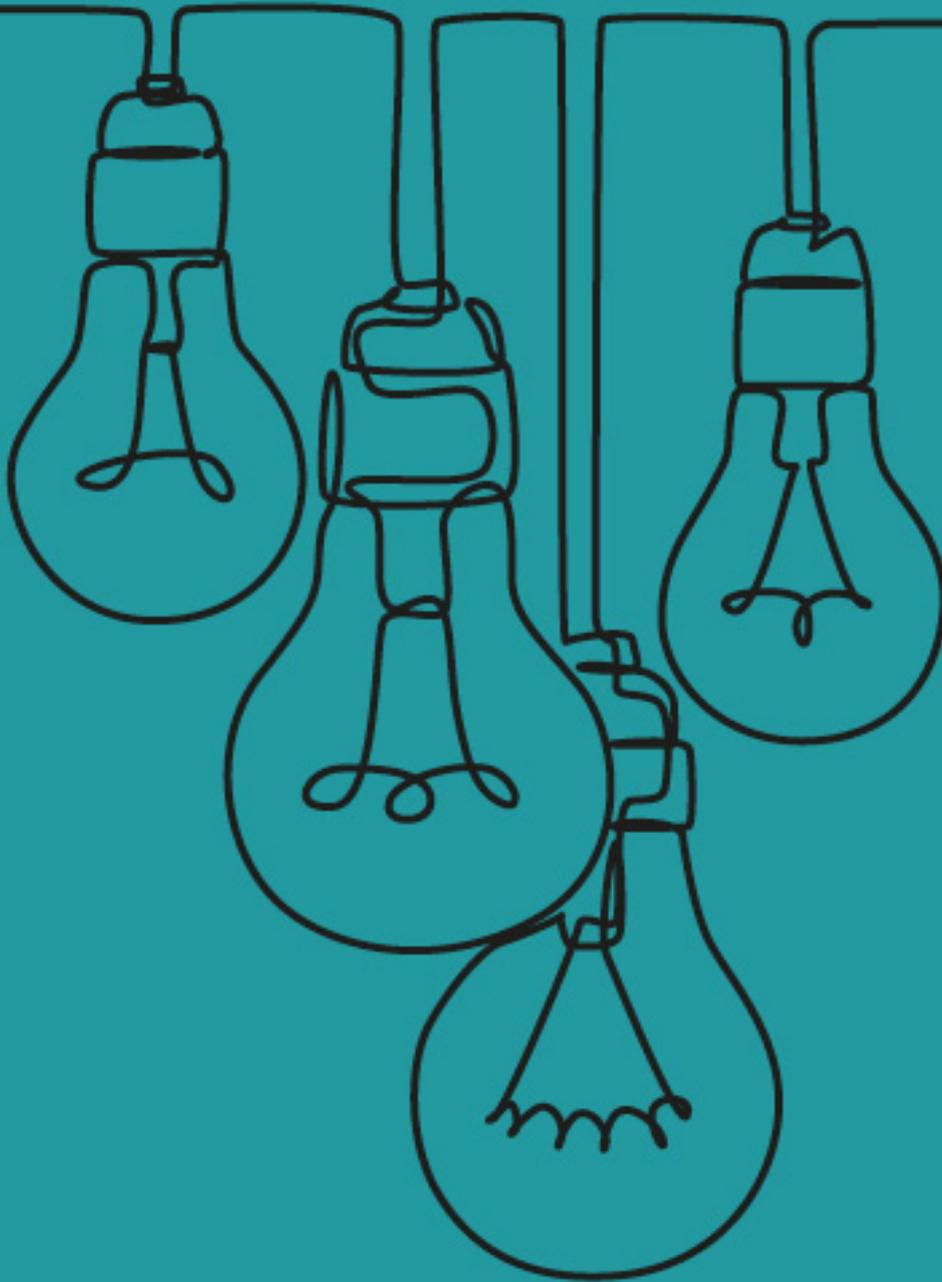




Llywodraeth Cymru
Welsh Government



**WALES INNOVATES:
CREATING A STRONGER,
FAIRER, GREENER WALES
– INTEGRATED IMPACT
ASSESSMENT**

WELSH GOVERNMENT INTEGRATED IMPACT ASSESSMENT

Title of proposal:	Wales Innovates: Creating a Stronger, Fairer, Greener Wales
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Cabinet Secretary/Minister responsible:	Minister for Economy Minister for Health and Social Services Minister for Climate Change Minister for Education
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SECTION 1. WHAT ACTION IS THE WELSH GOVERNMENT CONSIDERING AND WHY?

In narrative form, please describe the issue and the action proposed by the Welsh Government. How have you applied / will you apply the five ways of working in the Well-being of Future Generations (Wales) Act 2015 to the proposed action, throughout the policy and delivery cycle?

The Welsh Government has committed to developing an integrated Innovation Strategy which sets out the vision for innovation over the next 5-8 years. The commitment is part of the Co-operation Agreement with Plaid Cymru and has been developed in partnership.

The strategy describes how innovation will be used, in an integrated way, to deliver against our Programme for Government commitments, with a strong focus on our economic recovery, population health and wellbeing and our ambitious net zero targets.

The Wellbeing Goals are embedded throughout the strategy which focusses on four mission themes. These are:

- Education
- Economy
- Health and Wellbeing
- Climate and Nature

These missions cannot be delivered by single Government Departments or sectors alone and require an integrated approach across public bodies and academic institutions, as well as partnership working with other sectors such as industry and the third sector.

Impact

As part of the implementation of the strategy action plans will be developed and published, and further work will be undertaken to establish a monitoring process to measure impact, which seeks to use as many existing data sources as possible. Stakeholder engagement has been ongoing throughout the development of the strategy and feedback on the level of bureaucracy around our innovation interventions has been consistent, therefore ensuring any new impact data collected is necessary and used many times will be at the forefront of our work. We have tested our approach to measuring impact with stakeholders and this

has informed the development of a logic model which will be iterative as we implement the strategy and develop the required action plans¹.

Long term

Innovation involves taking risk in new product, process and service development. The needs of citizens change quickly, and it is necessary to carry out ongoing horizon scanning to understand new and emerging trends where the Welsh ecosystem will need to act.

The biggest long-term challenge we face in relation to innovation is our ability to increase, or even maintain, levels of investment in RD&I within Wales. The Reid Review undertaken in 2018² recommended an increase in both QR funding (money allocated to research institutions for RD&I infrastructure), and the establishment of a fund to support the establishment of further infrastructure as well as the provision of a competitive fund.

The current economic uncertainty, inflationary driven squeeze on budgets, and the change in funding availability as a result of our exit from the European Union means that we have been unable to implement all of the Reid recommendations to date. Since the Reid Review NESTA³ also wrote a paper on the gaps in funding across different UK regions. They estimate additional spending of more than £4 billion is needed to level up UK spending in this area with £420 million needed in Wales.

To encourage as much investment as possible within the Welsh RD&I ecosystem we are taking a different approach to securing investment, the strategy commits us to develop an intervention which supports consortia building to attract the larger sums of funding through UK Government mechanisms. We have also committed to working much more collaboratively with Innovate UK to support their aim to help Wales to lever more funding throughout our ecosystem.

Prevention

The Welsh Government's Economic Action Plan – Prosperity for All⁴ introduced the Economic Contract between businesses, partners and Welsh Government. This was the

¹ <https://businesswales.gov.wales/innovation/sites/innovation/files/documents/December%202021%20-%20Engagement%20Event%20RE%20Logic%20Model.pdf>

^{and} <https://businesswales.gov.wales/innovation/sites/innovation/files/documents/January%202022%20-%20Engagement%20Event%20RE%20Logic%20Model.pdf>

² Review of Government Funded Research and Innovation in Wales 2018, Professor Graeme Reid

³ The Missing £4 Billion Making R&D work for the whole UK, 2020, NESTA

⁴ <https://www.gov.wales/sites/default/files/publications/2019-02/prosperity-for-all-economic-action-plan.pdf>

first time a something for something approach has been taken to support delivered by the Welsh Government and requires organisations receiving support to help deliver against wider priorities such as decarbonisation and the availability of fair work. In the strategy we are committing to continuing this approach through our interventions, ensuring that by supporting innovation activity we are not creating negative impacts elsewhere.

Innovation also has the potential to directly treat the underlying cause of several of our societal challenges by using mechanisms specifically targeted at addressing them. We will continue to use initiatives such as Challenge Led Innovation to issue unsolved public sector challenges to the private sector to work collaboratively on potential solutions. This approach also known as the Small Business Research Initiative (SBRI) has been proven to generate additional turnover, while enabling the public sector to invest in innovation.⁵

Integration

The strategy takes an integrated approach across all four missions, it recognises that no one sector, Government department or Minister has the power or resources to deliver the mission on its own. For example, a thriving economy needs a healthy and skilled workforce. To tackle our climate and nature emergencies we need a low carbon economy, and investment from industry in the generation of renewable energy.

The joint development of the strategy, with Plaid Cymru, is a commitment within the Programme for Government. The strategy sets out how innovation can contribute towards the delivery of a prosperous, equal and greener Wales. It recognises the role the public sector has to play in innovation, while setting a vision for the wider ecosystem many of whom take greater risk and make a bigger investment in innovation. The four mission areas (Education, Economy, Health and Wellbeing, and Climate and Nature) align with the seven wellbeing goals. We have engaged with members of the Public Services Boards as part of our stakeholder engagement, and wider consultation, including Natural Resources Wales, Local Authorities, Local Health Boards and the voluntary sector, with contribution also through our representatives of the External Stakeholder Group.

Collaboration

The strategy underpinned by research undertaken by the Innovation Advisory Council for Wales^{6 7}, this research involved approximately 50 stakeholder interviews and an AI enabled data scrape of information sources on the internet. Following this, extensive

⁵ <https://www.ukri.org/wp-content/uploads/2022/05/UKRI-130522-SBRIDrivingPublicSectorInnovation-FINAL.pdf>

⁶

<https://businesswales.gov.wales/innovation/sites/innovation/files/documents/AMPLIFYI%20Report%20final%20version.pdf>

⁷ https://businesswales.gov.wales/innovation/sites/innovation/files/documents/MASTER%20COPY%20-%20Scoping%20innovation%20policy%20in%20Wales_final%20report_19th%20May%20final.pdf

stakeholder engagement was undertaken which determined a Ministerial decision to pursue an integrated strategy over a strategy focussed on the Economy. The Innovation Advisory Council⁸ is made up of key Innovation leaders and have been engaged throughout the process.

In addition to the Council, an external stakeholder group has been established with representatives from across the key sectors to advise periodically on the strategy development. We have also reached out to our external bodies such as the Higher Education Funding Council for Wales, Natural Resources Wales, Universities Wales, Industry Wales and NHS Innovation leads to provide input.

The Health and Wellbeing mission has been informed by significant engagement across the system. This has included working with the Value Based Healthcare Team, A Regional Collaboration for Health (ARCH), Social Care Wales, the Bevan Commission, Health Technology Wales and all NHS Wales Health Boards and Trusts. The strategy is also informed by wider activity such as, the evaluation of previous funding programme⁹, the Efficiency through Technology Fund, Research, Improvement Innovation Co-ordination Hub mapping reports, University Health Board/Trust designation reviews and the NHS Wales Covid-19 Innovation and Transformation Study¹⁰.

Involvement

The Welsh Government issued a contract, through open procurement, to the Co-Production Network (CPN) to undertake citizen and community engagement throughout the development of the strategy. They used the NESTA report from 2019 – Is Wales Getting Innovation Right?¹¹ – to inform their approach and engaged with people on the basis of whether they felt able to participate in innovation or benefit from it. Comments made were completely anonymous, a summary of their findings are included below:

Participants wanted to see the following happen:

- Enable greater connectivity between those interested in, and involved with, innovation at all levels.
- Enable improved access to funding for innovation.
- Contribute to a new and positive ‘innovation culture’ in Wales.

⁸ <https://businesswales.gov.wales/innovation/innovation-advisory-council-wales>

⁹ <https://www.gov.wales/sites/default/files/statistics-and-research/2019-07/170830-review-efficiency-through-technology-programme-en.pdf>

¹⁰ <https://www.nhsconfed.org/publications/nhs-wales-covid-19-innovation-and-transformation-study-report>

¹¹ <https://www.nesta.org.uk/report/wales-getting-innovation-right/>

- Support knowledge transfer and innovation skills development in Wales to enable more people to innovate.
- Deliver a clear definition of innovation, relevant to Wales, and consider the benefits of innovation for people and the planet.
- Bring community involvement into the heart of innovation activity in Wales.

The CPN engagement activities also covered children and young people, further detail of which is provided in the Children's Rights Impact Assessment at Section A.

Costs and Savings

The innovation strategy is not fully costed at this stage. This is because this is a cross Government strategy with a number of Ministerial decisions still to be made.

Commitments to invest in innovation are made throughout the document. We recognise that Welsh Government's investment in this area is small in comparison to the wider innovation ecosystem. We will monitor investment using datasets such as BERD, HERD and GERD as well as better monitor our own expenditure.

SECTION 2. WHAT WILL BE THE EFFECT ON SOCIAL WELL-BEING?

2.1 People and Communities

How (either positively or negatively), and to what extent (significant/moderate/minimal impact), will the proposal affect people and communities?

The health and wellbeing mission of the integrated Innovation Strategy for Wales is designed to create the most conducive environment for health and care innovation in Wales, primarily be focused on supporting health and care organisations to work with external innovation ecosystem actors, to bring greater coherency and alignment to our existing health and care innovation infrastructure.

The impact of a more coherent system and the corresponding activity will result in and measure improvements in healthcare value that will be felt by people and groups:

- patient outcomes
- patient experience
- resource efficiency

These impacts will be tracked at health and care organisational levels, through the development of a new Value Base Healthcare measurement system. In terms of specific groups, impacts will be felt through improvements in services being accessed by individuals. Depending on where innovation takes place, this could be accessible to everyone through a service such as general practice or community pharmacy, or a specific service aimed at a particular group such as social services for older people. Improvements include:

- Improved services and models of care, through use of new technologies and digital services.
- Better information platforms to support self-care and management.
- More relevant and care effective medical products and consumables.
- Improvements to the working environment for workers within the health and care system, including greater opportunities to pursue innovation within their own area of work.

Given the size of the Health and Care footprint and the variety of approaches taken, we will rely on health and care organisations to notify and share their proposed areas of focus and to track benefits for the target groups, linked back to their own organisational priorities, as part of the new measurement system.

Welsh Government will then aggregate data provided to understand and report impact at a national level.

2.2 Health

2.2a How (either positively or negatively), and to what extent (significant/moderate/minimal impact), will the proposal impact health determinants?

'A Healthier Wales'¹² and its vision for a seamless, coordinated whole system approach to health and social care remains our primary focus. It is important that the innovation agenda and ecosystem supports 'new and different ways of working' that can drive our pandemic recovery and meet system transformation priorities.

