



Lancashire
Enterprise Partnership

Lancashire Innovation Plan





Innovation Plan Foreword

Edwin Booth

Chairman of Lancashire Enterprise Partnership

From the Spinning Jenny to the development of the jet engine, Lancashire has always been able to build a vibrant economy, based on the innovation of those who work here. In 2018 the challenge has never been greater to harness innovation, to retain our competitive position and imagine Lancashire's industries of the future.

The challenge to increase productivity and match the performance of established and emerging competitors is an issue for the UK as a whole, but Lancashire is well placed to respond. Building on an already strong academic and industry base, Lancashire Enterprise Partnership has directed much of the investment it has won to creating and enhancing a range of innovation assets and centres of excellence which can match the needs of our key industrial sectors.

The commitment of both industry and academia to invest in significant facilities such as the North West Advanced Manufacturing Research Centre, UCLAN's Engineering Innovation Centre, Lancaster University's Health Innovation campus and Edge Hill's Tech Hub are matched by new skills development infrastructure such as Energy HQ at Blackpool and the Fylde College and BAE's own Academy for Skills and Knowledge.

The Lancashire Innovation Plan provides a framework within which we can re-focus our efforts. It explores the immediate challenges which need to be addressed to retain our advantage in key sectors such as aerospace, advanced manufacturing and energy but also challenges us to think about how current capabilities and research capacity can service the industries of tomorrow.

Existing programmes need to be better integrated with key supply chains and small and medium sized enterprises to define the role which new technologies can play in meeting the aspirations of Lancashire businesses.

Finally, we will meet the need to communicate progress both locally and globally through telling our story of innovation in Lancashire and the North of England as a whole. The evidence and assets referenced in the preparation of this plan will be central to our new Strategic Economic Plan and Local Industrial Strategy, illustrating the part we can play in the economic future of the region and beyond.

Executive Summary

The Lancashire Enterprise Partnership's plan for Lancashire is a plan to drive forward innovation across the County. It involves building on Lancashire's existing innovation resources and unlocking our latent potential to create the conditions where successful businesses can emerge and grow. Its objective is to drive productivity, industrial resilience and sectoral agility across the whole County.

The Lancashire Innovation Plan is designed around the principal that innovation matters and will increasingly be an imperative for how Lancashire 'works'.

Innovation is increasingly viewed as a key driver to improving productivity across the UK. Businesses that innovate grow faster than those that do not, and innovating economies are more resilient to market and technology change, and better equipped to plot their futures than those that do not. Innovation is front-and-centre of the launch of the UK Industrial Strategy, whilst the Northern Powerhouse identifies it as one of its key enablers. Internationally, work by the Organisation of Economic Development and Cooperation (OECD), has done much to highlight the importance of innovation, as technology brings once distant markets increasingly close to one another.

Against the economic context of Lancashire, innovation has a significant part to play.

Lancashire has many strengths and assets to build on to move our productivity efforts forward. We are home to leading global businesses at the cutting edge of innovation in Advanced Manufacturing, supported by a supply chain cluster of high-tech small and medium-size enterprises (SMEs). Our long standing and well-known strengths in Aerospace, Automotive, and Energy industries sit alongside exciting, emerging strengths in sectors such as Digital and Applied Healthcare. And through our high-performing universities and Further Education providers, working closely with national centres of research excellence and knowledge transfer partnerships, our excellence in deep thinking and research provides us with crucial competitive advantage. Yet our Gross Value Added (GVA) per head, the commonly used measure of productivity, across Lancashire's local authority geographies ranges dramatically, from £31,494, (amongst the top 50 districts in the UK and within the top 20 outside London and the South East) to £14,524 (380th of 395 areas).



The Lancashire Innovation Plan sets out how we will use innovation more widely, deeply and, importantly, visibly, to drive the resilience and productivity of our economy to enable Lancashire to achieve its full economic potential and establish a pivotal role both regionally and nationally by 2030. Our top priority will be to use innovation to help improve the productivity performance of Lancashire's sub-areas to the levels of our county's best.

