



The All-Party Parliamentary
University Group

31 January 2017

Agenda

The subject of the meeting of the All-Party Parliamentary University Group is the Government's Industrial Strategy.

- 6pm** **Roberta Blackman-Woods MP**, Co-Chair of the All-Party Parliamentary University Group, welcome and introductions.
- c6.10pm** **Professor Quintin McKellar**, Vice-Chancellor, University of Hertfordshire
- c6.20pm** **Steven Wilson**, Head of Innovation, Greater Cambridge and Greater Peterborough Enterprise Partnership
- c6.40pm** Questions, comments, and discussion with university leaders, MPs and Peers.
- 7.30pm** Speaker meeting concludes.

Speaker biographies



Professor Quintin McKellar

Professor McKellar has been the Vice-Chancellor and Chief Executive of the University of Hertfordshire since 2011. He is chair of the Biological and Biotechnological Scientific Research Council (BBSRC) Animal Research Club and chair of the Board of Trustees of The Pirbright Institute. He is also a member of the Government Chief Scientist Steering Group on Animal and Plant Health in the UK. He is co-chair of the National Centre for Universities and Business (NCUB) Food Economy Task Force. He is a member of the Hertfordshire Local Enterprise Partnership and chair of the Hatfield Renewal Project Board. In 2015 he was elected as a Board member of Universities UK (UUK), and is also chair of the University Vocational Awards Council.

Professor McKellar was made a Commander of the Order of the British Empire (CBE) in 2011 for services to science. He was a distinguished researcher with interests in the pharmacology of anti-infective and anti-inflammatory drugs in domestic animals.

He graduated from Glasgow University Veterinary School in 1981, and went on to gain a PhD in Veterinary Parasitology in 1984. In August 1997 Professor McKellar took up the post of Scientific Director of the Moredun Research Institute and Chief Executive of the Moredun Foundation. In 2004, he was appointed Principal of The Royal Veterinary College of the University of London.



Steven Wilson

Steven is Head of Innovation for Greater Cambridge Greater Peterborough LEP, where he works in close partnership with industry, academia, the NHS, BEIS (incl. Innovate UK), DIT and others to develop the GCGP LEP area's priority sectors: Life Sciences; Agri-Tech; Advanced Engineering, Materials & HVM; ICT and Cleantech. He is a member of the GCGP LEP area's Science, Industry & Innovation Council and a Board Member of Medtech Accelerator Ltd., a joint venture Proof of Concept Fund co-funded by regional NHS organisations and

LEPs. He led the wide regional consortium that secured the East of England Science & Innovation Audit, which will report in Summer 2017.

Previously Steven was Head of Innovation for EEDA, where he led an expert team of sector programme managers. He was EEDA's lead for the Norwich Research Park, and a member of the BBSRC Project Board for a new national capability: The Earlham Institute. Earlier, he led the Prime Minister's Initiative for Vocational Training in Russia, and worked in technology transfer roles at the Universities of Oxford, Bristol and London.

Elected a Fellow of the Institute of Directors (FIoD) in 2001 and, in 2016, a Fellow of the Royal Society for the Encouragement of Arts, Manufactures and Commerce (FRSA) and a Policy Fellow of Centre for Science and Policy (CSaP) at the University of Cambridge, Steven is a Freeman of the City of London and Renter Warden of the Worshipful Company of Farriers.

Briefing: The Government's Industrial Strategy

Prepared for members of the All-Party Parliamentary University Group

This is not an official publication of the House of Commons or the House of Lords. It has not been approved by either House or its committees. All-Party Groups are informal groups of Members of both Houses with a common interest in particular issues.

This briefing document has been produced by Universities UK which provides the Secretariat for the University APPG.

Overview

On 23 January 2017, the government published its green paper, *Building our Industrial Strategy*. The green paper sets out how the government proposes to build a modern industrial strategy, and 38 consultation questions. Responses to the questions are invited until 17 April 2017.

The green paper sets out ten pillars the government believes are important to drive forward an industrial strategy, and the announcements most relevant to universities are summarised in this briefing.

