

## UK Government R&D Roadmap Consultation:

August 2020



Noddir gan  
**Lywodraeth Cymru**  
Sponsored by  
**Welsh Government**

## **UK Government R&D Roadmap**

**Submission deadline: Wednesday 12<sup>th</sup> August**

### Overview

The Government's ambitious UK Research and Development (R&D) Roadmap aims to ensure the UK is the best place in the world for scientists, researchers and entrepreneurs to live and work. This will help to power up our economic recovery and level up the UK.

The roadmap is the start of a big conversation on what actions need to be taken and how. Over the coming months we will develop the proposals in our roadmap in a comprehensive R&D plan.

This plan will only be effective if it is developed with people and organisations across the UK. We therefore welcome responses to the high-level questions outlined in this survey.

### **About HEFCW**

The Higher Education Funding Council for Wales – HEFCW – is the public body operating between Welsh Government and higher education providers. We regulate fee levels at higher education providers, ensure a framework is in place for assessing the quality of higher education and scrutinise the performance of universities and other designated providers. We also provide funding for higher education teaching and research, and apply our influence and expertise to help deliver Welsh Government priorities for higher education that also have wider societal and economic benefits.

### **How can we best increase knowledge and understanding through research, including by achieving bigger breakthroughs?**

- By investment in the underpinning, multidisciplinary research in universities.
- Through collaborative working – partnerships between UK Government, devolved governments, universities and businesses.
- Through collaborative working with Europe/international partners – association with the various EU funding programmes has led to significant research and societal impact and strong, established research collaborations. We should build on these successes, further develop these collaborations and protect and expand on all that has been achieved over recent decades.
- By recognising the potential of pockets of research excellence outside of the “Golden Triangle” and the impact they can have. Wales’ research impact (as measured by REF2014), although small in comparison, has outperformed other UK nations and has contributed to the UK’s world class standing for science and research. Building further on these successes will help the Roadmap’s ambition to “level up” the UK’s regional inequalities whilst investing in the excellent research that increases knowledge and leads to bigger breakthroughs.

### **How can we maximise the economic, environmental and societal impact of research through effective application of new knowledge?**

- Universities have a strong track record of translating research into economic, environmental and societal impact. Wales is one of the most efficient countries at translating its research income into high impact research for countries of a comparable

size. Despite comprising only 4% of the total UK submissions, Wales's REF2014 impact results showed that almost half of the research submitted was evaluated as world leading, with Wales securing the highest proportion of 4 star impact of all the UK countries.<sup>1</sup>

- Encouraging greater collaboration between business, regulators, government policy teams and the research base is key, with support for knowledge exchange and commercialisation activity and a recognition that that different parts of the UK require different types and scales of funding. For example, the majority of businesses in Wales are SMEs, not large companies, and some of the poorer areas with a low population density are far more focused on start-ups. Those areas with a large SME base, which do not have the R&D budgets of larger companies, need funding to help develop clusters. Innovation capacity in these areas is starting from a low base and needs to be considered when aiming to increase the effective application of new knowledge and the levelling-up agenda.
- An expansion of programmes that take a place-based approach to research and innovation funding, building on pockets of research excellence, supporting collaborative proposals from consortia of publicly-funded research organisations, businesses and local leaders that will have a demonstrable impact on local economic growth and/or provide evidence to shape future national policy.

### **How can we encourage innovation and ensure it is used to greatest effect, not just in our cutting-edge industries, but right across the economy and throughout our public services?**

- Provide the support to businesses to engage and grow through research collaboration with universities. Wales' economy supports a relatively high number of SMEs, many of which are microbusinesses. It can be particularly difficult for microbusinesses to find the necessary co-investment due to their scale.
- Engage with key local stakeholders in co-creating effective innovation approaches for local economies, including universities, building on their unique local strengths and assets and ensure there is a genuine collaborative approach to formulating national innovation policy, as well as supporting other (UK and devolved) government policy development.
- A clear and coherent landscape for innovation funding which can be easily understood by those who need to access it. This is particularly relevant for SMEs who do not have the time or the staff capacity needed to involve themselves in long and complicated funding processes. As innovation is devolved, UK Government policy will therefore need to take into account the innovation funding already provided by devolved administrations e.g. SMART Expertise programme in Wales<sup>2</sup> and seek complementarity. We therefore welcome the commitment in the Roadmap to look at the place-focused innovation offer both from the UK and devolved perspective and of the formation of an Innovation Expert Group to help shape innovation policy and to work with the devolved administrations in supporting high growth.
- There is a need for existing government schemes to be flexible and adjust to the increase in microbusinesses. Wales has significant numbers of businesses in Wales with less than 10 people. The challenge is for microbusinesses to feel they can access

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<sup>1</sup> Times Higher Education "Wales and the World" The Learned Society of Wales September 2017

<sup>2</sup> <https://businesswales.gov.wales/expertisewales/support-and-funding-businesses/smart-expertise>

support through government schemes, and are not unduly burdened with red tape / financial requirements when they do not have capacity or capital to deal with it. Investing in universities and in the knowledge and expertise that universities can share and exchange with these businesses offers them a greater opportunity for success and expansion and to contribute to the local economy.

