

B. KING



Spending review leaves research in the lurch

A revised research spending plan won't meet the challenges Britain faces from its international competitors or from climate change, argues **David King**.

Last week, the UK government announced its plans for cutting an astonishing £81 billion (US\$128 billion) from the country's budget over the next four years. Although other departments saw an average of 19% shorn off their annual funding, science got off relatively lightly. The United Kingdom's research budget was frozen but not cut, meaning an effective reduction of some 10–12%.

That sounds like good news, but there are two main problems. First, we do not yet know the indirect effect that the cuts to university teaching budgets will have on research, nor how much they can be offset by increased student fees. Second, and perhaps more important for the research community, because the funding for large international collaborations such as CERN, Europe's particle-physics laboratory near Geneva, Switzerland, has to be ring-fenced, most of the cuts will fall on shorter-term, more timely pieces of research.

This means that certain research councils face a far larger percentage cut. The Engineering and Physical Sciences Research Council, for example, has few long-term commitments, so only a small part of its budget is ring-fenced. The rest will be fair game to meet not just its own share of the overall target, but also that of councils with larger ring-fenced allocations. There could even be funding rounds in which it is unable to allocate any grants at all. This in turn means that timely ideas could fall by the wayside, or be taken up by international competitors.

This matters, to Britain at least, because I believe that research funding lies at the heart of the country's economic recovery and future prosperity. In 2000, the UK government that I advised realized that, in the following decades, science and technology — and the innovation and wealth creation that follows — would be more in demand than ever before. Humanity faces unprecedented challenges: the deterioration of ecosystems; resource mismanagement and shortages; and decarbonizing the economy, which is the biggest single innovation challenge since the Industrial Revolution.

For these reasons and more, the ten-year strategy setting out the previous government's science and investment framework for 2004–14 pledged to continue to increase the science budget each year by twice the rate of growth in gross domestic product (GDP) (but not to reduce the budget if GDP contracted, as it has done recently).

This made waves around the world — notably in the emerging markets that are providing Europe and the United States with an increasing (and I would say, welcome) economic challenge. In 2003, the Chinese premier Wen Jiabao asked to meet me during a state visit. Why? Because the prime minister's 2002 speech 'Science Matters' had been translated into Chinese and he wanted to know more. When I went to China the following year, the Chinese

government declared that it had decided to match the UK pledge of increasing science funding by twice the level of GDP growth. But China committed to doing this over 20 years, not 10, and as its GDP growth was 10%, it has been boosting its science budget accordingly — with a 30% increase from 2008 to 2009. Even this year it has continued the increase, with an 8% rise in the science budget. This is underpinning the nation's continuing remarkable economic growth and the increased competitiveness of its manufacturing industry.

The United States, too, has seen the need for change. The administration of President Barack Obama has revitalized US research through public funding over the past year, substantially increasing research funding across the board, as well as giving a large boost to alternative-energy research (see *Nature* doi:10.1038/news.2009.457; 2009).

Europe is also focusing on research funding. In May, leaders in European research, industry and policy met under the aegis of the European Research Area Board, of which I am a member, to consider the European Union's research, development and innovation policy. Its report calls for radical action, including the establishment of a single market for research and development. And in the past few months, both France and Germany have published national strategies showing their commitment to investing in research.

So, although the cut in the UK science budget is lighter than I had feared, I still believe that it threatens the country's ability to use the power of science research to retain its international competitive-

ness. Just as importantly, it threatens the country's ability to decarbonize the economy. Most of the funding for Britain's energy research comes through the research councils, and it is deeply worrying that this will be cut just when a radical increase in activity is needed. Admittedly, there was some good news in this regard, as the government reinforced its funding for energy and the environment in the Department of Energy and Climate Change and the Department for Environment, Food and Rural Affairs. This will be crucial if Britain is to stick to its commitment of reducing carbon dioxide emissions by 34% by 2020.

However, the agenda set out by the UK government in 2004 in its ten-year strategy for research was always intended to be a long-term investment. The danger of the freeze proposed by the present government is that it could stall the whole process just as it is taking off. In the meantime, watch out for a bloodbath as scarce resources are divided between the research councils this winter. ■

David King was chief scientific adviser to the UK government from 2000 to 2007, and is now director of the Smith School of Enterprise and the Environment at the University of Oxford.
e-mail: director@smithschool.ox.ac.uk

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