

Open for business

A nation of global researchers
and innovators

THE
**ROYAL
SOCIETY**

 **BRITISH
ACADEMY**
for the humanities and social sciences

 **ROYAL
ACADEMY OF
ENGINEERING**

 **The Academy of
Medical Sciences**

**“Unless we get smarter,
we’ll get poorer.”**

Lord Rees of Ludlow Kt OM HonFREng Hon FMedSci FRS,
Astronomer Royal

The UK is facing unprecedented change. This change presents an opportunity to shape our future, to be ambitious and to build on our strengths to make Britain a country that works for every one of us.

We must send a bold, positive message that the UK is one of the best places in the world to research and innovate, and capture the benefits stemming from this to improve the lives of people in the UK.

Create the workforce of the future, drawing on the world's brightest and best and giving every UK citizen the opportunity to be part of this

Champion Britain as a hub of research and innovation attracting a diverse mix of entrepreneurs and researchers from home and abroad

Recruit teachers with specialist subject knowledge at all stages of education who can enthuse, inspire and ensure that everyone can go as far as their talents will take them

Encourage and facilitate mobility between sectors and disciplines to improve the UK's ability to build on global advances

Cement the UK's reputation as a destination to research, innovate and adopt new technologies

Place research and innovation at the heart of the UK's Industrial Strategy and plans for long term socio-economic growth throughout the UK

Signal the UK's ambition to compete internationally by setting a target of 3% of GDP for combined public and private R&D spending

Build a streamlined and flexible regulatory environment that supports research and innovation and earns public confidence

Capture the creativity and innovation underway in the UK to improve people's lives

Strengthen the interaction between business and universities to better transform discovery into real world impact

Use the UK's experts to provide independent advice that draws on the best available evidence to inform national and international policymaking

Use the breadth of research excellence in the UK to pioneer new approaches and answer new questions

The UK is facing unprecedented change

IQE, head-quartered in Cardiff, is a leading global supplier of advanced wafer products and services to the semiconductor industry, providing the technology at the heart of today's wireless products. Established in 1988 IQE reached a turnover of over £114 million in 2015¹.

The UK has decided to leave the EU. The decisions made now – during the post-referendum negotiations and beyond – will determine the future trajectory of the UK and the people that live here.

Research and innovation is global and it benefits everyone by underpinning the industries that are of strategic value to the UK and creating jobs and a better quality of life for people in the UK and around the world.

This change brings risks, but also presents an opportunity to shape our future, to be ambitious and to build on our strengths to make Britain a country that works for every one of us.

However public and private investment in UK research and innovation lags behind many other leading countries. Combined with threats to our ability to continue to attract the best global talent, we are at a turning point. We must send a bold, positive message that the UK is one of the best places in the world to research and innovate.

The UK is a world leader in research and innovation, with a highly diverse, broad and efficient research ecosystem, itself undergoing structural change.

Investments by foreign owned corporations boost the innovation capacity of domestic firms operating in the same sector.

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With less than 1% of the world's population and 3.2% of global R&D expenditure, **we produce 15.9% of the world's most highly cited research papers.**

.....

The UK creative economy comprises an estimated **2.9 million jobs**, or 1 in 11 of all UK jobs⁵.

In the 2016 Global Innovation Index, the UK was ranked 3rd overall out of 128 countries².

The service sectors represent **79% of the UK's economy**. They are core areas of innovation underpinned by research and development⁴.

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The UK digital sector is **growing over 32% faster** than the wider economy, and is creating jobs 2.8 times faster with an estimated turnover of £161 billion in 2014⁶.

.....

The UK pharmaceutical industry generates exports worth £24 billion³.

1. IQE <http://www.iqep.com/investors/key-financial-data/>
2. The Global Innovation Index 2016
3. BIA, *UK Life sciences manifesto 2015-20*
4. ONS (2016) *Statistical bulletin UK index of services (July 2016)* <https://www.ons.gov.uk/economy/economicoutputandproductivity/output/bulletins/indexofservices/july2016>
Royal Society (2009) *Hidden wealth: the contribution of science to service sector innovation*
5. Creative Industries Council 2016
6. TechCity in partnership with NESTA, TECHNATION 2016

Create the workforce of
the future, drawing on
the world's brightest and
best and giving every UK
citizen the opportunity to
be part of this

Champion Britain as a hub of research and innovation attracting a diverse mix of entrepreneurs and researchers from home and abroad

.....
Five of the fifteen most recent UK Nobel Laureates were born overseas.
.....

Nearly 72% of UK-based researchers spent time at non-UK institutions between 1996 and 2012⁷.
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We must ensure that the best people can develop and contribute their skills to Britain's success. UK research and innovation is international. Many of our Nobel prize winners and leading entrepreneurs have chosen to come and work in the UK. We are an attractive destination and UK research and innovation benefits from this. Working alongside the best people from across the world enables UK-based researchers to share techniques and approaches and access influential contacts and networks. UK-born researchers also benefit from being able to work abroad themselves to develop their expertise and networks and often choose to bring these back to the UK.

Mobility and collaboration give UK businesses, universities and research and innovation organisations access to a broader range of knowledge, people and facilities than could be obtained in the UK alone. This enables new ideas to be generated, shared and refined and has helped build the UK into the global powerhouse it is today.

