our inquiry were not lost amongst wider considerations. Dr Sarah Main, from the Campaign for Science and Engineering, argued that:

If [science] is represented among all the many other interests that are important to the UK, then the community will trust that it can feed into that voice. A voice at the table and a clear process—a structure—by which the community can feed in what it wishes to say would be what I would ask for.⁸⁵

Similarly, Professor Philip Nelson, Chair of Research Councils UK, explained that:

One of the challenges we face is that so many of the issues are tied in with the bigger politics of it all, and it is quite an intimidating thought that this could easily get lost. Our real concern is that we do not lose some of the important features of our current landscape.⁸⁶ [...] it is very important that our [science community’s] voice is heard and that it is substantially transmitted in that negotiation.⁸⁷

58. Jo Johnson told us that a “high-level forum” on the impact of Brexit for science and research was being established, which will “make sure that we are really capturing all the views of the distinct parts of the community”.⁸⁸ He explained that he wanted to ensure that the Department for Exiting the EU was “as well informed as possible about the interests of the community”, and told us that he and DExEU ministers were “really working tightly together to ensure that the community’s views and interests are fully represented in [DExEU’s] work”.⁸⁹ Clearly it is incumbent on the science and research community to ensure that it continues to express its concerns and priorities clearly as Brexit negotiation plans progress.

59. In the meantime, Jo Johnson envisaged that the creation of UK Research and Innovation (UKRI) would play a part in providing this information. The Higher Education and Research Bill will establish this body, bringing together the seven existing Research Councils, Innovate UK, and research funding from the Higher Education Funding Council for England. In a speech at the Wellcome Trust in June, the Minister said:

I have no doubt that the formation of UKRI will provide indispensable support to our research and innovation leadership during this period of change in our relationship with the European Union. Now, more than ever, as these communities face new challenges, we need a strong and unified voice to represent your interests across government, across Europe and around the world.⁹⁰

85 Q6

86 Q114

87 Q92

88 Q194

89 Q195

90 Speech by Jo Johnson MP at the Wellcome Trust 30 June 2016, [Leading the world in a new age of global science](#)

Sir John Kingman, appointed in May as the interim Chair of UKRI,⁹¹ told us that:

I have been spending a significant part of my time engaging with colleagues in Whitehall, both on Brexit-related issues and on ensuring that, for want of a better phrase, the new Government buy into the importance of this agenda for our country and economy. [...] I have been very encouraged by the receptiveness of No. 10, the Treasury and obviously Ministers in BEIS to that line of argument [...] I fully accept the responsibility to do everything I can to make sure that any downsides of Brexit are limited and any upsides are maximised.⁹²

60. It is crucial that science and research have a clear ‘voice’ within DExEU and in developing Brexit negotiation strategies, but we are not yet convinced that this is the case. We welcome the Government’s plans to establish a high level group to capture the views of the science and research community and look forward to receiving further details in the Government’s response to this report. But the science perspective must be part of the Government’s planning now. *The Government states that UKRI can provide such a voice. It should formally involve the interim Chair of UKRI as a bridge between BEIS and DExEU. We recommend that he engage publicly with the community to describe the progress made with securing a good outcome for science and research.*

A Chief Scientific Adviser for DExEU

61. The Government is supported by a network of Chief Scientific Advisers (CSAs), with one appointed in each Government department. We asked Robin Walker on what timescale the newly created Department for Exiting the European Union (DExEU) would appoint a CSA. He told us on 26 October that “a vacancy has been advertised”⁹³ and Jo Johnson referred to DExEU having “got its advert out”.⁹⁴ That reassurance was subsequently withdrawn when the Ministers wrote to explain that a job advert had not been issued, and that DExEU was still considering how best to get the scientific expertise it needs, since the Government Office for Science offered “a resource for the whole of Government”.⁹⁵ The Ministers stated that DExEU “will be using those resources to make sure that we are properly informed on these things”.⁹⁶

62. We were very disappointed to learn that the Department for Exiting the European Union is not currently progressing with appointing a departmental Chief Scientific Adviser (CSA). Such an adviser could help ensure that the impact on science and research of various models for Brexit, and the opportunities these provide, is understood and prioritised within the Department. A stronger Brexit role for UKRI should not be a substitute for a clear science voice within DExEU itself. *We recommend that DExEU make appointing a Chief Scientific Adviser a matter of priority.*

91 [“John Kingman to lead creation of new £6 billion research and innovation body”](#), Department for Business, Innovation and Skills, 17 May 2016

92 Oral evidence taken on 12 October 2016, HC 671, Qq25–29

93 Q166

94 Q169

95 [Letter from Robin Walker MP and Jo Johnson MP to Science and Technology Committee Chair](#), 28 October 2016

96 Qq166–167

63. **There is a need for the Government to articulate an ambitious vision for science that goes beyond continuing to be ‘open for business’ and generally seeking “a positive outcome” from leaving the EU. At this stage it may not be possible to articulate the detail of how any vision for science after-Brexit will be achieved, but a more ambitious statement would provide greater reassurance in the current climate of uncertainty. The beginnings of this were provided by the Science Minister in his evidence to us, but such a vision needs to be developed and propagated much further.**

64. The Government must send a clear message now that it intends to protect the UK’s strength in science. To help allay the uncertainty arising from the Referendum result, it should set out its objectives for addressing the priority areas of concern for the science community—funding, people, collaboration, regulation and facilities. It should use the opportunity of the Autumn Statement later this month to commit, as we have previously recommended, to raising the UK’s expenditure on science R&D to 3% of GDP. This would demonstrate a determination not only to negotiating a post-Brexit relationship with the EU that is good for science but also to secure opportunities for science collaboration with markets beyond Europe.

Monitoring the impact

65. Such a post-Brexit vision will have to be regularly restated, but also updated so that it continues to take account of views about emerging risks and opportunities. This requires monitoring the priority areas we have discussed in this report to detect changes as a result of beginning the process of leaving the EU. The Wellcome Trust Sanger Institute told us that monitoring the impact of Brexit in terms of the effect on people required a detailed disaggregation of data:

Particular areas to focus attention on are positions which by their nature are relatively short (3 years or less) but highly skilled and highly mobile groups, such as postdoctoral fellowships, visiting workers and PhD students [...] Recruitment figures and overall funding figures should be relatively easy to gather from multiple UK sources, however understanding the impact of reduced access to certain funding streams (if that is what eventually happens) will be far more challenging to understand than simple financial impact. Metrics for the movement of researchers, the roles researchers are playing on collaborative grants (lead or supporting) and the numbers of visiting workers, postdoctoral fellows etc. could help the Government to monitor the change in working practices. This is of course dependent on having such metrics prior to the referendum vote.⁹⁷

66. The European Commission told us that it routinely monitors Horizon 2020 participation rates, and that the 2016 annual monitoring report would be available in the first semester of 2017.⁹⁸ Comparing participation rates in 2016 with previous figures could provide some insight into whether UK partners are being left out of bids, but these figures will be subject to some natural variability.

97 Wellcome Trust Sanger Institute ([LEA 133](#)) paras 28–29

98 European Commission ([LEA 287](#))

67. The Government must set out the metrics it will use to assess how well the UK avoids the risks of Brexit for science and research and secures the benefits. It should monitor these metrics during the course of the Brexit negotiations, and regularly publish the results. We intend to ask the Minister for science for updates periodically during the course of the Brexit process.

Conclusions and recommendations

Short-term responses to uncertainty

1. The Government has provided helpful reassurance to the science and research community by promising to underwrite the payment of EU grants extending beyond the point at which the UK leaves the European Union. However welcome this announcement is, it does not appear to represent a significant new financial investment, given that the EU itself apparently has a legal commitment to honour these payments. (Paragraph 20)
2. There is more to be done to spread the messages of recent Government announcements before the communications strategy can be described as ‘comprehensive’. In this context, the communication of the policy is as important as the policy itself. (Paragraph 24)
3. In the light of continuing uncertainty about the risks and opportunities for science following exit from the EU it is vital that the Government has a comprehensive communications strategy for this critical area. At the heart of such a strategy should be a clear understanding of the different audiences with which the Government should communicate, their existing levels of understanding, and the different forms of communication that will be most effective for each group. (Paragraph 25)
4. *We recommend that the Government present to us a genuinely comprehensive strategy for communicating its messages of ongoing support for science and research in the context of its plans for leaving the EU and the negotiations to follow. The strategy should be much more than a collection of high-level meetings and speeches within the UK, and should include an analysis of key audiences in other countries, such as researchers who could be encouraged to work here.* (Paragraph 26)

