



Department for
Business, Energy
& Industrial Strategy

DOWLING REVIEW OF BUSINESS-UNIVERSITY RESEARCH COLLABORATIONS

Government response



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Introduction

The Prime Minister has set the development of an economy that works for everyone, with a strong industrial strategy at its heart, as one of the government's top 3 priorities. It will focus on addressing long-term productivity growth, encouraging innovation and focusing on the industries and technologies that will give the UK a competitive advantage. It will promote a diversity of industrial sectors and ensure the benefits of growth are shared across cities and regions up and down the country.

The creation and application of new ideas is critical to delivering this vision and the government remains committed to making Britain the best place in Europe to innovate, patent new ideas and set up and expand a business.

We have continued our support for basic research and our world class research universities and institutions, and the Prime Minister announced on 21 November that we will invest an extra £2 billion a year in R&D by the end of this Parliament, a total of £4.7bn by 2021. This investment will help to sustain our position against much larger economies such as the US and China and our success more generally in this highly competitive global environment. This investment will include new Industrial Strategy Challenge Fund (ISCF) to back priority technologies - such as robotics and biotechnology - where the UK has the potential to turn strengths in research into a global industrial and commercial lead.

Collaborations between universities and business play a vital role in maximising the social and economic benefits of our investment in science and research, by providing business with new processes and technologies, highly skilled people and access to world-leading experts.

The government welcomed the publication of Dame Ann Dowling's Review of business-university research collaborations in 2015, and fully endorses the Review's analysis and conclusions. Dame Ann's recommendations have had a significant influence on government policy. The importance the government places on continuing to improve the conditions for university-business collaboration is reflected by the Chancellor's recent announcement of £100m over the next four years to provide support for collaborative projects and activities between English universities in technology transfer and other collaboration with businesses.

The Dowling Review continues to guide our ongoing work to reform and simplify public support for research and development and maximise the potential benefits of collaboration between business and our academic research base.

The creation of UK Research and Investment (UKRI) will be a powerful opportunity to take the insight in Dame Ann's review further and reap the full potential from connecting innovative businesses with excellent research. Subject to parliament, UKRI will be established to allocate funding for research and innovation, act as a champion for the UK's world class system and drive future discovery and growth. UKRI will incorporate the functions of the seven Research Councils, Innovate UK, and HEFCE's research funding and knowledge exchange responsibilities. We will go further to simplify support around the needs of users across all science and research funding bodies as we build towards the establishment of UKRI.

Details of progress to date and next steps in implementing Dame Ann's recommendations are set out below.

Public support for the innovation system is too complex

Dame Ann's overarching recommendation was that the government should seek to reduce the complexity of support for research and innovation wherever possible, and where simplification is not possible, make every effort to ensure that the interface for businesses and academics seeking support for collaborative R&D is as simple as possible (a process that has been referred to as 'hiding the wiring').

The government fully accepts this recommendation, and significant progress to simplify access to support has been made, including:

- Innovate UK have now introduced a new sector focus and simplified offer for all funding. There will be a sequence of two broad competitions per year for funding in each of the 'Emerging and Enabling Technologies', 'Health and Life Sciences', 'Infrastructure Systems' and 'Manufacturing and Materials' areas and two 'open' competitions for applications from any sector.
- The Research Councils and Innovate UK have been engaging widely with universities and business who apply for grant funding, to develop a system and service of research and innovation funding that will be a simpler, more intuitive and flexible experience.

The government is committed to implementing a 'no wrong door' approach across Innovate UK and all science and research funding councils. UKRI will operationalise this approach, using its strategic oversight of the research and innovation funding system to simplify access to support across Innovate UK, the Research Councils, and HEFCE/Research England. This will help businesses and others find the right information and support irrespective of which part of the organisation they talk to. UKRI will also consider how to introduce greater uniformity and standardisation across funding programmes and awards managed by different funding councils.

These opportunities start now however. Innovate UK, Research Councils and HEFCE are already working together increasingly closely in the run-up to establishing UKRI. In addition we will take every opportunity to further simplify access to support for businesses and academics as we develop our Industrial Strategy, and as we develop proposals for increasing investment in research and development. This will include how we design the new Industrial Strategy Challenge Fund, which will be jointly delivered by Innovate UK and Research Councils to deliver collaborative programmes which bring together business with the research base and which are easy to navigate for businesses and researchers.

