

## **Invest 2035. The UK Government's Modern Industrial Strategy**

### **Universities Scotland's response to the consultation. 2024.**

#### **Introduction**

Scotland's universities are excited by the potential within the industrial strategy. The focus on 8 growth sectors align very strongly with our strengths in research, innovation and skills. As Scottish HE operates in a devolved and reserved context, this strategy is relevant to our institutions and to maximising growth within Scotland and the rest of the UK. We hope to be fully involved in the next stage of the strategy's development including the development of a growth plan for each of the priority sectors identified.

The consultation on the Modern Industrial Strategy was comprised of 36 questions. We choose to focus our response on just 13 of those questions, as best fits higher education in the devolved context.

#### **2. How should the UK government account for emerging sectors and technologies for which conventional data sources are less appropriate?**

The UK Government can use universities' research strengths and expertise as a means of predicting and accounting for emerging industrial sectors. Many of the UK's strongest-performing sectors have grown out of the world-leading research and innovations being produced by our universities, including:

- **Scotland's small satellite manufacturing sector**, centred in Glasgow and the second biggest in the world, which grew out of expertise at the Universities of Glasgow and Strathclyde in small satellite technology and engineering, space safety and sustainability, space mechatronics, robotics and automation, and earth observation and data analysis.
- **Scotland's thriving net zero sector**, which is built upon universities' research and innovation activities, including the University of Aberdeen's work on hydrogen production, storage, and applications; the Robert Gordon University Oil and Gas Institute's work on repurposing offshore infrastructure for renewable energy use; and advances in carbon capture and storage (CCS) being driven by institutions like the University of Edinburgh. Scottish universities are also collaborating with a wide range of partners through the ETP and Scotland Beyond Net Zero groups to mobilise their strengths in research, data and innovation to support Scotland in its net zero transition and beyond. The headquartering of GB Energy in Aberdeen demonstrates the significance of Scotland's clean energy industries and the university expertise underpinning them.
- **Scotland's evolving life sciences sector, including for example world-leading capabilities in drug discovery, design and development, and engineering biology.** The University of Dundee

was ranked first in the UK for spin-out success in 2023<sup>1</sup> Notable spin-outs include Amphista Therapeutics Ltd and Exscientia, which raised £2.2 billion in its IPO on the US NASDAQ, one of the largest ever UK university exits. The Edinburgh Genome Foundry is the most highly automated DNA assembly platform in Europe and a cutting-edge high throughput cell selection and phenotyping system, one of only a handful of systems globally.

- **Scotland's photonics sector**, which spans both leading SMEs and major multinational companies, and generates over £1.2 billion in turnover per annum. This sector is supported and enabled by expertise across several Scottish universities in research fields including optical communication, quantum technologies, biophotonics, and sensors and imaging.
- The **AI and data sector in Scotland**, comprising more than 1,000 data and AI-related companies, which is driven by world-leading research and infrastructure within our universities across fields including natural language processing, robotics, computational modelling, big data analytics, and statistical methods. The University of Edinburgh, with Heriot-Watt University, leads on £660m Edinburgh City Region Deal investment in AI data-driven innovation, cementing Edinburgh City as the 'data capital of Europe'. Edinburgh hosts the UK's most powerful supercomputer, and its Edinburgh International Data Facility in partnership with Hewlett-Packard Enterprise delivers the largest regional data infrastructure in Europe. Scottish AI research underpins advancements across all of the growth sectors and beyond, including agriculture, health, net zero transition, and fintech.

If the UK is to maintain its competitive edge in emerging sectors and technologies, the UK Government must continue to invest in fundamental research across the UK, through UKRI and other routes. Fundamental research is a crucial first step in the journey from new discoveries to application in addressing real-world challenges, and commercialisation of innovative solutions. ARIA may provide a model for investment in fundamental research, noting the organisation is still in its nascent stages and it will be important to evaluate its operations over coming years.

We understand and support the drive to commercialise the products of research. However, investment in applied research cannot be at the expense of the blue-skies research in which UK universities excel, but which is often viewed as too high risk to attract commercial investment. Models such as the Scottish Funding Council's Alliances for Research Challenges and Innovation Centres can help bring together institutions and business partners to amplify research efforts in emerging and important fields.