Securing the best outcome for science and research from the Brexit process

5. The Government will need to address all of the priority issues for the science community listed in this report—funding, people, collaboration, regulation and facilities—as a coherent whole rather than a list of separate considerations. (Paragraph 29)
6. *We understand that the Government is not yet able to offer firmer guarantees regarding future immigration rules for researchers but remind them that this is essential in order to continue to attract top-quality researchers to the UK. We recognise that planning for exit negotiations is still underway, but there is clear agreement that researcher mobility is a crucial component of the UK’s successful research and science sector. The issue should be treated separately from discussions about immigration control more broadly, with firm commitments provided as soon as possible.* (Paragraph 37)

7. *The Government should deliver on the Prime Minister's early reassurance to EU researchers currently working in the UK, that certainty for them will be a Government priority, by making an immediate commitment to exempt them from Brexit negotiations on any reciprocal immigration controls for workers already in post. (Paragraph 40)*

The Government's vision for science outside the European Union

8. It is crucial that science and research have a clear 'voice' within DExEU and in developing Brexit negotiation strategies, but we are not yet convinced that this is the case. We welcome the Government's plans to establish a high level group to capture the views of the science and research community and look forward to receiving further details in the Government's response to this report. But the science perspective must be part of the Government's planning now. *The Government states that UKRI can provide such a voice. It should formally involve the interim Chair of UKRI as a bridge between BEIS and DExEU. We recommend that he engage publicly with the community to describe the progress made with securing a good outcome for science and research. (Paragraph 60)*
9. We were very disappointed to learn that the Department for Exiting the European Union is not currently progressing with appointing a departmental Chief Scientific Adviser (CSA). Such an adviser could help ensure that the impact on science and research of various models for Brexit, and the opportunities these provide, is understood and prioritised within the Department. A stronger Brexit role for UKRI should not be a substitute for a clear science voice within DExEU itself. *We recommend that DExEU make appointing a Chief Scientific Adviser a matter of priority. (Paragraph 62)*
10. There is a need for the Government to articulate an ambitious vision for science that goes beyond continuing to be 'open for business' and generally seeking "a positive outcome" from leaving the EU. At this stage it may not be possible to articulate the detail of how any vision for science after-Brexit will be achieved, but a more ambitious statement would provide greater reassurance in the current climate of uncertainty. The beginnings of this were provided by the Science Minister in his evidence to us, but such a vision needs to be developed and propagated much further. (Paragraph 63)
11. *The Government must send a clear message now that it intends to protect the UK's strength in science. To help allay the uncertainty arising from the Referendum result, it should set out its objectives for addressing the priority areas of concern for the science community—funding, people, collaboration, regulation and facilities. It should use the opportunity of the Autumn Statement later this month to commit, as we have previously recommended, to raising the UK's expenditure on science R&D to 3% of GDP. This would demonstrate a determination not only to negotiating a post-Brexit relationship with the EU that is good for science but also to secure opportunities for science collaboration with markets beyond Europe. (Paragraph 64)*

12. *The Government must set out the metrics it will use to assess how well the UK avoids the risks of Brexit for science and research and secures the benefits. It should monitor these metrics during the course of the Brexit negotiations, and regularly publish the results. We intend to ask the Minister for science for updates periodically during the course of the Brexit process. (Paragraph 67)*

Annex: Issues raised in written and oral evidence

We received over 270 written submissions to our inquiry, providing a wealth of information on the many issues of interest to the science and research community in the context of leaving the European Union. An illustrative selection of these issues are reproduced here, although it is not intended to be a comprehensive summary of the many issues raised. As the Government turns its attention to addressing the overarching issues highlighted in this report it should draw on these and other submissions to understand the community's concerns.

Table 1: Funding

Issue	Description and written evidence references	Notes
<p>Concerns that the UK might not be able to access EU funding, including Framework Programmes (Horizon 2020) and structural funds, after the UK leaves the EU—depending on which future UK-EU model is chosen.</p>	<p>The University of Southampton quoted data from the Swiss Secretariat for Education, Research and Innovation (SERI), showing the effect of Switzerland's move to a partial association model, and described this as a "substantial decline in Swiss involvement and income during this period of uncertainty".¹ The SERI report goes on to state that "If Switzerland were to be fully downgraded to third-country status from 2017 onwards, its opportunities for participation and influence would be extremely limited. We would also expect to see an even sharper decrease in the financial and quantitative shares of Swiss participation in the [Framework Programmes]. A further concern would be the potential isolation of Swiss-based researchers. The fear is that over the long term, third country status could lead to a loss of expertise and could reduce Switzerland's influence in research circles, both in Europe and indeed globally".</p> <p>HEFCE described the benefits of funds beyond Horizon 2020, particularly in supporting innovation: "EU public and private funds have played a significant role in supporting innovation in the UK. UK universities have received around £100M p/a from ERDF and ESF funding streams over the last three years to support a range of economic regeneration activities. Structural Funds have helped to improve regional competitiveness and absorptive capacity. Competitiveness and capacity are also supported by domestic businesses' ability to access a range of EU funds including H2020. The European investment fund has provided important SME financing which in turn has leveraged venture capital and private equity funds. Each finance stream invests in private sector capacity to engage in research and development and this then helps university enterprise activity and innovation partnerships to be successful. In addition, universities have benefitted from working with EU businesses with good levels of research and development capacity and a high tech focus".²</p>	<p>A description of the existing models for non EU-member involvement in Horizon 2020 is provided in the House of Lords Science and Technology report. This includes a description of the "Swiss model".</p>

Issue	Description and written evidence references	Notes
<p>Ability to lead projects and influence the EU Framework Programmes post-Brexit</p>	<p>The University of Oxford told us that: "For the UK (and in particular UK universities), whilst participation in projects is, of course, desirable, future success and the UK's competitive edge is also dependent on the ability to influence the content of future research programmes, the areas for large-scale investment in research as well as the content of EU directives that affect research in the UK (eg animal testing, open access & data mining). It is vital that the UK is driving the research agenda rather than following the agenda of other member states."³</p>	<p>The House of Lords Science and Technology Committee noted that: "The UK currently has significant influence on the development of EU policy for science. It is not entirely clear how this would be affected in the event of termination of membership and adoption of Associated Country status".⁴</p>
<p>The need for appropriate levels of funding to be delivered through appropriate new schemes, if access to Horizon 2020 and other funding streams cannot be negotiated</p>	<p>The Royal Academy of Engineering wrote that: "If the UK was unable to secure continued access to EU research and innovation programmes, it would be essential for the UK government to create suitable replacement research and innovation programmes using national funds. Any such replacement programmes should replicate the successful and unique aspects of EU programmes, including support targeted at collaboration and partnership at many different levels, including researchers, universities, large corporates and SMEs, plus long term visibility of themes and subject areas".⁵</p> <p>Loughborough University wrote that: "Participation in EU research projects is about much more than access to another research funding stream. Advances in research and consequent benefits to society and economy could not be realised by simply placing the same level of funding through a UK funding body".⁶</p> <p>The Wellcome Trust Sanger Institute described these features in more detail: "European funding structures have a number of significant differences from UK sources, but in conversations with Institute faculty the themes of investigator-led funding calls, mobility and career development came up repeatedly. Many faculty felt that the strategic direction of EU funding was more driven by investigators themselves than in the UK and this often led to the EU funding more ambitious projects than UK research councils were willing to. The EU also supports individuals through their career stages more than is currently the case in the UK. EU funding for career development fellowships is more generous and does not require a sponsor to top up the award, unlike most UK funders".⁷</p> <p>The University of Edinburgh added that "even if all displaced H2020 funding is fully replaced and ring fenced, it is possible that UK researchers will be still be disadvantaged if industry partners perceive that their contributions are better leveraged through Horizon 2020, with a consequent net drain of industrial sponsorship from UK universities in favour of their European rivals."⁸</p>	

Issue	Description and written evidence references	Notes
	<p>The Institute of Chartered Foresters queried which bodies would be distributing any replacement funding and to whom: "Whilst it would be good to ensure the UK continues to spend on research what it repatriates, it must ensure that whatever it does spend is available, on a level playing field, for all research bodies that can currently apply for EU funding namely, Universities, Public Sector Research Organisations, SMEs etc. Any funds repatriated should not be given solely to Research Councils to administer as they are not all-inclusive".⁹</p> <p>The University of Cambridge highlighted a need to ensure any domestic funding routes are synchronised with those in other countries: "The Government's Balance of Competences Review (2014) found that international collaborations with non-EU members are made more difficult by the reliance of researchers in different countries on different funding cycles. Potential UK participants could run into problems in 'synchronising' research projects and funding with EU partners, in the event of the UK no longer being a full participant in Horizon 2020".¹⁰</p>	
Key features of EU funding that should be preserved or imitated	<p>The University of the Arts London (UAL) described EU funding as an "an approach that in many ways is more attractive than Research Council schemes to an institution like UAL". UAL pointed to:</p> <ul style="list-style-type: none"> –Greater notice of funding calls, which gives HEIs time to assemble consortia. (A complaint about major Research Council directed calls is that the public notice period is so short that only those with informal prior knowledge have a serious chance of assembling a fully resolved response.) –Wider and more inclusive support for academic and industrial partnerships. The structure of EU funding means that commercialisation is more integrated into the project lifecycle. This approach is especially attractive to the design discipline with its close links to professional practice. –Greater opportunities for UK companies to be involved in publicly funded research. UK companies are keen to be involved in EU funding but SMEs in particular are wary of their complexity. UK universities provide a vehicle for British companies to engage with funding streams and expertise to which they would never normally have access. –More opportunities to learn about funder priorities and expectations. Feedback on applications is more extensive and detailed than that from the Research Councils. Applicants can learn how to improve the quality of their bids, and so increase their chances of being funded in later calls. 	