The proposed ten pillars of a modern industrial strategy

The government proposes the following pillars for the industrial strategy based on evidence that shows they drive growth:

1. **Investing in science, research and innovation** – we must become a more innovative economy and do more to commercialise our world leading science base to drive growth across the UK.
2. **Developing skills** – we must help people and businesses to thrive by: ensuring everyone has the basic skills needed in a modern economy; building a new system of technical education to benefit the half of young people who do not go to university; boosting STEM (science, technology, engineering and maths) skills, digital skills and numeracy; and by raising skill levels in lagging areas.
3. **Upgrading infrastructure** – we must upgrade our standards of performance on digital, energy, transport, water and flood defence infrastructure, and better align central government infrastructure investment with local growth priorities.
4. **Supporting businesses to start and grow** – we must ensure that businesses across the UK can access the finance and management skills they need to grow; and we must create the right conditions for companies to invest for the long term.
5. **Improving procurement** – we must use strategic government procurement to drive innovation and enable the development of UK supply chains.

6. **Encouraging trade and inward investment** – government policy can help boost productivity and growth across our economy, including by increasing competition and helping to bring new ways of doing things to the UK.
7. **Delivering affordable energy and clean growth** – we need to keep costs down for businesses, and secure the economic benefits of the transition to a low-carbon economy.
8. **Cultivating world-leading sectors** – we must build on our areas of competitive advantage, and help new sectors to flourish, in many cases challenging existing institutions and incumbents.
9. **Driving growth across the whole country** – we will create a framework to build on the particular strengths of different places and address factors that hold places back – whether it is investing in key infrastructure projects to encourage growth, increasing skill levels, or backing local innovation strengths.
10. **Creating the right institutions to bring together sectors and places** – we will consider the best structures to support people, industries and places. In some places and sectors there may be missing institutions which we could create, or existing ones we could strengthen, be they local civic or educational institutions, trade associations or financial networks.

Investing in science, research and innovation

The green paper notes that while we have world-class research universities, ‘not one features in the ‘Top 10’ list compiled by Reuters covering innovation and commercialisation.’

The government plans to provide an additional £4.7 billion of funding to R&D by 2020-21. The government will ensure allocation of additional research investment ‘takes full account of the need to continue our world-class dual support system.’ The green paper indicates possible options on how the additional spending could be allocated:

- Expanding successful mechanisms such as Higher Education Innovation Funding (HEIF) or Knowledge Transfer Partnerships (KTPs), and new types of interventions to enable research and business to collaborate (such as skills or funding time away from the laboratory in businesses)

- Creating new funding streams to support world-class clusters of research and innovation in all parts of the UK, whether they are led by business or universities. This could involve creating new research institutions to back local strengths in world-class research.
- Increasing the number of PhDs and research fellowships in STEM subjects (science, technology, engineering and maths)
- Exploring programmes to attract leading academics to anchor strong departments
- Developing a new capital spending roadmap that would support fundamental research
- Deepening funding for existing sector-specific innovation funds matched by industry (like the Advanced Propulsion Centre, Aerospace Technology Institute and Biomedical Catalyst) or exploring similar arrangements for further sectors
- Creating ring-fenced funding for innovative procurement schemes, like the Small Business Research Initiative
- A new funding stream through the Industrial Strategy Challenge Fund – which will not require reductions in existing research priorities to pay for it – that draws on the experience of the US Defense Advanced Research Projects Agency (DARPA) programme.

The Industrial Strategy Challenge Fund will focus on challenges where:

- the global market is potentially large, or fast growing and sustainable
- the UK has capabilities to meet market needs in terms of research strength and business capacity
- there are significant social and economic benefits and
- there is evidence that government support will make a difference.

The green paper sets out ‘early suggestions’ for potential challenge areas, which include:

- Smart, flexible and clean energy technologies (such as storage, including batteries, and demand response)
- Robotics and artificial intelligence (including connected and autonomous vehicles and drones)
- Satellites and space technologies
- Leading-edge healthcare and medicine
- Manufacturing processes and materials of the future
- Bioscience and biotechnology

- Quantum technologies and
- Transformative digital technologies including supercomputing, advance modelling, and 5G mobile network technology.