As the UK prepares to leave the EU, we must encourage the world's brightest and best entrepreneurs and researchers from at home and abroad to choose the UK. It will be important to ensure that any new immigration arrangements continue to enable us to recruit those with strategically valuable skills, and facilitate short-term visits for conferences or collaborations. Strategically valuable skilled individuals include not just successful leaders in research fields, but the early-stage researchers, technologists and technicians with specialist expertise that support them.

We must send a message to these highly sought after people that they are welcome, and show them the opportunities available in the UK.

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In 2015, **over half of the UK's research output** was the result of an international collaboration and these collaborations are increasing in absolute terms, and as a proportion of the UK's research output⁸.
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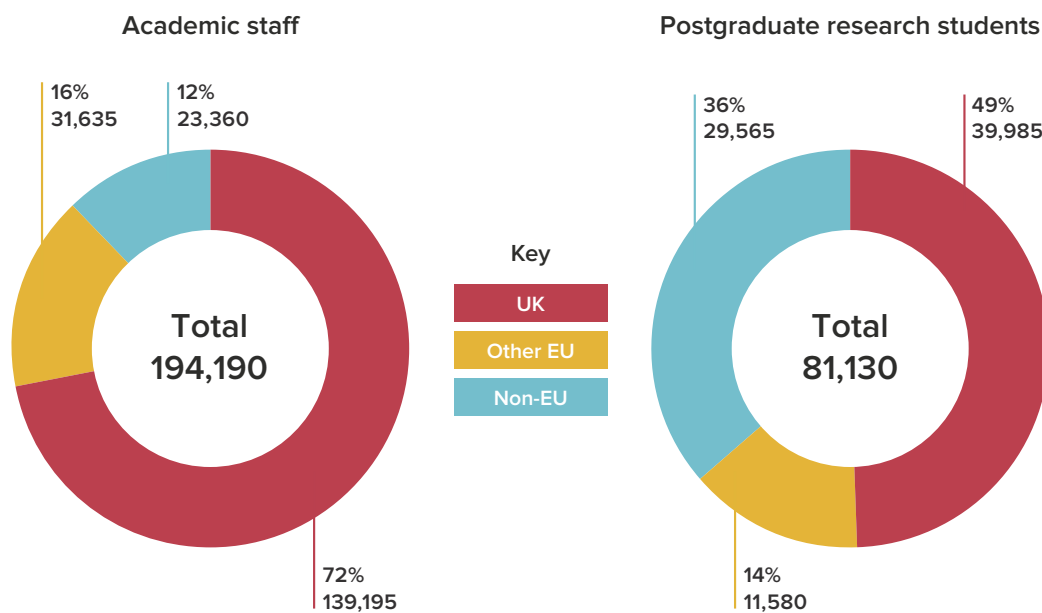
A third of UK start-ups were founded by non-UK nationals and 51% of UK start-up employees come from outside the UK⁹.

7. Elsevier (2013) *International comparative performance of the UK research base 2013*

8. Royal Society (2016) *UK research and the European Union: the role of the EU in international research collaboration and researcher mobility*

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

UK-based researchers come from around the world, and work with people across the globe.



Between 2007 and 2014, Marie Skłodowska-Curie actions funded 8,120 researchers, from all over the world, to work at organisations in the UK¹².

Source: Higher Education Statistics Agency for 2014 – 2015 (see <https://www.hesa.ac.uk/stats>, accessed 22 March 2016). Note that figures are rounded.

UK-based researchers returning after time working abroad are **more productive** in terms of articles published than average¹⁰.

Analysis of **Research Excellence Framework Impact case studies** shows that UK academics have made contributions to all countries of the world¹¹.

10. Elsevier (2013) *International comparative performance of the UK research base 2013*
 11. The Research Excellence Framework (REF) is the system for assessing the quality and impact of research in UK Higher Education Institutions. Kings College London and Digital Science (March 2015), *The nature, scale and beneficiaries of research impact*
 12. European Commission, *Statistics – Marie Skłodowska-Curie actions research fellowships* http://ec.europa.eu/research/mariecurieactions/funded-projects/statistics/index_en.htm

Recruit teachers with specialist subject knowledge at all stages of education who can enthuse, inspire and ensure that everyone can go as far as their talents will take them

39%

of UK firms have difficulties recruiting staff with skills in science, technology, engineering and mathematics¹³.

71%

of SMEs agreed that future executives would need foreign language skills and international experience¹⁴.

We are facing a significant shortfall in skilled workers to fill research, engineering and technology roles. The future of the UK economy will depend on a strong supply of skilled workers. We must enthuse and inspire our young people to choose to study a broad range of disciplines. This includes young people of all backgrounds and genders. Any lack of diversity within research and industry represents a huge waste of new talent that British businesses should be accessing to help the UK reach its full potential.

Being taught by people with specialist subject knowledge will be key to delivering this learning environment, as well as taking steps to show young people where science can take them and create role models that they can relate to and can inspire them.

As technology develops, the nature of jobs and the needs of employers change. A broad and balanced curriculum will best equip young people with the range of skills that they will need in the future economy. Ongoing educational opportunities and career development will become increasingly important to enable people to learn new skills as the jobs UK employers need their staff to undertake change over time.

