

Underpinning our world class research base: the importance of 'QR' funding

Summary

- The UK's dual support system of investment in research (quality-related funding for universities coupled with Research Council and other project funding) plays an essential part in sustaining research of the highest quality, ensuring the UK's leading universities remain internationally competitive.
- Quality-Related 'QR' funding is a highly competitive funding source which allows universities to engage in long-term strategic planning for research and to respond quickly to emerging opportunities, giving them an edge against international competitors. **This has been exemplified during the Covid-19 crisis, as universities were able to use QR funding to rapidly redeploy researchers to pandemic-related work even before government schemes were put in place.**
- Indeed, flexible, longer-term funding complements a challenge-based approach to research funding by ensuring there is a pipeline of new ideas to underpin innovation in areas which have not yet emerged as the global challenges of the future. **Without QR funding we would not have had innovations and discoveries such as: graphene, genomics, opto-electronics, cosmology research, and new tests and treatments for everything from bowel disease to diabetes, dementia and cancer.**
- As well as underpinning and leveraging other funding, including from industry and charities, QR is used to support a wide range of activities which keep UK universities at the forefront of global science, many of which are not directly supported by other types of funders, including:
 - Building interdisciplinary research capacity
 - Supporting cutting-edge, curiosity-driven or newly developing research areas
 - Attracting and retaining top researchers and supporting staff development
 - Developing and improving research infrastructure, facilities and equipment
 - Training and developing postgraduates and early career researchers – this is all the more important given it has been estimated we will need 50% more researchers to help meet the Government's target to boost R&D investment to 2.4% of GDP by 2027.
- External funders can find fundamental, blue skies research too early-stage or risky to support. This makes the role of the Government in supporting basic research vital. However, the value of QR funding has declined by 14% in real terms in the last 10 years and the balance of funding between QR and Research Council funding has fallen from 80p in the pound in 2007, to 50p in the pound in 2018.
- **As part of the Government's commitment to boost public R&D investment to £22bn a year by 2024/25, now is the time to shift towards long-term and low bureaucracy investments in people and ideas by introducing a significant uplift in quality-related funding for research. Doubling the QR grant and its equivalents in the devolved nations over the next five years would help Government realise its aims of supporting breakthroughs in blue-skies research, boosting the research talent pipeline and using R&D to power future economic growth.**

1. Supporting collaboration and leveraging other funds

- 1.1 Universities use QR funding to develop collaborations and partnerships with a range of other organisations. While businesses may find it challenging to invest in risky research, or projects with medium- to long-term returns, QR funding allows universities to share this risk via co-funding, helping to facilitate university-business collaborations.
- 1.2 Evidence shows that universities that have higher research funding (including from QR) are able to generate more research income from other sources.¹ In other words, the more QR funding allocated to a university, the more evidence of external organisations being willing to pay for a range of research activities and commercialisation.² The Charity Research Support Fund (CRSF) and business support elements of QR funding are especially valuable in this respect.

Providing forward-looking solutions for global challenges

- 1.3 QR funding helps ensure there is a sustainable **pipeline of new ideas to underpin innovation** in areas which may not yet have emerged as the global challenges of the future. For example, researchers at Durham University were supported by QR funds to explore whether warm water found in abandoned coal mines in the local area could be harnessed to provide central heating for houses. The team could not initially secure funding from the Research Councils, partly because decarbonisation of heat was not seen as a high priority. This started to change once the Industrial Strategy explicitly recognised the importance of decarbonisation of heating and the Minister for Energy and Clean Growth then encouraged bids to the Industrial Strategy Challenge Fund to help advance innovation in geothermal energy in former mines.

Working with business

- 1.4 QR funding helps universities leverage in funding from business. For example, QR funding was used by the University of Warwick **to leverage in funding** from UK-based pharmaceutical company Funxional Therapeutics Ltd to co-fund PhD students involved in research collaboration between the two partners, as well as with University of Cambridge. The subsequent sale of the team's research to another pharmaceutical company generated a multi-million pound return to Funxional Therapeutics and its investors.
- 1.5 **QR can be used to support businesses to grow and innovate**, such as at Queen Mary University of London. QR funding, together with funding from the GLA, was invested to set up and support the Queen Mary Bioenterprises Innovation centre, the largest purpose-built commercial laboratory space available for rent in London. The centre has had significant impact, assisting over 200 businesses and creating and safeguarding 500 science jobs.