The health and wellbeing mission of the integrated Innovation Strategy for Wales is designed to drive improvements in the wider environment for health and care innovation in Wales and will be measured by improvements in healthcare value (patient outcomes, patient experience and resource efficiency) for the people of Wales.

Although a great deal of work is underway within health and care organisations to mitigate the impact of Covid-19 through reset and recovery, it is more crucial than ever to fully apply innovation to solve our live system pressures.

MISSION	KEY THEMES
<p>A coherent health and care innovation ecosystem, which supports collaboration with industry, academia and the third sector. This ecosystem will deliver greater healthcare value by developing, sharing, and adopting innovative partnerships, practice and technology.</p> <p>This innovation ecosystem will enable NHS Wales and social care organisations to explore new and different ways of working, identify opportunities to lever additional funding and better support the adoption of innovation at scale by coordinating and aligning a range of innovation pipelines. This ecosystem will enable the development of new reset and recovery strategies from the Covid-19 pandemic.</p> <p>This innovation ecosystem will be underpinned by clear infrastructure and a robust policy framework which has the full support of health and care leadership, to create a supporting culture for innovation at all levels of the health and care system.</p>	<ul style="list-style-type: none">Develop a more coherent health and care innovation ecosystem in WalesImprove the alignment of our existing health and care innovation infrastructure and actorsEstablish a system that enables the adoption of innovation, at pace and scaleAlign innovation to support COVID-19 reset and recovery prioritiesStrengthen and support innovation leadership and cultureTake a more strategic, longer term approach to innovation fundingBuild innovation capacity, at all levels of the systemIntegrate innovation learning and practice into additional health and care policy areas

¹² <https://www.gov.wales/healthier-wales-long-term-plan-health-and-social-care>

Based on our assessment of the evidence (see Appendix B), the strategy will secure positive impacts on health and care, based on testing and applying new and different ways of working, embedding these where they can demonstrate impact and improvements compared to previous ways of working.

The primary mechanism by which we will impact positively impact the health and care innovation ecosystem Wales, is to create an environment – with a work programme based on the mission and key themes above – that enables greater coherency and alignment to our existing health and care innovation infrastructure. This will enable organisations we fund health and care (NHS Wales, Social Care Wales) organisations to generate innovation ‘pull’ based on areas of need. This provides a platform to collaborate with the external innovation environment (such as those funded by our Innovation, Technology and Partnerships programme) to provide more relevant innovation ‘push’ based solutions based on health and care need.

Measuring the impact

In line with the direction of our national Value Based Healthcare programme¹³, value metrics will be used to measure the measure the health and care impact of innovation projects:

- improved patient outcomes (PROMS – Patient Reported Outcome Measures)
- improved patient experience (PREMS – Patient Reported Experience Measures)
- improved resource efficiency (via a new suite of resource efficiency measures)

The health and care innovation ecosystem can also deliver significant economic impact from new and different ways of working and we will develop a set of performance and impact metrics for our recently rebranded Innovation, Technology and Partnerships programme.

These metrics will be consistent with the agreed economic impacts and measures that form the broader strategy, such as:

- increased adoption of innovation across the health and social care system
- increased external investment (either from the public or private sectors) into Welsh health and care, gathered by innovation teams and measured against an agreed baseline
- increased match funding to health and care innovation projects
- increased income generation through health and care innovation activity
- increased partnerships between health, care, academia and industry
- increased generation of intellectual property and patents.

¹³ <https://vbhc.nhs.wales/>

- wider government portfolio area impacts (e.g. disinvestment of redundant equipment/practices, meeting decarbonisation goals, wider societal/health measures e.g. quality of life, well-being)

Positive and negative impacts on health determinants

We have also considered to what extent (significant/moderate/minimal) there will be a positive or negative impact on the specific health determinants below. Our assessment is that increased innovation will result in predominantly positive impacts as a result of improvements in the system, service provision and by using more effective products and models.

♦ **Lifestyles**

Minimal (positive) – our focus on the development of the health and care innovation ecosystem will coordinate and develop the existing system, focused on the leadership and operation of innovation teams within the NHS Wales and their engagement with external ecosystem platforms, to improve services and products through new partnerships and the adoption of innovation from elsewhere. This is less likely to directly impact patient Lifestyles, however PROMS and PREMS will be used by local health teams to assess value impacts.

♦ **Social and community influences on health**

Minimal/Moderate (positive) - Where innovative social and community models of health are developed and embedded by NHS Wales organisations, this will result in improved influences on society and the community. A more conducive environment will support this, but each NHS Wales organisation will be responsible for defining their own areas of priority and measuring the Value Based healthcare impacts, which we will aggregate nationally.

♦ **Mental wellbeing**

Minimal/Moderate (positive) – Again, where innovative mental health interventions are developed and embedded by NHS Wales organisations, this will result in improved mental wellbeing by service users. Additional positive mental wellbeing benefit will be realised by practitioners in both the NHS and the external innovation ecosystem from increased job satisfaction, increased esteem and the meeting of self-actualisation needs. PROMS and PREMS will be used by local health teams to assess Value impacts.

♦ **Living/environmental conditions affecting health and sustainability**

Minimal (positive) – significant impacts affecting health living or environmental conditions are not expected.

Improvements in service sustainability are expected and will be quantified through a new set of performance and impact measurement metrics, by organisation and subsequently aggregated to a national level.

- ♦ **Macroeconomic conditions affecting health**

Moderate (positive) – A range of impacts are expected from a greater focus on wider health and economic metrics from across the health and care innovation ecosystem, which will include a range of procurement and foundational economy interventions.

- ♦ **Access and quality of services**

Moderate (positive) – A number of improvements in both access and quality of services are expected, with new and different ways of working across health and care although it will be hard to define where, until NHS Wales and Social Care organisations define where they intend to align innovation activity against organisational priorities.

A new set of performance and impact measurement metrics (developed with external Value Based Healthcare teams and internal Welsh Government Resource Efficiency teams) will collate information on what improvements on access and service quality can be quantified from NHS Wales and Social Care organisations, as part of a new suite of resource efficiency metrics.

2.2b Could there be a differential health impact on particular groups?

- ♦ **Age related groups / Income related groups / Groups who suffer discrimination or other social disadvantage**

The health and well-being mission of the strategy is focused on improving the conditions and environment for health and care innovation right across the health and care system in Wales, so is unlikely to deliver significant impact to one group over another.

- ♦ **Geographical groups**

All NHS Wales and Social Care organisations deal with different socio-economic groups and geographical area profiles and are well versed in providing for their own geographical profile through their Regional Partnership Boards, and Population Needs Assessments. The health mission of the strategy will create a more appropriate environment for innovation at an ecosystem level, but local arrangements will sit in line with existing organisational expertise.

The impacts identified are not deemed significant enough to warrant a full health impact assessment. Reasoning:

The health mission of the strategy is designed to drive improvements in the environment and ecosystem that supports health and care innovation in Wales and will be targeted at improving healthcare value (patient outcomes, patient experience and resource efficiency) for the people of Wales.

With this in mind, the strategy will ultimately secure mostly positive impacts on health and care, based on applying new and different ways of working and embedding these where they can demonstrate improvements to the previous ways of working.

A Rapid Health Impact Assessment was decided upon, following the use of the Wales Health Impact Assessment Support Unit¹⁴ (WHIASU) Screening tool and questions (see Appendix A).

The development of the strategy and this impact assessment has spanned nearly two years, including the establishment of a steering group and a wide range of participatory stakeholder workshops both internally and externally at relevant stage gates.

We have undertaken a range of evidence generation, pre and peri consultation events which have generated a broad investigation of health impacts, a short literature review of quantitative and qualitative evidence and the gathered knowledge and evidence from a number of local and national stakeholders.

We have gathered evidence to inform the Health and Wellbeing mission of the strategy through the broad stakeholder engagement and consultation activities undertaken for the strategy. In addition, we have gathered evidence as follows:

- The NHS Wales COVID-19 Innovation and Transformation Study Report¹⁵
- Evidence requests to all NHS Wales organisations, Bevan Commission, Health Technology Wales (not published).
- Innovation Strategy – consultation responses¹⁶
- Key opinion leader study to understand the healthcare innovation landscape in Wales – 30 stakeholder interviews undertaken by Cardiff Business School, Cardiff University (Q1 2022). This is not published but a summary of key findings is included below:
 - Innovation policy framework – 70% of respondents felt the innovation policy framework was average of below average indicating that the policy framework at the time was not well developed.
 - Innovation support (financial and non-financial) – 77% of respondents wanted more support for innovation within health and care.

¹⁴ <https://phwwhocc.co.uk/whiasu/>

¹⁵ <https://www.nhsconfed.org/publications/nhs-wales-covid-19-innovation-and-transformation-study-report>

¹⁶ <https://www.gov.wales/sites/default/files/consultations/2022-12/innovation-strategy-consultation-summary-of-responses.pdf>

- Innovation maturity level – 70% of respondents ranked maturity as average or below average highlighting a lack of coherency in the innovation infrastructure.
- Integration – 83% of respondents felt that teams should be collaborating to establish bespoke innovation programmes in areas such as Digital Health, AI and primary care.
- Leadership and Culture – 80% of respondents felt that there could be greater executive and cultural support for innovation within health and care organisations.
- Cross-Sector Collaboration – 97% of respondents felt that there should be more effective relationships with external innovation partners.

2.3 Privacy

Will the proposal involve processing information that could be used to identify individuals?

For the purposes of this impact assessment Welsh Government are not the Data Processor. Where NHS Wales organisations process patient identifiable information, they will do so in line with their own Data Protection regulations, as overseen by their Chief Digital Officer and Caldicott Guardians, as those responsible for protecting the confidentiality of people's health and care information and making sure it is used properly. All NHS organisations and local authorities which provide social services must have a Caldicott Guardian.

SECTION 3. WHAT WILL BE THE EFFECT ON CULTURAL WELL-BEING AND THE WELSH LANGUAGE?

3.1 Cultural Well-being

Innovation presents an opportunity to support cultural wellbeing by improving peoples access to the arts, museums and the built historic environment. By bringing digital tools, such as 3D scanning and VR, to our Welsh heritage¹⁷ citizens can explore historic sites from the comfort of their own home. Welsh Government are supportive of further innovation in this area, not only for the benefits it brings to our citizens through access to our history and culture, but also for wider commercialisation opportunities and learning experiences for our children.

RD&I is also important in the area of Sport, the Welsh Institute of Performance Science is a partnership between academic institutions in Wales and relevant industry partners. The institute conducts research, aligned to the strategies of Sport Wales to help enhance the performance of our nation's athletes. There are links also with medicine, science and engineering to develop and test innovations that have performance benefits¹⁸.

The strategy is likely to have a minimal to moderate impact on cultural wellbeing, although this is not listed specifically as a priority within the innovation strategy. The Welsh Government will continue to support business innovation and collaborative projects seeking to undertake RD&I in these areas, particularly where it aligns with wider priorities and the Wellbeing goals. Impact will be measured at a project level, aligned with the measures for the strategy.

3.2 Welsh Language

A full Welsh Language Impact Assessment is provided at Section E.

¹⁷ <https://cadw.gov.wales/visit/whats-on/virtual-visits>

¹⁸ <https://www.sport.wales/content-vault/welsh-institute-of-performance-science/>

SECTION 4. WHAT WILL BE THE EFFECT ON ECONOMIC WELL-BEING?

4.1 Business, the General Public and Individuals

How (either positively or negatively), and to what extent (significant/moderate/minimal impact), will the proposal impact business and the public?

Over the longer term, the key challenge for Wales and the UK remains historically slow productivity growth. The UK has suffered from sluggish growth at least since the global financial crisis: between 1997 and 2007 the UK's output per hour growth was the second fastest of the G7 countries, between 2009 and 2019, it was the second slowest¹⁹.

Within the UK, Wales has similarly exhibited slow productivity growth, ranking as the least or second least productive UK country or English region throughout the ONS' regional labour productivity time series, stretching back to 1998. In 2020, Wales ranked second lowest in terms of GVA per hour worked of the 12 UK countries and English regions (above Northern Ireland), estimated to be 16% below the UK figure²⁰. However, as with a number of other regional economic indicators, UK labour productivity is heavily skewed by London and the South East, so that when compared to a number of other regions, Wales is not a distinct outlier. Thus, West Midlands, East Midlands, North East and Yorkshire and the Humber are all less than four percentage points above Wales' GVA per hour worked figure (83.9%).

Identifying the causes of this decline in productivity growth (the 'productivity puzzle') have produced many potential explanations, from scarring effects, regulatory/monetary policies to simple mismeasurement. Some commentators have pointed to declines in innovation levels as a potential source; modern ICT-based innovation simply may not have the same growth potential of past innovations.

An alternative explanation is that innovation has not slowed but rather that sluggish productivity growth is the result of slower rates of diffusion of innovation. Such theories posit that the trickle-down of innovation has stalled, creating a divide between strongly innovating, 'frontier', companies and non-frontier businesses, those who are not innovating at all or not to the same extent.

¹⁹

<https://www.ons.gov.uk/economy/economicoutputandproductivity/productivitymeasures/bulletins/internationalcomparisonsofproductivityfinalestimates/2021>

²⁰ Annual Regional Labour Productivity, 2020; ONS. Experimental quarterly productivity estimates are also available for UK countries and regions for Q4 2020, here.

This view ties in with work from Giles Wilkes²¹, who points out that a policy concentrating on highly productive sectors could crowd out easy wins for raising productivity in lower productivity service sectors. Highly productive sectors often (almost by definition), have a relatively small number of workers compared to the latter. Concentrating on low productivity service sectors could be an opportunity to raise output and wages in lower paid sectors, resulting in a wider reach in terms of employment. Rather than concentrating on a narrow set of industries, the Innovation Strategy will seek to enable Welsh Government to deliver innovation impacts across sectors.

The effects of increased innovation spending in promoting additional output and employment in the economy via direct, indirect and induced impacts (Type II multiplier effects) can be significant, especially when compared to that seen in many other sectors²²:

- Oxford Economics found that the Innovation, Research and Technology (IRT)²³ sector gave a gross value-added multiplier of 2.08; for every £1 million in economic activity, it generates another £1.08 million in its supply chain and through wage consumption impacts. In terms of employment, the sector was found to have a multiplier of 2.4; for every 100 people employed within the sector, another 140 are employed elsewhere in the economy.
- Research from the UCL Institute for Innovation and Public Purpose and funded by Innovate UK²⁴, reported that total government spending excluding R&D had a GDP multiplier of just 0.82. This compares to ‘mission-orientated innovation’ (proxied by military R&D in the US) and non-military R&D spending which showed multipliers of 8.82 and 7.76, respectively.

Due to the wide range in the levels of these multipliers, no attempt has been made to calculate the estimated impact of Welsh Government innovation spending in terms of GDP or employment.

