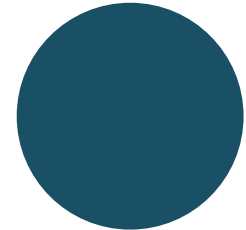
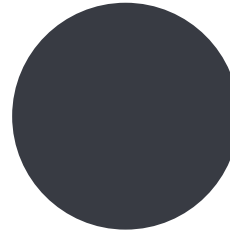
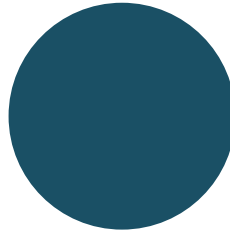
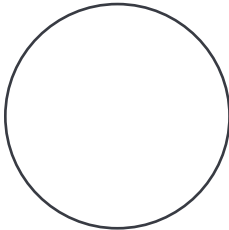
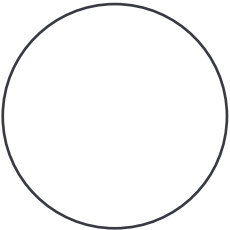
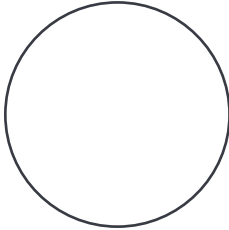
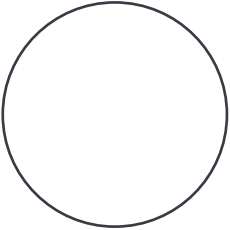
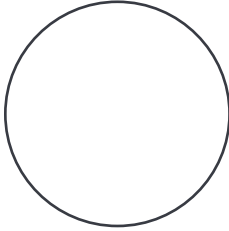
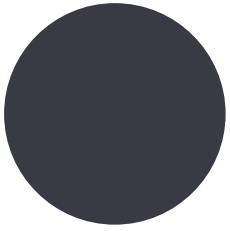
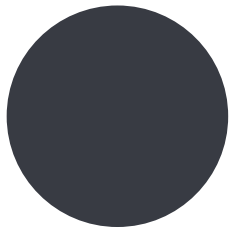




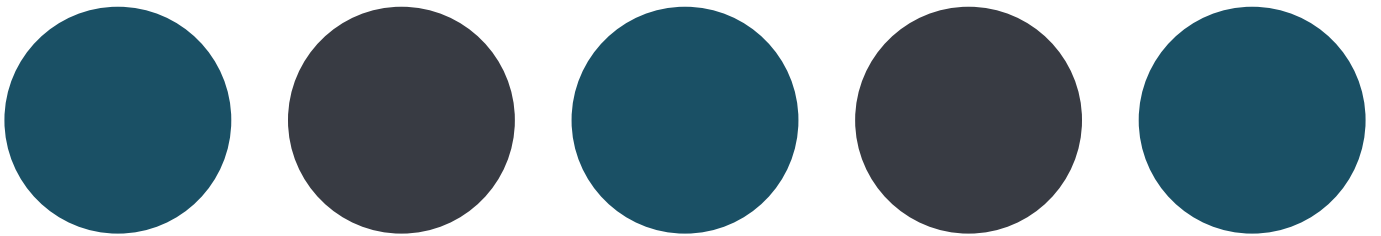
Llywodraeth Cymru
Welsh Government



A Manufacturing Future for Wales

A Framework for Action

February 2021



OGL

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Manufacturing, with its long history in Wales, is part of our national story. The largest contributor in terms of Gross Value Added (GVA) to the Welsh economy, it provides good quality employment to thousands of individuals and scores of communities the length and breadth of Wales.

Manufacturing is more important to Wales than to any other part of the UK and that is without taking into account the longer term operation, maintenance and service related activities, which take place as a consequence. Manufacturing can be defined as a sector in itself but is, in fact, a composition of sub-sectors including food and drink, information and communications technology, chemicals, electronics, life sciences, construction, metals, paper and pulp, energy, mobility including automotive, rail, aerospace and defence and security. This is a very broad description of many of the activities that contribute to the well-being of Wales and linked to this are the consequent operation of maintenance and service activities, which contribute to our foundational economy.

However, manufacturing is in the midst of profound change. From the COVID-19 pandemic to EU Transition to climate change; from the explosion of new technologies affecting customer choices and preferences, to the ever-increasing pace of globalisation – manufacturing is going through one of the most intense periods of change in its history. In 2020 the sector faced an unexpected challenge in the form of COVID-19 and responded by helping to secure the safety and security of the citizens of Wales. Our Economic Resilience Fund (ERF) has been instrumental in supporting businesses during the height of the pandemic. The ERF was introduced to provide targeted support to Welsh firms of all sizes (including social enterprises) which had not already benefited from UK schemes.

This manufacturing plan is framing our response to the pandemic and the impact

of leaving the EU, together with actions to future proof our manufacturing activities and ensure their vital contribution to the well-being of Wales continues. Through this plan we are re-affirming our commitment to deliver a well-being economy which drives prosperity, is environmentally sound, is resilient, reduces inequality and helps everyone realise their potential.

We will use the manufacturing plan to support a different approach, one which supports a more effective balance between the tradeable and the foundational economy, which provides the essential skills and services that underpin everyday life in our communities.

The plan will build on the priorities in *Our Economic Resilience and Reconstruction Mission* and is rooted in our Economic Action Plan, Prosperity for All, with their progressive purposes of reducing inequality and spreading wealth and well-being across all of Wales.

I would like to thank all those who contributed to the development of this plan over the past year; through the manufacturing summits and industry workshops we have held, the public consultation exercise we conducted and the many conversations we have had with business, academia, the trade unions and others. Together, we can deliver on our shared commitment to future proof the manufacturing sector in Wales.



Ken Skates MS
Minister for Economy,
Transport and
North Wales

A stylized, handwritten signature in black ink, appearing to read 'Ken Skates'.

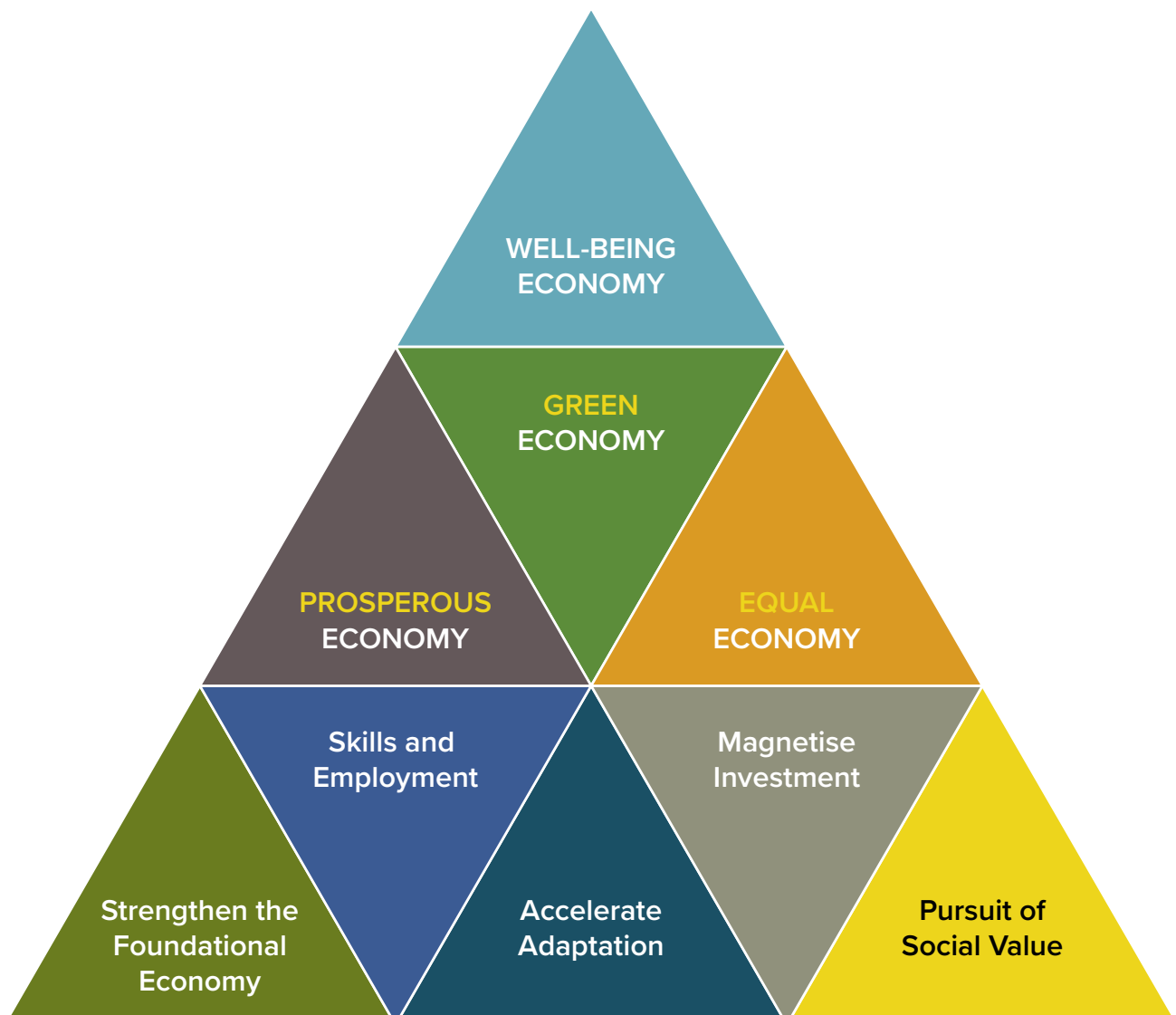
02 Introduction

This plan has been developed in the context of how we translate our vision for a well-being economy into reality. It is underpinned by the pursuit of **three outcomes**:

