



Science budget and Industrial Strategy inquiry – House of Commons Science & Technology Select Committee

Submission of the Institution of Environmental Sciences (IES)

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1. Background

- 1.1. The Institution of Environmental Sciences (IES) is a membership organisation that represents professionals from fields as diverse as air quality, land contamination and education, wherever you find environmental work underpinned by science. The organisation leads debate, dissemination and promotion of environmental science and sustainability, and promotes an evidence-based approach to decision and policy making. The Institution stands up for science, scientists and the natural world.
- 1.2. The IES has previously submitted evidence to the BEIS consultation on the Building our Industrial Strategy Green Paper. In this submission we focus primarily on how the Government, through its Industrial Strategy, science funding systems and policy more broadly, can better support innovation, focusing on low carbon and resource efficient technologies.

2. Industrial Strategy

- 2.1. The IES welcomed the publication of the Government’s Industrial Strategy Green Paper in January. The Government has stated its aim to produce a ‘modern’ industrial strategy, which does not solely focus on promoting growth in key manufacturing sectors; the strategy should represent a holistic policy framework which, if appropriately developed and embedded across government, has the potential to deliver a range of positive economic, social and environmental outcomes. However, we consider that the actions identified in the Green Paper are not sufficient to deliver long-term sustainable growth, which must be a central aim of any modern industrial strategy. There should also be a focus on making the UK one of the ‘greenest’ economies in the world. The recent Clean Growth Strategy is a positive step in this regard, but there is still work to be done to properly embed these principles across government.
- 2.2. There should be a greater focus in the Government’s Industrial Strategy and related policy on enhancing resource productivity through promoting the circular economy and resource efficiency. The concept of the circular economy “envisions entire economies built around the principle of using resources to their maximum value, keeping them within the economy indefinitely, and aiming to ‘design out’ waste from the system as far as is possible”¹. This is an

¹ Roberts, C. and Hill, J. (2015) New materials for new ways of making things, *environmental SCINETIST*, 24.1: pp 7. <https://www.the-ies.org/resources/new-materials-and-circular-economy>



area where innovation is rapid, and which has the potential to deliver significant economic impact, sustainably, with appropriate support.

- 2.3. The Ellen MacArthur Foundation, Stiftungsfonds für Umweltökonomie und Nachhaltigkeit (SUN; the environmental economics branch of the Deutsche Post Foundation), and McKinsey have identified that by adopting circular economy principles, Europe can take advantage of the impending technology revolution to create a net benefit of €1.8 trillion by 2030, or €0.9 trillion more than in the current linear development path². As the European Union takes active steps towards increased circularity through the Juncker Commission's Circular Economy Programme, the UK should not miss out on the competitive advantages the programme could afford. Defra analysis in 2011 predicted that improving resource efficiency could save British businesses up to £23 billion per year³.
- 2.4. We welcome the broadly 'horizontal' approach taken by the government in its Green Paper. To tackle the interlinked challenges facing our economy, society and environment we need to seek cross-sector solutions, and encourage collaboration between businesses, academia, civil society and voluntary organisations, and government. The UK must also seek to draw on its strengths: its world-leading science and research base, and strong track record in delivering low carbon and resource efficient innovations.

3. Industrial Strategy Challenge Fund (ISCF)

- 3.1. The UK is home to world-leading environmental science research. Capitalising on, and continuing to develop this outstanding research base is essential if the UK is to make, and benefit from, the transition to a greener, low-carbon economy, and maintain sustainable growth. The increase in science funding announced in the 2016 Autumn Statement is very welcome, but this additional support must be appropriately targeted.
- 3.2. We welcome the announcement of a new funding stream for challenge-led research and innovation. This fund offers the opportunity for the UK to capitalise on strengths in low carbon technologies, and resource efficiency. Initial indications that the fund will be used to deliver investment in the priority areas of clean energy and battery technology are positive steps. To reach its full potential the ISCF must be used to support the development of technologies which may span traditional disciplinary boundaries.
- 3.3. Sector deals may be a useful mechanism through which organised groups of businesses can work with government to take advantage of strategic opportunities, and in some cases linking these deals with initiatives funded through the ISCF may be sensible and productive. However, the role of government in supporting research and development to tackle key societal

² Ellen MacArthur Foundation, SUN, McKinsey & Co. (2015) Growth Within: a circular economy vision for a competitive Europe (June 2015).

www.ellenmacarthurfoundation.org/assets/downloads/publications/EllenMacArthurFoundation_Growth-Within_July15.pdf

³ <https://www.gov.uk/government/news/research-shows-companies-can-save-money-by-helping-the-environment>



challenges should not be underestimated, and business-led sector deals, although they could be complementary, should not be considered an alternative to such investment.