People are central to successful collaborations

The Dowling Review highlighted the importance of creating an incentive framework for universities and businesses which promotes the transfer of ideas and people between business and academia, and recommended supporting students to develop business awareness at an early stage of their research careers, continuing to fund schemes which support mobility between academia and business and ensuring that researchers who are successful in collaborations are valued in terms of career progression and assessment of research output – including by increasing the emphasis on collaboration in the Research Excellence Framework (REF).

The government is committed to providing an overarching framework that supports, encourages and rewards collaboration with business and commercialisation of research in the public interest. This can be seen in our approach to the REF where in assessing overall research excellence, we, along with the devolved authorities, recognise the importance of impact and research environment alongside excellent outputs. This approach leaves individual institutions the flexibility and autonomy to develop and reward researchers in a way that best fits their approach to research excellence and their often widely varied needs and missions. The government and devolved authorities have recently asked the Funding Councils to undertake a detailed consultation with UK's HE sector on Lord Stern's proposed changes to the REF. This includes proposals to increase the overall effect of impact, as recommended by Dame Ann, through maintaining the 'impact' weighting and strengthening recognition of university-business collaboration through the 'environment' component.

The Research Councils, InnovateUK, HEFCE and others play vital roles in ensuring that academics can develop the skills they need to collaborate effectively with business, including from the earliest stages of training through postdoctoral studentships. Current support includes:

- Enterprise fellowship programmes¹ which help early career researchers bridge the gap between the academic and commercial sphere, recognising the important role these individuals can play in easing the path from fundamental research to exploitation of technology.
- The ICURE pilot programme², which provides research teams with up to £50k to 'get out of the lab' and validate their ideas in the marketplace. It also connects spin-out companies to early-stage funding of up to £500k from Innovate UK, to help them develop faster and increase their value by reducing perceived risks for subsequent private investors.

The Dowling review highlighted the importance of promoting positive perceptions of the benefits of collaborating with business across academia. The Research Councils promote the achievements of researchers who have demonstrated outstanding business or social impact through a range of awards (Innovator of the Year³, Impact Prize⁴, Impact Awards⁵). To ensure

¹ Such as provided by the Royal Academy of Engineering or those that are jointly funded by BBSRC, STFC and NERC in partnership with Scottish Enterprise and Royal Society of Edinburgh,

² Delivered by the SETSquared the partnership between the universities of Bath, Bristol, Exeter, Southampton and Surrey (www.setsquared.co.uk).

³ www.bbsrc.ac.uk/innovation/maximising-impact/fostering-innovation/innovator-of-the-year/

⁴ www.esrc.ac.uk/research/celebrating-impact-prize/impact-prize-winners-2015/

⁵ www.nerc.ac.uk/latest/events/impact/

the effective alignment of communications and engagement activities with all stakeholders, including business, a new RCUK Director of Communications and Public Engagement has been appointed and a cross-Research Council Communications and Engagement Board established.

The government and funding bodies will continue to develop these approaches to promoting the benefits of collaboration as we build towards establishing UKRI.

Effective brokerage is crucial, particularly for SMEs, and continued support is needed for activities that help seed collaborations

The Dowling Review recommended using digital tools to facilitate the identification of potential research partners, complemented by clear signposting and access to support from appropriately informed people.

The Research Councils and Innovate UK have already jointly developed the Gateway to Research web portal that provides transparency on all Research Councils and Innovate UK investments. We recognise that this is a good start, but more can be done to help and one of the projects, as highlighted in the Dowling Review, being developed by NCUB is a UK Intelligent Brokerage Tool, called ‘Konfer’, that is now in open alpha testing.

The Dowling Review also recommended ensuring funding is available to kick-start collaborations, and called for a long-term commitment to flexible funding for knowledge exchange, confirming the important role of Higher Education Innovation Funding (HEIF) in supporting university –business collaboration. The government has reaffirmed its long term commitment to knowledge exchange including funding for HEIF. In addition the government recently announced £100 million additional funding over the next four years to incentivise universities to work together across England in collaborations in technology transfer and in engaging with business. This will enable universities to sustainably pool expertise, respond flexibly to industrial and regional priorities, and make it easier for businesses to access opportunities to work with them. BEIS is working with HEFCE to develop detailed proposals for allocating this funding to support universities in England. Funding will be allocated through competitive processes and mechanisms, complementing and building on established HEIF mechanisms which enables universities to develop their core capacity to collaborate with business.