Issue	Description and written evidence references	Notes
<p>Criticisms of EU funding routes that should not be replicated</p>	<p>The Chartered Institute of Foresters hoped that any future system would be as simple and free from “red tape” as possible, noting that “the Horizon 2020 programme has made substantial advances in reducing complexity and bureaucracy but many other EU funding mechanisms (LIFE+, Interreg and others) remain labyrinthine and non-uniform in their approach to eligible costs”.¹¹</p> <p>A group of researchers at Swansea University observed that “Rules and regulations around EU funding applications and grants are designed to fit a wide variety of funding calls over multiple programmes and research areas. As such, the known issue of overextended time-to-grant and intrinsic complexity of European funding create a high threshold of administrative knowledge and resources necessary to navigate these funds”. They suggested that “By returning the key sources of funding to the nation state level, Brexit may offer an opportunity to streamline research guidelines, thus reducing the resource burden of both applying for and undertaking large research grants. Some researchers indicate that many UK funding bodies, including RCUK bodies, Innovate UK and the Wellcome Trust, are all already simpler and more user-friendly than EU funding”.¹²</p> <p>Ian Byrne, the Deputy CEO of a small charity undertaking research and development in the area of sustainable energy, told us that “In recent years, the EU has consolidated many of its funding strands into just two: those around the European Social Funds and, for science-based activities, Horizon 2020. This has had the effect of reducing the number of projects being funded, while maintaining the total level of expenditure. While this may be beneficial for fundamental research in “big science” it has not helped smaller organisations such as ours, working in fields where much of the research is incremental. In particular, in the area of energy efficiency we have seen a trend towards funding a few disconnected projects each year, which often appear to suffer from bloated administration yet modest achievements”.¹³</p>	
<p>The effect of reliance on EU funding on smaller HEIs</p>	<p>We were told that “Smaller organisations such as Goldsmiths have relied heavily on access to the ERC and EU income to ensure their research income remains stable. Reduced access to EU funding sources would negatively affect this stability”.¹⁴</p>	

Issue	Description and written evidence references	Notes
The effect of reliance on EU funding on smaller subjects	Representatives of some smaller research subjects in the UK were concerned about the level of their current reliance on EU funding. For instance, the Institute of Acoustics told us that 47% of funding for acoustics-related research in the UK is received through EU routes, ¹⁵ and the Institute of Conservation highlighted Heritage Science as an area with a similar level of dependence on EU funding. ¹⁶	Some information on the current level of reliance on EU funding by discipline was provided by RCUK. ¹⁷ Over the three-year period from 2012/13 to 2014/15, EU Government Bodies provided 13% of all research grants and contracts income to UK universities. The variability is not restricted to ‘small’ subjects; Chemistry and “IT, system sciences, and computer software engineering” both appear in RCUK’s top ten subject centres by proportion of income from EU bodies (at 21.5% and 30.9% respectively), and also in the top ten by total level of EU income (at £155m and £142m)
Need to map EU funding mechanisms	<p>Scientists for EU told us that “There is probably not, at this stage, enough appreciation of the myriad EU-based mechanisms that bring funds into innovative players in both the public and private sector at the moment. These must be mapped urgently. Horizon 2020 and the “EU Structural Funds” (Regional Development Fund and the European Social Fund—jointly €10.8billion allocated to the UK from 2014–2020) are not the only investments”.</p> <p>They highlighted the European Fund for Strategic Investment (EFSI) as one such route: “[EFSI], also known as the “Juncker Plan” is a recent initiative (launched jointly by the European Investment Bank, European Investment Fund and European Commission) aimed at using public funds strategically to dramatically leverage private investment into innovation. “The EFSI aims to overcome current market failures by addressing market gaps and mobilising private investment. It will support strategic investments in key areas such as infrastructure, education, research and innovation, as well as risk finance for small businesses.”¹⁸</p>	

1 University of Southampton (LEA 97) para 25

2 HEFCE (LEA 230) para A

3 University of Oxford (LEA 184) para 1

4 House of Lords, EU membership and UK science, Second report of the Science and Technology Committee, Session 2015–16, [HL Paper 127](#), para 228

5 Royal Academy of Engineering (LEA 279) para 2.5

- 6 Loughborough University ([LEA 109](#))
- 7 Wellcome Trust Sanger Institute ([LEA 133](#)) para 26
- 8 University of Edinburgh ([LEA 159](#)) para 13
- 9 Institute of Chartered Foresters ([LEA 156](#)) para 6
- 10 University of Cambridge ([LEA 42](#))
- 11 Chartered Institute of Foresters ([LEA 156](#)) para 2
- 12 IMPACKT, Swansea University ([LEA 138](#)) para 7
- 13 Ian Byrne ([LEA 134](#))
- 14 Goldsmiths, University of London (LEA 252) para 17
- 15 Institute of Acoustics ([LEA 73](#)) para 3
- 16 Institute of Conservation ([LEA 86](#)) para 1.1.1
- 17 Research Councils UK ([LEA 235](#)) annex 1
- 18 Scientists for EU ([LEA 261](#)) 2.3

Table 2: People

Issue	Description and written evidence references	Notes
Costs from visa requirements	Dr Julian Downward warned that the Crick Institute’s annual expenditure on processing visa and work permit applications could rise “from about £70,000 to some £250,000, if rules introduced to regulate entry of EU nationals are similar to those currently applied to non-EU nationals”. ¹⁹ Similarly, the University of Oxford estimated that there could be “anything up to a tripling of work load” in order to process additional visa applications. ²⁰	The Society for the Environment noted the possibility of a “research passport” model as a solution, based on the National Health Service (NHS) research passport, “which grants honorary research contracts or letters of access to those who need to undertake research within the NHS”. ²¹ However, the Society noted that “whilst a similar system would be a good compromise for those who conduct research, it may not be a suitable model for industries employing scientists who work in the field but do not conduct research as part of their activities”.
Movement of researchers potentially constrained by caps on overall immigration levels	The University of Cambridge explained that the current limits on Tier 2 visas meant that this route “would be unlikely to have the capacity to absorb the numbers of EU nationals which the sector would require”. ²²	<p>The UK currently controls immigration from countries outside the EU through a system of visa ‘tiers’, which includes a mix of ‘points-based’ and ‘employer-led selection’ components. This includes tier-1 visas (‘exceptional talent’ /entrepreneurs), tier-2 visas (‘skilled workers’), tier-4 visas (students) and tier-5 visas (which includes approved ‘research placement’ schemes). Tier-1 and tier-2 visas have quotas—the 1,000 a year cap on tier-1 visas include an allocation of 250 places to be endorsed by the Royal Society, 150 by the Royal Academy of Engineering and 150 by the British Academy.</p> <p>In March 2016, before the EU Referendum, the Government announced reforms to the skilled worker visa (Tier-2), following a review of the route by the Migration Advisory Committee, including an increase in the minimum salary threshold for experienced workers using Tier 2, from £20,800 to £25,000 in Autumn 2016 and £30,000 in April 2017 (For new entrants to the workforce, including those under 25, the minimum will be £23,000), and the introduction of an ‘immigration skills charge’ for each non-EEA worker an employer wants to bring to the UK (larger sponsors of Tier 2 migrants would be charged £1,000 per migrant a year, £364 for small businesses and charities). There would be an exemption for migrants undertaking PhD level roles</p>

Issue	Description and written evidence references	Notes
Reassurance for EU researchers currently in the UK is needed to avoid 'brain drain'	<p>The University of Leicester suggested that "There should be a fast-track way of enabling non-UK EU academics and researchers (including after any envisaged transition date) to obtain the right to remain in the UK when employed by the universities".</p> <p>The Babraham Institute wrote that "Action is needed immediately, EU-nationals need to be reassured that their status is protected now and in the future, or we risk losing the 'best brains' before negotiations even begin".²³</p>	
Student access to loans	<p>UUK called on the Government to "Provide immediate reassurances to EU students starting in academic year 2016/17 regarding their unchanged tuition fee status and for 2017/18 entrants on their ability to access student loans, recognising that the UCAS cycle opens on 6 September 2016".²⁴ The Russell Group went further: "Our experience suggests that future cohorts of students will also be making decisions about where to study even though they may not be expecting to start until 2018/19 or 2019/20. This is expected to be a crucial time when negotiations between the UK and the EU may conclude and early clarification from the Government on the expected status of these students would be very welcome".²⁵</p>	<p>The Government announced on 11 October that "EU students applying for a place at an English university or further education institution in the 2017 to 2018 academic year will continue to be eligible for student loans and grants—and will be for the duration of their course".²⁶</p>

