Setting science and technology research funding priorities

Campaign for Science & Engineering
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Introduction

1. The Campaign for Science & Engineering (CaSE) is a policy advocate for science and engineering in the UK. We are supported by individuals and organisations spanning all areas of science, technology, engineering and mathematics with representation from universities, industry, learned societies and charities.

Objective of publicly-funded science and technology research

2. The objective of research is to advance knowledge; the purpose of doing so will vary from project to project. The Government's overall objective with respect to science and technology is to increase the UK's knowledge intensity (measured in percentage of GDP spent on R&D).

3. There are many reasons why advancing scientific and technical knowledge is in the public interest. New knowledge contributes to the creation of economic opportunities, it also helps us identify and respond to societal challenges, and it contributes to our cultural advancement. Research is critical to informing policy decisions with evidence. Highly-skilled scientists, technologists, engineers and mathematicians are an extremely important outcome of publicly funded-research.

Portfolio of investment

4. The Science and Innovation Investment Framework 2004-2014 set to raise the level of investment in the Science Budget, whilst only aiming to maintain departmental funding levels. Over the last decade investment in the dual support system (Research Councils and HEFCs) has increased, whilst overall government departmental investment has remained relatively constant in real terms. The increased investment in the Science Budget was and still is needed. However, the implications of the shift in the balance of investment need to be considered as the consequences have not yet been fully explored. The government needs to ensure that strategic research in priority areas is performed. If the current funding trend is maintained then it is important to examine the mechanisms by which government can direct funding to priority areas.

5. When considering public expenditure on science and technology it is worth noting that funds are also distributed via other means, including the Regional Development Agencies, the Technology Strategy Board and the European Framework Programme. The Government also supports industrial investment in research through the R&D tax credit. Funding streams should not be viewed in isolation as there are different mechanisms for supporting different elements of R&D in the UK. They should continue to have distinct purposes.

Dual support system

6. The Government allocates funds for the research base (universities and institutes) via the dual support system (Research Councils and HEFCs). The overriding principle

for both funding streams is and should remain excellence. Without a focus on funding excellent research, the UK will risk its international standing. The dual support system needs to support research across all disciplines to ensure a broad research base.

7. The dual support system is partially devolved. Research Councils should remain focused on funding the highest quality research across the UK. Devolved HEFCs mean that there will be different decisions on both the level of funding and the principles guiding the distribution of Quality Related (QR) research across the UK.

Research Councils

8. The Science Budget which is mainly distributed by the Research Councils needs to be 'ring-fenced' from the other spending commitments of the department that is responsible for its allocation and oversight so that it is not cut during a spending period. There should be a long-term framework for investment to give clarity, and hopefully confidence, to the research community, corporate and charitable research funders about the level of support for research.

9. The allocation of the Science Budget to the Research Councils is where the government has the greatest influence in shaping their research priorities. The last Allocation of the Science Budget focused Research Council funding on cross-cutting programmes that reflected the Treasury's key policy challenges. In the run-up to the next spending round the Director General for Science and Research has said that he will consult selected bodies in shaping both the departmental submission and allocation of funding to Research Councils. It is important that the process is done transparently.

10. It is extremely difficult to determine if the Government is upholding the Haldane Principle, as it does not regularly publish the guidance it gives to Research Councils. Greater transparency is needed about the role of government in setting Research Council funding priorities in order to improve accountability. Greater clarity and consensus is needed on what level of guidance government should be giving Research Councils, this is particularly important in the development of their strategic plans.

11. The balance between directed and responsive mode research should not be a static figure, nor should it be the same figure across Research Councils. However, there is a strong rationale to support the Ten Year Framework's position that responsive mode funding should form the larger part. The reason is twofold. First, responsive mode funding gives flexibility to the funding system. Second, it is a highly competitive form of distributing project funding which can raise standards.

12. An ongoing research policy issue is whether there should be greater focus on priority areas. Any move in this direction should not risk the breadth of the UK's research base. Narrowing the science and engineering research base would risk the UK's ability to absorb research that other countries are carrying out and areas that industry can invest in. The UK needs to be part of a global system of knowledge production, and it is extremely difficult to know what areas of research will have the

greatest impact or where the UK can lead the world. Furthermore narrowing the research base could put student of studying science, engineering and mathematics if they do not see support for their areas of interest.

13. Research Councils UK should publish annual data on the distribution of funding by each Research Council. There needs to be consistency in how terminology, like responsive and directed, is applied across Research Councils. This information would help to inform debates about research funding.

Higher Education Funding Council for England

14. Funding from Higher Education Funding Councils provides the baseline investment needed to support research in higher education institutions. Allocation of the Quality Related (QR) block grant will be informed in the future by the outcome of the Research Excellence Framework (REF). In order to ensure the confidence of the research community in the process, it needs to be managed by expert panels. QR funding should be focused on supporting internationally excellent science and engineering research within universities.