Both the Well-being of Future Generations (Wales) Act 2015²⁵ and Economic Resilience and Reconstruction Mission²⁶ aim to improve the social, economic, environmental and

²¹ Productivity: firing on all cylinders | The Institute for Government

²² As a comparison, all but one of the 25 WERU 2007 Type II sectors has an output multiplier of under 2 and all but three sectors had an employment multiplier below 2.

²³ <https://www.oxfordeconomics.com/resource/the-impact-of-the-innovation-research-and-technology-sector-on-the-uk-economy/>

²⁴ https://www.ucl.ac.uk/bartlett/public-purpose/sites/public-purpose/files/macroeconomic_impact_innovateuk_iipp_report_final_web.pdf

²⁵ <https://www.futuregenerations.wales/about-us/future-generations-act/>

²⁶ <https://www.gov.wales/economic-resilience-and-reconstruction-mission>

cultural well-being of everyone in Wales. Although there are significant influences upon economic well-being that are beyond the direct control of the Welsh Government, an innovation strategy that improves the environment for innovation can improve productivity and business competitiveness. Strong productivity growth, in turn, promotes wages growth, improved living standards, providing an increase in the tax base, enhanced public services, ultimately leading to greater levels of economic well-being.

Further detail on the innovation metrics used can be found at Appendix C.

4.2 Public Sector including local government and other public bodies

How (either positively or negatively), and to what extent (significant/moderate/minimal impact), will the proposal impact the public sector?

The Innovation Strategy will build on the action areas prioritised in *Innovation Wales*²⁷, which directly link to the promotion of innovation in the public sector in Wales, namely:

- Action Area 12: The public sector in Wales should be encouraged to support innovative methods of procurement.
- Action Area 13: Public sector organisations in Wales should trial innovative solutions in areas such as health, digital education, transport etc., where Wales is of a suitable scale to act as a pilot to demonstrate new ideas.

Public procurement in Wales represents an opportunity to support the local economy while bringing more innovation into public services. The Innovation Strategy will build on a central principle of the Wales Procurement Policy statement in supporting innovative procurement, in aligning, “our ways of working and increase stakeholder involvement to support innovative and sustainable solutions through procurement”.

Delivering this strategy will require a co-ordinated approach across the innovation network.

The public sector in Wales is proportionally larger than in many other areas of the UK; public sector employment representing 22.7% of total employment, the second highest figure of the 12 UK countries and English regions and above the figure for the UK as a whole (17.6%)²⁸. Therefore, policies which target the public sector are likely to have a disproportionately greater impact in Wales compared to other areas.

²⁷ <https://www.gov.wales/innovation-wales-strategy>

²⁸ <https://www.gov.uk/government/statistics/public-sector-employment-uk-september-2022>

4.3 Third Sector

How (either positively or negatively), and to what extent (significant/moderate/minimal impact), will the proposal impact third sector organisations and what they do?

Delivering the Innovation Strategy requires a co-ordinated approach across the third sector. This involves partnership working, building on the work of Digital Communities Wales²⁹ (DCW) in supporting organisations ranging from nationwide charities to small community run social enterprises and addressing ‘data poverty’. Key delivery partners will be engaged to collaborate in the ongoing delivery of the innovation strategy. This involves third sector stakeholder groups and delivery partners, as well as establishing with other third sector groups new collaborative working opportunities.

4.4 Justice Impact

We do not envisage bringing forward new primary legislation in implementing the Innovation Strategy and nor does the implementation of the Innovation Strategy involve creating, removing or amending an offence. The Innovation Strategy is not expected to impact on the justice system.

²⁹ <https://www.digitalcommunities.gov.wales/>

SECTION 5. WHAT WILL BE THE EFFECT ON ENVIRONMENTAL WELL-BEING?

5.1 Natural Resources

5.1a How will the proposal deliver one or more of the National Priorities in the Natural Resources Policy (NRP)?

Innovation provides opportunities to deliver impact against all three of the national priorities in the Natural Resources Policy³⁰. This has been identified as an area of priority and strength for Wales within the strategy (see Priority Themes Analysis paper which is being published alongside the strategy). We expect investment in innovation to stimulate action in areas such as decarbonisation and protecting nature. We have committed in the strategy to ensuring our support aligns with the requirements of the pre-existing economic contracts, but also that support provided does not cause harm, new product development should be carried out in a sustainable way, and we will seek to ensure these terms are built into the terms of our grant offers and procurement contracts, alongside tools to support organisations to understand and measure impact. Business Wales already offers advice, but we will seek to support more organisations with advice and financial support to adopt new processes within their business that drive improved efficiencies, e.g., in areas such as resource and energy usage. This is currently targeted towards the manufacturing sector, but consideration will be given to what an offer expanded to wider sectors, and smaller businesses, could deliver. In addition, we will seek to lever additional investment into Wales for our renewable energy generation, in particular our focus on Floating Off-shore Wind opportunities aligned to our ports.

5.1b Does the proposal help tackle the following national challenges and opportunities for the sustainable management of natural resources?

RD&I can be targeted towards national challenges such as reducing the risk of flooding and effects of climate change and develop solutions to contribute to our adaptation to the effects. On reviewing the themes of projects to date innovation is happening in this area. The new strategy brings a greater focus on the importance of collaboration and intervention on this agenda, and measurement of impact which will be considered further as we develop the action plan.

5.2 Biodiversity

A full Biodiversity impact assessment is at section F.

³⁰ <https://www.gov.wales/sites/default/files/publications/2019-06/natural-resources-policy.pdf>

5.3 Climate Change

5.3a Decarbonisation

How (either positively or negatively), and to what extent (significant/moderate/minimal impact), will the proposal affect emissions in Wales?

Reducing carbon emissions, investing in decarbonisation and supporting businesses to become greener and more energy efficient were all common themes arising from the consultation on the strategy³¹. Wales has already made a strong commitment to become net zero and has set out a plan to do so³². The innovation strategy sets out how innovation has a role to play in supporting delivery against many of the actions set out in the plan. Impact can be delivered in two ways, through innovative development, and by adoption of new technology. Welsh Government has previously supported Welsh companies and consortia to develop innovative products, services and processes through the ERDF funded SMART suite of programmes, which delivered 709 projects between 2014 and 2022.

Support is also available, and will continue, in the form of advice and consultancy to identify where businesses can adopt digital technologies with a view to driving efficiency and improving performance. Businesses often report high energy consumption as a reason for engaging with the programme. To date over 500 organisations have engaged with the programme, we do not have the data on the impact this has had on carbon emissions and energy consumption at this stage, further work is needed to understand the full impact of this intervention, and others.

As we transition to a new programme of core funded activity which will invest £20 million of grant funding in organisations in Wales, over the next three financial years, we have committed to exploring the options around carbon calculators to identify the most appropriate tool to support organisations to measure their carbon output and determine what reductions are made through the adoption of new technologies. We will also explore a requirement on organisations to ensure new developments (products, services and/or materials) supported by grant funding are done so in a carbon neutral way, and how this could be measured. Organisations can be from any sector, depending on the size and type of organisations we support which will affect the level of impact, but we expect the impact to be moderate and we will measure and monitor overall impact of interventions as part of the evaluation of the strategy.

³¹ <https://www.gov.wales/sites/default/files/consultations/2022-12/innovation-strategy-consultation-summary-of-responses.pdf>

³² <https://www.gov.wales/net-zero-wales-carbon-budget-2-2021-2025>

In addition to advisory support, and grant funding, the Development Bank of Wales is currently developing a Decarbonisation fund to support businesses in the transition to net zero. The bank is remitted to have Decarbonisation as a policy priority and will assist businesses wanting to invest in decarbonisation infrastructure including renewables. The impact of this intervention will be assessed in due course.

Alongside the delivery of a low carbon economy the public sector must seek ways in which it decarbonises the services it delivers. We will also support the public sector to innovate and adopt new technologies to support this alongside their delivery plans and commitment to reporting.

We project the strategy will likely have a moderate impact on decarbonisation, on consideration of the HM Treasury Green Book Greenhouse Gas valuation methodology³³ it is not considered appropriate to undertake an assessment at this stage. Assessments, if appropriate, should take place on relevant actions and investments arising from this strategy.

5.3 b Adaptation

How (either positively or negatively), and to what extent (significant/moderate/minimal impact), will the proposal affect ability to adapt to the effects of climate change?

RD&I has the potential to explore the effects of climate change and develop solutions to contribute to our adaptation to the effects. On reviewing the themes of projects to date innovation is happening in this area. The new strategy brings a greater focus on the importance of collaboration and intervention on this agenda, and measurement of impact which will be considered further as we develop the action plan.

5.4 Strategic Environmental Assessment (SEA)

A SEA has not been carried out on the strategy, in itself it is not likely to have a significant impact on the key areas listed. Should interventions be developed as a result of the strategy our expectation is that this decision is re-visited, and an assessment carried out at the programme level.

5.5 Habitats Regulations Assessment (HRA)

A HRA has not been carried out on the strategy, commitments made within the strategy are not likely to have a significant impact on the Natura 200 European protected site

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https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1063330/Green_Book_2022.pdf

network. Should interventions be developed as a result of the strategy our expectation is that this decision is re-visited, and an assessment carried out at the programme level.

5.6 Environmental Impact Assessment (EIA)

An EIA has not been carried out on the strategy, in itself it is not likely to have a significant impact on the key areas listed. Should interventions be developed as a result of the strategy our expectation is that this decision is re-visited, and an assessment carried out at the programme level.

SECTION 6. CONCLUSION

8.1 How have people most likely to be affected by the proposal been involved in developing it?

The strategy has been developed following extensive engagement with a broad range of stakeholders, at various stages of the development. Early engagement on the approach took place online, in light of Covid restrictions, with stakeholders from across the public, private and academic sectors. A contract was issued to the Co-production Network who led on engagement with children and young people, citizens, communities and the third sector. In addition to targeted engagement an open consultation was held between July and September 2022 with open events held across Wales. An equality and diversity questionnaire was made available to all participants in the engagement and consultation activity, the data is included at Appendix D and includes a comparison with official statistics. In addition to broad engagement an external advisory group has been operating throughout with representation from Universities Wales, Industry Wales, the Welsh Language Commissioners office, Natural Resources Wales and the Older Peoples Commissioners office.

8.2 What are the most significant impacts, positive and negative?

- People – Welsh Government are committed to creating a culture of innovation in Wales which enables citizens to participate in, and benefit from innovation. Examples of initiatives that will contribute to this include, support for businesses and collaborations to carry out innovative activities within Wales; to deliver a more cohesive environment for health and care innovation with a dedicated social care innovation programme and support for relevant organisations to work with external innovation ecosystem actors and to contribute to the *Healthier Wales*³⁴ goal.
- Culture and Welsh Language - In terms of the Welsh language, the Strategy is most relevant to Cymraeg 2050's³⁵ target of “multi-lingual as standard”, with two of its commitments being to Increase the range of services offered to Welsh speakers and Ensure Welsh language is at the heart of innovation in digital technology to enable the use of Welsh in all digital contexts. This will form part of the conditions of any relevant projects that receive Welsh Government support.
- Economy – By aiming to improve the environment for innovation the Strategy will lead to increased productivity and business competitiveness. Strong productivity growth, in turn, promotes wages growth, improved living standards, an increased

³⁴ <https://www.gov.wales/healthier-wales-long-term-plan-health-and-social-care>

³⁵ <https://www.gov.wales/sites/default/files/publications/2018-12/cymraeg-2050-welsh-language-strategy.pdf>

tax base, enhanced public services, ultimately leading to greater levels of economic well-being; a virtuous circle towards a *Prosperous Wales*.

- Environment – The Strategy has identified opportunities to deliver beneficial impact against all three of the national priorities in the Natural Resources Policy³⁶, with particular commitment to innovating for Net Zero, supporting organisations to measure emissions, and ensuring nature is protected. This will build upon our commitments to an economic contract by building these requirements into our support offer.

8.3 In light of the impacts identified, how will the proposal:

- **maximise contribution to our well-being objectives and the seven well-being goals; and/or,**
- **avoid, reduce or mitigate any negative impacts?**

To date, responsibility for innovation within Welsh Government has been dispersed among various portfolios and discrete programmes, where an action with beneficial innovative impacts in one area could inadvertently lead to negative impacts in another. For example, where support for a new product or process might lead to increased economic activity but result in a bigger carbon footprint.

Without attempting to reduce Ministerial discretion over priorities or budgets, the new Strategy's emphasis on cross-government innovation working (i.e. not on a departmental basis) will place a holistic approach on working toward the seven well-being goals concurrently. The intention is for coordinated action to lead to better outcomes across the goals, minimising unintended negative consequences in any of them.

The biggest negative impact confronting the new Strategy is the loss of EU Structural Funds which formed the backbone of Welsh Government support for innovation and control of decision making in Wales for many years. To mitigate this impact, a central theme of the Strategy describes a route and milestones to achieving a step-change in the amount of funding won from UK sources and beyond, along with an emphasis on the discipline required from all Welsh stakeholders to collaborate behind the priority areas of RD&I which it identifies.

8.4 How will the impact of the proposal be monitored and evaluated as it progresses and when it concludes?

A set of measures have been proposed to measure the impact of the strategy. They include using as many of the existing data sets collected and referred to in this document,

³⁶ <https://www.gov.wales/sites/default/files/publications/2019-06/natural-resources-policy.pdf>

for example BERD³⁷ and the UKIS³⁸ survey both collected at the UK level. We are currently transitioning from ERDF funded programmes and the data requirements placed on those and will be continuing to develop our approach to measurement of impact as an action plan is developed to sit alongside the strategy.

In addition to measuring impact, we are also publishing a methodology with the strategy which sets out how we have assessed our strengths and set priorities. This methodology can be repeated at regular intervals to assess whether, through our interventions, we have seen areas of strength grow in prominence, or moved our emerging opportunities to areas of strength.

We are also committed to developing new measures, particularly in the areas of health and climate where we will further develop impact measures for health and care innovation, applying learning from the Value Based Healthcare approach, and climate where we are committed to supporting organisations to understand their carbon emissions output. We will continue to be open and transparent about our approach to measurement of this strategy.

³⁷

<https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/researchanddevelopmentexpenditure/bulletins/businessenterpriseresearchanddevelopment/2021>

³⁸ <https://www.gov.uk/government/collections/uk-innovation-survey>

SECTION 7. DECLARATION

Declaration

I am satisfied that the impact of the proposed action has been adequately assessed and recorded.

Name of Senior Responsible Officer / Deputy Director:

A handwritten signature in black ink, appearing to read 'D. JV', with a long horizontal stroke extending to the right.

Duncan Hamer

Director of Operations – Business & Regions

Department: Economy, Treasury and Constitution Group

Date: 7th March 2023

FULL IMPACT ASSESSMENTS

A. CHILDREN'S RIGHTS IMPACT ASSESSMENT

1. Describe and explain the impact of the proposal on children and young people.

The impact of the Innovation Strategy will be felt mostly by children and young people within the education system, primarily through the wide-ranging activities set out and resulting plans. These activities will undergo their own impact assessments and are expected to have a positive impact on children and young people, such as the development of entrepreneurial and innovation skills through the implementation of the new curriculum.