Issue	Description and written evidence references	Notes
Financial consequences of changes in EU student fees	<p>The University of Oxford explained that “At the moment, students from the EU pay the same fees as ‘home’ students. It has been suggested that a positive outcome of a UK withdrawal from the EU will be the charging of international student fees to EU students, thus giving UK Universities a huge boost in fee income. In theory, this sounds like an excellent proposition. However, those who deal with student recruitment believe that, in reality, there will be a huge drop in numbers from the EU as students chose to study at one of the many excellent universities in mainland Europe. The result would actually be a huge drop in fee income (as well as the loss of some excellent students). There is strong feeling that if EU fees are raised to the level of overseas students there will be a knock-on effect on the make-up of the students we see applying, as UK courses become exponentially more unaffordable (especially compared to other EU providers)”.²⁷</p> <p>The University of Liverpool provided some figures on the possible financial consequences: “Projections based on no new EU students coming to Liverpool show the loss in fee income in 2016/17 would be around £2.5M, rising to £6.2M in 2018/19. If only 50% of students currently forecast came there would be a potential loss of over £3M”.²⁸</p> <p>Universities UK called for the Government to produce “an international student strategy, backed by investment to support international marketing, mobility and partnerships in both Europe and across the world including a quantitative target to increase international student recruitment”.²⁹</p>	

Issue	Description and written evidence references	Notes
<p>Access to ERASMUS exchange programmes</p>	<p>Loughborough University wrote that “Studying abroad and ERASMUS exchanges are life-shaping events for young people, preparing them for careers working across nations and cultures. Their careers will deliver economic prosperity to the UK. Exclusion from programmes would be hugely to our detriment and will not be replaced on anything like the same scale by piecemeal opportunities around the world”.³⁰</p> <p>Loughborough University went on to provide figures: “Student mobility is clearly a very significant EU achievement. At Loughborough some 600 students are EU (non-UK) nationals. Their fee income amounts to £5M and they spend similar sums in the local economy. They enrich our community immeasurably, as do our exchange students. 170 students/year come to Loughborough on ERASMUS exchange and we send the same number out, 2/3 to study and 1/3 to work. As an indication of the success of ERASMUS, we can compare with exchanges with the rest of the world which serve as an indicator of likely levels of activity in a UK outside the EU. Despite the attractions of major English-speaking nations, the absence of formal programmes results in a much smaller activity, about 20 students in and 20 out. Exchanges are life-shaping events for these young people, preparing them for careers working across nations and cultures that will deliver economic prosperity to the UK. Exclusion from programmes would be hugely to our detriment and would not be replaced on anything like the same scale by piecemeal opportunities around the world”.³¹</p>	<p>The Education Committee is holding its own inquiry into the implications of Brexit for Higher Education, which will include the UK’s participation in the ERASMUS scheme.³³</p>

Issue	Description and written evidence references	Notes
	<p>The Russell Group said that “The Erasmus programme has also benefited UK and EU students and universities for many years. Over 15,000 students from UK universities took part in the Erasmus+ programme in 2013/14, nearly half of whom were from Russell Group universities. The programme provides an experience that is valuable to those individuals and to employers who want graduates with experience of other cultures and language skills. The Government has confirmed the referendum result does not affect beneficiaries of Erasmus+ or those considering applying in 2017 but there is currently no clarity beyond that. We hope the Government will negotiate for the UK to have continued access to the Erasmus+ programme beyond 2017”.³²</p>	
Visas for short visits	<p>The MRC Laboratory of Molecular Biology in Cambridge told us that “short-term working visits and internships are the lifeblood of scientific collaboration and information transfer”, but that current immigration rules make it “extremely difficult” to host such visits from non-EU citizens. The laboratory was concerned that similar restrictions could apply to visits from EU citizens after Brexit, noting that such visits “do not lead to immigration nor compete for jobs, so their restriction serves little obvious purpose”.³⁴</p>	

19 Dr Julian Downward ([LEA 187](#))

20 University of Oxford ([LEA 184](#))

21 The Society for the Environment ([LEA 192](#)) para 2.2

22 University of Cambridge ([LEA 42](#))

23 Babraham Institute ([LEA 124](#)) para 2.2

24 Universities UK ([LEA 275](#))

25 Russell Group ([LEA 180](#)) para 3.3

26 “[Funding support for EU students](#)”, Department for Education press release, 11 October 2016

27 University of Oxford ([LEA 184](#))

28 University of Liverpool ([LEA 222](#)) para 6

29 Universities UK ([LEA 275](#)) para 18

30 Loughborough University ([LEA 109](#)) p1

31 Loughborough University ([LEA 109](#)) para 2.4

32 Russell Group ([LEA 180](#)) para 3.6

33 “[The impact of exiting the European Union on higher education](#)”, Education Committee, accessed 4 November 2016

34 MRC Laboratory of Molecular Biology, Cambridge ([LEA 74](#)) para 4

Table 3: Collaboration

Issue	Description and written evidence reference	Notes
Collaboration requires dedicated funding	The Royal Society observed that collaboration was dependent on funding, and that: “Leaving the EU will not create spare capacity for collaboration elsewhere unless supporting funds are identified, ring-fenced and made available. If the UK wishes to increase global collaboration then it must increase the funding and support to make it possible, ideally encouraging collaborations both in Europe and further afield.” ³⁵	
Some research is only possible through collaboration	International collaboration is important for conducting studies that require large populations, such as clinical trials of medicines for rare diseases. ³⁶ The Royal Society of Biology told us that: “Research on cancer, mental health, imaging, neurodegenerative disease, tissue engineering, bioinformatics, and conservation among others will be heavily and negatively affected if the UK is unable to maintain involvement in centralized EU-wide initiatives. By their nature these research efforts require, for example, large patient pools, or distributed ecosystems, or infrastructure that is beyond the scope of any individual country. Many specialisms, for example endocrinology, cover rare diseases requiring a large population from which to draw viable study cohorts. Similarly, capacity to conduct studies on trans-national boundary infectious diseases (clinical and veterinary) is essential for research as well as disease control and public health. International collaboration and outlook is key.” ³⁷	
	<p>Loughborough University emphasised the need for recognition that “participation in EU research projects is about much more than access to another research funding stream”.³⁸ The university provided case studies of projects that could not be delivered by UK partners alone, even with equivalent levels of funding, and explained that: “The collaborations across EU states enable projects to happen where teams with the required skills cannot be assembled within single nations, as well as where climatic, cultural and behavioural differences are fundamental to the motivation for, delivery of and ultimately the success of the project.”³⁹</p> <p>Similarly, the Marine Biological Association explained that “Sophisticated Research Vessels, such as the new RRS Sir David Attenborough, can still only operate in one location at any given time so that no one nation can afford to conduct research across the global oceans on their own. With the threats to the seas, through climate warming, acidification and pollution, international collaboration in marine science is essential”.⁴⁰</p>	

Issue	Description and written evidence reference	Notes
There are many EU structures for promoting collaboration	<p>RCUK explained that: "JPIs, ERA-Nets and CSAs foster and support international collaboration at a strategic and research level, reducing fragmentation and adding value to national investment:</p> <p>–Joint Programming Initiatives (JPIs) pool and align national research efforts to more effectively tackle common European challenges, many of which have a wider global impact. There are ten JPIs in key areas such as neurodegenerative disease, cultural heritage, antimicrobial resistance and climate change.</p> <p>–European Research Area Networks (ERA-NETs) strengthen co-ordination of national and regional research programmes by providing a framework to develop joint activities and support joint calls for transnational proposals. The Research Councils support UK involvement in around twenty such platforms, aligning with areas of key national interest such as diet and health, synthetic biology and urban futures and often receiving additional EU funding for particular activities.</p> <p>–Coordination and Support Actions (CSAs) support coordination and networking—including workshops, development of collaborative activities and knowledge exchange -particularly where relationships are new and emerging".⁴¹</p>	
A new research funding stream for collaboration is needed	<p>Researchers at Swansea University suggested that "The UK should provide some funding, with a low administrative hurdle, to researchers with proven and pre-existing European networks who are already or about to start developing collaborative bids. This would dissuade other EU partners from dropping UK universities from projects and provide a strong signal that UK research will continue to be outward looking".⁴²</p>	

