

## CaSE submission to the Nurse Review

### Key points

- Investment in the research base through the Research Councils must increase for the UK to remain internationally competitive and support economic growth. This must be done with new money and not transfer of research funds from other agencies. Improvements recommended by the Nurse Review will be stymied without adequate funding for the Research Councils.
- The government should conduct a detailed review of the resource funding required to derive maximum benefit from current research capital, and the resource required to support new equipment and infrastructure investments to keep the UK at the cutting edge of global science and engineering research. Resource and capital budgets should then be tied and included within one 'Science Budget', without any loss of overall budget value.
- Any decisions regarding the future of the Research Councils must be evidence-based, fully-costed, and done with full involvement of stakeholders to ensure improvements will be successful, cost-effective and beneficial for UK science
- Research funding and strategy should support breadth, multidiscipline collaboration, and excellence wherever it exists to maintain the UK's productive and innovative research base.
- Greater transparency in departmental research will support strategic alignment of Research Council priorities and allow the research community to better support government policy interests.

### Introduction

The Campaign for Science & Engineering (CaSE) is a membership organisation aiming to improve the scientific and engineering health of the UK. CaSE is funded by around 750 individual members and 100 organisations including industry, universities, learned and professional organisations, and research charities that recognise the importance of science and engineering for the UK. CaSE welcomes the opportunity to feed in to this review.

The UK research base is an integrated ecosystem encompassing science, engineering, innovation and technology. It spans a wide range of sectors including public and charitable, higher education, and industry, which is itself composed of small, medium, and large enterprises. The extraordinary and well-documented success of the UK research base is founded on historic strength, stable institutions, past investment, and valued principles for allocation of funding.

CaSE believes that the UK should aim to have a healthy and thriving research base in which all parts of this integrated system are well funded and performing optimally. This will generate growth, stimulate inward investment, and create high-value jobs now and in the future.

## **Investment in the research base through the Research Councils must increase**

The Research Councils are at the heart of the UK research base. Government investment through the councils in world-leading science, facilities, and people creates the foundations on which the rest of the ecosystem builds. And yet that investment has been declining in real-terms since 2010, when the 'Science Budget' was ringfenced with a flat-cash settlement and the capital budget cut. This has put the UK research base at risk and reduced the ability of science and engineering to contribute to a strong and sustainable economic recovery for the UK.

CaSE has compared current investment levels to what could be expected if 2010 budgets were maintained in line with inflation<sup>1</sup>. This analysis found that the UK research base, funded through the resource 'Science Budget' and the capital budget, has lost over £1 billion of investment in real-terms over the course of the 2010-15 Parliament.

The Coalition government's commitment to invest £1.1 billion in real-terms each year up to 2020/21 through the capital budget is welcome and must be maintained post-2015 whoever is in power. But even taking this into account, the overall shortfall for the research base will continue to rise, reaching £2.3 billion by 2020 unless the flat-cash settlement for the 'Science Budget' is lifted.

CaSE recognises the difficult economic times we are living in and supports efforts to improve efficiency in how the Research Councils and the wider research base operate. The research community is on track to meet the target of £428 million in efficiency savings to be achieved between 2010 and 2015, set by the Wakeham report<sup>2,3</sup>. The £1 million shortfall revealed by CaSE's analysis has therefore not been absorbed through efficiency savings alone. It has instead squeezed the research base and its ability to perform optimally. Furthermore, Universities UK members have raised concerns that the long-term sustainability of research could be brought into question should the Wakeham recommendations be rolled forward into future years with similar expectations of savings<sup>3</sup>.

Real-terms reductions in investment can't be fully compensated for through efficiency savings. They will instead come at the expense of scientific excellence and the volume of research performed in the UK. Short-term savings in government spending will therefore have a counter-productive effect by choking off the innovation needed for economic growth. The Nurse Review must push for increased funding for the Research Councils.

Without proper funding, any recommendations that the Nurse Review makes – on supporting the wider national interest and promoting business collaboration, for example – will be stymied in their ability to produce positive and lasting impact. The government should commit to an upward trajectory for investment that exceeds growth as part of a long-term, cross-government framework for research and development funding.

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<sup>1</sup> <http://sciencecampaign.org.uk/CaSE2015BudgetBriefing.pdf>

<sup>2</sup> <http://www.rcuk.ac.uk/RCUK-prod/assets/documents/reviews/fec/fecReviewReport.pdf>

<sup>3</sup> <http://www.universitiesuk.ac.uk/highereducation/Documents/2015/EfficiencyEffectivenessValueForMoney.pdf>

### **Resource and capital budgets should be tied**

In science and engineering, resource and capital are closely entwined, each equally requiring the other. It is vital that capital investments are supported with resource budgets to fully utilise research infrastructure and equipment to gain maximum scientific and economic benefit.

The Terms of Reference asks whether the balance of funding in each Research Council is “well-judged between support of individual investigators, support of teams and support of equipment and infrastructure?” This is a vital question not only for each Research Council but for government investment in science and engineering as a whole. It appears little is known about what size the UK’s resource budget should be in proportion to the capital budget. The government, supported by the Research Councils, should conduct a detailed review of the resource required to derive maximum benefit from current research capital, and the resource required to support new equipment and infrastructure investments to keep the UK at the cutting edge of global science and engineering research.