Working with charities

- 1.6 Over a third of publicly-funded research in the UK is funded by charities and the Charity Research Support Fund (CRSF) helps universities to **bid for, and underpin, substantial amounts of research funding from the UK's third sector organisations that might otherwise go overseas**. Most charities will only fund the directly incurred costs of a research project, so the CRSF is essential to support the other indirect costs incurred by universities in undertaking this work. We would welcome a collaborative approach between charity funders, universities and UKRI to discuss how higher cost recovery levels and the CRSF could be used in tandem to address current funding shortfalls and put charity research on a more secure footing for the future.

Complementing other sources of public funding

- 1.7 QR funding is often vital in securing Research Council funding when institutional support is required to secure a grant. Data from the OfS shows funding from the Councils has hovered between 72%-74% of full economic costs (FEC) since at least 2016.³ QR funding is often used to make up the additional costs of research, along with income from international student fees and revenues

¹ *The Economic Significance of the UK Science Base* (March 2014), A Report for the Campaign For Science And Engineering.

² *A Review of QR Funding in English HEIs: Process and Impact* – a report to HEFCE by PACEC and Centre for Business Research, Cambridge (December 2014).

³ OfS Annual TRAC reports [2016-17](#), [2017-18](#), and [2018-19](#)

generated from activities such as business conference hire and endowments. The result of the pandemic is such that these income streams are likely to be unreliable for several years. **Boosting QR funding and increasing the level of FEC recovered on grants, including from Research Councils, government departments and NIHR, will ensure universities have the financial capacity to deliver the world-leading R&D the country needs to drive economic and social recovery from the pandemic.**

2. Strategic investment keeping UK universities ahead of the game

- 2.1 QR funding allows universities to invest strategically in new ideas, talent and facilities that underpin ground-breaking developments, such as the Centre for Applied Superconductivity at the University of Oxford, which studies applications in energy and healthcare. The flexibility of this funding allows universities to plan ahead, take risks and be pre-emptive in the funding of new R&D opportunities.
- 2.2 Many sources of public funding for research are short-term in nature, supporting specific projects for a few years at a time. By contrast, it has been shown that **QR funding is vital in allowing universities to develop and implement long-term research strategies.**⁴ QR also enables institutions to allocate resources to priority areas which may not typically be supported by the Research Councils. The Institute of Arab and Islamic Studies at the University of Exeter, for example, was supported by QR at a time when the number of academics working on these subjects in the UK was relatively small. This allowed the university to maintain a critical level of high-quality research and to make a significant contribution to a range of key debates over the last decade, including the radicalisation of British citizens.
- 2.3 Our universities rely on cutting-edge equipment to carry out high-tech research and QR funding enables them to **deliver key infrastructure** to support this. The School of Geosciences at the University of Edinburgh, for example, invested QR funding in an aircraft to support researchers in their studies of the lower atmosphere. The aircraft enables researchers to make atmospheric measurements up to 10,000 feet above sea level and to produce images of the Earth's surface.
- 2.4 As well as underpinning pioneering research, **QR funding helps universities invest in training and skills development.** Indeed, UKRI estimates that around 20% of QR funding is used by universities to support their research talent directly.⁵ At Imperial College London, QR funding was invested to support two graduate schools running an extensive series of core training programmes in transferable skills, scientific methods and key laboratory techniques. The funding also supports courses such as business skills and commercial awareness, which provide PhD graduates with an introduction to the business world through a mini-MBA programme.