35 Royal Society of Biology ([LEA 225](#)) para 3

36 Academy of Medical Sciences ([LEA 265](#))

37 Royal Society of Biology ([LEA 225](#)) para 2

38 Loughborough University ([LEA 109](#)) para 2.8

39 Loughborough University ([LEA 109](#)) para 2.8 ff

40 Marine Biological Association ([LEA 278](#)) para 5

41 Research Councils UK ([LEA 235](#))

42 IMPACKT, Swansea University ([LEA 138](#)) para 12

Table 4: Regulation

Issue	Description and written evidence references	Notes
<p>Regulations relevant to science and research requiring review, and the process for this</p>	<p>The Babraham Institute told us that: “A substantial amount of work will be needed to review science and technology-related legislation, regulations and projects. Areas to be covered will include: health & safety, employment laws, IP, commercialisation and technology transfer practices, and animal research regulations.⁴³</p> <p>Universities UK provided a substantial list of regulations relevant to science and research that will need to be reviewed,⁴⁴ and the Institute of Physics and Engineering in Medicine highlighted others specific to medical physics and clinical engineering.⁴⁵</p> <p>The Institution for Environmental Sciences listed several regulations relevant to environmental research.⁴⁶</p>	<p>Jo Johnson told us that:</p> <p>“We need to look at what kind of relationship we are going to have to the rest of the European Union before we can give a clear picture about the regulatory systems we will continue and those that we might be able to change and adapt. They will all form part of a very detailed piece of work, which will be undertaken within the Department and across Government over the weeks and months to come”.</p>

Issue	Description and written evidence references	Notes
<p>Specific regulations: Clinical trials</p>	<p>Many organisations highlighted the Clinical trials directive as relevant to science and research. The British Pharmaceutical Society explained that “New EU Clinical Trials Regulations are set to come into force by the end of 2018. These regulations are meant to harmonise procedures for assessing clinical trials applications, as well as enhancing collaboration between ethics committees, streamlining safety-reporting procedures and increasing transparency surrounding the outcome of clinical trials. These regulations will create a centralised gateway for clinical trial applications. However, Brexit means that UK patients will be left out of this new system, leaving EU patients ahead in accessing the latest innovative clinical research. The likely impact on the UK of not being involved in these new regulations is thought to be major and needs to be carefully assessed”.⁴⁷</p> <p>UCL wrote that “If the UK leaves the EU, there will be significant implications for medical research involving clinical trials or use of human samples which have obtained ethical and patient consents. This will affect both ongoing research projects, where consent was given under a previous regulatory regime, and future research projects, which will have to comply with multiple sets of regulation. This poses a currently overlooked but highly significant risk to the undertaking of medical research and could affect the UK’s pre-eminence in this field. Pharmaceutical research will also be affected both in terms of prospects for investment (the UK alone is less attractive than the UK as gateway to the EU market) and because of the consequences of regulatory divergence for drug development (the UK becomes a less attractive place to develop drugs for the EU market) [...] It is likely that ongoing clinical projects will either have to re-seek consent or abandon some or all of their previous work. UK researchers will find it increasingly difficult to collaborate with EU partners in future if their involvement necessitates compliance with two different regulatory regimes.”⁴⁸</p>	

Issue	Description and written evidence references	Notes
Specific regulations: Data protection	<p>The Wellcome Trust Sanger Institute told us that “The UK was recently instrumental in the negotiation of the new Data Protection Regulation, with UK science being strongly represented. The question has now arisen of whether the UK will adopt this legislation and the government can and should make a decision on this as soon as possible. The ability of UK science to generate, collect, process and share data is vital especially given the national drive towards “big data science” and establishing legislation compatible with EU legislation is vital”.⁴⁹</p> <p>Open Data Institute also raised data regulation issues: “The EU is implementing the General Data Protection Regulation, which requires personal data be managed in countries with similar standards of privacy rules. The EU is also developing the Free Flow of Data initiative to regulate flows of data within the EU. The UK may leave the EU without an agreement for data flows and personal data management. [A consequence could be that] UK researchers may lose access to data about EU citizens, due to incompatible data regulations. Certain types of research may be hampered (longitudinal studies into health, for example)”.⁵⁰</p>	
Specific regulations: Toxicology	<p>The British Toxicology Society wrote that “An example of an EU regulation that has wide-ranging implications for the UK following withdrawal from the EU is REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals). UK exporters to the EU of products ranging from bulk chemicals and cars to cleaning products, will still need to abide by REACH. Under REACH, an Only Representative (OR) is a legal entity responsible for the chemicals to be registered or pre-registered. All non-EU importers must appoint an OR. Currently an OR needs to be in the European Economic Area (EEA) in order to make a REACH registration. Without a negotiated change to the current regulation, following the UK withdrawal from the EU many small companies will no longer be able to be responsible for their own REACH registrations for exports to the EU and consultants who provide this function as a service will no longer be able to do so directly from a UK based company. In the absence of a negotiated arrangement, companies wishing to provide an OR service would need to collaborate with a business within the EEA—an additional overhead”.⁵¹</p>	

Issue	Description and written evidence references	Notes
Specific regulations: GM	<p>In our report on EU regulation of the life sciences we concluded that “too often, the precautionary principle has been wilfully misused in the formulation of EU life science policy-making, including and notably for Genetically Modified Organisms”.⁵² In our current inquiry, the NFU told us that: “Leaving the EU could provide Britain with the opportunity to develop and harness certain technologies, such as biotechnology, that have been hindered by over politicised and unscientific decision-making. [...] Being outside of the EU could enable the UK to authorise new crops and traits more quickly, for use in feed, food and for cultivation.”⁵³</p> <p>The Royal Society of Biology wrote that “An important consideration following the UK exit from the EU would be the regulations concerning the use of GMOs in agriculture and the status of genome editing. The current EU approval process is viewed by many scientists as burdensome and dissuading innovation. The UK might have an opportunity to develop its own regulations in this area. However, this would not necessarily lead to adoption or commercial growing of approved GMOs in the UK, because public, political and economic considerations must combine in this decision-making”.⁵⁴</p>	
	<p>Similarly, the Agricultural Biotechnology Council (ABC) wrote that “Given the strength of the UK science base, there is now an opportunity to boost this base through the implementation of better regulation. ABC is primarily focused with agricultural biotechnology, and as such is particularly concerned with the regulation of GM crops. As such, ABC believes that the future regulation of GM crops in the UK should be led by scientific evidence and safety assessments should be ‘risk-based’. There is also the prospect of the UK becoming a leader in new technologies, such as Novel Breeding Techniques (NBTs), which can help to overcome some limitations of traditional breeding and enlarge the portfolio of products developed in the UK. Although relatively new, NBTs hold the potential to speed up the conventional breeding process and have the potential to increase the competitiveness of agriculture in the UK. The EU is yet to agree regulations for these technologies, however if the UK were to adopt a science-led approach to regulation, there is an opportunity for the UK to be a leading light in seed research and development (R&D), and for UK farmers to reap the benefits of early access to new tools before their European counterparts”.⁵⁵</p>	

Issue	Description and written evidence references	Notes
<p>The future of the European Medicines Agency in London and licensing of new treatments</p>	<p>A particular concern raised in written evidence was the feasibility of the UK being able to retain the headquarters of the European Medicines Agency (EMA), and the benefits this brings to UK bioscience and pharmaceutical businesses in dealing with EU regulation and approvals. In our report on the EU regulation of the life-sciences, we highlighted the importance of the close relationship between the EMA and the UK Medicines and Healthcare Products Regulatory Agency (MHRA).⁵⁶ If the UK, after Brexit, is not a member of the EEA, pharmaceutical companies would need to apply for marketing authorisations separately to the Medicines and Healthcare Products Regulatory Agency (MHRA) for a medicine they wished to supply in the UK.</p>	<p>This issue was the subject of a Westminster Hall debate on 12 October.⁵⁷</p> <p>Robin Walker MP (a DExEU Minister) told us that “The implications to medicines licensed through the EMA after the UK’s departure from the EU are being considered as part of the wider assessment of the UK’s regulatory regime. It is too early to speculate at this stage on the future location of the EMA.”⁵⁸</p>

- 43 Babraham Institute ([LEA 124](#))
- 44 Universities UK ([LEA 275](#)) annex 2
- 45 Institute of Physics ([LEA 135](#)) para 3.1
- 46 Institution of Environmental Sciences ([LEA 256](#)) para 7.1
- 47 British Pharmaceutical Society ([LEA 272](#)) para 3. See also Cancer Research UK ([LEA 224](#)) and others.
- 48 UCL ([LEA 258](#)) paras 24–25
- 49 Wellcome Trust Sanger Institute ([LEA 133](#)) para 19
- 50 Open Data Institute ([LEA 118](#))
- 51 British Toxicology Society ([LEA 255](#)) para 12
- 52 Science and Technology Committee, First Report of Session 2016–17, [EU regulation of the life sciences](#), HC 158, para 65
- 53 National Farmers’ Union ([LEA 116](#))
- 54 Royal Society of Biology ([LEA 225](#)) para 17
- 55 Agricultural Biotechnology Council ([LEA 191](#))
- 56 Science and Technology Committee, First Report of Session 2016–17, [EU regulation of the life sciences](#), HC 158, para 28 ff
- 57 HC Deb, 12 October 2016, [cols 116–137WH](#)
- 58 Q210