- A recognition that local economies in different parts of the UK require different solutions. The Welsh economy and employment market needs to have strong relationships with SMEs and the public sector. HEFCW's Research Wales Innovation Fund incentivises institutions to increase their innovation-related income from all sources. Much of this will be through work with public sector and SMEs due to the nature of the Welsh economy.
- Analysis of the 273 impact case studies from Welsh universities in the 2014 REF demonstrates how research from a small country can produce changes and benefits both internationally and regionally, impacting on culture, on the preservation of language, and local policy as well as industry<sup>3</sup>. SMEs in Wales were a key beneficiary: many of the impacts relating to economic growth in Wales highlighted complementary research and policy initiatives that supported the growth of start-ups and small businesses and encouraged industry, enterprise and entrepreneurship within Wales.

### **How can we attract, retain and develop talented and diverse people to R&D roles? How can we make R&D for everyone?**

- Nurturing and developing research talent in universities involves supporting and offering greater opportunities for early career researchers in order to create a career pipeline for talented academic researchers to progress.
- The timing of this is crucial for Wales – teams of experts built up over several years on numerous EU Structural Funds programmes have, in the past, dispersed and moved elsewhere due to continuation funding not being available in time to renew contracts. Brexit and the uncertainty around the UK's future relationship with the EU means that there is an urgent need in Wales to retain the expertise it currently has and provide an opportunity to build on that capacity, ensure that it is maintained and develops further.
- Sêr Cymru is an example of a successful multi-million pound funding programme to bring scientific talent into research posts in Wales, focussing on three Grand Challenge areas: life sciences and health; low carbon, energy and environment; and advanced engineering and materials. Funding from EU Structural Funds and Horizon 2020, with match funding provided by Welsh universities, Welsh Government and HEFCW for Research Chairs, National Research Networks and early to mid-career researchers has attracted talent into Wales.
- Capital investment to create state-of-the-art facilities, labs and equipment is a draw for the most talented academics to carry out world-class research. Investment in the physical infrastructure of universities should align with funding to attract and retain “the brightest and the best”.
- Relaxing barriers and enabling talented researchers from every part of the world to work in the UK through programmes such as the Global Talent Visa is helpful. Consideration must be given to the inclusion of the devolved nations in this process, so that there are the same opportunities for talented individuals to access funding from Welsh “endorsed” organisations and funding bodies as there are in the rest of the UK.

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<sup>3</sup> Impacts of Academic Research from Welsh Universities 2017 Policy Unit, Kings College, London

- EU programmes such as the European Research Council and Marie Skłodowska-Curie have enabled international world class researchers to relocate to, and conduct their research in the UK. Ensuring continuity of access to these schemes (or equivalents) will ensure continued support for bringing excellent researchers to the UK. Any UK replacement for these schemes would have to ensure they are perceived as 'prestige/flagship' (i.e. considered on par with the EU schemes), or the UK will be unable to attract the very best researchers to apply. The ERC Proof of Concept scheme is also invaluable in terms of R&D/Innovation, being a way to deliver 'applied' socio-economic benefits from ERC grants.
- Universities play an important role in the talent pipeline for R&D through developing entrepreneurial skills in their students and supporting start-ups and staff spins outs. Working more closely with the professional institutions like, for example, the Institution of Civil Engineers, to support the training and development of professionals particularly in their understanding of research, and how it can contribute to their work would also secure business support to the pipeline.

### **How should we ensure that R&D plays its fullest role in levelling up all over the UK?**

- We support the commitment in the Roadmap for UK Government to invest in research and innovation in places around the UK and align this with devolved priorities and initiatives. We welcome the greater focus on place outcomes in decision-making, and that new, proactive and coordinated approaches with devolved administrations and key funders could address regional imbalances in R&D intensity as part of the levelling up ambition. We particularly welcome the commitment to work with devolved nations on the development of a UK Place strategy. In order to address the challenge of regional imbalances there needs to be a greater willingness to involve regional knowledge and expertise in the co-production of levelling up policies which align with the devolved Governments and other regional actors. There should also be sufficient engagement and impact within the UKRI structure to ensure the spatial impacts of decisions are fully taken into account.
- We support the UK Government's commitment of working more closely with the devolved administrations, UKRI, other R&D funders and representatives of local bodies to explore new place-based advisory functions and to deepen the relationships between national bodies, devolved bodies and local areas to better inform the development and delivery of both national, devolved and local economic growth plans.
- Local knowledge is crucial in identifying existing strengths that can be built on with co-ordinated and sustained investment from the public sector. The identification of compound semiconductors as one such strength in South Wales provides an example of where a potential cluster based on existing industry strength has been supported through investment in local universities and the establishment of a translational research centre.
- The recent NESTA report "The Missing £4 Billion" points out the divide between a highly productive, prosperous knowledge-based economy in the south-east and east of England and an economy that lags behind competitors in Northern Europe in the rest of England and Wales as well as Northern Ireland. Large scientific facilities and research centres can reinforce regional inequalities – knowledge spillover where the economic benefits are highly localized. In making decisions on where to locate these facilities consideration should be given to the effects on regional imbalances and opportunities for levelling-up.

