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Strategic Priorities for Science and Research Funding

Thank you for your letter of 16 April, seeking the Council for Science and Technology's views on strategic priorities for science and research funding in the context of the Spending Review.

The UK is well established as a global leader in science and innovation. A commitment to enhance expenditure on the research base and on support for its translation into economic benefit would be both an investment in the UK's short term growth and our longer term prosperity and place in the world.

Key Considerations

At a time when BIS and the Government more widely is developing an industrial strategy for growth, it must be a priority for the Spending Review to consolidate the excellence of our research base and to forge the closest possible links between it, innovators, and industry

Your predecessor, Sir Adrian Smith, asked for CST's views in relation to the Spending Review in 2010, and we made three main points. These remain valid:

- The link between economic growth and the strength and quality of a nation's research base is well-documented. In straitened economic circumstances, investment in science has immense positive impact on growth both in supporting indigenous business and in attracting foreign investment.
- There is a need to ensure that the most pressing priorities are addressed, the best researchers are supported, and that the benefits from earlier investments are fully realised.
- The UK's strong position in research will be significantly under threat because of increasing competition from the rest of the world - particularly North America, India and

China. If our global research position declines, it will impact on the UK's economic and social growth.

The economic impacts of government investment in the science and research base are well known. These include:

- the direct application of research to innovation, leading to the development of high value products and services that are increasingly important to the UK economy.
- the development of a workforce with the skills needed for a 21st Century economy.
- the ability to generate income from businesses, charities and other users of research.
- direct income from international student fees.
- inward investment in sectors where foreign industries need access to cutting edge research.
- leverage of EU research funds. The UK is highly competitive here, and secured 15% of the EU's FP7 funding.

Our main competitors are responding to the challenges facing the global economy by increasing their commitment to R & D. Forecasts suggest that global R & D funding will increase by 3.7% in 2013. The commitment is even greater in key emerging economies. China is set to continue its decade-long annual double digit increase.

Gross R&D expenditure in the UK is already relatively low compared to other innovation economies. In this intensely competitive context another "flat cash" investment in research (let alone a reduction in spend) is not compatible with the need to consolidate our position as a global leader.

Resource and capital spend: the position since 2010

Much has moved on since we wrote in 2010. The flat cash *resource* settlement for 2010-2015 was welcome in a context of severe economic constraints, and has helped provide a degree of the certainty which is important in nurturing excellence in research. It needs to be recognised that in reality this has led to a significant decline in funding in real terms, however, by an estimated 7%.

The 2010 settlement reflected confidence in the capacity of research to drive growth. The money was not squandered. During this period the UK was recognised as second in the world (ahead of the United States) for the quality of its universities' collaboration with industry.¹ Some notable achievements over this period include the creation of an International Centre for Advanced Materials in Manchester, based on £64 million of investment by BP, led by the University of Manchester, in partnership with Imperial College and Cambridge University. Meanwhile, some good schemes like the Higher Education Innovation Fund (HEIF) have been working to promote knowledge transfer between universities, colleges and the wider world. The fund's return on investment is estimated at £6 for every £1.

The Government's commitments subsequent to the 2010 Review have also been welcome, for example, the Chancellor's emphasis in his speech at the Royal Society on the role of science. The Government's developing emphasis on an innovation strategy centring on "Eight Great Technologies" has provided welcome focus on key areas of UK strength. Signals like this are important (not least to potential R & D investors) and the Spending Review offers the Government the opportunity to illustrate the continuity of its commitment.

¹ World Economic Forum Global Competitiveness Report., 2011-12

Capital spend did not fare so well in the 2010 Spending Review.

Announcements of new capital expenditure since 2010 (notably £600 million for science and innovation announced in last year's Pre-Budget Report) have been welcome and have made up some of the shortfall. We should continue to seek opportunities to reinforce the science base in support of the industrial strategy. But high profile initiatives and announcements cannot take the place of continuing investment in the basic infrastructure which is vital to the long term viability of our research capacity. Maintenance of the existing infrastructure is critical, and local decision-makers need the freedom and discretion to make the essential expenditure decisions. We note in passing that this is not just a matter of bricks and mortar: capital includes expenditure on longitudinal studies which are fundamental to the UK's research excellence in medicine and the social sciences.

An increase in capital expenditure must now be a priority.

Strategic priorities for this Spending Review

With all these factors in mind, there is a strong case for research expenditure to be increased. The relatively small amount of money involved compared to wider government expenditure, and the clarity of the evidence for its enduring economic impact make this clear.

It is clear that the excellence of our research base needs to be matched with a world class innovation infrastructure if we are to realise all these benefits on the right scale. In parallel with sustained investment in discovery and translational research within universities, expenditure in the wider innovation system also needs to be a priority.

The future of the **Technology Strategy Board (TSB)** in particular will be vital to our capacity to make commercial capital out of our research excellence. By international standards the TSB is a conspicuously small innovation agency, but it is responsible for delivering a wide range of schemes across the whole range of the UK's innovation policy. These responsibilities have grown considerably over the last five years, without a commensurate increase in funding: for instance, when the TSB inherited some of the functions of the old Regional Development Agencies.

This year's Budget commitment to increase expenditure on a TSB-led initiative, the Small Business Research Initiative (SBRI), is welcome. The scheme has a crucial role to play in putting government procurement to better use in driving innovation. CST has been recommending this for some time.

We need to see similar sustained commitment across the board: for instance in the further development of Catapult Centres, working to bring business innovators and leaders in discovery research together in specific sectors.

Specific issues

As well as strategic priorities, you asked for our views on a number of specific issues. We agree with the four criteria that you propose to guide prioritisation: namely, excellence, growth, efficiency, and maximising leverage.

You also asked for our views on the role of the science and research ring fence. We believe that the ring fence gives clarity about future funding. Its existence reflects the fact that the research base is a strategic resource for government as a whole, not just a specific Department. It also marks the independence of the research community. It costs nothing,

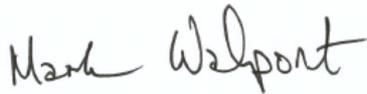
and to remove it now would send an unfortunate signal to potential investors. It will be critical to securing steady development going ahead.

National Academies

You wrote in parallel to the Presidents of the National Academies: the Royal Society, the British Academy, the Royal Academy of Engineering, and the Academy of Medical Sciences. The Academies' Presidents are *ex officio*, members of CST. We fully support the perspective put forward in the National Academies' recent joint statement, *Fuelling Prosperity: research and innovation as drivers of UK growth and competitiveness*. It reflects the fact that all disciplines have their part to play in promoting prosperity.

We look forward to further engagement with you and Ministers as the Government's deliberations proceed.

We are copying this letter to the Prime Minister and Deputy Prime Minister, the Chancellor of the Exchequer, Vince Cable, David Willetts and Sir Jeremy Heywood.



Sir Mark Walport
Co-chair



Professor Dame Nancy Rothwell
Co-chair