

## **Evidence for the science and innovation strategy 2014 – Russell Group submission to RCUK and the Funding Councils**

### **Summary**

#### *Overview*

1. The UK's universities lead the world in producing excellent research – we should aim to secure this position of strength for the long-term, maintaining our international competitiveness and paving the way for future economic growth. We must be able to attract and retain private investment in R&D and the best talent, both of which are increasingly mobile internationally.
2. Our world-class universities are anchors for growth in their regions and should be considered as strategic assets for the UK around which advances in research and future business growth can be catalysed.
3. To remain competitive and position the UK strongly for the future, investment in R&D as a proportion of GDP needs to increase substantially: first by increasing investment in world-class basic research and then ensuring UK investment in innovation and commercialisation matches levels seen in our nearest European competitors.
4. EU funding is not just an added bonus, but a vital part of university research funding. The new science and innovation strategy must commit to ensuring that full access to EU funding through Horizon 2020 and other research, innovation and skills initiatives is maximised and maintained for the long-term.

#### *Research capability*

5. Public funding is essential for curiosity-driven research, which to have economic benefit typically needs to be sustained over the medium to long-term. The continued ring-fencing of the science budget is critical in demonstrating the Government's long-term commitment to science and research, and protecting that investment from being diverted to other more short-term policy priorities.
6. The UK's dual support system of support for university research plays an essential part in sustaining research of the highest quality. The combination of stable core funding through the Funding Councils, and competitively awarded grants from the Research Councils ensures the diversity and breadth of research in the UK.
7. The current balance of research funding between basic and more applied areas is about right, but the overall level of investment should rise.
8. Our global competitors are increasingly concentrating funding on their leading universities and are already reaping the rewards. Investment in the UK should similarly focus on our world-leading universities and their institutes where there is a critical mass of research excellence. The breadth and depth of activity in such universities provides the greatest opportunities for multidisciplinary research, to make the most effective use

of facilities through collaboration and equipment sharing initiatives and to train the next generation in the latest techniques.

9. In order to maintain the UK's international competitiveness and maximise the impact of public investment, it is essential that future decisions about the provision of funding are based on protecting university autonomy.
10. The formula approach to funding is highly efficient as a mechanism for making public investments in research and innovation, compared to costly and time consuming bidding processes. It also provides the autonomy and certainty to invest in areas of scientific opportunity identified by our world-leading researchers.

#### *Infrastructure*

11. The majority of research undertaken in the UK relies upon access to small- and medium-scale research infrastructure, much of which is located within leading research-intensive universities. The bulk of capital funding should thus be allocated at the institution and research project level as opposed to large-scale projects, with a strong emphasis on formula funding.
12. We urge the Government to give a clear commitment to support the on-going resource costs associated with operating, maintaining and up-grading capital facilities.
13. In order to choose between capital priorities identified in the initial round, we recommend further in-depth consultation with key academic research leaders to make a final recommendation on large-scale project funding to Government.

#### *Skills for science and innovation*

14. Funding through HEFCE to support the teaching of STEM and other high-cost strategically-important subjects should be increased. Maintaining quality of provision is absolutely key. 'Band B' subjects are already under-funded, so investment for any growth in undergraduate student numbers (in 2014/15 and beyond) should also include additional funding for STEM and other high-cost subjects.
15. In order to signal that the UK's doors are fully open to genuine international students, including STEM students, the Government should: prioritise lifting caps on international student numbers in medicine and dentistry, remove students from the net migration target, reconsider the introduction through secondary legislation of the healthcare levy contained in the Immigration Act, introduce a longer post-study work period in line with our competitors, and reduce the cost of a student visa.

#### *Research-business interface and impact*

16. The UK needs to create the right environment for new ideas to develop and grow into commercial success. The Government should continue to support universities' efforts to build strong links with business and public services and to establish their own spin-outs and other commercial activities. Technology transfer offices and other interface initiatives play a vital role in connecting universities with business. The availability of proof of concept funding is critical in helping to bridge the gap between research and its possible applications in the economy and society. Financial and tax support for early stage ventures from universities should also be enhanced.
17. HEIF and equivalent funds in the Devolved Administrations that give universities autonomy in how they are used must be maintained and targeted to support those

universities with the research excellence, critical mass and track record of innovation where they can have most effect.

18. On-going support for Institutional Impact Acceleration Accounts is also important. In future we would like to see IAAs available across the Research Councils as this will help to support interdisciplinary research through proof of concept to commercialisation. Funding should also be distributed using a formula approach as this is the most effective and efficient mechanism.
19. Research excellence must be at the heart of the Catapults. They should be engaged directly with the UK's excellent research-intensive universities, enabling them to build on areas of existing strength and comparative advantage.
20. In order to improve the uptake of Knowledge Transfer Partnerships (KTPs), local enterprise partnerships (LEPs) could be major contributors to KTP funding, raising awareness with the SME community in particular, and helping to boost the number of partnerships supported each year in their regions.
21. We would like to see opportunities for world-class research-intensive universities in all areas of the UK to engage in the University Enterprise Zone initiative in future.
22. A more strategic approach to the Research Partnership Investment Fund (RPIF) could be achieved with a longer-term and more flexible initiative.

# Science and innovation strategy 2014 – Russell Group submission

## 1. Introduction

- 1.1 The purpose of The Russell Group is to provide strategic direction, policy development and communications for 24 major research-intensive universities in the UK; we aim to ensure that policy development in a wide range of issues relating to higher education is underpinned by a robust evidence base and a commitment to civic responsibility, improving life chances, raising aspirations and contributing to economic prosperity and innovation.
- 1.2 We welcome this opportunity to contribute to development of the new science and innovation strategy for the UK and we would be happy to explore the issues raised in more detail as the Funding Councils and RCUK develop their inputs to the strategy. The Russell Group will also be contributing separately to the on-going capital consultation.
- 1.3 The UK's research community, and especially its research-intensive universities, are best placed to identify strategic priorities for science and innovation. Indeed, universities should be at the heart of the new strategy, with our world-leading research-intensive universities being recognised as key assets for the UK's scientific, social and economic future.
- 1.4 The contribution of universities to generating and disseminating new knowledge and ideas is an incredibly valuable public good, which should never be overlooked. It is important, especially in difficult economic times, to resist the tendency to view universities primarily as instruments to deliver short-term economic development or the skilled labour force of tomorrow. Their role is much more complex, and their contribution much broader than that.
- 1.5 We understand that the new science and innovation strategy will focus primarily on capital spending and on the BIS landscape and only out to 2020. However, we hope that the strategy will go further on all of these:
  - (a) It is essential that science and research resource funding, preservation of dual support, HEIF and the ring fence be confirmed for the long-term alongside the very welcome announcements that the Government will commit around £1.1 billion per year in real terms for capital to 2020-21.
  - (b) The science and innovation strategy should look beyond BIS to ensure there are appropriate linkages with other Government Departments and their investments in science, research and innovation.
  - (c) The 2020 timescale is short in terms of the research lifecycle – the new strategy should be ambitious about laying the grounds for the longer-term, looking beyond the lifetime of the next parliament to ensure the UK remains internationally competitive to 2030 and beyond.