The strategy commits to improving opportunities for children to participate in innovation through the continuation of schemes such as the WJEC Innovation Awards and Engineering Education Scheme Wales³⁹, as well as encouraging a culture of innovation that attracts new talent and investment to Wales.

Further actions and projects which will flow from the Strategy will have varying impacts on children and young people, and these will be assessed separately, where appropriate. The Strategy itself has been developed with engagement from across stakeholder groups, including children and young people in line with Article 12 of the United Nation Convention on the rights of the child, and our duty to involve citizens in the Wellbeing of Future Generations Act 2015. Welsh Government let a contract through competitive tender to the Co-Production Network (CPN) to carry out citizen engagement on the Innovation Strategy prior to, and during, the consultation period. The contract ran from January 2022 to September 2022. CPN representatives attended an in-person STEM Cymru/Engineering Education Scheme Wales (EESW) Young People event, on the 4th May 2022, with 77 young people, aged between 14 and 18 years old, in attendance. During July 2022 CPN also facilitated two virtual workshops with 'Children in Wales - Special Interest Groups, one focussed on Education and Social Justice and one focussed on Health and Social Services. Participants were aged between 11 and 18 years old, and discussions were tailored explicitly around the needs and interests of young people.

The data generated by the above activities has been analysed by CPN and reports provided on findings to the Welsh Government. These have not yet been published but are summarised below.

³⁹ <https://www.stemcymru.org.uk/>

2. Analysing the Evidence and Assessing the Impact:

The young people engaged with valued both innovating, and benefiting from the innovations of others, but warn that there is not equity of opportunity for young people across Wales with regards to innovation.

Insights related to:

- **Infrastructure and support:** with a young person's ability to innovate, and benefit from the innovations of others currently contingent conditions around them, inclusive of levels of funding and investment in their schools and local areas, educational approaches they are exposed to, and access to expert mentors, activities and experiences which promote and enable innovation.
- **Equality:** with the importance of opportunities to innovate and benefit from the innovations of others being open to all, irrespective of gender, race, ethnicity, language, socio-economic background or otherwise. Collaboration was seen as key to breaking down barriers and enhancing what innovation could achieve.
- **Culture:** with transparency and openness with regards to the reality of innovating, and a less risk-averse culture within and outside of schools, enabling innovation.
- **Engagement:** with opportunities for young people to engage with innovation, innovators, be involved in real innovation processes, and more able to connect with their peers (physically and virtually) to innovate together.

Since 2014 young people have engaged and been supported to innovate in Wales, in both Welsh and English. Programmes have confirmed that projects such as Technocamps 2, STEM Cymru, STEM Gogledd and Trio Sci Cymru have reached over 33,000 secondary school pupils, and over 13,000 secondary school pupils have competed at the WJEC Innovation Awards.

In light of the feedback from children, Welsh Government has committed to continuing to support activities where it has previously done so and will work with and encourage its partners to do the same. We will also seek to further raise awareness and engage all schools in the activities to ensure equality of opportunity. It should be noted, however that some programmes have been supported by EU funding. As this funding is no longer available to Wales, we may see a reduction in activity which could have a negative impact on children's access to innovation opportunities. Wider funding opportunities will be explored, and impact and affordability considered before final decisions are made by providers.

The following UNCRC articles are considered relevant to the innovation strategy:

Article 24 – Right to the best possible health, and health care:

The Innovation Strategy includes a mission to improve the impact and value the health and care service delivers for all citizens in Wales, including children, by developing and adopting innovative products and processes, at scale. Impact will be measured by gathering data on patient experience and outcome at a project and programme level.

Article 28 – Right to an education, **Article 29** – Education should develop each child’s personality and talents to the full:

The strategy sets out how the education system in Wales will play its part in the innovation ecosystem in Wales to deliver against the education mission by developing the skills of learners and creating new knowledge through research activities. Schools, Colleges and Universities will provide opportunities for learners, through activities such as the implementation of the new curriculum and the Commission for Tertiary Education Research, to develop their entrepreneurial and RD&I skills, as well as those skills needed to enter the workforce.

3. Communicating with Young People

A child friendly, easy read version of the strategy will be produced, included on Hwb⁴⁰ and relevant newsletters. We will also promote the strategy through our partners such as WJEC, EESW, Children in Wales and others who have supported engagement with children and young people as part of the development of the strategy.

4. Monitoring and Review

Impacts, which specifically relate to children, will be measured at the intervention level. For example, the impact of implementing the new curriculum will be monitored and reported to Welsh Ministers at the programme level. The same applies to relevant health innovation interventions.

⁴⁰ <https://hwb.gov.wales/>

B. EQUALITY IMPACT ASSESSMENT

1. Describe and explain the impact of the proposal on people with protected characteristics as described in the Equality Act 2010.

People with protected characteristics, in the context of the Innovation strategy, can be both innovators and users of innovation. In developing the strategy, we have ensured the views of people within these communities are reflected in the development. Demographic data gathered during stakeholder engagement and consultation is included at Appendix D.

Equality is a theme which runs throughout the strategy, our vision is to ensure that there is equitable access to the support provided to innovate, the ability to influence innovation and to feel its benefits. The NESTA report, *Is Wales getting Innovation right?*⁴¹ details the views of Welsh people on where the impact of innovation is felt positively and negatively. People who are Black, Asian or minority ethnic, older people and those on lower incomes were the groups that felt the least positive impact.

Research confirms that diversity drives innovation⁴² this includes inherent diversity such as ethnicity and sexual orientation and acquired diversity from our experiences. Further work will be done during action planning to enhance our offer to ensure accessibility for all people, whether it be participation in innovation, or benefitting from it. Markets such as Femtech⁴³ and Transtech⁴⁴ offer new growth opportunities for innovators. Data collection will be improved to improve the Welsh Governments ability to identify disproportionate impacts in accessing innovation support.

Business Innovation

In terms of those groups who benefit from the innovation funding and advisory support delivered by Welsh Government, current data collection (Table 1) does not provide us with full detail and is linked to measures required for reporting against European structural funds. While the data demonstrates more needs to be done to reach those companies with diverse ownership, the data shows the ownership structure of the companies receiving support and not the characteristics of those who are involved in the innovation. Data from other programmes, including those where we co-fund with UK agencies, is also incomplete. In order to demonstrate a sufficient reach in terms of our support functions we

⁴¹ https://media.nesta.org.uk/documents/Is_Wales_summary_English_Ttuok34.pdf

⁴²

<https://static1.squarespace.com/static/5f335d8f379f9d38d30a78d6/t/607e6d66bd48400dba2c17da/1618898279248/How+Diversity+Drives+Innovation.PDF>

⁴³ <https://www.mckinsey.com/industries/healthcare/our-insights/the-dawn-of-the-femtech-revolution>

⁴⁴ <https://www.forbes.com/sites/alyssawright/2020/12/08/trans-tech-is-a-budding-industry-so-why-is-no-one-investing/?sh=5151c70ce3c3>

will improve data collection to capture the demographics of those undertaking R,D&I as well as introduce data collection into programmes where this is not currently collected. We will not have a baseline; therefore, we will aim for a reach and access that is reflective of our society. We will also work with UK Government to improve their data collection and reach within Wales, in order to ensure impact in terms of reach is positive.

Table 1 – Demographic Data for SMART Cymru Recipient Companies (2014-2021)

Number of Beneficiary companies	Male Owners	Female Owners	Black, Asian, Ethnic Minority Owners	Number of non Black, Asian, Ethnic Minority Owners	Owners who consider themselves disabled	Owners aged 0-25	Owners aged 25-44	Owners aged 45-64	Owners aged 65-74	Owners who are aged 75 or over
359	959	260	33	1011	19	11	405	667	110	23

Barriers which we have identified through the course of strategy development include:

- People, who we have spoken to through the course of stakeholder engagement, have reported that they struggle with the process and forms required to access funding. This has included women, and people who consider themselves to be disabled.
- Our support has been restricted to those companies with 9 or more employees, this has meant that Micro enterprises which account for 95% of the total enterprises in Wales⁴⁵ unable to access support. This has a greater effect in rural areas where there is a larger share of employment in micro businesses. In terms of owner demographics 12.8% of micro business in Wales are led by women, and 1.2% are minority ethnic led⁴⁶.

The strategy commits us to a broader reach in terms of a new funding offer which will be open to micro and small enterprises, previously restricted from applying. We will also develop an action plan and design services which can be accessed by all groups within our population. We will explore the use of different approaches such as online tools and video applications, as well as providing one to many and one to one support to develop

⁴⁵ <https://statswales.gov.wales/Catalogue/Business-Economy-and-Labour-Market/Businesses/Business-Structure/Headline-Data/latestbusinessstructureinwales-by-sizeband-measure>

⁴⁶ <https://www.gov.wales/longitudinal-small-business-survey-2019-html>

proposals across sectors. We will do this in collaboration with the Wales Innovation Network, Innovate UK, KTN, Development Bank of Wales and British Business Bank.

Health and Care Innovation

University Health Boards, Trusts and local authorities in Wales are subject to the Public Sector Equality Duty. Equality, diversity and human rights are also embedded in practice through the Values and Standards of Behaviour Framework, Standard 2 of the Healthcare Standards for Wales and the Governance Framework. Each organisation has their own Equality Diversity and Human Rights Policy, a person or team dedicated to lead on equality, diversity and human rights who meet collectively as the Equality Leadership Group, and each publishes regular Diversity Annual Reports.

Where innovative activity takes place, resulting in service change within the health and care services, service providers are required to undertake Equality Impact Assessments of their own in relation to any planned service changes in their area of coverage. They are supported to do so by the NHS Wales EIA Practice Hub and the NHS Wales Centre for Equality and Human Rights.

Commission for Tertiary Education Research (arising from the Tertiary Education and Research (Bill))

As set out in the Co-operation agreement with Plaid Cymru the Commission for Tertiary Education Research will be required to implement the Innovation Strategy alongside Welsh Government and the wider ecosystem. The Commission has a number of strategic duties, which include encouraging participation in life-long learning, equality of opportunity and collaboration and coherence in tertiary education and research. The Equality Impact Assessment⁴⁷ completed for the TER Bill has indicated that the proposals as a whole are unlikely to affect people with protected characteristics.

Record of Impacts by Protected Characteristic

Age: Current data tells us that the main beneficiaries of Welsh Government support offered, and participators of innovation are in the 25-64 age range. Previously we have promoted the Innovate UK Young Innovators (18-30 years old). Since 2018/19 there have been 77 successful UK applicants, of those, 7 applicants are from Wales⁴⁸. Our aim is to drive up the success rate through our action planning with Innovate UK.

The innovation strategy aims to deliver a positive impact to all age groups, improving the offer and accessibility will be key to ensuring that anyone regardless of their age can

⁴⁷ <https://www.gov.wales/sites/default/files/publications/2021-10/tertiary-education-and-research-bill-equality-impact-assessment.pdf>

⁴⁸ <https://www.ukri.org/publications/innovate-uk-funded-projects-since-2004/>

participate in innovation. This will require differing, appropriate interventions to ensure there is something for everyone. In considering different age groups and benefitting from innovation, the Nesta⁴⁹ report demonstrates that perceptions differ;

- 18-24 year olds are more likely to report hearing about innovations improving local communities and education.
- 25–34 year olds are more likely than most age groups to say innovations making the UK's population healthier have made their lives better.
- 18–24 year olds are more likely to say innovations in education have made their lives better.
- People in Wales feel there are some who are clear 'winners' as a result of innovation, including young people aged 18 or under.

With commitments in the strategy to invest in a dedicated social care innovation programme, a more flexible offer for businesses and a new curriculum the aim is to create a culture of innovation to benefit everyone. Improvement in data collection, to ensure consistency across initiatives, is another key action which must be implemented to identify any discrimination and take mitigating actions quickly.

Disability: Approx. 1.5% of business owners receiving innovation support and/or funding consider themselves disabled. We have heard during stakeholder engagement that access can be an issue and are committed to improving accessibility to our support, as well as working with and encouraging others to do the same. In addition to supporting disabled innovators, it is important that the voice of people's lived experiences and understanding of disabled people's needs is heard, this can act as a stimulus for innovation to new product development and impact within those groups. Our aim is to drive greater collaboration across sectors, and with citizens, to ensure innovation meets the needs of our citizens. Our expectation is that there will be a positive impact on this group. We will continue to collect and monitor demographic data to ensure greater diversity in innovation. A report by Innovate UK highlights the opportunity this presents, in particularly in terms of people reporting that they had identified an idea for a new innovation that could be used to start a business⁵⁰.

Pregnancy and Maternity: Research carried out by Welsh Government, separately to this policy development, has determined there are no significant impacts identified for the pregnancy and maternity protected characteristic group in relation to economy and innovation, transport, rural affairs, environment and culture. Evidence and research is mainly limited to employment and related matters, with some relating to the experience of

⁴⁹ https://media.nesta.org.uk/documents/Is_Wales_summary_English_Ttuok34.pdf

⁵⁰

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/902986/InnovateUK_Supporting_Diversity_and_Inclusion_in_innovation_WEBVERSION.pdf

pregnant women during their studies. It is unlikely that the Innovation Strategy will have a direct impact in relation to this protected characteristic.

Race: Data collected on existing Welsh Government existing SMART interventions shows that 2.7% of business owners accessing support were Black, Asian or Minority Ethnic people. A report by Innovate UK confirms that businesses owned by Black, Asian and Ethnic Minority People face persistent challenges in accessing finance in appropriate forms and volumes, and that mainstream public sector business support is under-utilised by those businesses⁵¹. We are committed, in the strategy, to ensuring greater accessibility of support (financial and non-financial) in terms of both demographic and geographic equality. In line with our Anti-Racist Wales Action Plan commitments⁵² for Business Wales, we will ensure staff delivering innovation support take up training and that our contracts secure an anti-racist provision. We will continue to collect and monitor demographic data to ensure greater diversity in innovation. A report by Innovate UK highlights the opportunity this presents, in particularly in terms of people reporting that they had identified an idea for a new innovation that could be used to start a business⁵³. We believe there will be a moderately positive impact in this area.

Religion, belief and no-belief: Currently we do not collect data on the religion, belief or no-belief of those who have accessed innovation support. Throughout our engagement and consultation, we have collected data on the beliefs of respondents and have collected views from a diverse group, see appendix D. Those views have been fed into the analysis and have influenced the strategy. There is intersectionality with this characteristic and Black, Asian and Minority Ethnic People. An Innovate UK report demonstrated that people experience additional obstacles as a result of stereotypical images of specific ethnic cultures, religion and practices. As stated previously we will take steps to ensure accessibility of Welsh Government support, as well as implement the commitments of an Anti-Racist Wales Action Plan which will deliver impact. Further work will be done during action planning to ensure accessibility on the grounds of religion, belief or no belief. Data collection will be improved to improve the Welsh Government's ability to identify disproportionate impacts in accessing innovation support.