8.3% of the UK academic staff population are Black and Minority Ethnic (BME) compared with 14% of the UK population according to the 2011 census¹⁵.

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Secondary schools have a **shortage of 5,500** specialist mathematics teachers in England¹⁶.

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13. CBI/Pearson (2014) Gateway to growth: CBI/Pearson education and skills survey 2014

14. British Academy (2011), *Small and Medium Enterprises Language Survey*

15. Equality Challenge Unit (2015) Equality in higher education: statistical report 2015
<http://www.ecu.ac.uk/publications/equalityhigher-education-statistical-report-2015/>

16. ACME Maths Snapshot, (2014) Teachers of mathematics: supply training and development.

Encourage and facilitate mobility between sectors and disciplines to improve the UK's ability to build on global advances

Boosting mobility between industry and academia would yield substantial dividends for the UK. The physical movement of people creates opportunities for collaboration and knowledge exchange activities that are central to Britain operating as a hub of innovation.

Mobility also increases the UK's absorptive capacity, enabling us to quickly take up global advances and build on these. Timely adoption of externally-generated innovation can be one of the most important ways of driving up

productivity within firms, and therefore the economy as a whole.

Small interventions could vastly increase this valuable interchange. A richer dialogue between academia and industry could help people see the opportunities open to them in either sector, and encourage them to consider portfolio careers, developing skills in one sector and taking them elsewhere. This could also ensure that university courses equip individuals with the skills to make these transitions.

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The UK ranks 33rd for knowledge absorption in the Global Innovation Index 2016.
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CASE STUDY 1

Encouraging businesses to engage with schools and colleges

Teachers are a crucial part of inspiring pupils to pursue STEM subjects – in some cases the single biggest influence¹⁷. Employers can support teachers to enthuse and inspire young people, and help them see where studying STEM subjects can take them, in both academia and industry. To encourage more of these collaborations between business, schools and colleges, the Royal Society and CBI recently produced *Making education your business: a practical guide to supporting STEM teaching in schools and colleges*.

CASE STUDY 2

The Institute of Advanced Manufacturing and Engineering – a Unipart and Coventry University collaboration

To address a shortage of industry-relevant skills, particularly among young people entering the job market, Coventry University and Unipart Manufacturing established the Institute for Advanced Manufacturing and Engineering (AME), which creates a learning environment focused on live manufacturing projects and taking research ideas through to commercially viable solutions.

In just 20 months, AME is now home to more than 60 students and hosts £3million of state-of-the-art equipment. The unique R&D environment that is AME has already delivered a new fuel rail for the Ford Fox Engine and an exhaust system for Aston Martin that is nearly 50% lighter than its predecessor.

17. McKinsey and Company. 2007 How the world's best-performing school systems come out on top. Barber, M and Mourshed, M. <http://mckinseysociety.com/howthe-worlds-best-performing-schools-come-out-on-top/> 4 Wellcome Trust Monitor. 2013. An independent nationwide survey of 460 young people. Six in ten young people stated that it was having a good science teacher which inspired them to study science at university. <http://www.wellcome.ac.uk/News/Mediaoffice/Press-releases/2013/WTP052643.htm>

**Cement the UK's
reputation as a destination
to research, innovate and
adopt new technologies**

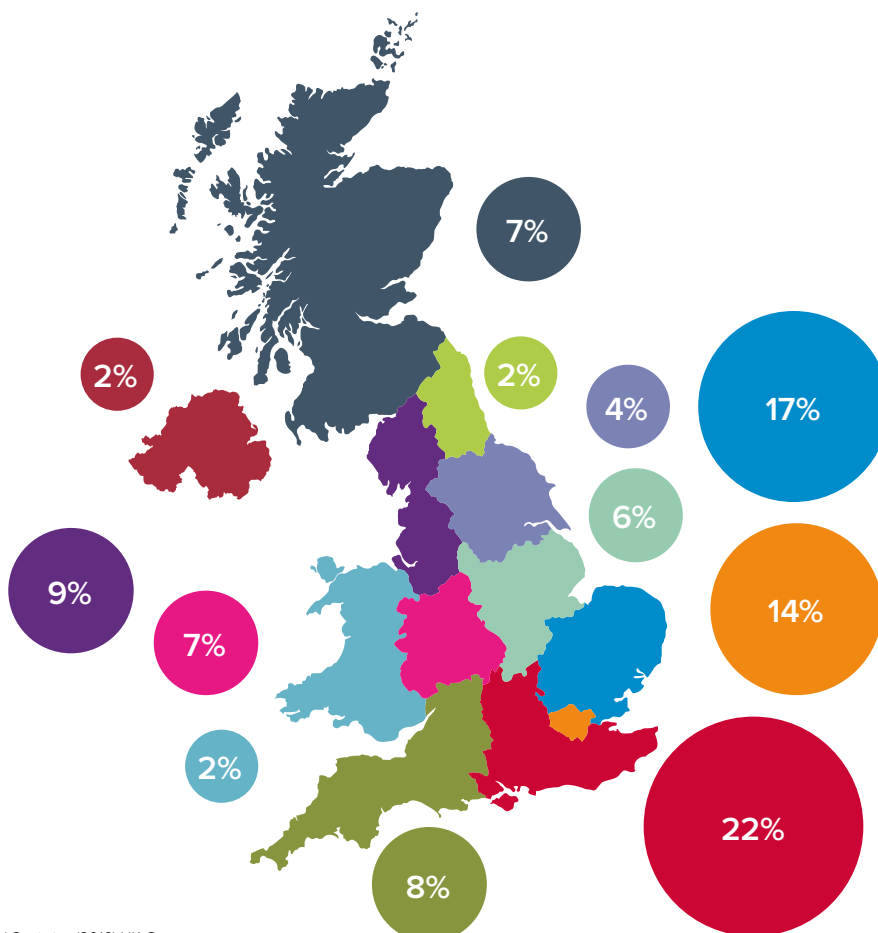
Place research and innovation at the heart of the UK's Industrial Strategy and plans for long term socio-economic growth throughout the UK

