

# THE UK RESEARCH BASE



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**BIS, the Department for Business, Innovation and Skills, was formed in June 2009, putting science and innovation at the heart of building Britain's future with a sustainable economic recovery. In this new departmental structure the research base has not only retained existing close contacts with higher and further education, innovation and the Government Office for Science, but now has the opportunity to exploit closer synergies with the business agenda.**

The ring-fenced budget for science and research has doubled in real terms since 1997. BIS funding this year is of the order of £5.6 billion, £3.2 billion of which is distributed through the seven Research Councils. Around half of this is allocated as grants for PhD studentships and peer-reviewed research projects, much of the remainder supporting large capital facilities in the UK such as the Diamond Light Source synchrotron in Oxfordshire and

membership of international programmes such as CERN and the European Space Agency. Another £1.5 billion is distributed directly to English higher education institutions through HEFCE, currently allocated on the basis of the RAE measure of research excellence. The Science and Research Budget also includes allocations for knowledge transfer, the three National Academies and the devolved administrations. This public funding for basic research and infrastructure underpins the excellence and international competitiveness that levers in significant further national and international research funding.

So what do we get in return for this investment? Crucially, it underpins a strong, internationally competitive research base. Independent analysis shows the UK to be currently second in the world (behind the USA) in both overall number of peer-reviewed publications and number of citations. The UK tops the G8 in number of citations per researcher and number of citations relative to research spending. The importance of our global competitive position cannot be emphasised too strongly. Just as we have increased our spending, so have many other countries – China and India in particular have

greatly expanded their investment in research in recent years.

The UK receives major economic, social, health and cultural returns from the research base. We get direct economic return from the creation of new businesses and contributions to greater productivity in existing companies, the strength of the research base being a magnet for inward R&D investment. In addition, we generate for the economy and society a supply of highly educated and skilled individuals, create cultural capital and tackle key societal challenges around energy, the environment and the health of the population.

The 10-year Science and Innovation Investment Framework, 2004-2014, reflects a Government commitment to treat research spending as a long-term investment, with Government setting broad-brush strategic priorities but with detailed funding decisions made on the basis of peer group judgement of research excellence. These commitments have recently been reaffirmed by the Prime Minister as critical to the UK's plans for post-recession recovery. In recognition of the need for stability, the Science Budget has been ring-fenced by successive governments for the last 35 years.

Whilst recognising the absolute need to protect long-term blue-skies research, the Funding Councils seek, where appropriate, to encourage academia to be more outward-facing; for example by promoting knowledge and technology transfer activities and

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by rewarding rather than hindering business engagement in universities' internal promotion criteria. The resulting culture change has contributed to the UK's overall knowledge exchange income doubling since 2001 and the UK leading Europe in inward R&D investment, and in the numbers of university spin-out companies created.

The challenge now is to maintain research excellence in the face of tighter public spending. In part this requires us to ensure that quality research is exploited efficiently, so that the taxpayers who fund it share in its returns. The RAE, currently the basis of the allocation of HEFCE research funding, is set to be replaced by the REF, which will reward both excellence and the impact derived from it. This agenda does not conflict with the need to invest in blue-skies research and to continue to support areas of research that have no obvious short-term non-academic impact. What matters is that opportunities are not missed, whenever and wherever they occur, for harvesting economic and social benefits from research current and past.

The research base is central to the New Industry, New Jobs agenda, especially through the funding councils' growing joint agenda with the Technology Strategy Board, which brokers links between academia and business and industry. The TSB's Knowledge Transfer Partnerships allow graduates to complete an industrial project, for example designing a new product or strategy, with academic support. 70% of these partnerships between graduate and business turn into a full job. The department is also working hard to strengthen partnerships across Whitehall and communicate regularly the

contribution Science & Research makes to BIS and government-wide objectives.

High-level skills are vital for the UK and at Lord Mandelson's request I am currently leading a wide-ranging review of postgraduate education, to report in Spring 2010. We will assess the benefits of postgraduate study to individuals, universities, the economy and wider society and explore ways in which postgraduate study can better meet national needs. The review will assess the competitiveness of UK postgraduate education in the international market and ask how we can ensure the UK remains an attractive option for the brightest and best internationally mobile young researchers. We will also analyse current levels and patterns of social participation in the UK.

It is increasingly important to see UK future strategy within an international context, especially in respect to the EU, where planning is already in train for the 8th Framework Programme for Research and Technological Development, which will take effect from 2014. The current, 7th Framework Programme, running from 2007-14 has a total budget of around €50 billion, of which some €1 billion per year has been flowing to the UK. It is important, therefore, that we engage at an early stage with the development of the themes and funding mechanisms of the next Framework. The EU is also a key player in the funding of large international projects such as the ITER experimental fusion reactor, which will be built in southern France and may be a critical breakthrough in producing large-scale clean energy.

The research base obtains further international leverage and connectivity through the Science and Innovation Network.

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This is a joint activity between the FCO and BIS, with 90 staff across 25 countries acting as a catalyst to bring UK academics together with overseas academics and businesses in pursuit of the Government's overseas science policy priorities. The network helps the UK to stay regularly updated on research policy developments around the world and, where appropriate, to try to influence the formation of other governments' science policies.

Research base influence also extends to outer space. The space industry is a flourishing, research-intensive sector of the UK economy with satellites playing a key role both in operational telecommunications and scientific research. It is also highly internationalised, with the potential to generate strong levels of public interest. For these reasons, the Science Minister, Lord Drayson has recently announced his intention to create a UK space agency to co-ordinate and present a higher profile for these activities.

Another area in which Science & Research plays a key role is the relationship between science and society. It is in everyone's interest for there to be a strong connection between scientists and the wider world.

We are all major stakeholders in scientific research as citizens and taxpayers. The UK's leading position in science depends on a supply of qualified people and an environment of public awareness and support. We have set up five independent Expert Groups to develop future plans to improve this relationship.

Finally, in addition to the already excellent science communications work taking place in the UK, we have launched the "Science: [So what? So everything!]" campaign, which is designed to widen participation beyond those targeted through conventional channels. This activity is estimated to have reached 24 million people so far. Extending messages at grass-roots level is National Science and Engineering Week, which in 2009 inspired 3,500 regional events. To maintain excellence and tackle global challenges ahead, it is important that we inspire the next generation of scientists and academics. This campaign is increasing awareness of science especially among young people, who may well take up STEM-based careers in the future.

