

# NOW IS THE TIME TO INNOVATE

THE ROAD TO THREE PERCENT

MARCH 2017



**Cover:** *industrial biotechnology and biorefining at CPI's National Industrial Biotechnology Facility at The Wilton Centre, Teesside. CPI helps businesses bridge the gap between early-stage concept and scalable commercial process.*

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## Now is the time to innovate: the road to three percent

*Gene editing, space tourism, self-driving vehicles, robotic limbs, floating farms, London to Sydney in four hours. Game-changing innovations like these will shape the course of the next decade. Many will improve lives across the globe.*

With evolving innovations, new technologies, and developing expertise, businesses and governments everywhere are working to tackle many of today's greatest challenges. Already new energy technologies are reducing the UK's carbon emissions, UK-developed vaccines are preventing deaths around the world, and healthcare innovations have the potential to save the NHS millions of pounds.

The current pace of change in technology is unrivalled and individuals, companies, and governments are under pressure to keep up. Here in the UK our position as world leaders in science and innovation is at risk.

More and more, countries are increasing their focus on science and innovation and the balance of power is shifting east. At the same time, unless addressed, the UK's exit from the EU could leave our businesses and universities unable to access the funding and collaborative networks of which they have been a leading recipient and contributor, damaging our influence overseas.

Much of what we need to deliver a world-class innovation ecosystem is already in place. The UK has first-rate universities, cutting-edge businesses and attracts talent from across the globe. But our spending on R&D has stagnated at just 1.7% of GDP, with both public and private sectors under-investing.

Business is calling on government to target raising the country's R&D spend to 3% of GDP. This will be vital to ensuring growth and opportunity reach all of the UK's regions and nations. The government has already taken positive steps, with the development of a new industrial strategy underway and an extra £2bn public spend per annum on R&D as part of this. Now is the time to ensure that these policies work for business and set us on the road to 3%. Now is the time to innovate.

### Why 3%?

The CBI is not alone in calling for R&D to be raised to 3% of GDP. After extensive economic analysis international organisations selected 3% of GDP total spend on R&D as the right target. At this level, evidence shows that R&D spend can have a significant impact on long term economic growth and employment, to the order of 0.5% of additional output and 400,000 jobs per year across Europe.

Closer to home a 2014 report commissioned by the government cited 2.9% of GDP as the most appropriate goal, with evidence that countries who have been spending far more than the UK's 1.7% of GDP get good returns on their investment. Meanwhile, the House of Commons Science and Technology Committee, and the Business, Energy and Industrial Strategy Committee, have both argued for a long-term plan to increase total R&D investment in the UK, stating support for the 3% benchmark.

The 3% target has been widely supported by countries across the EU and scientific institutions in the UK including the Royal Society, the Campaign for Science and Engineering, the British Academy for Humanities and Social Sciences, and the Academy of Medical Sciences.

Making 3% a goal now will act as a crucial indicator that the UK is open for business, supercharging industry spend, maintaining and creating new jobs and setting ourselves up to be a competitive, globally-focused economy. It can provide confidence to domestic and global businesses alike at a time of unprecedented change and focusses attention on the need for both the public and private sectors to invest in R&D.

## The case for investment in innovation stems from its economic and social benefits

*Innovation is at the heart of economic, social and cultural development. It drives productivity, raises living standards and helps to lay the foundations for tomorrow's world.*

For advanced economies such as the UK it is the chief driver of sustainable economic growth, with innovation a major source of productivity gains. And as well as boosting productivity our leading science and innovation ecosystem pulls in overseas investment, supporting thousands of jobs across the country.

At the organisational level, productive, innovative businesses increase their competitive advantage, are more likely to export goods and services, and are more likely to do so successfully. Meanwhile, with productivity the single most important determinant of household income, innovation indirectly benefits individuals across the country.