Designed with flexibility at its core, the Lancashire Innovation Plan is not a set of rules or regulations, but rather a route map to how we want to build and embed innovation across the County. In the face of challenges posed by technology and market changes, the Plan aims to support a more dynamic response to key requirements, such as infrastructure, and provides the impetus to harness the power of our existing industrial strengths and identify new, emerging pathways to innovation for the benefit of businesses, people and communities.

An Innovative Strategy for an Innovation Economy

The formal implementation of Lancashire's Innovation Plan began with identifying the key aspects of Lancashire's innovation activity and development. To do this, we consulted with over 70 individuals from over 50 organisations from within, and out with, the County.

We launched a series of 'scoping calls' to key senior stakeholders from across private and public sectors.

These included representatives from the Advanced Manufacturing, Aerospace, Automotive, Nuclear, Digital, and Health Sectors, plus thought leaders and local 'innovation champions'. Further stakeholder workshops provided additional data analysis and market futures research to enhance the evidence base.

A comprehensive analysis of socio-economic and innovation datasets, econometric projections and a formal 'Call for Evidence' from key stakeholders in Lancashire was undertaken and an asset list of Lancashire's innovation assets was developed. This 'Asset List', presented at Appendix A in the final report, is a live document which will be maintained on an ongoing basis.

Together, this research formed a comprehensive evidence base which fed into the development of an 'Action Agenda' - a list of key aims and actions-from which Lancashire's Innovation Plan has been developed.



Creativity and innovation will underpin our future



A Framework for Action

At the heart of Lancashire's Innovation Plan is a simple framework set around a long-term vision and five strategic aims, summarised here and developed in more detail throughout the document.

Two of our Strategic Aims relate to Lancashire's innovation capability – the ability of existing and new businesses to develop, adopt, and commercialise innovation, whilst the other three Strategic Aims relate to building Lancashire's innovation ecosystem – building the infrastructures, mindsets, and marketing capability across the County necessary for innovation.

Within each Strategic Aim, we set out why the Aim is needed, and outline a series of supporting objectives which define the practical activity required to achieve them.

What Success Will Look Like

To make Lancashire's Innovation Plan a reality by 2030, a series of short, medium and long-term actions are proposed for each Strategic Aim.

For Strategic Aim 1 'Staying Ahead', we will:

- + Focus on delivering the Made Smart Review's North West National Adoption Programme Pilot;
- + Connect with Centres of Excellence outside Lancashire, helping to improve our participation in national, and potentially international, innovation networks;
- + Work in collaboration with large employers in the County to strengthen innovation capabilities of their supply chains;
- + Develop a network of Lancashire 'Innovation Ambassadors' to work with local SMEs; and
- + Implement a Lancashire Technology and Market Foresight Observatory.

For Strategic Aim 2 'New Routeways to Excellence', we will:

- + Develop supply chain crossover networks;
- + Encourage an increase in Knowledge Transfer Partnerships (KTPs);
- + Develop Test Beds in new sectors such as Digital, and initiatives such as 'Failure Labs' and 'hackathons', with different sector hubs over time; and
- + Start to analyse rigorously how overlaps and synergies between the activities and technologies of our existing sectors can be drawn out to define new areas of sectoral strengths that we can develop.

For Strategic Aim 3 'Broadening the Innovation Base', we will:

- + Enhance existing, or building new, leadership development programme activities, ensuring that innovation is given the same priority as wider core business disciplines;
- + Ensure relevant capital developments include provision for incubating innovation-led start-ups;
- + Facilitate networking between innovation and incubation centres within and out with the County to share best practice; and
- + Develop a programme of visits to Lancashire from innovation success stories across the world, helping to stimulate global networking, and bringing best practice to Lancashire's attention.

For Strategic Aim 4 'Enabling Infrastructures for Innovation', we will:

- + Create an 'innovation graduate' placement programme for SMEs;
- + Develop a single point of contact programme of support for innovation-led start-up or early-stage businesses;
- + Explore options for creating a Lancashire Innovation Fund for early-stage funding for innovation-led start-ups;
- + Develop a programme to promote innovation across public and third sectors; and
- + Embed Intellectual Property (IP) management in to innovation initiatives.

