

## Science and Technology Select Committee – The Science Budget inquiry

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### Written evidence submitted by The Institution of Environmental Sciences

*The Science and Technology Committee has decided to undertake an inquiry into the Science Budget, ahead of the Spending Review. Written submissions were invited on a series of points outlined in the inquiry [terms of reference](#).*

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### Background

- 1.1. The Institution of Environmental Sciences (IES) is a membership organisation that represents over 3,000 professionals from fields as diverse as air quality, land contamination and education - wherever you find environmental work underpinned by science. A visionary organisation leading debate, dissemination and promotion of environmental science and sustainability, the IES promotes an evidence-based approach to decision and policy making.
- 1.2. As a professional association representing scientists working in research, industry and a wide range of other sectors in the UK and internationally, the Institution is keen to ensure that UK science maintains its world-leading reputation, supported by adequate, and well directed investment both from government and the private sector. However, as an environmental organisation the IES also recognises the vital importance of investing in both fundamental and applied research which will enable us to detect and respond to environmental threats and meet the major societal challenges we face.

### Departmental expenditure and the Science Budget – connecting up support for fundamental and applied research

- 2.1. The IES strongly believes that to deal with the major social and environmental challenges we currently face in the UK and globally, it is vital that departmental R&D budgets are protected. Traditionally, applied research targeting real-world problems has received funding from these budgets. However, it is our observation that there is some structural confusion regarding the interrelation between the Research Councils and government departments in this regard.
- 2.2. It used to be the case that there was a clear distinction between the type of research performed under government research contracts and those offered by the Research Councils. The more 'blue-sky' fundamental research was funded by the Research Councils while government commissioned the more applied research required to support government policy development. In more recent times this has not been found to be a useful model: this structure can hinder the progression of new ideas from early stage research output to useful application. Although there are partnerships and various memorandums of understanding between government departments and specific RCs, there is a need to improve the connectivity between good fundamental research and support for real world problem solving across all research areas.
- 2.3. One possible way of enhancing this connectivity, which government should explore, would be to enable organisations outside of the university sector to directly access more RC funding. This should include non-departmental public bodies, government agencies, research institutes and

NGOs, which would be able to plan projects with more explicitly applied (but still excellent) research objectives and outputs. We hope that these observations and recommendations are being considered by Sir Paul Nurse in his review of the Research Councils for the Government<sup>1</sup>, and will be given consideration in due course by the relevant ministers and departments.

### **Maximising the benefits of science and research expenditure**

- 3.1. The UK science sector is widely recognised as world leading, despite currently being underfunded in comparison with global competitors<sup>2</sup>. However, it is also recognised that the current situation is not sustainable and further investment will be necessary to ensure continued success (see statements by CASE and others<sup>3</sup>). Political short-termism can be damaging to the success of the science sector, so we urge the Government to make developing a long term plan and framework for investment in science and research across government (not restricted to the Science Budget), with cross-party support, an immediate priority. We would also support CASE and others in calling for the government to commit to increasing the total spend on science at levels which exceed growth<sup>3</sup>.
- 3.2. Stability and confidence in government funding structures is vital if leading scientists are to be encouraged to undertake ambitious long-term research projects with potentially large, but uncertain returns in the short term. Likewise, if investment from the private sector is to be secured, there must be confidence in the government's framework and commitment to science funding.
- 4.1. Major societal challenges, particularly environmental challenges, are often significant over long time scales, whilst also being dynamic and variable in time and space. As such, it can be difficult to directly compare the financial benefits of investment (for example in research on climate change adaptation or mitigation technologies) with the costs of expenditure foregone elsewhere, as these costs may be relevant at a different scale.
- 4.2. It should also be noted, that in order to maximise the benefits of capital spending on science and research (assessed against expenditure foregone elsewhere or by other indices), this must be supported by sufficient resource investment, with commitment that this investment will continue beyond the short term. In order to develop solutions or technologies to aid in dealing with the consequences of long term problems such as climate change, research is required which is informed by long term datasets and experimental trials. Likewise, research based on long term environmental monitoring will lead to a better understanding of socio-environmental systems, and thus the generation of better evidence to inform policy making and future research investment.

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<sup>1</sup> These recommendations were also outlined in the submission of the IES to the Nurse Review, available at: <https://www.the-ies.org/sites/default/files/documents/IES-Nurse-review.pdf>

<sup>2</sup> OECD (2013) *OECD Science, Technology and Industry Scoreboard 2013*, OECD Publishing. [http://dx.doi.org/10.1787/sti\\_scoreboard-2013-en](http://dx.doi.org/10.1787/sti_scoreboard-2013-en) See Figure 44, pg50: 'Gross domestic expenditures on R&D as a percentage of GDP' and pg 153 'Government budget appropriations or outlays on R&D, percentages'.

<sup>3</sup> <http://sciencecampaign.org.uk/CaSE2015InvestmentBriefing.pdf>



- 4.3. The Institution would recommend the Government adopt an approach which prioritises investment in sustainable technologies, to ensure long term societal, environmental and economic viability, as well as short term economic growth.

#### **Consistency with other government policy and spending**

- 5.1. It is essential that the government embeds a requirement to consider sustainability in the work of all of its departments. This should also be reflected in strategic spending, including on science and research.
- 5.2. The government's stated commitments to, for instance, flood prevention, must be backed up with support for science and scientists in vital public bodies such as the Environment Agency. Likewise, if the government is committed to dealing with important issues of plant disease and biosecurity (growing challenges in an ever globalising world), this must be reflected in support for scientists at institutions such as Kew Gardens and the Animal and Plant Health Agency.
- 6.1. Ultimately, considering the Science Budget in isolation is unhelpful. Without the insights gained from scientific research, current and future government spending in other areas risks being misdirected, badly applied or outright wasted. Applied research can identify more effective and efficient ways of maximising benefits from current spending, whilst 'blue sky' research can help to identify whether spending is going to the right recipients in the longer term. The independence of the Research Councils in making funding decisions must be protected, but a cross-government approach to science and research investment is required which both promotes innovation for economic growth and empowers departments to commission and engage with both fundamental and applied research at different stages of decision making regarding policy and spending.

For more information please contact:

**Robert Ashcroft, Publications and Policy Officer**  
The Institution of Environmental Sciences  
3<sup>rd</sup> floor, 140 London Wall  
EC2Y 5DN

Email: [robert@the-ies.org](mailto:robert@the-ies.org)