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Support for science

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Summary

Public funding for research comes from a mix of devolved (e.g. Higher Education Funding Council for England) and UK (e.g. Research Councils) institutions. Bodies like Innovate UK have a specific focus on industrial research. Within these broad frameworks, grants are awarded on a competitive basis.

Successive governments have sought to protect the science budget – both in terms of recurring and capital costs. The latter are increasingly being linked to earmarked projects, a recent one being the Alan Turing Institute based at the British Library. The non-capital science budget, held by the Department for Business, Innovation and Skills, now stands at £4.7 billion per annum; following the outcome of the comprehensive spending review, this will be protected in real terms for the rest of the Parliament. The Conservative Party Manifesto 2015 provides an outline of the current Government's general policy commitments in this area.

Ahead of the spending review, the House of Commons Science and Technology Committee recommended that the Government should produce a long term "roadmap" for increasing the combined public and private investment in research and development to 3% of GDP. The Committee also recommended that sufficient resource funding should be in place to fully "sweat" the capital assets embodied by research infrastructure. The Government, in its response, acknowledged the need to match resource funding with capital, but did not adopt the roadmap recommendation.

A library standard note, [Research and Development in the UK](#), includes, among other things, a regional breakdown of support for science from different sources identified as government, higher education, business and private non-profit organisations (e.g. charities). On 20 March 2015, the Office for National Statistics (ONS) published a statistical bulletin: *UK Gross Domestic Expenditure on Research and Development, 2013*.

The ONS provides data on R&D expenditure by UK country and region. In this context, the country and region refers to the location where the R&D is performed, not the location of the funder. In 2013, the South East, East of England and London continued to dominate R&D activity in the UK, accounting for 52% of total UK R&D.

1. Background

Successive governments have voiced support for science and innovation. Funding grew under the Labour Government's ten-year science and innovation policy. The Coalition Government protected science funding at a time when other sectors were facing substantial cut-backs. Even so, most major economies spend more. Graeme Reid, Professor of Science and Research Policy at University College London, has described the UK's science spending as "mediocre by international standards". He acknowledges, however, that the UK spends what it does well: "But not many countries share the ruthlessly meritocratic process by which the UK research community selects its projects, and only the US outperforms this country in terms of scientific excellence."¹ The October 2010 Spending Review saw resource spending on science maintained in cash terms – meaning that salaries and project funding remained intact. However, capital investment "was to be cut by almost 40% by 2015" leaving "hardly any money for new facilities".² Subsequently, the Coalition Government announced new capital investments in facilities and programmes specified by ministers, on scientific advice. Reid summarises it thus:

Direct capital investment from government has made good the 2010 cuts and increased the annual rate of investment to £1.1 billion, some 20% higher in cash terms than in 2010. It has also committed to maintain that level until the end of the next Parliament in 2020-21. RPIF [[Research Partnership Investment Fund](#)] alone has led to more than £1 billion investment in scientific infrastructure, two-thirds of which comes from businesses and charities. This scheme has been extended until at least 2017 so we can expect even more of these investment partnerships.

This adds up to substantial investment in modern scientific facilities with higher levels of ministerial engagement in priority-setting and specifying the locations for facilities around the UK. In effect the science community was offered money – lots of it – at a time of public spending cuts in return for accepting closer ties to political priorities. This is not blunt political direction of science but nor is it the full independence to which the science community had grown accustomed.³

¹ ["State of the Nation: government protection of the science budget has come at a cost"](#), The Conversation, 13 April 2015

² Ibid.

³ Ibid.

2. Spending

The non-capital science budget, held by the Department for Business, Innovation and Skills (BIS), has stood at £4.6 billion per annum during the last Parliament. Other government departments, notably Health and Defence, also fund research and development – this is not included in the £4.6 billion science budget mentioned above. BIS makes a distinction between the non-capital (i.e. resource) science ring-fence (£4.6 billion) and a slightly larger (£4.7 billion) non-capital science budget that includes some recent additional items such as funding for quantum technologies.⁴ Going forward, the £4.7 billion is now seen as the starting point for resource funding for the science base.

A non-capital ring-fenced science budget of £4.6 billion is allocated annually by BIS

The capital part of the science budget currently stands at £1.1 billion per annum, a figure that is to be protected in real terms until 2021.⁵ These earmarked resource and capital budgets support what might be termed the science base: the research councils, the Higher Education Funding Council for England, the UK Space Agency and national academies like the Royal Society.

A library standard note, [Research and Development in the UK](#), includes, among other things, a regional breakdown of support for R&D from different sources identified as government, higher education, business and private non-profit organisations (e.g. charities). On 20 March 2015, the Office for National Statistics (ONS) published a statistical bulletin: *UK Gross Domestic Expenditure on Research and Development, 2013*.

In summary:

- Total research and development (R&D) expenditure in the UK in 2013 represented 1.67% of Gross Domestic Product (GDP), an increase from 1.62 % in 2012.
- The business sector performed 64% of UK R&D expenditure in 2013. Expenditure by this sector increased by 8%, in current prices, to £18.4 billion in 2013, compared with 2012.
- In 2013, the gross domestic expenditure on research and development (GERD) performed in the UK, in current prices, increased by 7% to £28.9 billion compared with 2012. Adjusted for inflation, in constant prices, research and development (R&D) expenditure increased by 5%.
- Between 1985 and 2013 GERD grew by 52% in real terms, but because it has not grown as fast as the economy as a whole it has fallen as a proportion of GDP from 2.01% to 1.67%.
- International comparisons show that UK R&D expenditure in 2013 was below the European Union (EU-28) provisional estimate of 2.02% of GDP, but the 12th highest of all member countries.

