

Economy, Trade and Rural Affairs Committee inquiry into R&D

Universities Wales written evidence

November 2023

About Universities Wales

Universities Wales represents the interests of universities in Wales and is a National Council of Universities UK. Universities Wales' membership encompasses the vice-chancellors of all the universities in Wales, and the Director of the Open University in Wales.

Our mission is to support a university education system which transforms lives through the work Welsh universities do with the people and places of Wales and the wider world.

Universities Wales welcomes the opportunity to respond to the Committee's consultation.

Summary

- Welsh universities deliver significant research and innovation activity across a diverse range of strengths, underpinned by core and competitive funding.
- The funding landscape is challenging, with core funding remaining static and under pressure, the requirements of match-funding, and with European Structural Funding coming to an end.
- Welsh universities will benefit from access to Horizon Europe and are working hard to leverage combined strengths to secure greater grant capture from competitive sources.
- Universities serve as regional drivers of innovation through partnerships and collaborative activity with businesses, in catapults, clusters and via Knowledge Transfer Partnerships.
- In the most recent Research Excellence Framework exercise (2021), Wales led the UK for proportion of research whose impact is considered internationally excellent or world-leading. Analysis of the REF case studies found that Welsh universities benefitted 25 different groups of people and organisations in Wales, including

children and young people, policy makers, the elderly, women and people with disabilities.

1. The current position of the research, development and innovation landscape in Wales and the effectiveness of:

1.1. Public funding: including funding levels; barriers to access; regional differences across the UK and Wales

Investment in research at universities plays a particularly important role in Wales' R&D landscape: Welsh HE accounted for 28% of Wales's total investment in R&D in 2021¹. Total R&D expenditure by Welsh universities in 2021 accounted for 3.1% of UK HE R&D expenditure.

Under the dual funding system, universities receive core research grant funding from the Welsh Government via HEFCW (and CTER from April 2024) and are able to access competitive funding streams including through UKRI (and its constituent councils). Core research funding allocations have been static over many years, which amounts to a real-terms decline. Increasingly, universities are reliant on cross-subsidising research from other income.

Welsh universities also drew down significant funding for research and innovation activity from European Structural Funds. As the Committee is aware, despite the UK Government's Shared Prosperity Fund providing some replacement funding, the method of its distribution makes it difficult to access funds for research and innovation.

Universities can now apply for Horizon Europe funding given the UK's association.

Scale of research in Wales

In terms of its research base, Wales made up 3.9% of the UK's research staff submitted in the recent REF 2021 and 3.5% of the staff who were rated as 4*, i.e. Wales continues to output a significant volume of world-class research.² However, the volume of research/staff base remains almost 20% lower than an expected proportion based on Wales's population size (4.7% mid-2020).³

Comparing funding in other UK countries, higher education in Wales remains comparatively disadvantaged. Core funding for research (QR and PGR) in Wales is at a lower level on a per capita basis than other parts of the UK which makes it more difficult to compete for other funding sources. The following chart shows the last two years' allocations for research and innovation compared to

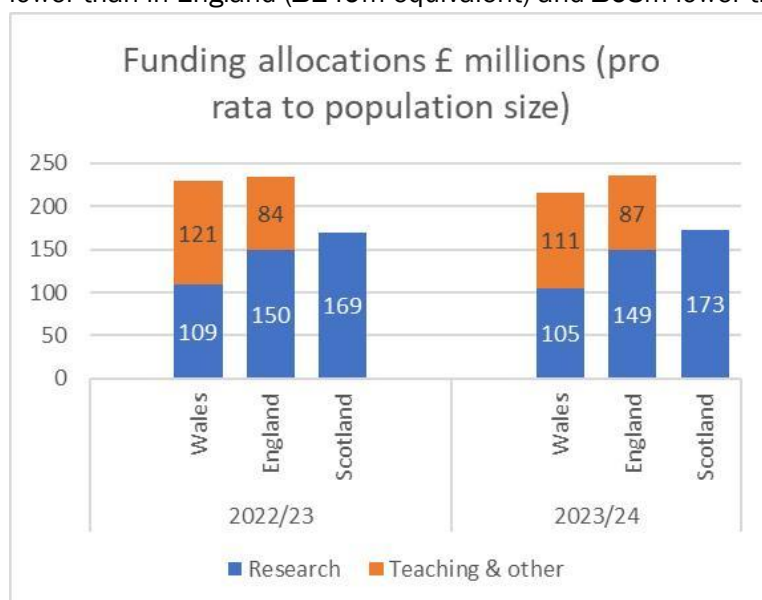
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<https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/researchanddevelopmentexpenditure/datasets/ukgrossdomesticexpenditureonresearchanddevelopment2021designatedasofficialstatistics>