## 2. International benchmarking and key challenges

- 2.1 The UK's universities lead the world in producing excellent research:
  - Whilst the UK has just 4% of researchers globally, we produce 12% of global citations and 16% of the world's most highly-cited articles

- The UK ranks first in the world by field-weighted citation impact.<sup>1</sup>
- 2.2 The UK's universities have also substantially increased their role in undertaking wider research and development activities (R&D) in recent decades, with R&D performed by UK universities increasing in value by £3.3 billion (86%) in real terms between 1995 and 2011. UK universities also undertake a greater proportion of total R&D than universities in competitor countries.<sup>2</sup>
- 2.3 Russell Group universities, in particular, produce an extremely high level of world-leading research: 67% of world-leading research originating from all UK universities according to the last RAE.<sup>3</sup>
- 2.4 The strength of our research base enables the UK to attract high levels of inward investment and the best international researchers to locate within our centres of excellence, underpinning innovative business and research clusters. Between 2000 and 2011, the most consistent growth in overseas-financed R&D has been in the HE sector: with an average annual increase of nearly 9% over the period.<sup>4</sup>
- The World Economic Forum consistently ranks the UK as among the best in the world for business-university collaboration on R&D.<sup>5</sup>
- 2.5 However, public and private R&D expenditure in the UK is low compared to international competitors:
- R&D expenditure as a percentage of GDP declined in 2012 (from 1.77% in 2011 to 1.72%) – with decreases in both business and government investment
  - This is well below the EU-28 provisional estimate of 2.06% and investment by the US of 2.8% and Germany 3% in 2011.
- 2.6 Indeed, this year, an international comparison of national HE systems found that the UK's HE sector ranks second out of 50 countries for output, but 21<sup>st</sup> for resource inputs.<sup>6</sup>
- 2.7 The result is that the UK can boast some extremely impressive research productivity statistics –underpinned in particular by the activities of Russell Group universities. In comparison to seven other research-intensive countries (Canada, China, France, Germany, Italy, Japan and the US) and three fast growing nations (Brazil, India and Russia), the UK in 2012 ranked:
- 1<sup>st</sup> on articles produced per unit of gross expenditure on R&D (GERD)
  - 1<sup>st</sup> on citations per unit of gross expenditure on R&D (GERD)
  - 2<sup>nd</sup> on citations per researcher
  - 1<sup>st</sup> on citations per unit of Higher Education Expenditure on R&D (HERD).<sup>7</sup>

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<sup>1</sup> 'International Comparative Performance of the UK Research Base – 2013: A report prepared by Elsevier for BIS'

<sup>2</sup> In 2011, UK universities contributed around 27% of total R&D undertaken in the UK, compared to an average of 19% across the OECD area as a whole: National Audit Office, 'Research and Development funding for science and technology in the UK: Memorandum for the House of Commons Science and Technology Committee' (June 2013)

<sup>3</sup> Research Assessment Exercise 2008 (for the 24 universities that are now Russell Group members)

<sup>4</sup> BIS, 'Innovation Report 2014: Innovation, Research And Growth'

<sup>5</sup> World Economic Forum, 'The Global Competitiveness Report: 2013–2014'

<sup>6</sup> Universitas21 Ranking of National HE Systems 2014

- 2.8 In terms of wider impacts, Russell Group universities have an economic output of over £32 billion per annum (44% of the whole university sector), they bring in £886 million of contract research income from business and other partners and account for 63% of all IP income generated by UK universities (2012-13 figures). The economic and social benefits from this activity are highlighted in a number of Russell Group reports, with further case studies available on our web site<sup>8</sup>. Russell Group universities have also made significant commitments to investing in capital and infrastructure projects that will have a major long-term return for the economy. Over the five-year period 2012-13 to 2016-17 Russell Group universities are investing around £9 billion of their own resources that is expected to deliver gross value added (GVA) with a current value of £44.3 billion for the UK economy<sup>9</sup>.
- 2.9 But, the long-term sustainability of performance at this level must be in doubt if our world-class researchers are not able to access internationally competitive levels of funding for research, capital and activities to support knowledge exchange and the commercialisation of research. The on-going essentially flat cash settlement (even with some small increases announced in the last Autumn Statement and Budget) has meant the value of the science and research budget has significantly declined in real terms since 2009-10. It will be worth between £420 million and £560 million less in 2015-16 than would have been delivered with indexing to inflation.<sup>10</sup>
- 2.10 In contrast, many other governments have recently made significant commitments to science and research and we would hope that the strategy is ambitious in how it seeks to position the UK for the future alongside our international competitors. Some examples of key developments internationally include:
- In 2010, the French government launched its Future Investments Initiative outlining €22 billion (£18 billion) for research and universities. More than €7.7 billion (£6.3 billion) has already been allocated to the “Excellence Initiative” (IDEX) since 2010 to create eight campuses bringing together leading institutions to compete with the best universities in the world. This year, an additional €2 billion (£1.6 billion) has been announced as the second wave of funding to establish between three and five new IDEX campuses.
  - The new ‘Canada First Research Excellence Fund’ will invest CAN\$1.5 billion (£810 million) over 10 years, starting in 2015-16, to support university research that contributes to Canada’s long-term economic competitiveness. The funding will be allocated to research-intensive universities who have already achieved excellence in particular fields of research.
  - In 2013, Norway allocated a total of NOK 2 billion (£200 million) of funding to 13 research groups for a period of ten years located at five leading Norwegian universities. Since 2002, 21 Norwegian Centres of Excellence have been established.
  - China is rapidly increasing research funding for universities. In 2010, China invested £7.1 billion in university research, surpassing the UK. Public R&D investment is concentrated into a few large Chinese universities.

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<sup>7</sup> International Comparative Performance of the UK Research Base – 2013: A report prepared by Elsevier for BIS

<sup>8</sup> See: [http://www.russellgroup.ac.uk/uploads/RG\\_ImpactOfResearch2.pdf](http://www.russellgroup.ac.uk/uploads/RG_ImpactOfResearch2.pdf); <http://russellgroup.org/SocialImpactOfResearch.pdf>; <http://russellgroup.org/JewelsInTheCrown.pdf>

<sup>9</sup> [http://www.russellgroup.ac.uk/uploads/Economic-impact-of-the-Russell-Group\\_1.pdf](http://www.russellgroup.ac.uk/uploads/Economic-impact-of-the-Russell-Group_1.pdf)

<sup>10</sup> The range depends on which measure of inflation is used: GDP deflator or CPI.

- Following the Brain 21 programme, which invested over £1.8 billion between 1999 and 2012 to achieve 10 globally competitive research universities, South Korea is investing a further £1.2 billion over seven years to 2019, through its BK21 Plus programme to further cultivate a small number of research-intensive universities.

