House of Commons Science and Technology Select Committee Inquiry into the 'Science Budget and Industrial Strategy'

Submission by Yorkshire Universities

13 November 2017

1. About Yorkshire Universities and the university sector in Yorkshire

1.1 Yorkshire Universities (YU) is a regional higher education association representing eleven universities and one specialist college.[1] YU is a partnership based on a shared interest in place and the contribution universities make (both individually and collectively) to Yorkshire. In economic terms, this contribution is delivered as employers, purchasers of goods and services, providers of graduates/post-graduates, skills, and by undertaking research and innovation activity. YU has three decades' experience of working in collaboration with regional and local institutions and actors, including Local Enterprise Partnerships (LEPs), local authorities, Regional Development Agencies (RDAs), business, Members of Parliament and local communities. Our members also have a wider societal and civic position, which, as the proposed Industrial Strategy illustrates, is crucial as public policy seeks to address profound socio-economic disparities and inequalities across and within the UK.

1.2 The unique strength of YU lies in its ability to consolidate the diverse profiles of its members, bringing together a holistic 'offer' to businesses and communities across the four LEP areas of Yorkshire and articulating this proposition within the wider 'Northern Powerhouse' pan-region. Some of our members are universities with an international perspective, some are very local; some engage with large private sector companies, others with small and medium size employers (SMEs); some have scientific and technical curricula, others are based in the arts and social sciences; some work across a wide spectrum, while others focus on niche areas. YU is able to bring together the scale and capacity of its member institutions, drawing upon inter and cross-disciplinary research strengths, and can play a pivotal role connecting business with a collective group of universities.

1.3 The thrust of the YU submission centres on the following issues that the Select Committee inquiry is seeking evidence on, namely…*"the balance between different parts of the country in government funding of research/innovation, the effectiveness of such place-based financial support, and how planned place-based funding might affect that balance in future; What further measures the government should take to use its spending and facilities to strengthen innovation, research and associated 'place'-based growth"*.[2]

2. Place-based industrial strategy and innovation

2.1 Research &Development (R&D) is recognised as an important tool for stimulating innovation, which is itself a crucial element in improving productivity. However, R&D investment in the UK is lower than in most other leading knowledge-based countries and

[1] www.yorkshireuniversities.ac.uk/

[2] Science and Technology Select Committee 2017 Inquiry into the 'Science Budget and Industrial Strategy' Terms of Reference.

is sub-optimal for an advanced economy. There is also an over concentration of public research funding in the south of England, driven by an over-emphasis on 'academic research excellence' at the expense of stimulating business R&D and innovation across the wider economy.

2.2 The Government has pledged to invest an additional £4.7bn by 2020 in R&D funding. YU welcomes this new investment and the opportunities to identify areas and themes where the extra R&D funding should be invested. The Industrial Strategy Challenge Fund (ISCF), part of the National Productivity Investment Fund, should have a strong place-based dimension, as well as a focus on technology. YU members have been developing propositions and business cases for funding through the ISCF, and articulating the benefits of using scale and joint-working to bid for transformational projects. It is important that funding supports both technological innovations and broader 'grand societal challenges', which will encompass and encourage greater cross-disciplinary work within the 'academy'.[3] At the same time, a distinction should perhaps be made between 'academic research excellence' and more practically-focused forms of innovation and knowledge transfer. The first approach can often be more risky and speculative, and does not necessarily translate into immediate productivity gains, and can take longer to 'pay back', if at all. However, such research can contribute towards the structural learning and evolution of individuals, institutions and places.

2.3 Innovation is not simply about new technology, but it is also about more productive ways of working, and the significance of adopting a broader approach that goes beyond a linear process that begins in universities and ends with a commercialised product. The challenge is to embed both technology and human capability and capacity into industry in an integrated manner. This requires a partnership approach between business, local authorities and universities, with universities having a particular and distinct role in the stewardship and nurturing of knowledge.

2.4 Linking science and innovation and territorial cohesion [through national and local industrial strategies] speaks to the multi-faceted role of universities as key civic institutions, able to foster innovative environments in less successful places.[4] Public policy should recognise that many places lagging behind would benefit from universities as anchor institutions contributing significantly to 'place making' and mobilising the innovative capacity of their communities.