² <https://results2021.ref.ac.uk/>

³ [Population estimates by output areas, electoral, health and other geographies, England and Wales - Office for National Statistics \(ons.gov.uk\)](#)

the allocations in England and Scotland scaled to their relative population size – which is equivalent to the amount that Wales would have received under the Barnett formula. For 2023/24, this indicates that in Wales the funding allocations for research and innovation (£105m) were £44m lower than in England (£149m equivalent) and £68m lower than in Scotland (£173m equivalent).



A breakdown of funding streams is provided in an annex at the end of this document.

1.2. Collaboration: between universities and industry

Welsh universities have a long history of collaboration with businesses.

Universities engage in knowledge exchange with businesses, providing academic research and innovation capacity to develop new projects, services and products. These are often part-funded by Innovate UK and Welsh Government.

Universities serve as regional drivers for innovation activity, including through catapults such as the [Compound Semiconductor Applications catapult](#) based in South East Wales and the [Advanced Manufacturing Research Centre](#) in Flintshire.

Universities also provide facilities and incubation space for local businesses through cluster models like AberInnovation and MSparc, as well as working with city and growth deals to secure investment for research projects. Spin-outs and graduate start-ups also benefit from support from universities via facilities, knowledge and mentoring.

This is a particularly important feature of the Welsh R&D landscape as Wales' private sector is almost entirely made up of SMEs. ONS estimates 99.9% of businesses in Wales are SMEs, with a higher than UK average % of business turnover and employees.⁴

Partnerships between universities and SMEs are vital for driving forward local and national economies. However, the ability of universities to engage with SMEs is likely to be negatively impacted as a result of the loss of EU Structural Funds. ERDF represented the highest proportion of knowledge exchange income for universities in Wales. This has created an area of substantial risk for knowledge exchange with SMEs.

The Wales Innovation Network (WIN) was established to facilitate a greater degree of collaboration between Welsh universities, recognising the diverse strengths of the sector and with the aim of increasing the sector's capacity for grant capture from sources such as UKRI. As highlighted elsewhere in this document, Wales typically draws down less than our population share of national research funding. Wales was successful in securing funding from UKRI's Place-based Impact Acceleration accounts, including for Net Zero homes research in Swansea, Cyber in Cardiff and USW as part of the GW4's hydrogen research.

With a view to enhancing university-business collaboration opportunities, WIN will be exploring whether there are ways to encourage consistency in approaches to knowledge exchange, making it easier for businesses to knock on the door of our universities and establish partnerships.

1.3. Support for Welsh businesses: through research and development

Universities provide a variety of support to Welsh businesses, from supporting innovation in SMEs and micro-businesses to large-scale collaborative projects in partnership with industry, as well as providing continuing professional development and upskilling.

Cluster models, such as the Compound Semiconductor cluster and AberInnovation is one means of providing benefit to local communities and partnering with local business. AberInnovation builds on Aberystwyth's strengths in crop science and agri-tech, provides incubator space and a range of state-of-the-art facilities: laboratory analysis, kitchens, food tasting labs, fermentation facilities.

Universities provide significant support to graduate start-ups, including through incubators providing access to resources and academics.⁵ We have a high level of graduate start-ups in Wales, with over 2,000 start-ups in operation in 2021/22 (the latest data available)⁶. Universities can also provide insight and expertise to support with grant applications for smaller businesses that may not otherwise have the capacity.

⁴ [Business population estimates for the UK and regions 2022: statistical release \(HTML\) - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/statistics/business-population-estimates-for-the-uk-and-regions-2022-statistical-release)

⁵ [Graduate-Start-Ups-in-Wales-English \(8\).pdf \(uniswales.ac.uk\)](https://www.uniswales.ac.uk/graduate-start-ups-in-wales-english-8.pdf)

⁶ [Intellectual property, start-ups and spin-offs | HESA](https://www.hesa.ac.uk/news/2022/04/intellectual-property-start-ups-and-spin-offs)

Case studies

- A [partnership project between academics at Cardiff Metropolitan University and the Welsh food and drink industry](#) has supported SMEs to develop their food science, technical and food safety skills, resulting in new jobs, new markets and a £103m increase in sales;
- A team at University of South Wales has developed ways of [producing and using hydrogen](#) that could be used both industrially and commercially, reducing carbon emissions. The team worked with industrial partners such as Tata Steel and ITM Power plc.