2.11 The UK is also unusually reliant on overseas funding of R&D. Nearly 20% of gross expenditure on R&D conducted in the UK is now financed from abroad (compared to around 4% in Germany and the US)<sup>11</sup>. On the one hand, this is clearly a reflection of the quality, breadth and depth of the UK science base in being able to attract inward investment. But it also shows how dependent the UK is on being able to continue to attract this investment – a task that will only become harder as countries such as China start to attain their full potential in research and innovation.

2.12 The UK already compares poorly with international competitors on R&D spending as a proportion of GDP, but if this international component is excluded to compare just home-grown investment then the UK would lie between Spain and Portugal, with R&D as a proportion of GDP less than half that of Germany<sup>12</sup>.

2.13 The UK is also significantly behind its main international competitors in making public sector investments to facilitate innovation and business-university collaboration, as noted in a recent report for BIS<sup>13</sup>. For example, whilst the Technology Strategy Board (TSB) has an annual budget of £440 million, a number of other European countries provide higher levels of investment into publicly funded innovation initiatives. For example:

- The annual budget of Germany's network of 67 Fraunhofer Institutes is £1.7 billion (€2 billion).
- France's network of 34 Carnot Institutes are funded by a public endowment of £1 billion (€1.3 billion) and the network of 71 Innovation Clusters were awarded £2.2 billion (€2.7 billion) between 2008 and 2012 in state funding, with a renewed commitment to internationalise the network from the French government in 2013.<sup>14</sup>
- The annual budget of Finland's national innovation agency, TEKES, is £480 million (€577 million). This represents £89 of public investment into innovation per capita compared to £7 per capita in the UK.

**2.14 The UK's universities lead the world in producing excellent research – we should aim to secure this position of strength for the long-term, maintaining our international competitiveness and paving the way for future economic growth. We must be able to attract and retain private investment in R&D and the best talent, both of which are increasingly mobile internationally.**

2.15 But increased costs and global competition mean that the UK's comparative performance in research cannot be maintained indefinitely on current levels of

<sup>11</sup> OECD Main Science and Technology Indicators, 2013 (GERD financed from abroad)

<sup>12</sup> Comparing just the home-financed portion of GERD, expenditure on R&D as a proportion of GDP would be 1.38% for the UK, compared to: Germany 2.86%, US 2.65%, France 2.1%, Canada 1.6%, Portugal 1.42% and Spain 1.22% (OECD Main Science and Technology Indicators 2013).

<sup>13</sup> BIS, 'Insights from international benchmarking of the UK science and innovation system: A report by Tera Allas' (2014)

<sup>14</sup> The Carnot Institutes are a network of public research institutions dedicated to conducting partnership research for companies, promoting innovation and developing technology transfer. The Innovation Clusters are collaborations of companies, public HEIs and research laboratories focusing on market-oriented projects and prototypes.

investment. Our global competitors in the US, East Asia and Europe are investing billions in higher education, research and innovation– and money really matters.

- 2.16 **To remain competitive and position the UK for the future, investment in R&D as a proportion of GDP needs to increase substantially.**
- 2.17 There is clear evidence that business investment in R&D is correlated with public investment and is dependent on sustained public funding.<sup>15</sup> In order to boost business funded R&D and innovation, government should consider increasing its own investment: first by lifting investment in world-class basic research and then **ensuring UK investment in innovation and commercialisation matches levels seen in our nearest European competitors.**
- 2.18 Increasingly, our universities are turning to Europe to finance research and innovation. Horizon 2020, the new Framework Programme for research and innovation, presents huge opportunities for British universities. The UK has out-performed many of its international rivals in winning EU research funds and the Russell Group has been central to that success.
- The UK has won 14.5% of all Framework Programme 7 (FP7) funding.<sup>16</sup> The UK has received more than £5 billion from FP7 and won more funding in 2012-13 than any other Member State. Based on this success, the out-going research Commissioner, Geoghegan-Quinn, has predicted the UK could win up to £2 billion in the first two years of Horizon 2020.<sup>17</sup>
  - The UK hosts the highest number of European Research Council (ERC) grants of all Member States: 23% of all ERC grants compared to 14% in Germany, our nearest competitor.<sup>18</sup>
  - Funding for competitiveness and innovation makes up 18.3% of the UK's receipts from the EU.<sup>19</sup> FP7 alone was 14% of the UK's receipts from the EU; this is higher than in any Member State except the Netherlands.
- 2.19 EU funding is an irreplaceable and increasingly valuable source of additional funding for UK universities. As well as allowing our researchers to work internationally to address common global challenges, EU funding generates an excellent return for the UK economy.
- 2.20 Russell Group universities secure over £400 million in research funding a year from the EU, which accounts for 11% of the universities' collective research grant income.<sup>20</sup> **EU funding is not just an added bonus, but a vital part of university research funding. The new science and innovation strategy must commit to ensuring that full access to EU funding through Horizon 2020 and other research, innovation and skills initiatives is maximised and maintained for the long-term.**

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<sup>15</sup> Analysis of OECD data shows a marked correlation between government financed and private sector financed R&D in the UK and across 22 other countries. BIS, 'Insights from international benchmarking of the UK science and innovation system: A report by Tera Allas' (2014)

<sup>16</sup> European Research Area Facts and Figures 2013 report.

<sup>17</sup> Speech given by Commissioner Geoghegan-Quinn at the UK launch of Horizon 2020 (31/1/14).

<sup>18</sup> European Commission E-CORDA data extracted February 2014.

<sup>19</sup> EU Budget 2012 Financial Report.

<sup>20</sup> HESA finance data 2012/13.

### 3. Research capability

- 3.1 World-class universities generate economic and social impacts through a large volume of excellent research. The UK's world-class universities account for a significant proportion of the country's leading research due to their continuing ability to attract the world's top talent and their investment in cutting-edge, frontier research. They are capable of solving global challenges through promoting and facilitating multidisciplinary research and play a significant role in international collaborations. The critical mass of talent and expertise within an institution means world-class universities are able to respond much more quickly to meet the challenging timescales needed by business and government.
- 3.2 Such universities also provide international leadership and access the latest global breakthroughs in research. They are a core part of the UK's absorptive capacity for new ideas and knowledge, which can then spill over into the wider economy.
- 3.3 In highly developed economies such as the UK, growth increasingly needs to come from investments in research, innovation and human capital– all areas in which the role of universities is critical<sup>21</sup>. On-going underinvestment in these areas by Government and business will affect the UK's long-term growth prospects.
- 3.4 **Our world-class universities are anchors for growth in their regions and should be considered as strategic assets for the UK around which advances in research and future business growth can be catalysed.**

#### *The science ring fence*

- 3.5 **Public funding is essential for curiosity-driven research**, which contributes to the UK's knowledge base and often underpins future innovations that transform our lives, reaching areas we may never have thought of. Research, particularly basic research, is a speculative and high-risk endeavour and the time period between initial investment and economic or social impact can be lengthy, often taking decades and requiring on-going funding to develop and realise initial research ideas. The Government therefore has an important role to play in the funding of research, and particularly basic research, which the private sector is less inclined to fund due to the distance from market.
- 3.6 Provision of public funds also ensures that the widest breadth of research disciplines can be supported. This is important not only because we do not know where the opportunities and challenges of tomorrow may arise, but because many of those challenges are likely to require interdisciplinary solutions. Addressing climate change, for example, requires a whole range of physical, natural, social sciences and engineering and technology disciplines to come together to develop our understanding and create innovative responses.