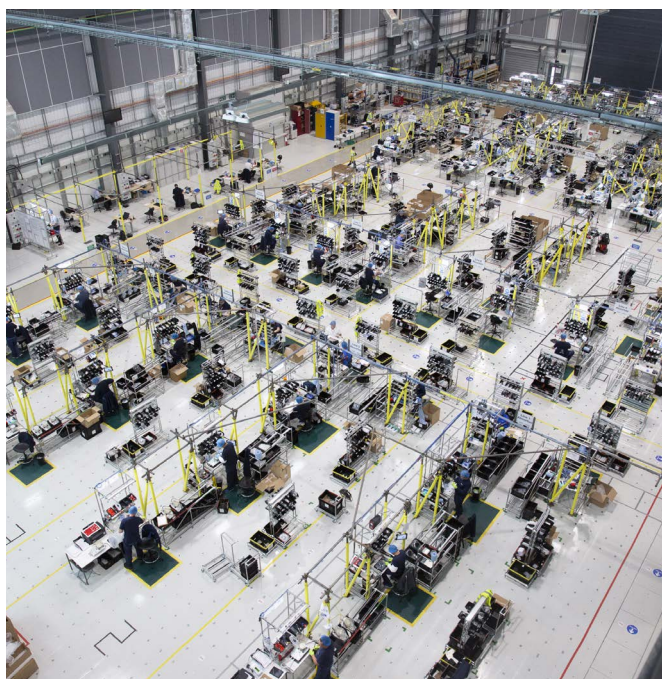
1. A **prosperous economy** which requires a steady focus on resilience and a capacity for transformation. We need to strengthen the foundations of the economy with a diverse yet inter-related economic base of outward-looking firms with positive innovation performance, good productivity levels and a workforce equipped with the skills for a changing world.
2. A **green economy** which demands high levels of circularity, where resources are kept in use adding economic value and

where waste is avoided. This economy is integral to a low carbon society, so we need to invest in low-carbon and climate resilient infrastructure, renewable energy projects, whole system thinking/design and sustainable homes.

3. An **equal economy** which means investing in the productive potential of all people in communities. We need to build ambition, encourage learning for life, improve our understanding of behaviours and attitudes and support people to make the most of their potential. Our regional approach will support a fair distribution of opportunities and we will continue to demand and champion fair work.



We have discussed with stakeholders the importance of the manufacturing community to Wales, its place in the Economic Action Plan, its importance in recovering from the COVID-19 pandemic and its role in delivering the objectives of the Well-being of Future Generations (Wales) Act. This plan aims to build communities with resilient manufacturing activities, which contribute to a healthier and more robust economy. The plan looks to support these ambitions by identifying opportunities around supply chains, re-shoring of certain activities and public sector procurement, thus providing opportunities for the foundational economy to flourish.



Above: Airbus and the Advanced Manufacturing Research Centre working collaboratively during the COVID19 UK ventilator challenge. © Airbus.

This period of change will be challenging for Welsh manufacturing, but it also represents an opportunity. By embracing trends such as the use of alternative, lower embedded carbon materials, increasing automation and digitalisation and reshoring supply chains, we can build a new future for Welsh manufacturing. This will mean a change of

culture, ensuring that as a nation, we innovate more, improve productivity, become more competitive, develop our skills and focus on how we tackle the impacts of climate change.

Productivity performance is central to the Economic Action Plan and the UK Government's Industrial Strategy. This action plan covers drivers of productivity such as skills, innovation and competitiveness and we need to seek out opportunities within Wales and in comparable countries and regions to share best practice and benchmark our performance.

In short, we have to transition and support the transformation of our manufacturing community – including its supply chains – to one which is increasingly involved in 'added value' activities. We need a manufacturing community which consists of companies who have a strong financial performance, who undertake strategically important activities and who make a positive social, economic, environmental and cultural impact on their local communities, their regions and the supply chain in Wales. This is how we define High Value Manufacturing in Wales – not by the sector, its complexity or its use of technology – but on how it impacts the well-being of the citizens of Wales.

To make this happen we cannot rely on business as usual; instead, government, the wider public sector, industry, trade unions, academia and other stakeholders must explore new ways of collaborating to develop a community, which:

- Protects and promotes growth in existing added value manufacturing capabilities, especially through its Small and Medium-sized Enterprises (SMEs), by sharing best practice and collaboration;
- Exploits and yet protects for future generations, Wales' assets and advantages in innovative ways to establish unique selling points and competitive advantage;

- Positions itself to maintain and improve its contribution to the economy, communities, environment and culture of Wales;
- Puts research, development and innovation at the heart of transformation so companies can commercialise ideas which align with government objectives for the well-being of Wales;
- Provides leadership to key manufacturing supply chains and help to transition into new opportunities and areas; and
- Builds resilience, resource efficiency, circularity and decarbonisation into the whole value chain from supply and use of the raw materials and components used in manufacturing in Wales to end users.

The Welsh Government, with its proud history of working closely with industry, academia and trade unions, will support our manufacturing through this period of change, helping it prepare for the future.

This Manufacturing Action Plan (MAP), based on the principles in our Economic Action Plan, supports the UK Government's Industrial Strategy and is a statement of intent that sets out a framework for action, which, through close collaboration with social partners, will help future proof manufacturing in Wales.

The development of this plan has been guided by the expertise of the Welsh Government's industry partner, Industry Wales and its specialist aerospace, automotive and electronics, software and technology forums. Industry Wales' remit is to help inform government how to best grow Welsh technology and manufacturing businesses.



Our vision of the future of manufacturing in Wales is predicated on the sector moving towards more value added activities – “High Value Manufacturing” as we term it, is about manufacturing activities which have a positive social, economic and environmental impact on the well-being of the citizens of Wales. It is about creating well paid jobs, safe communities, carbon neutral industries and a thriving Welsh culture. Importantly, High Value Manufacturing is a confirmed theme in the North Wales Growth Deal, the Cardiff City Capital Region Deal and the Swansea Bay City Deal as well as being

proposed for the Mid Wales Growth Deal, ensuring that the sector remains a high priority for all regions of Wales. It is imperative that capable, competitive, sustainable makers of our daily needs are distributed throughout communities securing prosperity and good jobs for the next generation.

The actions we take will be felt across the whole of Wales, building on bespoke regional strengths and helping to spread prosperity.

However, this plan is also about building on the success of our exporting companies. Exports are important for a resilient economy, helping to offset domestic market downturn and resulting in more productive businesses. In recent years, export performance in Wales has been positive with the value of goods exported for the year ending 2019 reaching £17.7bn, an increase of 34% since 2015.

The COVID-19 pandemic has already had a significant impact on the value of exports from Wales and although there is uncertainty on the long term economic effect and the timescale and degree of recovery; we do know that exports will have an important part to play in this recovery.

As a key part of our overall efforts to support economic recovery in Wales we will assist businesses to recover and rebuild their exports and to adapt to any associated new processes and trade agreements. Support will be available to help companies of all sizes across Wales on the key steps on their journey – from inspiring businesses to develop excellence within Wales and UK supply chains and to further anchor them by exporting this excellence; building capability, finding customers and accessing overseas markets – with the over-arching ambition of creating a strong, vibrant and sustainable exporting sector to help safeguard existing and create new jobs and opportunities for people in Wales.

The plan will use the five ways of working prescribed in the Well-being of Future Generations (Wales) Act, ensuring the actions we take will:

- Future-proof manufacturing in Wales by growing an innovative low carbon, resource efficient community;
- Support transition to new ways of working to prevent decline in manufacturing and focus on resilience through diversification of supply chain activity within both public and private sector procurement;
- Ensure integration with other actions being taken by other public sector bodies such as the Corporate Joint Committees; City/ Growth Deals, Natural Resources Wales and Skills bodies;
- Facilitate collaboration within and between government, industry, academia and trade unions, where appropriate; and utilise the social partnership model developed in Wales; and
- Involve the people of Wales, reflecting the society in which manufacturing operates and ensuring equality of opportunity.

Essential to this plan is the need to promote equality of opportunity in our manufacturing community and ensure that our language and culture thrives in all regions of Wales. To that end we will ensure that monitoring of progress against this plan will include important aspects of Welsh Government policy on equality and diversity and our Cymraeg 2050 strategy.

The consultation process involved informal discussions initially, workshops and a formal consultation process, which produced high quality input into this plan. The themes which follow in this plan are based on the consultation and the actions we are proposing build on those themes.

To ensure that our manufacturing community is fit for the future, the MAP has identified six over-arching issues that need to be addressed and a further ten themes that have emerged from the consultation process along with an “owner” in Welsh Government, who will co-ordinate the partnership needed to achieve our goals.

Actions have been prioritised in terms of immediate (the next 12 months), medium (up to 5 years) and long term (up to 10 years and beyond).

The six over-arching issues



1. Equality and Diversity

Manufacturing offers a wide range of career opportunities for all members of our community and there is a genuine opportunity for manufacturing employment to become more diverse. This goes beyond simply fulfilling statutory equality obligations and we will work with our social partners to help them proactively recognise the advantages of a diverse workforce for all. This includes, for example, taking steps to encourage more women, more people of various ethnicities and more people with disabilities into manufacturing careers.