We welcome Dame Ann’s recognition that the Catapult network⁶ is now established and producing promising results and positive feedback, with impacts across the country. The government is committed to the Catapult network, which it will seek to strengthen and grow over the term of this Parliament, and has prioritised core funding support for the Catapult network in the recent Spending Review. The government has demonstrated this commitment by announcing that a new Medicines Technologies Catapult is to be established at Alderley Park in Cheshire to build on the excellence in life sciences that has been identified in Manchester, and that a new Compound Semi-Conductor Applications Catapult is to be established in Wales to build on Wales’ reputation as a leader in advanced electronics.

The Catapults’ performance is currently monitored through a set of key performance indicators. Government is keen to see effective engagement with the research base and is working with Innovate UK, the Catapults and other government departments to determine how best to monitor and measure the impact and success of their work. A pilot to extend an existing EPSRC Catapult people exchange scheme across all Catapults is under development.

⁶ High Value Manufacturing; Cell Therapy; Offshore Renewable Energy; Satellite Applications; Digital; Future Cities; and Transport Systems

The Research Councils take a proactive role in supporting researchers to find and develop new relationships with business, seeking to balance the need for a simple offer across a wide portfolio with appropriate tailoring to the varying demands of business sectors and academic communities. A key component of this approach is providing funding that has a degree of autonomy and flexibility, allowing universities to act quickly in response to business opportunities. The Dowling Review highlighted Impact Acceleration Accounts (IAAs) and recommended their use more widely. The Research Councils have developed a common metrics framework – recognising that its deployment should always take into account the specific needs of varied user communities.

Pump prime funding would stimulate the development of high quality research collaborations with critical mass and sustainability

The Dowling Review concluded that there is more to be done to help existing efforts evolve from short-term, project-based collaborations to longer term partnerships focussed on use-inspired research.

In 2014-15, the Higher Education – Business and Community Interaction (HE-BCI) survey recorded UK activity of £4.2 billion, an increase in real terms of 67% since 2003-04. The largest components of this activity are collaborative research, contract research and consultancy, which are continuing to grow strongly. Innovate UK and the Research Councils have a range of individual and joint mechanisms which support collaboration between business and researchers, and are already working on improving the connectivity of their business-facing activities in the run-up to establishing UKRI. The new Industrial Strategy Challenge Fund will create additional opportunities for collaboration between business and researchers.

Technology transfer offices need to prioritise knowledge exchange over short term income generation, and further work is required to improve approaches to contracts and IP agreements

The Dowling Review commented on the need to reflect long-term returns on investment in technology transfer funding models and success metrics.

UK universities are autonomous charitable organisations, responsible for their own financial sustainability, who undertake research for the public benefit and own the intellectual property that results from their research in order to further that public benefit. It is for universities to decide how to distribute their funds to achieve their objectives in a sustainable manner. We recognise that there is no “one size fits all” approach to IP management that can be applied across all institutions, and that there is a need to reflect the specific academic strengths, partners and stakeholders and their business models.

Nonetheless, government has a clear expectation that exploitation of research means prioritising the long term benefits to the nation and this priority is reflected in the support and incentives provided by public research funding. Our principal tool for incentivising behaviour around university research is through the Research Excellence Framework (REF). We will also continue to provide overarching support and advice through partners such as the Intellectual Property Office (IPO) who have recently published an update to the Lambert toolkit to assist business-university research collaboration. The Lambert agreements are the result of cross-sector work by representatives from universities and industry. Research commissioned by the IPO revealed that the Lambert toolkit has been a very useful resource reducing legal costs, resources and time in negotiating agreements between publicly-funded research organisations and industry. 80% of respondents found that the toolkit simplified the process of constructing and securing agreements over IP, and nearly half found the agreements saved money and time – the research also identified additional requirements and an updated Lambert toolkit was announced in October 2016, including new model agreements on knowledge transfer partnerships, explanations on universities’ duties as charities and state aid and additional clauses on data protection. The IPO have also published a guide to “Intellectual Asset Management for Universities”⁷ which highlights that a strategy for intellectual assets needs to balance a university’s charitable status and achieving public benefit with commercial return, and to be in line with charity law and State Aid regulations.