The strengths of the UK's university research base, including Scottish universities' unique contribution, can provide indicators to UK Government of areas in which the UK has world-leading and growing capabilities which could underpin the growth of emerging industry sectors. Some sources which could provide helpful data include the Research Excellence Framework, which provides a retrospective view on university research outputs and impact; government investments in research infrastructure such as Hubs and Centres; and supported projects under programmes like the Industrial Strategy Challenge Fund.

Looking at a combination of these metrics from the past decade would for example demonstrate the strong growth of Scotland's quantum and photonics sector based on the success of Scottish universities in securing UK Quantum Technologies Programme funding, including for the QuantIC hub at the

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<sup>1</sup> Octopus Ventures, 2023, [Entrepreneurial Impact Ranking](#).

University of Glasgow, Integrated Quantum Networks (IQN) Hub at the University of Heriot-Watt, and the Quantum Computing Application Cluster which brings together the expertise of the Universities of Strathclyde, Edinburgh, and Glasgow.

Additionally, UK Government may wish to revive the Science & Innovation Audits programme, carried out by the then Department for Business, Energy & Industrial Strategy, which were successful in some cases in validating emerging strengths and identifying further opportunities. For example, the Offshore Renewable Energy Audit in 2017 outlined Scottish strengths in marine renewables, tidal stream energy, and offshore wind aligned to world class academic expertise in this area.

Emerging sectors and technologies require sustained and predictable support to realise their full potential. Investment in fundamental research is a necessary first step, but it alone is not sufficient – support is needed at every step of the Technology Readiness Level (TRL) journey. Fragmentation of (often short-term) support across local, regional, and national bodies is a key challenge. We welcome the Industrial Strategy’s 10-year horizon, which creates an opportunity to consider how best to support emerging sectors over the longer term.

The creative industries, as one of the growth sectors identified in the green paper, is not a sector which benefits from a conventional approach to data and measurement. In its recent review of *Culture and the creative economy in Glasgow City Region* (2022) the OECD identified a shift from a ‘creative industries sector’ to a ‘creative industries eco-system’, where culture and creativity cut across a range of other industry sectors. The report concluded that future development of the creative industries must be framed and supported on that basis.<sup>2</sup>

## **7. What are the most significant barriers to investment? Do they vary across the growth-driving sectors? What evidence can you share to illustrate this?**

Barriers to investment include inadequate skills planning; investors’ willingness to take on risk and their expectations for both the speed and rates of return; industries’ absorptive capacity; and policy fragmentation.

Skills planning and access- Gaps in workforce skills in crucial sectors of the economy (particularly emerging sectors) often act as a barrier to investment, as they limit company growth. Challenges with data sharing and accurate forecasting of skills needs, including a lack of regional specificity and useful granularity, can exacerbate these gaps. An active, enduring and responsive conversation is needed between education and training providers, governments, and industry to make the skills system more responsive to the needs of the growth-driving sectors, and to provide investors the necessary assurance that the UK has the skills it needs to support ongoing growth. That includes all aspects of workforce development, including upskilling and reskilling. Universities are the natural lifelong high skills learning partners of industry, but our potential is limited by policy fragmentation and short-term funding cycles. It is therefore critical that Skills England works collaboratively with Scottish Government and relevant Scottish public bodies (and their counterparts in Wales and Northern Ireland) in developing the skills-related elements of Industrial Strategy implementation.

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<sup>2</sup> OECD (2022), “[Culture and the creative economy in Glasgow city region, Scotland, United Kingdom](#)”, *OECD Local Economic and Employment Development (LEED) Papers*, No. 2022/10, OECD Publishing, Paris.

At a headline level, the UK's economic growth will be highly dependent on graduate and postgraduate level skills. By 2035, 88% of new jobs will be at graduate level, meaning more than 11 million extra graduates will be needed across the UK's workforce. That includes over 1.9 million STEM professionals in disciplines such as computing and engineering, which are essential to driving forward the growth sectors identified in the Industrial Strategy.

produces.