1.4. Welsh Government's approach: including its recent [Innovation Strategy](#)

We welcome the recently published [delivery plan](#) setting out the targets and actions for implementing the innovation strategy. Of particular relevance for universities, we welcome commitments to working with universities, including with the Wales Innovation Network, to increase research and innovation funding from external sources.

Increasing the budget for Knowledge Transfer Partnerships, as set out in the delivery plan, will also support university-business collaboration.

In our evidence submitted to the Welsh Government's consultation on its draft innovation strategy⁷, we highlighted the importance of investment to underpin innovation, as well as the need for recognition of the ways in which universities can serve as regional anchors for innovation. Universities' links with communities, businesses and the public sector, as well as the resources and facilities that universities host, can provide a sound basis for developing the innovation ecosystem in Wales.

We also noted the importance of attracting and retaining talent, and suggested the Strategy should consider the role of higher-level skills development in fostering a culture of innovation and facilitating knowledge exchange. Programmes such as degree apprenticeships have an important role to play in this area.

There should also be a further exploration of the role that our international activity, including that set out in Wales' International Strategy, will play in delivering the Innovation Strategy's ambitions. For example, the Global Wales partnership has been developing key international relationships including the UK's only partnership to date with T-Hub in Hyderabad, the world's largest innovation campus for start-ups.

⁷ [Universities Wales response - Welsh Government draft innovation strategy FINAL.pdf \(uniswales.ac.uk\)](#)

2. What challenges are Welsh businesses facing in terms of awareness of, and access to, public research and development funding?

Universities are well placed to act as regional drivers of the innovation ecosystem, through supporting businesses in applying for research funding, particularly by providing capacity and expertise for securing grants.

However, there are a number of challenges for businesses in accessing research and development funding, including:

- Capacity to engage with the process, in terms of staff time and/or expertise, particularly for SMEs and micro-businesses;
- Geographical restrictions - for many areas of Wales businesses are not operating within a well-developed ecosystem where they can speak to funders;
- Timescales for approval of funding can be lengthy and bureaucratic, making it commercially unviable;
- A wide range of funding programmes with differing priorities and regulations can be hard to track and access.

Universities have a range of existing programmes intended to support universities in undertaking research and development as outlined throughout this response.

With a view to enhancing university-business collaboration opportunities, WIN will be exploring whether there are ways to encourage consistency in approaches to knowledge exchange, making it easier for businesses to access expertise and capacity within our universities and to establish partnerships.

The [Knowledge Economy Skills Scholarships](#) programme (KESS), which was funded via European Structural Funds, placed Master's and PhD students into SMEs, large companies, social enterprises and public bodies, to provide research and innovation capacity. This type of programme is an effective way to enhance university-business collaboration across Wales. Organisations benefiting from the programme included Natural Resources Wales, Tata Steel, S4C, National Botanic Garden of Wales, Mencap Cymru, Halen Môn, Qioptiq Ltd., P&S Nano Ltd. and the Tidal Lagoon Swansea Bay.

3. What differences are there between funding for universities and funding for industry innovation? Are there regional disparities in the allocation of funding?

There are some differences in the funding for research and innovation activity between universities and businesses. As set out above, universities use government funding to support basic research and innovation, plus grant funding from a variety of sources to fund specific research projects.

Innovate UK funds business-led innovation, developing new products, processes and services. Knowledge Transfer Partnerships in Wales are all part-funded by Innovate UK.⁸ Universities provide the knowledge base for a large proportion of KTPs.

Businesses also have access to funding via Welsh Government's SMART Flexible Innovation Support fund.⁹

In terms of regional disparities, European funding was allocated on a regional basis, so different levels of funding were allocated to three regions: North Wales, East Wales, and West Wales and the Valleys. For the 2014-20 period, North Wales and West Wales and the Valleys were both categorised as 'less developed regions' (a regional GDP of less than 75% of the EU average) entitling them to a higher proportion of funding, while East Wales was a 'more developed region' (regional GDP of over 100% of the EU average).