Table 5: Innovation, facilities and infrastructure

Issue	Description and references	Notes
The contribution that science and research can make to the industrial strategy	<p>The Campaign for Science and Engineering wrote that “the Industrial Strategy could provide a long-term, ambitious framework and programmes to support collaboration, knowledge exchange and build on the UK’s competitive strength of its science and innovation base”.⁵⁹</p> <p>The Royal Academy of Engineering wrote that “Long-term commitment to an Industrial Strategy is one of the most effective ways of encouraging private sector investment in priority sector and technology areas, thus the Prime Minister’s commitment to Industrial Strategy was welcomed by the engineering community. An Industrial Strategy, if deployed successfully, will help the UK to exploit the opportunities and mitigate many of the risks that face the country as a consequence of exiting the EU. The Academy wants to ensure that engineering businesses, large and small, feature strongly in the industrial strategy and can access the talented workforce they need. [...] Furthermore, the creation of UK Research and Innovation (UKRI) offers the opportunity for an agile research and innovation system that invests strategically in areas of future growth and brings greater coherence to research and innovation funding.</p>	The Business, Energy and Industrial Strategy Committee is currently holding an inquiry into the Government’s forthcoming industrial strategy. ⁶⁰
Access to EU facilities	<p>Research often needs specialised infrastructure, including equipment and buildings, or less tangible infrastructure such as databases, archives, collections and computing systems. Since such facilities can be expensive, investment in construction and running costs may be provided by multiple countries. Thus, while the ‘headquarters’ of a facility will be in one country, other investor countries in the infrastructure can also gain access. For example, the European Synchrotron Radiation Facility (one of the most powerful x-ray sources in the world) is located in Grenoble, France. It is funded, however, by 21 partner nations, including the UK via the Science and Technology Facilities Council (STFC), who can use the facility. Professor Leyser, representing the Royal Society, also emphasised that UK scientists would “want to continue to make use of the facilities that are outside the UK because that is how science works and that is the most efficient way to do science. We do not want a situation where we are duplicating facilities because we no longer have access to existing facilities”.⁶¹</p> <p>Gareth Davies from BEIS emphasised the complexity of the nature of the scientific community’s relationship with Europe:</p> <p>“Some of the relationships are obviously formal and through the European Union. Others are multilateral and predate our relationship with Europe. As you work through the individual research institutions, it is very important to discriminate between those different types. There is CERN on the one hand, and JET and ITER, on nuclear fusion. There is work on European spallation centres and SKA in Manchester. They all have different legal bases and different ways of participation. A very complex and variable geometry sits behind these relationships”.⁶²</p>	

Issue	Description and references	Notes
Participation in space projects	<p>Several organisations highlighted the UK’s ability to participate in space and satellite projects that will provide national infrastructure. The Satellite Applications Catapult told us that “the EU has more recently been increasing the role it plays in European space programmes, especially those which have an application focus, and hence are important to the UK. This includes taking leadership of programmes like Galileo [satellite navigation programme] and Copernicus [earth monitoring programme], in both of which the UK has strong industrial interest [...] The UK satellite applications sector needs to retain access to Copernicus and Galileo to drive economic growth through the exploitation of these and other data sources. The current EU data and information policy means that users have free, full and open access to the data from these programmes. It is important that this continues. Defra, as the UK lead for the Copernicus programme, should work to ensure its future access and ideally influence in this programme. There are a number of operational contracts that are being, or are due to be, tendered for these programmes, the UK Government should ensure that UK companies have fair access to these contracts during the exit negotiations, to ensure the benefits of past investments”.⁶³</p>	
Hosting EU facilities in the UK	<p>The House of Lords Science and Technology Committee highlighted in its report that the UK hosts the headquarters of five pan-European research facilities: the European Life-science Infrastructure for Biological Information (ELIXIR) in Cambridgeshire, the Integrated Structural Biology Infrastructure (INSTRUCT) in Oxford, the Infrastructure for Systems Biology-Europe (ISBE) in London, the Square Kilometre Array at Jodrell Bank, and the European Social Survey (ESS ERIC) in London.⁶⁴</p> <p>Professor Philip Nelson of Research Councils UK highlighted their importance: “They are important activities. Several of them are around biology. We have the European Social Survey, for example, at City University in London. That is a very important enterprise, which has over 90,000 registered users worldwide using social survey data. It is critically important that we stay involved in that. There will be an awful lot of technical detail to be worked through and unravelled in the negotiation process, and in the way these things are structured—again emphasising the complexity—it will be important that we have a strong voice at the table to try to ensure that we can stay very much part of these things”.⁶⁵</p> <p>We received written evidence from the European Social Survey (a European Infrastructure Consortium, (ERIC)),⁶⁶ ELIXIR,⁶⁷ and others, highlighting the specifics of their circumstances. For instance, the ESS notes that “Arrangements have been made for Norway to host an ERIC, suggesting that Associated Members status would allow the UK to continue hosting the ESS ERIC. However arrangements which lead to the legal exclusion of the UK from the European Research Area—and in particular from access to future framework programme funding—would have far reaching ramifications for the ability of the UK to act as a host country for any ERIC including the ESS”.</p>	

- 59 Campaign for Science and Engineering ([LEA 267](#))
- 60 "Industrial strategy inquiry", Business, Energy and Industrial Strategy Committee, accessed 10 November 2016
- 61 Q76
- 62 Q206
- 63 Satellite Applications Catapult ([LEA 93](#)). Space programmes such as Galileo and Copernicus were also highlighted by the European Space Agency ([LEA 105](#)), ADS Group ([LEA 221](#)), Airbus ([LEA 168](#)),
- 64 House of Lords, EU membership and UK science, Second report of the Science and Technology Committee, Session 2015–16, [HL Paper 127](#), para 180
- 65 Q112
- 66 European Social Survey ([LEA 5](#))
- 67 ELIXIR ([LEA 231](#))

Formal Minutes

Wednesday 16 November 2016

Members present:

Stephen Metcalfe, in the Chair

Victoria Borwick Carol Monaghan

Jim Dowd Derek Thomas

Chris Green Matt Warman

Dr Tania Mathias

Draft Report (*Leaving the EU: Implications and opportunities for science and research*), proposed by the Chair, brought up and read.

Ordered, That the draft Report be read a second time, paragraph by paragraph.

Paragraphs 1 to 67 read and agreed to.

Summary and Annex agreed to.

Resolved, That the Report be the Seventh Report of the Committee to the House.

Ordered, That the Chair make the Report to the House.

Ordered, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

[Adjourned till Tuesday 22 November at 2.00 pm]

Witnesses

The following witnesses gave evidence. Transcripts can be viewed on the [inquiry publications page](#) of the Committee's website.

Tuesday 5 July 2016

Question number

Dr Sarah Main, Director, Campaign for Science and Engineering, **Professor Angus Dalgleish**, Scientists for Britain, and **Professor Sir Ian Diamond**, Chair of the Universities UK Research Policy Network

[Q1–47](#)

Professor Ottoline Leyser CBE FRS, Chair, Royal Society Science Policy Advisory Group, **Stuart Pritchard**, EU Affairs Manager, Wellcome Trust, and **Professor Martin Vetterli**, President, National Research Council of the Swiss National Science Foundation

[Q48–83](#)

Wednesday 13 July 2016

Kevin Baughan, Chief Development Officer, Innovate UK, and **Professor Philip Nelson**, Chair, Research Councils UK

[Q84–115](#)

Jo Johnson MP, Minister of State for Universities and Science, Department for Business, Innovation and Skills, and **David Wilson**, Head of European Knowledge and Innovation, Department for Business, Innovation and Skills

[Q116–157](#)

Wednesday 26 October 2016

Mr Robin Walker MP, Parliamentary Under-Secretary of State, Department for Exiting the European Union, **Jo Johnson MP**, Minister of State for Universities, Science, Research and Innovation, Department for Business, Energy and Industrial Strategy, and **Gareth Davies**, Director General, Department for Business, Energy and Industrial Strategy

[Q158–224](#)

Published written evidence

The following written evidence was received and can be viewed on the [inquiry publications page](#) of the Committee's website.

LEA numbers are generated by the evidence processing system and so may not be complete.