Organisational issues

15. As Lord Mandelson has proposed reviewing the Department for Business, Innovation and Skills' non-departmental public bodies, including the Research Councils and HEFCE, it is timely for the Committee to consider the mechanisms for allocating public funds to research. Although there are issues to consider within each funding agency there is no compelling reason to change the institutional setup at this time. Any changes would have significant costs. Tradeoffs should be evaluated when considering different funding systems.

Government departmental R&D

16. Departments need to invest in R&D to develop the evidence-base to inform policy decisions and to improve the delivery of services. Although departmental expenditure has increased considerably over the last ten years R&D budgets have not kept pace. Greater scrutiny of departmental R&D budgets is needed to assess if they are effectively deployed. Each department should have a scientific advisory committee to do this.

17. As the Government is pursuing industrial activism, greater consideration needs to be given to how departmental R&D budgets could support innovation in priority sectors. The other alternative is to give greater support to the Technology Strategy Board to support R&D investments in strategic areas.

18. Government departments are largely responsible for setting the level of their R&D budget and their research priorities. This has meant that there has been little progress in developing a more robust mechanism to protect departmental R&D budgets as the Sainsbury Review recommended. In the near future overall public expenditure is set to be cut, it is important that departments make use of their research budgets to ensure that their policy and delivery functions are efficient and effective. A Treasury Chief Scientific Adviser should be appointed to develop the

evidence base to help inform government expenditure and evaluate different forms of support for R&D.

19. The Government Chief Scientific Adviser and the Government Office for Science provide an oversight role, but there needs to be clearer responsibilities about how research priorities are coordinated across government. Since the Office of Science and Technology was split, there seems to be less ability to look at the science and technology research capacity across government.

20. The Government Office for Science should have a stronger role in coordinating government departmental R&D expenditure. It should also be responsible for ensuring that research gaps to meet policy needs are filed. For the most part this will be done by working with relevant departments. However, serious consideration should be given to allocating the Government Office for Science with its own research budget in the next spending round for research that falls between departmental portfolios.

21. The Office of Science and Technology used to produce *The Forward Look*, which included high-level priorities and spending plans across government funded science, engineering & technology. The last one was produced in 2003. A similar review of public funding should be re-started in order to communicate to various audiences the funding commitments and priorities of the government's portfolio of investments in science, engineering and technology.

Setting and coordinating research priorities

22. The Government has numerous institutional mechanisms for discussing science and research policy, the Cabinet sub-Committee on Science and Innovation, and the Chief Scientific Advisers Committee. Greater clarity is needed on what issues are being considered by both groups.

23. In terms of coordination with non-governmental funders there is the Research Base Funders' Forum. The UK Science Forum comprised of leaders from research-intensive companies and was meant to give advice on improving the UK's business R&D and innovation performance. It is unclear what impact the Forum has had on informing research priorities. Again it is important that all government supported forums on research policy produce public records of their deliberations and advice.

24. The Technology Strategy Board is starting to play an important role in funding research in selected areas. However it needs to have a much clearer funding stream, which is outside of the Science Budget, if it is going to live up to the ambitions for it. It has the most scope for supporting emerging technologies.

25. The Council for Science and Technology should be reconstituted to have a much clearer role in looking across the portfolio of public investment in science and technology and advising on strategic cross-cutting issues. As the funding and policy landscape is diffuse there needs to be a body with the capacity to look across the research funding landscape. A reconstituted CST would need to have greater resources to analyse funding trends and prospective policy options.

Response to the economic crisis

26. The economic crisis led to a short-term growth in public expenditure, which will most likely be followed by medium-term cuts. Unlike many other OECD countries the UK has not made support for science and innovation central to its short-term response. It is critical that the medium-term cuts to public expenditure do no not constrain the UK's long-term economic future. A pro-science and pro-engineering response to the crisis is needed if the government is going to deliver upon its aim of having a more balanced economy in the future. Other countries, notably the US, Finland and Korea, have at different times used economic crisis to increase their investment and support in science and technology.

International comparison of strategy and funding of publicly funded R&D

27. The UK's 10 Year Framework compares well against other countries' strategies. It is comprehensive in the policy issues covered and has resulted in sustained increased investment in the research base. Not all targets have been achieved, but it has focused government departments on key strategic issues, including science and mathematics education. The Ten Year Framework should be seen through until 2014. The process to develop a new medium-term framework should start following the next spending round. There needs to be a robust evidence-base and consultation to inform the development of a long-term strategy.

28. Many other OECD countries have long-term strategies, which have increasing levels of investment in science and technology as their objective (see the OECD Science, Technology and Industry Outlook reports). The UK still lags behind our international competitors in terms of investment and aspiration in increasing the knowledge intensity of our economy. The target of 2.5% of GDP being spent on R&D should not be abandoned.