



**COUNCIL FOR
SCIENCE AND
TECHNOLOGY**

1 Victoria Street
London SW1H 0ET

Prof Melanie Welham, Chief Executive, BBSRC and
Dr Ruth McKernan, Chief Executive, Innovate UK,
Polaris House,
North Star Avenue,
Swindon SN2 1FL

8 August 2017

Dear Melanie and Ruth,

Industrial Strategy Challenge Fund

We were grateful for your presentation to CST on your work with the Industrial Strategy Challenge Fund. The Fund presents a very significant opportunity to direct our world-leading science and technology towards areas of major strategic priority for the UK. We promised to follow up on our discussion with some perspectives on the selection of challenge areas, and the way in which the Fund is administered.

Our primary perspective is that the Fund needs to be seen in the wider perspective of the economic challenges confronting the country: in particular, improving productivity, growth and delivering economic opportunities more widely across the UK.

We believe that these priorities should serve as the basis for the criteria against which potential Challenges should be selected and evaluated. Identifying the right Challenges will require a strategic assessment of what actions are most likely to have the greatest impact on these issues in the near and longer-term, based on an analysis of the relevant sectors and productivity performance.

In the decades before the financial crisis, there was relatively healthy productivity growth in the UK. Subsequently, the picture has been weaker, and the productivity challenge is particularly pressing in regions outside of London and the South-East. Selecting the right Challenges means identifying those areas of social and technological challenge where innovation and growth are most likely to deliver a productivity boost for key parts of the economy in this economic context, and where the UK has a distinct advantage or opportunity.

To take some examples, artificial intelligence and robotics represents a major sector in its own right, but is also an enabling technology that will help shape and transform sectors right across the economy. Challenges aimed at improving productivity in healthcare would benefit a significant specialist sector but will also, by helping to

improve people's health, support productivity gains in the workforce. Developing approaches to clean, cheaper energy will create business opportunities for the companies that make this break-through, and access to less expensive energy would also benefit energy-intensive industries as a whole. Cities constitute another key area: the interweaving of city management and design with business and universities is a core opportunity for innovation and productivity, and an essential part of work concerned with place.

Those challenges that can work with and near pre-existing assets are likely to have a greater chance of success, and would potentially bring an element of "place" to the Fund. This may mean building partnerships spanning a number of centres within and across regions. CST's recent letter to the Prime Minister on science and place has some relevant observations here, and we attach a copy of the letter.

The criteria should also address the UK's potential role in the relevant value chain: investment should focus on those areas where it can be demonstrated that UK businesses have a realistic prospect of finding a role within that chain.

For the Fund to achieve its full potential, the government must deliver the right conditions for success. The emphasis on specific economic and social sectors (vertical priorities) within the Fund is important, but will only deliver benefits if there are the right infrastructure, skills and competitive environment (horizontal priorities) in place that will facilitate growth. For example, to exploit further opportunities in blockchain, we will need both a strong supply of the relevant skills and access to worldwide talent, as well as access to digital infrastructure, especially high speed broadband. It is important that the government's approach to these horizontal priorities in the Industrial Strategy and elsewhere align clearly with the priorities identified by, and analysis carried out as part of work on, the Fund.

We also had a number of perspectives on the governance and administration of the Fund. Many of these are informed by practice in the Defense Advanced Research Projects Agency (DARPA). We acknowledge that the ISCF represents a significantly larger proportion of the UK innovation budget, but there are a number of areas where the UK has something to learn from the US experience:

- There needs to be a central place within the ISCF for really bold and novel challenges that are not being addressed elsewhere in government or the wider innovation system.
- The Fund should have a good degree of risk appetite: a 100% success rate is impossible in genuinely cutting edge research and development, and would suggest that we have adopted the wrong level of ambition. It may be helpful to set a clear target for project success and failure rates.
- Good governance is essential but it should be light touch. It should prioritise innovation delivery over process and secondary metrics.
- Roles within the governance structures need to be clear: in particular, there needs to be a formal separation of function between those parts of the system with advisory and those with review roles.
- The recruitment of really effective challenge directors (a novel role within the UK) should also be a priority. Job descriptions need to articulate the importance of the role, and this will need to be supported by wider thinking

about how we can ensure that potential innovation leaders within the UK have access to clear and attractive career paths.

We were grateful for the opportunity to discuss the operation of the Fund, and look forward to further updates. CST would be very happy to discuss further as your work progresses.

A handwritten signature in cursive script that reads "Nancy Rothwell".

NANCY ROTHWELL
CO-CHAIR