Innovation is instrumental in delivering the economic and productivity gains associated with investment in research. The UK's world-leading research base provides an excellent source of new ideas and discoveries, which, through innovation, can result in advances in our economy, social and cultural well-being and health. This boosts the capacity of the economy to produce more in the long term. To innovate, we need to invest in both basic research to drive new breakthroughs, and in the innovation system to develop these ideas into new and improved products, services and approaches.

Therefore, to support and promote an advanced and entrepreneurial economy the Industrial Strategy should have research and innovation at its heart.

A successful Strategy should present a national vision while recognising that the UK and its industries are not uniform. Different sectors and places may offer distinct opportunities. Regional strategies should foster local strengths in research, innovation and businesses, taking opportunities to better integrate and grow these, as well as boosting existing centres of excellence.

Where is R&D investment made in the UK?



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65% of R&D
in the UK is
performed
by business¹⁸.

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CASE STUDY 3

A new local engineering school

A recent £37.5 million joint venture by Siemens and the University of Lincoln underpins the Greater Lincolnshire Local Enterprise Partnership's Engineering priority sector. The partnership resulted in the first new engineering school in the UK for 20 years, which opened in 2010. This was supported by key stakeholders such as HEFCE, the Regional Development Agency and the European Commission. Its aim is to address the urgent need to train more engineers and avoid businesses such as Siemens and their supply chains moving out of the area. Lincoln academics and Siemens training staff are co-located at the School, sharing equipment and facilities. Together these developments have assisted Siemens, an international engineering company, to increase its presence in the UK, secured over 1000 engineering jobs in the area and stimulated growth through its supply chain¹⁹.

Firms that consistently invest in R&D are **13% more productive** than firms that don't invest in R&D²⁰.

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18. Office for National Statistics (2016) UK Gross domestic expenditure on research and development: 2014 – <http://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/researchanddevelopmentexpenditure/bulletins/ukgrossdomesticexpenditureonresearchanddevelopment/2014>
In 2014 the business sector performed £19.9 billion (65%) of the UK's £30.6 billion gross expenditure on R&D but funded £14.7 billion (48%) of this total.
19. University Alliance (2016) *Creating innovative regions: The role of universities in local growth and productivity*
20. Cable, V (2014) *Innovation and the UK knowledge economy*

Signal the UK's ambition to compete internationally by setting a target of 3% of GDP for combined public and private R&D spending

The UK invests a lower percentage of GDP in research and innovation than most of our competitors, many of whom have launched specific strategies to increase R&D investment.

Our uniquely diverse funding system creates flexibility, allowing us to fund in innovative ways, contributing to what is a hugely efficient and cooperative system.

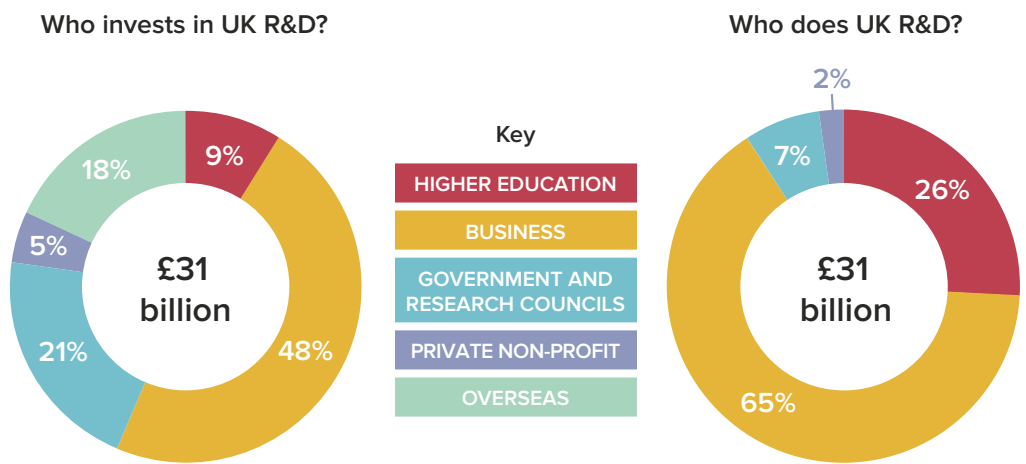
Uncertainty over future EU investment in UK research presents a risk as it currently represents a major source of public investment in UK research.

