

## Science and Technology Committee: Innovation, Growth and The Regions – GW4 Response

### About GW4

Founded in 2013, the GW4 Alliance brings together four of the most research-intensive and innovative universities in the UK: Bath, Bristol, Cardiff and Exeter. Collaboration is at the heart of everything we do and it makes us greater together than the sum of our parts. We work with other universities, businesses and civic bodies, acting as the anchor institutions to support a knowledge-intensive economy.

### Summary

- GW4 is the university alliance for the universities of Bath, Bristol, Cardiff and Exeter, together the universities have an active research and innovation portfolio of £2.4bn. Our region has internationally leading research and innovation strengths which can play a key role in driving economic growth, as well as support the government's wider Missions.
- GW4's geography suffers from historical under investment of public R&D funding. The Nesta report on The Missing £4 Billion noted how public sector funding is way more concentrated geographically than private sector R&D. If the intention was to level up regional public R&D spend to that in the Greater South East then in 2016 there was a £570m/pa gap for the South West and a £660m/pa gap for Wales and Northern Ireland<sup>1</sup>. This gap persists with UK Research and Innovation, the largest national public R&D funder which in 2021/22, only spent 1.7% (£137M) of its £7.8Bn funding in Wales and only 6.7% (£536M) in the South West but 52.8% was spent in the Greater South East (£4.15Bn).
- University Alliances such as GW4 are well placed to offer regional insights about their local innovation economies given the importance of universities as key national innovation assets. Innovation and research clusters often do not comfortably align with political geographies. GW4's two-nation geography means that we understand the importance of cross-border collaboration. We have a proven track record of supporting pan-national research, innovation and training, creating highly-skilled people and jobs.
- With the lack of mature devolved bodies within our English geography, our region is at risk of further missing out on funding as UKRI's place-based investment is increasingly being delivered through Mayoral Combined Authorities (MCAs). The West of England Combined Authority represents ~1.4% of the UK population and only~17% of the people in the South West of England with no other MCAs close to formation and none planned in Wales.
- The government, and funding bodies such as UKRI and ARIA, should they support cross-border collaborations and support organisations that facilitate collaboration at scale, not just areas of historical strength is we are to drive innovation clusters at scale and economic growth.

### Response

#### Q1. How does the Government drive research and innovation in our regions?

GW4 is the university alliance for the four of the UK's most research intensive universities – Bath, Bristol, Cardiff and Exeter. The GW4 universities' area of South West England and South Wales region is uniquely placed to support the aspirations set out in Labour Government's Missions, and boost economic growth through our internationally leading research and innovation strengths. Our region is recognised for its world-

leading research and innovation. Universities are critical drivers of economic growth, our four institutions have an annual turnover of £2.4 billion, a combined annual research income of over £465 million and a research and innovation portfolio of £2.4bn at any one time. The universities employ over 13,000 academic staff and train over 33,000 postgraduate students and 82,000 undergraduate students at any one time<sup>2</sup>.

GW4's geography suffers from historical under investment of public R&D funding, Nesta's *The Missing £4 Billion* report noted how public sector funding is way more concentrated geographically than private sector R&D. If the intention was to level up regional public R&D spend to that in the Greater South East then in 2016 there was a £570m/pa gap for the South West and a £660m/pa gap for Wales and Northern Ireland<sup>3</sup>.

This gap persists with UK Research and Innovation, the largest national public R&D funder in 2021/22, only spending 1.7% (£137M) of its £7.8Bn funding in Wales and only 6.7% (£536M) in the South West but 52.8% spent in the Greater South East (£4.15Bn)<sup>4</sup>. Recent data from UKRI's Medical Research Council demonstrates it only spends only 1% of its funding in Wales and 3% of its funding in the South West with 45% of its funding spent in London alone. This is despite the fact that of the 46 medical schools in the UK, 3 are in Wales and 2 in the South West.

Nesta has demonstrated the South West is an area with low public R&D but high business R&D (~1:2), whereas Wales has low public and business R&D and therefore there are unexploited opportunities for public R&D investment. The potential of the South West has largely been ignored during the award of recent growth generating activities such as launchpads, innovation accelerators, Freeports, and their special economic zones.