Access to and gaining the right qualification choices is an important step for increasing diversity through STEM (Science, Technology, Engineering and Maths) courses, qualifications and modern apprenticeships. We will step up our work across government and with social partners and others to ensure that future investment in education and training for manufacturing based subjects considers approaches to increasing equality and diversity, addressing issues such as age, disability, gender, pregnancy, race, sexual orientation, religious beliefs, household

income and the rights of children. These issues will be looked at as part of our commitment to fair work and improving leadership and management skills as well as highlighting an opportunity to fill skills gaps.

We recognise there is more to be done and we will, therefore, challenge practices and be open to challenge so that we can fully realise the advantages of a more equal and diverse workforce in manufacturing. We believe that the approach we are taking will ensure that equality of opportunity is embedded within the actions we take.

In the immediate (and medium/longer) term, we will:

Action	Owner within Welsh Government
Continue to monitor the impact of this plan on equality of opportunity and embed it in all aspects of the work.	<ul style="list-style-type: none"> Industrial Transformation Division



2. Our language and our culture

Welsh language policy is at the heart of our vision for future generations. Our Cymraeg 2050 strategy articulates the steps we must take to achieve our two headline targets by 2050 to:

- reach 1 million Welsh speakers; and
- double the daily use of Welsh.

The Welsh Government’s leadership in implementing the strategy requires actions across key policy areas to create favourable socio-economic conditions to facilitate the strategy’s aims.

We believe that the actions we take will support our policy on the language and culture of Wales by securing the long-term future

of the sector across Wales providing local employment opportunities in communities across Wales.

In the immediate (and medium/longer) term, we will:

Action	Owner within Welsh Government
Continue to monitor the impact of this plan on Welsh language and culture and modify the actions in the plan to respond to changing needs.	<ul style="list-style-type: none"> • Industrial Transformation Division • Welsh Language Division



3. Research, development and innovation

A fundamental issue in future proofing the manufacturing sector in Wales is embedding key functions such as research, development and innovation in our facilities and operations.

In conjunction with academia and supported through various parts of government including our innovation support programmes, the Welsh manufacturing sector has a strong record of undertaking research, development and innovation within our companies but it is clear more can and must be done in order to ensure companies feel “anchored” in Wales.

Wales is home to a number of innovative and dynamic research activities, several of which are world class. This includes: aerospace engineering; energy technologies, including nuclear and tidal; cutting edge metals innovation, such as in steels; marine technology; leading dementia research; automotive production; compound semi-conductors; food production; advanced manufacturing and materials; bio-sciences; data science and financial and professional services.

Moving from an industrial economy, based on natural resources to a knowledge based manufacturing and services economy, Wales has, over the past two decades, developed into a technologically advanced, open economy, with a research profile that by international benchmark standards, punches above its research income – in terms of research outputs, efficiency and impact.

Wales has a skilled workforce with a broad range of manufacturing expertise and a focus on innovation and collaboration between industry, government and academic institutions. In this area, Wales has a 145,000 strong skilled workforce (ONS data Sep 2020) with Welsh universities producing over 2,000 engineering graduates every year and the 160 aerospace and defence companies, which employ 20,000 people produces a turnover of more than £5 billion. Wales’ productivity in the manufacturing sector is higher than the UK average and accounts for 10 per cent of all workforce jobs in Wales, compared to 7.7 per cent across the UK. However, we are not complacent and recognise that there is much more to be done.

Wales has several UK-significant High Value Manufacturing industries, including automotive, opto-electronics, space and aerospace, medical devices, advanced materials and metals and a growing industry in nuclear. These are backed by recent key investments from Welsh and UK Governments. Wales is also a leader in compound semi-conductors technology, which lies at the heart of Industry 4.0 and is a technology that is growing rapidly in Wales. This remains a fundamental underpinning technology for many world-leading products, including smartphones; Wi-Fi; satellite communication systems; robotics and efficient light-emitting diodes (LEDs). In Wales, industry, academia and government are working to develop a world class compound semi-conductor cluster, incorporating IQE, the world’s leading manufacturer of advanced semi-conductor wafers, working in partnership with Cardiff University.



However, like many English regions and the other devolved nations, Wales has suffered from the lack of talent as leading researchers have moved away in search of better opportunities in the “golden triangle” and other areas with strong private sector presences. We, therefore, need to strengthen distinctive regional areas where there is a strong current or future competitive advantage or strong technological industrial opportunity, for example compound semi-conductor, cyber, defence, off-shore wind power or nuclear power technologies.

Future research, development and innovation funding must have a strong focus on capacity and capability building in Wales, especially where there has been a long-term deficit. New mechanisms will be needed that recognise, encourage and reward ‘visionaries’ and ‘champions’ of applied research, development, innovation and exploitation. We need to recognise users and exploiters of research as well as producers of research. New national laboratories, new public sector research establishments and

new public/private partnerships are some of the structures and mechanisms which might emerge from these ‘visionaries’ and ‘champions’ of the future. Partnerships across sectors and economies provide opportunities to access new markets, leverage new funding and reduce duplication of effort. Identifying and establishing productive collaborations remains a key catalyst for realising a new culture of innovation.

Our innovation programmes – SMART Innovation, SMART Cymru, SMART Expertise, SMART Partnerships and Knowledge Transfer Partnerships (KTPs) – are part of the Business Wales service and cover support to invest in research and development, introduce new techniques and technologies in design and manufacturing, protect assets through intellectual property rights and access facilities and expertise in universities and colleges. This support, we believe, will be key in attracting and retaining businesses in Wales. Innovation support is currently aimed at delivering on the digital, productivity, Industry 4.0 agendas, along with resource efficiency, decarbonisation and Welsh supply chain resilience.

Throughout the COVID-19 crisis we have used tried and tested mechanisms to deliver rapid turnaround. We are now acknowledged by Innovate UK as a leading practitioner in implementing public sector Small Business Research Initiative (SBRI) and GovTech competitions which stimulate new manufacturing solutions to grand challenges.

Wales has been proactive in developing international collaborative activities with a range of partners. Wales is an active member of the Vanguard Initiative innovation network, which comprises 38 of Europe’s industrialised regions. We are also fully engaged in two Interreg manufacturing programmes – Manumix & Cohesion, and regularly engage in joint Industry 4.0 projects with key international regions such as Baden-Württemberg and the Basque Country.

In the immediate term, we will:

Action	Owner within Welsh Government
Promote the key benefits of process innovation, knowledge transfer and research, development and innovation funding.	<ul style="list-style-type: none"> • Innovation • Office of the Chief Scientific Officer
Promote the benefits of commercial collaborative research, development and innovation undertaken in Wales by utilising the network of Wales, UK and international funding routes.	<ul style="list-style-type: none"> • Innovation • Office of the Chief Scientific Officer
Work collaboratively to build on existing and forge new partnerships in order to establish an ecosystem that includes: national and international funders; industry; research institutes; NHS Wales; the education and training sector; and other government agencies like the regional partnership boards.	<ul style="list-style-type: none"> • Innovation • Office of the Chief Scientific Officer
Address the loss of talent by funding joint endeavours between a number of different partners, including national laboratories, public sector research establishments and major public services such as NHS Wales.	<ul style="list-style-type: none"> • Innovation • Office of the Chief Scientific Officer

Action	Owner within Welsh Government
Review and undertake a step change in investment in research careers for public and private sector industrialists, clinicians, clinical academics and in doctoral, post-doctoral and career scientist awards schemes.	<ul style="list-style-type: none"> • Office of the Chief Scientific Officer

In the medium and longer term, we will:

Action	Owner within Welsh Government
Work to secure additional research, development and innovation funds.	<ul style="list-style-type: none"> • Innovation • Office of the Chief Scientific Officer
Establish new mechanisms that recognise, encourage and reward 'visionaries' and 'champions' of applied research, development, innovation and exploitation.	<ul style="list-style-type: none"> • Office of the Chief Scientific Officer
Establish new national laboratories, new public sector research establishments and new public/private partnerships to support these 'visionaries' and 'champions' of the future.	<ul style="list-style-type: none"> • Office of the Chief Scientific Officer



4. Data, information and knowledge

We recognise that we must act on evidence and data, so it is important that we review the information, which already exists around the various parts of our manufacturing sector. This will involve analysis, interpretation and assimilation of available data and knowledge.

We will commission a Welsh manufacturing capability and mapping survey to inform a Political, Economic, Social, Technological, Legal and Environmental (PESTLE) analysis and a Strength Weakness Opportunities and Threats (SWOT) analysis of the sector. This, together with a gap analysis identifying the raw materials needed and products produced in Wales, and those that potentially could be produced in Wales, will help us identify areas where the future of Wales’ manufacturing lies.

In the immediate term, we will:

Action	Owner within Welsh Government
Commission a Welsh manufacturing capability and mapping survey to inform a PESTLE and SWOT analysis of the community.	<ul style="list-style-type: none"> Industrial Transformation Division
Undertake a gap analysis of specific products that are in high demand in Wales and that could potentially be manufactured in Wales.	<ul style="list-style-type: none"> Industrial Transformation Division



5. Public sector procurement

Some of the opportunities identified to help our manufacturing sector are in the realm of public sector procurement including arm’s length bodies, utilities companies and UK government departments operating in Wales. Welsh Government funded public sector bodies alone spend £6.3 billion per annum on external goods and services. The statistical analysis we undertake suggests that 52% of that spend is with companies based in Wales. However, the analysis does not detail how much of the spend is on products manufactured in Wales, nor does it factor in the spend through arms-length bodies, utilities companies or third sector organisations who receive significant amounts of public funding.