- 1 1640 UK-Based Early Career Researchers (Joint submission) ([LEA0104](#))
- 2 Academy of Medical Sciences ([LEA0094](#)) and ([LEA0265](#))
- 3 ADS Group ([LEA0221](#))
- 4 Aerospace Technology Institute ([LEA0273](#))
- 5 Agricultural Biotechnology Council ([LEA0191](#))
- 6 Airbus Group ([LEA0168](#))
- 7 AIRTO Ltd ([LEA0083](#))
- 8 Alexander Lenz, Institute for Particle Physics Phenomenology ([LEA0061](#))
- 9 Alzheimer's Research UK ([LEA0211](#))
- 10 Anna Freud National Centre for Children and Families ([LEA0240](#))
- 11 Anneliese Dodds MEP and Clare Moody MEP ([LEA0253](#))
- 12 Apconix ([LEA0087](#))
- 13 ARMA UK Ltd ([LEA0284](#))
- 14 AsSIST-UK ([LEA0163](#))
- 15 Association of Clinical Research Organizations (ACRO) ([LEA0173](#))
- 16 Babraham Institute ([LEA0124](#)) and ([LEA0254](#))
- 17 Birkbeck, University of London ([LEA0092](#))
- 18 Birmingham City University ([LEA0161](#))
- 19 BIVDA ([LEA0047](#))
- 20 Breast Cancer Now ([LEA0241](#))
- 21 British Association for Psychopharmacology ([LEA0043](#))
- 22 British Ceramic Confederation ([LEA0248](#))
- 23 British Council ([LEA0214](#))
- 24 British Geotechnical Association ([LEA0197](#))
- 25 British Heart Foundation ([LEA0194](#))
- 26 British Library ([LEA0271](#))
- 27 British Nuclear Medicine Society ([LEA0171](#))
- 28 British Pharmacological Society ([LEA0238](#))
- 29 British Science Association ([LEA0212](#))
- 30 British Society for Immunology ([LEA0178](#))
- 31 British Society of Genetic Medicine ([LEA0198](#))
- 32 British Toxicology Society ([LEA0255](#))
- 33 Brunel University London ([LEA0268](#))

- 34 BSPB ([LEA0152](#))
- 35 BT ([LEA0263](#))
- 36 Campaign for Science and Engineering ([LEA0267](#))
- 37 Cancer Research UK ([LEA0224](#))
- 38 Canterbury Christ Church University ([LEA0260](#))
- 39 Cardiff Metropolitan University ([LEA0015](#))
- 40 Cardiff University ([LEA0208](#))
- 41 CBI ([LEA0250](#))
- 42 Centre for Computing and Social Responsibility, De Montfort University ([LEA0139](#))
- 43 Centre for Process Innovation ([LEA0209](#))
- 44 Challenger Society for Marine Science ([LEA0128](#))
- 45 Chartered Institute of Ecology and Environmental Management ([LEA0136](#))
- 46 Chris Illingworth ([LEA0102](#))
- 47 Council for Mathematical Sciences ([LEA0157](#))
- 48 Council of Professors and Heads of Computing (CPHC) and UK Computing Research Committee (UKCRC) ([LEA0234](#))
- 49 Cranfield University ([LEA0206](#))
- 50 Department for Business, Energy & Industrial Strategy ([LEA0274](#))
- 51 Department of Plant Sciences, University of Cambridge ([LEA0167](#))
- 52 Department of Physics & Astronomy, University of Sheffield ([LEA0144](#))
- 53 Digital Catapult ([LEA0227](#))
- 54 Dr Adam Miles Lewis ([LEA0095](#))
- 55 Dr Brian Fawcett ([LEA0058](#))
- 56 Dr Charlotte Jackson ([LEA0054](#))
- 57 Dr David Rydeheard ([LEA0107](#))
- 58 Dr Diego Gallardo ([LEA0033](#))
- 59 Dr Gillian Harrison ([LEA0189](#))
- 60 Dr Grant Lewison, King's College London ([LEA0199](#))
- 61 Dr Helen Stagg ([LEA0004](#))
- 62 Dr Hywel Owen ([LEA0070](#))
- 63 Dr James Briscoe ([LEA0106](#))
- 64 Dr John Steedman ([LEA0049](#))
- 65 Dr Julian Downward ([LEA0187](#))
- 66 Dr Louise Porter ([LEA0285](#))
- 67 Dr Magnus Johnson ([LEA0001](#))
- 68 Dr Mark Roberts ([LEA0052](#))
- 69 Dr Michael Head ([LEA0112](#))
- 70 Dr Nihal Sinnadurai ([LEA0046](#))

- 71 Dr Rohit K Dasgupta ([LEA0017](#))
- 72 Dr Scott McGrane ([LEA0026](#))
- 73 Dr Stephen Fleming ([LEA0021](#))
- 74 ELIXIR ([LEA0231](#))
- 75 EMBL-European Bioinformatics Institute ([LEA0154](#))
- 76 Emeritus Professor Colin Ockleford ([LEA0003](#))
- 77 Engineering Professors' Council ([LEA0233](#))
- 78 Eric Deeson ([LEA0030](#))
- 79 European Commission ([LEA0287](#))
- 80 European Social Survey ([LEA0005](#))
- 81 European Space Agency ([LEA0105](#))
- 82 Europlanet 2020 Research Infrastructure ([LEA0131](#))
- 83 Fera Science Ltd ([LEA0081](#))
- 84 Francis Crick Institute ([LEA0146](#))
- 85 Frank Krauss ([LEA0023](#))
- 86 Goldsmiths, University of London ([LEA0252](#))
- 87 Granta Design Ltd ([LEA0038](#))
- 88 Great Ormond Street Hospital ([LEA0166](#))
- 89 GuildHE ([LEA0190](#))
- 90 Heads of University Centres of Biomedical Sciences (HUCBMS) ([LEA0229](#))
- 91 HEFCE ([LEA0230](#))
- 92 Hewlett Packard Enterprise ([LEA0151](#))
- 93 HM Treasury ([LEA0286](#))
- 94 HVM Catapult ([LEA0099](#))
- 95 Icon, the Institute of Conservation ([LEA0086](#))
- 96 IMPACKT, Swansea University ([LEA0138](#))
- 97 Imperial College London ([LEA0242](#))
- 98 Institute of Acoustics ([LEA0073](#))
- 99 Institute of Chartered Foresters ([LEA0156](#))
- 100 Institute of Occupational Medicine ([LEA0024](#))
- 101 Institute of Physics ([LEA0062](#))
- 102 Institute of Physics and Engineering in Medicine ([LEA0135](#))
- 103 Institution of Environmental Sciences ([LEA0256](#))
- 104 John Innes Centre ([LEA0072](#))
- 105 John Wiley & Sons ([LEA0243](#))
- 106 Keele University ([LEA0213](#))
- 107 Knowledge Transfer Network ([LEA0103](#))
- 108 Lancaster University ([LEA0204](#))

- 109 Leeds Beckett University ([LEA0169](#))
- 110 LGC ([LEA0111](#))
- 111 London School of Hygiene & Tropical Medicine ([LEA0153](#))
- 112 London South Bank University ([LEA0195](#))
- 113 Loughborough University ([LEA0109](#))
- 114 Manchester City Council ([LEA0276](#))
- 115 Manchester Institute of Innovation Research ([LEA0232](#))
- 116 Marine Biological Association ([LEA0278](#))
- 117 Materials Processing Institute ([LEA0266](#))
- 118 Medical Schools Council ([LEA0088](#))
- 119 Michelle Peckham ([LEA0264](#))
- 120 Mike Wingfield ([LEA0036](#))
- 121 MillionPlus ([LEA0064](#))
- 122 Mineral Products Association ([LEA0126](#))
- 123 Moshe Kinn ([LEA0071](#))
- 124 Mr Ian Byrne ([LEA0134](#))
- 125 Mr James Bernardi ([LEA0037](#))
- 126 Mr Joe Gorman ([LEA0075](#))
- 127 Mr Leonardo Buizza ([LEA0032](#))
- 128 Mr Marcio Aquino ([LEA0002](#))
- 129 Mr Thomas Eagle ([LEA0065](#))
- 130 Mr Yirgalem Negash Tesfaye ([LEA0078](#))
- 131 MRC Clinical Sciences Centre ([LEA0280](#))
- 132 MRC Integrative Epidemiology Unit, University of Bristol ([LEA0122](#))
- 133 MRC Laboratory for Molecular Cell Biology ([LEA0101](#))
- 134 MRC Laboratory of Molecular Biology ([LEA0074](#))
- 135 Mrs Nimisha Kotecha ([LEA0170](#))
- 136 Muscular Dystrophy UK ([LEA0216](#))
- 137 National Centre for Atmospheric Science ([LEA0149](#))
- 138 National Farmers' Union ([LEA0116](#))
- 139 National Institute for Health and Care Excellence (NICE) ([LEA0155](#))
- 140 National Institutes of Bioscience ([LEA0172](#))
- 141 National Oceanography Centre ([LEA0140](#))
- 142 Natural History Museum ([LEA0262](#))
- 143 Newcastle University ([LEA0182](#))
- 144 NHS European Office ([LEA0193](#))
- 145 Nicola Capstaff ([LEA0127](#))
- 146 NOAH Ltd. ([LEA0217](#))