⁴ House of Commons Science and Technology Committee inquiry into the Science Budget, written evidence submitted by the Department for Business, Innovation and Skills ([TSB0075](#)), September 2015

⁵ Ibid.

The ONS also provides data on R&D expenditure by UK country and region. In this context, the country and region refers to the location where the R&D is performed, not the location of the funder. In 2013, the South East, East of England and London continued to dominate R&D activity in the UK, accounting for 52% of total UK R&D.

3. Coalition Government policy

A government policy paper published on 7 May 2015 – the date of the General Election – provided a synopsis of research and development policy over the period of the outgoing Coalition Government.⁶ It includes a list of actions aimed at supporting both researchers and businesses,⁷ with a range of initiatives covering funding, procurement and collaboration. Innovate UK, the UK's innovation agency is supporting, among other things, catapult centres⁸ – each of these focus on a specific technology allowing businesses to access equipment and expertise and to conduct their own in-house research and development. One of the appendices to the policy paper briefly covers science and research funding; this makes the point that public sector funding is organised via the Dual Support System into two main channels:

- the Research Councils provide grants for specific projects and programmes
- the higher education funding bodies provide block grant funding to universities⁹

The budget for science and research funding is allocated by BIS. In 2010, the Coalition Government published *Funding plans for science and research for 2011/12 to 2014/15*.¹⁰ This set out a detailed breakdown of the annual £4.6 billion science and research resource budget, the great bulk of which was earmarked for the research councils (UK-wide) and higher education funding in England (higher education funding is a devolved matter). National academies, including the Royal Society, were together allocated about £87 million per annum.

The 7 May policy paper also refers to the science and innovation strategy, published in December 2014.¹¹ On the specific question of funding, the strategy comments: "Cutting edge science cannot happen without modern infrastructure. That is why we have committed £5.9 billion to science capital from 2016 to 2021. This is the longest commitment to science capital in decades." Decisions on the allocation of these funds are to be informed by broad principles set out in this strategy: "agility; collaboration; the importance of place and of openness."

⁶ Department for Business, Innovation and Skills Policy Paper, [2010 to 2015 government policy: research and development](#), 7 May 2015

⁷ GrowthAccelerator and the UK Innovation Investment Fund are two sources of investment to support businesses.

⁸ [Catapult Centres](#), accessed online: 19 June 2015

⁹ The Higher Education Funding Council for England and similar organisations in Wales, Scotland and Northern Ireland.

¹⁰ Department for Business, Innovation and Skills, [Science and research funding allocation: 2011 to 2015](#), 20 December 2010

¹¹ [Our plan for growth: science and innovation](#), Cm 8980, 17 December 2014

Also relevant are the long-established principles set out by Haldane,¹² which are rehearsed in the December 2014 science and innovation strategy:

...it is important to recall all the principles of the Haldane Report, which argued: 1) that research and evidence was important to the development of government policy; 2) that each government department should provide funds to answer specific policy questions; 3) that there should be a department of government charged with funding general research questions; 4) that the choice of how and by whom that research should be conducted should be left to the decision of experts; 5) that the questions and topics to be tackled should be considered as a result of close collaboration between the administrative and the general departments; and 6) that there should be a department that supports research applied to trade and industry. The fourth of these points is the one that has been designated the "Haldane Principle", but all six are as pertinent now as they were in 1918; these are the six Haldane Principles.

During an appearance before the House of Commons Science and Technology Committee on 15 July 2015, the Minister of State for Universities and Science (Jo Johnson MP) said: "the science and innovation strategy, which came out in late 2014, that is a current document; it remains the strategy of the Department and the Government as a whole, and it informs all our work. That is a current overarching strategy framework within which we are working, and it remains operative."¹³

¹² The Haldane Report (1918). Report of the Machinery of Government Committee under the chairmanship of Viscount Haldane of Cloan. London: HMSO.

¹³ Science and Technology Committee, [Oral evidence: The science budget](#), HC 340, 15 July 2015, Q2

4. Universities and industry

As already noted, public sector funding for UK science and research is organised via the Dual Support System into two main channels:

- the Research Councils provide grants for specific projects and programmes
- the higher education funding bodies provide block grant funding to universities

Responding to the House of Commons Science and Technology Committee's report on the science budget (see below) the Government reiterated its commitment to the dual support system. However, in making a reference to the November 2015 Higher Education Green Paper, there is a clear implication that the administration of the system will differ. The Green Paper comments:

There are a number of possible options for the future design of the research landscape. These range from delivering the dual support funding system through separate bodies as at present (with another body taking on HEFCE's research role) to delivering dual support through an overarching body that brings together Research Council functions with management of institutional research funding for England.¹⁴

More information on the current arrangements – indicating the devolved nature of block grant funding – is given in a government policy paper, *2010 to 2015 government policy: research and development* (7 May 2015):

Research councils

The 7 research councils are the main public investors in fundamental research in the UK covering a wide range of disciplines:

[Arts and Humanities Research Council \(AHRC\)](#)

[Biotechnology and Biological Sciences Research Council \(BBSRC\)](#)

[Engineering and Physical Sciences Research Council \(EPSRC\)](#)

[Economic and Social Research Council \(ESRC\)](#)

[Medical Research Council \(MRC\)](#)

[Natural Environment Research Council \(NERC\)](#)

[Science and Technology Facilities Council \(STFC\)](#)

As publicly-funded bodies, the research councils are held accountable to Parliament for their investments in research.