Our region receives less support for innovation than other parts of the UK. In 2020-21, Western Wales and the Valleys received about £3 per £1,000 of GVA from the Higher Education Funding Council for Wales in 2020-21, compared to a UK average of £4.4. In Gloucestershire, Wiltshire, Bath & Bristol, UK Research and Innovation (UKRI) spent about £5.3 per £1,000 GVA—above the UK average but well below the West Midlands (£7.9 per £1,000 GVA), West Central Scotland (£9), and the area of Berkshire, Buckinghamshire and Oxfordshire (£11.6). The uptake of R&D tax credits is also lower in most parts of the GW4 universities' geographies than the UK average<sup>5</sup>. Pilot activities across the West of England highlight the potential of regional clusters to be "test beds" for innovation adoption in regulated industries where new technologies and innovation can be difficult to access and diffuse outside of very large industry incumbents. As an example, Future Finance (part of the UK's Next Generation Professional and Financial Services programme), jointly funded by ESRC and Innovate UK brings together research in GW4 Universities, large financial institutions, Fintechs and alternative finance institutions such as Credit Unions to explore joint challenge and skills programmes to broaden the social and economic impact of emerging technologies. Exploring this model in healthcare applications or energy sectors could have huge potential for driving productivity impacts in the wider economy and opening new supply chains.

In England, UKRI is increasingly devolving place-based funding to Mayoral Combined Authorities (MCAs)<sup>6</sup>. At present, the only MCA within GW4's geography is the West of England Combined Authority, which covers Bristol, Bath & North East Somerset, and South Gloucestershire and represents ~1.4% of the UK population and only ~17% of the people in the South West of England. The approved creation of the Devon and Torbay Combined County Authority will be non-Mayoral, and excludes the cities of Exeter and Plymouth<sup>7</sup>.

While we note the government's intention to expand Mayoral Combined Authorities across England, this will take time and there is concern that in the interim, much of our region could miss out on funding while a devolution deal is negotiated and MCA established. A focus on allocating funding within MCA boundaries could mean a lack of focus on facilitating important cross-border collaborations and wider regional clusters of research and innovation strengths.

For example, the Creative Industries sectors across Wales and the South West are an established powerhouse in cultural, digital and creative industries, employing 110,000 people across almost 14,000 businesses. Our institutions are home to successful multi-million-pound, multidisciplinary investments. These include Bristol and Bath Creative R&D, Clwstwr, and two Strength in Places Fund awards at Media.Cymru and MyWorld, where GW4 institutions are already working with the region's other universities and industry partners.

GW4 is a unique alliance as it is the only university alliance which collaborates across the border, with universities in England and a devolved nation, Wales. This presents many opportunities such as working with two governments and two NHS systems, but the current structures and systems also create barriers. One barrier we see is the lack of a full equivalent to NIHR in Wales, which curtails the translation of medical research. Wales also does not receive equivalent funding for Research England or England only activities funded by UKRI. Notably, there is no dedicated funding for research culture, despite this area (people, culture and environment) accounting for 25% of the quality profile for the Research Excellence Framework exercise in 2029; a major determinant of University funding and disadvantaging the outcomes for Welsh universities.

## Q2. How does research and innovation in our regions drive growth and prosperity in those regions?

Regional innovation clusters are vital to supporting regional growth and the prosperity for local communities. In our submission to the National Industrial Strategy consultation, GW4 agreed with the definition of clusters "taking any shape or form and over large geographical areas". As the only University Alliance to cross the borders of England and Wales, this is particularly true of GW4's two-nation geography, and more rural and coastal geographies where a cluster of expertise can often be far more geographically diffuse than in urban areas. Clusters, and research and innovation excellence, do not always align to political or economic geographies but supply chains depend on the potential for collaboration and shared and equivalent opportunities.

It is also welcome that the National Industrial Strategy, and other government policy papers such as the AI Action Plan and the National Planning Policy Framework, have all recognised the unique role that universities can play, both as drivers of regional economic growth, but also as nationally significant innovation assets.

In Clean Energy Industries, there is more expertise in climate and environmental sustainability here than in any other local region worldwide. As a regional Alliance, GW4 is perfectly placed to accelerate the transition to a sustainable Net Zero. The South West has one of the highest concentrations of businesses in the Net Zero economy in the UK, and the Net Zero economy in Wales is over three times more productive than the regional average. Exeter is home to the Met Office and the Joint Centre for Excellence in Environmental Intelligence and the area is a global leader in environmental technology.

Our innovation landscape supports the transformation towards sustainable mobility in hard-to-decarbonise industries such as aviation and maritime. Our region is home to the largest aerospace sector in the UK, and 14 of the 15 largest aerospace companies. Airbus and GKN have invested \$212 million in composites and advanced materials research and development. The Bath and Bristol Science Park is home to the National Composites Centre Catapult and IAPPS which form part of a world leading cluster in smart and sustainable aviation. Our innovative facilities such as the Exeter Centre for Future Clean Mobility are leading the way in unlocking green and inclusive growth opportunities.

