Speech: How universities can drive prosperity through deeper engagement

I'm delighted to be speaking here at the 2017 Higher Education Funding Council for England (HEFCE) conference. I hardly need to tell you what an important time this is for higher education in the UK.

Over the coming year, we will be putting into action the wide-ranging reforms set out in the Higher Education and Research Act (HERA).

Next year will see the launch of the Office for Students (OfS), which will take up the regulatory baton that HEFCE has borne for the past 25 years. I'd like to take this opportunity to thank Madeleine, Tim, and all the staff of HEFCE for their service.

The birth of the OfS will mean the establishment of a new regulatory regime, with a strong focus on accountability, value for money and the student interest.

Our work to implement the HERA will also bring into existence a new national strategic funding agency, UK Research and Innovation (UKRI).

This is an important time for research in the UK as we put science and innovation at the heart of our industrial strategy and it is on this vital area that I want to focus today.

We have made a significant commitment as a Government to increasing the amount of R&D the UK undertakes as a country.

Last year there was a £4.7bn increase by 2020/2021 we announced in the 2016 Autumn Statement, itself the largest increase to public R&D for 40 years.

Meeting the new target will not be possible without the concerted efforts of Government, businesses, charitable funders and of course our brilliant researchers, not just the homegrown talent but critically also those who have been drawn here from all over the world.

And this is what I would like to speak about today.

It goes without saying that UK universities are renowned for the quality of their research. Indeed, today the government is publishing analysis by Elsevier that shows that the UK continues to punch above its weight as a research superpower.

In particular, the research shows that although the UK represents just 0.9% of the world's population, we account for 9.9% of downloaded academic articles, 10.7% of citations and 15.2% of the world's most highly-cited articles.

Relative to its comparator countries, the UK continues to rank number one

Field-Weighted Citation Impact. This shows the vital importance of funding curiosity-driven research. It is something to be proud of and to protect.

But high quality publications do not by themselves guarantee impact in the world at large. Nor is there a simple, linear relationship between academic excellence and economic growth.

If the research that goes on in our universities is to have the greatest possible impact, our universities need to be deeply connected to the wider world. This is an important challenge for universities in any advanced economy.

But it is particularly important in the UK, because of the outsize role our universities play in our research and innovation system.

Over half of the money the UK taxpayer provides for R&D goes to the Higher Education sector – £4.8bn out of £8.8bn in 2015.

The result is that a far greater proportion of R&D – 26% – takes place in our universities – than in comparable countries, with 20% in France, 17% in Germany, 13% in the US and 12% in Japan.

This funding arrangement has helped ensure the excellence of British universities and their strong performance in international league tables, which give a heavy weighting to research.

But the fact that by international standards an unusually large proportion of our R&D activity takes place within our universities brings with it increased responsibilities.

Because they loom so large in our research ecosystem, it is particularly important that our universities engage with the wider world, and help to ensure that their work leads to wider economic and social benefits.

Today I would like to focus on two ways in which universities can help us achieve our ambitious goal: knowledge exchange, and international engagement.

Improving knowledge exchange

Universities’ engagement with the wider world takes many forms.

Public attention often focuses on technology transfer, intellectual property (IP) licensing and high-tech spin-outs, but these are far from the only way universities contribute to innovation and growth.

Collaborative and contract research conducted with businesses, consultancy, training, and broader partnerships with businesses and with civil society are every bit as important.

And of course, most universities play an important local economic role, whether by participating in economic development efforts, in skills development or by acting as hubs for businesses.

The analysis of the 2016 Higher Education Business and Community Interaction (HEBCI) survey, which HEFCE is publishing today, shows that this wider economic engagement is growing more slowly than the economy as a whole, at 1 per cent, and from a low base. It is also highly uneven, with parts of the country benefitting from it more than others.

Comparisons of our commercialisation activity with that of the US are revealing.

We require about £5m more research spending to generate each new spin-off than the US does. And US higher education institutions earn almost 40% more IP licence income as a percentage of research resources than those in the UK

This is income that can be ploughed back into research in a virtuous cycle of scientific discovery and innovation. I see the evidence of this collaboration on the ground. Examples such as the collaboration between the University of Lincoln, Lincoln College and Siemens which is inspiring a new generation of engineering and scientific talent in the region. Or the decision by McLaren to site their new factory in Sheffield in order to collaborate with Sheffield University Advanced Manufacturing Research Centre.

But the system as a whole needs to find a new gear.

The University of Queensland on Australia's Gold Coast is one institution we could learn from. Its long-established tech transfer subsidiary, Uniquest, helps it generate over AUS$30m a year from IP – more than any Russell Group university.

The rewards to good knowledge exchange can be very great: New York University earned more from Remicade, its blockbuster arthritis drug, in a year, than all UK universities put together.

Britain has had its home run successes too: consider the £64m that the Institute for Cancer Research made form licensing last year, or the University of Surrey's development of Surrey Satellite Technologies. But I would like to see these successes, and the wide range of business links that underpin them, become more common.