To deliver Strategic Aim 5 'Letting the World Know!', we will:

- + Hold an annual Innovation Showcase to celebrate successful innovation in, and across, the County;
- + Develop a Lancashire Innovation Marketing Strategy;
- + Develop and disseminate a portfolio of Lancashire innovation case studies; and
- + Ensure Lancashire is represented in all key national assemblies and debates relating to innovation, so that forward and backward linkages to innovation in our County are promoted and developed.

Making It Happen

Strong leadership, collaboration, and willingness to deliver change are fundamental to making Lancashire's Innovation Plan a reality. So too, is making the most of the County's existing resources. The Lancashire Enterprise Partnership (LEP), will play a central role in driving the Innovation Plan, but we'll also call on leaders from across private and public sectors to come together and work with us to drive and deliver innovation for Lancashire.

We'll set up a new Innovation Board-within the LEP's structure-to provide the strategic leadership and accountability for the Innovation Plan and its delivery. Led by the private sector, with the support and representation of publicly-funded partners and representatives of the key innovation assets in Lancashire, the Innovation Board will integrate and complement existing innovation settings and activities, such as the emerging Higher Education Institution (HEI) Innovation forum (which brings together HEI representatives on common innovation-facing issues), to drive a unified approach to innovation in the County.

Advancing the Future

The Innovation Plan is a plan for the future of Lancashire. A blueprint for the County's evolving DNA and a strategic agenda for innovation in the County through to 2030. Between now and then, much will change. New sectors, technologies, and services will flourish to create conditions that will improve access to new and existing markets and that will empower Lancashire businesses and workforces, enabling them to realise the true value of their services and skills.

Flexibility must become our watchword so that everyone is ready to meet these changes and opportunities as they come into play. We will work with businesses, communities and individuals of Lancashire to champion innovation success wherever we find it and work together to ensure that the benefits of innovation are felt across the County.

Creativity and innovation will underpin our future. The Innovation Plan will be our constant and collaboration will be our driver. Together, we will make Lancashire the very best place to start and grow a business, and cement Lancashire's position as one of the UK's leading innovation economies, resilient to change and fit for the future.

