THE CASE FOR INVESTMENT IN WELSH RESEARCH
The Sêr Cymru Research Networks Wales
Research Matters for Wales

Investing public funds into research and development provides significant economic growth, with every £1 spent in the UK delivering a £7 of value to the economy. Wales has a small but highly effective research base which is growing in quantity, quality, and international reach. Beyond the immediate economic benefits, research helps solve society’s greatest challenges; this is well recognized by the general public in Wales.

Wales has prospered from the pre-allocated European structural funds, receiving over 20% of total EU support to the UK in recent years (despite Wales comprising less than 5% of the UK population). But these funds, which provided £570m to Welsh universities in 2000-2018, are coming to an end.

In contrast, Wales does not perform well at securing UK-wide competitive research funding. However, the Sêr Cymru Research Networks provide an opportunity to increase Welsh grant capture to levels similar to the other home nations by pooling resources to achieve scale and attract further investment.

The Sêr Cymru Research Networks facilitate Welsh Universities, industrial partners, and policy makers in working together to enhance the excellent research capability in Wales, deliver research impact, and increase the competitive research funding secured in Wales.

As Ministers look for ways to stimulate the economy in the wake of the pandemic, supporting research will be vital. The Sêr Cymru Research Networks provide a highly effective mechanism to support research in Wales. With well-established networks in three of the Welsh Government’s grand challenge areas: Life Sciences, Advanced Engineering, and Low Carbon Energy and Environment, the networks are perfectly placed to identify and act quickly where investment could be especially influential (e.g. providing seed money to catalyse larger projects, supporting cohesive doctoral training, providing fellowships to attract researchers to Wales or bring people back into research after a career break).

The loss of EU funds and the underinvestment into Wales by UK Research and Innovation (UKRI) needs to be addressed if Welsh research is to fulfil its potential in contributing to the Welsh economy.

Universities play a vital role in developing a high-skilled workforce and providing the innovation to drive economic growth. Welsh Universities generate about £5bn a year, almost 50,000 jobs, and are important catalysts for regional development.

Between 2018-2019 UKRI invested £21 per capita into Wales, less than half that of Scotland (£45), The South East (£45), East of England (£45), or London (£52).

The Advanced Engineering Research Network funded a research group developing next-generation communications networks to deliver beyond 1 Gb/s data streams to the home. This research has generated £12 million of funding to date and is currently developing plans for a £3m Digital Signal Processing centre as part of the North Wales Growth Deal. The centre will develop digitally-integrated, circuit-based processes within the 5G communications framework, within a state-of-the-art facility staffed by technology experts from academia and 28 industrial partner organisations.

- Prof Jianming Tang, Bangor University

Multiplying the Impact of Welsh Government Funds

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Research Networks Wales Achievements

Targeted investment by the Welsh Government can make a big difference. In the first phase of Sêr Cymru (2013-2019), the £21 million investment in the research networks (£14.9 million by Welsh Government and £6.4 million by HEFCW) resulted in over £70 million of additional research funding being leveraged for Welsh universities. This investment also brought talented researchers into Wales; building Welsh research capacity.

Since the end of the first phase, millions of pounds of further research funding have been awarded to Welsh research as a result of the kick-start that the networks provided.

The networks achieved their success through a range of activities but critical was substantial funding to support research clusters, PhD students and early career fellows. The networks are currently in an interim phase with limited funds (we lack resource to provide any grants). However, we continue to be a voice for Welsh research, run events to facilitate collaboration, and work to catalyse excellent research in Wales.

The Power of Networks

Networking enables more efficient use of infrastructure. Wales is host to truly world-leading research facilities across many technical domains, including dedicated centres in the fields of Hydrogen, Compound Semiconductors, Marine Energy, Steel, Medicine Discovery, Dementia, and research farms at Aberystwyth and Bangor to name only a few. Cooperation between geographically close organisations can create a cluster effect that leads to enhanced innovation, as was recently seen in the formation of the South Wales Industrial Cluster.

Increasing discoverability of research strengths is vital to increase research collaborations. As the UK Government prepares further place-based strategies, it is important that Welsh Universities can connect with and even leverage some of the funding that will likely be invested in areas with research strengths outside of Wales. The Sêr Cymru Research Networks provide a platform for promotion and advocacy for excellent Welsh research and facilities.