The Shared Prosperity Fund and Levelling Up Fund have been distributed via local authorities, which has led to disparity on a more granular level. As per evidence given to the Committee previously, Universities Wales would advocate for successor funds to be distributed via Welsh Government to allow for a strategic, joined-up approach to its distribution across Wales.

4. Do the research interests of universities and industry differ and, if so, what actions can be taken and by who to ensure the interests of both sectors are catered for?

As set out in Professor Graeme Reid's *Strength in Diversity* report¹⁰, university research in Wales can be characterised by strong performance, modest scale, and a diverse range of institutions:

'The geographic locations of universities in Wales bring a rich variety of relationships with high technology business; proximity to rural populations; access to coastal waters; and understanding of social and economic challenges faced by individual communities.'

Universities are funded to undertake basic and applied research with a view to developing understanding or making an impact on, for example, scientific breakthroughs that benefit society. Universities also participate in knowledge exchange and collaboration with industry to develop innovative solutions and products. The extent to which universities undertake basic research, applied research, and innovation activity, varies across the diversity of institutions in Wales.

Businesses will primarily undertake research with a view to developing new products or services that ultimately yield a profit and/or gain a competitive advantage.

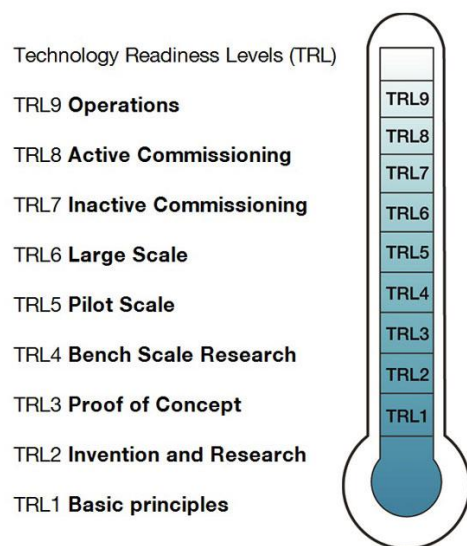
Core funding provides vital infrastructure and capacity for R&I activity to build upon, and encourages further investment from other sources. There is also a correlation between QR funding and success in grant capture from competitive sources.¹¹

⁸ [Knowledge Transfer Partnership guidance – UKRI](#)

⁹ [New £30 million funds launched to boost innovation in Wales | GOV.WALES](#)

¹⁰ [Strength-in-Diversity-Professor-Graeme-Reid-FINAL.pdf \(uniswales.ac.uk\)](#)

The differing levels of technology readiness are also relevant, with funding required at the basic research stage in order to facilitate and enhance more applied research and innovation activity:



Source: <https://www.gov.uk/government/ne-1>

While industrial and business-led R&D activity will be focused at the higher levels of technology readiness, the initial levels of basic research and proof of concept are vital components of the research pipeline.

In terms of actions to meet the interests of both sectors, RWIF funding can support initial partnership and collaboration, as well as funded programmes such as KESS, as set out above.

Cluster models and accelerator programmes facilitating join up with regional partners such as Cardiff Capital Region can also boost collaborative research that benefits universities and industry.

For example, Cardiff Capital Region has used part-funding from the Shared Prosperity Fund to launch a Cluster Development and Growth Programme, inviting tender opportunities for local enterprises.¹²

It is important to note that funding for basic research is an essential component of the innovation ecosystem. As noted in Welsh Government's report on [supporting Welsh R&I post-Brexit](#), public funding 'crowds-in' investment from the private sector in R&D:

There is evidence that every £1 spent by government on R&D, resulted in private sector R&D output rises of 20p per year in perpetuity.¹³

¹¹ [Reid Review \(gov.wales\)](#)

¹² [CCR launches £4.73M Cluster Development and Growth Programme to nurture priority Skills, vital Academic/Industry Partnerships and bespoke Business Growth Programmes - Cardiff Capital Region](#)

¹³ [Haskel 2014-04.pdf \(imperial.ac.uk\)](#) (quoted in [Regional Investment in Wales After Brexit \(gov.wales\)](#))

5. How can universities and businesses better interact and collaborate with each other?

The Wales Innovation Network will be exploring ways universities can create cohesion in knowledge exchange to make collaboration more accessible to businesses.