Additionally, there are numerous UK government agencies operating in Wales whose spend in Wales has not been easy to assess. This suggests that there is a need for a more in-depth analysis of how much product is procured by the public sector in Wales.

However, it is important to focus on future opportunities not just historical spend and consider the pipeline going forward. This will include the city and regional growth deals, social housing building and the Wales Infrastructure Investment Plan (WIIP), which can be used as a tool to assist the construction sector understand the public sector’s future intentions.

Analysis of public sector spend is on-going in relation to the foundational economy and the Centre for Local Economic Strategies (CLES) programmes of work, and we need to understand how this links to regional strengths in Wales. We also need to understand how leaving the EU may impact on public procurement regulations and the work on social value under the TOMS (Themes, Outcomes, and Measures) approach.

An improved understanding of public procurement expenditure, and the lessons learned from the Foundational Economy Challenge Fund projects, will help inform the development of future business support packages which grow the capability of indigenous businesses, including those in the Foundational Economy,

Food is a priority economic (and health and wellbeing) sector in Wales. However, basic analysis illustrates that approximately half of public sector spend on food takes place outside of Wales. More detailed examination reveals that major wholesalers to the public sector are supplying less than 10% of produce sourced from within Wales. Work is being progressed to further localise public sector spend on food and this can be aligned to the manufacturing plan to grow capability in packaging and high-value processing of food products.

Work has also commenced regarding public sector supply chains and opportunities for local manufacturers of Personal Protective Equipment (PPE). This work has helped identify barriers, including accreditation and visibility of long term contracting opportunities, which prevent local suppliers from developing manufacturing capability to enter this market.

These barriers also read across to other areas of manufacturing and the experience gained from the work on PPE can help smooth market development and entry in other sectors.

Public procurement policy in Wales sets out clear expectations for the public sector in terms of maximising the social, economic, environmental and cultural benefits of the money spent. Allied to this is our code of practice on ethical employment in supply chains which commits organisations to sign up to a set of principles to ensure that sourcing is undertaken ethically. An example of our approach to this is that Wales was the first signatory to the UK “Steel Charter”, committed to supporting the sector by helping to increase

the economic value procurement projects deliver to the UK, and by promoting the procurement of UK produced steel.

The COVID-19 crisis has highlighted weaknesses in our public sector supply chain and the lessons learned from the pandemic, together with revised procurement regulations/policy, present an opportunity to influence the way public procurement and supply chains operate, resulting in better opportunities for Welsh manufacturers.

In the immediate term, we will:

Action	Owner within Welsh Government
Analyse public sector procurement spend in Wales, including supply chains, to identify opportunities for Welsh manufacturing.	<ul style="list-style-type: none"> Commercial Procurement Foundational Economy

In the immediate (and potentially medium/ longer) term, we will:

Action	Owner within Welsh Government
Provide policy, guidance, tools and training (such as TOMS) to the Welsh public sector so that procurement practice supports sustainable Welsh manufacturing and achieves greater social value.	<ul style="list-style-type: none"> Commercial Procurement Foundational Economy
Progress work to further localise supply in areas such as food and PPE to increase the capability of indigenous businesses, including those in the Foundational Economy.	<ul style="list-style-type: none"> Foundational Economy

Action	Owner within Welsh Government
Work with food producers in Wales and the cluster of food packaging companies based in North Wales to use the Advanced Manufacturing Research Centre Cymru as a centre of food packaging innovation, linked to new supply chain opportunity in the Welsh Agri-economy.	<ul style="list-style-type: none"> • Food Division • Foundational Economy



6. Business support

The Welsh Government provides a wide range of business support through Business Wales, which acts as a gateway into the various programmes available. The service also employs expert advisors. The Business Wales service was conceived as a 'one stop shop' for businesses and start-ups to access support.

The SMART innovation programmes are part of the Business Wales service and offer business support to invest in research and development, introduce new techniques and technologies in design and manufacturing, protect assets through intellectual property rights and access facilities and expertise in universities and colleges.

Business Wales is available throughout Wales to entrepreneurs and SMEs and is non-sector specific. The current arrangements are due to end in September 2021, however, consideration is being given to fund and extend the current service until September 2022. As part of this extension period, Welsh Government officials will undertake a review of future business support requirements before

providing options on replacement services. This review will take account of the improved intelligence around public procurement expenditure and the lessons learned from the projects delivered through the Foundational Economy Challenge Fund.

Support is also available for businesses across Wales for all steps in their export journey. Support is delivered to businesses on a one-to-one and one-to-many basis as well as online. Examples include:

- Tailored one-to-one support to help with export strategy development including market selection, routes to market, identifying and connecting with potential overseas customers.
- Webinars to provide information and guidance on common export issues and to raise awareness of opportunities in overseas markets.
- Market visits and exhibitions – with the pandemic, these have become 'virtual' to ensure Welsh businesses continue to meet with potential customers in target markets whilst travel is restricted.
- The export hub on the Business Wales website provides access to live information and tools for a range of export issues. This will support both new and existing exporters to grow and address any challenges they face with the future trading environment.

The [Export Action Plan](#) sets out our intention to develop a new framework for 'export clusters' in Wales to systematically build capacity and capability for exporting for our key sectors. Manufacturers and manufacturing services will play a key role in these clusters.

The Export Action Plan sets out how, as a key part of our overall efforts to support economic recovery in Wales, we will assist businesses to recover and rebuild their exports and to adapt to any associated new processes and trade agreements.

Support will be available to help companies of all sizes across Wales on the key steps on their export journey – from inspiring businesses to export, building capability, finding customers, and accessing overseas markets – with the over-arching ambition of creating a strong, vibrant and sustainable exporting sector to help safeguard existing and create new jobs and opportunities for people in Wales.

In the immediate (and potentially medium/ longer) term, we will:

Action	Owner within Welsh Government
Support sectoral engagement to understand the type of business support needed by Welsh manufacturing.	<ul style="list-style-type: none"> • Trade and Inward Investment • Business Wales • Innovation • Regional Teams • Development Bank of Wales (DBW)
Develop further innovation and continuous improvement support for Welsh manufacturing.	<ul style="list-style-type: none"> • Trade and Inward Investment • Innovation
Take forward the commitment in the Export Action Plan to establish export clusters to build capacity and capability for exporting.	<ul style="list-style-type: none"> • Trade and Inward Investment
Use lessons learned from the Foundational Economy Challenge Fund projects, to develop support for indigenous businesses, including those in the Foundational Economy.	<ul style="list-style-type: none"> • Foundational Economy

Climate change, the need to protect our environment and decarbonise our commercial and social activities

In line with our Economic Action Plan, the Well-being of Future Generations Act and our comprehensive environmental legislation, we will take a holistic approach to the circular economy. We need to progress further with decarbonisation of our manufacturing processes and this could involve establishing resilient, efficient, ethical and shorter supply chains for raw materials and components for manufacturing in Wales.

On 29 April 2019, the Welsh Government declared a climate emergency. The announcement drew attention to the magnitude and significance of the latest evidence from the Inter-governmental Panel on Climate Change, and reflects the depth of feeling expressed in climate protests across the UK. In December 2020, Welsh Government received detailed, sector by sector advice from the Climate Change Committee and a recommendation to set a net zero target for 2050. In Spring 2021 Welsh Government will bring forward legislation for the introduction of a new emissions reduction pathway to 2050. This will substantially increase ambition in Wales, commensurate with the climate emergency.

In the transition to a low carbon future, ensuring a sustainable, competitive industry and business environment is paramount. There is a need to steer the growth of a resilient economy where we can continue to exploit our capabilities in new low-carbon technologies and markets, underpinned by a competitive industrial base. We need to work together to reduce emissions from our manufacturing business and make use of new technologies and energy sources to do this. We also need to work with our manufacturing sector to exploit opportunities from the global effort to reduce carbon emissions, and to look for

opportunities within emerging sectors such as floating off-shore wind. Developing a true circular economy within Wales will be key, as laid out in the Welsh Government's [Circular Economy Strategy, 'Beyond Recycling'](#).

[“Prosperity for All: A Low Carbon Wales”](#) (ALCW) published in March 2019 set out the foundations for Wales to transition to a low carbon nation, setting out policies and proposals to meet the first carbon budget (2016-2020). It recognises decarbonisation offers significant opportunities to create a vibrant and socially just economy. We will publish our next plan for the second carbon budget (2021-2025) later in 2021.

In terms of Wales' own emissions at 14.0 MtCO₂e the industry sector accounted for 36% of Welsh emissions in 2018. Industrial emissions in Wales are dominated by iron and steel production (12.3% of Welsh emissions in 2018), and petroleum refining (5.9%). Wider industry includes manufacturing and construction (3.9%), cement and gas production and distribution. Operation of machinery, minerals and mining, chemical production, paper and pulp and the manufacture and processing of food and drink also account for a significant proportion of emissions.