Case Study

Offline Robotic Programming

Esse Engineering

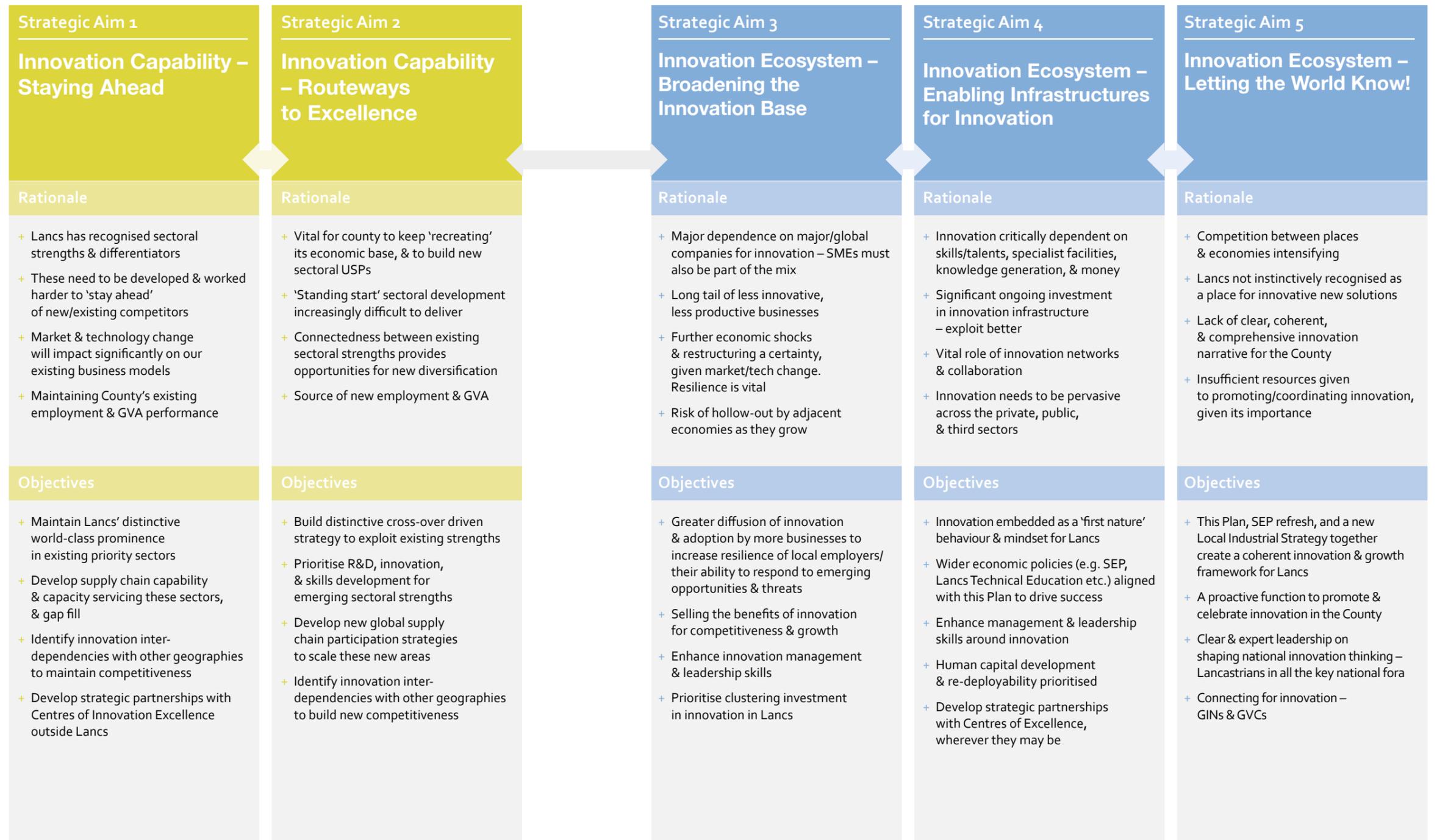
To maintain the highest quality the company assemble each stove by hand. In order to match demand the company were looking to make further investment into robotics, for the use of enamel application and the removal of cast iron flashings. Using robotics in the Advanced Manufacturing Laboratory at UCLan's Burnley campus, the DigitME2 project carried out research into company requirements and available solutions, before simulating methods of flash removal.

To supplement this, DigitME2 provided knowledge transfer to staff providing them with skills to use the companies existing robotics in an offline environment. This allowed staff to write programs for new product models offline, which has led to removing the need to halt the production line, an easier mitigation of risk through offline simulation and a reduced deployment time for new products.

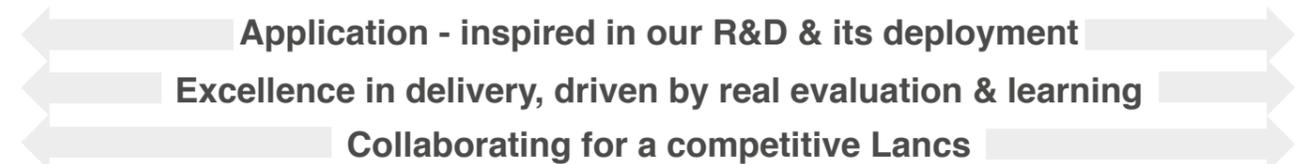
“We were impressed by UCLan's facilities and expertise, we had previously been unaware of the extent of activities taking place at the Burnley campus. We hope to extend the use of robotics within our manufacturing process during the next 12 months.

Martin Ashby,
MD – Esse Engineering

Vision



By 2030, Lancs will have positioned itself as a globally connected & resilient innovation ecosystem. The way we innovate will embody excellence & collaboration, feeding through to greater commercialisation, entrepreneurship, & competitiveness in our economy. We will have a track - record as a centre for globally-competitive knowledge clusters & talent, & as a developer of new solutions to the emerging challenges of our world.

