



Prime Minister  
10 Downing Street  
London SW1A 2AA  
*Sent by email only*

14 June 2021

*Dear Prime Minister*

## **SCALING THE IMPACT OF INNOVATION IN THE UNITED KINGDOM**

At CST's quarterly meeting in March 2021, the Secretary of State for the Department of Business Energy and Industrial Strategy set out his plans for an Innovation Strategy and sought members' advice on five innovation questions. This letter aims to address these questions and offers advice to inform development of the Innovation Strategy.

An effective Innovation Strategy will strengthen the UK's position as a science superpower, level up prosperity across the country, aim to achieve our net zero ambitions, and position us to address the emerging challenges of the future. It must:

- reinforce the UK's successful clusters of research and innovation, enabling them to compete globally; maintaining a broader base of fundamental R&D provides the knowledge and expertise to fuel innovation;
- encourage investment in development of the fruits of innovation across the whole of the UK, from focussed investment in specialized facilities for testing, experimentation and scaling solutions in strategically important areas, to enhancing the ability of local leaders to link research and education providers, business and finance, to create opportunities for local economic growth;
- enable the private sector to invest with greater certainty. The role of government in this space is to influence the balance of risks facing innovators, so that their decisions reflect, as much as possible, the long-term value of innovation investments and the desired outcomes for the nation<sup>1</sup>. Nations with a successful innovation economy are characterized by a willingness to take informed risks, an acceptance of some level of failure and the agility to redeploy resources from one project to another. A framework of incentives and related regulations that are transparent, consistent and stable over time will galvanise action to achieve the goals the nation cares about;

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<sup>1</sup> Innovation: Managing risk not avoiding it (GO-Science, 2014):  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/381906/14-1190b-innovation-managing-risk-evidence.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/381906/14-1190b-innovation-managing-risk-evidence.pdf)

- develop a skilled and diverse workforce. Innovation is more effectively accomplished by a diverse range of individuals who bring different perspectives, skills, and knowledge. Growing a cadre of diverse innovators will be important. A two-way flow between business and academia needs to be catalysed;
- focus resources in areas of present or potential competitive advantage, through explicit targeted incentives and a clear understanding of the balance of risks to be absorbed by government and the private sector;
- address the specific areas of UK's weakness in innovation through deployment of clear policies and improved coordination in strategically important areas. Innovation requires engagement and collaboration across a wide range of organisations including public and private finance, start-ups, universities, large corporations, and government (in its role as a grant maker and as a purchaser) at national, regional and local levels. A coherent integrated approach is needed.

We recommend action in the following four areas to strengthen the innovation environment to allow new discoveries or market-led innovation to flourish:

**People:** Innovation starts with people. Diverse groups, mixing people of different experiences, disciplines, geographies, backgrounds, age, and genders, led in an inclusive way, creates a bias towards success in innovation. Government should create clearer departmental accountability for improving the quality of education and training related to innovation, and to help employers understand where they can access relevant talent. This includes working with funders to develop more and specific programmes to build entrepreneurship and skills for innovation leadership. Government should work with business and academia to address the impending skills shortage. It should take action to change policies and funding practices that limit or discourage mobility of talented individuals between business, finance, academia and government.

**Finance:** HMT, BEIS, Innovate UK and the British Business Bank (BBB) should together review the risk profile and availability of capital to ensure innovative companies have access to funding across all stages of technology development and make appropriate recommendations, in particular, support for late-stage R&D and experimental development. HMT, BEIS, Innovate UK and the BBB should recommend how to increase the availability of scale-up funding. They should explore new mechanisms (such as mobilising pension funds) to bring together investment opportunities in specific areas, such as fintech. HMT, BBB, and IPO should work together to explore how government can support and educate asset managers, banks, commercial lenders and others to build consideration of IP and intangible assets into their credit risk models to unlock lending that would not occur otherwise. There is a gap in specialist investor expertise in the UK.