A key challenge to this is the changing funding environment, as European Structural Funds provided significant underpinning for collaborative activity.

As set out above, we await further detail on how Welsh Government intends to distribute the £3.4m consequential to Wales from the Regional Innovation Fund, and would hope that this can be used strategically in supporting regional, joined-up, collaborative research and innovation activity.

6. How effective is Welsh Government's [Innovation Strategy](#) likely to be in supporting research, development and innovation in Wales?

As stated above, we welcome the recently published delivery plan for the Welsh Government's Innovation Strategy and particularly the reference to working with Welsh universities.

The delivery plan suggests increasing collaboration through grant and procurement mechanisms with City and Growth Deal Regions and Freeports to encourage place-based innovation. This does have the potential to boost collaboration between businesses and universities.

The delivery plan is right to prioritise, under the economy mission, the need for capability and capacity building to compete more effectively for funding from international and UK-wide sources. As per evidence given to this committee previously, Welsh research has been hit hard by the withdrawal of European funding, and this has resulted in a loss of capacity. As demonstrated in Professor Sir Graeme Reid's 2017 report on R&I, there is a correlation between core funding and ability to secure competitive funding.¹⁴ Core funding plays a fundamental role in underpinning research infrastructure, which increases our ability to compete for UK funding sources.

There is also work to do to enhance engagement with Horizon Europe, which has been heavily impacted by the UK's failure to associate until recently.

7. Progress made in respect of the [Welsh Government response](#) to the Fifth Senedd report on 'Research and Innovation in Wales'.

A key recommendation of the report was for Welsh Government to articulate a vision for research and innovation activity in Wales.

The innovation strategy goes some way to setting out a vision, as well as outlining key areas of strength for Welsh research. CTER will also have to articulate how it will meet its strategic

¹⁴ [Reid Review \(gov.wales\)](#)

duty of promoting research and innovation in its strategic plan, which we look forward to responding to when it is consulted upon in 2024.

The report also recommended Welsh Government seek to increase its influence over investment decisions made in London. Universities Wales has supported this ambition through cultivating relationships with the Office of the Secretary of State for Wales and the Welsh Affairs Committee. The Secretary of State for Wales has visited all Welsh universities in the last year, and the Wales Innovation Network co-hosted an event in Lancaster House in Westminster last month to showcase the strengths of Welsh Research and Innovation, with the Secretary of State for Wales. The then Minister for Science, Research and Innovation George Freeman MP spoke at the event.

The report also recommended the reintroduction of innovation funding via HEFCW, which the Welsh Government supported. After an initial innovation capacity development fund of £7m for in 2019, the Research Wales Innovation Fund was operational from 2019/20 at £15m, and has remained at £15m annually. As noted by HEFCW in their review of RWIF in 2022, this is below the level of the Reid and Diamond reviews' recommendation that the fund should be £25m annually to support innovation activity.¹⁵

¹⁵ [W22-41HE-Research-Wales-Innovation-Fund-Review-2022-Outcomes-English.pdf \(hefcw.ac.uk\)](#)

ANNEX – funding streams

QR funding

HEFCW decides annually on the amount of QR it will allocate to each institution, the proportion being determined by the overall level of research excellence at each university, which is measured via the REF.

QR funding is unhypothecated and can be used to underpin core research activity, infrastructure and staffing.

QR funding in 2023/24 academic year was £81,677,344, with individual allocations ranging from £47m to £147,000 for individual institutions.¹⁶

Postgraduate Research funding (PGR)

Postgraduate Research funding is allocated to universities receiving QR, to fund the training of postgraduate research students. In 2023/24, PGR allocations totalled £6.2m, ranging from £2.5m to £69k for individual institutions.¹⁷

RWIF

The Research Wales Innovation Fund was introduced in 2020, after withdrawal of innovation and engagement funding from HEFCW in 2013/14. In 2023/24, RWIF allocation was £15m¹⁸ in total, ranging from grants of £500,000 to £3m. Institutions submit RWIF strategies to HEFCW, who allocate funding according to various metrics including spin-outs and graduate start-up outcomes, using data from the [Higher Education Business and Community Interaction Survey](#) from HESA.

The loss of innovation funding between 2013-2020 has arguably contributed to Wales lagging behind other parts of the UK in its innovation ecosystem.