In addition to specialist and industry-specific skills, there is a need to do much more on fundamental skills including creative thinking, leadership, and management, without which company growth will inevitably be limited. Universities offer a range of internationally competitive leadership and management courses, including executive education focussed on those already in leadership roles. However, more could be done to enable future leaders to access these courses, particularly in emerging SMEs, which often lack the resources available to more established firms.

More broadly, Skills England notes that a recent survey found leadership and management skills were difficult to find for 44% of skills shortage vacancies. OECD analysis has also found that quality metrics for management are typically lower for businesses in the UK than they are in other countries such as Sweden, Germany and the USA. Skills England links this to lower productivity levels.<sup>3</sup>

Leadership and management skills are also consistently identified as skills areas in increased demand. Skills Development Scotland's (SDS) October 2024 Economy, People and Skills report<sup>4</sup> concluded that management skills are one of the most in-demand skillsets in Scotland. Similarly, SDS's January 2024 report on green sectors comments on the need for strategic leadership and management skills to support the transition to net zero, including in manufacturing (which includes engineering).<sup>5</sup>

Additionally, the shortage of skilled workers equipped to respond to innovations and new technologies is particularly acute in remote and rural areas. Over the last ten years, Skills Development Scotland estimates a 1.2% decline in employment in rural Scotland as opposed to an increase of 3.8% across Scotland as a whole. This is a complex problem with multiple causes beyond simply skills, including rural depopulation. However, there are also opportunities. For example, the North East of Scotland (including more rural areas) has a skilled workforce relating to oil and gas and there is potential to retain this workforce and capitalise on transferable skills for clean energy.

Risk and return- In many cases, investors are unwilling to provide funding for infrastructure and assets that underpin the research and innovation activities that lead to groundbreaking discoveries, which in turn drive economic growth. For example, the origins of quantum science are over a century old, but it has only been in recent years that practical applications for quantum have become possible, with the quantum industry worth a potential £1 billion in Scotland by 2030.<sup>6</sup> Private investment is therefore often dependent on prior public funding to support and drive forward the groundbreaking research that could eventually have commercial potential.

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<sup>3</sup> Skills England, 2024, [Skills England: Driving growth and widening opportunities](#).

<sup>4</sup> Skills Development Scotland, 2024, [Economy, People and Skills](#).

<sup>5</sup> Skills Development Scotland, 2023, [CESAP Pathfinder: A Dynamic Skills Response to Supporting the Transition to Net Zero 2024](#).

<sup>6</sup> University of Glasgow, 2024, [Fundamentals of Quantum Science and Algorithm Development](#).  
Technology Scotland, 2023, [New report highlights billion pound potential of Scotland's quantum industry](#).

Private investors are also largely unwilling to invest in research at TRLs 1-3, due to the high degree of risk, and translational funding from other sources is therefore required to bring projects closer to market at TRLs 4-6. In addition, growing pressures on public and third-sector funding bodies have resulted in a reduction in translational funding over the last several years, making it more challenging for researchers to commercialise their work.<sup>7</sup> Initiatives such as the Department of Science, Innovation and Technology's Research Venture Catalysts, which offer government match funding to attract private matched investment to drive more risky research innovation, could provide a model for co-investment.

Absorptive capacity- Many companies across the UK have limited capacity to innovate, which restricts their potential growth and ability to attract investment. Absorptive capacity for innovation and technology varies greatly across regions depending on the composition of their industrial base. The UK Innovation Survey 2023, covering 2020-2022, found that small businesses (with 10-49 employees) were least likely to be innovative, with only 30.1% of small businesses in Scotland and 34.4% in the UK as a whole being considered 'innovation active'.<sup>8</sup> While the COVID-19 pandemic was a barrier to companies innovating over the period in question previous iterations of the survey bear out the same results, with large businesses being much more innovative than their SME counterparts.<sup>9</sup>

Scotland - alongside other nations and regions across the UK - has an economy dominated by SMEs, and therefore requires different policy solutions to incentivise companies to undertake innovative activities. SMEs account for 99% of all businesses, 56% of private employment in Scotland, and 42% of private sector turnover in Scotland.<sup>10</sup> A report from the Growing Value Scotland Task Force found that new knowledge generated by Scottish universities was not being absorbed by businesses in sufficient quantity or intensity.<sup>11</sup>

Universities are keen to work more closely and deeply with a greater range of companies across the UK to improve their absorptive capacity for new technologies and processes, which will enable better leveraging of the world-leading research and innovation outputs our sector consistently produces.