Research Councils UK

Launched on 1 May 2002, [Research Councils UK \(RCUK\)](#) is a strategic partnership of the 7 UK Research Councils. RCUK work scientifically, strategically and operationally alongside BIS to champion research, training and innovation in the UK.

¹⁴ [Fulfilling our potential: teaching excellence, social mobility and student choice](#), Cm 9141, November 2015

UK higher education funding bodies

The 4 higher education funding bodies in the UK provide block grant funding to support the research infrastructure and enable institutions to undertake ground-breaking research of their choosing:

[Higher Education Funding Council for England \(HEFCE\)](#)

[Higher Education Funding Council for Wales \(HEFCW\)](#)

[Scottish Funding Council \(SFC\)](#)

[Department for Employment and Learning, Northern Ireland \(DELNI\)](#)

The Research Councils provide funding which is UK-wide, sometimes involving direct support for industry. An example is the industrial CASE (formerly known as Collaborative Awards in Science and Engineering) Studentships that are funded under the auspices of the Research Councils. For example, the Science and Technology Facilities Council Industrial CASE studentships competition provides support for PhD students working on projects that involve joint supervision of the student by a member of staff at an academic Research Organisation or related institution and an employee of a non-academic organisation, such as a UK industrial firm, public sector organisation or charity (the non-academic partner). Among the facilities operated by the Science and Technology Facilities Council are the UK Astronomy Technology Centre (UK ATC) based at the Royal Observatory in Edinburgh and the Rutherford Appleton Laboratory in Harwell, Oxfordshire.

More generally, Research Councils UK (RCUK) is responsible for investing public money in research in the UK “to advance knowledge and generate new ideas which lead to a productive economy, healthy society and contribute to a sustainable world.”¹⁵

Each Research Council funds research and training activities in a different area of research ranging across the arts and humanities, social sciences, engineering and physical sciences and the medical and life sciences. RCUK supports over 50,000 researchers including 19,000 doctoral students, around 14,000 research staff, and 2,000 research fellows in UK universities and in their own Research Institutes.¹⁶

¹⁵ [About the individual Research Councils](#), accessed online: 19 June 2015

¹⁶ Ibid.

5. Reviews of Research Councils

After the 2010 General Election the Coalition Government introduced the *Public Bodies Act* that was the main legislative vehicle for implementing the Government's review of public bodies. The Act largely enables and allows Ministers, by order, to abolish or make certain changes to the public bodies listed in the various schedules to the legislation. In April 2011, Cabinet Office announced that all non-departmental public bodies (NDPBs) still in existence following the reforms brought about by the *Public Bodies Act* would have to undergo a substantive review at least once every three years, starting in 2011 to 2012.

These triennial reviews would have 2 purposes:

- to provide a strong challenge of the continuing need for individual NDPBs, both their function and their form, employing a so-called "three tests"¹⁷ discipline
- where it is agreed that a particular body should remain as an NDPB, to review the control and governance arrangements in place to ensure that the public body is complying with recognised principles of good corporate governance

The Cabinet Office, in June 2011, produced guidance¹⁸ for Departments on how to carry out a review and updated that guidance¹⁹ in 2014. The guidance indicates that all reviews should be:

- Challenging, taking a first principles approach to whether the function of a body is still needed and the best form for delivery of that function
- Proportionate, avoiding being overly bureaucratic and appropriate for the size and nature of the NDPB being reviewed.
- In context, ensuring that the review was integrated with other departmental policy initiatives, efficiency reviews and also to look across departmental boundaries.
- Conducted quickly to minimise the disruption to the NDPBs business and reduce uncertainty about its future
- Inclusive, allowing all stakeholders to comment
- Transparent, announced formally to Parliament and the public.

The triennial review of the Research Councils began on 6 February 2013 and asked for evidence to be submitted by 28 February 2013. The consultation included 20 questions, including a general one on the Royal Charter objectives for the Research Councils. Views were received from over a hundred stakeholders from a variety of organisations. The decision at the first stage of the review was to retain the status quo:

¹⁷ The "three tests" are: is this a technical function (which needs external expertise to deliver); is this a function which needs to be, and be seen to be, delivered with absolute political impartiality (such as certain regulatory or funding functions); or is this a function which needs to be delivered independently of Ministers to establish facts and/or figures with integrity.