We know that this is a delicate and inter-connected ecosystem. Cuts in one source of funding may have impacts on others. Public investment in research and innovation influences private investment.

And we also know that it is not just the amount of money invested but the nature of funding that is important. Seed corn funding, small amounts of funding in areas where little funding is available, or funding that offers researchers mobility and encourages collaborations can have a bigger impact than monetary values might suggest.

This is the time to provide confidence and leadership through a new Industrial Strategy underpinned by greater public investment in R&D. The UK government should demonstrate its ambition by setting a target of 3% of GDP for combined public and private R&D spending and take steps to deliver this by at least matching public investment to the OECD average of 0.67% of GDP invested into R&D by 2025²¹. Taking this action now will send a strong message that the UK is open for business, stimulating private investment, creating jobs and enhancing the UK's ability to compete on the world stage.

Who invests in UK R&D?

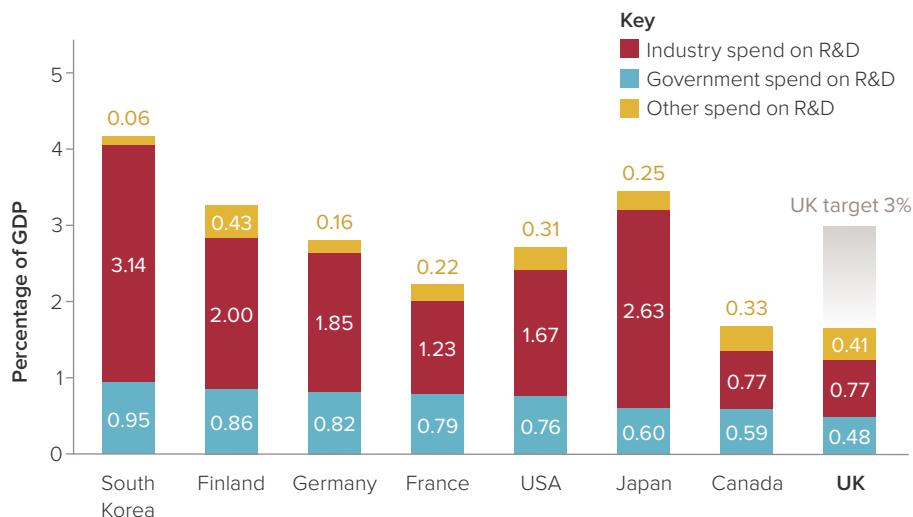


Office of National Statistics, figures for 2014. Note that figures are rounded.

21. OECD (2015). Main science and technology indicators. <http://www.oecd.org/sti/msti.htm>. For the purposes of this paper the term 'OECD average' refers to the 'OECD total'. This is effectively a weighted average, with weighting for size of economy and government financed expenditure on research and development.

How does UK investment in R&D compare globally?

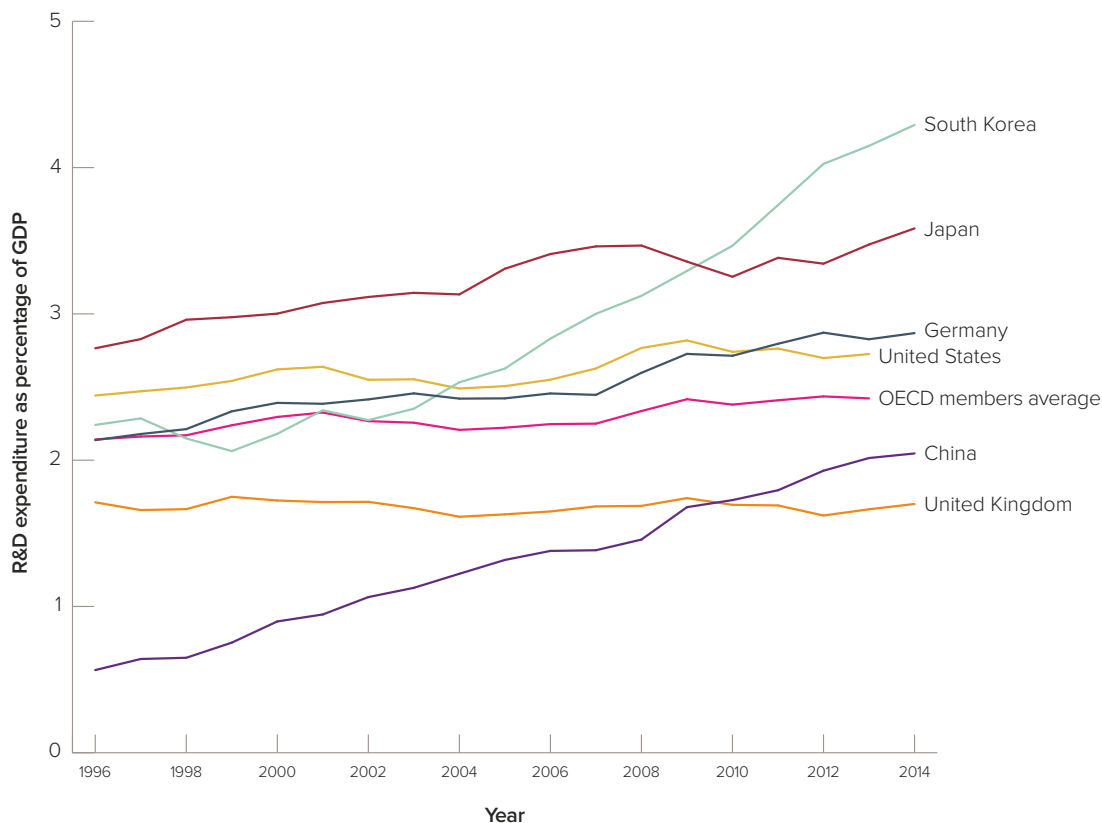
A partnership between the Medical Research Council and seven global drug companies, the largest of its kind in the world, has opened up a library of deprioritised pharmaceutical compounds to academic researchers. This provides a valuable resource to study other diseases, and may lead to new medicines being developed from otherwise dormant materials²².