### Exhibit 1: The economic benefits of innovation and the innovation ecosystem

Productivity	63% of the UK's annual labour productivity growth 2000-08 was due to innovation. <sup>1</sup>
Foreign direct investment	International businesses carry out £19bn of R&D in the UK every year, <sup>2</sup> and the UK market share of new European R&D projects is 26% and growing. <sup>3</sup>  The UK's world-class chemistry departments attract global pharmaceutical companies to base R&D facilities here, often within 10km of the campus. <sup>4</sup>
Exports	Innovative companies are more likely to export, more likely to export successfully, and more likely to generate growth from exporting than non-innovating firms. <sup>5</sup>
Employment	In 2015 the number of UK staff employed in full-time equivalent R&D roles reached the highest level recorded – 206,000. <sup>6</sup>  Firms who introduce a new product to market have been shown to grow jobs by 4.4% over the subsequent three years, compared with 2% for non-innovators. <sup>7</sup>
Turnover	Evidence indicates that companies who introduce a new product to market grow turnover by 10% in the following three years, in contrast to 5.8% for non-innovating firms. <sup>8</sup>

From the invention of the printing press in the 1430s enabling greater access to knowledge or the introduction of household appliances like the dishwasher propelling women out of the home and freeing up space for other activities, innovation helps improve quality of life.<sup>9</sup>

Now, at a time when the world faces growing challenges, from climate change to food shortages, and from the demands of an ageing society to rising inequality, innovation across a variety of sectors can provide solutions to ensure the progress made can continue. New medicines, for example, are improving and extending people's productive lives, while the development of fuel-efficient technologies can save household costs and the environment.

### Exhibit 2: Examples of the social benefits of innovation

Environment	Wind turbines in the UK play a key part in helping to cut carbon emissions and reduce the impacts of climate change. From 2008-2014 UK windfarms prevented the emission of nearly 36 million tonnes of carbon – the equivalent to taking 2.3 million cars off the road. <sup>10</sup> The north east is a global hub for offshore tech, and with the development of projects like Siemen's Green Port Hull turbine factory, this is major opportunity for the region and the country.
International development	Vaccines prevent millions of deaths each year and are one of the most cost-effective health interventions. With ongoing improvements to methods to increase coverage of the polio vaccine, 2017 could see the disease eradicated, with only three countries recording polio cases in 2016. <sup>11</sup> This would make it the second infectious disease to be successfully eliminated. Britain is a global leader in polio eradication efforts, helping vaccinate over 200 million children since 2009. <sup>12</sup>
Education	Between 2012 and 2015 25 million people globally enrolled in Massive Open Online Courses (MOOCs). <sup>13</sup> These are growing in popularity in the UK, with Oxford University taking candidates for its first-ever MOOC and 15% of UK adults reporting completion/intention to complete one. These courses are considered a means of differentiation, with three quarters of learners taking them to help progress their career. <sup>14</sup>
Demographic change	Telecare and telehealth services use technology to allow users to live more independently at home. Motion sensors and alarm systems around the house detect dangers such as smoke, gas and flooding, as well as movement, allowing lights to switch on. In Hampshire alone Argenti Telecare provides technology allowing more than 6,200 elderly people to live independently while reducing costs for the council and freeing up spaces in care. So far this has resulted in a net saving of £4.7m. <sup>15</sup>

## We need to build on the UK's capacity to commercialise ideas and up R&D spend

*The UK's innovation ecosystem is already well-developed, but government and business will need to support those areas where we lag behind international leaders to ensure the UK can compete on the international stage.*

### Strengths of the UK's innovation ecosystem

The leading research base in the UK is one of our greatest assets. In the face of relatively low levels of investment it supports high levels of output and quality research, and is recognised the world over.

- Four of the world's top ten universities are UK-based
- The UK ranks second globally for the quality of our scientific research institutions<sup>16</sup>
- Despite representing just 4.1% of researchers, the UK accounts for 15.9% of the world's most highly cited articles.<sup>17</sup>

This attracts extensive funding from overseas, seeing the UK with the highest share of externally funded R&D among the major industrial economies.<sup>18</sup>

More broadly, our research technology organisations (RTOs), public sector research establishments (PSREs), and developing network of catapults champion innovation and serve business of all sizes with specialist support alongside the universities. These organisations are also winning increasing global recognition, with interest in the catapults growing in countries ranging from France<sup>19</sup> to China.