The green paper also says there may be more opportunities, such as in the creative industries, and welcomes ideas through the series of consultation events run by Innovate UK and research councils. The fund is envisaged to support a range of industrial R&D activities which could include joint research projects, graduate placements, setting up demonstrators to test near-to-market technologies, and creating centres to promote commercialisation.

The paper notes that ‘in some cases, a challenge could lead to the creation of a new institution to drive forward a technology.’ The government has asked Sir Mark Walport to review the case for a new research institution on battery technology, energy storage and grid technology, reporting in early 2017.

The government will be commissioning research on principles and practices on commercialisation of intellectual property. These findings will be used to identify and spread best practice among universities’ technology transfer offices.

Developing skills

The green paper notes that the UK ‘has one of the most accomplished higher education systems in the world,’ and it is estimated that around half of all 17-year olds will participate in higher education by the age of 30. It states, however, that the UK’s poor performance in basic and technical skills is key to the UK’s persistently lower levels of productivity compared with other advanced economies. It notes that ‘our failure to address skills shortages has increased our reliance on flows of migrant labour.’ Skills shortages highlighted in the green paper include:

- A shortage of high-skilled technicians below graduate level
- Shortages in sectors that depend on science, technology, engineering and maths (STEM) skills. Nearly half of businesses report a shortage of STEM graduates being a key factor in being unable to recruit appropriate staff.
- Skill shortages specific to certain sectors, who have particular specialisms, for example the nuclear industry.

The green paper proposes the creation of a new technical education system. This will include:

- Creating fifteen core technical routes for students, and an aspiration that every student undertaking one of the routes in college will be entitled to a high quality substantive work placement.
- Creating new Institutes of Technology to deliver high-quality technical education at levels 3, 4 and 5, tailored around the needs of local employers. £170 million of capital funding will be provided by government.
- Reviewing the current loan system for technical education and the option to create maintenance loans
- Creating a course-finding process for technical education, similar to the UCAS process.

STEM shortages will be addressed through:

- Government seeking partners to open maths free schools, such as the ones pioneered by Exeter and King's College London
- Encouraging the education sector to increase opportunities to grow STEM subjects.

The government also intends to work towards a single, authoritative view of identifying persistent or emerging sector specific skills gaps faced by the UK now and in the future; publish a comprehensive strategy later this year for careers information, advice and guidance; and explore new approaches to encouraging lifelong learning.

Upgrading infrastructure

The green paper sets out government's approach to improving infrastructure services, which includes:

- Higher rates of public infrastructure investment - £2.6 billion for improvements in transport projects, £400 million in a new digital infrastructure investment fund, a new £2.3 billion housing infrastructure fund, and £170 million for flood defences. The government has also confirmed plans for a new expressway from Oxford to Cambridge.
- Supporting private sector infrastructure investment - exploring new construction-only guarantees which will provide new opportunities for private involvement in infrastructure

- Making infrastructure costs more competitive - a new review will report in summer 2017 on how to improve the quality, cost and performance of infrastructure, and the Chief Secretary to the Treasury will chair a new Infrastructure Delivery Ministerial Group
- Better matching of infrastructure to local plans - the new housing infrastructure fund will allow joined up planning for housing and infrastructure, and through devolution deals this will enable cities to plan infrastructure at a local level
- Data infrastructure - ensuring the right elements are in place in which open data drives growth, efficiency and innovation.

Supporting businesses to start and grow

The green paper states that the UK ranks third for start-ups, but only 13th for the number of businesses that scale up successfully, according to OECD research. Although the UK has an excellent record in creating businesses, many face barriers to scaling up – including a lack of finance, inability to adopt digital processes, and limited access to skills.