3. QR as a long-term investment in the UK's future

- 3.1 With UKRI grant approval rates at around one in four, QR funding provides a low bureaucracy mechanism to get public funds into the hands of researchers and to do this quickly.⁶ Empowering universities to make decisions on how and which projects and people to support ensures the funding is used efficiently and effectively, backed up by the established cycle of Research Excellence Framework (REF) assessment exercises as a robust external validation mechanism of the excellence and impact of university research activity overall.
- 3.2 Maintaining the balance between QR funding, which can be used to fund long-term or risky research, and challenge-based funding, which is currently delivered through mechanisms such as the Industrial Strategy Challenge Fund, is crucial.
- 3.3 **Now is the time to shift towards long-term and low bureaucracy investments in people and ideas by introducing a significant uplift in quality-related funding for research. Doubling the QR grant and its equivalents in the devolved nations over the next five years would help Government realise its aims of supporting breakthroughs in blue-skies research, boosting the research talent pipeline and using R&D to power future economic growth.**

⁴ *A Review of QR Funding in English HEIs: Process and Impact* – Report to HEFCE by PACEC and University of Cambridge (December 2014).

⁵ UKRI (2019) UKRI Annual Report and Accounts 2018-19.

⁶ The cost of REF 2014 has been estimated to be only around 2.4% of the £10.2 billion in QR research funds projected to be distributed between 2015/16 and 2020/21, which compares highly favourably against the cost of administering Research Council grants.

4. How Russell Group universities use QR: illustrative case studies

QR funding supporting the UK's Covid-19 response:

Having identified future pandemics as a key global threat, **University of Oxford** used QR funding to help establish the Jenner Institute in 2005, specialising in vaccine development. Decades worth of investment meant the team working on the SARS virus was already in place and able to be rapidly re-deployed at the outbreak of Covid-19, thus allowing the team to develop the most promising vaccine candidate to date.

UCL used QR funding to collaborate with industry partners to create breathing aids to keep Covid-19 patients out of intensive care. UCL's Technology Transfer Office also worked to make the design of these breathing aids freely available for others to manufacture worldwide.

QR funds allowed **Queen Mary University London** to help set up the Nightingale hospital in London and to provide leadership and direction to the clinical research programmes that flowed from the new hospital. QR funding also supported the design and testing of the genomic platforms at the university that now underpin the on-going UK-wide analysis of how Covid-19 patient genomes relate to clinical outcomes.

University of Nottingham: using QR to catalyse collaboration for the UK's first carbon-neutral lab

The University of Nottingham used £4.2 million of QR funding through its strategic development fund to establish its Centre for Sustainable Chemistry. This is a major facility underpinning the University's Green Chemicals Beacon, which is a strategic priority for the University. QR funding allowed the building of research capacity in this area and the recruitment of two Chairs for the project.

QR funding was also crucial to the expansion of Nottingham's partnership with GSK, which in turn enabled the university to secure £10.4 million in funding from the UK Research Partnership Investment Fund (RPIF), leveraging £12 million from GSK and further investment from the Wolfson Foundation to develop the GSK Carbon Neutral Lab (CNL). This is the first carbon-neutral lab to be built in the UK and it serves as a hub to catalyse new collaborations with industry through world-leading research in sustainable chemistry.

The University has significantly increased its staff and student numbers in this area, with an emphasis on recruiting early-career researchers to academic positions to secure the future pipeline of research leaders in sustainable chemistry. Since 2014, researchers within the CNL have secured over £15 million of research funding from a range of sources including through collaborations with Unilever, Rolls Royce, Croda, Lubrizol and L'Oreal.

Queen's University Belfast: using QR to enhance teaching and research in advanced engineering

Queen's University Belfast invested around £3 million of its QR funding to support a joint venture with Wrightbus, a leading manufacturer of buses, to establish the William Wright Technology Centre – a research facility at Queen's School of Mechanical and Aerospace Engineering. The Centre promotes research and advanced engineering to facilitate the creation and development of technologies suitable for today's bus industry, particularly as these needs become increasingly complex.

The University's QR funding, along with over £300,000 of capital refurbishment costs, attracted investment of more than £6 million from Wrightbus and led to an additional £3 million Innovate UK grant.

New permanent premises for the Centre were developed within the Queen's campus and opened in Summer 2017. Over the initial five-year life-span of the Centre a team of 25-30 engineers and PhD students are set to deliver a range of research projects including drive cycle modelling, thermal modelling, vibration related fatigue and lifecycle analysis, for topics such as cost of manufacturing, maintenance and operation. Ensuring that students have the opportunity to work alongside Wrightbus colleagues to develop technical, research and broader workplace skills is also central to the establishment of the Centre, improving the employability of its graduates.