Sex / Gender: Data collected on existing Welsh Government existing SMART interventions shows that 21% of business owners accessing support were female. The

⁵¹

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/902986/InnovateUK_Supporting_Diversity_and_Inclusion_in_innovation_WEBVERSION.pdf

⁵² https://www.gov.wales/sites/default/files/publications/2022-06/anti-racist-wales-action-plan_0.pdf

⁵³

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/902986/InnovateUK_Supporting_Diversity_and_Inclusion_in_innovation_WEBVERSION.pdf

2022 IUK Women in Innovation competition resulted in 1 successful application based in Wales from a total of 64 across the UK. While we do not have access to the data on all applications to the competition, we know that 29 Welsh women applied in total. Our support programme, CRISP, albeit small, has a strong track record of supporting applications to UK level competitions with 51 of the 60 applications (2014-2021) supported receiving offers of funding. Welsh Government do not currently offer support programmes targeted at specific groups. Our policy will aim to deliver a positive impact to all genders. In particular, we will aim to increase the number of women and women owned companies that are participating in and receiving support for innovation. We do not foresee any negative impacts arising from the policy, it does not seek to remove opportunities from other groups of people as a result. We will assess impact of resulting interventions through robust and ongoing data collection and seek to adjust where necessary to ensure equality of opportunity.

Gender Re-assignment: For previous interventions and programmes, we have not collected data on gender re-assignment of those who have accessed innovation support. Throughout our engagement and consultation demographic data has been gathered from respondents people who identify as trans and non-binary (see Appendix D), the consultation analysis has informed further work to develop the strategy. As stated previously we will take steps to ensure accessibility of Welsh Government support for innovators, and for innovations aimed at this group of people. This will be embedded into the actions we take to design interventions arising from the strategy. Data collection will be improved across all protected characteristics to ensure the Welsh Governments ability to identify disproportionate impacts in accessing innovation support.

Sexual orientation (Lesbian, Gay and Bisexual): Currently we do not collect data on the sexual orientation of those who have accessed innovation support. Throughout our engagement and consultation data has been gathered on the sexual orientation of respondents (see Appendix D), the consultation analysis has informed further work to develop the strategy. As stated previously we will take steps to ensure accessibility of Welsh Government support, and this will be embedded into the actions we take to design interventions arising from the strategy. Data collection will be improved to ensure the Welsh Governments ability to identify disproportionate impacts in accessing innovation support.

Marriage and civil partnership: Research carried out by Welsh Government has determined there are no significant impacts identified for the marriage and civil partnership protected characteristic group in relation to, economy and innovation, transport, rural affairs, environment, culture and sport, and skills and higher education. No significant evidence has emerged in relation to marriage and civil partnership discrimination affecting economy and innovation. It is unlikely that the Innovation Strategy will have a direct impact in relation to this protected characteristic.

Children and young people up to the age of 18: We are aiming for this group to see a positive impact from the strategy, through the development of innovation skills arising from

opportunities within the new curriculum, and as users of digital innovation within education settings. A full children's rights impact assessment is included in Section A. Some impacts are assessed based on findings from a previous impact assessment⁵⁴ for the new curriculum.

Human Rights and UN Conventions

The Universal Declaration of Human Rights (1948) establishes the framework of basic rights that all people across the world share.

The Welsh Government must not act in a way which is incompatible with those rights.

In addition to this, the Welsh Government uses the Human Rights based approach, which will apply to all decisions taken to apply innovation as a policy tool across our Programme for Government commitments.

To take the example of considering innovation in healthcare: whilst access to healthcare is not specifically covered by the UK Human Rights Act 1998, the Welsh Government uses the approach taken within the Human Rights framework of universality, equality and empowerment. Therefore, decisions made within innovation in healthcare will have due regard to this commitment and will involve, as far as possible, people who are affected by policy decisions in this area.

EU/EEA and Swiss Citizens' Rights

The Innovation Strategy itself is not expected to have any impact, either positive or negative on the rights of EU, EEA and Swiss citizens residing in the UK. Financial and non-financial support for RD&I is awarded at the organisation level, it is the duty of the relevant organisation receiving the support to ensure compliance with all relevant legislation. The implementation of this strategy will not affect rights e.g. access to services, or recognition of qualifications.

⁵⁴ <https://www.gov.wales/sites/default/files/consultations/2020-01/welsh-government-integrated-impact-assessment.pdf>

C. RURAL PROOFING IMPACT ASSESSMENT

As part of the development of the strategy we firstly engaged with stakeholders to discuss the proposed integrated approach. These sessions were well attended and included representative bodies from rural areas in Wales⁵⁵. We also engaged the services of the Co-production Network (CPN) for Wales to undertake community and citizen engagement, in the context of this work this meant ensuring people from across all communities, in all parts of Wales were given the opportunity to share thoughts, feelings and ideas with respect to the strategy. As part of the consultation, in-person events were held in every region in Wales.

The CPN engagement found that the distribution of funding was a common theme in terms of equality and inclusivity, local community engagement and the process of distribution: with a need to ensure innovation funding is distributed fairly, in particular with more done to support small and third sector organisations, rural and remote, as well as densely populated areas, and with funding for innovation of all shapes and forms, over and above tech innovation. Improved access to funding advice and support was seen as key.

Business Innovation

Traditionally, Welsh Government ERDF funded support has been restricted to those companies with 9 or more employees, this has meant that Micro enterprises which account for 95% of the total enterprises in Wales⁵⁶ were unable to access the full suite of support. This has a greater effect in rural areas where there is a larger share of employment in micro businesses.

This strategy enables much broader support and seeks to fill the gaps left by UK level programmes that are often too large for the business community in Wales. We believe the strategy will have a moderate and positive effect on rural businesses, in particular due to a more flexible support offering which will be tested with the business community as part of the work to implement the Innovation Strategy for Wales. Our commitment to extend our reach into all communities in Wales and provide additional support to ensure access to our service is equitable, should equate to a further positive impact for people and communities, in terms of a thriving local economy. This will be linked to the Regional Economic Frameworks, City and Growth Deal activity and the future Corporate Joint Committees.

⁵⁵ <https://www.gov.wales/innovation-advisory-council-wales-public-sector-engagement-report>

⁵⁶ <https://www.gov.wales/size-analysis-businesses-2021>

We will measure the impact of our proposal by capturing data of the location of those organisations we support and by utilising our data sharing agreement with UKRI/Innovate UK to understand location of the activity support by them. It should be noted that the Welsh Government budget for innovation has reduced following exit from the European Union, however we will continue to seek alternative funding sources working with the innovation ecosystem in Wales and beyond.

Commission for Tertiary Education Research (arising from the Tertiary Education Research (Wales) Bill)

The Commission must promote tertiary education and research in a way that contributes to the development of a sustainable and innovative economy in Wales. In discharging this duty, it must have regard to: the reasonable requirements of industry, commerce, finance, the professions and other employers regarding tertiary education and research and innovation. By working closely with Regional Skills Partnerships, the Commission will have the opportunity to review the learning provision available, in order to align this with the skills needs of local businesses and learners. The impact on rural learners is deemed to be moderate and it is not proposed that the provisions of the TER Bill will have a direct impact on rural communities⁵⁷.

Health and Care

The health and well-being mission of the strategy considers innovation policy for the entire health and care innovation ecosystem in Wales. It provides a policy direction for NHS Wales organisations and Social Care Wales to follow, but provides a direction of travel for our WG funded ecosystem as well, particularly those supported through our Innovation, Technology and Partnerships programme.

This mission also recognises that different NHS Wales organisations (in particular local health boards) have a significant variance in socio economic and demographic factors affecting the citizens residing in their geographical area. For example, regions in Wales have significantly different population demography depending on the level of rural and urban geographies⁵⁸.

We recognise that each local health Board has much greater knowledge of the needs of their citizens, so the assessment of what approach to innovation activity they undertake has to be based on the needs of the population that local health Board serves. This will be reflected in a priority setting exercise that each local health Board undertakes, which will be

⁵⁷ https://www.gov.wales/sites/default/files/consultations/2020-07/integrated-impact-assessment_0.pdf

⁵⁸ <https://www.gov.wales/sites/default/files/statistics-and-research/2020-05/summary-statistics-regions-wales-2020-629.pdf>

informed by their Population Needs Assessments, a requirement of the Social Services and Well-being (Wales) Act 2014, which are completed and published by the Regional Partnership Boards (RPB) (an example of which can be found here⁵⁹). The RPBs are regional structures which include membership from health organisations, local authorities and the third sector. Innovation teams within Local Health Boards are linked to Regional Partnership Board structures through Regional Innovation Coordination hubs, funded by the Welsh Government. Again, these have set their own priorities according to local and regional need.

The health and well-being mission is designed to provide an appropriate environment for increased innovation activity, linked to system need, however the specific activity undertaken locally will be determined by each individual organisation, linked to their organisational and regional assessments. The impact of this activity is expected to be positive; interventions should complete appropriate impact assessments, gather relevant data and measure impacts as determined by their focus area.

⁵⁹ <https://pthb.nhs.wales/about-us/key-documents/needs-assessments/population-needs-assessment-2022/>

D. DATA PROTECTION IMPACT ASSESSMENT SCREENING

Innovation Strategy for Wales
Name of Information Asset Owner – Duncan Hamer
PIA reference number A39673085
Please describe your proposal: The Innovation Strategy is a new cross Government strategy setting out the vision for Research, Development and Innovation activity in Wales. In particular how it will support the delivery of our Programme for Government and broader policy commitments. The previous Innovation Strategy was focussed primarily on Business Innovation. No personal data will be collected as a direct result of the strategy. Action plans and resulting programme delivery may result in data collection by Welsh Government. This will require a DPIA at the programme level, where appropriate. Data collected by the wider delivery ecosystem e.g. NHS, Local Authorities will be subject to their impact assessment processes. No new legislation is proposed.
Has data protection impact screening or assessment already been carried out? • No
Does the proposal involve the processing of personal data by Welsh Government or any other parties? • No

For completion by Information Rights Unit

Is a Data Protection Impact Assessment (DPIA) required for this proposal?

- No

No personal data being processed by the Welsh Government.

Has advice on UK General Data Protection Regulation (UK GDPR) compliance been provided?

- No

N/A - No personal data will be collected as a direct result of the strategy.

E. WELSH LANGUAGE IMPACT ASSESSMENT

Welsh Language Impact Assessment reference number: 04/04/2022

Does the proposal demonstrate a clear link with the Welsh Government's strategy for the Welsh language? – *Cymraeg 2050 A million Welsh speakers* and the related Work Programme for 2017-2021?

The Innovation Strategy sets out our vision for where innovation will be used as an enabler to deliver some of our policy commitments. During stakeholder engagement we tested the outcomes we were proposing to deliver through the strategy. Relevant to *Cymraeg 2050* is the "multi-lingual as standard". This aligns with two commitments, where we believe there will be a positive impact:

Under Theme 2 – Increase the range of services offered to Welsh speakers.

Under Theme 3 – Ensure Welsh language is at the heart of innovation in digital technology to enable the use of Welsh in all digital contexts.

Delivery ecosystem stakeholders (public, private, third sectors, academia) have been clear with policy makers that they are looking for a policy framework to enable them to develop local policy. Welsh Language Legislation applies to many ecosystem players already however we have clearly set out our expectations that research, development and innovation activities should be multi-lingual from the outset. We will ensure this by using the levers attached to funding awards (procurement/grant). Developing to enable multi-lingual versions from the outset will deliver wider benefits to commercialisation, particularly in international markets. Usage of the tools set out below to support this commitment are monitored through the delivery and progress reporting of the Welsh Language Technology Action Plan.

Describe and explain the impact of the proposal on the Welsh language and explain how you will address these impacts in order to improve outcomes for the Welsh language. How will the proposal affect Welsh speakers of all ages (both positive and/or adverse effects)? You should note your responses to the following in your answer to this question, along with any other relevant information:

How will the proposal affect the sustainability of Welsh speaking communities⁶⁰ (both positive and/or adverse effects)?

All projects supported by Welsh Government to develop, test or adopt new digital services will be required to do so in a multi-lingual way from the outset. This will ensure any public facing digital products will be available in Welsh.

How will the proposal affect Welsh medium education and Welsh learners of all ages, including adults (both positive and/or adverse effects)?

There will not be a direct impact on Welsh medium education or Welsh learners of this strategy, however innovation will be encouraged from all sectors. Projects may come forward from the education and skills sector, the impacts of which would be assessed at a project level.

How will the proposal affect services⁶¹ available in Welsh (both positive and/or adverse effects)? (e.g. health and social services, transport, housing, digital, youth, infrastructure, environment, local government etc.)

The innovation strategy is focussed on the development and delivery at the cutting edge of service provision across all services in Wales. By requiring developments be bi-lingual from the outset we will ensure that Welsh speakers have the same access to new services as non-Welsh speakers. A bilingual technology toolkit is available to support developments, which will be used to support these requirements in both procurement and grant processes for innovation.

How will you ensure that people know about services that are available in Welsh and are able to access and use them as easily as they can in English? What evidence / data have you used to inform your assessment, including evidence from Welsh speakers or Welsh language interest groups?

Communication of the strategy is being planned out to ensure extensive reach, all materials are being produced bilingually to raise awareness of the vision. Communication of services that will be available multi-lingually as a result of the commitments within the strategy will be the responsibility of lead organisations, departments and projects in line with their duties under the Welsh Language Act.

⁶⁰ These can be close-knit rural communities, dispersed social networks in urban settings, and in virtual communities reaching across geographical spaces.

⁶¹ The Welsh Language Strategy aims to increase the range of services offered to Welsh speakers, and to see an increase in use of Welsh-language services.

How will you know if your policy is a success?

We will be using, and where necessary collecting, data as set out in the logic model attached to the strategy. Where new multi-lingual innovations are developed their impact will be captured also at the policy level in line with broader policy commitments e.g. a bi-lingual digital healthcare service would be measured using the value-based healthcare measures of patient outcome, patient experience and/or resource efficiency.

F. BIODIVERSITY IMPACT ASSESSMENT

Embedding biodiversity

1. How will your proposal integrate biodiversity into decision making?

Since the early stages of designing this strategy, protecting our natural environment, improving water and air quality, as well as allowing room for biodiversity and natural systems to regenerate have all been considered, and discussed as part of stakeholder engagement and consultation. Prior to the strategy development, steps have been taken to ensure all innovation projects supported from Economy budgets have been assessed against the seven wellbeing goals, set out in the Wellbeing of Future Generations Act⁶². In addition, businesses receiving support have been asked to sign up to the Economic Contract, which asks for detail on the positive action and achievements already made and for development pledges in the area of low carbon and climate resilience. In the last round of ERDF funding (from 2014), Welsh Government has supported 13 cross-sector collaborations with £5.9m grant funding against total project costs of £14.3m, and 75 business innovation projects with £3.6m grant funding against total project costs of £7.5m. These projects meet the EU definition of Bio-Economy⁶³, and are focused on the development of new products, processes and services covering the areas of Biodiversity, Decarbonisation and Circular Economy.