Reference: OECD Main Science and Technology Indicators 2013. Data comparator countries shown.

World Bank figures on global R&D investment over time

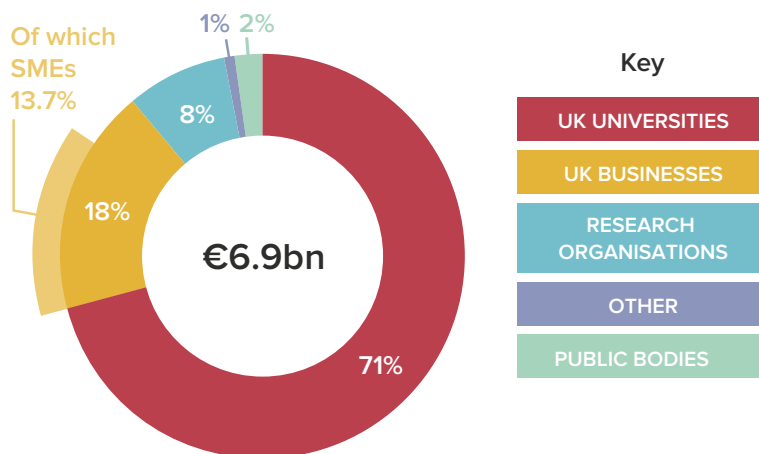
The UK is home to the biggest dedicated charitable funders of cancer research, cardiovascular and musculoskeletal research. The medical research charity sector invest £1.3 billion of public funding for research a year²³.



Source: <http://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?end=2013&start=2003>

22. MRC (2014) *World's largest collection of deprioritised pharma compounds opens to researchers* <https://www.mrc.ac.uk/news/browse/world-s-largest-collection-of-deprioritised-pharma-compounds-opens-to-researchers/>
 23. AMRC (2014) *Charities investing in Research*.

Who receives EU research funding? (distribution of Framework Programme 7, 2007 – 13, in the UK)



The UK currently holds 15% of all awarded grants in Horizon 2020 – the current EU research funding programme – the largest share among participating countries.

It is estimated that the Francis Crick Institute in London could face a shortfall of £5million a year without EU funding²⁷.

Between 2007 and 2013, the EU invested **€8.8 billion** into UK research development and innovation²⁴.

26% of UK R&D takes place in UK universities. 10% of their funding for this came from the EU in 2013/14.

Receiving a grant increases a firm's own spending on innovation by around 30 per cent, in addition to the grant funding²⁸.

For every £1 spent by the government on R&D, private sector R&D output rises by **20p per year in perpetuity**, by raising the level of the UK knowledge base²⁵.

Evidence suggests that grants are **more effective when combined with broader forms of complementary support** such as tax credits and business support than when used in isolation²⁶.

24. Through Framework Programme 7, allocated competitively on excellence, and structural funds that are allocated regionally subject to need. European Commission (2015) *Seventh FP7 Monitoring Report 2013*
European Commission (2015) *Cohesion Policy Data*

25. Jonathan Haskel, Alan Hughes, Elif Bascavusoglu-Moreau (2014) *The Economic Significance of the UK Science Base A REPORT FOR THE CAMPAIGN FOR SCIENCE AND ENGINEERING*

26. BIS (2014) *Analysis paper four: Estimating The Effect Of UK Direct Public Support For Innovation*

27. Euractiv (2016) <http://www.euractiv.com/section/uk-europe/news/funding-staffing-woes-for-uk-science-after-brexit-vote/>

28. BIS (2014) *Estimating the effect of UK direct public support for innovation*

Build a streamlined and flexible regulatory environment that supports research and innovation and earns public confidence

The UK is well-placed to capitalise on its strengths to continue to provide an attractive environment that will encourage growing companies to locate themselves here. The UK is respected around the world for its proportionate approach to regulating emerging technologies, such as the application of embryology research to reproductive technologies, in a way that balances emerging scientific understanding and competing values²⁹. This has enabled new techniques to be researched and made available to patients in the UK with public confidence.