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<sup>21</sup> For example:

<https://spiral.imperial.ac.uk/bitstream/10044/1/9913/6/Haskel%202012-06.pdf>;  
<http://www2.lse.ac.uk/researchAndExpertise/units/growthCommission/documents/pdf/LSEGC-Report.pdf>; [http://dl.njit.edu/mnj/MGI\\_Manufacturing\\_the\\_future\\_Full\\_report\\_Nov%202012.pdf](http://dl.njit.edu/mnj/MGI_Manufacturing_the_future_Full_report_Nov%202012.pdf);  
<http://www.oecd.org/innovation/knowledge-is-growth.htm>

- 3.7 **The continued ring-fencing of the science budget is therefore critical in demonstrating the Government’s long-term commitment to science and research, and protecting that investment from being diverted to other more short-term policy priorities.**
- 3.8 It is essential that any consideration of shifting the balance of research investment to more targeted priorities involves close dialogue with the research community as well as potential users. Such dialogue needs to be part of the ongoing debate about the responsiveness of the research base to new opportunities and user-driven research needs. A balance has to be struck in ensuring the research base is responsive to the needs of today, while ensuring it is sufficiently strategically placed to meet the longer-term requirements of tomorrow. As such, **the current balance of research funding between basic and more applied areas is about right, but the overall level of investment should rise.** Consideration should also be given to increasing investments to take research ideas closer to market, for example through HEIF and Research Council support for proof of concept activities.

#### *Dual support*

- 3.9 Adequate, sustainable public funding for research allocated via a dual support model is essential for maintaining the diversity, breadth, and quality of research in the UK. It provides a sound basis on which universities can forge research collaborations and partnerships with other universities in and outside of the UK and with businesses, charities and other partners.
- 3.10 Dual support provides separate and distinct sources of funding for university research, which are highly complementary:
- (a) Research Council funding supports world-class research across all academic disciplines, with grants awarded for specific research projects based on independent, expert peer review. This funding supports innovative, excellent research, as well as sustaining progression in established disciplines, capacity building in emerging areas, training of researchers, investment in strategic priorities and maintaining national capacity.
  - (b) QR funding, as an un-hypothecated funding stream, complements funding allocated via the Research Councils. Awarded as a block grant to universities based on RAE/REF outcomes, it enables institutions to plan ahead and invest strategically. QR funding provides the stable, core investment base for novel research and facilitates institutional flexibility to respond to new opportunities and challenges. In particular, it supports the concept of the ‘well-founded laboratory’ in which work supported by the Research Councils, EU initiatives, business and others can take place.
- 3.11 **The UK’s dual support system of support for university research plays an essential part in sustaining research of the highest quality. The combination of stable core funding through the Funding Councils, and competitively awarded grants from the Research Councils ensures the diversity and breadth of research in the UK.**

#### *Concentration*

- 3.12 The highest quality research is performed in institutions where a high proportion of staff are active in research. The large majority of research already takes place in Russell Group universities and they receive more than two thirds of the funding from Research Councils and charities. **Our global competitors are increasingly**

**concentrating funding on their leading universities and are already reaping the rewards.**

- 3.13 It is important to nurture a small number of leading research universities within a genuinely diverse education system where a range of institutions with different missions and strengths are fostered. The country does not need - and certainly cannot afford - all universities to be research-intensive. **To remain internationally competitive, investment should focus on the UK's world-leading research-intensive universities and their institutes where there is a critical mass of research excellence. The breadth and depth of activity in such universities provides the greatest opportunities for multidisciplinary research, to make the most effective use of facilities through collaboration and equipment sharing initiatives and to train the next generation in the latest techniques.**

#### *Autonomy*

- 3.14 Academic freedom and university autonomy are essential components of our universities' success and international research shows university autonomy leads to better outcomes.
- 3.15 Higher financial autonomy within a university budget is associated with higher shares of national public competitive-based funds. This means the more autonomous an institution is, the more effectively it will be able to compete in obtaining funds from different sources, such as competitive funds, contracts with private companies, and donations from the non-profit sector. This also leads to greater diversification of income streams, meaning autonomous institutions are better able to adapt to a changing environment and to meet future challenges.<sup>22</sup>
- 3.16 Autonomous institutions can also compete internationally for foreign direct investment, which as outlined above is absolutely crucial for the UK.
- 3.17 The more constraints are placed on funding, the harder it will be to sustain the UK's international competitiveness in the long-term. For example, although funding through initiatives such as the Research Partnership Investment Fund is very welcome, attaching additional stipulations to public funding, such as requirements to double-match from other sources represents a direction of travel away from the protection of institutional autonomy. This jeopardises adherence to the Haldane Principle, and could potentially deprive the UK of investment in up-coming areas of knowledge and competitive advantage arising from the research base.
- 3.18 **In order to maintain the UK's international competitiveness and maximise the impact of public investment, it is essential that future decisions about the provision of funding are based on protecting university autonomy.**

#### *Formula funding*

- 3.19 The provision of institutional autonomy in relation to research through block funding provides research organisations with a stable basis for research activities and allows them autonomy in the selection of research projects, enabling expertise in new fields to be built up.<sup>23</sup>

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<sup>22</sup> Evidence taken from an analysis of 200 research-active universities from 33 European Research Area (ERA) countries: <http://ftp.jrc.es/EURdoc/JRC63682.pdf>

<sup>23</sup> OECD Innovation Policy Platform, 'Issue Brief: Public Sector Research Funding' (2011)