Policy landscape fragmentation- The UK's innovation and economic growth policy landscape is currently characterised by complex, short-term and fragmented initiatives; particularly in the devolved nations, where two governments are often active in the same space. Better coordination between government departments and all levels of government within the UK would assist in reducing the complexity for businesses and investors in navigating the system and its available supports. Incorporating learnings from current and previous programmes into the implementation approach for the Industrial Strategy will also be of great benefit.

Finally, it should be noted that there is great variation across the growth-driving sectors in the associated infrastructure costs and hence their attractiveness to private sector investors. Lab facilities are particularly costly and difficult to secure, with perennial difficulties for life sciences companies for example to find the wet lab space they require. The cost per square foot of developing these spaces

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<sup>7</sup> Scottish Enterprise, 2023, [Scottish Universities Spin Out Review](#).

<sup>8</sup> Scottish Government, 2024, [UK innovation survey 2023- results for Scotland](#).

<sup>9</sup> Department for Business, Energy & Industrial Strategy, 2020, [UK Innovation Survey 2019: Main Report covering the survey period 2016 – 2018](#).

<sup>10</sup> Scottish Government, 2023, [Businesses in Scotland 2023](#).

<sup>11</sup> National Centre for universities and business, 2016, [The Step Change: Business-University Collaboration Powering Scottish Innovation- The Final Report of the Growing Value Scotland Task Force](#).

often exceeds market rents, particularly those targeting start up and early-stage companies. That in turn creates a viability gap that cannot be filled by commercial funding. Universities are the providers or key partners across most of Scotland's company incubation space, but funding is under ever-increasing pressure and demand continues to outstrip supply.

**8. Where you identified barriers in response to Question 7 which relate to people and skills (including issues such as delivery of employment support, careers, and skills provision), what UK government policy solutions could best address these?**

Scottish universities have a central role to play in meeting skills needs right across the growth sectors – from industry specific skills to foundational provision in cross-cutting competences such as leadership and management, and creative and critical thinking. Universities are uniquely well placed to be the lifelong high skills learning partners of industry, with porosity between education and employment pathways creating a virtuous cycle of skilling and upskilling in areas of need. However, multiple barriers currently restrict our ability to play that role to full effect – including inadequate skills planning, and funding pressures that limit but the breadth of provision universities can provide and business access to that offer.

Existing skills forecasts often focus on the short-term and can be vague about skills needs (e.g. referring to more 'green skills'). Skills forecasting is difficult because there are many interdependent factors and contingencies<sup>12</sup>, but the planning process for some types of provision is long. For example, progressing from designing a brand-new undergraduate course to the first student graduations can take six years. This will be shorter for taught postgraduate degrees and shorter still for short courses, but time lags remain significant where skills gaps already exist.

It would be useful to be more specific about skills needs. For example, recent Skills Development Scotland (SDS) analysis on financial services identified medium (to 2027) and longer term (to 2034) skills needs for the financial sector, with demand highest for business and public service associate professionals. However, this does not identify the actual skills that employers want. Similarly, analysis of skills to support a transition to net zero<sup>13</sup> identifies industries that need people and has some information on some professional areas, but is lacking the critical detail providers like universities need to plan new provision effectively.

In recent years skills reports have often focussed on the private sector and ignored public sector needs, including health and schools. This is problematic because, without key public services, it will be difficult to attract and retain talent within the growth sectors - whose employees naturally consider public service provision when choosing where to locate - across all of our regions, particularly our more remote and rural areas. Universities Scotland would welcome more holistic assessments of skills needs across the whole economy, including the growth sectors identified by the Industrial Strategy.

