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20 May 2013

Strategic Priorities for Science and Research Funding

Your letter of 16 April asked for the Chief Scientific Advisers' advice on key priorities and challenges for the science and research budget. We are grateful for the opportunity to input.

We recognise that hard decisions are going to be needed to deal with the difficult economic circumstances facing the country. It is important that these decisions recognise the critical and complementary roles that both the UK science and research base and the wider innovation ecosystem play in delivering economic growth and prosperity. As the Chancellor of the Exchequer said in his Budget Statement of 20 March 2013, "Research and development is absolutely central to Britain's economic future".

Science and research generate the technological advances and skilled people needed to sustain an advanced competitive economy. An effective innovation infrastructure is key to turning this science into economic benefit and new businesses.

A good example of this is British Satellite manufacturer Surrey Satellite Technology Ltd. SSTL – a successful spin-out from publically funded space research at Surrey University in the 70s – is now the world's premier provider of operational and commercial satellite programmes. Now majority-owned by the EADS Astrium but benefitting from long-term partnership with Surrey University, SSTL builds and operates small satellites. The company has had a huge impact on the local economy. It now has 550 staff, an order book of well over £300 million with an annual turnover approaching £100 million. SSTL has also established further facilities in Kent and Colorado in the USA and has a number of significant international contracts including a major part of the Galileo satellite constellation for the European GNSS (GPS) system.

Another example of where our strength in science and research is critical is data science. We are in the middle of a revolution in the use of data which puts the kind of advanced analytical skills developed in our mathematics and computing university departments at a premium. Continued investment in research

excellence will mean that we have a workforce equipped to ensure that business, public service and government alike can make the best possible use of the opportunities this creates and keep the UK at the forefront of the data revolution.

As well as being critical to the wider economy, we must emphasize that the science and research base also underpins the work of Government itself. It informs the agenda of every government department and is key to finding solutions to the major challenges being faced by the country, so:

- Research on earth system processes and on changes in the climate system is essential to the UK's climate change mitigation and adaptation policies.
- Research on energy storage and supply underpins UK energy policy.
- Research on food storage and manufacture improves consumer safety and reduces food poisoning.
- Advances in medical research reduce the risk of heart attack and improve public health.
- Advances in computer science, advanced electronics and smart materials play a vital role in UK national security.
- Publically funded social science helps our understanding of social mobility and approaches to tackling child poverty.
- Investment in underlying data sets, in particular, longitudinal studies is fundamental to identifying and understanding social trends.

Science and technology is our main tool in the mitigation and the response to the risks in the National Risk Register, including pandemic influenza; coastal flooding; effusive volcanic eruptions; catastrophic terrorist attacks and severe space weather. And the expertise of the research base is particularly critical at times of emergency. For many types of civil contingency – flooding, animal disease outbreaks and CBRN accidents or attacks – Ministers would not be in a position to take robust, evidence-based decisions without the national capabilities funded by the research base.

As an example, the UK was able to model and monitor the 2010 Eyjafjallajökull volcanic ash cloud better than any other European country thanks to the strength of its volcanology research and facilities at Bristol and Leeds Universities, NERC's British Geological Survey and National Centre for Atmospheric Science. This led to the reopening of UK air space sooner than otherwise and meant the financial impact of this disruption on the UK economy was significantly less than it would otherwise have been.

Similarly, following the 2011 Japanese earthquake which damaged the Fukushima nuclear reactor, UK technical advice to the Japanese government and UK nationals on immediate risks to health and long term impacts on the food chain was based on decades of research across multiple disciplines post the Chernobyl incident in the 1980s. This sort of capability takes decades to build and can be lost in a short time in the absence of sustained funding. UK excellence means we have diversity of talent to draw on at short notice.

Science also plays a vital role for Government at an international level, helping to deliver robust evidence-based policy and providing effective alternative channels of communication and influence. UK scientific excellence is a major soft power asset, giving us reach and influence with traditional partners and emerging economies in support of our foreign policy agenda, especially around prosperity and growth. The relationships that Government helps to build with and through science will be important in shaping the future global economy and the UK's place within it. For all these reasons, Government needs to retain and build its ability to engage on both science and policy in the international space (for example, through the Government Science and Innovation Network) and to capitalise on its international reputation for excellence (for example, through initiatives to draw the best and brightest international scientists and innovators to work in the UK).

The research base is important for government as a whole not just for one department (BIS) and a stable funding environment is key to making all of this work. The ring-fence is part of this. I and the network of departmental CSAs believe it is important to have a commitment to preserve the independence and quality of the UK research base. Government should sustain and increase investment in ring-fenced

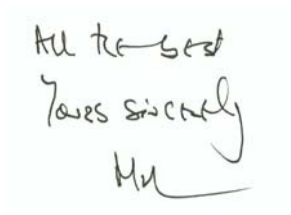
research funding alongside complementary and increasing investment in our innovation infrastructure, such as the Technology Strategy Board.

It is also equally important that Government continues to support Departmental investment in science and research. Departmental investment in science is essential to develop the best policies and underpins delivery of the most effective public services.

We support key criteria set out in the body of your letter as the basis for the allocation process. In particular, we fully support the focus on excellence. UK research must be outstanding in quality, deliver with impact and leverage significant investment from industry.

We would of course be happy to contribute further.

I am copying this letter to Vince Cable, David Willetts and Martin Donnelly (and Nick Macpherson in HMT)



All the best
Yours sincerely
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Sir Mark Walport (on behalf of the Chief Scientific Advisers Committee)