Government plans to address these barriers include:

- The launch of a new patient capital review, chaired by Sir Damon Buffini. The review will identify the root causes limiting the availability of long-term finance for growing innovative forms, including any barriers that investors may face. A consultation will be published in the Spring and the review will make its final recommendations ahead of the Autumn Budget 2017.
- Increasing investment in venture capital by the British Business Bank by £400 million
- Creating the Northern Powerhouse Investment Fund and Midlands Engine Investment Fund, which add to and aggregate existing local investment funds
- Working with partners including Local Enterprise Partnerships (LEPs), Growth Hubs, universities, business schools and others to build peer to peer business networks for fast-growing firms
- Through use of VAT data, identify fast growing firms to enable the efficient offer of advice and support
- A review of entrepreneurship led by Professor Tim Dafforn, Chief Entrepreneurial Adviser at the Department for Business, Energy and Industrial Strategy (BEIS)
- Supporting the Productivity Council, led by Sir Charlie Mayfield, to facilitate stronger business to business engagement, including through the appropriate use of digital technologies.

Improving procurement

The government sets out the following areas of focus for the industrial strategy:

- Stimulating innovation through government procurement; David Connell is leading a review on how to improve the Small Business Research Initiative (SBRI) in light of the US experience. This could include extending the scheme to new parts of the public sector.
- Supporting economic growth through a 'balanced scorecard' approach; this will involve all major government procurement projects being structured to support productivity improvements
- Procurement in key industries, including defence and health;
 - Defence - A new innovation and research insight unit is being established to look at the implications of emerging technology and innovation to defence and homeland security, and will inform the future science and technology programme for the Ministry of Defence (MoD). Matching of defence and security customers with suppliers, through bringing together research institutions, innovation centres, SMEs, and industry partners is being set up through a defence and security accelerator. A joint apprenticeship scheme between MoD and BEIS is also being developed.
 - Health – Government is responding to the Accelerated Access Review, which proposed greater capacity and capability within Academic Health Science Networks and major research-led tertiary trusts to support local health economies with adoption of new technologies.

Encouraging trade and inward investment

The green paper sets out the government's aspiration to join up trade and inward investment promotion with local areas. Trade and investment promotion services are being improved, with teams dedicated to the Northern Powerhouse, the Midlands Engine, Greater London and southern England, working closely with local leaders to support small firms across the country to export and promote local strengths to overseas investors. Other actions under way and new commitments by government include:

- Maximising UK presence at existing international trade fairs, and exploring where there are sectors which could benefit from support to create trade fairs, in particular in emerging sectors such as the innovative technology industries.

- Improving market access for exporters, with the Department for International Trade holding discussions on market access issues with countries outside of the EU, and establishing a series of working groups with key trade partners.
- Developing a new, more strategic approach to inward investment. The Department for International Trade will review what can be learned from successful inward investment promotion agencies across the globe and will report in 2017.
- Creating a new more active “Team UK” approach to winning overseas contracts, with the Government helping convene consortia of companies to back a single UK bid for major overseas projects.
- Doubling export finance capacity, and increasing fourfold the number of foreign currencies that it supports
- Working with behavioural insights experts, to improve targeting of potential exporters and using HMRC data.
- Making it easier for firms to access government support through a new digital platform to provide digital services to help exporters and investors.

Delivering affordable energy and clean growth

The green paper highlights that the government doubled support for energy innovation in the 2016 Autumn Statement, and is investing £600 million to accelerate the transition to ultra-low emission vehicles.

The government will set out its emissions reduction plan in 2017, as well as a long-term road map to minimise business energy costs, informed by a review of the opportunities to reduce the cost of achieving decarbonisation goals in the power and industrial sectors. The review will cover how best to support greater energy efficiency, the scope to use existing instruments to support further reductions in the cost of offshore wind once current commitments have been delivered, and how the government can best work with Ofgem to ensure markets and networks operate as efficiently as possible in a low carbon system.

As mentioned under the science section earlier, government will review the case for a new research institution to act as a focal point for work on battery technology, energy storage and grid technology, reporting in early 2017.

Cultivating world-leading sectors

The government is keen to address significant variations in the productivity of different sectors. It highlights the government's work with particular sectors, automotive and aerospace being two examples, which has been successful in benefiting all firms in an industry.