Secondly, the UK is home to some world-leading innovative sectors. These include high-end services, chemicals, life sciences, aerospace, creative industries and automotive. For instance, a quarter of the world's top 100 prescription medicines were discovered and developed in the UK,<sup>20</sup> while the UK's creative goods and services are exported worldwide. Grand Theft Auto V, for example, was produced in Edinburgh by Rockstar North and is the fastest selling entertainment product in history, as well as recently passing the 75 million sold mark.<sup>21</sup>



## Areas in which to build the competitiveness of the UK's innovation ecosystem

### UK R&D spend

Despite some clear strengths in science and innovation, the UK fares less well by other key measures, trailing competitors on both R&D spend and in the commercialisation of research. On the former – a critical measure of the capacity of an innovation ecosystem – the UK lags well behind international peers, with total spend on combined public and private R&D at 1.7%. This is well below the OECD average of 2.4% of GDP and far short of international benchmarks, such as the 3% of GDP set out in the Lisbon Strategy.<sup>22</sup>

Low levels of UK government and business spend are factors here, with the latter stagnating at more or less 1.1% of GDP since 2000. This is in part explained by the UK's industrial structure, but low R&D intensity in larger medium/low-tech industries also plays a role. Meanwhile there has been a slow decline in public expenditure, though announcements at the 2016 autumn statement herald a step change in spending and growing recognition of the significance of innovation to the economy.

In 2015 business expenditure made up about two-thirds of overall R&D spend in the UK, or £20.9bn. This was concentrated in a small number of large businesses – with 75% delivered by 400 companies, and over half (51%) foreign-funded.<sup>23</sup>

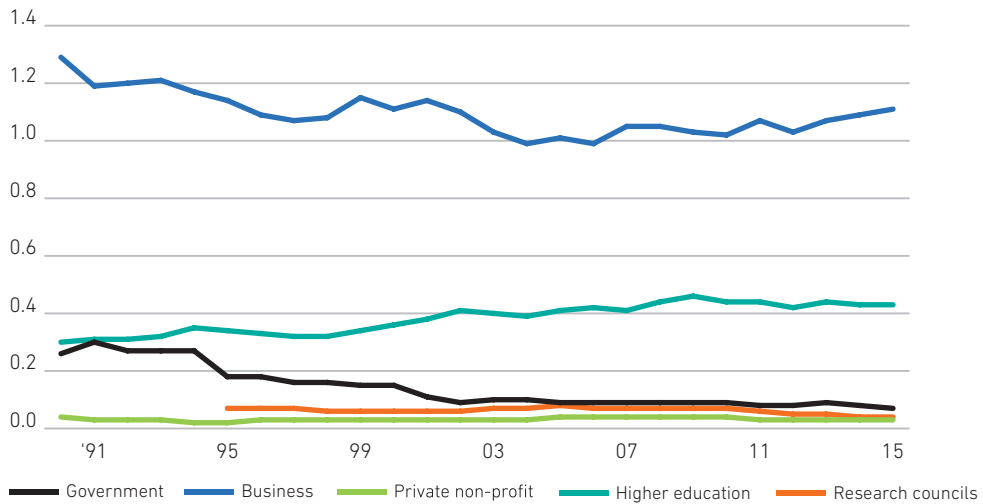
### UK commercialisation capacity

A second key area in which the UK sits behind global competitors is in commercialisation. For example, the UK places just 26th of the EU 28 on sales of new-to-market and new-to-firm innovations as a % of turnover. The relative capacity of our small and medium-sized enterprises (SMEs) is also a challenge, with the UK ranking 18th across the EU based on the proportion of SMEs introducing product or process innovations.<sup>24</sup>

This is linked to the complexity of the innovation landscape in the UK. With many different players and multiple support mechanisms, businesses of all sizes can struggle to navigate the innovation ecosystem and the resource demand of engaging with its many disparate bodies is often significant.

Finally, the UK's relatively poor performance on innovation outputs is also related to the low levels of funding spent on this phase of R&D. For example, Innovate UK's budget represents 0.03% of the UK's GDP, relative to 0.07% and 0.18% of respective GDP funnelled through German and Finnish innovation bodies.<sup>25</sup>

**Exhibit 3:** R&D expenditure by performing sector as a percentage of GDP, 1990 to 2014



Source: UK Gross Domestic Expenditure on Research and Development, <https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/researchanddevelopmentexpenditure/datasets/governmentexpenditureonresearchanddevelopment>



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*Biopharmaceutical development at CPI's National Biologics Manufacturing Centre in Darlington, County Durham. CPI helps companies to de-risk process development through proof of concept testing to accelerate the commercialisation of new processes and technologies.*

## Challenges to the UK's science and innovation ecosystem need to be addressed now


*Existing weaknesses in the UK's science and innovation ecosystem are a matter of even greater concern when set against an international uptick on innovation spend and the vote to leave the EU.*