The region has considerable strength in cyber with Bath, Bristol and Cardiff already working closely together through the ESRC-funded Digital Security by Design Social Science Hub+. The Universities of Bristol and Cardiff are Academic Centres of Excellence as recognised by the National Cyber Security Centre (NCSC), with the EPSRC CDT between Bristol and Bath also recognised by NCSC. Crucially, there is not just a strategic gap in the research and innovation landscape, but a critical workforce challenge which needs to be addressed in tandem through education, training and upskilling. The relative geographical proximity of the GW4 to GCHQ

in Cheltenham and the existing effectiveness of our research collaborations also constitute a critical mass of activity that is distinctive and perhaps unparalleled within the UK cyber environment. However, we note:

- i. An ecosystem which is vibrant but ‘fragile’: short-term research funding, industrially co-funded or otherwise. Not only does this limit the scope and impact of the research, but when contracts end, both researchers and industrial partners move on.
- ii. A lack of systematic and sustainable pipelines and longer-term investment to escalate university cyber research through Technology Readiness Levels into existing and creating new businesses. A lack of coordination and access infrastructure for existing distributed testbeds enabling limited opportunities for co-creation and cross-fertilisation of ideas with industry.
- iii. Problems with the ‘people pathway’: closest to home, the challenges facing early career researchers who want to develop valuable links with (and routes into) industry while retaining their unique and highly specialised expertise. More broadly, though, significant skills gaps in the region, which includes some of the poorest areas in Europe. Currently there is only a partial and uncoordinated response to well-known problems surrounding skills gaps in cyber.

GW4 has a proven track record of facilitating cross-border innovation clusters across our geography and institutions, alongside civil and business partners. GW4 would like to submit two examples to the Committee for its consideration:

**GW-SHIFT (Great Western Supercluster of Hydrogen Impact for Future Technologies)**<sup>8</sup>: Supported by the Engineering & Physical Sciences Research Council (EPSRC) as part of their Place Based Impact Acceleration Account awards (PBIAA), GW-SHIFT brings together researchers from across GW4’s four partner universities alongside the universities of Swansea, South Wales, and Plymouth. GW-SHIFT also works with 25 civic and industry partners, who are contributing over £1.5 million in additional funds and in-kind support, to maximise the enormous potential of the South West of England and South Wales hydrogen ecosystem<sup>9</sup>. The devolved funding provided by EPSRC over the next four years will support innovative research and activities to support a thriving low carbon hydrogen supercluster focusing on key themes such as production, storage and distribution, conversion and transport. The Western Gateway Hydrogen Delivery Pathway calculates that investing in hydrogen infrastructure within the area could create up to new 40,000 new jobs and safeguard a further 60,000 existing jobs<sup>10</sup>.

**LEAP (Leadership, Engagement, Acceleration & Partnership)**<sup>11</sup>: Supported by a £4.11 million grant from the EPSRC, LEAP is a digital health hub which aims to revolutionise the region's digital health landscape. Bringing together GW4’s four partner universities as well as the University of the West of England (UWE) and Health Data Research UK (HDR UK), LEAP's partnership network extends to 21 supporting companies nationally, seven NHS Trusts & Health Boards, four social care organisations, five Local Authorities, Health Innovation West of England, and the award-winning business incubator SETsquared. Over three years, the Hub will deliver a unique portfolio of training as part of its Skills and Knowledge Programme, leveraging the expertise from LEAP’s university partners, including the UK’s only Centre for Doctoral Training in Digital Health and Care at the University of Bristol. In December 2024, the Hub awarded funding of over £1 million to 15 new collaborative digital health research projects and fellowships across the South West and Wales in December 2024, leveraging over £410,000 in additional funding from partner organisations<sup>12</sup>.

There is growing evidence of the effectiveness of University Alliances, such as GW4, both in driving collaboration between regional actors, and helping to shape policy<sup>131415</sup>. We would urge the government to harness to the regional perspectives of these university alliances to support wider efforts to drive research & development, and grow local knowledge economies.

- **How regional Cluster growth can best be measured, mapped, and monitored to help inform local leadership and evidence-based policymaking in Whitehall.**

The DSIT cluster tool is about mapping existing clusters using evidence including joint academic and business IUK and Research Council grants and joint publications.

Given public R&D funding is very unevenly spread geographically, in part the cluster map therefore demonstrates and reinforces this concentration of funding in the Greater South East, so its unsurprising that London shows the largest cluster in 43 of the 46 sectors.

