

## POLICY RESPONSE

# MillionPlus response to BEIS R&D Roadmap

11 August 2020

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## INTRODUCTION

1. MillionPlus, the Association of Modern Universities, welcomes the publication of the UK government R&D Roadmap and the consultation by BEIS on the direction of travel proposed in the document. The UK government's commitment to invest 2.4% of GDP in research, development and innovation by 2027 must be delivered if we are to prosper in a post-Covid-19 economic and social environment. We hope that the Spending Review in autumn 2020 will set a clear trajectory for the UK to make swift progress towards the target by the end of the current parliament in late 2024.
2. This submission first sets out the strengths of modern universities as drivers of research and innovation across the UK. We then echo the Roadmap's broad view of the research and development landscape, fleshing out what we see at the proper scope of R&D support for universities and their partners in industry and the public services. The submission then suggests strong candidates for additional support via public investment in UK R&D. We draw attention to the importance of the new UK Shared Prosperity Fund before concluding by focusing on the critical importance of people in the research and innovation ecosystem.

## MODERN UNIVERSITIES AS DRIVERS OF RESEARCH AND INNOVATION IN THE UK

3. Recognising the impact and excellence of modern universities is particularly important as it will be a key plank in meeting the government's R&D aspiration. Modern universities operate as key anchor institutions in parts of the UK that the government has identified as central to its levelling up agenda.

4. Over half of research carried out at modern universities is judged to be world-leading or internationally excellent based on the last research excellence framework. Moreover, 61% of the research at modern universities is judged to be world-leading or internationally excellent in terms of its impact, a factor that will be critical in any vision of expanding R&D in the UK so that it neatly aligns with the levelling up agenda.<sup>1</sup> As a reflection of this impactful research, almost £200m of research income was gained by modern universities in 2018-19 from UKRI, the EU and contract research sources.<sup>2</sup>
5. Modern universities are also major innovators in research in the important SHAPE disciplines,<sup>3</sup> and in research that helps transform our public services. Modern universities are pioneers in knowledge exchange and translational research, placing entrepreneurial education at the heart of their curricula.
6. The work of modern universities in transforming public services through innovative research and knowledge exchange activities results in long-lasting, sustainable change that benefits the health and wellbeing of regional economies. For example, Middlesex University London is collaborating on an international three-year research project with the University of Genoa, jointly funded by the EU and the Japanese government, to develop and evaluate the world's first culturally-aware robots, aimed at assisting in caring for the elderly. Given current and likely future circumstances, such a project could have enormous benefits for society
7. A London South Bank University research programme aimed to understand the behaviour of individuals when performing label checks on fresh produce in order to inform the development of a software application designed to support quality control. A three-month onsite trial of a software application designed on the basis of these research findings led to a 100% decrease in quality control errors. Engaged forms of research such as these have the advantage of making discoveries implementable and more achievable than some traditional fundamental research. These investments in locally focused, but internationally applicable.
8. Research activities of this type are often produced in partnerships with users and beneficiaries and can unlock new practices and cultures that in turn lead to cost efficiencies, smarter business decisions and improved social wellbeing. Supporting modern universities, who play a central role in their communities, means these investments often have an impact in levelling up that is far more immediately impactful than a 'moonshot' project run at a national institute in a major city. The two can, and should, co-exist in a complementary way.

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<sup>1</sup> MillionPlus, *Facts and Stats* card, analysis of research output based on REF2014: <http://www.millionplus.ac.uk/documents/Think Modern - Facts and Stats 2020.pdf>

<sup>2</sup> Ibid.