A significant majority of industrial emissions arise from a cluster of operations in the South Wales corridor, dominated by the production of steel and oil refining. Businesses and wider stakeholders within the South Wales cluster have come together to form a network including iron and steel production, power generation, refining of oil, cement, chemicals, paper and pulp, nickel refining, food and drink and general manufacturing operations. In North Wales, the principal carbon emitting industrial plants are predominantly concentrated in the Flintshire and Wrexham local authority areas and include the manufacture of cement, paper and pulp. Action is taking place through the North Wales

growth deal and through engagement with the Merseyside industrial decarbonisation cluster.

Decarbonisation in line with the legislated ambition of Welsh Government clean growth is one of the key pillars of our economic contract with action in this area a requirement for receiving government funding.

It is essential that manufacturing companies fully engage with the opportunities available from the UK Government, including through the forthcoming Industrial Decarbonisation Strategy, to support investment in new technologies. The Industrial Energy Transformation Fund (IETF) launched in June 2020 to provide funding for capital investment in energy efficiency and deep decarbonisation projects including Carbon Capture Use and Storage (CCUS). The first application window closed in October 2020 and a second competition opens in Spring 2021.

CCUS is recognised internationally as a key technology to reduce emissions in industry and power generation. Our advisory body the Climate Change Committee considers CCUS is a necessity in delivering net-zero greenhouse gas emissions and we have procured research to advance our evidence base on this technology in Wales.

As outlined in our Transport consultation we also need to consider continued investment in our ports to ensure that Wales is able to maximise business opportunities aligned with renewable energy, including both fixed and floating off-shore wind in the UK and Irish waters and CCUS. The Swansea Bay City Deal is investing £60 million, of which approximately £23 million is ring-fenced for port infrastructure upgrades within Pembroke Dock Marine. The BEIS Port Infrastructure Fund has attracted Welsh bids for the £160 million available and innovation in marine energy is becoming increasingly important with a €100 million EU funded programme which has allowed businesses in Wales to gain valuable experience in delivering products and services

to the sector. These have also had a positive impact on local communities and the local economy with many of the projects achieving over 70% local supply chain.

Another example of engaging with and taking opportunities of funding is [Energy Kingdom](#), a hybrid hydrogen whole system development working with Energy Systems Catapult, Port of Milford Haven, Arup, Offshore Catapult, Riversimple, Wales & West Utilities, Pembrokeshire County Council and Welsh Government, funded by Innovate UK.

As demand for high carbon goods and services is constrained, decarbonising industrial processes and products will be increasingly important for manufacturing companies of all sizes, from SMEs to large operations. Businesses will need to be better placed to respond to consumers and buyers increasingly demanding low carbon products and/or components in order to meet their own carbon ambitions and the demand for entirely new zero carbon products.

We have set out in 'Beyond Recycling' our aim for Wales to become a nation where we avoid waste, keep resources in use as long as possible and use our fair share of the earth's resources. Short supply chains and greater local sourcing, especially of recycled materials, are a feature of a circular economy which can therefore help to address the issues stemming from the vulnerability of longer supply chains highlighted by COVID-19. We have a world-class materials recycling collection service that can provide both a competitive advantage and greater economic added value, and we need to move away from the situation where recyclable material is minimally processed and exported with the value lost. A circular economy is about keeping products and materials in productive use for as long as possible, so there needs to be a focus on designing for longevity and repair, and services for repair and remanufacture are an important component of the infrastructure needed.

In the immediate term, we will:

Action	Owner within Welsh Government
Accelerate our engagement with manufacturing companies on the economic contract to understand what measures they are taking to reduce their carbon footprint.	<ul style="list-style-type: none"> • Regions • Resource Efficiency and Circular Economy • Industrial Transformation Division
Identify key new legislation driving more recycling and less landfill including, for example, new extended producer responsibility requirements for all packaging.	<ul style="list-style-type: none"> • Resource Efficiency and Circular Economy
Use the Circular Economy Fund to help companies to support this work.	<ul style="list-style-type: none"> • Regions • Resource Efficiency and Circular Economy
Promote new opportunities for funding from the UK government’s programmes including the IETF and the Off-shore Wind Sector deal.	<ul style="list-style-type: none"> • Regions • Resource Efficiency and Circular Economy • Industrial Transformation Division
Work collaboratively to promote exemplar organisations, who have embraced decarbonisation and resource efficiency, sharing best practice across Wales in order to achieve short term “wins”.	<ul style="list-style-type: none"> • Regions • Resource Efficiency and Circular Economy • Industrial Transformation Division

In the medium/longer term, we will:

Action	Owner within Welsh Government
Work with manufacturers to understand the best approaches to achieve decarbonisation including consideration of technologies such as hydrogen and CCUS.	<ul style="list-style-type: none"> • Regions • Resource Efficiency and Circular Economy • Industrial Transformation Division
Work collaboratively to promote opportunities for the manufacturing sector in Wales to use our facilities and the materials collected to reuse products and re-manufacture and manufacture more from recycled content.	<ul style="list-style-type: none"> • Regions • Resource Efficiency and Circular Economy • Industrial Transformation Division • Innovation

Technological change including artificial intelligence, automation, digitalisation and the connected environment

In September 2019, we published “Wales 4.0 Delivering Economic Transformation for a Better Future of Work” – the final report of the Review of Digital Innovation for the Future of the Economy and Work in Wales undertaken by an expert panel chaired by Professor Phillip Brown. A strong theme of the Brown Review is to equip businesses in Wales to take advantage of the opportunities associated with technological change, as well as helping businesses to be dynamic, develop new business models and build resilience.

The Brown Review identified the role of industrial clusters aligned to key technology capabilities and the need for multi-stakeholder engagement in drawing together industrial transformation plans aimed at growing

capacity and developing resilience in different parts of the Welsh economy. Exporting is one of the stages, and we are looking to set up export clusters during 2021 and 2022.

Research, development and innovation were also identified as key drivers in responding to the challenges of increased digitalisation and automation, particularly with respect to supporting the acceleration of SMEs and their supply chains.

Our innovation support mechanisms (SMART) help technology businesses to digitally transform priority industries and public services, supporting emerging technologies in artificial intelligence, automation, smart living and data. We are supporting initiatives with the potential to enhance our reputation – such as a digital, artificial intelligence and automated hotspot, including the UK’s first National Software Academy, a new National Cyber Security Academy and the Wales Data Nation Accelerator.

We have introduced a SMART Productivity service, offering manufacturing companies support for determining the suitability of new digital/automation processes including specifying and planning their implementation. Companies are then eligible to apply for up to £100,000 SMART Cymru grant towards implementing automation and digital technologies.

Our Knowledge Transfer Partnerships (KTPs) are helping transform manufacturing businesses, enabling them to bring in new skills and the latest academic thinking to deliver a specific strategic innovation project through a knowledge based partnership. We are also developing a digital pathfinder project with the Advanced Manufacturing Research Centre (AMRC) Cymru to trial digital twinning projects with four SMEs; whilst internationally, it is leading on the transfer of Industry 4.0 knowledge and techniques to and from a number of overseas regions.

We need to support and encourage Welsh companies to employ techniques and technologies which will help them be more resilient in times of crisis, improving their productivity and longer term sustainable growth. We have a diagnostic tool capable of covering automation and digital processes and through the Economy Futures Fund we have supported 77 projects with a value of over £7 million via the call to support research and development, automation and digitalisation.

We have also established the [Wales Union Learning Fund \(WULF\)](#), which enables trade unions to deliver 2-3 year training projects focused on improving the learning and skills of their members.

Supporting companies to embrace digital and automation technologies, employing an Industry 4.0 approach will create a more resilient manufacturing base and a more resilient Wales. By adopting innovative manufacturing technologies our businesses will be better equipped to be flexible in order to deal with high and low volumes and multiple product variants.

In the immediate term, we will:

Action	Owner within Welsh Government
On completion of the digital strategy, explore supporting structures to build capacity and identify key gaps for further investment requirements.	<ul style="list-style-type: none"> • Innovation • Regions

In the medium/longer term, we will:

Action	Owner within Welsh Government
Support a consortium of Welsh universities and industry partners to progress proposals for new strategic investments to be made in the core areas of software development, artificial intelligence, data and cybersecurity creating a National Software Academy, a new National Cyber Security Academy and the Wales Data Nation Accelerator.	<ul style="list-style-type: none"> • Skills, Higher Education and Life Long Learning
Align research on data security with industry need and support manufacturing businesses and people to adopt digital technologies in job redesign through regional hubs.	<ul style="list-style-type: none"> • Skills, Higher Education and Life Long Learning
Provide support through upskilling and reskilling in response to job redesign.	<ul style="list-style-type: none"> • Skills, Higher Education and Life Long Learning

The need to refine skill sets

We have to ensure we have the people with the right skills we require in Wales to work in manufacturing, developing a pipeline for diverse talent to enter the manufacturing sector in Wales. This includes addressing barriers to people with disabilities, women, ethnic minorities and younger people. Work needs to be undertaken to determine where we have skills gaps and developing a pipeline

of talent reflecting the diverse nature of our society. Attracting people to the manufacturing sector is one of the issues to be tackled.

One of the unintentional outcomes of the COVID-19 crisis may be the number of people who have taken inspiration from and changed their perception of engineering as a career and manufacturing generally. It may be that more young people are now considering a career in science and technology after witnessing engineers build ventilators and convert buildings into hospitals during the UK response to the pandemic.

