Innovation Advisory Council for Wales

Response to Economy, Infrastructure and Skills Committee ("The Committee") review into Research and Innovation in Wales.

1. Background

The Committee has called launched a consultation on research and innovation in Wales.

The Innovation Advisory Council for Wales (IACW) is a Welsh Government advisory body established to provide expert advice and guidance to Welsh Government on innovation policy and practice. Our members are drawn from across the public, private, educational and third sectors.

In this document IACW outlines its perspective on innovation and its vital role in driving the development of the Welsh economy, supporting the environment and improving the wellbeing of citizens.

The term Innovation tends to have a range of meanings to different people and stakeholder groups. In some cases, this has caused Innovation to be narrowly defined and hence, often we have seen a strong association with science, research and technology. IACW has a long standing, evidence based view that all of the components of innovation need to be developed and recognised in order to create cultures and whole systems of innovation rather than silos, compartments or pockets of innovation that can have a limited impact on the wider economy, society and the environment.

Building on the above context we would make the following general observations on research and innovation and its importance to Wales.

1. **Innovation is not exclusively about science, research and technology.** In many cases incremental innovation and ingenuity has a much more dynamic and far reaching transformational impact on economies, the environment and society. For example, innovation amongst Welsh SMEs is evidentially low, as defined by Government statistics and proxies such as R&D tax credit claims. However, there is often a mistaken belief that innovation has to be centred on new technology and should be rich in Intellectual Property (IP). In our experience the most effective and transformative innovation can often be in business process innovation and investing in productivity transforming capital expenditure and skills development. It's often less about the "great leap forward" technology gains and more about wide spread, incremental improvements and a constant embracing of change and new ways of doing things.
2. **University based research has an unequivocally important role to play in innovation but its wider economic, social and environmental impact can sometimes be limited.** That innovation often does not disseminate to Welsh SMEs or the public sector in Wales and the commercial exploitation could easily take place in other countries, especially where the Intellectual Property is licensed by the University. Many Universities have very successful programmes and initiatives that engage with industry and the public sector but these are small in comparison to the research heavy science and technology innovation, which currently absorbs much public sector funding.

3. **Wales has the potential to turn its comparatively large public sector into a competitive economic advantage by opening up its Public sectors, in a risk managed way, as innovation test beds**. There are examples of good practice here with SBRI and KTP but it's not at a sufficient scale at present. SMEs and public sector innovators should be empowered and encouraged to undertake proof of concept innovations in trial environments that have the potential to make significant impacts on productivity, safety, wellbeing, environmental and consumer experience gains.
4. **Much innovation funding has historically been focussed on IP rich, research and science based innovation, especially in Universities.** It should be more focussed on productivity, wellbeing and the environment across SMEs, the public and third sectors.
5. **Wales is currently measuring the wrong things in assessing innovation impact.** Instead of focussing on research, IP and job creation, metrics need to be focussed on productivity, wellbeing and the environment.
6. **Welsh SMEs are undercapitalised.** This means their ability to invest in productivity boosting innovation, transformation, capital expenditure and skills is restricted. Funding for broad spectrum innovation and transformation is vital. That can be grant based or commercial. SMART Cymru is a positive initiative and Innovate UK have good examples of more commercial financial instruments through their grants and Innovation Loans.
7. **Wales can become a landing pad for global innovators and a launch pad for home grown innovators.** If the environment is right with attractive funding, public sector test beds and proactive business support, there is no reason why Wales cannot attract innovators from all over the World and a coordinated strategy to do so should be deployed. Other cities and regions do this very successfully including Singapore, California, The Netherlands and London.
8. **Innovation is a loaded word.** It is the right word but it has become synonymous with science, research and technology. Impactful innovation is far more about embracing change and transformation, challenging the status quo, ingenuity, being empowered to be inquisitive and engaged in experimentation. Innovation therefore cannot just be seen as "belonging to Science, Research and Technology."

2. Detailed Responses

Below we have set out responses to some specific issues that the Committee has raised:

- Welsh Government says that there needs to be a "major increase" in research intended to help solve specific challenges facing Wales (challenge-led research). It also says this type of research needs to be balanced with the more traditional type of long-term research undertaken by universities which pushes the boundaries of knowledge
    - To what extent do you agree with this view and how can Welsh Government ensure that an increase in one type of research activity doesn't mean the other type loses out?
    - Policy and practice must take account of UK wide and European initiatives in this space. Particularly those of Innovate UK and Horizon 2020. Wales cannot develop policy in this area in isolation. We should note the extensive research

conducted to shape the priorities of the funding from Innovate UK – The Grand Challenges –

https://www.gov.uk/government/publications/industrial-strategy-the-grand-challenges/industrial-strategy-the-grand-challenges#artificial-intelligence-and-data

- Welsh Government has said it wants to bring all research funding together and that this funding should then be available to small and medium-sized enterprises (SMEs), large private businesses, and other organisations as well as universities and colleges.
    - To what extent should businesses and other organisations be able to receive Government research funding that might have otherwise gone to universities and colleges? How could this be done without under-funding some organisations – might there be unintended consequences?
    - A central repository for all research funding is a good idea.
- In a recent review into research funding, it was argued that there was a strong risk of university research and innovation interests overshadowing the research and innovation interests of private businesses. But it didn't then go on to suggest a way of stopping this happening.
    - What needs to be done to ensure businesses and their interests are not over-shadowed by universities when it comes to research and innovation funding and activity?
- It is important to understand that innovation has many forms and that it is not exclusively about science, research and technology. The ability of businesses to access funding for investment in leading edge business process development, innovative capital expenditure and leadership and skills development can drive important productivity gains. Funding for such activities is harder to find from commercial sources because all of the above often involves risk, disruption and uncertainty. In addition, SMEs in particular need access to funding to commercialise technology. Historically funding has been focussed on Technology Readiness Levels (TRLs) 1-4. It needs to be more focussed on TRL levels 5-9. Therefore patient capital is required that is not traditionally available from mainstream funding sources. Funding could be ring fenced for such purposes.
- In the academic year 2016/17 there were 241 graduate start-ups reported by Welsh universities with an estimated turnover of £56 million, this was almost double the turnover of university staff start-ups in the same year.
    - What is currently in place from Universities and Welsh Government to help and support student and graduate entrepreneurs turn their ideas into successful ventures?

      Agor IP Swansea.

      Business Wales including Big Ideas Wales and the Accelerated Growth Programme.

      Development Bank especially the Technology Seed Fund.

      Various co-working and incubator spaces.

University Industrial Liaison Officers.

KTP.

Smart Cymru

KES

- Is this support systematic and consistent across Wales and is there more Welsh Government and others could do?

  The support needs to be better linked to the funding to create a genuinely cohesive ecosystem built around funding but with pre and post investment support built in.

- The recent review of research made recommendations to help incentivise businesses and universities to work closely together on research and innovation to take their collaborations to "greater heights".

  - What are businesses and universities able to offer each other when they work in collaboration on research and innovation projects?

    Should Welsh Government and others be doing anything differently to bring smaller businesses together with universities to collaborate on research and innovation projects? What is working well and what isn't?

    Better link Universities, SME and Welsh Government Business support in a more dynamic and integrated offer. Consider helping to create commercial innovation and business hubs within universities, focused on emerging technology sectors.

    However, do not assume that the best means for supporting innovation in SMEs is to encourage them to work more closely with Universities. That's important but it's a relatively small part of the answer. There are other far more impactful mechanisms.