UKRI has expressed interest in engaging with networks and clusters at a high level. As UKRI develop their strategy in line with the UK Research and Development Roadmap, it is important that they are fully aware and up to date with Wales’ research strengths and the opportunity that the highly connected Welsh research landscape (facilitated by the Sêr Cymru Research Networks) has to offer.

Seed Funding Captures Major International Funding Award

The Life Sciences Research Network Wales awarded Prof Gareth Jenkins of Swansea University £50k for a 12 month post doctoral fellowship, “Development of human liver tissue models for drug safety assessment”, which led to 3 publications. This research contributed to the award of a £13m Horizon 2020 grant, “Physiologically Anchored Tools for Realistic nanomaterial hazard assessment (PATROLS)”, a pan-European project led by Prof Shareen Doak, another member of the research network.
The high-profile Universities Wales “Strength in Diversity Report”\(^1\) recommended “streamlining creation of new collaborations in research” through activities in four areas:

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<th>Facilitating Consortiums</th>
<th>Sharing Bidding Best Practice</th>
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<td>“Increase research competitiveness in Wales by providing better opportunities for leading researchers to draw on a wider pool of expertise and assets to optimise research teams during the preparation of research proposals for competitions run by UKRI and other funders.” (^2)</td>
<td>“Create additional opportunities for researchers in Welsh universities to share experiences and expertise in working with UKRI and other funders and stakeholders.” (^3)</td>
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<tr>
<th>Forming International Connections</th>
<th>Partnering with Industry</th>
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<td>“Present larger and more attractive offers to international partners by creating research teams from larger pools of expertise.” (^4)</td>
<td>“Present larger and more attractive offers to industry partners, drawing on expertise from across Wales rather than from a single institution.” (^4)</td>
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The Sêr Cymru Research Networks Wales are already doing this. In the first phase of the networks we:

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<tr>
<td>500 Researchers</td>
<td>65 Events</td>
<td>93 International Partners</td>
<td>500 Total Collaborations</td>
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<tr>
<td>250 Projects, linking many researchers across Wales</td>
<td>&gt;6000 Attendees</td>
<td>45 Countries</td>
<td>150 Companies</td>
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<tr>
<td></td>
<td>&gt;1000 Funding Bids</td>
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<td></td>
<td>&gt;260 Funding Awards</td>
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\(^1\) Strength in Diversity, Prof Graeme Reid, Sept 2020. https://uniswales.ac.uk/media/Strength-in-Diversity-Professor-Graeme-Reid-FINAL.pdf
Our Recommendations

Engage with the Research Networks to develop the next phase

We are working towards the goal that by March 2023 we will be implementing a new phase of similar scope and ambition to the first. To ensure this aligns with needs of government and wider society we need close engagement with stakeholders at Welsh Government. Given the importance of a highly trained workforce to support research and innovation, we are particularly keen to see PhD students and fellowships funded through the network.

Make use of the Research Networks

The research networks are an ideal matchmaker for Welsh Government (as well as other groups) looking to make a connection with researchers with expertise in a particular field. Welsh research is a national asset, delivering economic, social, cultural and health benefits for Wales.

Integrate the Research Networks into wider networking strategies in Wales

The research networks have close connections throughout the relevant research communities in Wales. We operate at a level which is tangible and are aware of existing research strengths, support needs and opportunities. The Research Networks can therefore complement the high-level institutional aspirations of the Wales Innovation Network.

Prioritise Funding the Research Networks Wales

The Sêr Cymru Research Networks Wales are an established and highly effective way of supporting research in Wales. The networks multiply the impact of Welsh Government funding, and through significant investment they enable researchers to inject dynamism into the Welsh economy while supporting researchers to help provide solutions in the three grand challenge areas of Life Sciences, Advanced Engineering, and Low Carbon Energy and Environment.

Building Research Capacity in Wales

The Returning Fellowship Scheme was an innovative programme designed to facilitate researchers in returning to their careers following long-term absence such as maternity, paternity, adoption, health or caring.

“The Low Carbon Energy and Environment returning fellowship changed everything for me and I can genuinely say that I would not be in the position I am in if it wasn't for the award. The wider network helped me connect to the Welsh research community and build confidence. When I received my award I had been out of research for six years and everything that has happened since (grant awards, publications, forming a spin out company) would not have happened had it not been for the fellowship funding.”

– Dr Emma Hayhurst, University of South Wales