4. Place-based research/innovation funding

- 4.1. To promote place-based growth, Local Enterprise Partnerships (LEPs) need to be able to support research and innovation on a much more significant scale, and so need to be required and funded appropriately to do so.
- 4.2. Mapping existing research strengths in local areas, and making this information publicly available, may help to build better local and regional links and strategic partnerships. Making links between geographically proximate institutions and businesses can encourage clusters to develop which can accelerate innovation, attract investment and contribute to the local and national economy.

5. Supporting innovation

5.1. Incentivisation

5.1.1. The government's Industrial Strategy Green Paper is concerned with the commercialisation of ideas, and the progression of innovative technologies to market, to drive productivity and growth. In our submission to the government's consultation on this green paper, we identified two mechanisms by which government could better incentivise the commercialisation of new technologies and ideas: (1) the use of public procurement to favour and de-risk the adoption of innovation, and (2) fiscal incentives to both innovators and adopters of innovative technologies.

5.2. Innovation prizes

5.2.1. Innovation 'prizes' are another measure available to the Government by which innovators in business and research can be supported and encouraged. The Government should seek to learn from successful initiatives such as the X-prize and Scotland's Saltire Prize. These examples are goal-oriented initiatives designed to support and accelerate innovation to tackle major societal and environmental challenges, or to accelerate the commercial development of promising new technologies, and have proven histories of success.

5.3. Regulation and a stable policy environment

5.3.1. We urge the Committee to caution government against promoting the misconception in its industrial strategy and science policy, that all regulation is bad for business and innovation. Not just at the commercialisation stage, but indeed throughout the innovation pipeline, private sector investment in research, development and breakthrough technologies is secured and sustained by a stable and transparent regulatory and policy environment in which investors have confidence. In fact, there is a need to invest in regulatory and policy innovation alongside emerging technologies: such innovations will only succeed where accompanied by the development of appropriate regulatory structures and instruments.

5.3.2. As we illustrated in our submission to the Government's Green Paper consultation, there are occasions where regulation plays an important role in promoting innovation in specific sectors, practices and technologies, for mutual economic and environmental benefit. This



has particularly been the case in the environmental sector, as highlighted in a 2014 policy brief from the Grantham Research Institute and Global Green Growth Institute which argued that “*there is ample evidence that environmental regulations induce innovation in clean technologies*”⁴. For instance, in the waste management sector, research shows that the landfill tax (introduced in 1996) has encouraged diversification and promoted the development of innovative waste treatment solutions, as well as social and environmental benefits⁵. In this case, the landfill tax acted as a primary driver for investment across the sector’s supply chain. As Databuild’s Report for HM Revenue and Customs highlights, the landfill tax promoted investment in research on the recycling of traditionally ‘hard-to-treat’ materials, exemplifying the potential for profit in immature technologies, and driving them closer to market. In this way, regulation has driven, and continues to drive, innovation in, and the commercialisation of, technologies that are valuable to the UK.

5.3.3. A stable regulatory and policy environment is a major concern for investors in new and emerging industries and technologies, including low carbon innovation. Industry needs certainty in order to have the confidence to invest, and this requires consistency in policy over the longer term. Without this certainty and stability industry can be reluctant to invest in this country, leading to the UK importing new technologies (for instance, some photovoltaics and wind turbine components), and missing out on the opportunity to deliver benefits for the UK economy and highly skilled jobs in these industries.

5.4. *Equality of opportunity*

5.4.1. The government must ensure equal opportunities for progression, and seek to tackle any discrimination or lack of representation on the basis of gender, marital status, race, ethnic origin, colour, nationality, national origin, disability, sexuality, religion, belief, or age. As well as the need to address this issue as a moral imperative, innovation often arises from diversity. We must ensure that the full cross-section of our society is empowered and supported to engage in business, research and innovation. There is evidence that diverse workforces are more innovative and productive⁶, demonstrating the ‘power of difference’ and benefits of diversity.

⁴ Dechezleprêtre, A. and Sato, M. (2014) *The impacts of environmental regulations on competitiveness*. Policy brief, November 2014. Grantham Research Institute on Climate Change and the Environment and Global Green Growth Institute, p3.

⁵ Talbot, A. et al. (2014) Qualitative research into drivers of diversion from landfill and innovation in the waste management industry. *HM Revenue & Customs research report 316*, April 2014, DATABUILD. HM Revenue & Customs.

⁶ <http://www.mckinsey.com/business-functions/organization/our-insights/is-there-a-payoff-from-top-team-diversity>