When co-location is also limited 30km distance this is also a very different prospect in London, but would mean Bristol and Newport would not be considered as co-location, as they are more than 30km apart. Therefore, the fact that the region is home to the world's first compound semiconductor cluster and the Compound Semiconductor Applications Catapult in Newport, which has initiated over £100 million in projects, and the University of Bristol is home to a new EPSRC £11m Knowledge and Innovation Centre REWIRE in semiconductor research would be missed.

The methodology in part looks at density, and therefore the 336 R&D collaborating clusters (red) unsurprisingly map to where there are larger cities, but also they decided whether firms were RD&I active based on whether they appeared in the IUK dataset or not. It would be preferable to consider clusters and innovation potential on a broader geography.

The Committee should also consider the potential of meta-clusters to turbocharge innovation and economic growth. Meta-clustering is a strategy “that links different clusters from various sectors, industries, and regions in the global economy”. Meta-clusters “use the collective power and diverse abilities of different clusters to set a new bar for innovation, collaboration across fields, and global competitiveness”<sup>16</sup>.

As mentioned in our response to **Question 2**, our region has significant strengths both in Creative Industries and AI. Fostering collaboration between these complementary sectoral clusters, would allow for greater innovation at a faster and wider scale. GW4's Building Communities work is a good example of supporting the cross-institutional, interdisciplinary collaborations that will be vital for developing meta-clusters across our regional economy<sup>17</sup> and delivering new activity on a scale that is greater than the sum of its parts.

### **Q3. How is research and innovation diffused or supported to drive productivity and growth in the regions, wherever it may come from?**

The role of the GW4 Alliance, funded by the universities, is completely focused around collaborative research and development and innovation, supporting our researchers and external partners to collaborate on innovative research.

The GW4 universities of Bath, Bristol, Cardiff and Exeter, along with Southampton and ,Surrey, also work together as the SETSquared enterprise partnership. SETSquared is the world's leading business incubator supporting the development of ideas into thriving businesses.

SETSquared has a research portfolio of over £600m, and has produced over 230 spin-out companies through collaboration across vibrant regional innovation ecosystems. Companies supported by SETSquared have contributed £15.7 billion to the UK economy over the last 20 years and created 15,600 jobs. Despite this success, the potential impact of R&D to power regional growth and productivity is being held back due to significant imbalances in equity funding across the UK.

Startups in the region raise, on average, five times less at early stages than in the Golden Triangle. To try and address this imbalance, the SETSquared partnership has joined forces with a leading regional investment firm



QantX to launch a new £300m spin-out focused investment vehicle<sup>18</sup>. The aim is to drive a much needed step change in early-stage patient capital, expertise and support available to University spin-outs and start-up companies in the region that are working in areas of true global impact – such as sustainability, clean energy and transformative healthcare. Initiatives such as this are vital as we are to drive productivity and growth in regions.

#### Q4. In addition, the Committee welcomes submissions on the following points:

- **How are funding bodies such as UKRI and ARIA contributing to the UK's innovation ecosystem and delivering the government's growth missions?**

In our response to **Question 2**, we set out how, through initiatives such as GW-SHIFT and LEAP, UKRI funding has been essential for supporting our regional innovation ecosystem, growing cross-border research clusters, and delivering on economic growth.

- **How does the UK's innovation ecosystem compare to those of other countries, and what lessons can the UK learn from international models in terms of commercialising research and innovation to benefit both regional and national economies?**

The Catapults are a welcome addition to the UK landscape, however their number and scope are limited. For example, the remit of the current Digital Catapult is broad, including quantum computing, creative industries and telecoms. Many of the programmes are focused on 5G and supply chains, but none are focused on cyber, despite the considerably growing threat of cybersecurity in an unstable world. Consequently, the opportunity for a new cyber cluster should be considered. A model where academics and industrial partners from a variety of spokes, with existing testbed facilities, are also embedded within a single hub adding value to each other's activities is considered key to the success of activity in this space, given the speed of technological change. This cluster could be facilitated by joint appointments from both industrial and academic partners, or with sponsored chairs and is similar to the academic-industrial-hybrid model used by the successful *Fraunhofer* institutes commonplace in Germany.

The aim is to drive a much needed step change in early-stage patient capital, expertise and support available to University spin-outs and start-up companies in the region that are working in areas of true global impact – such as sustainability, clean energy and transformative healthcare. Initiatives such as this would enable these companies to scale within and across regional clusters of the UK rather than be acquired by US capital before fully realising the potential for productivity and growth in UK regions.