<sup>3</sup> SHAPE refers to the Social Sciences & the Arts for People and the Economy, the concept is an initiative of the British Academy alongside the LSE and other partners. See <https://thisisshape.org.uk>

## **A BROAD VIEW OF RESEARCH AND DEVELOPMENT**

9. The Roadmap rightly takes a broad view of the research and development landscape - it seeks to increase research funding and capability, including in applied research, and make it easier for people to operate. It also wants to focus on place more specifically when considering research objectives. The Roadmap states at the beginning that it is using the terms science and research in the widest sense and sees research as something that happens in many different institutions and organisations. However, the vast majority of the case study examples in the document relate to STEM and a good deal of the document focuses on discovery research more than it does on application and translation of research.
10. There is an opportunity to be grasped by using the Roadmap discussion to expand the view of research and development – both in terms of activity and location. An inclusive understanding of “scientia”, as the Roadmap promises, needs to properly consider the impact of innovative research in the social sciences, arts and humanities. There is a risk that a narrow view prevails, which privileges technological solutions in “cutting edge” industries but overlooks innovative research that changes cultures and behaviours in organisations to ensure they capitalise on new ways of working. This also needs to include multi-disciplinary research and the inclusion of users and beneficiaries of research as co-designers.

## **USING EXISTING R&D LEVERS MORE EFFECTIVELY**

11. The UK has a strong reputation for world-leading research, in large part due to the contribution made by universities. The UK government’s Roadmap commits to greater levels of investment in research and development, to reducing bureaucracy and to providing more time and space to research teams to achieve breakthroughs without pressure. These are positive and welcome commitments, which will be fully realised if this approach is applied broadly across the R&D landscape and when trust is placed in universities to manage their investment in research and innovation capabilities appropriately.
12. Much of the Roadmap focuses on boosting activity within research intensive universities, which will deliver significant benefits, but, as evidenced by successive research excellence framework (REF) assessments, excellence occurs in all universities and so the Roadmap will achieve much more, for more of the country, if it embraces the full breadth of the university sector. It would be a missed opportunity to concentrate on a small number of institutions, when a focus on many will widen the reach and scope of the Roadmap and share its aspirations for levelling up across the whole of the UK.

13. The first port of call for the government in achieving its 2.4% of GDP target should be the 'tried and tested' investment programmes that have proved successful in ensuring that universities and other partners work together successfully. The quantum of resource allocated to develop [Knowledge Transfer Partnerships](#) (KTPs) between universities and industry is crucial to ensuring the exchange of technological insight between academia and business/charities. A step change in the resource devoted to this programme - enabling more and deeper partnerships between universities and businesses - will be essential if we are to realise our ambitions in this space.
14. The [Higher Education Innovation Fund](#) (HEIF) has a strong track record in underpinning the innovation and knowledge exchange activities of universities. This support has been crucial for a range of universities, large and smaller, in supporting some of the baseline costs of innovation and technology transfer. An evaluation of HEIF found that a third of all income from university knowledge transfer activity can be attributed to the impact of the fund.<sup>4</sup> There is real scope to enhance the resources supporting this key Research England programme, to enable a wide range of universities to devote even greater time and support to their R&D partners. This will bring out productivity improvements in industry, the public services and the third sector.
15. [Place-based R&D investment streams](#) being taken forward by UKRI and Research England also have the potential to enable the UK to shift gear in how specific projects and initiatives with universities and their partners can impact on a locality, especially those outside existing areas of high R&D resource. UKRI's Strength in Places fund, the Expanding Excellence in England fund and the RED fund each have the potential to level up the R&D capabilities of a place if the total level of investment in each is increased substantially. This should be a priority for the government in looking at funding streams in the forthcoming Spending Review.
16. The government's aims in the roadmap will be best met by embracing all parts of the higher education ecosystem that is engaged in research and development. A major constraining factor currently, however, is the concentration of [quality related \(QR\) research funding](#), which is the block grant allocated by Research England and the corresponding bodies in the devolved administrations that is informed by the Research Excellence Framework.
17. Modern universities make up 47% of the institutions that receive QR funding in the UK. However, as [Table 1](#) below shows, for each of the last four years, "pre-92" institutions have collectively received more than ten times the amount of QR funding than all modern universities combined. This is a function of the highly selective criteria used in allocating

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<sup>4</sup> Coates Ulrichsen, T. *Assessing the Economic Impacts of the Higher Education Innovation Fund: Report for HEFCE*, (2015), table 2, p. 19. Substantial non-monetary benefits to HEIF are also elaborated in the report.