While RWIF has been reintroduced, which is of course welcome, there are additional funding streams in other parts of the UK not available in Wales. Funds such as additional HE Innovation Funding in England provided post-pandemic, and Research England's Connecting Capabilities Fund have allowed universities to experiment with their KE offer.

European Structural Funds

Wales has received proportionally greater investment through European Structural Funds than other parts of the UK¹⁹. A significant proportion of these funds has been invested in research, skills and

¹⁶ [W23-19HE-HEFCW-Funding-Allocations-for-Academic-Year-2023_24-English.pdf](#)

¹⁷ [W23-19HE-HEFCW-Funding-Allocations-for-Academic-Year-2023_24-English.pdf](#)

¹⁸ [W23-19HE-HEFCW-Funding-Allocations-for-Academic-Year-2023_24-English.pdf](#)

¹⁹ [Allocation of EU structural funding across the UK - GOV.UK \(www.gov.uk\)](#)

innovation activities and infrastructure that have enabled our universities to secure competitive funding, support businesses and deliver to individuals.

This investment and the springboard it provided has brought tangible benefits to people and places across Wales. Universities were the second largest recipients of EU Structural Funds in Wales in the most recent programme, being awarded over £350m as lead partners since 2014.

A number of major infrastructure projects at our universities have been supported by Structural Funds including a world-leading brain research centre, innovation campuses and the centre for compound semiconductors.

Collaborative capacity building projects across a number of Welsh universities have also been supported by Structural Funds. These have included projects focused on developing sustainable energy systems, advanced manufacturing, bio sciences and agri-tech.

The activities and research programmes delivered by universities via ESIF have brought a wide range of tangible impacts across communities in Wales and supported Welsh Government strategic aims such as achieving net zero.

Shared Prosperity Fund

The UK Shared Prosperity Fund has not been an effective vehicle for sustaining research and innovation activity previously supported by EU Structural Funds. In order for Welsh universities to continue to deliver benefit to the people and places of Wales, there would need to be some significant changes to the delivery of the UK Shared Prosperity Fund.

The structure of delivery via local authorities is too localised to meet regional or Wales-level strategic priorities for investment in research, innovation and skills. Available grants were too small, with too tight a timescale, to allow for meaningful, strategic and joined-up bids to be developed.

A more considered, joined-up, regional or Wales-wide approach is needed to address gaps in funding arising from the withdrawal of ESIF.

Timescales also need addressing. The UKSPF prospectus was released in April 2022, with a deadline for investment plans of 1 August 2022. This gave very little time for a strategic approach to delivery.

Furthermore, with funding allocated up to 2025, compared to the ESIF period of 2021-2027, there is less opportunity for investment in longer-term projects.

Universities have noted that ESIF funding processes were fairly bureaucratic, and so consideration should be given to reducing bureaucracy in allocating research and innovation funding. This is in line with the findings of the Independent Review of Research Bureaucracy led by Professor Adam Tickell²⁰ (funding applications were the most cited causes of unnecessary bureaucracy based on the length and complexity of the processes) and the Independent Review of the UK's Research,

²⁰ [Independent Review of Research Bureaucracy: final report \(publishing.service.gov.uk\)](https://www.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/107422/independent-review-of-research-bureaucracy-final-report.pdf)

Development and Innovation Organisational Landscape, led by Professor Sir Paul Nurse²¹ (which found research operations are hindered by excessive bureaucracy with too much emphasis on audit-oriented reviewing and reporting).

UKRI

Welsh universities can apply for research funding from UKRI, made up of research councils including the Science and Technology Facilities Council, and Innovate UK. However, Wales doesn't historically draw down its proportionate share of UKRI funding based on population size compared with other UK nations.

In 2022-23, Wales secured 3.56% of available funding from Research Councils and Innovate UK²². However, with competitive research funding it is important to take a longer view as amounts awarded can vary greatly year on year.

²¹ [Independent Review of the UK's Research, Development and Innovation Organisational Landscape: final report and recommendations \(publishing.service.gov.uk\)](https://www.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/92122/independent-review-of-the-uk-s-research-development-and-innovation-organisational-landscape-final-report-and-recommendations.pdf)

²²

<https://public.tableau.com/app/profile/uk.research.and.innovation.ukri/viz/GeographicalDistributionofUKRISpendin2019-20and2020-21/UKRISpend>