

**Response to Innovation, Universities, Science and Skills Select Committee's  
supplementary call for evidence as part of its inquiry 'Putting science and engineering at  
the heart of government policy'  
April 2009**

*This submission is provided on behalf of the Natural Sciences Committee of the UK National Commission for UNESCO, an independent civil society organisation set up by Government, in partnership with civil society, as the focal point in the UK for provision of expert policy advice, and for programme work, relating to UNESCO.*

*The National Commission is part of the global community of 195 UNESCO National Commissions. Unique to UNESCO in the UN system, National Commissions function as essential partners both of governments and of UNESCO, acting as catalysts to involve key national actors in UNESCO's fields of education, sciences, culture and communication & information.*

**'Has the time come for the UK – as part of a clear economic strategy – to make choices about the balance of investment in science and innovation to favour those areas in which the UK has a clear competitive advantage?'**

We address each of the points raised by the Select Committee in turn.

**1. What form a debate or consultation about the question should take and who should lead it**

Given the importance and pervasiveness of this issue, we are strongly of the view that the debate needs to involve high-level stakeholders from a wide range of sectors, including the research councils, industry, HEIs, NGOs and Government departments. Consideration should be given to using the Foresight process led by DIUS but with scrutiny provided by the Sustainable Development Commission. A facilitated workshop would help to identify key issues and explore some of the implications of pursuing particular lines. The list of Government's own Public Service Agreement targets could provide a useful framework.

**2. Whether such a policy is desirable or necessary**

Before attempting an answer, it is not obvious what "clear competitive advantage" means in this context. It could mean that we concentrate on what we already do well to the exclusion of new areas of research – an approach which will inevitably lead to stagnation. It may also make it more difficult to fund cross-disciplinary research and collaborations both within and outside the research community. There should be a balance between what we are good at and meeting future needs (both those already identified and those yet to emerge). The phrase might also imply a reduced priority for research directed at vital strategic areas but with no direct economic benefit.

Assuming that the phrase does not exclude such science, then we believe that achieving a sustainable future requires excellence and efficiency in the science base underpinning the development and implementation of environmental policy not only within the UK but in Europe and internationally. The intergovernmental/international science programmes of UNESCO – Intergovernmental Oceanographic Commission (IOC), Man and the Biosphere Programme (MAB), International Hydrological Programme (IHP) and International Geoscience Programme (IGCP) – provide an important coordinating framework for such activities, helping to ensure that public funds are used to address global problems in a more joined-up fashion.

Most global environmental problems require long-term investment in science and engineering and any refocusing of UK investment should aim to increase this rather than responding to relatively short-term economic fluctuations. We therefore need to preserve and further develop a national capability in key aspects of environmental science quite apart from immediate economic outlooks, recognising that with population growth, climate change, etc the demand for such knowledge is only likely to increase.

### **3. What the potential implications of such a policy are for UK science and engineering, higher education, industry and the economy as a whole**

Our perspective is obviously international with a particular emphasis on working in programmes supporting development in other regions of the globe. Refocusing our scientific effort in terms of promoting UK economic competitiveness, as mentioned earlier, could jeopardise this. However, we note the Prime Minister's comments regarding poverty and inequality – that we should be “enlisting science in the service of humanity”. We must have a policy that enables the free flow of information across continents and not necessarily one targeted for hi-tech economic futures of the UK; otherwise this would be just another form of intellectual imperialism. However, we should also provide leadership in science to the rest of the world in topics where we know we can make a difference. We believe environmental science is one such crucial area not only because of its intrinsic intellectual challenges but because of strong linkage to sustainability and peace. Reducing conflict, e.g. arising from mass migration in the face of climate change, is itself of great economic relevance and is likely to become more important as an issue with time.

It is welcome that the Government continues to hold the view that increased spending on science and engineering is required. The UK needs to have long-term environmental science to underpin policy and because of public good arguments we believe that should come from the public purse rather than vested interests. Knee-jerk funding reactions to sudden economic changes although understandable are to be avoided if at all possible. Experience has shown that when areas of research expertise are closed down they can take a very long time to re-establish and the increased competition from other countries is likely to make this even more difficult in the future. We also consider that the balance can be shifted towards long-term, strategic, policy-driven research without compromising on excellence; the Hadley Centre set up to support UK involvement in the UN Framework Convention on Climate Change is a good example. There is however a pressing need for better joining-up between research and policy and obtaining the appropriate mix between universities, research councils and government labs in achieving this. Returning to the international dimension, we note with approval the recent decision to appoint the FCO's first-ever Chief Scientific Adviser. That person will need to look outside the department for the best scientific evidence and it will be important that this engagement is with those parts of the scientific community that have experience of international programmes and organisations.

### **4. Were such a policy pursued, which research sectors are most likely to benefit and which are most likely to lose.**

Mention has already been made of the increased priority that should be given to environmental research. There are also spin-offs, e.g. the extraction of pharmaceuticals from the deep ocean – the largest gene pool on the planet. The energy sector is clearly of vital importance and Government has made clear its commitment to renewables and clean coal associated with carbon capture and storage. These continue to require much research which can also benefit from private sector finance; however, there is a strong need to ensure that knowledge sharing is not impaired.

On the loss side, there is potential for the biosciences to suffer. Although recent ministerial speeches on the subject of this consultation have cited examples such as bee colony collapse, GMOs, etc., thereby indicating awareness of the concerns being expressed, there is a fear that this area may be hit at the expense of the engineering and physical sciences.

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