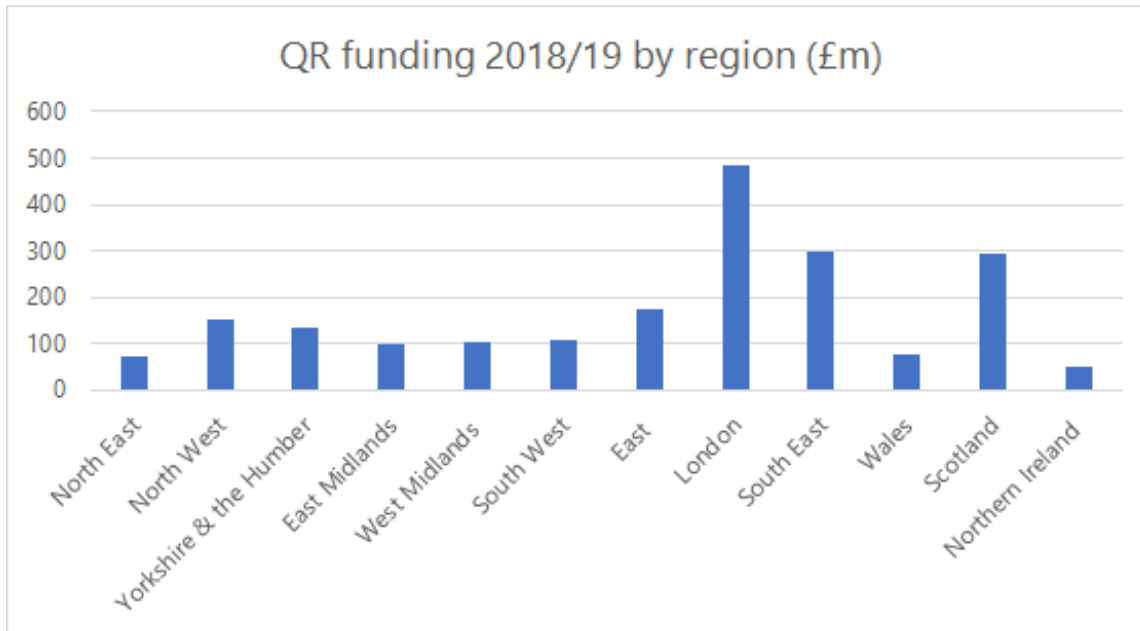
resources from REF2014 by Research England, focused on a particular understanding of excellence.

Table 1: Distribution of Quality-related research funding in England by university type

	2015-16	2016-17	2017-18	2018-19
<b>Modern</b>	£155.8m	£159.8m	£163.7m	£171.1m
<b>Pre-92</b>	£1803.4m	£1818.3m	£1813.9m	£1877.0m

18. However, it would be a mistake for the government to solely increase the funding available, without addressing some of the problems caused by the hyper-concentration of QR investment. A simple increase in funding using the same approaches as are applied currently will exacerbate the over-concentration of funding and do nothing to address the levelling up challenge. Revisiting the funding rules and allocation formula provides the government with an attractive opportunity to both reward individuals over projects, and to consider how to use its research investment to level up economies outside of London and the south east.
  
19. In particular, MillionPlus believes that Research England should, following the REF2021 outcome, fund 2\* research in universities across England through QR. 2\* research is of genuinely high quality, defined by Research England as that which “is recognised internationally in terms of originality, significance and rigour”. Currently 2\* research receives no substantial investment from QR funding in England, despite the fact that some of this research is directed to regional and local needs and can be more translational in scope than some higher starred research outputs. Again, this is not about favouring one form of research (pure vs. applied) over another, but simply a recognition of the complementary importance of both.
  