- 3.20 The formula method of allocation means that funding can be distributed with far greater efficiency on the part of universities and Government, as there is no need to prepare or to judge bids for competitions. In addition, the autonomy that formula funding brings enables institutions to take advantage of opportunities to optimise efficiency of spend through shared facilities within and between institutions, ensuring more widespread access to facilities and equipment and encouraging research collaborations.<sup>24</sup>
- 3.21 Capital funding allocated directly to institutions should continue to be calculated using formula funding methods based on research excellence – in other words, allocated to institutions with an established track record in undertaking world-leading research. These institutions will be most able to leverage impact from the investment in terms of sustaining a critical mass of excellence in the UK, drawing on leading scientific expertise ‘in-house’ in order to make strategic decisions about when and how best to make investments. This enables strategic investments to be made in priority areas and emerging opportunities to be capitalised on. Conversely, deadlines for research project funding distributed by competition do not necessarily match up to institutional cycles, putting pressure on universities to rush to finalise project proposals. Providing capital funding directly to institutions allows them to make investments at the most appropriate time.
- 3.22 Similarly the QR block grant is vital, as described above, in providing the stable base of research funding over reasonably long time periods (ie known for 6-7 years in advance depending on the frequency of RAE/REF exercises).
- 3.23 The Higher Education Innovation Fund (HEIF) has provided a significant boost to knowledge exchange activity between universities and businesses, enabling universities to invest as they see fit to speed up the commercialisation of research and ideas, and to build and cement collaborative relationships with a range of businesses from large corporations to SMEs. The allocation of HEIF based on performance measures helps to leverage the greatest impact from the investment available: the return on investment for HEIF funding to the most research-intensive universities is more than double the average, and more than five-fold higher than the return on investment to low research-intensive institutions. However, impact is limited by the cap on the total amount of funding which can be allocated to individual institutions. Given the limited funding available, HEIF must continue to be allocated based on performance with a greater focus on targeting funding to institutions with the strongest track record in innovation, and the largest quantities of cutting-edge research from which businesses and others can benefit.
- 3.24 **The formula approach to funding is highly efficient as a mechanism for making public investments in research and innovation, compared to costly and time consuming bidding processes.**

#### 4. Infrastructure

- 4.1 The Russell Group will be making a separate detailed submission to the BIS consultation on proposals for long-term capital investment. Our submission to that consultation should be read in conjunction with this paper. The key themes from our submission are summarised below:

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<sup>24</sup> For example, the University of Cambridge’s Nanoscience Centre provides open access to over 300 researchers from across the University to nanofabrication and characterisation facilities housed in a combination of Clean Rooms and low noise laboratories.

- The UK's position as a world-leader in research, and the benefits that flow from this for the economy and society, will only be maintained if our research-intensive universities have the facilities and equipment needed to compete internationally.
- The commitment to increase funding for capital investment and maintain this at around £1.1 billion per year in real terms to 2020-21 is very welcome.
- We recommend that the **majority of funding be allocated at the institution and research project level as opposed to large-scale projects**, and that funding allocated directly to institutions is at least equal to that allocated to research projects through the Research Councils. (Scenario 1 in the consultation document.)
- Capital investment for science and research should be allocated to research-intensive universities and institutes where there is a critical mass of research excellence. Extending capital investment to research and technology organisations and independent research organisations runs the risk of duplicating existing facilities and equipment rather than building on the UK's research strengths within our universities' centres of excellence.
- **The provision of capital funding directly to HEIs by a formula mechanism** is extremely valuable as it provides the autonomy and certainty to invest in areas of scientific opportunity identified by our world-leading researchers. The formula approach is also highly efficient as a funding mechanism, compared to costly and time consuming bidding processes.
- We urge the **Government to support the on-going resource costs associated with operating, maintaining and up-grading capital facilities**. A resource element separate from project resource should be tied to capital investment to ensure facilities and equipment can operate to full capacity, and to enable vital upgrades and maintenance to ensure the continued competitiveness of facilities in the long-term.
- We welcome the intention to formulate a strategy in relation to the UK's priorities for investment in major national and international projects. In order to choose between priorities identified in the initial round, **we recommend further in-depth consultation with key academic research leaders to make a final recommendation on large-scale project funding to Government**.
- A proportion of the capital funding budget should remain ring fenced for the future to ensure flexibility to invest in strategic priorities which may not become apparent for years to come. At such time as the Government wishes to allocate the remainder, we strongly recommend that a full consultation be undertaken with the research community to identify strategic priorities for investment.
- The Research Partnership Investment Fund (RPIF) for capital co-investment in university research facilities has been very successful in leveraging funding for capital investment and we would recommend that this be turned into a longer-term, more strategic initiative for the future.
- **The majority of research undertaken in the UK relies upon access to small- and medium-scale research infrastructure**, much of which is located within leading research-intensive universities. Provision for infrastructure on this scale

must be at the heart of the Government's capital investment strategy including through RPIF and as part of Research Council grants.

- Russell Group universities remain committed to increasing productivity and driving efficiency through collaboration with other UK universities and industry through research partnerships to share key scientific facilities and equipment. We urge Government to consider how VAT legislation and guidance can be simplified to avoid hindering collaboration between universities in equipment sharing and other similar activities.

4.2 The RCUK/Funding Councils call for evidence specifically highlights the potential role of RTOs and their infrastructure, which we comment on in our capital submission:

*The role of research-intensive universities in identifying current and future areas of scientific opportunity and in hosting scientific infrastructure*

- 4.3 The location of leading-edge research infrastructure within research-intensive universities is vital in maintaining the international competitiveness of the UK. It ensures access by world-class scientific experts at those institutions, facilitates the development of talented researchers, leading to new scientific discoveries, and leads to an emerging workforce of graduates who have received training in the latest techniques.<sup>25</sup>
- 4.4 With their strong links to other potential users, investment in universities also enables industry, including SMEs, to access the latest scientific equipment and facilities, thus maximising the effectiveness of investment. In particular, leading-edge infrastructure at UK universities is enhanced by in-house availability of key scientists and consultant engineers to assist with industrial development and experimentation with industry.<sup>26</sup>
- 4.5 The expertise to understand the major national and international research challenges and opportunities for innovation in science and engineering lies within our research-intensive universities. They are best placed to make strategic decisions within their own institutions about capital investment priorities, to identify emerging opportunities quickly, and to advise government on priorities for large-scale national and international capital investments.
- 4.6 Capital investment for science and research should be allocated to research-intensive universities and their institutes where there is a critical mass of research excellence. Extending capital investment to research and technology organisations and independent research organisations runs the risk of duplicating existing facilities and equipment rather than building on the UK's research strengths within our universities' centres of excellence. It would also go counter to the approach now being taken by the MRC and others to embed previously independent research units and research establishments into universities to improve their efficiency and maximise opportunities for excellent research.

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<sup>25</sup> Research infrastructure at our universities is open for use by students as well as researchers and staff. For example, the new South Glasgow Hospitals Campus (SGH) at the University of Glasgow focusing on stratified medicine will include a £25 million learning and teaching facility alongside facilities for clinical trials and research imaging suites.

<sup>26</sup> For example, the University of Southampton Wind Tunnels (part of the national wind tunnel infrastructure) are operated by experienced technical staff and backed by a knowledge base of internationally recognised academic researchers in fundamental and applied aerodynamics. The Tunnels are available for commercial work with consultant engineers on hand.