### Increasing competition from overseas

Governments around the globe increasingly recognise innovation as one of the chief drivers of sustained economic growth and prosperity, and the key to responding to emerging societal challenges. From grants and public support to technology road mapping governments are improving the business environment for innovation to attract foreign investment and leverage its full benefits.<sup>26</sup>

The balance of world-leading countries in research and innovation is shifting away from traditional leaders to emerging Asian economies. South Korea doubled its expenditure between 2003 and 2011 to around £35bn,<sup>27</sup> and now spends 4.3% of GDP on R&D.<sup>28</sup> Elsewhere, China is developing its own DARPA-style innovation agency to invest in R&D projects<sup>29</sup> and is bolstering spend. It increased its share of global R&D expenditure from 2.5% in 1996 to 19.6% in 2013, spending 2.0% of its GDP on R&D in 2014 and overtaking the UK.<sup>30</sup>

Meanwhile, closer to home Sweden spends 3.3%, Germany 2.9%, and France 2.2% of GDP on R&D – all consistently investing well above the UK's 1.7% of GDP.



Engineers at Airbus' Filton, UK site are involved in a range of areas – including wing integration, flight physics, structures and systems.

**Exhibit 4:** Change in gross domestic spend on R&D as % of GDP, 2000-2014

	2000	2014	2014-2000*
South Korea	2.2	4.3	2.1
Austria	1.9	3.1	1.2
China	0.9	2	1.1
Taiwan	1.9	3	1.1
Slovenia	1.4	2.4	1
Czech Republic	1.1	2	0.9
Estonia	0.6	1.5	0.9
Switzerland	2.3	3.1	0.8
Australia	1.5	2.11	0.6
Denmark	2.32	2.9	0.6
Hungary	0.8	1.4	0.6
Japan	3	3.6	0.6
Portugal	0.7	1.3	0.6
Belgium	1.9	2.5	0.5
Germany	2.4	2.9	0.5
Turkey	0.5	1	0.5
Ireland	1.1	1.5	0.4
Italy	1	1.4	0.4
Singapore	1.8	2.2	0.4
Spain	0.9	1.2	0.4
Greece	0.56	0.8	0.3
Israel	3.9	4.3	0.3
Poland	0.6	0.9	0.3
Argentina	0.4	0.6	0.2
France	2.1	2.2	0.2
Netherlands	1.8	2	0.2
Norway	1.6	1.7	0.2
Slovak Republic	0.6	0.9	0.2
Chile	0.3	0.4	0.1
Russia	1	1.1	0.1
US	2.6	2.8	0.1
<b>Great Britain</b>	<b>1.6</b>	<b>1.7</b>	<b>0</b>
Romania	0.4	0.4	0
Finland	3.2	3.2	-0.1
Canada	1.9	1.6	-0.3
Luxembourg	1.6	1.3	-0.3
Iceland	2.6	2	-0.6
US	2.6	2.8	0.1

Note: numbers may not sum due to rounding.

Source: OECD Data: gross domestic spending on R&D (OECD: 2016)  
<https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm> \*Or nearest year available

In this context UK spend on R&D stands out as a clear area in which the UK is falling behind competitors. Trends suggest this will only continue if business and government fail to take action now.

### The UK's decision to leave the EU

The twin challenges of access to collaborative networks and to EU funding form an additional and emerging risk to the UK's science and innovation ecosystem.

As the recipients of €1.2bn in Horizon 2020 funding the UK's universities receive by far the highest levels of European research funding in cash terms of any member state. Meanwhile, although comparatively less, UK businesses gain €0.4bn from the EU, equivalent to more than a fifth of the UK's overall R&D funding from the EU. This supports our leading aerospace, defence, energy, pharmaceutical and biotech industries, among many others. Universities and businesses are therefore particularly concerned about participation in Horizon 2020, as finance from it forms a key element of the funding mix in the UK.