20. The case for a change in approach in relation to QR is clear. The results of applying ultra-excellence criteria to REF outcomes are stark, as Table 1 demonstrates, with a hyper-concentration of funding into a small number of universities. Over time, this has led to a significant imbalance in investment into this research activity, skewing funding to London and the south east of England and away from other parts of the UK. Figure 1 below shows that, in 2018-19, London received more than five times the level of investment for this activity than the north east of England.

Figure 1: University quality-related funding by UK nation / England region



21. Looking at this further, [Table 2](#) below shows funding by region proportionate to the population of the region and nation. Only two English regions register a level of funding per capita that is above the UK average – London and the South-East (Scotland also has a higher level, but these decisions are devolved so the UK Government’s influence of this area of funding is limited to England).

Table 2: Per capita Quality-related research funding distribution by UK nation and England region

	QR funding (£)	Population estimates	QR funding per capita (£/person)
NORTH EAST	72,448,000	2,669,941	27.1
NORTH WEST	153,740,000	7,341,196	20.9
YORKSHIRE AND THE HUMBER	135,029,000	5,502,967	24.5
EAST MIDLANDS	98,950,000	4,835,928	20.5
WEST MIDLANDS	102,457,000	5,934,037	17.3
EAST	173,995,000	6,236,072	27.9
LONDON	486,430,000	8,961,989	54.3
SOUTH EAST	297,193,000	9,180,135	32.4
SOUTH WEST	106,930,000	5,624,696	19
WALES	77,040,000	3,152,879	24.4
SCOTLAND	293,085,000	5,463,300	53.6
NORTHERN IRELAND	50,850,000	1,893,667	26.9
UK	2,048,147,000	66,796,807	30.7

22. It should be noted that this analysis does not account for uneven geographical distribution of funding within (rather than across) regions or nations. For example, the east of England displays the highest level of QR funding per capita outside of London and the south east, but this is largely a result of the University of Cambridge and therefore shows a slightly distorted picture of research funding that is not reflected elsewhere in that region. In considering how to use investment in place to support the levelling up agenda, the government needs to be cognisant of “place within place” *within* cities or localities.
23. London is one of the most obvious examples, where wealth is distributed unevenly throughout the city and there are areas of extreme disadvantage within a short distance of areas that have some of the UK’s highest Gross Value Added. This is one of the reasons why an inclusive approach to the development of the UK’s R&D capabilities will yield greater benefits. Modern universities in London are significant actors in creating economic opportunities for disadvantaged areas – e.g. the University of East London and its work in areas such as Stratford,

Middlesex University's investment in north-west London, or London Metropolitan and London South Bank in their role in regenerating parts of inner-city London.

24. Taking all this into account, the main observation remains: the distribution of QR funding in the UK is highly uneven according to geography. Looking at QR funding through the lens of the so-called "golden triangle" of institutions that are found within London, the south east, and the east of England also generates some interesting results. In 2018-19, six institutions received over £600m in QR funding. To give that figure some context, just 4% of all institutions in receipt of QR take home 29% of the overall quantum of funding. This highlights the overlap between a high geographical concentration of QR funding, combined with a hyper-concentration based on institution type and history.
25. Investment in quality-related research is one of the biggest single areas of research funding, and so some increase in the quantum of support here could be significant if the criteria of distribution is amended to include the full range of high-quality research. This investment is a major lever that the government can pull on, and it would be wise to use it to increase the overall level of R&D funding across the country.

