

DINNER/DISCUSSION SUMMARY**The Race to the Top
A Review of Government's Science and Innovation Policies**Held at The Royal Society of Medicine on 14th November, 2007We are grateful to
The National Physical Laboratory for supporting this event**Chair:** **The Earl of Selborne KBE FRS**
Chairman, The Foundation for Science and Technology**Speakers:** **The Lord Sainsbury of Turville**
Chair of the Sainsbury Review
Professor Sir Keith O'Nions FRS
Director General, Science and Innovation
Department for Innovation, Universities and Skills
Professor Eric Thomas FMedSci
Vice-Chancellor, Bristol University
Mr John Cridland CBE
Deputy Director General, CBI

LORD SAINSBURY said he was pleased that the government had accepted the recommendations in his report, but that was only the start. It was only if the scientific, academic and business communities understood that the only way to maintain and improve the competitive performance of the UK was to concentrate on high value products, and bought into the recommendations of the Report that he would be content. There was already evidence that business understood that always concentrating on the low cost option was a route to failure and that we were moving to a high value based economy; but were we moving quickly enough, and was the issue given priority? There was much good news: the UK was good at discovery: better than was thought at innovation; improving in knowledge transfer and spin outs from universities and developing high tech clusters. Among his recommendations were proposals to strengthen the leadership role of the Technology Strategy Board (TSB); improve further knowledge transfer; give further impetus to improve the teaching of STEM (science, technology, engineering and mathematics) subjects in schools and universities; ensure closer contact between universities and business and encourage and sustain innovation as a core aim for government departments, both in procurement and regulation.

SIR KEITH O'NIONS outlined the contribution of the Comprehensive Spending Review (CSR) to the ten year science framework. It went well beyond considering only science and technology and saw the Sainsbury Report was a major step forward. A coherent deployment of assets and resources by government, business and academia, in standard setting and regulation, intellectual property, product development and design was vital. He strongly welcomed the proposals to strengthen the key leadership role of the TSB to give the same parity of esteem to knowledge transfer as to research and teaching; to promote the role that Further Education could play and to campaign for better STEM teaching. He illustrated the increase in science spending in the CSR, with an increase of 17.4% to the

Research Councils (30% to the Medical Research Council - the changes following the Cooksey Report did not mean that basic science would be given less priority). Challenges were to make the Small Business Research initiative effective and to optimize contributions to innovation through education, training and skill deployment, in IT, design, and management, (there were good examples at Lancaster and Warwick) and to find the right role for government. DIUS would be reporting on implementation of the Sainsbury recommendations.

PROFESSOR THOMAS also welcomed the recommendations in the Sainsbury report. He was glad to see the central position given to Higher Education and the high regard in which it was now held. He emphasized the change in culture in universities; they now welcomed engagement with business in both research and teaching, which should include courses on innovation. Being "business facing" meant, in particular, involving SMEs - they were the businesses that could both benefit from and contribute to, knowledge transfer and innovation, not only vis a vis academia, but also through learning from each other. He welcomed the development of high tech clusters and giving greater status to Further Education institutions. Universities could work with them and should support the proposals for diplomas - they were pathways, not "dumbing down". STEM recruitment was rising, but large investment, which only few could afford, was needed to encourage physics and chemistry students; the result might lead to concentration of such subjects in fewer universities. The RDAs were valuable sources of information, and were rightly major science and innovation funders, as they understood the needs and resources of their areas.

MR CRIDLAND said that business welcomed the report and supported the recommendations in it. He particularly welcomed the concept of innovation eco-systems. This captured the nature of innovation, involving diversity, complexity, non-linearity and uncertain and unexpected

outcomes. It included not just R&D, but the whole range of business performance - marketing, design, development and production. The emphasis on the service sector - 70% of GDP - was right. The role of the TSB was crucial; it must not only lead - be the "critical accelerator" in innovation - but it must also have adequate resources. It would need much more public funding over time if it were to do its job. The recommendations on STEM teaching were right, but would they be implemented with sufficient priority? Career guidance given to pupils and students was often inadequate and lacked sufficient understanding of opportunities and necessary skills. It was vital to get more pupils doing triple science and STEM undergraduates should have more bursary support.