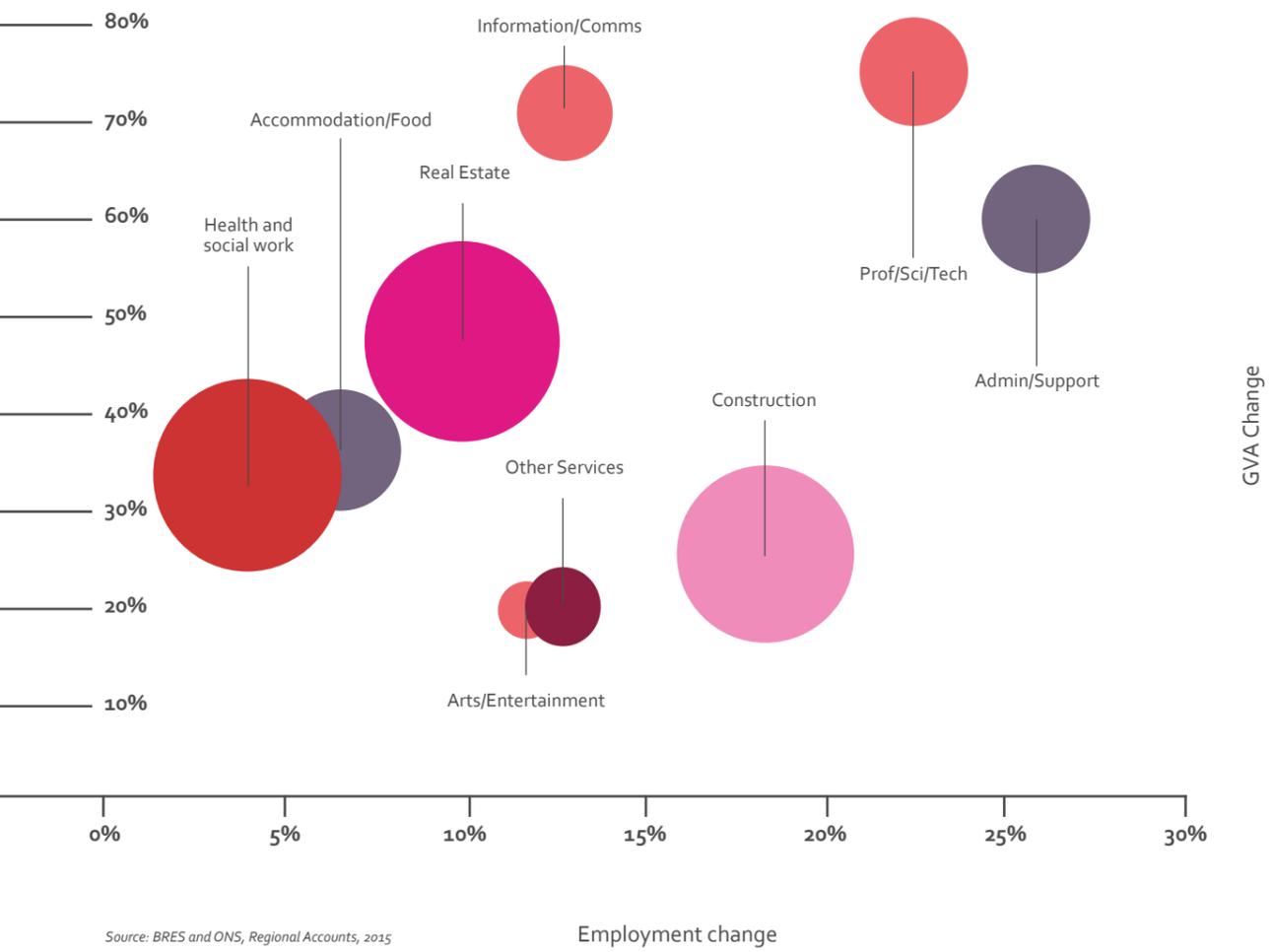


The Changing Shape of Lancashire's Economy

Econometric forecasts suggest that, under a 'Do Nothing' scenario, the productivity gap will remain. By 2036, GVA in Lancashire is due to increase by just over 30% to £38.5 billion. Over the same period, UK GVA is forecasted to increase by just over 40%: the productivity gap will grow. If Lancashire's GVA grew at the same rate as the UK over this period this would result in an additional £2.5 billion in GVA by 2036.