**Infrastructure:** Inventive solutions and their match to critical problems can be done by those anywhere in society; industry, academia, local and national government, small enterprises and individuals. Government should review the UK's innovation support mechanisms, from the perspective of innovators, including those well outside the conventional mainstream, to ensure it is open and accessible to all. Innovate UK should develop and publish an up-to-date map of the current innovation infrastructure across the UK to enable businesses to locate facilities and expertise relevant to their needs. The review should also examine provision of specialized innovation infrastructure for testing, experimentation and scaling solutions in strategically important areas.

**Demand Management:** As part of the current review of procurement, government should consider measures that broaden the approach to procurement to include building UK capacity and stimulating innovation. Every department should have a clear plan for procurement of innovation.

Any economy has only limited resources to spend on innovation; focus is needed. Alongside support for R&D and maintaining an innovation-friendly environment in the UK, government also has a role in supporting focused investments in the early stages of innovation especially in strategically important areas which will provide the seed corn for advantage.

The choices you make now on where to focus will define the UK's future. In our letter on "Strengthening the UK's position as a science and technology superpower", we offer advice on the governance, values and approach needed to enable informed decision making. In addition, we have previously written detailed advice on principles government should use for selecting specific missions and science and technology moon-shots<sup>2</sup> which we commend for use in support of the Innovation Strategy.

Government will need to align its support with a compelling national vision on priority areas (such as achieving net zero by 2050). It must be prepared to commit to fostering innovation in those areas over the long-term to provide direction, targets and certainty for innovators and investors. Clear challenges and missions need to be chosen that will generate defined research and innovation questions. Demand for resulting products and processes could be stimulated by establishing enabling and innovation friendly regulations<sup>3</sup>, by fostering new social behaviours and through government procurement. Our advice on taking a systems approach to net zero offered some examples of the options available to government.<sup>4</sup>

We should pursue international collaborations and partnerships which draw on complementary efforts and strengths of key allies rather than try to duplicate established success in other nations. Government should use the Own-Collaborate-Access approach (as set out in the Integrated Review) to guide development of

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<sup>2</sup> <https://www.gov.uk/government/publications/principles-for-science-and-technology-moon-shots>

<sup>3</sup> <https://www.gov.uk/government/publications/reforming-the-governance-of-technological-innovation>

<sup>4</sup> <https://www.gov.uk/government/publications/achieving-net-zero-carbon-emissions-through-a-whole-systems-approach>

action on strategically important technologies, including where international partnerships may need to be strengthened or limited.

With these measures the UK will be able to generate increased innovative output for every pound invested. It will be able to build more successful businesses from its strong research base. It will not just be a breeding ground for successful entrepreneurs but will create an environment which retains and attracts innovators and where they can scale their work, bringing spill-over benefits to other parts of the economy and society. Successful innovators, drawn from across society, can help to inspire the next generation.

We would be delighted to discuss these recommendations in more detail with you or your Ministerial colleagues and will write to the Secretary of State for Business, Energy and Industrial Strategy with more detail in each area.

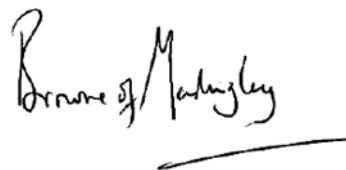
We are grateful to CST members who have led the development of our recommendations: Paul Stein (Chief Technology Officer, Rolls Royce plc), Professor Fiona Murray (Associate Dean for Innovation and Professor, Massachusetts Institute of Technology, School of Management), Saul Klein (Executive Fellow of Management Science and Operations, Strategy and Entrepreneurship, London Business School) and Suranga Chandratillake (General Partner, Balderton Capital). We are also grateful for the support from policy teams in the National Academies.

We are copying this letter to the Chancellor of the Exchequer; the Secretary of State for Business, Energy and Industrial Strategy; the Secretary of State for Education, the Secretary of State for Housing, Communities and Local Government, the Chief Secretary to the Treasury, the Minister of State for Universities, the Parliamentary Under Secretary for Science, Research and Innovation, the Minister for Regional Growth and Local Government, the Cabinet Secretary and the Permanent Secretaries of HM Treasury, the Department for Business, Energy and Industrial Strategy, the Department for Education, and the Ministry of Housing, Communities and Local Government.

Yours sincerely,



**Sir Patrick Vallance**  
Co-Chair



**Lord Browne of Madingley**  
Co-Chair