Equipped with an evidence base from such a resource-capital review, future government spending reviews should include both resource and capital allocations within their definition of the ‘Science Budget’, without an overall loss of budget value, and capital investment should be tied to resource. This will reflect their interdependency and ensure efficient and effective use of public funds.

### **Any decisions regarding the future of the Research Councils must be evidence-based**

We welcome this review as an indication of the importance that the UK government places on science and engineering. There are no-doubt improvements that can be made to how the government supports the research base through the Research Councils and other bodies. This review is an important opportunity to identify those and decide on the best way forward.

The route of that path forward must be chosen based on sound evidence gathered from the research community and other stakeholders, not for political expedience. Significant restructuring would be extremely costly so proposals must also be fully and carefully-costed to avoid the unnecessary waste of public money.

The research ecosystem is forever evolving but relies on a solid foundation that provides stability and reassurance to stakeholders. The Research Councils are too important to be experimented with but improvements will be welcome if there is evidence that they will improve the current system, which is rightly respected internationally as high-performing and extremely efficient.

### **Research funding should support breadth, multidiscipline collaboration, and excellence**

The UK’s great strength is in creative academic discovery leading to innovation. Discovery imparts a national competitive advantage in being ahead of the curve. The breadth of the UK’s strength across disciplines must therefore be protected, enabling discovery to emerge in unpredicted places. The range of our excellence stimulates new ideas at the boundaries of understanding and enables researchers to quickly capitalise on their advantage by easily recruiting experts in diverse fields. We

must guard against over-specialisation because it risks weakening our strength in breadth. The UK research ecosystem must be nimble and responsive; a place where researchers have the potential to become world-leading in any area of new research and capitalise on that advantage.

Breadth in the research base provides opportunities for multidiscipline, collaborative research, which is becoming ever-more important as a catalyst for innovation in science and engineering. The Research Councils have great expertise in their individual disciplines, which should be valued, and are increasingly working together and harmonising funding processes to support multidiscipline project applications. These efforts should continue and the Nurse Review is a valuable opportunity to hear from stakeholders where further improvements can be made. This will not only benefit the productivity of research but will save time and money for applying institutions.

Breadth must be supported by excellence, which is guarded by the UK's long-held principle of research funding allocated by peer-review and the Haldane Principle. This has developed to state that the research community should determine which projects receive state support via the Research Councils, whilst the government may guide priority-setting according to a range of criteria. The former Science Minister, David Willetts, stated in 2010 that holding to this principle "has been crucial to the international success of British science." A departure from the long-standing principles of peer review and Haldane would be a damaging and retrograde step for UK science and engineering.

High-level strategic decisions, whether by the Research Councils or the government, should be made in a transparent and accountable way to give confidence and direction to researchers, investors, and tax-payers.

The Research Councils have a long-held and valuable mission to support excellence wherever it exists. In recent years, the government has increasingly looked to address regional economic imbalances with investments in science and engineering research. Both are important for the UK but there are significant risks in looking to integrate these two missions into the functions of the Research Councils. However, if regional balance is the aim, an assessment of scientific quality is inarguably vital to ensuring science investments have the desired effect. As Research Councils are best placed to assess quality, they have a valuable role to play here. Other agencies may however be better placed to lead the mission of addressing regional balance with input from the Research Councils, primarily in the form of peer review. As with all investment decisions, processes should be transparent and those making the decisions accountable.

Under no circumstances must the regional balance agenda detract from the Research Council's ability to fund excellence wherever it exists. Diverting funds away from this mission would be highly detrimental to British science and engineering. Instead, there must be greater real-terms investment through the Research Councils and separate increases in funding to address regional balance.

Academia and businesses alike recognise the importance and interconnectedness of funding basic research alongside innovation and commercialisation. Indeed at a recent House of Commons Committee evidence session representatives from Rolls-Royce and GlaxoSmithKline affirmed that

they were in favour of more funding for Innovate UK, but not at the expense of the basic funding through the Research Councils, a view that was echoed in recommendations made by the Committee in the final report<sup>4</sup>. Funding for Innovate UK should be increased but not at the expense of the Research Councils.

### **Greater transparency in departmental research will support strategic alignment**

Research funded and commissioned by all the government departments makes up a large body of evidence of great interest and significance to the research community and to government. Yet research commissioned by government departments in particular any research prior to 2010, has been archived in such a way to make it unsearchable and inaccessible to both government officials and the wider research community. The gov.uk website has done an excellent job of harmonising government online resources. This should be expanded to include a free and easily-searchable archive of research performed or commissioned by government departments. This will allow Research Councils and the wider research community know what research has already been done and what research questions still need answering and support better strategic alignment.

Furthermore, for evidence to drive policy it needs to begin at a research level, not simply at a policy level. To allow Research Council-funded researchers to better engage and support government policy, every department should publish, and annually update, a list of key, long-term research questions.

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<sup>4</sup> <http://www.publications.parliament.uk/pa/cm201415/cmselect/cmbis/249/249.pdf> (page 13-14)