#### Exhibit 5: Horizon 2020 UK participation statistics

Type	EC total funding (€m)	EC funding to UK (€m)	UK share of EC total funding (%)	EC funding to EU 28 (€m)	UK share of EC funding to EU 28 (%)	UK ranking (share of total EC funding)
Private for-profit entities	3,426	411	12.0%	3,266	12.6%	2nd
Research Organisations	3,489	201	5.8%	3,324	6.1%	6th
Public bodies	505	75	14.9%	458	16.4%	1st
Higher or secondary education establishments	4,589	1,157	25.2%	4,238	27.3%	1st
Other	369	29	7.9%	354	8.2%	5th

Source: UK Participation in Horizon 2020 and Framework Programme 7 (Department for Business Innovation and Skills: 2016) <https://www.gov.uk/government/publications/uk-participation-in-horizon-2020-and-framework-programme-7>. Data correct as of February 2016

As well as reduced opportunities to win funding leaving the EU could result in less access to the EU's collaborative networks. This would mean missing out on involvement in programmes like the Clean Sky Initiative – the EU's largest aeronautics programme – featuring 84 companies, research institutions and universities.

Such networks are important because international collaboration in general makes a difference to the productivity and validity of research, and because at present over half of the UK's collaborative papers are with EU partners.<sup>31</sup> Moreover, many scientific challenges rely on interdisciplinary skills and technological pull-through that is enhanced with a larger pool in which to find expertise. For instance, research in areas such as particle physics often involves thousands of collaborators across multiple countries sharing a range of facilities.<sup>32</sup>

There is already anecdotal evidence that overseas partners perceive UK businesses and universities as less attractive partners, despite reassurance from the UK government and the EU Commission.



*A technician using a microscope in IQE's cleanroom in Cardiff. The company manufactures advanced semiconductor wafer products, supporting the development of emerging products and services, such as self-drive vehicles and 5G communications.*

## The next steps for business and government

*Science and innovation can be a route to more productive jobs, higher wages and prosperity for all parts of society. Investing in science, research and innovation is therefore rightly a core pillar of the government's Industrial Strategy Green Paper.*

But the ecosystem which helps businesses to innovate is complex, with many actors and multiple touchpoints. These include national, devolved and local governments, universities, businesses and the third sector. Given this complexity there is no one solution to developing innovative capacity in the UK. Instead it must be a long-term goal of government and business, delivered in partnership.

The following areas are those in which the biggest gains can be made and should be the focus of efforts to bolster the science and innovation ecosystem. These are our initial thoughts on key areas and we will explore these further in the coming months.

### Public funding and incentives

Public funding is a vital piece in the R&D puzzle, with evidence that government spend crowds in private sector expenditure and can lead to increases in total investment on R&D.<sup>33</sup> The Biomedical Catalyst, a partnership between the Medical Research Council and Innovate UK to stimulate research in the life sciences, is one example of this. As well as attracting industry-matched funding from businesses participating in its competitions and grants schemes it has also crowded-in follow-on private sector investment, to the tune of four times the original government funding provided.<sup>34</sup> This clearly demonstrates how public funds can stimulate private finance, leading to substantial increases in overall spend.

Businesses are pleased with the government's commitment to an extra £2bn a year for R&D by 2020, with the decision to place science and innovation at the centre of the UK's industrial strategy, and with the creation of the Industrial Strategy Challenge Fund (ISCF). As the largest increase in public spending for R&D since 1979 it is vital to get this right – ensuring it crowds in private investment – and government and business must work together to do this.




*For every £1 spent by the government on R&D, private sector R&D output rises by 20p a year in perpetuity.<sup>35</sup>*





**A role for government to:**

- Adopt and publicise a long-term objective to reach a total 3% of GDP expenditure on R&D.
- Ensure UK Research and Innovation (UKRI) engages business strategically and deeply to form a sound evidence base for the design, dissemination and evaluation of the ISCF. This will offer the highest possible chance of crowding in greater business R&D spend, which is essential to reaching the 3% target. Given that the quality of the research base is so high, incremental additions in the volume of funding, such as this, have the potential to make a big difference.
- Work with partners across the regions and devolved nations to ensure the ISCF complements existing initiatives and delivers a holistic approach, while supporting its key objectives to raise the levels and effectiveness of innovation.



*The Northumbrian Water advanced anaerobic digestion plants at Howdon and Bran Sands represent £75m of investment. The company is the only business in the water sector to use 100% of its sewage sludge to produce electricity. The sites played a significant part in helping Northumbrian Water to exceed its 20% renewable energy target two years early in 2013.*

## Culture and skills

Absorptive capacity in industry is vital for developing a competitive science and innovation ecosystem. The ability of a company to identify, understand and exploit knowledge developed in other parts of the innovation ecosystem relies on ensuring it has people with the right skills.