The Brown Review highlighted the need to adapt skills to the changes envisaged in Industry 4.0. Our skills policy is aiming to blend delivery between higher and further education and work-based learning i.e. “post compulsory education” and is therefore addressing the changing nature of industry and jobs and peoples’ longer working lives. There should be ease of movement between vocational, technical and academic pathways. Regulated qualifications may not always be the best option for employers or the workforce; other forms of accredited learning are equally as important and more accessible to some learners. However, where qualifications do exist they should be easily understood and comparable, offering transferability and mobility. Work has commenced on establishing a strategic vision/mission for post compulsory education and we need to build on this as part of this action plan.

On that basis, careers advice should be targeted at adults as well as school children and young people. Many parts of the manufacturing sector are characterised by an ageing workforce that will need to adapt and retrain into new job roles as industry transitions. In this respect, there may be a place for quality placements to expose individuals to the opportunities of the sector, help to give them practical skills and be a valuable recruitment tool for employers.

Careers Wales' [Working Wales Service](#) (WW) was launched in 2019, providing independent careers information, advice and guidance for all adults and is able to refer people to appropriate programmes to develop skills.

Welsh Government's apprenticeship framework is aimed at supporting good quality apprenticeships in response to industry requirements. The framework is reviewed regularly to ensure it is meeting requirements.

Regional Skills Partnerships (RSPs) are strategic voluntary partnerships and are in place to provide regional employer-led labour market intelligence, setting priorities for Welsh Government across the areas of employability and skills. The RSPs are:

- North Wales Regional Skills Partnership (NWRSP);
- South East Wales Cardiff Capital Region Skills Partnership (CCRSP); and
- South West and Mid Wales Regional Learning and Skills Partnership (RLSP).

The RSPs produced three year strategic employment and skills plans in August 2019, which set out regional priorities, based upon employer led intelligence. Manufacturing features as a priority across all three regions with respect to skills and employability.

In light of the COVID-19 pandemic, the annual regional outline planning process which allowed RSPs to make recommendations to Welsh Government to influence further education and work-based learning delivery has been paused. However, the RSPs have been commissioned to produce reports on the employment and skills impacts of the pandemic based on intelligence gathered from their employer networks. This provides a useful picture on manufacturing across the regions. The aim of the reports is to utilise the RSP employer networks to provide rapid, up-to-date information about how employers are responding. Whilst these reports are not intended to be comprehensive assessments of the impact within the regions,

they are being used by Welsh Government, in conjunction with other intelligence and data, to identify emerging issues and enhance our understanding of the employment and skills impacts of COVID-19.

During 2021, work will commence on strengthening the demand led system to provide a greater role for RSPs to inform the deployment of skills funding across work-based learning and apprenticeships. Plans are also underway to establish a fourth RSP for Mid Wales, aligned to structures supporting its Growth Deal.

New technologies such as developing digital twins, using artificial intelligence and 3D printing to manufacture healthcare products, and making sure the circular economy is an integral part of lifecycle design and management are all exciting concepts which appeal to young people across genders, regardless of disability and ethnicity. With the advent of digital manufacturing and cyber security, there is an opportunity to attract higher numbers of talented diverse people into an exciting era of manufacturing.

For the manufacturing sector, it is clear that more people with STEM skills are needed. The need to address equity in learner progression in STEM related subjects is necessary to increase the flow of STEM skills from schools into the Welsh economy. Careers Wales is very active in providing details on jobs available, and also hosts targeted jobs fairs for schools including for STEM.

Collaboration across businesses will help identify the transferable skills that employers and workers need. A more co-ordinated approach in the Welsh manufacturing sector, which co-ordinates activities with Careers Wales and the Department for Work and Pensions (DWP) will help produce a pipeline of talent. This is particularly important in light of the Additional Guidance on Careers and Work Related Experiences (CWRE) which is being developed as part of the Curriculum and Assessment Bill.

The sector should encourage and promote the concept of lifelong learning and development of the workforce to develop skills that are portable, identifiable and can be demonstrated to aid movement across the economy. Vocational pathways, including apprenticeships, should be underpinned by UK-wide standards to offer transferability and portability across employers, sectors and borders. Generic transferable skills are vital to enable the workforce to remain mobile across various industries, particularly during an economic crisis.

In the immediate term, we will:

Action	Owner within Welsh Government
Work closely with the Regional Skills Partnerships to identify regional priorities for skills and employability across the manufacturing sub sectors.	<ul style="list-style-type: none"> Skills, Higher Education and Life Long Learning
Continue to review the apprenticeship framework and pathways to ensure they support the manufacturing sector.	<ul style="list-style-type: none"> Skills, Higher Education and Life Long Learning

In the immediate (and potentially medium/ longer) term, we will:

Action	Owner within Welsh Government
Establish an overarching body to co-ordinate STEM activities in Wales and bring stakeholders together.	<ul style="list-style-type: none"> Education and Public Services

Action	Owner within Welsh Government
Work with Careers Wales and DWP to address and develop Gatekeepers' knowledge of STEM career pathways to stimulate interest in manufacturing careers in line with CWRE guidance.	<ul style="list-style-type: none"> Education and Public Services
Build on the existing industrial engagement interventions and careers inspiration for learners from all backgrounds in compulsory education, by capturing modern manufacturing technologies. This will include people with disabilities, women, young people and ethnic minorities.	<ul style="list-style-type: none"> Education and Public Services Skills, Higher Education and Life Long Learning
Build on existing work to establish a programme of visit 'blocks' to capture modern manufacturing technologies, and extend these experiences beyond young people to teachers, careers advisors and parents.	<ul style="list-style-type: none"> Education and Public Services Skills, Higher Education and Life Long Learning

Strengthening collaboration between government, industry, trade unions and academia

This will help drive and improve competitiveness and productivity, which is essential for the manufacturing sector to secure its long term future.

We have an excellent record of working in partnership with industry, trade unions and academia through our social partnership approach and it is evident that this joined up approach can have a very positive impact on the manufacturing sector by helping to increase capacity and capability.

Although there is much good practice in this area, the systematic use of co-operation by industry with other stakeholders can be improved. These improvements should consider the “how” and “why” of collaboration as well as focusing on the future requirements of the economy. Interventions may be considered such as training in ISO 44001 (the international standard for collaboration), breakfast events, networking opportunities, building the business community, learning from exemplars in Wales on continuous improvement as well as looking further afield to benchmark productivity performance in comparable regions and countries. There may also be opportunities for digital platforms to facilitate collaboration.

Removing barriers to collaboration is also required if we are to identify good practice and build confidence and capacity. It is important that we demonstrate leadership on this and help to bring together parties working to a cohesive plan. This should include the development of innovative solutions in public sector bodies by the application of collaborative projects. Examples of how this can work is the Small Business Research Initiative (SBRI) and [Smart Living](#) (SL), both of which bring together public sector, academia and businesses together to develop innovative solutions.

We also want to work with our social partners to take advantage of opportunities at a UK level for growth and investment. In March 2020, the UK government committed the largest ever expansion of support for basic research and innovation, increasing public research and development investment to £22 billion per year by 2024 to 2025. In July 2020, the UK government published its research and development roadmap setting out its ambition to contribute to the place agenda, the need for both talent and diversity in the UK research and innovation arena, a desire to improve the research culture and the creation of the Advanced Research Projects Agency (ARPA). In Wales, our Regional Investment in Wales Framework (RIWF) was published in November 2020 and supports further investment in research and development.

The engagement between the Welsh and UK Governments as well as other key partner organisations and devolved administrations is important not only for research but building sector knowledge. It is through establishing and sustaining relationships, partnerships, and collaborations that we are best placed to develop intelligence and insight, to perform analysis, interpret information and influence actions. Such engagement supports magnet-project business cases, detailed briefings and action plans, to prepare for pipeline announcements and respond to economic shocks and further to support decision-making and strategic choices. The UK Industrial Strategy (2017) is a key publication and whilst economic development is devolved, we recognise the importance of alignment and the levelling-up of economic performance across the UK.

The way we work together with social partners and others over the next few years will also be important. We are strongly supportive of employers and trade unions working collaboratively and with mutual respect to make the workplace a better place for all.

Trade unions will play an important role in job redesign as part of the digitalisation and automation of the workplace to ensure the workforce is brought along in the transition, and supported to take advantage of new opportunities. We support widening access to trade unions and collective agreements to help realise our ambition of making Wales a fair work nation, and any changes that impact the workforce are the product of full engagement, consultation and negotiation with the trade union representatives of the workforce.

We will utilise the Shadow Social Partnership Council as well as new corporate joint committees being established at a regional level to support growth in all parts of Wales. Our approach will be to dovetail support for manufacturing with other opportunities across government including through new regional investment structures post-EU transition.

In the immediate term, we will:

Action	Owner within Welsh Government
We will step up our approach to encouraging employers to see the business benefits of engaging constructively and in social partnership with trade unions, recognising the contribution this makes to a more committed and productive workforce.	<ul style="list-style-type: none"> • Social Partnership and Fair Work • Regions
Review the key stakeholder map and categorise engagement (Informing/Consulting/Participating).	<ul style="list-style-type: none"> • Industrial Transformation Division • Regions

Developing communities and clusters within manufacturing sub-sectors

This will help to develop a culture of continuous improvement, share best practice and encourage collaboration.

The Brown Review recommends the creation of industrial innovation clusters to facilitate industrial transformation. The clusters initially identified included: data analytics; clean energy/circular economy; creative; professional services; medical/bio tech; and advanced manufacturing. The review also included internationalisation as a pillar of a cluster and we are looking to set up export clusters to support this area. We acknowledge that more work and analysis is needed to identify the right clusters for Wales and we recognise the need to support existing clusters as well as new ones.