Therefore the government is encouraging businesses to make proposals to government to transform and upgrade their sector through 'Sector Deals' – where sectors address shared challenges and opportunities. The green paper notes 'this is not about the government providing additional funding.' The green paper states the government is looking for businesses to collaborate with other stakeholders, such as universities and local leaders, to produce a clear proposal for boosting the productivity of their sector, which could include developing clusters, boosting skills and commercialising research.

The green paper sets out a case study for the automotive sector, with examples of leadership, innovation and knowledge, and skills institutions supporting a developed sectoral policy. Innovation and knowledge institutions listed include the Advanced Propulsion Centre and WMG at the University of Warwick.

Early sector deals are noted in the green paper, which include:

- Life sciences, a strategy led by Sir John Bell
- Ultra low emission vehicles, led by Richard Parry-Jones
- Industrial digitalisation, Juergen Maier will review how UK industry can benefit from the accelerated adoption of digital technology across advanced manufacturing
- Nuclear, Lord Hutton will oversee work to improve UK competitiveness and skills
- Creative industries, Sir Peter Bazalgette will review how the UK can utilise and develop new technology, capitalise on intellectual property rights and grow talent pipelines.

The green paper reiterates government's long-term commitment to building on existing sector relationships, including a government-industry £3.9 billion commitment to aerospace, with £14 million invested in Rolls-Royce and Loughborough University in a collaborative project to reduce engine emissions. This example is used to highlight how government investment can increase private investment including in research and development.

Driving growth across the whole country

The unevenness of growth across and within parts of the UK is highlighted in the green paper as a major challenge. The green paper attributes the differences in income between different parts of the country to a number of factors, including the different qualification and skills levels of people in different places, that research and development investment tends to be lower in places with low productivity, and different areas do not always have strong institutions to support their growth.

The government makes the following proposals:

- Working with local areas to close the skills gap, which could include new schemes to support the retention and attraction of graduates, potentially spreading programmes like Sheffield's RISE initiative, which places graduates in local SMEs
- The creation of new competitive funding streams to support world-class clusters of research and innovation in all parts of the UK, whether they are led by business or universities. This could potentially involve creating new institutions or strengthening existing ones. Consideration will also be given to expanding Higher Education Innovation Funding (HEIF) and Knowledge Transfer Partnerships (KTPs).

Ministerial forums on industrial strategy are proposed in each of the devolved administrations, to consider how the industrial strategy can best address key productivity barriers.

Creating the right institutions to bring together sectors and places

The green paper states that competitor economies often have better developed sectoral institutions and stronger local institutions than the UK. It sets out key features of successful clusters from around the world, including:

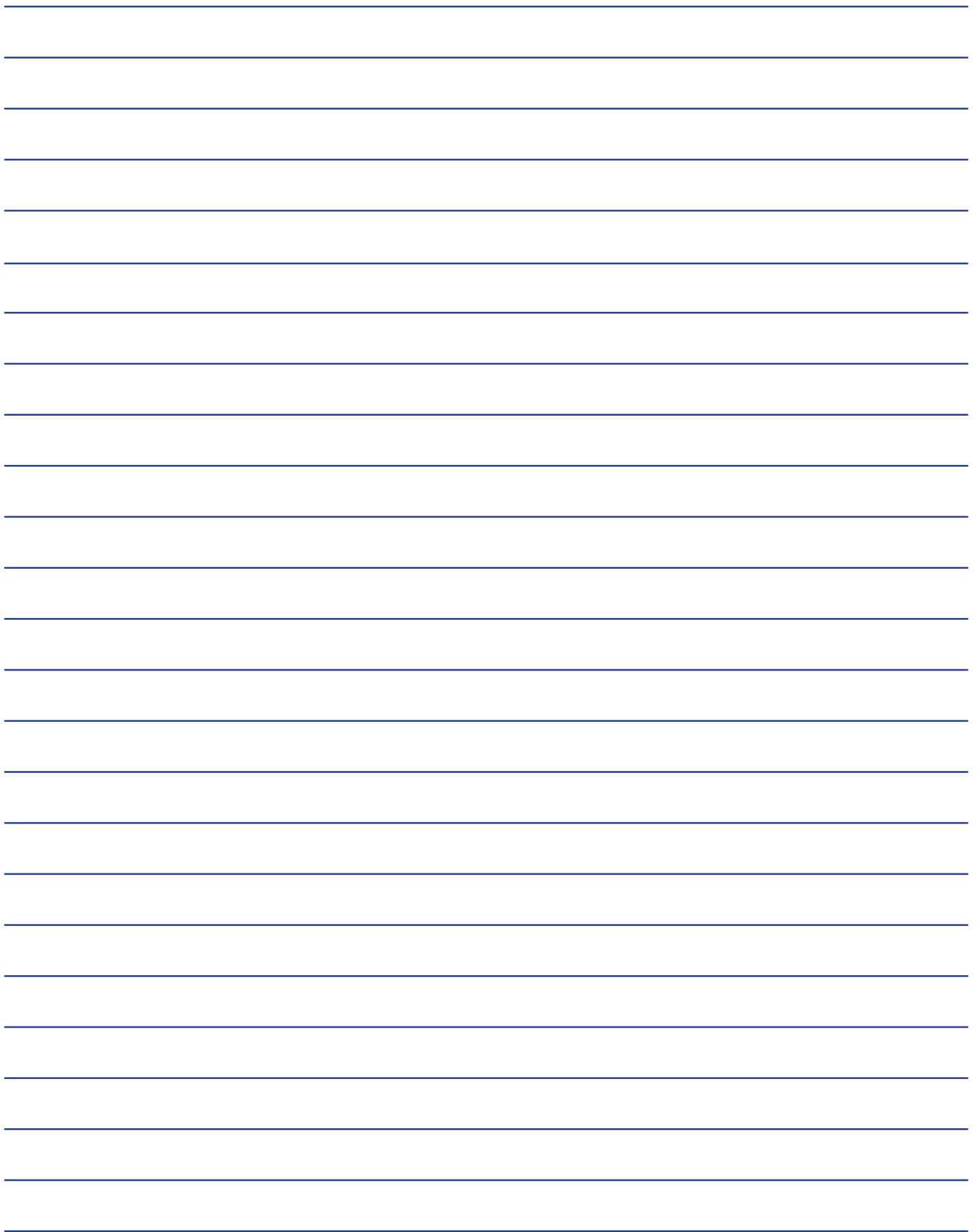
- 'Anchor' businesses who play a key role in attracting skilled workers to an area or generating spin off companies
- Institutions that support innovation, including universities, government and research labs, science parks, innovation districts, catapults and incubator spaces

Universities are described as having 'a big impact on local growth and regeneration, including by attracting young skilled people; spinning out firms; and attracting research intensive businesses to locate in the area.'

A case study of Cambridge as a cluster is given in the green paper, highlighting the role of the University of Cambridge, Cambridge Science park, the Laboratory of Molecular Biology and Addenbrookes Hospital as being at the heart of a cluster of tech and biotech businesses. The roles of Cambridge Enterprise, Cambridge Consultants and the Judge Business School are also mentioned.

The government proposes to:

- Review whether more can be done to leverage government and research council laboratories to drive local growth – including considering their role in supporting wider innovation districts and whether surplus government land or buildings could be used to support innovative businesses around them
- Support networks of universities where they want to come together to improve commercialisation. This could mean deepening cooperation amongst existing regional groups such as the N8, SETsquared and Midlands Innovation.
- Get a better understanding of the relative weakness of venture capital funding and entrepreneurship networks outside the South East
- Work with LEPs to review their role in delivering local growth and examine how they can be strengthened
- Explore further devolution deals for the largest cities.





The All-Party Parliamentary **University Group**

Future meetings

Tuesday 7 March 2017

Social mobility

6-7.30pm, Committee Room 4, followed by dinner

Wednesday 10 May 2017

Higher level skills

8.30-10am, Dining Room B

Tuesday 20 June 2017

Devolution

6-7.30pm, Committee Room 4, followed by dinner

For more information about the group please email appug@universitiesuk.ac.uk or visit www.universityappg.co.uk