¹⁸ Cabinet Office, *Guidance on reviews of non-departmental public bodies*, June 2011 (superseded by [subsequent guidance](#))

¹⁹ Cabinet Office, [Triennial Reviews: Guidance on Reviews of Non-Departmental Public Bodies](#), accessed online: 19 June 2015

Based on the evidence gathered during the Review, the team concluded that the current balance of costs against benefits did not support a change to the current number of seven Research Councils. The team recommended that the Research Councils should be retained as NDPBs [Non-Departmental Public Bodies]. However, the team believed that these conclusions should be revisited at the next Triennial Review to determine whether the position had changed.

The second stage of the review was to assess in more detail the relationship of the research councils with the Government. This involved a wide range of engagement with the councils and other stakeholders. The final report²⁰ was produced in April 2014:

The team concluded that, individually the Research Councils are operating from a position of strength ... However, the review team believe that ... there are some aspects that require substantial attention but overall compliance was good.

Subsequently, the Coalition Government asked Sir Paul Nurse (President of the Royal Society) to lead an independent advisory group to review, with research councils, how they can evolve to support research in the most effective ways. This consultation was launched on 9 March 2015 and ran until 17 April 2015.

At the time the review was announced, Sir Paul Nurse said: "The aim of the Research Councils review is to look at overall questions relating to UK research funding, and build on the findings of the recent more focussed Triennial Review. Through this review we will seek to ensure that the UK continues to support world-leading science, and invests public money in the best possible way."²¹ Among the questions asked by the Nurse review were the following:

- How should the Research Councils take account of wider national interests including regional balance and the local and national economic impact of applied research?
- Is the balance between investigator-led and strategically-focused funding appropriate, and do the right mechanisms exist for making strategic choices?
- Within each Research Council is the balance of funding well-judged between support of individual investigators, support of teams and support of equipment and infrastructure?

Other questions relate to the research councils' roles in fostering collaborations and links with other academic, industrial, European and global R&D activities.

Sir Paul Nurse's independent review of the UK research councils was published on 19 November 2015.²² Among other things, it recommended the establishment of Research UK; this would represent "an evolution of Research Councils UK into a formal organisation with a single Accounting Officer, which can support the whole system to collectively become more than the sum of its parts".

What role should regional and strategic factors play in research council decision-making?

²⁰ Department for Business, Innovation and Skills, [Triennial Review of the Research Councils: Final Report](#), April 2014

²¹ Department for Business, Innovation and Skills, [Nurse Review of Research Councils: Call for evidence](#), March 2015

²² [Ensuring a successful UK research endeavour](#), 19 November 2015

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At the spending review, the Government announced it would accept these recommendations:

The government is taking forward the recommendations of Paul Nurse's independent review and, subject to legislation, will introduce a new body – Research UK – which will work across the seven Research Councils. This will take the lead in shaping and driving a strategic approach to science funding, ensuring a focus on the big challenges and opportunities for UK research. The government will also look to integrate Innovate UK into Research UK in order to strengthen collaboration between the research base and the commercialisation of discoveries in the business community. Innovate UK will retain its clear business focus and separate funding stream.²³

²³ [Spending Review and Autumn Statement 2015](#), Cm 9162, November 2015

6. Local Enterprise Partnerships

Local enterprise partnerships (LEPs) are partnerships between local authorities and businesses. They decide what the priorities should be for investment in roads, buildings and facilities in the area. Local enterprise partnerships were given the chance to apply to have an enterprise zone and 24 were awarded. These zones can take advantage of tax incentives and simplified local planning regulations.

So far 39 local enterprise partnerships have been created. LEPs were set up from 2011 on a volunteer basis without any public funding, and were a consequence of and response to the abolition of the regional development agencies.²⁴

Some LEPs will have an opportunity to work with recently-established University Enterprise Zones (UEZs). These are a £15 million pilot scheme (from 2014 to 2017), introduced by the Coalition Government, which aims to allow universities “to push through local growth plans and support entrepreneurship and innovation”²⁵ (to quote the Coalition). The intention is that for every £1 of government funding, the relevant universities will raise £2 of match funding.

A document prepared under the Coalition Government goes on: “University enterprise zones will provide funding to locations across England. The zones will allow business spaces to be built that can host a range of new high-tech companies in the early stages of their development. These innovative small businesses will then be able to share the expert knowledge at the university, helping them to grow and prosper. A competition is being held to select 3 to 4 pilot zones.”²⁶

Subsequently, the [Chancellor announced](#) four successful bids for pilot UEZs. These sites are:

- Bradford (Leeds City Region)
- Bristol
- Liverpool
- Nottingham

The zones aim to:

- encourage universities to strengthen their roles as strategic partners in local growth to engage with LEPs, building on existing capabilities and partnerships
- stimulate development of incubator or ‘grow-on’ space for small businesses in locations that encourage businesses to interact with universities and to innovate

A Coalition policy document on research and development adds: “UEZs will have access to business support packages and the specialist facilities

²⁴ HM Government, [2010 to 2015 government policy: Local Enterprise Partnerships \(LEPs\) and enterprise zones](#), updated 8 May 2015

²⁵ Ibid.

²⁶ Ibid.