We need to consider which clusters we view as strategic assets in enabling Wales to compete further up domestic and global value chains. There are already a number of clusters or communities in areas such as aerospace, automotive, food, hydrogen, marine energy, nuclear, life sciences and health innovation, technology and semi-conductors, which have been established for some time. We are also actively looking at a strategy for our chemicals cluster and establishing a tech valley cluster and an agri-tech cluster. We are also looking at supply chain opportunities within the floating off-shore wind sector within the Celtic Sea.

We believe that building on this success and taking on board the recommendations of the Brown Review will bring benefits to the manufacturing sector as a whole. The initial mapping work proposed would test this clusters approach as identified in the review, pinpointing the strengths and opportunities in Wales. The review also advocates MAPS (Mainstream, Align, Prioritise, Stop) as a planning tool and this may be a useful next step from the SWOT and PESTLE when identifying interventions and actions.

We will support these communities with strategies and suggestions for direction to ensure that we bring a cohesive continuous approach to the many business communities that are spread across Wales. The main focus will be to provide their membership with association with a credible, influential organisation to:

- gather and discuss market intelligence;
- use networking to collaborate on supply chain synergies;
- develop rapid innovation through sharing knowledge; and
- gain commercial benefit for its members.

In the immediate (and potentially medium/ longer) term, we will:

Action	Owner within Welsh Government
Take into account the recommendations of the Brown Review on clusters together with information from the manufacturing capacity and capability survey and use the data to identify Wales' strengths and identify priority clusters.	<ul style="list-style-type: none"> • Skills, Higher Education and Life Long Learning • Industrial Transformation Division
Establish a pan Wales network between clusters to share best practice and collaboration.	<ul style="list-style-type: none"> • Skills, Higher Education and Life Long Learning • Industrial Transformation Division

The provision of modern infrastructure to support changes to the way we work and how we access work opportunities

To enable our manufacturing sector to grow and thrive, we need modern infrastructure that can respond to changes in the way we work. The COVID-19 crisis has had a profound and potentially permanent impact on how we work. Remote working is now established in certain sectors, online business meetings and events are now normal. However, most manufacturing activity is likely to continue in physical premises so it is essential that we have right type of buildings for our manufacturing community to expand, diversify and start up.

We also need the infrastructure to be accessible by public transport and with autonomous vehicles we are increasingly seeing the possibility of the merger of public and private mobility. Welsh Government continues to invest in cleaner decarbonised public transport including buses and trains and is building greater broadband connectivity. We also recognise that to encourage greater reuse and recycling of materials we also have to continue to invest in our circular economy infrastructure so that our waste can be used as a manufacturing resource.

Modern infrastructure will help our manufacturing sector to access local suppliers and workers, become more productive, more connected and decarbonise our activities. We therefore need:

- employment sites and premises i.e. factories, offices and other facilities that can accommodate modern ways of working;
- transport infrastructure that is able to respond to differing working patterns and the merger of personal and public mobility such as autonomous vehicles;
- energy infrastructure, which enables employment sites to function, is increasingly

decarbonised and creates new business offerings for provision of energy services;

- circular economy infrastructure, which enables the reuse of resources; and
- communications systems which allow us to work in a connected way.

Consultation with stakeholders also highlighted the need for planning requirements to be easier to enable companies to expand, diversify and start up. This will also be a way in which companies can be better encouraged to remain in Wales.

Where Welsh Government property is involved in a ‘deal’ (sale, tenancy to a business or involve a grant) there may be opportunity for discussion about socially productive use of public property and assets for fair work purposes.

In the medium/longer term, we will:

Action	Owner within Welsh Government
Address the needs of manufacturing when planning the delivery of premises for businesses.	<ul style="list-style-type: none"> • Economic Infrastructure • Property • Regions
Focus on the needs of manufacturing when planning transport improvements, energy infrastructure, circular economy infrastructure and communications infrastructure.	<ul style="list-style-type: none"> • Economic Infrastructure
Look at planning requirements for companies wishing to expand, diversify or start up. This will include use of local development orders, permitted development and use of areas for public good.	<ul style="list-style-type: none"> • Planning

Fair work commitments to ensure that people working in manufacturing are treated fairly

We see fair work as fundamental to a prosperous economy and a successful manufacturing sector. This reflects the strong relationship between fair treatment of employees and their increased commitment, productivity, lower absenteeism, better recruitment, retention and other aspects of business performance.

Many of our best manufacturers are exemplars of fair work and they recognise the business benefits of treating their workers well. We will continue to advocate the economic as well as ethical case for fair work, using important levers like the economic contract and code of practice on ethical employment in supply chains to maximise our influence. We will also use our influence in public sector procurement and grant funding to promote fair work outcomes.



We will step up our work with social partners to champion the benefits of fair work and of employers and trade unions working as partners in a spirit of collaboration, shared commitment and mutual respect to make the workplace a better place for all.

In the immediate (and potentially medium/ longer) term, we will:

Action	Owner within Welsh Government
Ensure fair work is considered in collaborative work between government, industry, trade unions and academia.	<ul style="list-style-type: none"> • Social Partnership and Fair Work • Business Wales • Regions
Promote the economic contract and code of practice on ethical employment in supply chains in all procurement activity.	<ul style="list-style-type: none"> • Social Partnership and Fair Work • Business Wales • Regions • Commercial Procurement

In the medium/longer term, we will:

Action	Owner within Welsh Government
Use every lever available to promote fair work outcomes across the manufacturing sector.	<ul style="list-style-type: none"> • Social Partnership and Fair Work • Business Wales • Regions • Development Bank for Wales • Commercial Procurement
Expect all companies receiving funding through contracts and grants to sign up to the ethical employment in supply chains code of practice.	<ul style="list-style-type: none"> • Social Partnership and Fair Work • Regions • Development Bank for Wales • Commercial Procurement

Action	Owner within Welsh Government
Work with industry and trade unions to identify, promote and share best practice case studies of fair work, particularly those which demonstrate a link between fair work and improved business performance.	<ul style="list-style-type: none"> • Social Partnership and Fair Work • Business Wales • Regions

Strengthening leadership and management in manufacturing

A key objective of this plan is to secure the long term future of the manufacturing sector in Wales and to do that we need to build on the enormous amount of experience and expertise we currently have and harness that to spread best practice. This will involve identifying key skills such as strategy and execution and risk management, which will help to sustain and grow manufacturing businesses in Wales.

However, we should not limit our search for best practice to Wales. We are continually seeking out best practice from across the world with bodies such as the Massachusetts Institute of Technology (MIT) so we can access new thinking. Additionally, our universities have many collaborative projects underway with institutions in other countries, which bring ideas into Wales. Wales is also the home for a large number of global companies who are leaders in their fields, and we need to harness this expertise, experience and new ideas so we can build a community working together at improving leadership and management. There already exist a number of organisations/ fora who tackle elements of this, such as the Leaders Group, run by the Well-being of Future Generations Commissioner and Academi Wales, and consideration will be given to build networks around these existing networks.

Benchmarking our performance against other comparable regions will also be important as a measure of our progress and to gain a deeper understanding of how other regions have achieved high performance in economic development. For example, the four motors for Europe: Auvergne-Rhône-Alpes (France), Baden-Wurttemberg (Germany), Catalonia (Spain) and Lombardy (Italy). This will involve considering economic units such as the German Mittelstand and its part in the country’s economic success, where the role of SMEs is distinct, in that they base their competitiveness around high levels of innovation, being strongly export focused and being privately/family owned.

Choices of products and markets are fundamental decisions for companies to differentiate themselves from competitors and each choice implies a different level of risk involving uncertain customer demand, unpredictable competitors and changing technology. Execution of the strategy has less risk, as it takes place within the organisation, yet still involves uncertainty within its socio-technical systems. The challenge for leaders is the decision making necessary to select those specific dimensions which will focus attention and deliver success. There are risks in making poor decisions, but equally, there are risks in not making decisions to change direction and to exploit new opportunities. This is pertinent at this time of exponential change brought about by technology, climate change, ageing population, global competition as well as the COVID-19 pandemic and EU exit.

We need to work together to learn from best practice, benchmark our performance and develop leadership and management skills, which will secure the long term future of manufacturing in Wales. We also need to apply this learning to improve the well-being of the citizens of Wales.

In the medium/longer term, we will:

Action	Owner within Welsh Government
Focus on the two drivers of company performance; strategy and execution – the strategic choices which are made, and the subsequent organisational structure and mobilised resources to deliver the strategy. Consider the role of risk for both omission and commission of strategic choice.	<ul style="list-style-type: none"> • Industrial Transformation Division
Build communities of best practice with leaders across the manufacturing sector who are prepared to share with others and to learn from bodies such as MIT. Include channels to exemplar services such as the Leaders Forum and Academi Wales with a focus on the impact on the well-being of the citizens of Wales.	<ul style="list-style-type: none"> • Industrial Transformation Division • Regions
Benchmark our manufacturing performance against best practice of comparable regions in the UK and globally. Use this data to inform the development of support packages to improve productivity and competitiveness.	<ul style="list-style-type: none"> • Industrial Transformation Division

Supply chain resilience

This will involve identifying the potential for reshoring and localisation of priority items within the supply chain and using the procurement of public sector organisations and key anchor institutions/companies to create the initial demand. Integral to this approach will be the responsible/ethical sourcing of raw materials and components for products manufactured in Wales so that all of our manufacturers are 'globally responsible'.