Employment growth is also forecast to remain slower than that of the UK. By 2036, employment in Lancashire is set to grow by 2.7% (an added 19,000 jobs). Over the same period, the UK employment is due to increase by 7.3%. If Lancashire's employment grew at the same rate as the UK this would result in an extra 53,000 jobs in the local economy.

Figure 1: Expanding Sectors in Lancashire in the period to 2036



Source: BRES and ONS, Regional Accounts, 2015

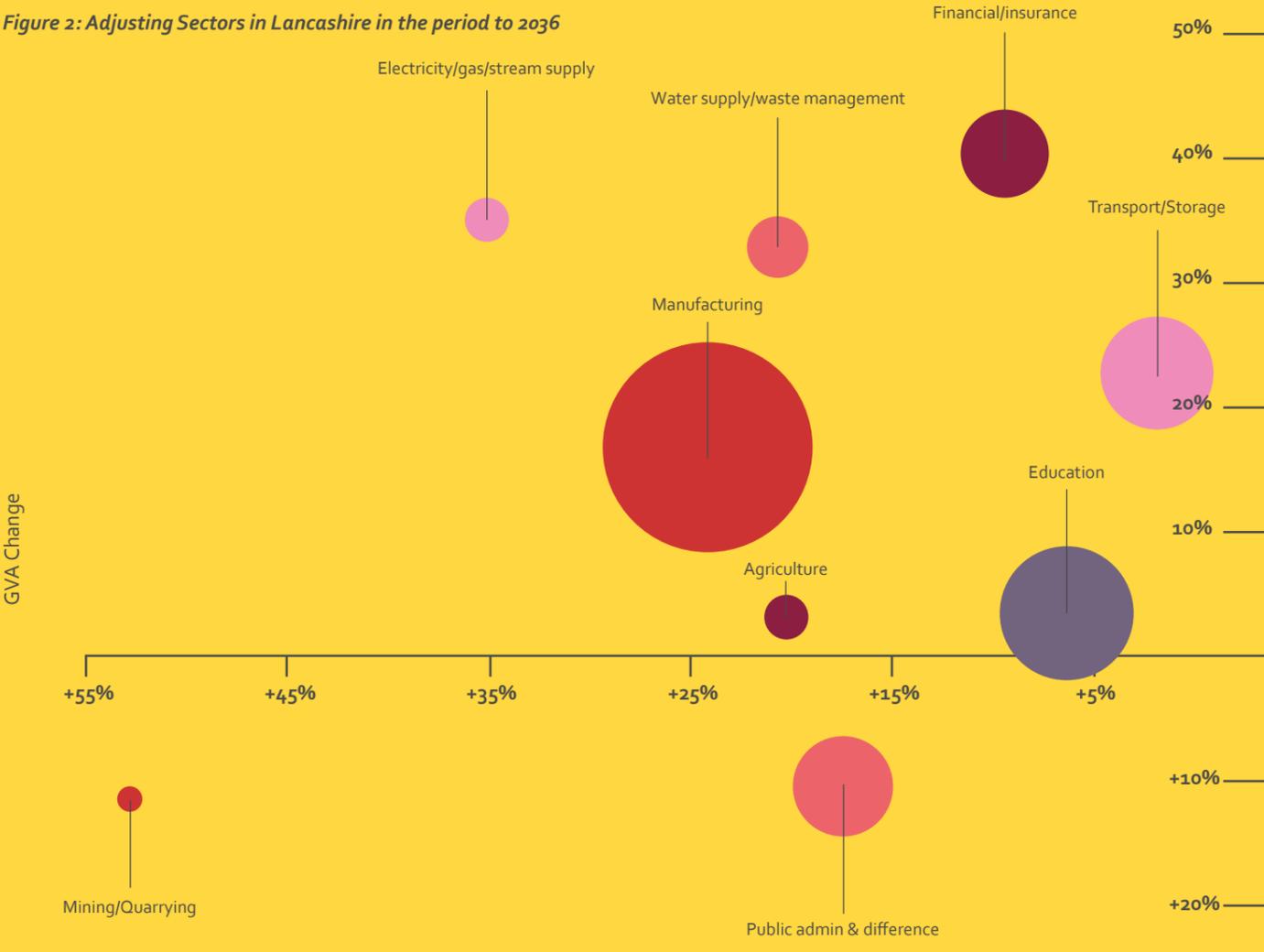
Moreover, Lancashire's economy will experience significant change over the next two decades. Sectors are expected to perform in one of two ways:

- + Expanding sectors which are forecasted to grow in both GVA and employment; and
- + Adjusting sectors where GVA will increase but employment is likely to decrease.