We will continue to refine our approach to use the economic contracts and Wellbeing goals, in line with wider commitments, when assessing the applications to our flexible fund which we are committed to developing and delivering within this strategy. We will integrate biodiversity into the decision making on funding awards. We will also consider ways in which we can support projects to measure their impact in terms of resource efficiency, biodiversity and decarbonisation, as well as building this into our wider support offer to all organisations.

2. Has your proposal ensured biodiversity is accounted for in business decisions?

In addition to considering biodiversity in decisions on whether to award support, we will encourage organisations we support to consider biodiversity as part of their own decision making, and measurement of impact. This will require support for some organisations with tools and techniques to help them measure their current, and future, impact on the carbon emissions.

⁶² <https://www.futuregenerations.wales/about-us/future-generations-act/>

⁶³ https://research-and-innovation.ec.europa.eu/research-area/environment/bioeconomy_en#:~:text=The%20bioeconomy%20means%20using%20renewable,circular%20and%20low%2Dcarbon%20economy.

Consideration of biodiversity is already demonstrated with public sector organisations undertaking innovation, who are covered by the goals and ways of working set out in the Wellbeing of Future Generations Act (2015) and the Biodiversity and Resilience of Ecosystems Duty (the Section 6 duty) set out in the Environment (Wales) Act 2016⁶⁴. For example, NHS Wales has a Strategic Delivery Plan for Decarbonisation⁶⁵ which must be considered, alongside innovation and adoption of digital solutions, as part of the annual strategic planning process.

3. How does your proposal improve understanding and raise awareness of the importance of biodiversity, encouraging others to act?

Welsh Government currently offers businesses access to high quality consultancy support, through the SMART Digital Accelerator and SMART Productivity and Design. These offer organisations, that engage, up to 8 days of consultancy support to diagnose opportunities for efficiencies, as well as support to implement solutions. While this consultancy support is not restricted to improving understanding and taking action around biodiversity, it can support organisations to take positive actions in this regard. Often organisations are facing challenges such as high energy consumption from ageing machinery or processes.

Currently under consideration is how this offer could potentially be expanded to support the implementation of programmes such as the Decarbonisation loans from the Development Bank of Wales⁶⁶. It is envisaged the offer will provide advice and guidance on the investment areas to reduce carbon emissions, including how this will impact costs such as energy consumption.

Improving our evidence, understanding and monitoring

4. Have you used the best available evidence of biodiversity to inform your proposal and this assessment?

Yes. The strategy has been developed in a cross-Government way with expert input on the missions from all relevant policy areas, including those leading on all areas of climate and nature policy and delivery, as well as Natural Resources Wales. The strategy makes reference to Environment (Wales) Act 2016⁶⁷, and contains a number of areas where innovation can have an impact such as Circular Economy and Energy Efficiency.

⁶⁴ <https://www.gov.wales/section-6-biodiversity-and-resilience-ecosystems-duty-reporting-guidance>

⁶⁵ <https://www.gov.wales/sites/default/files/publications/2021-03/nhs-wales-decarbonisation-strategic-delivery-plan.pdf>

⁶⁶ <https://www.gov.wales/development-bank-wales-offer-net-zero-incentive>

⁶⁷ <https://www.gov.wales/environment-wales-act-2016-overview>

The food, energy and transport systems, as set out in the State of Natural Resources Report⁶⁸ are areas where innovation has the potential for impact, with food, decarbonisation and materials and manufacturing deemed as strength and priority for Wales RD&I system. We will take action, invest, and stimulate investment from wider sources in this area, with robust measurement of impact linked to our actions to understand where impact is delivered and where further intervention is needed.

5. Have you used up to date knowledge of the key impacts on biodiversity to make evidence-based decisions?

Yes. The strategy has been developed with input and support from Natural Resources Wales colleagues. We will be measuring progress against the following, which will be featured in NRW's new corporate plan and are also their well-being objectives to 2030:

- How nature is recovering (tackling the nature emergency)
- How resilient communities are to climate change (tackling the climate emergency)
- How harmful pollution is being prevented (reduction in levels of pollution and incidents)

By measuring progress against the above, we will ensure we are making a positive impact on biodiversity also allowing us to better understand the role that nature plays in our lives and well-being.

The Nature Recovery Action Plan for Wales, 2021⁶⁹, has also considered the evidence around the scale of the loss of biodiversity, and set key objectives and actions needed to reverse the decline of biodiversity. Five immediate priorities have been identified which will be reviewed and monitored:

- Aligning the responses to the climate emergency with the biodiversity crisis
- Addressing the post-EU funding gap for agri-environment measures
- Providing spatial direction for targeting action for biodiversity
- Improving the condition of the Protected Sites Network
- Exploring new and sustainable funding mechanisms for biodiversity action

6. Can your proposal contribute to our body of knowledge for biodiversity?

The strategy commits Welsh Government to measuring the impact of Innovation across all mission areas. We have developed a logic model detailing areas where we will be using existing datasets to determine impact, where there are no datasets, we will be taking steps to best collect data at an intervention level. For example, we have made a specific

⁶⁸ <https://cdn.cyfoethnaturiol.cymru/media/695923/sonarr2020-executive-summary.pdf>

⁶⁹ <https://www.gov.wales/nature-recovery-action-plan>

commitment to identify the most appropriate carbon calculator to support organisations to understand carbon emissions pre and post intervention. Further detail on specific actions, and impact measurement, will be made available as part of an action plan to be developed after the launch of the strategy, we will work with relevant experts to inform this. Evaluations will be published at years 3 and 5 post publication.

Governance and support for delivery of biodiversity action

7. Can your proposal support biodiversity action in any way?

The innovation strategy makes commitment to invest in activity which drives impact for citizens in Wales. This includes several financial offers to organisations to share risk and investment through grant and loan funding. Previous innovation activity has been targeted towards specific goals and challenges, Welsh Government has run specific calls to industry to develop products, processes and solutions to support decarbonisation with grant funding⁷⁰, and using procurement mechanisms, such as SBRI. These include SBRI the safe disposal of gases used in the health sector⁷¹, and protect our rivers and water courses by developing a way of containing animals to keep them from entering the water and contaminating it. We will seek our further opportunities to hold specific calls, while also embedding biodiversity into our financial support for wider projects.

8. Can your proposal help to build capacity for biodiversity action?

The strategy does not make specific commitments to support skills and training on biodiversity, but we expect there to be some impact in terms of understanding by organisations undertaking innovation. We will drive this by embedding nature-based solutions in our initiatives and supporting organisations to understand and measure their impact e.g. in the first instance we have committed to identifying an appropriate carbon calculator.

9. Have you recorded decisions and actions to maintain and enhance biodiversity?

The strategy commits to developing an action plan for publication, as well as refining an approach to measuring impact. This will consider how we can best use existing data sets and detail where new data needs to be collected (at the intervention and project levels). We are committed to publishing evaluation reports, at years 3 and 5 post publication, which will detail where impact has been delivered.

⁷⁰ <https://businesswales.gov.wales/news-and-blogs/news/funding-available-your-innovative-decarbonisation-ideas>

⁷¹ <https://sbriwales.co.uk/competition/safe-and-ethical-disposal-of-nitrous-oxide-and-entonox-medical-gases/>

G. SOCIO-ECONOMIC DUTY ASSESSMENT

What evidence has been considered to understand how the proposal impacts inequalities of outcome experience resulting from socio-economic disadvantage?

People and Communities

Early research on the impact of Covid showed that one in five workers in Wales are employed in sectors that were shut down during the outbreak⁷², disproportionately affecting women, young people, and employees from a Black, Asian and Minority Ethnic background⁷³. As the most disadvantaged groups within the workplace are the ones most likely to be impacted, the achievement of equality of outcomes for a policy has become even more challenging.

Whilst there may be opportunities in the future - such as those associated with increased remote working - the wider challenges of increasing levels of digitalisation and automation will impact these groupings. Further, longer-term changes in the post-Covid labour market, may lead to falls in the number of people employed and the number and quality of job vacancies on offer.

To ensure our communities can respond to these challenges, our innovation interventions need to reflect this inequality and target interventions likely to benefit those most at risk, whether by geography, industrial sector or protected status.

Education and Skills

The longer-term trend is that of increasing qualification levels amongst working age adults in Wales. Despite this, data published in April 2022⁷⁴ showed that, the proportion of working age adults with no qualifications increased in Wales in 2021 while the proportion of working age adults holding level 2 qualifications decreased. The proportion of working age adults holding at least level 3 or level 4 or above qualifications increased slightly in 2021. An estimated 8.1% of working age adults in Wales reported having no qualifications compared with 7.4% in 2020. 80.1% of working age adults in Wales held at least level 2 qualifications compared with 80.9% in 2020. 62.5% of working age adults in Wales held at least level 3 qualifications compared with 62.2% in 2020. The proportion holding higher

⁷² <http://www.learningandwork.wales/wp-content/uploads/2020/04/Understanding-the-potential-impact-of-coronavirus-in-Wales.pdf>

⁷³ <https://gov.wales/coronavirus-and-employment-analysis-protected-characteristics-html>

⁷⁴ <https://www.gov.wales/levels-highest-qualification-held-working-age-adults-2021-html>

education or equivalent level qualifications (NQF level 4 or above) was 41.6% compared with 41.1% in 2020.

People with higher level qualifications and skills are more likely to be in sustained employment, with larger earning and wage gains. However, disparities exist across Wales and more can be done to grow our higher-level skills base and tackle disadvantage by reducing the proportion of adults without qualifications.

A higher percentage of adults in more deprived areas of Wales have no qualifications. There is considerable variation at local authority level. In 2021⁷⁵, the proportion of working age adults with no qualifications was highest in Merthyr Tydfil (20.1%) and Blaenau Gwent (15.3%) and lowest in Ceredigion (2.8%) and Monmouthshire (3.0%). These percentages compare to a national average of 8.1%.

Level 3 (the equivalent to A-Level) is the gateway to high-skilled jobs and higher education; it is the level at which trade professionals can take on high level technical roles, with the theoretical and applied knowledge to embrace innovation and add value to employers. Research shows that the productivity returns for individuals qualified to Level 3 are much higher than those qualified to Level 2.

Labour market disadvantage

Breaking the links between poverty, long term unemployment and disability can significantly improve outcomes for some of the poorest people in Wales. Although a large proportion of disabled people would like to work, they are much less likely to be in employment than non-disabled men and women, making them particularly vulnerable to poverty. Covid has exacerbated these inequalities with the most vulnerable being hardest hit in terms of economic outcomes and impacts on health and well-being.

Inequalities prevail for protected groups with shared characteristics who are significantly underrepresented in the labour market.

For example, further disaggregated data from the Annual Population Survey shows that in the year ending September 2022⁷⁶:

- The employment rate for people of a Black, Asian and minority ethnic background in Wales was approximately 67.2% compared to 73.8% for people of a White background.
- The employment rate for females in Wales was approximately 70.6%, compared to 76.3% for males and 73.4% for all those aged 16-64.

⁷⁵ <https://www.gov.wales/levels-highest-qualification-held-working-age-adults-2021.html>

⁷⁶ [annual population survey - Nomis - Official Census and Labour Market Statistics \(nomisweb.co.uk\)](https://www.nomisweb.co.uk/annual-population-survey)

- The employment rate for disabled people in Wales was approximately 48.7%, compared with 82.1% for non-disabled people. This gap has generally decreased since 2014, though has seen a small increase since the start of the pandemic⁷⁷.

Of those who were classed as economically inactive in the year ending September 2022, 7.1% were inactive due to long-term sickness and wanted a job. This proportion has generally decreased from a peak of 9.5% in 2015-16.

Note: Employment rates and economic inactivity rates provided are for those aged 16-64.

Job Automation

Businesses are increasingly adopting digitalisation and new technologies in their work processes. In the near future, the adoption of encryption and cyber security technologies is projected to increase by 29% and cloud computing by 17%.⁷⁸

There is a trend in the UK towards increasing provision of remote working opportunities.⁷⁹ But this trend varies significantly from individual industry and job role – those in customer facing, skilled trade roles are less likely to work remotely, whereas public administration and managerial roles are the most flexible. Amongst younger workers, inactivity appears to have fallen amongst women but risen amongst men, with the balance in part reflecting the effects of increased home working.

The trend to further automation of work is likely to continue with technology substituting for labour in existing workplaces and working practices and generating innovative new and improved products, and services.⁸⁰ It is estimated that around 6.5% of jobs in Wales have a 'high potential for automation', a figure slightly above the UK average of 6.2%.⁸¹ There is evidence that 'low-skilled' roles involving routine and repetitive tasks are at greatest risk of automation, while 'high skilled' roles involving varied and complex tasks are less likely to

⁷⁷ This is using the Equality Act 2010 definition of disability - a physical or mental impairment that has a substantial and long-term negative effect on your ability to do normal daily activities.

⁷⁸ https://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf

⁷⁹ <https://www.resolutionfoundation.org/publications/doing-what-it-takes>

⁸⁰ <https://gov.wales/sites/default/files/publications/2019-09/delivering-economic-transformation-for-a-better-future-of-work.pdf>

⁸¹ <https://www.ippr.org/files/2020-01/shaping-the-future-wales-feb20.pdf>

be automated.⁸² Younger people and women are more likely to be at risk of having their job automated.⁸³

Poverty

Approximately one fifth of the Welsh population live in relative income poverty (measured after housing costs).⁸⁴ However, levels of relative income poverty across Wales have gradually reduced since the mid-1990s.⁸⁵ Living with a person who has a disability makes relative income poverty more likely in a Welsh household. In the latest reliable period (2017-18 to 2019-20), 28% of people who lived in a family where there was someone with a disability were in relative income poverty compared with 20% of those in families where no-one was disabled.⁸⁶

However, the pre-pandemic relative income poverty levels in Wales were higher than in other UK nations and have been for some time. An estimated 23% of all people in Wales lived in relative income poverty between 2017/18 and 2019/20, the latest reliable figures. The average UK relative income poverty rate is 22% for the same period, which is also the rate for England. The rates in Scotland and Northern Ireland are slightly lower at 19% and 18% respectively.

The percentages of working age adults and pensioners living in relative poverty were higher in Wales compared to the rest of the UK for the period 2017/18 to 2019/20 and child poverty levels were slightly higher in Wales than England: England's child poverty rate is 30 % and Wales' is 31 %. Wales also has one of the highest rates of people-in-work poverty at 14% (only second to London at 17%)⁸⁷. The in-work poverty rate for single parents in 2016/17-2018/19 was 27%⁸⁸, almost double the national average.