But there is widespread evidence of space to improve the quality and availability of our leadership and management skills in business. The CBI's own survey research supports this, with almost half of businesses (46%) answering that increased access to leadership skills would help them to innovate more.

Alongside leadership skills business, culture can frustrate innovation. For instance, in a CBI/Deloitte questionnaire 88% of respondents stated that their board supports innovation, yet just 45% thought that employees at their company have time to innovate. This suggests a potential need to raise awareness of the importance of business innovation to company growth, and to ensure companies have solid strategies to encourage innovation.

Finally, in addition to cultural and management issues, businesses are worried that the long-term prospects of the innovation ecosystem may be held back due to shortages of people skilled in science, technology, engineering and maths (STEM). The CBI has long advocated the importance of STEM, and we know that schools often struggle to get the right teaching staff to help students understand the opportunities which these subjects open up. This is feeding in to skills shortages in areas like engineering, and is an area where business can support – as demonstrated by the great business-school engagement schemes that already exist.

With the UK's exit from the EU many companies are concerned that these shortages are only likely to be exacerbated and that the talent pipeline overall will be damaged through potential limits to migration.

### **A role for government to:**

- Explore what long-term incentives could be implemented to draw – and retain – STEM graduates into teaching. A welcome starting point would be for the government to assess tying student loan reimbursement to career progression within teaching – especially in targeted regions and opportunity areas.
- Enable businesses in all sectors to access the people and skills that they need to be competitive via the UK's new immigration system. A clear international message that the UK is open for business and an attractive destination for talent, and assurances that existing EU staff will be able to remain in the UK following the UK's exit from the EU, are high priorities for organisations working across science and innovation.

### A role for business to:

- Raise awareness of the importance of R&D and innovation to company growth. Organisations such as the Productivity Leadership Group must ensure that executive teams have the right skills and levels of confidence in new technologies – and investing in them – to be able to exploit the potential. Digitalisation should not be confined to any one sector and it will be important to address this issue across a range of industries.
- Share internal strategies to promote an enterprise culture and drive innovation across all levels of the organisation. There is a role for the CBI and other organisations such as the Local Enterprise Partnerships to facilitate the sharing of best practice across sectors and between businesses of different sizes.
- Work with schools and colleges to support STEM education. Employers of all sizes and sectors should be working with teachers to help encourage and enthuse future generations about the value of STEM through co-ordinated strategies.



*Amazon has launched a private customer trial for its drone delivery service, Prime Air, in Cambridge. The new system is designed to safely deliver packages to customers in 30 minutes or less using unmanned aerial vehicles – also called drones – as well as helping to increase the overall safety and efficiency of the transportation system.*

## Collaboration

Business-to-business and business-university collaboration offers the chance for companies to improve performance through developing new techniques or technologies, by de-risking investment in research, and by extending the capabilities and expertise available to them.<sup>36</sup> No company has all of the skills necessary to innovate internally and solutions can stem from across industry.

But although the UK ranks fourth globally in terms of business-university collaboration and despite improvements in the networks between them,<sup>37</sup> this has not shifted the dial on the UK's ability to commercialise basic research. Moreover, many of the collaborations that do take place are short-term projects formed on the basis of individual interests or personal relationships. While these are often extremely successful they are not equipped to respond to long-term technological challenges.<sup>38</sup>

With two thirds of the CBI/Deloitte innovation survey respondents answering that increased collaboration and partnering would help them to innovate more, this is a key factor for businesses. In particular, partnering between companies is important, with 71% of respondents classifying the UK as a 'follower – needing to improve support' in this area.

In order to become an innovation leader UK business needs to take steps to bolster collaboration – across sectors, within the supply chain, and with universities, catapults and research organisations.

### A role for government to:

- Ensure that mechanisms to deliver the ISCF focus on achieving outcomes that deliver economic and social benefits. They should spur collaboration between a range of sectors, promote innovative approaches to solving the challenges and enable the engagement of non-traditional innovators and small companies.
- Ensure that UKRI leverages its unique role within the innovation ecosystem to deliver a strategic vision for UK science and innovation and stimulates collaboration between these communities. UKRI's ability to support commercialisation will be one of the key criteria companies will be looking at when determining its effectiveness.
- Boost support for the co-location of industry and research organisations, to ensure teams are embedded on university campuses. Incentives should be used to get this happening more frequently, enabling the true integration of business-university partnerships.
- Explore options to continue UK involvement in networks such as Horizon 2020 once the UK leaves the EU. Collaboration with European partners is a vital factor in enhancing the UK's research excellence.