Figure 1 shows the Expanding sectors. Significant growth in both GVA and employment is forecasted in service sectors such as Professional/Scientific/Technical, Administration/Support (including Technical Support), and Information/ Communications. Most sectors are forecasted to grow in GVA and employment. These data are at a broad sectoral level, which can miss the nuances and variety of job roles within each sector.

Figure 2 below shows the Adjusting sectors. Most significantly, the current key employment sector of manufacturing is forecast to decline in employment by 24% (c.20,000 jobs) by 2036. This trend is expected nationally, however, is expected to be more keenly felt in Lancashire due to the size of the sector in the County. The fact that manufacturing is forecast to grow in GVA despite this points to the productivity opportunities in data and automation that Industry 4.0 presents. It is important to remember that these forecasts are 'policy-off', meaning they do not consider different policy scenarios or their implications. Interventions such as those advocated later in this Plan, alongside ongoing actions across the County and North, can address these potential employment challenges.

Figure 2: Adjusting Sectors in Lancashire in the period to 2036



Source: BRES and ONS, Regional Accounts, 2015

Lancashire's Innovation Ecosystem

Through a range of stakeholder consultations, data analysis, and a review of over 40 documents received via a 'Call for Evidence', this section of the study presents the strengths, weaknesses, opportunities, and threats (SWOT) for innovation in Lancashire.

The SWOT was conducted through four lenses. These are:

- + People/Human Capital – covering demographics, mindsets, skills and occupation offer, education, and access to work;
- + Infrastructure/Assets – covering sites, premises, (and the cost and location of these), housing, environment, transport, and national strategic infrastructures (digital/energy/waste/water/flood risk);
- + Knowledge – covering Further and Higher Education, research institutions, innovation systems, networks, and commercialisation processes; and
- + Money and External Business Expertise – covering access to finance, accounting and legal professions, intellectual property management, and marketing.

Lancashire has well established and recognised strengths in the Aerospace, Automotive, Energy, Nuclear, Digital, and Health Innovation sectors. There are strengths in biological sciences, Life Sciences and Healthcare, Advanced Manufacturing and materials, and Digital. Protecting, enhancing, and diffusing these strengths across their supply chains and across sectors will be a key feature of the future innovation landscape in Lancashire.

The local HEIs have research strengths in STEM subjects, in particular, Computer Science, Mathematical Science, and General Engineering, and provide significant research and consultancy services (with a total income of £26m from contract research and consultancy services across the four HEIs in 2015/16). There are translational research centres such as the Engineering Innovation Centre at UCLan, the North West Advanced Manufacturing Research Centre at Samlesbury, and the forthcoming Lancaster Health Innovation Campus which can be catalysts for research development and adoption across the local economy and beyond.

Graduate retention rates are good in Lancashire, and strong Further and Higher Education provision is starting to show in the improving rates of residents with higher level skills. Maintaining and continually improving these will be key to ensuring a pipeline of talent to support Lancashire's businesses and innovation capabilities.

Analysis of the IPO patenting data indicates strong intellectual property advances in areas such as Civil Engineering, Mechanical Elements, Medical and Computer Technology, and Thermal Processes. Ongoing analysis of patenting data can provide an indication of emerging innovation specialisms and differentiators. Providing support for businesses in generating and managing their intellectual property can help them to protect their intellectual property assets and maximise the value from them.

Innovation Assets

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|--------------------------|------------------|------------------------------|
| ● Advanced Manufacturing | ● Creative | ● Health |
| ● Aerospace | ● Digital | ● International connectivity |
| ● Automotive | ● Eco-innovation | ● IT |
| ● Business Support | ● Education | ● Maritime |
| ● Chemistry | ● Energy | ● Mixed |
| ● Construction | ● Engineering | ● Nuclear |





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