

## Supporting future breakthroughs and improved resilience for the UK: the importance of 'QR' funding

### Summary

- As the Integrated Review has outlined, the UK's future will be dependent on its ability to maintain scientific and technological advantage against international competitors. Quality-related (QR) research funding plays a key role in maintaining the UK's R&D capability, allowing research organisations the flexibility to pivot to address short-term challenges and opportunities, as well as make strategic investments to position the UK as a world-leader in priority areas in the long-term.
- QR funding is a highly competitive funding source which has enabled universities to improve the UK's resilience and agility in responding to pressing threats. **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.** By tapping into existing research funded by QR, vaccines and treatments were developed which saved thousands of lives and enabled the Government to roll back restrictions and drive forward the economic recovery.
- 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. **Innovations and discoveries supported by QR funding include graphene, genomics, opto-electronics, cosmology research, and new tests and treatments for everything from bowel disease to diabetes, dementia and cancer.**
- Non-governmental funders often find fundamental, blue skies research too early-stage or risky to support. This makes the role of the Government in supporting basic research vital and impossible to replicate from other sources. However, the value of QR funding has declined by 17% in real terms since 2010, at a time when funding for research has increased from £9.7bn in 2007 to £14.9bn in 2021.
- **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 safeguard the UK's future resilience, agility and prosperity by introducing a significant uplift in quality-related funding for research. Increasing QR funding (and its equivalents in the devolved nations) by 20% 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.**

## Building the UK's resilience and agility to address global emergencies

Quality-related (QR) research funding provides institutions with the autonomy to deploy funding strategically – both to commit to long-term investments and to respond quickly to new challenges. This has been exemplified during the Covid-19 crisis, where our universities have used internal QR funding to support the swift redeployment of researchers to pandemic-related work even before government schemes were put in place. Unlike other sources of public funding, universities are able to deploy QR funding flexibly when needed, improving the resilience of the R&D system and providing a strategic advantage over institutions which rely solely on project funding.

### Case studies: universities using QR to rapidly develop vaccines and treatments for Covid

Having identified future pandemics as a key global threat, the **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 quickly develop a safe and effective vaccine. The Oxford-AstraZeneca vaccine is now in use in more than 40 countries and has played a crucial role in protecting public health in the UK, enabling the Government to roll back restrictions on social interaction and supporting the economic recovery.

**University College London** used QR funding to rapidly assemble a collaboration with industry partners and the NHS to create breathing aids to keep Covid-19 patients out of intensive care much more quickly than would have been possible through government grant making processes. The UCL Ventura breathing device was designed in just 100 hours through the flexible deployment of QR, with regulatory approval given to the device on 27 March 2020, four days before the Government was able to launch its first Covid 'rapid-response' calls for funding.

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.

## Maintaining international strategic advantage: identifying future challenges

QR funding allows universities to invest strategically in new ideas, talent and facilities that underpin ground-breaking developments. The flexibility of this funding allows universities to plan ahead, take risks and be pre-emptive in the funding of new R&D opportunities.

Many sources of public funding for research are short-term, 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**.<sup>1</sup> QR also enables institutions to allocate resources to priority areas not typically supported by the Research Councils.

### Case studies: supporting breakthroughs to improve healthcare and to reach net zero

Researchers at **Durham University** were supported by QR funds to explore whether warm water found in abandoned coal mines 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.

<sup>1</sup> A Review of QR Funding in English HEIs: Process and Impact – Report to HEFCE by PACEC and University of Cambridge (December 2014).

QR funding has helped the **University of Exeter** become a world leader in diabetes research. The flexibility of QR funding allowed Exeter to support new research posts and make investments in molecular genetics facilities, helping the University attract £36m in additional R&D funding since 2012/13. Exeter's diabetes research supported the development of improved UK clinical guidelines and boosted treatments. These breakthroughs have delivered significant cost savings for the NHS, with an economic impact analysis of one programme designed to prevent or delay the onset of type II diabetes estimating an overall net benefit to UK health services of £1.2bn over 5 years.

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.

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.<sup>2</sup> At **Imperial College London**, QR funding was invested to support two graduate schools running a series of training programmes in transferable skills, scientific methods and key laboratory techniques. The funding also provides PhD graduates with an introduction to the business world through a mini-MBA programme.

## Supporting collaboration with new partners

Universities use QR funding to develop new partnerships with a range of other organisations including overseas investors. 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.

Evidence shows that universities that have higher research funding (including from QR) are able to generate more research income from other sources.<sup>3</sup> 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.<sup>4</sup> The Charity Research Support Fund (CRSF) and business support elements of QR funding are especially valuable in this respect.

### *Leveraging private investment in R&D*

QR funding allows universities to leverage in funding from business. The **University of Nottingham** used QR funding to expand its partnership with GSK. This in turn enabled the University to secure £10.4m in funding from the UKRPIF, leveraging £12m from GSK and further investment from the Wolfson Foundation to develop the GSK Carbon Neutral Lab. This is the first carbon-neutral lab in the UK, serving as a hub to catalyse new collaborations with industry through world-leading research in sustainable chemistry and attracting new jobs to the region.

**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 to support medical advancement*

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**

<sup>2</sup> UKRI (2019) UKRI Annual Report and Accounts 2018-19.

<sup>3</sup> *The Economic Significance of the UK Science Base* (March 2014), A Report for the Campaign for Science And Engineering.

<sup>4</sup> *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).

**research funding from the UK's third sector 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.

QR has also been instrumental in helping universities leverage investment to the UK from overseas charities. The **University of Oxford**, for example, used QR funding to underpin a new large-scale project with the Bill and Melinda Gates Foundation to develop tools to monitor and evaluate the wellbeing of mothers and infants. The University was only able to secure the nearly \$29m investment from the charity by committing £2.9m of its own QR funding to signal its commitment to co-invest in the project.

### *Complementing other sources of public funding*

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 71%-74% of full economic costs (FEC) since at least 2016.<sup>5</sup> QR funding is used to make up the additional costs of research, along with income from international student fees and revenues 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.**

### **QR as a long-term investment in the UK's future**

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.<sup>6</sup> 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.

Despite its vital role in driving the UK's R&I performance, since 2010 QR funding has declined by 17% in real terms. This has happened at a time when funding for research has increased from £9.7bn in 2007 to £14.9bn in 2021. Indeed, the balance of funding between QR and Research Council funding has fallen from 80p in the pound in 2007, to 64p in the pound in 2021/22.<sup>7</sup> 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.

**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 safeguard the UK's future resilience, agility and prosperity by introducing a significant uplift in quality-related funding for research. Increasing QR funding (and its equivalents in the devolved nations) by 20% 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.**

<sup>5</sup> OfS Annual TRAC reports [2016-17](#), [2017-18](#), [2018-19](#) and [2019-20](#)

<sup>6</sup> The cost of REF 2014 has been estimated to be only around 2.4% of the £10.2bn 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.

<sup>7</sup> [BEIS R&D budget allocations 2021/22 \(footnote 16\)](#)