In the following discussion there was wide support for the report recommendations and for the underlying message that competitiveness was the crucial issue and that the route to success was to concentrate on higher value production and services. Perhaps, however the title "racing to the top" was a little misleading. It was not a question of being "top" in R&D or innovation in all areas, but of maintaining our present position - between 9 and 12 in the global table - through investing in the most promising areas and using our skills. Improving GDP per head, not overall GDP was the goal. The real danger was sliding back through failure to give sufficient priority to the factors which led to successful innovation, leading to insufficient resources and policy, regulatory or financial impediments. A concern underlying several speakers' questions was whether the report had gone widely enough into looking at structures of business development and areas where innovation could be of benefit and whether implementation of the recommendations would achieve the objectives set. What was actually new in the report? Was it not in many ways a repeat of what we already knew? It was not news that we needed more STEM teaching, but there were 74 centres of excellence in teaching and learning in the UK, but only six in STEM subjects? Why? If there were not more already, why should the report make any difference? Did it take into account the way businesses had to be re-structured to cope with the very different demands of managing creative teams? Was there sufficient emphasis on inter-disciplinarity? Some of these concerns arose because of insufficient recognition of the very great difficulty of achieving "joined-up" government with departments, regulators and NGDPs working together with the private sector. Success could never be total and the only way ahead was continuing pressure, ensuring that government and public sector did not try to do things for which it lacked knowledge and expertise, but concentrated on trying to set frameworks in which business could operate. In particular, we should search for areas or projects in which a genuine public/private approach, making use of the expertise on both sides, was beneficial but there were genuine changes in the Government's perception of how universities and businesses work together. It was, for example, accepted that the initial view that universities could be divided into research or teaching institutions (and it may be that the problem noted about Centres of Excellence stemmed from HEFCE's interpretation of the categorization) was misguided. All HE institutions were now seen as having roles to play in research, innovation and teaching and all would seek to involve themselves with business locally or more widely. While high-tech clusters were still seen as important, it was now recognized that one could not specify what technologies would eventually flourish - they would change over time - and it was the surrounding environment which was the determining factor. On inter-disciplinarity, the Research Councils were particularly con-

cerned to promote this, and, indeed, their awards reflected new emphasis on it.

Although speakers noted that the term, innovation ecosystem, was not new, it was valuable if government really understood that it meant that they accepted that diversity and unexpected outcomes were inevitable, and that rigidity of approach was fatal. There was, for example, a danger that the report's recommendations, were seen as set in stone, and predicated certain approaches and outcomes, which became less and less applicable to changing circumstances. Lord Sainsbury's emphasis on all sectors "buying in" to the report was seen as important. For example, a wide understanding both in business and HE of the vocational diplomas was essential if an impact was to be made on the motivation and career understanding of 14 to 19 year olds. Ideally they should enable pupils to raise their ambitions, because they could see a realistic way of achieving them and develop new pathways to further and higher education. But the universities must work with schools to avoid diplomas being seen as second rate qualifications, which do not lead to wider opportunities. But if the "buying in" did not happen, then new approaches should be sought.

Speaker cited further evidence, as they saw, of lack of "joined up" government and doubtful evidence for some policies. If, for example, STEM teachers were so important, why were they not paid more than other teachers? Why did not career guidance start in primary schools, where children were more susceptible to guidance, than in secondary schools? What was the evidence that R&D spending was crucial to companies' success; was it not manufacturing that was the driver? What was the Government's view on tax credits for R&D? Evidence was that it was of little value in spurring R&D; why did not the £600m it cost go to funding the TSB? If Imperial was such a success why was not the government promoting an Imperial in the North (Answer - it was; merger of Manchester and UMIST). But such questions illustrated the difficulties of prioritising only one objective. The collegiate culture in schools was seen by teachers as being vital to a successful school; resentments would arise if one particular set of teachers was favoured. The pressures on timetable and learning in primary schools were such that it would be difficult to fit more in (although universities could recognize that they could help in promoting STEM knowledge in primary schools). Of course it was the eventual product which made the profit and manufacturing was important, but there was much evidence that R&D was the basis for higher value output - see Japan. On tax credits, other speakers, not surprisingly, thought they were essential. A 1% cut would cause companies to go abroad. But it was noted that R&D was only 10% of spend by companies on intangible assets; it could not be a determinant of a companies success.

Sir Geoffrey Chipperfield KCB

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Sainsbury Review:

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