## 5. Skills for science and innovation

- 5.1 The provision of highly-skilled Science, Technology, Engineering and Maths (STEM) graduates and postgraduates is vitally important to the prosperity of the UK, helping to generate innovation and new technologies, and to drive future economic growth.
- 5.2 Various estimates have been made of the increasing demand for STEM skills in the future. Analysis by Engineering UK, for example, suggests that double the number of engineering graduates and apprentices will be needed by 2020 to meet demand<sup>27</sup>.
- 5.3 In July 2012 the House of Lords Science and Technology Committee called for immediate action to ensure enough young people study STEM subjects at both undergraduate and postgraduate level to meet the needs of high-tech industries<sup>28</sup>. Other recent studies have identified that the demand from the economy for graduates in STEM subjects far exceeds current supply<sup>29</sup>. One report suggested an annual shortfall in domestic supply of around 40,000 such graduates<sup>30</sup>. Maintaining and increasing the supply of high quality graduates and postgraduates in these subjects will be essential to the future economic recovery of the UK.
- 5.4 Russell Group universities play a vital role in meeting that demand with world-class education and research programmes, training around 30% of the UK's science and engineering graduates and more than 80% of UK graduates in medicine and dentistry.
- In the QS world university rankings by subject for 2014:
    - i. The top five universities in the UK for medicine, computer science, biological sciences, pharmacy and pharmacology, chemistry, earth sciences, materials science, mathematics, physics and astronomy, and all fields of engineering are all Russell Group universities
    - ii. In most of these disciplines, at least three Russell Group universities are also in the top twenty globally.
- 5.5 The Government could do more to encourage UK students into STEM subjects, but must ensure that these high cost subjects are funded sustainably: quality of provision is key. The continued recruitment of international students, and the ability of those students to fill highly skilled jobs in the UK after graduation, will also be imperative to meeting that demand.

### *Funding for high cost subjects*

- 5.6 Degree courses in subjects such as medicine, engineering, chemistry and physics are extremely important to the future success of the UK's economy and cannot be sustained on tuition fee income alone. Their teaching costs are significantly higher than other subjects because of the requirement for expensive laboratories and equipment. There are also particular cost pressures associated with maintaining such provision in a world-class research-intensive university.

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<sup>27</sup> Engineering UK, 'The State of Engineering' (2014)

<sup>28</sup> <http://www.publications.parliament.uk/pa/ld201213/ldselect/ldsctech/37/37.pdf>

<sup>29</sup> For example: *Jobs and Growth, the importance of engineering skills to the UK economy*, Royal Academy of Engineering, September 2012,

[http://www.raeng.org.uk/news/publications/list/reports/Jobs\\_and\\_Growth.pdf](http://www.raeng.org.uk/news/publications/list/reports/Jobs_and_Growth.pdf)

*In the balance: the STEM human capital crunch*, The Social Market Foundation, March 2013,

[http://www.smf.co.uk/files/8713/6344/7820/In\\_the\\_Balance.pdf](http://www.smf.co.uk/files/8713/6344/7820/In_the_Balance.pdf)

<sup>30</sup> *In the balance*, *ibid.*

- 5.7 The announcement by HEFCE of a cut in the funding for those studying medicine and dentistry in 2012/13 was also worrying – as is the proposed 4% cut in benchmark pricing for the education of nurses that Health Education England is seeking to impose. Any further teaching cuts would seriously threaten our ability to maintain world-class learning environments in high cost and strategically important subjects.
- 5.8 We have therefore been encouraged by the Government’s announcement of additional funding to teach high-cost STEM subjects from 2015. The current situation is that high-cost funding has not been keeping pace with growth in student numbers in those subjects.
- 5.9 The assurances about increases in the unit of funding, given in David Willetts’ letter of 13 December to the Chair of the Russell Group were particularly welcome. It is important that the commitment of £35 million additional funding in 2015/16 and £50 million additional funding in subsequent years is now delivered. However, we remain concerned that the level of funding per student will fall as a result of student number growth at other institutions in 2014/15 and beyond.

**23. Funding through HEFCE to support the teaching of STEM and other high-cost strategically-important subjects should be increased. Maintaining quality of provision is absolutely key. ‘Band B’ subjects are already under-funded, so investment for any growth in undergraduate student numbers (in 2014/15 and beyond) should also include additional funding for STEM and other high-cost subjects.**

*International students*

- 5.10 International students are, by their very nature, highly mobile and the UK faces stiff competition to attract them to the UK. The Government should do all it can to ensure the UK visa and immigration system is both competitive and welcoming, while continuing to tackle abuse.
- 5.11 International STEM students currently make up a significant proportion of total STEM students in the UK. Across the sector as a whole, international students make up 13% of first year students studying STEM subjects, and at Russell Group universities, the figure is 24%, rising to 41% for postgraduate taught students.<sup>31</sup>
- 5.12 Although international STEM student numbers have risen for Russell Group universities over the last two years, across UK universities as a whole they have declined for two consecutive years, by 10% in total between 2010-11 and 2012-13, and by 15% at postgraduate taught level.<sup>32</sup>
- 5.13 There has been a particular decline in subjects allied to medicine, computer science, and engineering and technology. Falling international student enrolments in such subjects presents a real problem as international students represent a high proportion of enrolments. If international STEM student numbers continue to fall in these particular disciplines, it may affect the financial viability of such courses going forward, and potentially reduce provision for domestic students.
- 5.14 **In order to signal that the UK’s doors are fully open to genuine international students, including STEM students, the Government should:**

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<sup>31</sup> HESA 2012-13

<sup>32</sup> Ibid

- **Remove students from the net migration target** in order to counter the perception that the UK is not ‘open for business’
- **Introduce a longer post-study work period** for students at the UK’s most highly trusted universities in line with the UK’s English-speaking and European competitors
- **Reduce the cost of student visas** to ensure parity with key competitors<sup>33</sup>
- **Reconsider the introduction through secondary legislation of the healthcare levy contained in the Immigration Act**, which could be prohibitively expensive for students on longer courses<sup>34</sup>

5.15 The Government should also **prioritise lifting caps on international student numbers in medicine and dentistry** which restrict the pool of UK-trained healthcare professionals the NHS could call on if needed to meet future demand.<sup>35</sup> Such action would also provide greater security for universities offering medical and dental training, which would benefit domestic students, and boost economic growth. We recommend:

- International medical and dental student number caps should be lifted – potentially being doubled in the first instance – with more flexibility introduced to allow universities to manage intake numbers. Tariff (SlfT) payments for these international students should be maintained.
- International caps should be removed altogether where overseas students are fully funded to cover both the BIS/HEFCE and DH contributions associated with their training (so called ‘off quota’ arrangements).
- Moving the point of full registration to the point of graduation for doctors would help the UK become a major exporter of high quality medical education to the rest of the world.
- Any consideration of a move to reduce or remove tariff payments for international students outside of off quota arrangements could have significant negative consequences – the potential impact on demand first needs to be modelled and prior consultation with universities is essential.

## 6. Research-business interface and impact

6.1 Government initiatives currently support a range of activities leading to innovation and economic impact developed from universities’ research and knowledge transfer activities. In particular, technology transfer offices, typically established and run with HEIF investment over many years, play a vital role in connecting universities with business. However, we believe more can be done to increase the effectiveness of

<sup>33</sup> The cost of a student visa is significantly cheaper in competitor countries including the US, Canada, Denmark, Germany, France, Sweden, Ireland and New Zealand

<sup>34</sup> The proposed healthcare levy of £150 would mean a prospective international student seeking to enter the UK for a 4-year course would be required to pay £944 up front, compared to £332 today – in other words, almost a 3-fold increase.