- 147 Open Data Institute ([LEA0118](#))
- 148 Plymouth Marine Laboratory ([LEA0085](#))
- 149 Political Studies Association ([LEA0246](#))
- 150 Post-doctoral Researchers in the Division of Biosciences, University College London ([LEA0119](#))
- 151 Professor Emeritus Giovanni Ciccotti ([LEA0035](#))
- 152 Professor Alexander Orlov ([LEA0203](#))
- 153 Professor Anthony Fox ([LEA0016](#))
- 154 Professor Ben Bollig ([LEA0288](#))
- 155 Professor Carlton Baugh ([LEA0006](#))
- 156 Professor Dave Fernig, University of Liverpool ([LEA0060](#))
- 157 Professor David Dobson ([LEA0029](#))
- 158 Professor David Schmool ([LEA0034](#))
- 159 Professor Heiko Balzter ([LEA0084](#))
- 160 Professor Jeremy Baumberg ([LEA0012](#))
- 161 Professor Jernej Ule ([LEA0019](#))
- 162 Professor John Duncan ([LEA0068](#))
- 163 Professor John Duncan and colleagues ([LEA0069](#))
- 164 Professor John Hardy ([LEA0020](#))
- 165 Professor John Quinton ([LEA0018](#))
- 166 Professor Jonathan Bamber ([LEA0041](#))
- 167 Professor Julian Hiscox ([LEA0010](#))
- 168 Professor Martin Vetterli ([LEA0059](#))
- 169 Professor Miles Padgett ([LEA0056](#))
- 170 Professor of Computational Biology Nicholas Luscombe ([LEA0249](#))
- 171 Professor Peter Weinberg ([LEA0108](#))
- 172 Professor Richard Wakeford ([LEA0066](#)) and ([LEA0183](#))
- 173 Professor Robin Shattock ([LEA0051](#))
- 174 Professor Roger Barker ([LEA0045](#))
- 175 Professor Sebastian Oliver ([LEA0259](#))
- 176 Professor Stuart West ([LEA0013](#))
- 177 Professor Theodore Shepherd ([LEA0025](#))
- 178 Professor Tim Palmer CBE FRS ([LEA0014](#))
- 179 Professor Timothy Frayling ([LEA0009](#))
- 180 Professor Toby Bruce ([LEA0053](#))
- 181 Prospect ([LEA0113](#))
- 182 Queen Mary University of London ([LEA0176](#))
- 183 Research Councils UK ([LEA0235](#))
- 184 Ricardo plc ([LEA0055](#))

- 185 Robert Gordon University ([LEA0141](#))
- 186 Rolls-Royce plc ([LEA0245](#))
- 187 Rothamsted Research ([LEA0188](#))
- 188 Royal Academy of Engineering ([LEA0279](#))
- 189 Royal Astronomical Society ([LEA0145](#))
- 190 Royal College of Physicians ([LEA0181](#))
- 191 Royal College of Psychiatrists ([LEA0282](#))
- 192 Royal Irish Academy ([LEA0239](#))
- 193 Royal Meteorological Society ([LEA0039](#))
- 194 Royal Pharmaceutical Society ([LEA0272](#))
- 195 Royal Society of Biology ([LEA0225](#))
- 196 Royal Society of Chemistry ([LEA0077](#))
- 197 Russell Group ([LEA0180](#))
- 198 Safran ([LEA0096](#))
- 199 Satellite Applications Catapult ([LEA0093](#))
- 200 Science Board - Science and Technology Facilities Council (STFC) ([LEA0196](#))
- 201 Science Council ([LEA0236](#))
- 202 Scienceogram UK ([LEA0202](#))
- 203 Scientists for Britain ([LEA0089](#))
- 204 Scientists for EU ([LEA0261](#))
- 205 Sciovis Ltd ([LEA0150](#))
- 206 Scottish Universities Physics Alliance ([LEA0091](#))
- 207 Seqirus ([LEA0281](#))
- 208 Sheffield Hallam University ([LEA0090](#))
- 209 Shelford Group Medical Directors ([LEA0270](#))
- 210 SOAS, University of London ([LEA0040](#))
- 211 Society for Endocrinology ([LEA0048](#))
- 212 Society for the Environment ([LEA0192](#))
- 213 Society of Chemical Industry ([LEA0257](#))
- 214 Space Insight Ltd ([LEA0123](#))
- 215 Spirent Communications plc ([LEA0162](#))
- 216 STFC Solar System Advisory Panel ([LEA0244](#))
- 217 TalaveraScience ([LEA0050](#))
- 218 The Association of Medical Research Charities ([LEA0228](#))
- 219 The Association of the British Pharmaceutical Industry (ABPI) ([LEA0247](#))
- 220 The British Academy ([LEA0175](#))
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- 223 The Institute of Cancer Research, London ([LEA0207](#))
- 224 The Open University ([LEA0027](#))
- 225 The Postdocs of Cambridge Society (PdOC) ([LEA0185](#))
- 226 The Publishers Association ([LEA0283](#))
- 227 The Royal Society ([LEA0177](#))
- 228 The Royal Society of Edinburgh ([LEA0082](#))
- 229 The Systematics Association ([LEA0237](#))
- 230 The UK 850 MHz Solid-State Nuclear Magnetic Resonance (NMR) Facility ([LEA0158](#))
- 231 The University of Sheffield ([LEA0110](#))
- 232 The Catapult Programme ([LEA0160](#))
- 233 UCL ([LEA0057](#)), ([LEA0114](#)) and ([LEA0258](#))
- 234 UCL Hazard Centre ([LEA0220](#))
- 235 UCL Institute of Neurology Postdoc Committee ([LEA0028](#))
- 236 UCL Knowledge Lab ([LEA0132](#))
- 237 UK Deans of Science ([LEA0129](#))
- 238 UK Hydrogen and Fuel Cell Association ([LEA0223](#))
- 239 UKAEA ([LEA0044](#)) and ([LEA0218](#))
- 240 Ulster University ([LEA0201](#))
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- 242 University of Bristol ([LEA0063](#)) and ([LEA0210](#))
- 243 University of Cambridge ([LEA0042](#))
- 244 University of East Anglia ([LEA0115](#))
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- 247 University of Hull ([LEA0142](#))
- 248 University of Leeds ([LEA0130](#))
- 249 University of Leicester ([LEA0179](#))
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- 255 University of Southampton ([LEA0097](#))
- 256 University of Sussex ([LEA0079](#))
- 257 University of the Arts London ([LEA0137](#))
- 258 University of Winchester ([LEA0215](#))
- 259 University of Wolverhampton ([LEA0098](#))
- 260 Wellcome Trust ([LEA0277](#))

- 261 Wellcome Trust Sanger Institute ([LEA0133](#))
- 262 WISE Campaign ([LEA0226](#))
- 263 World Conservation Monitoring Centre ([LEA0200](#))
- 264 Xi Hu ([LEA0080](#))

List of Reports from the Committee during the current Parliament

All publications from the Committee are available on the [publications page](#) of the Committee's website.

The reference number of the Government's response to each Report is printed in brackets after the HC printing number.

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First Report	EU regulation of the life sciences	HC 158
Second Report	Digital skills crisis	HC 270
Third Report	Satellites and space	HC 160
Fourth Report	Forensic Science Strategy	HC 501
Fifth Report	Robotics and artificial intelligence	HC 145
Sixth Report	Evidence Check: Smart metering of electricity and gas	HC 161

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First Report	The science budget	HC 340 (HC 729)
Second Report	Science in emergencies: UK lessons from Ebola	HC 469 (Cm 9236)
Third Report	Investigatory Powers Bill: technology issues	HC 573 (Cm 9219)
Fourth Report	The big data dilemma	HC 468 (HC 992)
First Special Report	Royal Botanic Gardens, Kew: Government Response to the Committee's Seventh Report of Session 2014–15	HC 454
Second Special Report	Current and future uses of biometric data and technologies: Government Response to the Committee's Sixth Report of Session 2014–15	HC 455
Third Special Report	Advanced genetic techniques for crop improvement: regulation, risk and precaution: Government Response to the Committee's Fifth Report of Session 2014–15	HC 519
Fourth Special Report	The science budget: Government Response to the Committee's First Report of Session 2015–16	HC 729
Fifth Special Report	The big data dilemma: Government Response to the Committee's Fourth Report of Session 2015–16	HC 992