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and expert knowledge offered by universities. They will also work with UK Trade and Investment (UKTI) to promote inward investment.”²⁷

²⁷ Department for Business, Innovation and Skills, [2010 to 2015 government policy: research and development](#), updated 8 May 2015

7. Conservative Government

The current Government continues to provide regular updates on policy development in research and development.²⁸

In the context of the 2015-16 financial year, a short item in *Research Fortnight* (10 June 2015) indicated that the science budget would continue to be protected: “The science budget is to be protected from chancellor George Osborne’s cuts to the Department for Business, Innovation and Skills’ budget. On 4 June, Osborne announced that BIS would have to make savings of £450 million in the 2015-16 financial year.²⁹ A spokeswoman confirmed that the savings would come from the department’s non-science resource budget, leaving the further and higher education budgets under threat.”

A general indication of the Government’s position can be gleaned from the [Conservative Party Manifesto 2015](#). In this document, science features in a number of contexts, but also has a dedicated section that begins with a commitment:

We will continue to invest in science, back our industrial strategies and make Britain the technology centre of Europe

Great science is worthwhile in its own right and yields enormous practical benefits too – curing diseases, driving technological innovation, promoting business investment and informing public policy for the better. We ring-fenced the science budget by making difficult choices to reduce spending in other areas. Now we will invest new capital on a record scale – £6.9 billion in the UK’s research infrastructure up to 2021 – which will mean new equipment, new laboratories and new research institutes. This long-term commitment includes £2.9 billion for a Grand Challenges Fund, which will allow us to invest in major research facilities of national significance, such as the new Alan Turing Institute [mathematics and computing], and projects such as the Polar Research Ship [marine science] and Square Kilometre Array [radio astronomy]. We have boosted research and development tax credits and we will continue to support our network of University Enterprise Zones, ensuring that Britain’s world-beating universities are able to make money from the technology they develop. We will support our modern industrial strategies, such as our successful Life Sciences strategy, to help people compete and win in the intense global race for high value, high knowledge jobs. We will work with the Automotive Council in support of our resurgent car industry and direct further resources towards the Eight Great Technologies – among them robotics and nanotechnology – where Britain is set to be a global leader. We have delivered a network of catapult centres – R&D hubs in the technologies of the future – and we will create more to ensure that we have a bold and comprehensive offer in place for Britain’s researchers and innovators.

Other references to science in the manifesto appear in the context of regional economic development. In the context of the “Northern Powerhouse” agenda, the manifesto states:

²⁸ [Research and development](#), Gov.uk, accessed online: 19 June 2015

²⁹ HM Treasury, [“Chancellor announces £4½ billion of measures to bring down debt”](#), 4 June 2015

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We will back scientific and technical strengths by creating new institutions such as Health North; the Royce Institute for Advanced Materials in Manchester, Leeds, Liverpool and Sheffield; the National Centre for Ageing Science and Innovation in Newcastle; the Cognitive Computing centre at Daresbury; and by making investments in energy research in Blackpool, Cumbria and Thornton.

And, in the Midlands:

We will back the Midlands' strength in advanced manufacturing, engineering and science with major projects such as the Energy Research Accelerator and support for innovation in the motor industry.

Science also appears in the context of other manifesto commitments too (extracted below):

- We will support a science-led approach on GM crops and pesticides and implement our 25-year strategy to eradicate bovine TB.
- We aim to make Britain the best place in the world to study maths, science and engineering, measured by improved performance in the PISA³⁰ league tables.
- We will maintain our universities' reputation for world-class research and academic excellence. Through the Nurse Review of research councils, we will seek to ensure that the UK continues to support world-leading science, and invests public money in the best possible way.
- With a future Conservative Government, you will have a truly 7-day NHS, at the frontier of science, offering you new drugs and treatments, safeguarded for years to come.
- We will speed up your access to new medicines by implementing the findings of our Innovative Medicines and Medical Technology Review. We will increase the use of cost-effective new medicines and technologies, and encourage large-scale trials of innovative technologies and health services. Antibiotic resistance is a major health risk so we will continue to lead the global fight against it, taking forward the recommendations of the independent review launched by the Prime Minister, David Cameron. And we will support our long-term economic plan by fostering research, innovation and jobs in the life science industry.
- We will continue to support research to improve the diagnosis and treatment of rare diseases and cancers, including through decoding 100,000 whole genomes. This will help scientists and doctors understand diseases better, and design more effective, personalised treatments.