<sup>35</sup> Currently, international dental student numbers are capped at 5% of a school’s intake and international medical students at 7.5%. This year one Russell Group university estimates that it could have offered places to another 100 international medical students and 30 international dental students were more places available. At another Russell Group university, 505 applicants met the academic requirements for their medical course, but the university was only able to offer places to 30 students. Similarly in dentistry, 67 met the requirements, but only 8 offers could be made because of the cap on places.

these initiatives to leverage maximum impact from our universities' excellent research and innovation activities – and to engage more businesses of all sizes and across all parts of the economy, including service sectors, as set out below:

#### *Proof of concept*

- 6.2 Significant gaps remain in the UK's funding pipeline to take a research idea through to a final product or service, including problems in accessing 'proof of concept' funds and sufficient venture capital (particularly compared to the US). It remains a real challenge in the UK to secure investment in new technologies.
- 6.3 Proof of concept funding is essential in bridging the gap between research and its possible applications in the economy and society. In particular, demonstrating proof of concept can help de-risk investment decisions and thus attract necessary financing to take research ideas 'out of the lab' and into real world application. In many cases this can be about how a research idea can be scaled appropriately or turned into a technology or service that has the potential for further development. But also important is work that can help to prove there is a market for something new and innovative.
- 6.4 Proof of concept and proof of market funding is available via the TSB's SMART scheme, but only SMEs are eligible to apply, which means universities cannot access this directly. The eligibility rules should be changed, allowing universities access to these funds to enable more good ideas to be developed for commercialisation or spin-out. The TSB also supports larger-scale demonstrators to test concepts (for example in low carbon vehicles, digital technologies and future cities), which universities can access. Availability of this type of funding should be increased to ensure the UK can develop and test ideas at the scales needed to compete globally.
- 6.5 We welcome the expansion of the TSB's Catalyst Fund, providing discipline-focused proof of concept funding in biomedical science, agricultural technology, energy and industrial biotechnology. Further Catalysts should be introduced in other fields to support both academically and commercially-led R&D through to commercialisation.
- 6.6 **The UK needs to create the right environment for new ideas to develop and grow into commercial success. The Government should continue to support universities' efforts to build strong links with business and public services and to establish their own spin-outs and other commercial activities. The availability of proof of concept funding and financial and tax support for early stage ventures from universities should be enhanced.**

#### *Higher Education Innovation Fund*

- 6.7 HEFCE funding for knowledge exchange through the Higher Education Innovation Fund (HEIF) is extremely effective in developing knowledge-based interactions between universities and businesses, and facilitating innovation which results in economic and social benefit to the UK. Critically, HEIF – and its equivalents in the Devolved Administrations— allows universities autonomy in deciding how and where to invest in solutions for best effect. Again, one of the most important activities that universities have chosen to support through HEIF is proof of concept and proof of market activity. HEIF is also being used to build engagement with small and mid-sized companies, larger corporates and their key supply and value chains in the UK, and to enhance entrepreneurship skills essential for the next generation of business success.
- 6.8 A recent independent report for HEFCE found that Government investment through HEIF 'is a critical part of the knowledge exchange funding landscape, allowing HEIs to

build the necessary capacity and capability to engage with external users'.<sup>36</sup> It calculated that HEIF funding results in a return on investment of more than six-fold and the return is greater where research intensity is greater:

- Over the period 2003-2012, the return on £1 of HEFCE knowledge exchange investment to the most research-intensive universities was £13.30 in gross additional knowledge exchange income, for other high research-intensive institutions it was £7.10.
- This drops to £4.80 and £2.60 for medium and low research intensive institutions respectively, and just £1.50 for specialist arts HEIs.<sup>37</sup>

- 6.9 We welcome the Government's continued support for the *de minimis* cut-off for HEIF funding allocations, in order to ensure that funding is performance based.<sup>38</sup> However, the £2.85 million allocation cap for any single institution means that universities who deliver most of the UK's excellent research are being constrained in their ability to translate research into innovation. Lifting the cap will target the limited resources through HEIF on those universities best able to translate world-class research and knowledge into even greater economic benefit to the UK.
- 6.10 We are supportive of Sir Andrew Witty's recommendation that HEIF should be increased to £250 million per year. Despite this, the Government has not made a clear commitment to maintain the current level of investment in HEIF, which is a matter of real concern.
- 6.11 But we do not agree that even greater emphasis is needed on direct engagement with SMEs for the distribution of HEIF. There is a danger that amending the allocation of HEIF in the manner recommended by Sir Andrew Witty could serve to skew knowledge exchange interactions too much towards purely SME-university collaboration. This would ignore the importance of engaging with larger companies with greater capacity to drive regional and national economic growth. Enabling universities to engage with SMEs through the supply and value chains of large businesses should be a key consideration.
- 6.12 Indeed, Russell Group universities already engage extensively with innovation-led SMEs through a wide range of activities and provide effective routes for engagement such as single points of contact through Technology Transfer Offices. Many of our universities have also introduced schemes aimed exclusively at engaging SMEs in knowledge exchange, such as Innovation Voucher schemes. Russell Group Business schools, in particular, are extremely effective in supporting SMEs, providing accelerator facilities and advice for external emerging businesses as well as staff and graduate start-ups, and spin-outs.
- 6.13 In 2012-13, Russell Group universities accounted for:
- The majority of IP income to the HE sector from SMEs (61%) and the majority of contract research with SMEs (55%).
  - Eight of the top ten UK universities by value of contract research with SMEs.

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<sup>36</sup> 'Knowledge Exchange Performance and the Impact of HEIF in the English Higher Education Sector: Report for HEFCE' (April 2014).

<sup>37</sup> *Ibid.* The report classifies the most research-intensive universities as Oxford, Imperial, UCL, Cambridge, Manchester and KCL. All other Russell Group universities in England (as the report does not cover the devolved nations) are classified as high research-intensive institutions.

<sup>38</sup> 'British Invention, Global Impact: The Government's Response to Sir Andrew Witty's Review of Universities and Growth' (March 2014)

- They provided £42 million worth of consultancy, equipment and facilities services and continued professional development to SMEs.<sup>39</sup>

**6.14 HEIF and equivalent funds in the Devolved Administrations that give universities autonomy in how they are used must be maintained and targeted to support those universities –with the research excellence, critical mass and track record of innovation - where they can have most effect.**

#### *Institutional Impact Acceleration Accounts*

6.15 We welcome moves by most of the Research Councils to develop Institutional Impact Acceleration Accounts (IAAs) that provide funding for knowledge exchange activities based on recent research funding history. This funding is complementary to HEIF and universities have substantial autonomy in how these funds are used. In particular, research-intensive universities are using IAA funding for proof of concept work, frequently with SMEs.

