

**International Comparisons
Text of a letter to the Prime Minister**

5 March 2012

When we met on 6 February, you asked for our views on potential road blocks to the implementation of government policy. You had earlier asked the Council what more the UK could do to learn from the best international comparators in the translation of science into growth.

International comparisons represent very well trawled ground and are probably best used to show “proof of concept” rather than to identify policies that can be translated wholesale. This letter is therefore very selective: it highlights four areas where other economies perform strongly, and where we think you will need to keep a particularly firm hand on implementation in the UK for similar benefits to be delivered here.

Our starting point, however, is a reminder that the UK is itself a strong performer in many areas and, as we found in our recent meeting with our French equivalents, others often look to us for insight. Our research base is outstanding, and leads the world in terms of output measured in citations relative to inputsⁱ. The UK also scores strongly for enterprise and entrepreneurship against a range of measuresⁱⁱ. Our single most important need is to secure greater investment in research and development by businesses in the UKⁱⁱⁱ.

Your government’s Innovation and Research Strategy (IRS)^{iv} sets clear new policy directions. It rightly assumes that we must build increasingly close connections between government, universities and major UK-based companies if we are to pull promising innovations through with the energy they and our economy deserve. In this respect the examples of the strongest innovation economies, such as the USA and

Germany, teach two main lessons: ones of scale, and of implementation. In different ways, they illustrate the benefits of a long-term commitment to driving an innovation strategy through into practice. We therefore strongly support your intention to focus on implementation. The following recommendations reflect some specific areas where we think sustained change will require greatest vigilance. The points relating to securing long-term public and private investment in R&D are particularly critical.

Building stronger relationships with major inward R & D investors

R&D funded by businesses abroad can also provide “pull” for innovations on a large scale. This is particularly important in the UK, the most open of all the OECD economies in its approach to international R&D funding. There is some evidence however that our inward funding is tailing off. Shell’s recent decision to close its principal UK R&D centre and transfer the work carried out at the facility overseas is a case in point. Understanding international R&D investment is critical if we are to keep

it in the UK. This means developing as strong as possible an understanding of international investors' business models, and their *specific* reasons for continuing to invest. The Department for Business, Innovation and Skills, UK Trade and Investment and the Technology Strategy Board need to make it a priority to build strong individual relationships with the key investors and have your support in ensuring their issues are tackled energetically across Government. To take a specific example, Technology Innovation Centres are now being rolled out under the Catapult initiative and will act as a focus for innovation networks. There needs to be a commitment at senior level to the development of these networks if they are to realise their full potential in attracting R&D investment into the UK.

Using procurement to pull innovations through to market

Procurement can play an important role in pulling cutting-edge research through into production. The scale and effectiveness of the way in which US federal agencies have worked over time with the most innovative businesses to see the most promising innovations through to commercial exploitation is well known. More recently, Sweden has made a concerted attempt to use government procurement to help drive innovation and commercialisation in areas like energy efficiency. Freeing up government agencies so that they can become real partners in innovation is critical. We met Francis Maude recently and were reassured with the direction he outlined but we do not underestimate the sustained systemic changes required to get this right. We will write to you separately with specific recommendations in this area.

Building innovation into wider national and local strategies

No innovation strategy can work in isolation from other initiatives. There needs to be the strongest possible connection between policy areas, between the funders of research and its practitioners. The UK's approaches to innovation and workforce skills, for instance, need to be closely aligned. The IRS rightly identifies the development of technician-level skills as a particular challenge for the UK. There are a number of good international models here: the combination of a strong educational system and a strategic innovation agency has played a key part in securing Finland's outstanding performance as an innovation economy. We need to get to the point where Departments and Ministers across government are routinely building on our innovation strategy in taking their specific responsibilities forward.

The same need for consistency of purpose applies at local level, and we need to ensure the right support for innovation 'clusters'. Local Enterprise Partnerships are being encouraged to drive the strong local networks between businesses, universities, schools and colleges which are observed at the heart of thriving innovation economies in other countries, such as Finland. Here, again, scale and sustained focus on implementation over several years will be essential.

Extending opportunities for entrepreneurship in universities

Overseas universities, such as some in Singapore and the US, demonstrate how universities can develop strong entrepreneurial cultures of their own which, in turn, support growth elsewhere in the economy. Many UK universities also do well. Doctoral training centres, for example, often include core modules on entrepreneurship and commercialisation, and these are popular. We need to keep building on initiatives like these and give them time to increase visibility, momentum and sustained impact.

A similar attention to detail and assurance of stability in the framework of incentives for academic researchers to engage in innovation is also important. More systematic use of the new Research Excellence Framework, the Higher Education Innovation Fund, Collaborative Awards in Science and Engineering (CASE) PhD studentships (which fund business-led research), sabbaticals between academia and industry and funds for student enterprise will help give this further impetus. We believe the Department for Business Innovation and Skills is well placed to lead on this.

The government should also explore financial incentives on the business side, with a view to encouraging selective investment in universities' research infrastructure. This will not only help consolidate our excellence in research but would encourage long term business R&D commitment.

In this letter we have attempted to identify areas where we think road blocks are most likely to occur, and where it is particularly important to achieve the scale and scope that will fully deliver the improvements we all seek.

We would be happy to meet you or Ministerial colleagues to discuss the specifics of maintaining drive and focus in any of these areas in greater detail. We are copying this to Nick Clegg, George Osborne, Danny Alexander, William Hague, Vince Cable, David Willetts, Michael Gove, Francis Maude, Nick Macpherson, Simon Fraser, Martin Donnelly, Tom Jeffery, Jeremy Heywood and Ian Watmore.

Signed:

Sir John Beddington
Professor Dame Nancy Rothwell

CST co-chairs

i International Comparative Performance of the UK Research Base, Elsevier, Report prepared for the Department for Business Innovation and Skills, 2011. UK universities also attract large numbers of students from all over the world and in the full range of subjects that they teach.

ii We score 7th in the world on the World Bank's ease of doing business index, and a relatively high proportion of our enterprises are SMEs, Doing Business 2012, World Bank, 2012.

iii A Council for Industry and Higher Education (CIHE)'s task force is currently examining the UK R&D landscape. Its findings to date show that there has been an overall fall of total gross expenditure on R&D in the UK relative to GDP from the early 1990s to date, and that business enterprise R&D expenditure in the UK is low by international standards, even after adjusting for structural differences between countries. The publication forms part of a wider CIHE project to investigate what can be done to make the most of the UK research base. (Hughes, A. and Mina A., The UK R&D Landscape. Enhancing Value Task Force, January 2012).

iv Innovation and Research Strategy for Growth. Department for Business Innovation and Skills. December 2011.