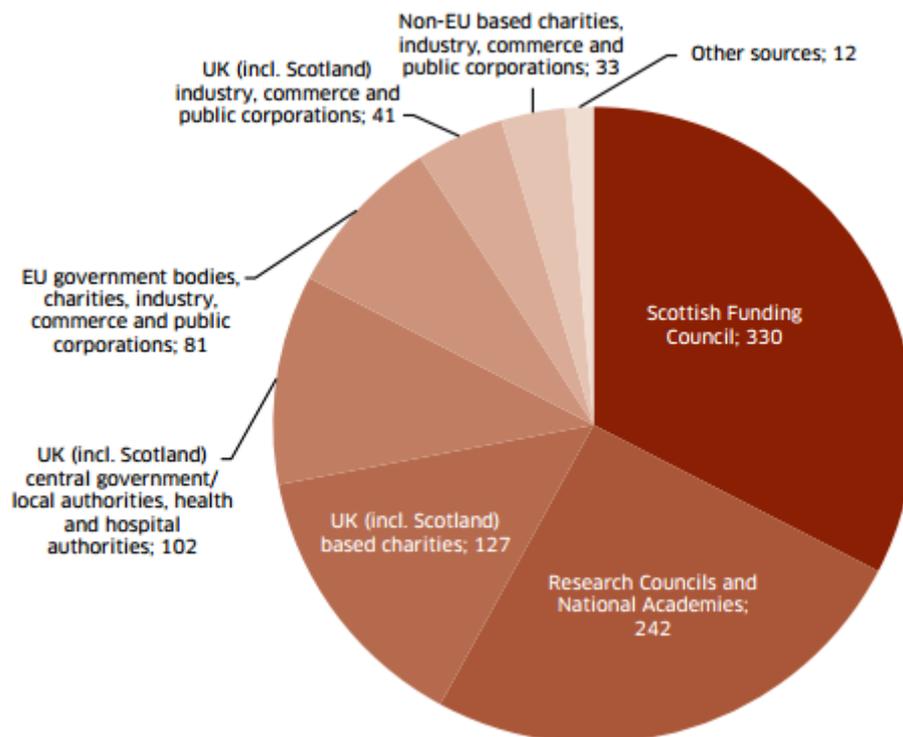
³⁰ Programme for International Student Assessment of the OECD

8. Scotland

Broadly speaking, Scotland receives about 11% of the available research council funds. More detailed data on this is available on the Research Councils UK website.³¹ (Wales and Northern Ireland get roughly 2.5% and 0.7% respectively.) The relative importance of the different funding mechanisms for university research came up in a report produced by the Scottish Government in advance of the 2014 independence referendum:

The Scottish Government is the largest single source of university research funding in Scotland with funding allocated through the Scottish Funding Council accounting for one third of university research income in 2012/13. A further quarter of research income is secured from the Research Councils. This dual funding system comprising funding from the Scottish Funding Council and competitively awarded grants from national Research Councils (funded through the tax base) works well.

As can be seen from the chart below, charities and public sector bodies are also substantial sources of funding:³²



Scottish universities research income 2012/13 (£969 million)³³

³¹ Research Councils UK, [Research Funding across the UK](#), accessed online: 19 June 2015

³² Scottish Government, [Scotland's Future: Higher Education Research in an Independent Scotland](#), April 2014

³³ Ibid.

8.1 Innovate UK

Another (UK) source of funding is Innovate UK – formerly the Technology Strategy Board; this public body operates at arm’s length from the UK Government, reporting to the Department for Business, Innovation and Skills (BIS). Its aim is to accelerate economic growth by stimulating and supporting business-led innovation.³⁴ Innovate UK’s plans for 2014 to 2015 include:

launching more than 80 competitions for up to £536 million government funding, including our Smart and Launchpad competitions, in:

- specific sectors such as energy, digital, health and care, and transport
- new areas such as urban living and emerging technologies

developing our Knowledge Transfer Network and Knowledge Transfer Partnerships programme

helping UK business make the most of the innovation funding and opportunities in Europe such as Horizon 2020

improving our customer services and application processes

Innovate UK has been developing a network of Catapult centres,³⁵ each specialising in a specific technology. “They will allow businesses to access equipment and expertise that would otherwise be out of reach, as well as conduct their own in-house research and development. Catapults will also help businesses access new funding and will make them aware of new technology and its potential.”³⁶ One of the catapult centres (Offshore Renewable Energy) is located in Scotland (Glasgow).

The Government’s plans for Innovate UK were rehearsed in a response (19 January 2016) to the House of Commons Science and Technology Committee’s report on the science budget:

In the recent Spending Review, the Government made clear its commitment, over the course of this Parliament, to protect the Catapult network and total funding for business led innovation through Innovate UK. The Government also wants to broaden the type of financial support available for innovation so it will look to evolve Innovate UK’s existing funding models to deliver up to £165m of support through new finance products by the end of the Parliament. The Government will also look to integrate Innovate UK into Research UK—the proposed new body incorporating the seven Research Councils. Innovate UK would retain its clear business focus and separate funding stream while also helping to foster a more strategic partnership with the wider research base.³⁷

³⁴ Ibid.

³⁵ <https://www.catapult.org.uk/catapult-centres>

³⁶ Department for Business, Innovation and Skills, [2010 to 2015 government policy: research and development](#), updated 8 May 2015

³⁷ House of Commons Science and Technology Committee, [The science budget: Government Response to the Committee’s First Report of Session 2015–16](#), HC 729, 19 January 2016

9. The future science budget

9.1 Select committee inquiry

In July 2015, the House of Commons Science and Technology Committee decided to undertake an inquiry into the Science Budget, ahead of the Spending Review. The Committee took oral evidence on 15 July from Jo Johnson MP, the Minister for Universities and Science, as well as national academies, and has since had further sessions, including a second appearance by the Minister.

The Committee invited written submissions on the following issues:

The extent to which the current ring-fence arrangements, and the separate arrangements for determining 'resource' and 'capital' allocations, have produced coherent UK science and research investment;

The extent to which science and research expenditure in Government departments (outside the Science Budget) complements or competes with the Science Budget;

The need for and rationale for any adjustment to the trajectory of future Government expenditure on science and research, and what would be gained from an increase (or lost from a reduction) compared with current expenditure levels;

Whether the current distributions of the budget between particular types of expenditure and between different organisations is appropriate for future requirements, and achieves an appropriate balance between pure and applied research;

What level of Government expenditure on science and research is needed:

- to significantly drive the overall level of such expenditure in the economy, through synergies between government and private sector investment (including overseas investment); and

- to optimally balance its benefits against the opportunity cost of government expenditure foregone on other public services.