6.16 The scale of IAA funding varies considerably between Research Councils (£60 million in the recent EPSRC pilot, but only £200,000 in total from the BBSRC) as does the funding mechanism: EPSRC, ESRC and STFC on a formula basis while BBSRC uses competitive bidding, which is both time consuming and resource-intensive.

**6.17 On-going support for Institutional Impact Acceleration Accounts is important. In future we would like to see IAAs available across the Research Councils as this will help to support interdisciplinary research through proof of concept to commercialisation. Funding should also be distributed using a formula approach as this is the most effective and efficient mechanism.**

#### *Catapults*

6.18 The Catapult Centres are now a major focus of activity for the TSB, with over £1 billion of public and private sector investment into the Catapults expected over the next five years. Catapults have the potential to be a significant national asset for the UK if research excellence is at the heart of their operations and if long-term funding is available that will allow them to deliver meaningful benefit.

6.19 A number of our world-class universities actively engage in the Catapult Centres.<sup>40</sup> Indeed, when they were first proposed, the Russell Group stressed that the benefits of such centres would be maximised only if they were closely linked to existing centres of excellence in research-intensive universities, and built on existing innovation networks associated with such universities.

6.20 The High-Value Manufacturing Catapult, which was developed principally out of existing academic centres of excellence in proximity to industrial critical mass, has been one of the most successful Catapults in terms of impact. The HVM Catapult has worked with over 1,500 businesses since its inception in 2011, the vast majority of

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<sup>39</sup> HE-BCI data 2012-13

<sup>40</sup> The Universities of Sheffield, Manchester, Birmingham, Nottingham, Bristol and Warwick are partners in the High Value Manufacturing Catapult. The Cell Therapy Catapult has an academic partnership with Newcastle. The Offshore Renewable Energy Catapult engages with academia through a Research Advisory Group, which includes representatives from 10 universities, including: Imperial, Sheffield, Edinburgh, Oxford, Exeter, and Queen's University Belfast. Durham University and the University of Nottingham are partners in the Satellite Applications Catapult Centre of Excellence.

which are SMEs, to close the gap between early innovation and full-scale production. Many of the seven HVM Catapult Centres are now expanding their offer to respond to industry demand.

- 6.21 However, it is not entirely clear how universities will be engaged in development of all the new and prospective Catapult centres.. We are concerned that the impact of the Catapults will be diluted if the link with excellent research in universities is not clear and strong from the start.
- 6.22 Resources for Catapults should be focused where there is most comparative advantage to be gained from integrating research, teaching and translation. By locating Catapults within or alongside research-intensive universities, their remit can be enhanced to deliver training and development informed by excellent research and expertise in knowledge exchange and translation. It will also allow Catapults to tap into other key facilities and services such as business incubation.
- 6.23 Strong links with our world-class universities will enable Catapults to engage across the full breadth of research, tapping into new areas as needs evolve. Universities are also highly collaborative, so a centre at one leading university opens the door to a much wider national and international network.
- 6.24 In addition, research-intensive universities possess the expertise and intellectual capacity to operate larger facilities and equipment that make Catapults a distinctive offer to business.
- 6.25 **Research excellence must be at the heart of the Catapults. They should be engaged directly with the UK's excellent research-intensive universities, enabling them to build on areas of existing strength and comparative advantage. We are concerned that the value of Catapults will be undermined if engagement with the research base and academic networks within our world-leading universities is not at the core of their remit.**

#### *Knowledge Transfer Partnerships (KTPs)*

- 6.26 Knowledge Transfer Partnerships (KTPs) which typically engage SMEs with expertise in universities are a valuable mechanism for knowledge transfer.
- 6.27 Russell Group universities are undertaking KTPs with a wide range of organisations across sectors including pharmaceutical, aerospace, construction, engineering, IT, telecoms, utility, and healthcare, with partners ranging from SMEs to large companies as well as local authorities and the NHS.
- 6.28 **In order to improve the uptake of KTPs, local enterprise partnerships (LEPs) could be major contributors to KTP funding, raising awareness with the SME community in particular, and helping to boost the number of partnerships supported each year in their regions.**
- 6.29 Reintroducing shorter-period KTPs and reducing the bureaucracy in setting up KTP arrangements would also help make them more attractive to SMEs.

#### *University Enterprise Zones*

- 6.30 Last year, the Government announced that £15 million in capital funding will be made available over three years for a University Enterprise Zone (UEZ) pilot.

- 6.31 While this is potentially a very welcome initiative, we are concerned the money will be spread too thinly to have a significant impact for business-university collaboration, even across the 3-4 projects BIS intends to fund initially. To be effective, UEZs need to create demand from innovative SMEs; the draw of easier access to knowledge, skills and facilities at research-intensive universities is strong, but UEZs also have to appeal to the immediate commercial pressures faced by business. As currently framed, the UEZs lack many of the incentives of established Enterprise Zones, in particular, business rate discounts and support for superfast broadband - benefits SMEs often seek when considering where to locate.
- 6.32 Furthermore, although eight areas have been chosen to bid for the 3-4 pilots, **we would like to see opportunities for world-class research-intensive universities in all areas of the UK to engage in the UEZ initiative in future.**

#### *Research Partnership Investment Fund (RPIF)*

- 6.33 The success of the RPIF has demonstrated that our universities are ready to do business with public and private partners and that those partners also see great benefit in such collaborations.<sup>41</sup>
- 6.34 RPIF has undoubtedly been very useful in securing outside investments, but **a more strategic approach to RPIF could be achieved with a longer-term and more flexible initiative** having either an open-ended time period for putting forward proposals, or at least a clear set of proposal closing dates known well in advance.
- 6.35 A longer-term perspective would also fit with business planning cycles. Businesses typically look five or more years ahead in making major capital investments so the longer lead-time universities have to talk to business about potential investments, the better quality of bids that can be put forward, the wider universities will be able to look for partners, and the more likely that they will be of strategic importance.
- 6.36 Business investment in research and innovation is globally mobile and the UK needs to do whatever it can to attract investment here against very strong international competition. If we can attract the really important strategic investments through future rounds of RPIF then other activities will follow.
- 6.37 Whilst we welcome the ambition to leverage private sector investment, this must be in addition to Government funding and must not be seen as a replacement for it. Government must be wary of over-estimating the capacity of other sectors to fill the funding gap. Unrealistic expectations on the scale of contributions that business, charities and others can deliver could be damaging to relationships between universities and their partners.
- 6.38 It would also be useful to reconsider the scale of projects eligible for RPIF as many smaller projects (sub £30 million) are currently losing out. This would help to leverage capital investment from more mid-sized companies and those just starting to consider increased strategic engagement with universities.

June 2014

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<sup>41</sup> <http://www.hefce.ac.uk/whatwedo/rsrch/howfundr/ukresearchpartnershipinvestmentfund20122015/>