If we are to meet our national goals to increase R&D, we will need to continue to deepen these forms of engagement. Demonstrating this engagement and the associated economic impact will be important in making the case to the public and within government that increased public investment in research is justified.

We are taking a number of steps to drive engagement.

Increased weighting for impact in the Research Excellence Framework (REF) Impact

I welcome the decisions that HEFCE and HE funding bodies have taken to place greater emphasis in the next REF exercise on the impact of research – increasing weighting for impact to 25%).

Science & Innovation Audits are also helping to deepen the relationships between universities and their wider communities. Across the country, I have seen that the SIA process has not just identified the relationships between universities and their local partners, but helped define and strengthen them.

For example, the SIA for the Edinburgh City Region has helped them to develop a successful bid realising £300m in funding for data driven innovation. This maximises the opportunities afforded by the world class research base and will exploit the wide range of technologies being pioneered across the city region.

So, today I'm also announcing Wave 3 of SIAs – twelve more areas selected to map their local research, innovation and infrastructure strengths. As before, this round of SIAs will examine strengths in a number of sectors and disciplines, across the UK – from the Marine Economy in Scotland to Nuclear in the North West.

As before, this round of SIAs will be taken forward as collaborations between, universities, businesses and other institutions such as Local Enterprise Partnerships.

Measuring and funding knowledge exchange

One of the most powerful tools for increasing engagement has been our investment in Higher Education Innovation Funding (HEIF). HEIF underpins knowledge exchange and tech transfer capabilities and supports skills development and entrepreneurship.

It provides universities with the resources needed to invest in partnerships: from developing tech transfer offices, to helping ease the movement of staff between academia and businesses. Many of the most important collaborative projects in England were enabled by HEIF. That is why we are providing an additional £40m a year for Higher Education Innovation Funding to help support commercialisation, taking the total to £200 million for 2017-18.

In addition, we are also encouraging universities to collaborate on the commercialisation of research and working with business. HEFCE launched a £100m Connecting Capability Fund in April, and today I am also pleased to announce the first four funding projects, which will collectively receive just under £20m.

- The first project is a collaboration between a group of universities in the East of England – Essex, UEA, and Kent – which aims to address the region's productivity challenges by supporting company development and entrepreneurial skills growth.

- The second project is a collaboration between a group of HEIs in the North of England – Manchester, Leeds, and Sheffield – which aims to establish an investment fund to improve access to finance for university spinouts.

- The third is an extension of an existing collaboration between a group of universities in the South of England – the SET squared partnership – which aims to better support SMEs as they scale-up.

- The fourth is a collaboration between a group of universities and research institutes across the UK – Oxford, Birmingham, Dundee, and the Francis Crick Institute – which aims to support the development of new therapeutics to tackle age-related diseases.

Given the importance of knowledge exchange to the national mission of universities, I believe there is a strong case for doing more to measure how good a job universities are doing and to link funding more directly to such an assessment.

It is noteworthy that the UK university system has public frameworks to track two of the missions of universities – the REF for research and the Teaching Excellence Framework (TEF) for teaching outcomes – but nothing for the third mission of knowledge exchange and engagement.

Since its introduction under a different name in the 1980s, the Research Excellence Framework has become a familiar part of the higher education landscape, playing a vital role in ensuring we fund only excellent science.

And the more recently introduced Teaching Excellence Framework, entering its third year, is already, as Universities UK's (UUK) recent poll shows, acting as a powerful incentive on universities to focus on teaching quality and student outcomes

I am keen to explore what more we can do to evaluate the extent of knowledge exchange, engagement, collaboration and commercialisation – the impact that universities are having on the economy – and to recognise which of our universities are leading the way.

I see a key role for an enhanced performance assessment in creating a constructive competitive dynamic between institutions that incentivises them to make the most of opportunities they have for knowledge exchange.

We have the building blocks for such an assessment with the work undertaken by the knowledge exchange steering group led by Professor Trevor McMillan and considerable amounts of relevant data are already gathered, not least through the HEBCI survey and the HEIF process.

And there is evidence that there is excellent practice on knowledge exchange throughout the system: from Russell Group universities like Oxford and Leeds to newer institutions like Anglia Ruskin and Hertfordshire.

But at present this information is hard to access. And it is not weighted to reflect the differences in size and research income between different institutions. Therefore it does not have the impact it might in terms of identifying outperformance and underperformance.

With this in mind, I will be asking Research England within UKRI, working with the OfS, to consult with the sector and advise on the development of a new, public Knowledge Exchange Framework (KEF), that brings together a comprehensive range of measures of impact from collaboration and knowledge exchange.

Our ambition is that the new KEF will become an important public indicator of how good a job universities are doing at discharging their third mission, just as the REF rewards excellence in research and the TEF rewards excellence in teaching and student outcomes.

This will enable universities to benchmark and develop their own performance, and will increase universities' accountability to taxpayers, local government and businesses.

Increasing HEIF

Alongside better data on knowledge exchange, there is also a case for greater investment that is directly linked to institutional performance in terms of knowledge exchange and tech transfer.