In addition, whilst Scottish assessments of skills needs look at both Scotland as a whole and regions within it, UK skills assessments often only consider the former. Scotland is not homogeneous, and our regions have very different economies and skills needs, across both the public and private sector. We

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<sup>12</sup> Skills Development Scotland, 2023, [CESAP Pathfinder: A Dynamic Skills Response to Supporting the Transition to Net Zero 2024](#).

<sup>13</sup> Ibid

therefore urge the UK Government to ensure that Skills England considers the needs and circumstances of Scotland's regions, as well as the country as a whole.

One model which UK and Scottish Governments might consider implementing to address challenges in skills planning is the National Energy Skills Accelerator, a collaboration across the University of Aberdeen, Robert Gordon University and NeSCol, supported by Skills Development Scotland and Energy Transition Ltd. The Accelerator provides a regional model working with businesses and the tertiary education sector to help create a more flexible and resilient work force for the UK's energy sector.

Currently, all eight of the growth-driving sectors are dependent on high-level skills and are reliant on graduates. All are driven by a labour force where graduates constitute at least 50% of workers. This figure is even higher within the creative sector (76%), professional and business services (74%), and the life sciences sector (73%). The crucial role of universities in educating the workforce required by these growth-driving sector strengthens the imperative for granular skills forecasting to allow universities to plan their provision (though we note that universities are not limited to acting only within the physical regions in which they are located).

In fact, across the growth sectors (or the nearest proxies available), postgraduates<sup>14</sup> are already critical. All of these sectors have a higher proportion of postgraduates than the overall Scottish workforce (14.9%) as a whole, some significantly so. The percentages of postgraduates in these sectors are:

- 28% of the digital technologies workforce.<sup>15</sup>
- 23.2% of the creative industries workforce.<sup>16</sup>
- 22.2% of the financial and professional services sector workforce.<sup>17</sup>
- 21.7% of the energy workforce.<sup>18</sup>
- 17.3 per cent of the life sciences workforce.<sup>19</sup>
- 15.8% of the engineering workforce.<sup>20</sup>

In addition, whilst appropriate undergraduate provision is crucial, so too are postgraduate and doctoral research skills. These skills are by their nature more specialised and therefore can be critical in meeting specific industry needs. UK Government projections of the labour market in 2035 predict that the workforce in Scotland will need 2.6% of the Scottish workforce to hold a doctorate (up from 1.7% in 2020), 15.9% of employees to hold other postgraduate qualifications (an increase from 10.8% in 2020) and 32.8% of the workforce to hold first degrees (an increase from 26.6% in 2020). Furthermore, whilst growth per year for all qualifications in Scotland is predicted to be 0.5%, it will be over 3% for postgraduate qualifications (3.4% for doctoral and 3.2% for other postgraduate).<sup>21</sup>

However, funding postgraduate study can be challenging. There are PGT loans in Scotland, but these do not cover the full cost of maintenance and tuition fees. This can restrict who chooses to undertake

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<sup>14</sup> Taught postgraduate degrees are Scottish Credit and Qualification Framework (SCQF) level 11 and doctoral degrees are SCQF level 12.

<sup>15</sup> Skills Development Scotland, 2024, [Sectoral Skills Assessment: Digital Technologies.](#)

<sup>16</sup> Skills Development Scotland, 2024, [Sectoral Skills Assessment: Creative Industries.](#)

<sup>17</sup> Skills Development Scotland, 2024, [Sectoral Skills Assessment: Financial and Professional Services.](#)

<sup>18</sup> Skills Development Scotland, 2024, [Sectoral Skills Assessment: Energy.](#)

<sup>19</sup> Skills Development Scotland, 2024, [Sectoral Skills Assessment: Life Sciences.](#)

<sup>20</sup> Skills Development Scotland, 2024, [Sectoral Skills Assessment: Engineering.](#)

<sup>21</sup> UK Government, 2024, [Labour market and skills projections: 2020 to 2035.](#)

PGT study because of concerns about debt, which is likely to affect the diversity of the postgraduate student population. It would be helpful to consider ways of supporting postgraduate study, including incentivising employers to invest in postgraduate courses for their staff. There are no loans for doctoral research, and therefore these students must either self-fund or secure a studentship.