People whose head of household comes from a non-white ethnic group are also more likely to live in relative income poverty in Wales, but the overall percentage has decreased

⁸²<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/whichoccupationsareathighestriskofbeingautomated/2019-03-25>

⁸³<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/articles/theprobabilityofautomationinengland/2011and2017>: Office for National Statistics.

⁸⁴ <https://gov.wales/sites/default/files/publications/2020-12/chief-economists-report-2020.pdf>

⁸⁵ <https://statswales.gov.wales/Catalogue/Community-Safety-and-Social-Inclusion/Poverty/householdbelowaverageincome-by-year>

⁸⁶ <https://statswales.gov.wales/Catalogue/Community-Safety-and-Social-Inclusion/Poverty/peopleinrelativeincomepoverty-by-whethereisdisabilitywithinthefamily>

⁸⁷ <https://www.jrf.org.uk/report/poverty-wales-2020>

⁸⁸ <https://www.jrf.org.uk/report/poverty-wales-2020>

from 2014-15 levels.⁸⁹ While non-working households continue to be at greatest risk of poverty, the share of poor people living in working households has increased over recent years as employment levels have increased.⁹⁰

Health Inequalities

There are significant historical health inequalities affecting the lives of people. Since the 1970s, multiple reports have highlighted the extent and effects of these in the UK and in Wales.⁹¹ There are significant differences in 'healthy' life expectancy between the most and least deprived. Analysis (based on 2018-2020 data) shows that the gap in life expectancy between the most and least deprived areas was 7.5 years for men and 6.3 years for women.⁹² However, the gap in healthy life expectancy between the most and least deprived was even greater, at 13.4 years for men and 16.9 years for women. Health inequalities can be deepened by factors such as mental health problems, homelessness, and an inability to access healthcare.

How could the proposal potentially further exacerbate inequality of outcome experienced as a result of socio-economic disadvantage?

In terms of digitisation, some of the most vulnerable groups in society are at risk of being left behind⁹³:

- **Older adults:** There is a higher proportion of digitally excluded people in older age groups. Only 41% of people over 75 have basic digital skills, compared with 87% of 16–49-year-olds.
- **People with disabilities or long-term health conditions:** 89% of people with a disability or long-term health condition use the internet, compared with 93% of those without.
- **Those with lower educational attainment:** 93% of those with qualifications at degree level or above demonstrated all five digital skills compared with 51% of those with no qualifications.

⁸⁹ <https://statswales.gov.wales/Catalogue/Community-Safety-and-Social-Inclusion/Poverty/peopleinrelativeincomepoverty-by-ethnicgroupoftheheadofhousehold>

⁹⁰ <https://statswales.gov.wales/Catalogue/Community-Safety-and-Social-Inclusion/Poverty/workingageadultsinrelativeincomepoverty-by-economicstatusofhousehold>

⁹¹ <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/datasets/healthstatelifeexpectancyallagesuk>

⁹²

<https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthinequalities/datasets/healthstatelifeexpectanciesbydeprivationquintileswales>

⁹³ <https://www.digitalcommunities.gov.wales/digital-inclusion-in-wales-2/>

- **Lower income individuals and families:** Those who are economically inactive are less likely to visit a website (71%) than those in employment (82%).
- **People in rural areas:** Due to problems in broadband provision for fixed line and mobile broadband services.
- **Welsh speaking people and others who do not use English as their first language:** Digital systems need to be designed to accommodate Welsh speakers and minority languages.

The influence of technology on the future of work is potentially controversial. There is considerable uncertainty about what digital innovation means for people's livelihoods and those of future generations. These concerns around automation and Artificial Intelligence (AI) can be presented as a threat to jobs and personal privacy.

Up to half of jobs could be automated in developed economies within the next 10-20 years reflect concerns about the impact of new technologies on jobs. Technologies are increasingly used as a substitute for human labour. There is also a possibility that the fourth industrial revolution, driven by AI, automation, Internet of Things (IoT), robotics and big data will follow previous industrial revolutions, where a period of upheaval is followed by economic growth, better job opportunities and higher wages.

The most likely scenario is that over the next decade, digital technologies will result in both job displacement and creation and have an impact on how we all experience work. Digital technologies can be used to augment skills and improve job quality, but they can also be used to deskill and eliminate jobs⁹⁴.

The new technologies will not automatically resolve longstanding problems of job quality, low wages or labour market inequalities. These issues are critical when considering the future of work in Wales and our ambition to become a Fair Work nation.

Better quality jobs can improve economic prosperity, but many working people may not feel the benefits. There may well not be enough well-paid jobs for those who want them.

How could the decision potentially improve outcomes for those who experience socio-economic disadvantage?

⁹⁴ <https://www.gov.wales/sites/default/files/publications/2019-09/delivering-economic-transformation-for-a-better-future-of-work.pdf>

Programme for Government⁹⁵ Alignment

After extensive stakeholder engagement, this Strategy offers a new integrated, cross-government approach to guide our actions - government, businesses, third sector, academia, research organisations, citizens - to deliver impact on the priorities of the Programme for Government:

- A stronger and more resilient economy.
- Effective and sustainable healthcare.
- Better services for vulnerable people.
- Higher educational standards, particularly in tertiary education and research.
- Respond to the climate and nature emergency in everything we do.

Skills and Employability

Wales' skills and employability⁹⁶ priorities underpin the Strategy to enable the prosperity it generates to be shared by all. These include:

- A Young Person's Guarantee - giving everyone under 25 the offer of work, education, training, or self-employment.
- Tackling economic inequality - a focus on improving labour market outcomes for Black, Asian, and Minority Ethnic communities, women, disabled people and those with low skills.
- Promoting Fair Work - encouraging employers to make work better, fairer and more secure; promoting the role of trade unions; empowering responsible businesses; improving the quality of employment; increasing workforce diversity; and enhancing physical and mental health.
- Supporting people with a long-term health condition to work - by preventing people falling out of employment through health prevention, early intervention, healthy workplaces and optimising the role of NHS Wales as an anchor employer.
- Raising skill and qualification levels, and the mobility of the workforce - by expanding the system of flexible and personal learning to develop adaptable skills to increase workforce resilience, and for everyone who needs help to progress, improve their skills, find work, or retrain.

⁹⁵ <https://www.gov.wales/programme-government>

⁹⁶ <https://www.gov.wales/stronger-fairer-greener-wales-plan-employability-and-skills-summary-html>

Regional Skills Partnerships (RSPs) are central to understanding the employment and skills needs of the future. They collate labour market intelligence from employers, providing an evidence base which will help inform decision making focused on enabling change, to meet an evolving economy because of innovation and other drivers such as Net Zero Wales by 2050.

Digitisation

The Digital Strategy for Wales⁹⁷, published in 2021, sets a clear vision and ambition for a coordinated digital approach across sectors in Wales. It outlines how we will use digital and data to improve the lives of people in Wales across six Mission areas – public services, inclusion, skills, economy, connectivity, and data.

The Digital Strategy's ambitions for the economy, skills and data missions closely align with the ambitions for innovation. Our aim is to ensure that people, businesses, and public services in Wales have the skills and confidence to embrace the opportunities that digital technologies and innovations can offer.

This will ensure that Wales can retain new talent, stand out in global competition for new markets and industries, and foster a culture of innovation and collaboration - using the potential of data, artificial intelligence (AI) and the Internet of Things (IoT) to benefit all of our people. To this end, we are supporting the Wales Data Nation Accelerator⁹⁸ (Wales DNA) project, a pan-Wales initiative led by 4 of Wales biggest universities. It aims to promote economic and social transformation through support for innovation in data and Artificial Intelligence (AI). Its approach is focussed on raising skills, collaboration and critical mass, positioning Wales for long term success through data science and AI.

We will work alongside public, private and third sectors to champion the use of data-driven innovation, data science and new sources of data.

We will continue to work with our partners in academia to consider how best we can continue to support the on-going Wales DNA proposal, including how we might leverage and maximise all potential sources of funding to progress our data and AI ambitions. We will seek to leverage the wider targeted benefits of the UKG's AI Strategy⁹⁹ and its related Action Plan. Wherever technology such as AI is used, we will ensure it is done so in an ethical, responsible and inclusive way, aligned to the underlying principles of the Digital Strategy for Wales.

⁹⁷ https://www.gov.wales/digital-strategy-wales?_ga=2.92380958.201582099.1674453777-1858760437.1656930121

⁹⁸ <https://dnawales.cf.ac.uk/about/>

⁹⁹ <https://www.gov.uk/government/publications/national-ai-strategy>

APPENDIX A. Welsh Health Impact Assessment Support Unit (WHIASU) Screening Tool

Screening Question	Response
<p>Whether the proposal is likely to impact on health?</p>	<p>The health and well-being mission of the Innovation strategy for Wales is designed to drive improvements in the wider environment for health and care innovation in Wales and will be targeted at improving healthcare value (patient outcomes, patient experience and resource efficiency) for the people of Wales.</p> <p>With this in mind, the innovation strategy will ultimately secure mostly positive impacts on health and care, based on applying new and different ways of working and embedding these where they can demonstrate improvements to the previous ways of working.</p>
<p>Which sections of the population, particularly vulnerable groups, are likely to be affected (e.g. by age, discrimination, social disadvantage, income, geographical location)</p>	<p>The innovation strategy is focused on improving the conditions and environment for health and care innovation right across the health and care system in Wales, so is unlikely to affect vulnerable groups over others.</p>
<p>The possible scale of the impacts and whether these are likely to be positive or negative.</p>	<p>Reflecting on the significant evidence base we have developed, the new demands and requirements of the innovation ecosystem, the learning gained from Covid-19 and the urgent need to embed innovation within system recovery priorities, Wales now has a strong policy rationale for a new development phase of the health and care innovation ecosystem in Wales.</p> <p>The scale of these impacts on the health and care innovation ecosystem will be positive.</p>

	<p>Key themes that will support positive impacts to the health and care innovation ecosystem in Wales:</p> <ul style="list-style-type: none"> • We need to bring greater coherency and alignment to our existing health and care innovation infrastructure. This will enable health and care organisations to generate innovation ‘pull’ based on areas of need. This provides a platform to collaborate with the external innovation environment, to provide more relevant innovation ‘push’ based solutions. • More strategic leadership for innovation is required, with a consistent message to support innovation at all levels, to drive a more supportive culture for innovation across the ecosystem. • We must better support Innovation adoption and scale across the system, by creating the appropriate supporting infrastructure, which can share and support the uptake of good practice, through a range of local and national networks. • A more strategic approach to innovation funding is required; to maximise the existing funding envelope, realign funding to a new innovation ecosystem direction and support income generation from innovation activity. • To embed new ways of working across pandemic recovery and system priorities, we must build capacity for innovation at all levels of the workforce and system. • To increase the impact and reach of innovation, we must integrate innovation approaches through other policy areas and delivery mechanisms. <p>Encouragingly, these themes of focus align well with the European Union’s five key action areas: Innovation Ecosystems, Better Innovation Policy Making, Talent, Access to funding and Regulation. These areas are outlined in their upcoming New European Innovation Agenda¹⁰⁰ policy document, which was adopted in summer 2022.</p>
<p>Whether a desktop, rapid or comprehensive HIA is needed.</p>	<p>The WHIASU screening questions determine that a Rapid HIA is required. Innovation interventions at the NHS and local authority level will be required to undertake their own equality impact assessments.</p>

¹⁰⁰ https://research-and-innovation.ec.europa.eu/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/new-european-innovation-agenda_en

	<p>This IIA has taken more than 18 months to develop and has included the establishment of a broad internal working group, a broad range of specialist presentations to specialist audiences, and a range of both public and expert stakeholder workshops.</p>
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	<p>We have undertaken an investigation of health impacts, a broad literature review of quantitative and qualitative evidence and the gathered knowledge and evidence from a number of local and national stakeholders.</p>
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APPENDIX B. HEALTH AND CARE EVIDENCE BASE AND ENGAGEMENT WORK

This evidence includes three separate academic studies, commissioned by the Welsh Government and undertaken by Cardiff Business School and Swansea University's School of Management. These studies canvass the views of key opinion leaders on the requirements of the innovation ecosystem and a huge range of lessons learned from the COVID-19 response, which highlight the urgent need to embed innovation within recovery priorities. An independent report on how Wales can 'Realise value from Innovation' was commissioned and produced by consultants Grant Thornton.

This evidence base also includes detailed submissions from NHS Wales organisations, Social Care Wales, and a wide range innovation ecosystem delivery agents, from our HSS Innovation Technology and Partnerships programme.

Evidence used:

- 2021 The NHS Wales COVID-19 Innovation and Transformation Study Report | NHS Confederation¹⁰¹.
- 2017 and 2021 Reviews of the Efficiency through Technology (ETT) Programme¹⁰²
- Cardiff Business School study: The healthcare innovation landscape in Wales – 30 structured stakeholder interviews with key opinion leaders across the sector (2022 not published).
- 15 evidence submissions received from each NHS Wales organisation / Social Care Wales / Bevan commission / Health Technology Wales (2022).
- Grant Thornton report – 'Realising Value from Innovation' (2022 not published).
- Research, Improvement, Innovation Coordination Hub mapping reports from Cwm Taf Morgannwg, West Wales and North Wales.
- University Health Board / Trust designation reviews 2022.

¹⁰¹ <https://www.nhsconfed.org/publications/nhs-wales-covid-19-innovation-and-transformation-study-report>

¹⁰² <https://www.gov.wales/sites/default/files/statistics-and-research/2019-07/170830-review-efficiency-through-technology-programme-en.pdf>

APPENDIX C. INNOVATION METRICS

UK Innovation Survey, 2021

For individual businesses, the development of new products, processes and services is key to establishing a sustainable competitive advantage and increasing productivity.

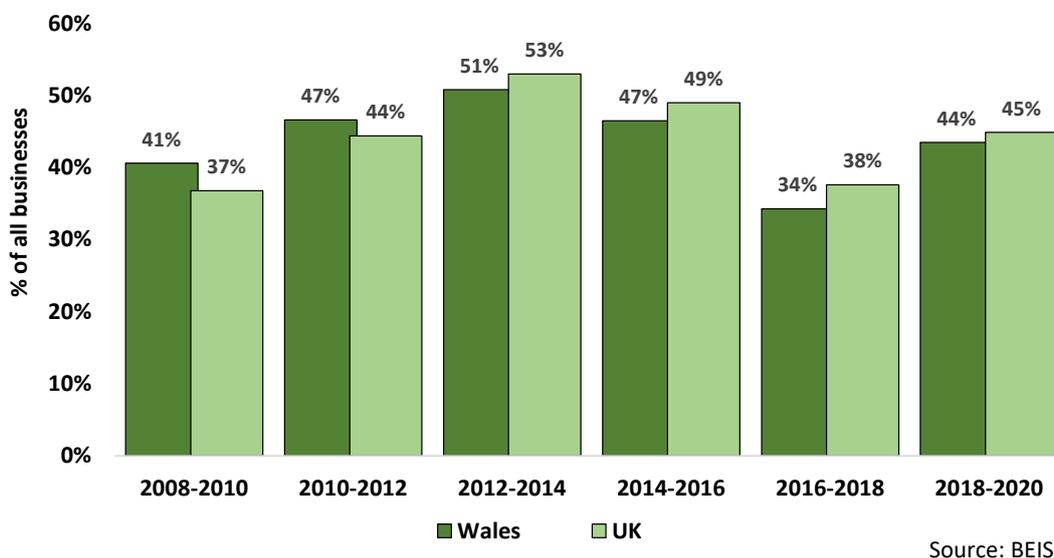
The UK Innovation Survey (UKIS)¹⁰³ is the main data source for business innovation in the UK. The latest report, released in 2022, covers the three-year period from 2018 to 2020 and has information for the UK countries and English regions. A consistent time series back to the 2008-10 survey is also available.