#### **MAXIMISING NEW OPPORTUNITIES**

26. The end of the Brexit transition period and the formal withdrawal of the UK from various European research programmes is viewed by the government as an opportunity to invest funding previously committed to the European Union in a more UK-centric manner. It marks the end of the country's participation in a series of programmes that have collectively invested over €16bn into the UK since 2014.
27. These programmes – the European Regional Development Fund (ERDF), the European Social Fund (ESF), the European Maritime and Fisheries Fund and the European Agricultural Fund for Rural Development – have been of huge value to the UK, in particular to the areas of the country with lower levels of economic output. Scotland, Wales, Northern Ireland and the English regions have benefited enormously from this investment, seeing major projects implemented, as have parts of London and other large cities that have wide disparities of economic activity within them.
28. A key component of the UK leaving the European Union is the notion that the UK government will be better equipped to target capacity building and infrastructure provision currently funded under the European Structural and Investment Funds. The government has pledged to use the funds that were contributed to the European Union to spread wealth across the country and narrow regional inequalities.





29. The UK Shared Prosperity Fund has been mentioned in speeches and comments by successive prime ministers, chancellors and business secretaries since 2016, but does not feature in the Roadmap document. Between 2014 and 2020, ERDF funding resulted in €2.6bn being invested in the research and innovation system.<sup>5</sup> As yet, there is no indication of how the UK Shared Prosperity Fund will replace, and further improve upon the role and contribution of the ERDF in enhancing our research and innovation profile. Indeed, there has been no formal confirmation that the UK Shared Prosperity Fund will have a dedicated and extensive research and innovation investment element within it. Clarification on this point from the UK government is urgently required in the Spending Review this autumn.
30. Regardless of the exact parameters of the UK Shared Prosperity Fund, the Roadmap should improve upon the key principles and processes of the ERDF when considering new R&D investment. ERDF in particular has played an instrumental role in supporting the research and innovation landscape in more peripheral or less prosperous areas of the UK. This funding stream has been of significant benefit to communities served by modern universities and the companies who work with them. Modern universities have been key recipients of ERDF investment since 2014, which has been used to invest in the nations and regions of the UK to level up wealth and prosperity.
31. Moreover, the economic backdrop to the growth of modern universities meant that these institutions grew with an express goal of contributing towards the revitalisation of their local areas as a core part of their institutional mission. For decades, ERDF have been a key source drawn on to great effect by modern universities to support regeneration, not only as innovators themselves, but also as facilitators of collaboration between local partners. The UK Shared Prosperity Fund gives the government the chance to surpass the achievements of ERDF with a more flexible and synergised approach with other 'place-based' research and innovation funds. Within ERDF, there is an explicit aim to reduce regional inequality through the new principle of 'levelling up', to replace that of 'convergence'.
32. To put it directly, less affluent regions do better out of European Structural and Investment Funds. To illustrate this point, the north east received more per capita funding than any other region in England through ERDF and ESF combined in both the 2014-20 and the preceding 2007-13 funding rounds. This has enabled a multitude of projects supporting the objectives outlined in [Table 1](#).
33. To give one example, in the most recent funding cycle, the University of Sunderland led the Internships and Enterprise Project. This placed graduates at local SMEs who receive subsidies

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<sup>5</sup> European Commission, *Open data on European Regional Development Funds*, (2020)  
<https://cohesiondata.ec.europa.eu/countries/UK>

for participation, as well as offering support to graduate entrepreneurs who are setting up their own businesses.