We acknowledge the concerns identified by the Dowling Review that performance is uneven and that there is a need to simplify what can be complex and time-consuming processes to agree collaborations.

Professor Trevor McMillan recently led a review of technology transfer practice in the UK, which made a number of recommendations for improving evidence, transparency and dissemination of best practice. The government welcomes the McMillan review and is now working with HEFCE and other partners to take forward implementation, alongside ongoing

⁷ IPO Intellectual Asset Management for Universities
www.gov.uk/government/publications/intellectual-asset-management-for-universities

work to develop a Knowledge Exchange framework to increase efficiency and effectiveness in use of public funding and further a culture of continuous improvement in university KE.

BEIS is also commissioning independent research into knowledge exchange practices which will examine the reasons for barriers to collaboration, and test options for improving transparency and business understanding of universities' policies and practices.

Government strategy on innovation needs to be better coordinated and have greater visibility

The Dowling Review concluded that research and innovation have a central role to play in supporting industrial strategy and universities should be seen as key partners in its development and delivery.

The government's Industrial Strategy will focus on addressing long-term productivity growth, encouraging innovation and focusing on the industries and technologies that will give the UK a competitive advantage. The Dowling Review findings will continue to guide our approach to aligning innovation policy with wider industrial strategy, and to establishing UKRI as the body with ongoing strategic oversight of our science, research and innovation landscape.

We are clear that research and innovation together have a critical role to play in delivering an economy that works for everyone and ensuring the benefits of growth are shared across cities and regions across the UK. Our programme of Science and Innovation Audits is helping to bring together consortia of businesses, universities, Local Enterprise Partnerships (and equivalents in Devolved Authorities) and others involved in the research and innovation system at a local level. These consortia consider where their research strength, innovation capability and potential market are aligned in order to generate both analytical evidence and stronger collaborative relationships with which the future opportunities may be taken forward. Innovate UK is greatly increasing its role and remit at local level through its management of the Enterprise Europe Network. With more than 120 advisers active across the country, the Enterprise Europe Network is being developed hand-in-hand with LEPs and Growth Hubs.

We agree with Dame Ann recommendation on the role of NHS as key player in supporting one of the UK's most important sectors now and in the future. The Accelerated Access Review (AAR)⁸ was commissioned to make recommendations to government on reforms to accelerate access for NHS patients to innovative medicines, medical technologies, diagnostics and digital products and help make the UK the best place in the world to design, develop and deploy these innovations. The final report of the independently-chaired AAR report proposes a framework of recommendations to accelerate and streamline the pathway for new products from development to their use in patients and widespread adoption across the NHS. The report sets out a vision of the NHS as a system which can embrace innovation and work in collaboration with organisations from across the system in an Accelerated Access Partnership to prioritise key innovations, to align technology review processes, and to get products to patients more quickly. This will create a win: win for the NHS, innovators and patients.

⁸ www.gov.uk/government/organisations/accelerated-access-review

Conclusion

This response shows the breadth of activity underway to improve conditions for university-business collaboration. The Chancellor's recent announcement of £100m to assist English universities in technology transfer and other collaboration with businesses will help maximise the social and economic benefits of our investment in science and research and sits alongside the Prime Minister's announcement that we will invest an extra £2 billion a year in R&D by the end of this Parliament, a total of £4.7bn by 2021. At Autumn Statement, to consider further improvements to the overall environment for UK R&D, we also announced a review of the tax environment for Research and Development, a review into Patient Capital and a review into the Small Business Research Initiative.

Subject to Parliament, the creation of UK Research and Investment (UKRI) will provide a strong and unified voice championing UK research and innovation, nationally and internationally. And it will help build collaborative partnerships and promote stronger commercialisation and business links with publicly funded research.

The Dowling Review will continue to guide our ongoing work to reform and simplify public support for research and development and maximise the potential benefits of collaboration between business and our academic research base.



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