I am struck whenever I visit universities by the impressive initiatives and ventures that have been enabled by HEIF funding.

The University of Central Lancashire, which established its Centre for SME Development in 2016, is a case in point. Its first annual report showed that it had interacted with more than 500 Lancashire SMEs. Its current funded business support projects for SMEs are worth almost £10m and are set to reach almost 1,000 SMEs in the region.

Or take Reading University, which is investing in a new inter-disciplinary Centre for Food, Nutrition and Health. This will extend its relationships with the agri-food industry, enabling it to deliver research, innovation and education that addresses their needs and contributes to economic growth in the sector.

I believe it is possible to do more. We have already reiterated the important contribution that HEIF is playing to the delivery of our Industrial Strategy through the £40m pa uplift taking HEIF to £200m in 2017-18. The Witty Review recognised the critical role of HEIF and recommended increasing funding to £250m pa and I am keen that we take steps to do so.

In addition, I am asking UKRI and Research England to consider the right balance between HEIF and quality-related (QR) funding – so that as we give recognition to the vital role that universities must play in their engagement with others in the UK economy, we do not lose sight of the need to support curiosity-driven science that has no immediate commercial goals.

This is not just because the pursuit of knowledge is the hallmark of a civilised society, and a good thing in and of itself, but because unanticipated scientific breakthroughs can turn out to be even more valuable than the outcomes of agenda-driven research.

I believe this stronger commitment to knowledge exchange and engagement will give universities the confidence they need to set ambitious plans and bold partnerships – benefitting national and local economies, and society at large.

International engagement

The second aspect of deeper engagement I would like to discuss is engagement with the wider world. Today's Elsevier report shows the remarkable global reach of UK research. It shows that over 51% of all UK publications in 2017 were co-authored, highlighting that UK researchers are highly collaborative internationally. The only other comparator country to surpass the UK was France, ahead of the UK by just 0.3 percentage points. And the UK's share of international co-authorship has increased annually from 2010.

Importantly, internationally co-authored articles are generally associated with a higher field-weighted citation impact. Continuing to work with international partners is critical – our research strength and our innovation have been built upon a history of collaboration.

As the Government set out in its recent paper, we will be seeking an ambitious science and innovation agreement with the EU – one that continues high levels of collaboration with European partners on major science, research, and technology initiatives.

In her Florence speech, the PM set out the UK's commitment to developing the deep and special relationship we have with Europe. She said "We may be leaving the European Union, but we are not leaving Europe". Continuing with – and building on – our collaboration with our European partners will remain critical to our long-term economic development. So, we have made our intentions clear in this area.

We want to remain a player in European science, research and innovation programmes. And we will continue to attract the best talent from across the world, including the EU.

The UK will continue to welcome the brightest and best from across the world, including the EU. The UK will remain a hub for international research and innovation talent.

So, we will continue to increase our levels of international engagement on science research and innovation. Not just with Europe, but across the world.

For example, UK-US collaborations have resulted in 26 Nobel prizes for science and economics. Nearly 14% of the UK's internationally co-authored papers are with the US, almost double the next nearest country – Germany. And the UK is the number one destination for US R&D company investment outside of the US, accounting for over 10% of US foreign R&D investment.

That's why, last month I signed the first formal Science and Technology Agreement with the US, providing a framework for UK institutions to collaborate on joint scientific research and technology programmes with the

US.

We recently agreed to invest £65m in our ongoing partnership with the United States on the Deep Underground Neutrino Experiment, which will probe fundamental questions about the nature of matter and the evolution of the universe.

Alongside this, we have signed a new Memorandum of Understanding (MOU) with Canada which will strengthen bilateral cooperation in science, technology, innovation and entrepreneurship. The MOU kicks off work to build lasting partnerships between our science and innovation agencies, and will initially focus opportunities in the fields of quantum technology, clean technology, agri-tech, and advanced manufacturing. But we don't want to stop there – this is a model that we are keen to repeat with other countries to further expand and enhance our global partnerships.

And that's why I'm pleased to announce that Government is investing an additional £18m in the Rutherford Fund this year in 2017/18 to attract the brightest research talent to the UK. This builds on the £100m that we have already committed to Rutherford over the next 4 years.

This new funding will enable more than 200 additional significant fellowships to start in the current financial year, at our world class institutions, including at the Crick and the Turing Institutions, at UK museums, at the British Academy and at UK universities. It also includes 50 Commonwealth Fellowships.

Our ongoing investment in talent will help to reinforce the UK as the go-to country for innovation and discovery.

Reinforcing the importance of the humanities and social sciences, £5m of this global talent funding is through the British Academy's flagship Post-Doctoral fellowship scheme with leading universities – delivered alongside a further £5m to support and develop domestic research talent.

Conclusion

So, Science, Research and Innovation are central to our industrial strategy and will be critical to the UK economy in the future – it improves our productivity, the economy and helps people prosper across the country. Universities' engagement and collaboration with others – domestically and internationally – is now more important now than ever and I and other Ministers in this Government, through our industrial strategy, will be doing everything we can to support them.

Thank you