CASE STUDY 4

Scientific and public debate informs public policy on mitochondrial transfer techniques

In 2015 UK MPs voted to allow the introduction of mitochondrial transfer techniques into the clinic, overseen by the Human Fertilisation and Embryology Authority. This decision was the culmination of many years of scientific and public debate. These treatments, developed in the UK, could reduce the number of children born with rare mitochondrial diseases, and help dozens of families to lead happy and healthy lives.

The UK was the largest recipient of foreign direct investment in R&D in Europe in 2014 but this is a competitive market. Other countries are continually assessing their existing incentives.

For the UK to fully realise the benefits of its investments in research it has to create an environment conducive to driving forward innovation. A wide range of government policies may impact the ability of innovative companies to succeed. These include immigration, which can affect the ability of companies to recruit the individuals with the specific skills they require; the wider tax and fiscal environment; the regulatory environment; and public views on research and its products. These should be considered in the round to develop an effective Industrial Strategy.

A change in the UK's relationship with the EU provides an opportunity to develop a mix of regulatory and financial approaches that, alongside the right infrastructure, skills and an excellent research base, will make the UK an extremely attractive place for global companies to research and develop new technologies, enabling us to take a leading position on international markets for these new products.

Capture the creativity
and innovation underway
in the UK to improve
people's lives

Strengthen the interaction between business and universities to better transform discovery into real world impact

Bringing businesses into closer contact with UK academia can provide a myriad of benefits to both, sparking future innovation and creativity and encouraging the development of new products in the UK. The excellence of the UK's research base and track record of university-industry research collaboration gives the UK a competitive advantage to grow this valuable activity.

However, although the UK is relatively successful at facilitating business-university research collaborations, the coverage of sectors and companies which do collaborate is uneven³⁰. The proposed creation of UK Research and Innovation (UKRI) provides an opportunity to substantially improve this situation. This could speed the process from research to impact, ensuring that knowledge and expertise are rapidly exploited for the benefit of the whole country and beyond.

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The UK ranks 4th out of university-industry research collaborations in the Global Innovation Index 2016.

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Only 6% of all firms (equivalent to 11% of R&D active firms) have co-operative agreements with universities although 23% have more informal connections and use them as a source of information³¹.

30. Dowling Review of Business-University Research Collaborations (2015)

31. The economic significance of the UK Science Base, Haskel/Hughes/Bascavusoglu-Moreau, March 2014.

Use the UK's experts to provide independent advice that draws on the best available evidence to inform national and international policymaking

Expert input can help decision-makers to respond to unpredictable challenges like pandemics and more everyday challenges, like how to provide affordable care for an ageing population.

By working closely with the UK research community on their doorstep, decision-makers can draw on the best innovative thinking around the world to inform their policymaking. This scientific evidence can then be considered alongside other factors that shape policy, including accepted norms, traditions and moral values.

UK policymakers at a national, devolved and regional level should engage with a broad range of experts and the public to inform policy-making and ensure that it is developed with public confidence and can improve people's lives. They should be transparent about how policy decisions are made to allow informed scrutiny and re-evaluation should further evidence become available, or public opinion change.

CASE STUDY 5



Responding to the Ebola epidemic

The Ebola Response Anthropology Platform³² has helped staff in West Africa communicate health messages effectively, assess the acceptability of drug trials to people in West Africa, support the modification of funeral practices in Sierra Leone to improve safety, and develop home nursing guidelines. Its core activity is providing rapid responses by e-mail, conference calls and web-based dialogues to operational questions raised by those working for NGOs, government and international agencies to contain the epidemic or care for those affected. The network is able to develop policy briefings that are rooted in both the historical and rapidly changing contemporary context of affected communities by drawing upon existing anthropological expertise and undertaking targeted fieldwork³³.

32. The Platform is coordinated by academics from the London School of Hygiene and Tropical Medicine, IDS, Sussex, Exeter and Njala University and funded by a grant from the Research for Health in Humanitarian Crises (R2HC) Programme Government (2016) *New research funding to strengthen ebola response* <https://www.gov.uk/government/news/new-research-funding-to-strengthen-ebola-response>

33. Ebola anthropology platform website – <http://www.ebola-anthropology.net/about-the-network/>

The Global Challenges Research Fund is a five year, £1.5 billion investment in research, announced by the government in 2015. It forms part of the UK's Official Development Assistance commitment, and supports research targeting global challenges facing developing nations across the world. It represents a major new focus for UK research funding, as well as an opportunity to capitalise on UK leadership and excellence in relevant research areas.

CASE STUDY 6



Ensuring education policy and practice are better informed by evidence

High quality educational research has the potential to transform education in the UK, and beyond, ensuring that everybody has the opportunity to develop skills that will help them to reach their potential. Together, the Royal Society and the British Academy are investigating how resources may best be harnessed to ensure that educational research optimally benefits teaching, learning and student outcomes

CASE STUDY 7



The regulation of hydraulic fracturing for extraction of shale gas 'fracking'

The National Academies can provide independent, expert advice to answer specific questions that help move policy forward – the Royal Society and Royal Academy of Engineering report *Shale gas extraction in the UK: a review of hydraulic fracturing* answered a specific question over whether 'fracking' could be conducted safely in the UK, allowing the public debate to focus on the question of whether this technology was publicly acceptable.