Whether the Government's expenditures on aspects of science and research are consistent with other government policies, including the Industrial Strategies and the Eight Great Technologies and fiscal incentive policies for research investment;

The extent to which any increase or reduction in Government expenditure on science and research will have an impact on the UK's relative position among competitor states.

The term "Science Budget" is generally taken to mean funding for the science base, comprising research councils, the Higher Education Funding Council for England (the other parts of the UK have their own higher education funding bodies) together with academies like the Royal Society. However, it is clear from the terms of reference of the Committee's inquiry that funding and fiscal incentives for the wider research and development ecosystem were being considered: in other words, funding for research, development and innovation by government departments (including BIS's programmes outside the Science Budget) and tax incentives for businesses to conduct their own research and development.

The [Committee's website](#) includes transcripts of oral evidence sessions and the text of nearly 80 written submissions. On 9 November, the Committee published its report, *The science budget*,³⁸ a key recommendation of which was that the Government should produce a long term "roadmap" for increasing public and private R&D investment in the UK to 3% of GDP. The Committee also recommended that "A significant element of research funding should continue to be channelled through both the research councils and the higher education funding authorities." The report was clearly designed to influence government decisions on the science resource budget due in the Comprehensive Spending Review later that month. A commitment to capital spending had already been announced (see below).

As noted above, the Science and Technology Committee's inquiry into the Science Budget provides a useful source of material. For example, written evidence submitted by the Department for Business, Innovation and Skills (BIS) gives a detailed breakdown of 2015/16 resource and capital budget allocations for science and research that were announced in May 2014. This totals £4.7 billion for the resource departmental expenditure limit (RDEL) and £1.1 billion for the capital departmental expenditure limit (CDEL). BIS makes a distinction between the (resource) science budget of £4.7 billion and the science ring-fence of £4.6 billion – the difference is due to some more recent allocations (e.g. to quantum technologies) made outside the ring-fence agreed with HM Treasury.

A key point is that, throughout the last Parliament, the resource science budget has had the protection of a "flat cash" ring-fence standing at £4.6 billion per annum. By contrast, the capital budget has fluctuated: an initial fall has since been "righted" and the Conservative Government has now announced that a real terms ring-fence of £1.1 billion will apply to capital until 2020/21. Whether the resource budget would continue to enjoy a ring-fence – either in flat cash or in real terms – was a moot point during the Committee's inquiry. The outcome of the Spending Review (see below) suggests a continuation of a ring-fence, albeit one sufficiently permeable to accommodate aspects of Official Development Assistance.

The Campaign for Science and Engineering (CaSE) have pointed to declining science budgets in real terms over the last Parliament – both in their submission to the select committee inquiry and in their submission to the comprehensive spending review. In the latter, CaSE argues:

The Conservative Manifesto speaks proudly of the relative protection for investment in science in the last Parliament. And rightly so. However, in the current climate, anything short of a real terms increase to investment in R&D by the end of this Parliament would be short-sighted and damaging; scientifically, politically and economically.

To compete as a scientific, technological, and economic world-leader, and reap the benefits of global investment, the Government must set an ambitious upward trajectory

³⁸ Science and Technology Committee, [The science budget](#), HC 340 2015-16

for investment in R&D over the long term, at a rate that exceeds predicted growth by the end of the Parliament.³⁹

9.2 Combining capital and resource spending

One issue that has emerged is that, in future, government spending on research and development will be treated entirely as capital spending. Graeme Reid, Professor of Science and Research Policy at University College London, told a Westminster Higher Education Forum on 30 June 2015: "In all likelihood the Government will adopt a new, or newish European Standard of Accounting, which will lead to science and research spending being treated as capital investment in future. I think my interpretation is that no-one quite knows what that means, but it will not mean that floodgates suddenly open and we are all swimming in money, so we can save ourselves from that concern."⁴⁰

Professor Reid subsequently gave evidence to the Select Committee's inquiry, providing the following elaboration: "My understanding of this is that it is a done deal, and it comes from a new accounting protocol from Brussels, the European Standard of Accounting 10, or ESA10, under which Government investment in R and D will be classified as capital across the EU. My understanding is also that the UK is going to introduce that protocol at some point after the spending review, so we are going to do the spending review under current protocol, and at some point it will transfer to this capital-only regime."⁴¹ In evidence to the Committee, the Minister for Universities and Science (Jo Johnson MP) confirmed that this would be the case

Q264 Matt Warman: Minister, you touched on this: is the current spending review going to continue to treat research capital and resource funding separately?

Joseph Johnson: For the spending review in November, my understanding is that they will observe the existing conventions of treating science resource and science capital as distinct pots of money. Thereafter, ESA10 will start to apply, as it does in the ONS national accounts, and there will be a new definition of resource spending as capital.