2.5 Models of local innovation can be found in the smart specialisation strategies (SSS) that were a condition for the UK being awarded European Structural and Investment Funds (ESIF).[5] SSS concepts recognise the importance within innovation in all regions (especially under-performing economic regions) of institutions, governance and the 'smart state',[6] which underpins the notion of universities, national and local government and other parts of the public sector working collaboratively in the guise of 'place-based' leadership. The SSS hub has provided information, advice and guidance to LEPs and

[3] ISC (2017) The Final Report of the Industrial Strategy Commission, Industrial Strategy Commission, The University of Manchester and The University of Sheffield: Manchester/Sheffield.
[4] Goddard, J. (2017) Towards a placed based science and innovation strategy for England: a role for universities? A paper for the BEIS, Advisory Group on Smart Specialisation and Innovation Audits, Centre for Urban and Regional Development Studies (CURDS), Newcastle University: Newcastle upon Tyne.
[5] Ibid.
[6] Morgan, K. (2017) 'Nurturing Novelty: Regional innovation policy in the era of smart specialisation', Environment and Planning C: Politics and Space, 35(4): 569-583.

other local institutions in the innovation agenda. It will be important that there is similar capacity and support through and into implementation of the Industrial Strategy.

2.6 Innovation and skills development are two sides of the same coin and are indispensable as human capital is required to improve productivity. YU has argued against the separation of the two themes into distinct pillars in the Industrial Strategy, which appears more to reflect embedded structures (i.e. government departments) and the process by which public funding is allocated. However, the interconnectedness between innovation and skills is critical. For example, the KTP programme has created new forms of value because of its explicit integration of innovation and skills development, and the University of Sheffield-led Advanced Manufacturing Research Centre is a clear demonstration of the success of integrating place-based research, innovation, knowledge exchange and skills, and the role of universities as anchor institutions in local and regional economies.[7]

3. Science and Innovation in Yorkshire and the Humber

3.1 Yorkshire institutions, including universities, are setting out robust cases for new investment in advance of the autumn 2017 Budget Statement and as part of the Industrial Strategy.[8] These interventions recognise the competitive and uneven nature of territorial economic development investment (including science and technology investment) in the UK, and within different parts of the north of England.[9]

3.2 Universities play a critical role in stimulating both the supply and demand for science, technology and innovation, drawing upon, in some cases, HEFCE Knowledge Exchange Funding resources (Table 1) alongside UK Research Council and other funding sources. This investment is even more important given the relatively low(er) levels of business and other forms of public R&D spend in Yorkshire and the Humber compared to elsewhere in the UK (see figures below). The challenge, as set out by the Industrial Strategy Commission in its recent report is for the UK's innovation system to "re-link excellence in basic and applied research; and ensure that the innovation in the high-skilled, high-productivity parts of our economy diffuses to the places and sectors currently stuck in a low-skill, low-productivity equilibrium".[10]

[7] http://www.amrc.co.uk/

[8] E.g. WYCA (2017) 'Combined Authority's ambitious £200m autumn budget submission, 16 October, West Yorkshire Combined Authority: Leeds: http://www.westyorks-ca.gov.uk/News/Articles/autumn-budget-submission/

[9] Raikes, L. (2017) State of the North 2017: The Millennial Powerhouse, ippr north: Manchester.

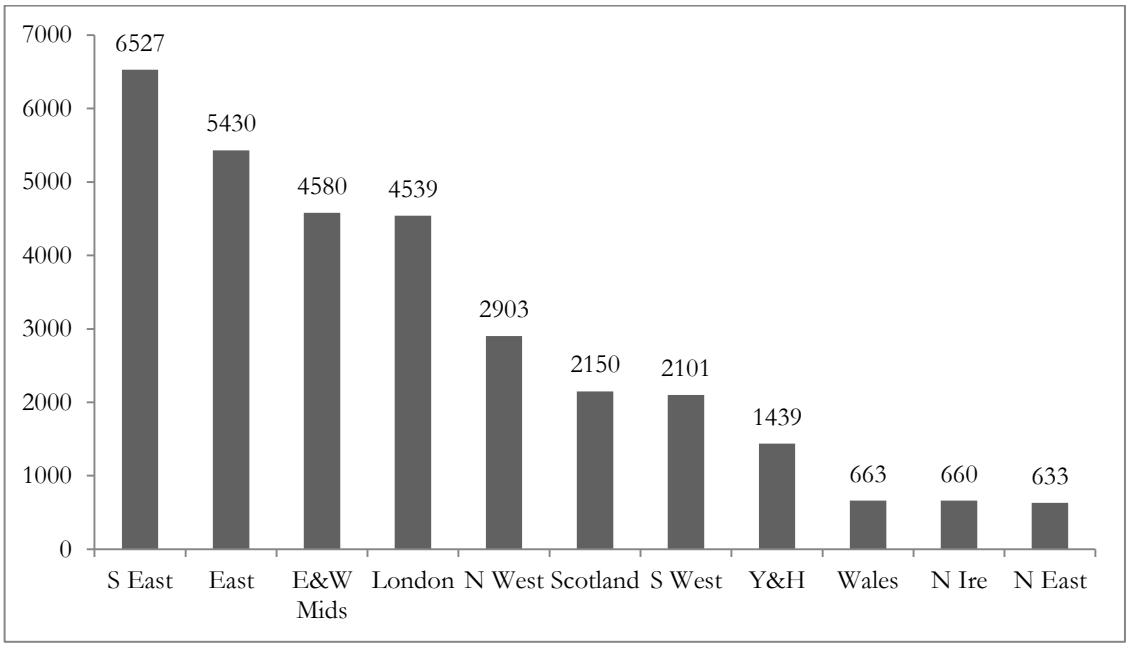
[10] ISC (2017) The Final Report of the Industrial Strategy Commission, Industrial Strategy Commission, The University of Manchester and The University of Sheffield: Manchester/Sheffield: 11.