34. The north west has also benefited greatly from European funds, receiving over €1bn in ERDF and ESF combined in 2007-13 and 2014-20 respectively. One project that exemplifies how such money is used to support local economic development is The Innovation Clinic at the University of Central Lancashire (UCLan), which supports SMEs to grow and diversify to raise competitiveness and drive growth. The project brings together extensive industry and academic expertise and the use of UCLan's state-of-the-art facilities and technology to provide tailored support at any stage of the product development process, from initial concept and market research through to launch. The Innovation Clinic has assisted hundreds of local SMEs to date, linking multiple businesses to research institutions and contributed to the introduction of new products at 36 different SMEs.
35. The projects supported by the ERDF are designed to focus on place. Given the focus in the current UK policy climate on developing new place-based initiatives, the loss of this distinctive feature of ERDF in any replacement would be a serious oversight. The social and political history of the UK is one of a heavily centralised system where decisions are made and capital invested from the core, with a primacy afforded to the priorities of its more affluent centre. Falling back on the same national structures and decision-making processes could result in funds 'trickling down' through the same hierarchies, leaving much smaller sums for geographically peripheral areas.
36. Some argue that for the full potential of the UK Shared Prosperity Fund to be realised, the Treasury should not have complete control over the allocation process. The metrics chosen to measure and define regional disparities will be critical to the UKSPF, if such a procedure is adopted. The use of gross value added (GVA) as a determinant of regional levels of funding in ERDF has been criticised by some, who argue that it fails to account for deprivation *within* more affluent regions such as London and the south east.
37. The R&D Roadmap should consider increasing the level of devolution in decision making so that these are taken as close as possible to the regions that will benefit. A national, centrally driven approach has not been as successful in developing regional growth as expected. Investment is concentrated in a few areas, and so the Roadmap as a fundamental principle should focus on devolving decision making. This can still be accompanied by a strong, *strategic* direction from the centre (i.e. the government) but the inclusion of regions, local authorities, university partnerships in the decision-making process will support a greater emphasis on levelling up.

## **SUPPORTING PEOPLE IN THE R&D ENDEAVOUR**

38. The Roadmap is clear in its desire to support people. This also needs to be considered broadly to include not just people working as researchers, but also the people who are beneficiaries of research. The Roadmap commits to diversity and inclusion. Modern universities typically have a more diverse, inclusive and representative workforce than other universities, and they also tend to be more reflective of the community in which they are located.
39. The revised Concordat to Support the Career Development of Researchers provides a framework for stakeholders to address the recruitment, retention and development of people in R&D roles. However, there is an urgent need to address the precarious nature of employment opportunities for researchers due to short-term funding opportunities, so the aims within the Roadmap to consider this are welcome.
40. Investing in a broader range of institutions and encouraging a greater commitment to diversity as part of funding rules will support a more inclusive research base. Ensuring there are opportunities for women to progress in their careers without disruption will serve to fix the leaky pipeline. Shifting away from hyper-concentration of investment and a focus on only a few institutions, and towards more of the country's institutions will increase the number of opportunities for underrepresented people from minority ethnic backgrounds.
41. A more inclusive approach to supporting people would also encourage "hybrid" careers, where people can move between academia and industry more smoothly, thereby sharing learning from one for the benefit of the other. This would encourage a greater understanding of the individual contexts and support innovation in research and knowledge exchange, with the likely impact of securing faster, more effective transformation. This approach would also ensure retention of the research workforce, and encourage people to return after career breaks, which is a major factor in creating and sustaining a diverse and inclusive workforce – the Daphne Jackson Trust is an important organisation in this regard.<sup>6</sup>
42. Universities also play a role in encouraging innovation in the local community, for example as brokers and enablers in knowledge exchange, which in turn supports a more inclusive population. Modern universities were responsible for 64% of all graduate start-ups in the UK and 49% of social enterprises coming from the HE sector in 2018-19. Graduate start-ups linked to modern universities are estimated to have generated £459m and employed over 14,000 people. Ninety-seven per cent of modern universities provide entrepreneurship training to such start-ups.<sup>7</sup>

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<sup>6</sup> <https://daphnejackson.org/>

<sup>7</sup> MillionPlus Think Modern *Facts & Stats card* (2020), analysis based primarily on HESA data  
<http://www.millionplus.ac.uk/documents/Think Modern - Facts and Stats 2020.pdf>

43. Many Small and Medium Enterprises (SMEs) struggle with establishing key infrastructure and networks, as they seek to move from the start-up phase to scale-up. In 2018-19, modern universities provided services to 26,246 SMEs.<sup>8</sup> Universities can offer support by bringing SMEs together in clusters, enabling them to collaborate on training, developing networks and approaches to market and supporting these businesses into sustainability that will make a valuable contribution to levelling up society and boosting productivity and prosperity following the pandemic.

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<sup>8</sup> Ibid.