Many of our manufacturing operations have supply chains, which can be long and linear and extend across the globe. The COVID-19 pandemic has proved that these supply chains can be fragile, lengthy, complex and therefore vulnerable. It critically exposes how much society depends on the smooth functioning of a supply chain.

During the COVID-19 crisis, many companies have experienced disruption to their global supply chains as their just enough and just in time supply chain failed. We have worked with industry on the supply of PPE and other items critical to the well-being of Wales in a concerted effort to combat shortages and protect front line workers. The success of this effort has highlighted three issues:

1. If we had another pandemic or other global disaster, not only would our PPE/medical items supply chains be in jeopardy but also other items such as food and raw materials or components which are used by manufacturers in Wales.
2. Whilst reshoring of many items may be desirable, in some cases it is just not possible, so we have to ensure supply chain resilience for the future. This may include holding safety levels of stock in the supply chain or working with supply chains closer to the UK.
3. COVID-19 has delivered a powerful lesson on the risks of long, linear supply

chains. The redesign of business models must consider how businesses improve their supply chain resilience, while also contributing to a green recovery through circular supply chains.

Work has commenced on looking at public sector supply chains for PPE and food. This is clearly a big issue for our manufacturers and possibly an opportunity to grow our manufacturing sector in certain areas. Sectors such as health, energy, construction, rail and defence are dependent upon public sector policy and budgets, and therefore the public sector has more influence over the supply chains in these areas than in other sectors, such as automotive and aerospace.

On a UK level, the Department for Industry and Trade co-ordinated Project DEFEND initiative has identified 65 sub-sectors where supply chain resilience is critical to the UK. Many of these are in areas where Wales has significant strengths and across these we need to engage. However, while efforts to shorten supply chains in many sectors will typically bring tier one and tier two suppliers closer together, the raw material extraction elements of the supply chain are often extremely difficult to change.

From a decarbonisation perspective, shortening the supply chain does not solve the issue but can make a significant contribution. A fundamental shift towards circular business models will retain the value of resources and products. This will include a range of actions which are part of the circular economy model, such as repair, recondition, reengineer, repurpose, reuse, remanufacture and recycle.

The outcome of the UK-EU Trade and Cooperation Agreement means that EU-derived components cannot be cumulated with UK ones to meet rules of origin targets for exports to the rest of the world. This means that businesses in the UK may see an advantage in sourcing suppliers within the UK. Conversely, SMEs within the manufacturing

sector may well find markets within the EU drying up as a result of EU customers preferring to source suppliers within the EU27. There will also be new regulatory barriers to trade which may be difficult for businesses which in the past have only ‘exported’ to the EU. We will need to continue support for these businesses to put systems in place and support for exporting as well as examining the potential for free trade agreements with non-EU markets, working with UK government to ensure that Welsh manufacturing interests are promoted.

In the immediate term, we will:

Action	Owner within Welsh Government
Identify which products, raw materials and components are vital to the well-being of Wales and look at how we can secure supplies and shorten supply chains in the event of a global emergency such as the COVID-19 pandemic.	<ul style="list-style-type: none"> • Regions • Industrial Transformation Division • Innovation • Commercial Procurement • Foundational Economy
Develop and rollout to the public and private sectors a responsible/ethical approach to procuring raw materials and components for products manufactured in Wales so that all of our manufacturers are ‘globally responsible’.	<ul style="list-style-type: none"> • Regions • Industrial Transformation Division • Innovation • Commercial Procurement

In the medium/longer term, we will:

Action	Owner within Welsh Government
Address the challenges and opportunities that arise from leaving the EU single market by modifying the support provided to ensure supply chain resilience.	<ul style="list-style-type: none"> • Regions • Industrial Transformation Division • Innovation • Commercial Procurement

Improving anchorage of businesses in Wales

This will involve encouraging and facilitating decision-making functions such as headquarters, research, development, innovation, sales and marketing and procurement in Wales.

The decision to anchor a business within a specific country or region comes from a range of reasons, including the themes already identified such as skills, supply chain, innovation support and route to market (procurement). Too often, however, the middle size companies in Wales are the manufacturing operation of a larger company whose decision making functions relate to several European or global ventures. This lack of decision making function in Wales presents a challenge in anchoring companies in Wales.

A balanced approach of both organic growth and critical focused/targeted inward investment that encourages companies to move vital decision making functions to their Welsh facilities is therefore essential. Clustering by areas of strength, and developing centres of excellence also play a significant role in this.

Over the last 10 years, investment has been made in such facilities, including the compound semi-conductor catapult, AMRC Cymru and M-Sparc amongst many others.

Our plans for further investment include the creation of an Advanced Technical Research Centre (ATRC) on Deeside.

We believe our innovation support will be key in attracting and retaining businesses in Wales. Innovation support is currently aimed at delivering on the digital, productivity, Industry 4.0 agendas, along with the newer priority of building Welsh resilience. Throughout the COVID-19 crisis we have used tried and tested mechanisms to deliver rapid turnaround. We are now acknowledged by Innovate UK as a leading practitioner in implementing public sector SBRI and GovTech competitions which stimulate new manufacturing solutions to grand challenges.

We believe that the advantages Wales can bring in terms of the themes identified in this plan, will make companies, whether they are foreign or indigenous, want to stay in Wales and make strategic decisions about their business in Wales. In particular, we believe that having access to innovation support is an important element of the Wales “offer”.

We can take action by encouraging the development of such functions from existing businesses – indigenous, UK and foreign owned. We can also undertake supply chain mapping to identify the voids that become promotable opportunities and we can target promotion to new investors in specific areas.

In the immediate and medium/longer term, we will:

Action	Owner within Welsh Government
Bring together research, development and innovation support and utilise our investments in facilities like AMRC and ATRC to help future proof our manufacturing community.	<ul style="list-style-type: none"> • Industrial Transformation Division • Regions • Innovation • International Division

Action	Owner within Welsh Government
Negotiate economic contracts in the manufacturing sector to improve anchorage in Wales linked to the Wales 4.0 journey.	<ul style="list-style-type: none"> • Regions

In the medium/longer term, we will:

Action	Owner within Welsh Government
Take a balanced approach of both organic growth and inward investment that encourages companies to move vital decision making functions to their Welsh facilities.	<ul style="list-style-type: none"> • Regions • Innovation
Undertake supply chain mapping to identify the voids that become promotable opportunities.	<ul style="list-style-type: none"> • Industrial Transformation Division • Regions • Innovation • International Division
Target promotion to new investors in specific areas.	<ul style="list-style-type: none"> • Industrial Transformation Division • Regions • Innovation • International Division

What we measure is an indication of what we value. Our *Economic Resilience and Reconstruction Mission* sets out a well-being economy with a holistic approach to the economy; recognising its potential for harm as well as good it demands a holistic way to measure progress. The MAP aligns with the mission.

GVA can no longer be the dominant measure of success and prosperity. We are focussed on seeing progress on the national indicators for Wales which reflect the vision for well-being as our central pillar. This means driving improvements to our environmental impacts, well-being at work and wider progress of society as a whole. It is not enough to measure overall wealth of a nation whilst glossing over inequality or consequential environmental degradation.

The drive for a well-being economy is no longer a fringe approach. The OECD has recently launched its Centre on Well-being, Inclusion, Sustainability and Equal Opportunity. Our membership of the Well-being Economy Governments network has consolidated our place in the vanguard of this progressive approach to economic development and our reconstruction efforts will demonstrate our influence and leadership on this agenda. We will engage with emerging and progressive thinking and debate in this field inputting our experience and learning from international good practice.

We envisage that the immediate, medium and long-term actions described are the basis of a ten year plan for future proofing our manufacturing sector. However, this is not just a Government plan – it is a plan that has been developed in conjunction with stakeholders including industry, trade unions and academia and to this end we must develop mechanisms to measure progress under the themes identified.

The Well-being of Future Generations (Wales) Act 2015 requires Welsh Ministers to set national indicators to assess progress towards

achieving Wales' well-being goals. The national indicators were published in March 2016 and these are summarised below. A full description of the national indicators including their technical definition and information about their data sources and frequency can be found on the Welsh Government [website](#).

Well-Being Indicators

Environmental well-being

- Levels of nitrogen dioxide (NO₂) pollution in the air
- Capacity (in MW) of renewable energy equipment installed
- The Ecological Footprint of Wales
- Amount of waste generated that is not recycled, per person
- Emissions of greenhouse gases within Wales
- Areas of healthy ecosystems in Wales

Economic well-being

- Gross Value Added (GVA) per hour worked (relative to UK average)
- Percentage of businesses which are innovation-active
- Percentage of people in employment, who are on permanent contracts (or on temporary contracts, and not seeking permanent employment) and who earn more than 2/3 of the UK median wage
- Gender pay difference
- Percentage of people in education, employment or training, measured for different age groups

Society well-being

- Percentage of adults with qualifications at the different levels of the National Qualifications Framework
- Gross Disposable Household Income per head

- Percentage of people living in households in income poverty relative to the UK median: measured for children, working age and those of pension age
- Percentage who feel able to influence decisions affecting their local area
- Mean mental well-being score for people
- Percentage of dwellings with adequate energy performance

To ensure that progress is properly monitored and measured, we will set up an industry-led panel with Ministerial oversight to focus on the delivery of this plan.