- Since research and innovation is a critical driver of economic growth, the allocation of R&D funding and lack of focus on spatial economic impact has exacerbated the economic imbalance within the UK. Whilst excellence is important, if UK Government policy continues to focus only on excellence where it occurs in scale, institutions in Wales and other regions that do not have the capacity to submit large quantities of funding bids will continue to fall behind. These institutions are as important to achieving the levelling-up agenda through their R&D activity as their larger-scale counterparts.
- There should be a focus on investing in nurturing excellence wherever it exists, even if only specific niches – a course of action recommended in the recent CaSE report ‘The Power of Place’.<sup>4</sup>
- We welcome the Roadmap’s commitment to review the geographical balance of decision-makers and advisory boards and consider that representatives from devolved bodies and local and regional areas should be included on advisory boards and in decision-making in order to achieve success in a levelling-up strategy.

### **How should we strengthen our research infrastructure and institutions in support of our vision?**

- The financial sustainability of the research base in universities is a crucial challenge for the success of the vision. The issue of cross-subsidisation to supplement the gap in research funding is an area that needs to be addressed in order to strengthen the UK’s research infrastructure.
- QR funding underpins the sustainability of the research base whilst also allowing universities to be flexible and adaptable to current research needs. This was well-demonstrated through the quick response of universities to the challenge of Covid-19. Reviewing the healthy balance of funding between QR and direct research funding referenced in the roadmap must take this into account. Furthermore, due to the devolved nature of dual funding support, devolved administrations must be engaged with in order to fully understand the UK-wide impact of any potential changes to this system and how it would affect the ability of all universities across the UK to deliver the Roadmap.
- Creating a healthy research base requires a system that doesn’t distort behaviour. The intention of the Research Excellence Framework (REF) is to influence behaviour, reward excellence and create a strong research base. Evaluation of future exercises would be valuable to ensure these intentions are maintained and must involve all four funding bodies as co-owners of the REF.
- Mechanisms that drive universities and business to work collaboratively with a focus on building clusters in economically deprived regions of the UK.
- Early engagement and collaboration with devolved nations in any new funding strategies and/or potential funding streams, so that nations like Wales with a strong need to increase R&D activity can be a part of shaping solutions and align them with devolved priorities.

### **How should we most effectively and safely collaborate with partners and networks around the globe?**

- Build and expand upon established links with partners and collaborators overseas including a commitment to participate in the next generation of European research and innovation programmes starting in 2021: Horizon Europe and Euratom R&T.

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<sup>4</sup> The Campaign for Science and Engineering (CaSE) The Power of Place May 2020

- EU funding, particularly within the Horizon and the Interreg (Ireland/Wales) programmes, have enabled Wales to develop strong partnerships and the establishment of a broad range of international research operations that have successfully addressed many key societal challenges, such as climate change, food security, carbon reduction and promoting the circular economy. We need to continue and expand on such collaborative partnerships.
- UK Government should work closely with devolved governments to promote the uniqueness of areas of the UK. For example, highlighting Wales' strengths and qualities to make us more competitive on the global stage. The Well-being of Future Generations Act epitomises a spirit of co-operation and partnership working. As the only nation to have translated the UN Sustainability Goals into law, Wales has a unique opportunity to engage with governments and organisations globally who are interested in developing similar legislation and approaches.
- A commitment to continuing the Global Challenge Research Fund which has been valuable in supporting cutting-edge research that addresses the challenges faced by developing countries, helping to build new partnerships, networks and collaborations overseas.
- Wales has benefitted from having a European Office, Wales Higher Education Brussels (WHEB) promoting Welsh research excellence, supporting Welsh HEIs to access EU networks and collaborative opportunities, and brokering strategic international relationships. Such 'national/regional office' infrastructure is invaluable in supporting UK HEI's international collaborations and enabling access to new international collaborative opportunities.

**How can we harness excitement about this vision, listen to a wider range of voices to ensure R&D is delivering for society, and inspire a whole new generation of scientists, researchers, technicians, engineers, and innovators?**

- Through a genuine engagement and involvement with devolved nations, as stated throughout the Roadmap, in making the vision a success. Potentially more "buy-in" and engagement from the rest of the UK and, in particular, devolved nations, if the breadth of regional capabilities and expertise outside of the Golden Triangle were recognised and supported.
- Through building on university alumni networks, promoting and publicising success stories.
- Through working with professional institutions to inspire and inform their members, and gain their support in partnerships.