Table 1: Knowledge Exchange Funding in Yorkshire and Humber (2017/18)

Institution	Total Knowledge exchange Funding
The University of Bradford	708,644
The University of Huddersfield	1,071,563
The University of Hull	1,480,315
The University of Leeds	3,825,000
Leeds Arts University	0
Leeds Beckett University	2,288,919
Leeds Trinity University	0
The University of Sheffield	3,724,944
Sheffield Hallam University	1,121,459
University of York	3,623,584
York St John University	0
Total	17,844,428

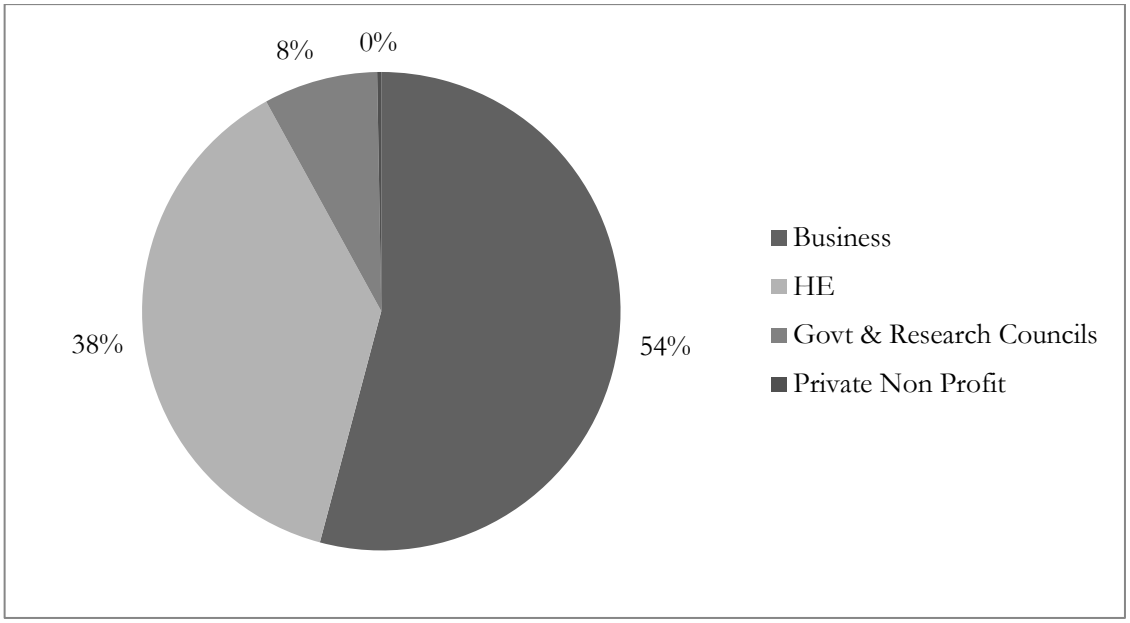
Source: HEFCE (2017) http://www.hefce.ac.uk/pubs/Year/2017/201724/

Figure 1: Total UK gross domestic expenditure (£m) on research and development by sector, country and region (2015)