Although there are a large number of metrics tracked by the UKIS, the headline measure is the proportion of innovation active businesses.

Main points

- In 2018-20, 44% of Welsh businesses were innovation active. This is less than the figure for England (46%) but is higher than both Scotland (39%) and Northern Ireland (38%).
- The proportion of Welsh innovation active businesses has fallen from 51% in 2012-14.
- In 2018-20, Wales ranked fifth lowest of the 12 UK countries and English regions in terms of the proportion of innovation active businesses.

Innovation Active Businesses, Wales and UK - 2008-10 to 2018-20



¹⁰³ <https://www.gov.uk/government/collections/uk-innovation-survey>

Potential Issues

- There is a large time lag between survey and publication dates. The 2021 UKIS, providing data from 2018-2020, was published in May 2022, a 17-month time lag.
- As the data comes from a survey, the results are sample-based estimates and therefore subject to differing degrees of sampling variability i.e. the true value lies in a differing range about the estimated value¹⁰⁴.
- The UKIS is only carried out every two years.
- The UKIS covers enterprises with 10 or more employees in sections C-K of the Standard Industrial Classification (SIC) 2007. The survey therefore excludes the following sectors: agriculture, forestry & fishing, mining & quarrying, real estate activities, professional, scientific & technical activities, business administration & support activities, public administration, health, defence & education and arts, education & recreation.

Research and Development Expenditure¹⁰⁵

Despite not capturing all forms of innovation, especially those within creative and service industries, research and development activity can be measured with Business Enterprise Research and Development (BERD) data.

Total expenditure on research and development is broken down into four sub categories: higher education bodies, business enterprise (BERD), Government and Research Council and private non-profit bodies.

Main points - Total R&D, 2020¹⁰⁶

- An estimated total of £1.5 billion was spent on R&D in 2020 in Wales; this was a decrease of £41 million (2.6%) compared with 2019.
- This decrease was largely a result of a fall in higher education R&D, down by £78 million (15.3%) over the year.
- R&D expenditure in Wales represented 2.4% of total UK R&D expenditure.
- Business enterprise R&D accounted for 69.9% of the total R&D expenditure in Wales, with higher education R&D accounting for 28.5%, and government R&D making up 1.6%.
- In 2022 ONS made methodological changes to the way expenditure data is calculated. The new analysis does not include R&D as a percentage of GDP.

¹⁰⁴ In the 2021 UKIS, 857 businesses in Wales responded (6% of the total number of UK businesses responses).

¹⁰⁵ <https://stats.wales.gov.wales/Catalogue/Business-Economy-and-Labour-Market/Businesses/Research-and-Development/latestresearchanddevelopmentexpenditure-by-area-expendituretype>

¹⁰⁶ <https://www.gov.wales/research-and-development-gross-expenditure-2020>

Main points - BERD, 2021¹⁰⁷

- In 2021, business expenditure on research and development (BERD) for Wales was £1.2 billion, up 9.6% on the figure for 2020 and representing 2.5% of the UK total. (Changes to the methodology, by the Office for National Statistics (ONS) means that the time series goes back to 2018 only)
- The 9.6% increase was the second highest increase of the 4 UK countries.
- For the UK, business expenditure on research and development increased by 6.7%.

Potential Issues

- In a small region such as Wales, the level of R&D expenditure can be influenced greatly by a small number of major projects commencing or ending, meaning the time series can be quite volatile and so a longer-term perspective is recommended.
- Non-BERD subcategories of R&D expenditure are not released at the same time as BERD data. 2021 BERD statistics were published in November 2022, with higher education, Government and private non-profit bodies (and therefore total R&D expenditure) for 2021 not due for release until the latter half of 2023.
- There is a relatively large time lag between the reference year and data release, for non-BERD data. While 2021 BERD had an 11-month time lag (data released in November 2022), other components of R&D and total R&D expenditure data for 2020 had a 23-month time lag (data released in November 2022)¹⁰⁸.
- Total expenditure is the measure used by the majority of commentators on R&D for international comparisons. It covers all R&D performed in the UK, irrespective of who pays for it, including funding from overseas. However, it excludes R&D performed overseas even if it is funded from the UK.
- While R&D data for government, higher education and public non-profit subcategories are compiled from a census of departments, educational institutions and organisations, BERD is compiled from survey returns. Therefore, BERD results are sample-based estimates and therefore subject to differing degrees of sampling variability i.e. the true value lies in a differing range about the estimated value.

Note - Productivity Definitions

Productivity usually refers to labour productivity and is calculated by dividing output (Gross Value Added or GVA) by a measure of labour input. Output divided by total hours worked or GVA per hour is generally considered the 'best' measure of the efficiency of a workforce. Therefore, productivity in this note has been defined as GVA per hour.

¹⁰⁷ <https://www.gov.wales/research-and-development-business-enterprise-expenditure-2021>

¹⁰⁸ This time lag was longer than is usually the case due to the effects of COVID-19 on ONS outputs.

A valid alternative measure of productivity is GVA per job filled (which divides the total output of an area by the number of jobs in that area) and is usually presented alongside GVA per hour in ONS publications. However, while GVA per hour accounts for different working hours and how those differ across regions and countries, GVA per job filled does not.

Both GVA per hour and per job filled are in turn better measures of labour productivity than GVA or GDP per head, which includes people not in the workforce (principally children and the retired) and can also be heavily biased by commuting flows.

Responses to Innovation Strategy consultation and engagement activity for the 9 protected characteristics.

Of those that chose to indicate a **gender**, 38% identified as female, while 46% identified as male, the rest preferring not to provide an answer. These figures compare to 2021 population estimates of 51% female and 48.94% male. (Direct responses to the consultation have been received from groups representing women such as Fair Treatment for the Women of Wales¹⁰⁹.)

With regards to **transgender and non-binary people**, just under 1% of our total respondents (0.64%) identified as either and over 16% preferred not to respond. There are no official census data to compare our figures with, but the Government Equalities Office estimates between 0.29 and 0.74% of the population shares this gender identity¹¹⁰.

Similarly, there are no official figures on **pregnancy** in the general population. Just under 2% of our responses said they were pregnant at the time of completing the online form/ attending a consultation event, around 17% choosing not to disclose this information.

In terms of **age**, only 3.3% of our responses were aged below 29, compared to the estimated 39.2% of the wider population. However, we did engage with Co-production Network for Wales and Children in Wales directly to run engagement sessions with young people and have received responses to the consultation from bodies representing young people, such as Colleges Wales and Ambition North Wales. People above 65 were also underrepresented at 8.5%, compared to 21.3% of the Welsh population falling into this category however again we received direct responses from bodies representing this group. Contrastingly, 46.6% of our respondents were aged 45-64 (compared to 26.6% figure for Wales), and 26% aged 30-44 (compared to 17.94%).

Regarding **national identity**, the only available data covers the percentages that identify as Welsh or not (nothing regarding British/ English/ Northern Irish). Thus, the figure given (62.7%) may not be representative for our data (16%).

For **ethnicity** the figure for 'Black, Asian and minority ethnic' is 4.9%, and the figure from our responses is 5.19%.

Sexual orientation- mostly similar figures: 1.94% of respondents identified as bisexual (compared to 1%); 1.3% gay (compared to 1.9%); 2.6% other (1% in census data).

¹⁰⁹ <https://www.ftww.org.uk/>

¹¹⁰ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/721642/GEO-LGBT-factsheet.pdf

The largest disparities are over **religion**, with 26% of our respondents saying they are Christian (46% in Wales), 0.7% Muslim (1.7% in Wales), 21% No religion or belief (50% in Wales), as well as 1.3% stating 'other religion' (2.4% in Wales).

Disability figures only cover the working age population, indicating 22% of the people in this group is disabled. Only 1.30% of the respondents to the Innovation Strategy consultation stated they are disabled. However, groups such as Learning Disability Wales and Royal College of Psychiatrists Wales did provide responses.

Nr.	Protected Characteristic	Categories	Consultation Responses (Online form + Event Management) %	Census Figures for Wales %
	Gender	Female	37.66	51.05 ¹¹¹
		Male	46.10	48.94
		Other	3.03	
		Prefer not to say	7.14	
		No response	7.79	
	Trans / Non-binary	No	83.11	
		Yes	0.64	
		Prefer not to say	7.79	
		No response	8.44	
	Pregnant	Yes	1.94	
		No	81.16	
		Prefer not to say	8.44	
		No Response	8.44	
	Age	<29	-	33,21
		25-29	3.24	6
		30-34	5.84	6.31
		35-39	10.38	5.99
		40-44	9.74	5.64
		45-49	12.33	5.98
		50-54	16.88	6.94
		55-59	12.82	7.16
		60-64	4.54	6.42
		65+	8.44	21.3
		Prefer not to say	8.44	
	No Response	7.14		
	National Identity	British or Mixed British	70.12	
		English	1.29	
		Northern Irish	0.64	

¹¹¹ <https://statswales.gov.wales/Catalogue/Census/2021/usualresidentpopulation-by-sex-localauthority>

		Welsh	15.58	62.7 ¹¹²
		Other National Identity	0.64	
		Prefer Not to say	5.19	
		No response	6.49	
	Ethnicity	Asian / Asian Welsh or Asian British - Any other Asian background	1.29	
		Asian / Asian Welsh or Asian British – Chinese	0.64	
		Mixed, multiple ethnic groups - Any other mixed background	0.64	
		Mixed, multiple ethnic groups - White and Asian	0.64	
		White – Irish	1.94	
		White - Other white background	4.54	
		White - Welsh, English, Scottish, Northern Irish, British	71.42	
		Other ethnic group - Any other ethnic group	1.94	
		TOTAL Black, Asian and minority ethnic	5.19	4.9 ¹¹³
		Prefer not to say	9.09	
		No response	7.79	
	Sexual Orientation	Bisexual	1.94	1.0 ¹¹⁴
		Gay man	0.64	1.9
		Gay woman	0.64	
		Heterosexual, straight	74.02	
		Other	2.59	1.0
		Prefer not to say	12.33	
		No Response	7.79	
	Religion	Agnostic	10.38	
		Atheist	14.93	
		Buddhist	0.64	
		Christian	25.97	45.82 ¹¹⁵
		Hindu	0.64	
		Humanism	0.64	
		Muslim	0.64	1.68
		Paganism	0.64	
		Tao	0.64	
		No religion or belief	20.77	49.88
		Other religion	1.29	2.4
		Prefer not to say	14.93	
		No response	7.79	

¹¹² <https://statswales.gov.wales/Catalogue/Equality-and-Diversity/National-Identity/nationalidentity-by-year-identity>

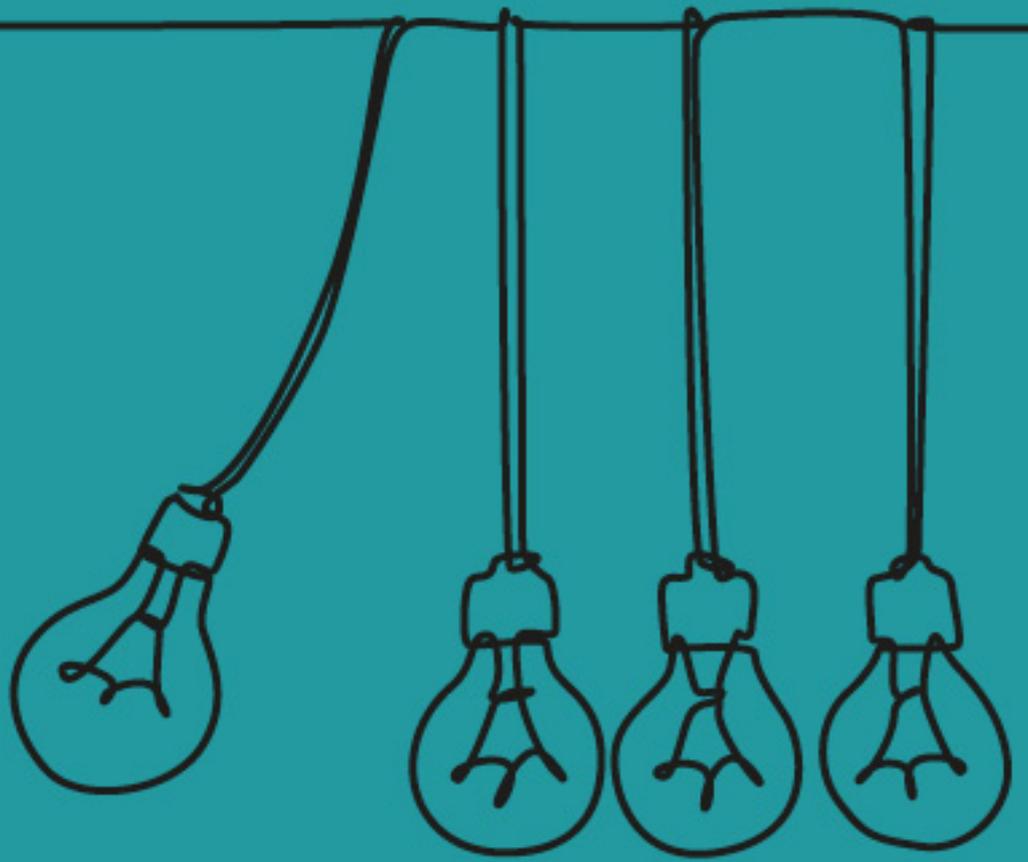
¹¹³ <https://statswales.gov.wales/Catalogue/Equality-and-Diversity/Ethnicity/ethnicity-by-area-ethnicgroup>

¹¹⁴ <https://statswales.gov.wales/Catalogue/Equality-and-Diversity/Sexual-Orientation/sexualidentity-by-year-identitystatus>

¹¹⁵ <https://statswales.gov.wales/Catalogue/Equality-and-Diversity/Religion/religion-by-region>

	Disability	Yes	1.29	22.14 ¹¹⁶
		No	87.01	
		Prefer not to say	4.54	
		No response	7.14	

¹¹⁶ ONS figure representative **only** of the working age population: <https://stats.wales.gov.wales/Catalogue/Equality-and-Diversity/Disability/disabledstatus-by-region>



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