Q265 Matt Warman: This might be for both of you. Does that incoming change have any effect on negotiations that you are having, or is it just an administrative thing essentially?

Joseph Johnson: For the purposes of this spending review, we are maintaining the existing convention.

Q266 Chair: What we are trying to understand as a Committee is whether the accounting convention will be merely a convention, or will it materially change the way in which spending allocations happen, meaning that institutions and others get one bulk allocation of funding, which they then have to divide up according to capital and resource? Will that be beneficial, because it will mean they have flexibility as to how they use the spending, or will it

³⁹ [CaSE's submission to the 2015 Spending Review](#)

⁴⁰ Westminster Higher Education Forum, *Priorities for science and innovation policy: opportunities, structures and investment*, 30 June 2015

⁴¹ HC 340 [Oral evidence - The science budget - 15 September 2015](#), Q 158

cause some risks for institutions that are not as effective in making sure they manage their forward spending?

Joseph Johnson: I understand. When everything is in a future world of being just capital, whether or not there will continue to be a line between intangible and tangible capital remains to be seen, and those sorts of decisions will be taken in the spending review.⁴²

Giving evidence to the House of Commons Science and Technology Committee on 19 January 2016, the Secretary of State explained that the accounting changes were not expected to affect the underlying settlement:

Q5 Chair: My final question is about the spending review setting a separate resource and capital budget for science, but with the new ESA-10 accounting changes. We have had a response from you that this would have very few policy implications for your Department and the research councils. We want to understand whether the newly combined budget will be fully ring-fenced in the same way as the current resource element.

Sajid Javid: No. The ESA-10 standard is already reflected in the ONS's national accounts. I believe it is already reflected in OBR projected numbers in a recent fiscal statement. It now needs to be pushed down, as it were, from the Treasury into respective Departments for their own budgeting. I am not sure when it will happen—that is a Treasury decision—but I do not expect it to change any of the picture in terms of what we see today as resource spending and what we are calling today capital spending. If I have correctly understood your question to be whether that somehow expands or changes the ring-fenced amount in real terms, it does not.⁴³

9.3 Spending Review 2015

HM Treasury's *Spending Review and Autumn Statement* was published on 25 November.⁴⁴ This states that the government "will continue to prioritise investment in science to ensure the UK remains a world class centre of research." It goes on:

The Spending Review and Autumn Statement reasserts the Government's firm commitment to the UK remaining at the forefront of world science by:

- protecting today's £4.7 billion science resource funding in real terms for the rest of the Parliament. This includes a new £1.5 billion Global Challenges fund to ensure UK science takes the lead in addressing the problems faced by developing countries whilst developing our ability to deliver cutting-edge research
- delivering on the long term science capital commitment of £6.9 billion between 2015-2021 to support the UK's world-class research base. This includes up to £150 million (total capital and resource) to launch a competition for a Dementia Institute, to build on the UK's strengths in medical research

⁴² HC 340 [Oral evidence - The science budget - 13 October 2015](#), Qq 264-6

⁴³ HC 761 [Oral evidence: The science budget and the Spending Review](#), 19 January 2016

⁴⁴ HM Treasury, [Spending Review and Autumn Statement](#), Cm 9162, November 2015

Of the “inclusions” referred to above, the most significant is the new Global Challenges Fund which, elsewhere in the document, is referred to in the following terms:

A new Global Challenges Fund is being included in the science resource budget

1.87 The government will spend 0.7% of GNI [Gross National Income] on ODA [Official Development Assistance] every year, rising to £16.3 billion per year by 2020. This will include:

[...]

a new Global Challenges research fund of £1.5 billion over the next 5 years to ensure UK science takes a leading role in addressing the problems faced by developing countries

The Government also undertook to take forward the recommendations of Paul Nurse’s independent review and, “subject to legislation, will introduce a new body – Research UK – which will work across the seven Research Councils.” The Government also said it “will also look to integrate Innovate UK into Research UK in order to strengthen collaboration between the research base and the commercialisation of discoveries in the business community. Innovate UK will retain its clear business focus and separate funding stream.”

The *Spending Review and Autumn Statement* also included the following commitment which will have a bearing on work conducted by the funding councils,⁴⁵ including the Higher Education Funding Council for England:

The government will also take forward a review of the Research Excellence Framework in order to examine how to simplify and strengthen funding on the basis of excellence, and will set out further details shortly.

Some background to the significance of the Research Excellence Framework – itself subject to an ongoing review⁴⁶ – was given in written evidence submitted to the House of Commons Science and Technology Committee by the Higher Education Funding Council for England:

Funding council support through Quality-Related research funding (QR), which is distributed on the basis of excellence gives universities the stability and flexibility to undertake essential blue skies research, to invest in emerging areas of research informed by their research strategy, the needs of their business partners and the government’s strategic priorities. QR is allocated competitively on the basis of evidence of exceptional performance in the Research Excellence framework (REF) which rewards both underpinning research excellence and impact.⁴⁷

⁴⁵ <http://www.ref.ac.uk/>

⁴⁶ <https://www.gov.uk/government/news/government-launches-review-to-improve-university-research-funding>

⁴⁷ [Written evidence submitted by the Higher Education Funding Council for England \(HEFCE\) \(TSB0065\), August 2015](#)

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