Use the breadth of research excellence in the UK to pioneer new approaches and answer new questions

The proposed creation of UK Research and Innovation (UKRI), with a 'strategic brain' at its centre³⁴ offers the opportunity to better support inter-, multi- and cross-disciplinary research that capitalises on the unique strength and breadth of the UK's research and innovation base. Combined with UK assets, including strong public support for research and public institutions such as the National Health Service, increased government investment in research and innovation could enable the UK to deliver more of the cross-cutting research that will mark us out from our competitors.

A 2014 poll commissioned by the National Institute for Health Research reported that **95%** of people supported the NHS carrying out clinical research and **89%** would be willing to participate in a clinical trial if diagnosed with a condition³⁶.

Almost two-thirds of impact case studies submitted to the 2014 Research Excellence Framework were underpinned by interdisciplinary research³⁵.

79% of the public agree that even if it brings no immediate benefits, scientific research which advances knowledge should be funded by government³⁷.

34. THES (2016) *UK Research and Innovation: nine brains in one body*
<https://www.timeshighereducation.com/comment/uk-research-and-innovation-nine-brains-in-one-body>

35. The Research Excellence Framework (REF) is the system for assessing the quality and impact of research in UK Higher Education Institutions. Kings College London and Digital Science (March 2015), *The nature, scale and beneficiaries of research impact*

36. National Institute for Health Research Clinical Research Network (2014) *What do people think about clinical research?*
<https://www.crn.nihr.ac.uk/wp-content/uploads/News/Censuswide%20infographic.pdf>

37. Ipsos MORI 2014 *Public Attitudes to Science*

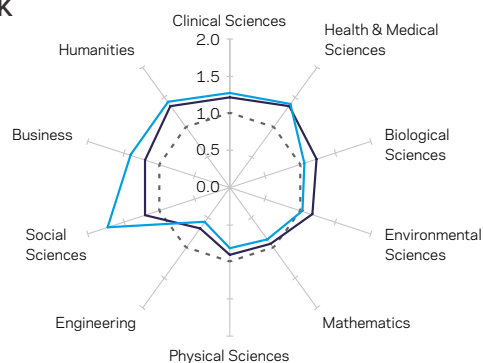
How does the breadth of the UK's research and innovation base compare globally?

For all research fields, an Activity Index of 1.0 equals world average share in that particular research field. For Humanities, the baseline is defined with respect to OECD countries rather than to the world 27.

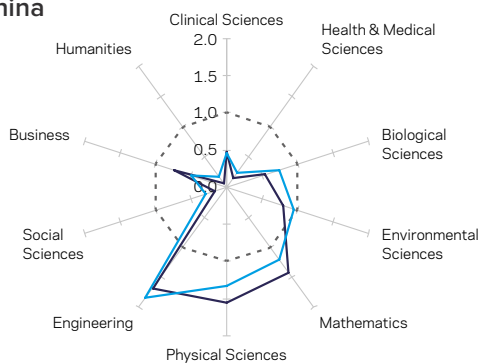
Key

- 2012
- 2002
- - World

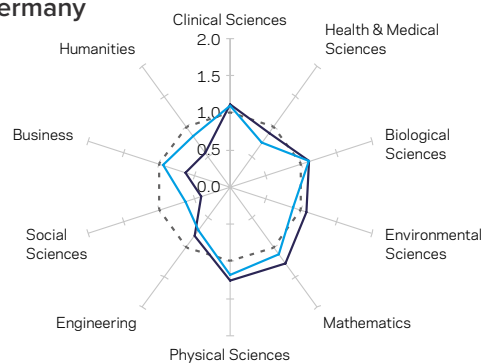
UK



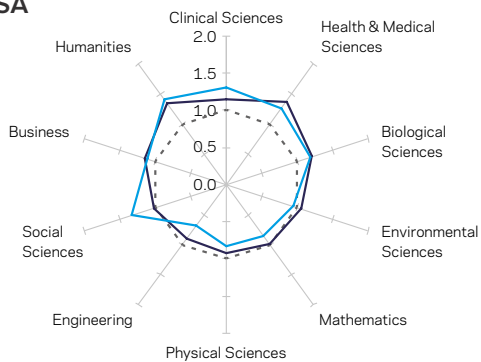
China



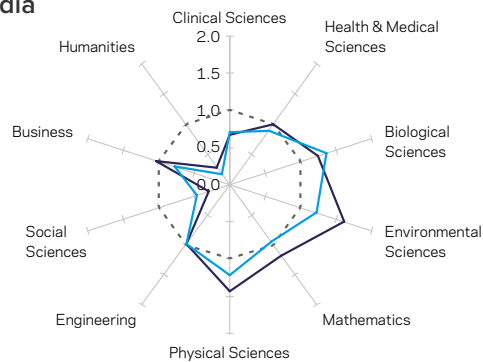
Germany



USA



India



Source: Scopus.

About the Academies

The Academy of Medical Sciences, the British Academy, the Royal Academy of Engineering and the Royal Society are working together to highlight the value of research and innovation to the UK, and to support researchers, industry and policy makers to make the UK the location of choice for world class research, development and innovation. We are working with our research communities to maximise the value of research funding and to support the translation of knowledge into benefits for individuals and society at large.

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