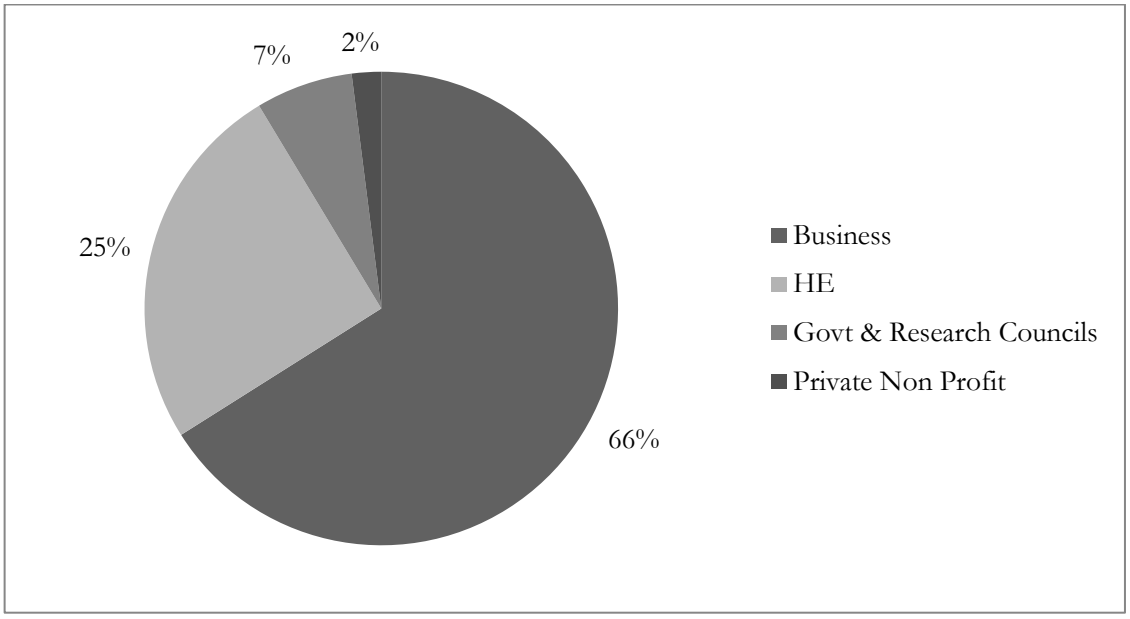
Source: Office for National Statistics (16 March 2017).

Figure 2: Gross domestic expenditure (£m) on research and development in Yorkshire and the Humber (2015)



Source: Office for National Statistics (16 March 2017).

Figure 3: Gross domestic expenditure (£m) on research and development in the UK (2015)



Source: Office for National Statistics (16 March 2017).

3.3 An important element of the process of mapping the innovation assets and future potential in Yorkshire has been the Science and Innovation Audits (SIAs). The University of Sheffield has been a co-sponsor of an 'Advanced Manufacturing' SIA.[11] The University of Leeds has led a 'Med-tech' SIA in Leeds City Region,[12] while the University of York has led a 'Bio-Economy' SIA across the North of England.[13] Universities in Yorkshire and the Humber are also expected to play a role in Wave 3 SIAs, including the Northern Powerhouse Chemicals and Processing Science (led by Tees Valley Combined Authority with support from North East, Humberside, and Liverpool City Region LEPs); Northern Powerhouse in Health Research (led by Northern Health Science Alliance and includes LEPs, universities and teaching hospitals from across the Northern Powerhouse). Universities in Yorkshire are also working with business and the public sector in developing emergent sector deals as part of the Industrial Strategy.

3.4 In the context of regulatory change in the HE sector nationally, it will be important that new and emergent institutions, such as UK Research and Innovation, Research England and the Office for Students, recognise and support the role of universities as major drivers of place-based and inclusive forms of growth and development. This means ensuring that excellence in teaching, research and knowledge exchange is embedded within policies designed to both ensure the UK HE sector strengthens its position globally and at the same time widens and deepens the role of universities within national and local industrial strategies.

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[11] http://www.amrc.co.uk/

[12] University of Leeds (2017) Opportunities and Growth: Medical Technologies in the Leeds City Region, a Science and innovation Audit sponsored by the Department for Business, Energy and Industrial Strategy, University of Leeds; Leeds.

[13] University of York (2017) The Bio-Economy in the North of England, a Science and innovation Audit sponsored by the Department for Business, Energy and Industrial Strategy, University of York: York.