**A role for business to:**

- Analyse new income sources and international models of collaboration to ensure that the UK can continue to grow the volume of overseas collaborations we are involved in once the UK leaves the EU. These should be targeted at those countries where stretch is most likely such as the US and Japan, who are some of the UK's key non-EU collaborators at present.<sup>39</sup>

**Regulation and IP**

The science and innovation ecosystem is significantly impacted by the wider business and social environment of the UK and factors like regulation play a critical role in a company's investment and location decisions.<sup>40</sup> Issues such as UK corporate venturing regulations, for example, impact significantly on the ability of businesses to invest in UK innovation and policy uncertainty in general can hinder company investment and innovation decisions.<sup>41</sup>

Disruptive companies are already worth £500m to the UK economy but with the right support they could reach £9bn by 2025.<sup>42</sup> In order to encourage these – and other – new forms of innovation we need to ensure that UK rules and regulations are well placed to attract businesses from the UK and overseas to invest and innovate here. This can help us reach the target 3% of GDP spend on R&D.

**A role for government to:**

- Review existing regulations to ensure that they are fit for purpose. Analysing regulations that are key to industries where disruptors are situated, such as travel and tech, will provide welcome clarity for all businesses and will ensure a level playing field.
- Incentivise longer-term investment in the UK from innovative companies. Government must leverage the Patient Capital Review to consider how to strengthen the UK as a place to scale up and grow. One particular area to examine in support of investment would include regulations around venture capital, including corporate venturing.

**A role for business to:**

- Offer government examples and insights from across different sectors and help to provide greater understanding as to the technologies and innovations that may not fit in existing frameworks.

## Procurement in public services

Public services touch the lives of citizens every day through healthcare, education and the environment around us. They matter to people, businesses and the economy, and are the cornerstone of a healthy and productive workforce. Government currently spends about £268bn each year with external providers, working with private and voluntary organisations to deliver services.<sup>43</sup>

If developed strategically this spend can be used to drive innovation, with the twin goals of improving outcomes for the public and supporting sustainable public finances. Businesses are well positioned to help government to achieve these aims, through investment in new technologies, systems, and processes at the front-end of projects and in cutting-edge innovations to help future-proof public services.

But to harness these benefits government will need to act differently as a customer.<sup>44</sup> Some of the issues around government-supplier relationships, such as the need for more pre-market engagement, are well-known. In addition, there are new and emerging challenges around big data and risk management in contracts, which, if tackled successfully can open the door to transformation across public services.

Businesses are therefore pleased to see procurement as one of the ten pillars outlined in the industrial strategy and want to work with government to help support innovation.

### A role for government to:

- Improve the management of risk in contracts. Commissioning transformational services carries an inherent level of uncertainty, requiring close partnerships between the government and suppliers to manage risk proportionately.
- Put in place more flexible agreements with contractors. These are best placed to respond to changing service environments, technological developments and external demand, helping suppliers ensure that they are delivering desired outcomes as well as value for money.
- Enable businesses to safely and securely access the wealth of data it holds in order to develop new and innovative public services and better serve the needs of the public.

### A role for business to:

- Support the delivery of new guidance for public buyers on how to drive innovation, using examples and case studies to provide real-life examples where they have worked with central and local government on successful, innovative procurement.

Innovation should be a key source of competitive advantage for the country once the UK leaves the EU. A long-term strategy to bolster total spend on R&D to 3% of GDP would send an important signal about the stability and sustainability of our science and innovation ecosystem in a post-Brexit world, supporting private sector R&D investment, jobs, and economic growth. Together, government and industry must take responsibility. Both have a role to play, and the government's industrial strategy presents a unique opportunity to ensure the UK remains a key player in science and innovation.



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For further information on this report,  
or for a copy in large text format contact:

Patrick Day  
Senior policy adviser  
T: +44 (0)20 7395 8103  
E: [patrick.day@cbi.org.uk](mailto:patrick.day@cbi.org.uk)

Jessica Dickinson  
Senior policy adviser  
T: +44 (0)20 7395 8053  
E: [jessica.dickinson@cbi.org.uk](mailto:jessica.dickinson@cbi.org.uk)

March 2017  
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Product code: 11806

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