We note and welcome the strong skills focus within the Industrial Strategy and the intention to connect to Skills England across strategy development and delivery. We also welcome Skills England's commitment to working with the devolved nations, and are keen to better understand what this interaction will entail and how it will work. Whilst Scotland's skills policy and funding is devolved to the Scottish Government, we see great value in connecting to UK work - both on policy initiatives that are UK-wide, such as the Industrial Strategy, and in areas that are devolved but might offer opportunities to collaborate across borders.

The Scottish Government is currently reforming the skills planning landscape, with responsibility for national (Scotland) and regional skills planning moving into the Scottish Government from Skills Development Scotland. We anticipate the Scottish Government will want to provide a broad framework for skills planning with regions.

It will be vital to Scotland's interests and to the success of industry growth in Scotland that the right connections are made between the Scottish Government and the UK Government, and between relevant public bodies in Scotland (e.g. Scottish Funding Council and SDS), so the work of Skills England and the Industrial Strategy adds value in all parts of the UK (including all regions of Scotland).

It is further vital that work on skills connects to work on careers advice, information and guidance. Young people and/or career changers do not always understand what opportunities exist, especially in emerging sectors. This can be addressed in part through (paid) placement opportunities for students and graduates, which gives them a chance to test out possible career options and gain valuable experience. That in turn can create a pipeline of interest to build on.

Careers education is also important for enabling people to identify the skills that they already have. Universities have done a lot of work in this area to both equip students with the skills they will need to navigate what are often multi career pathways, and to ensure students understand the skills they have and can communicate them to employers. We would welcome the opportunity to share our experience and insights on skills development with the UK Government and other stakeholders as the Industrial Strategy is developed.

Graduate careers can often be very flexible, and many graduate vacancies do not require a specific degree. In the work on green skills mentioned above, the third most common subject for recent graduates joining the green economy was social studies. Moreover, many disciplines foster important softer or meta skills that are critical in the workplace. The World Economic Forum's Future of Jobs Report 2023<sup>22</sup> comments that: *'Analytical thinking is considered a core skill by more companies than any other and makes up, on average, 9% of the core skills companies report. Creative thinking ranks second, followed by self-efficacy skills such as resilience, flexibility and agility; motivation and self-awareness; and curiosity and lifelong learning — all reflecting the growing need for workers to adapt to changing workplaces.'*

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<sup>22</sup> World Economic Forum, 2023, [The Future of Jobs Report 2023](#).



As mentioned in our answer to Q7, leadership and management skills are also critical to growing businesses and increasing productivity. Providing more support and incentives for businesses to access training in leadership and management skills could help unlock both growth and increased productivity. This is particularly important for SMEs. We note that the Help to Grow scheme has been helpful in this respect. Universities in Scotland already deliver leadership and management training for many businesses and, with appropriate funding, could do more to support this need. However, consideration also needs to be given, across the growth sectors, to how best to incentivise and better enable businesses with growth potential to access this training.

Finally, the speed with which many of the growth sectors are evolving – and the associated need to ensure that workforce skills keep pace – point to a growing need for innovative and dynamic approaches to skills development, and an increasingly porous relationship between universities and industry. Flexibility for learners and employers is key – including short courses to upskill and reskill, and work-based learning opportunities such as graduate apprenticeships, as well as postgraduate and undergraduate courses. The standard Scottish undergraduate honours degree is four years, structured around modules. This enables a lot of flexibility and opportunities for students to specialise, even within the same degree course. The modular approach offers opportunities to update content relatively quickly, creating opportunities for a responsive approach to emerging skills needs.

**10. Where you identified barriers in response to Question 7 which relate to RDI and technology adoption and diffusion, what UK government policy solutions could best address these?**

The UK Government should give careful thought to which of its programmes and initiatives can be delivered most effectively across the whole of the UK. Schemes like the Connecting Capability Fund could have significant positive impacts in Scotland, and cannot be replicated in either scale or extent by similar devolved schemes. Restricting opportunities to England only creates fragmentation in the system and ultimately limits growth.

That said, UK-wide schemes must be sufficiently flexible to respond to the specific needs and opportunities of the UK's regions, including the regions of Scotland. Absorptive capacity for innovation and technology varies greatly across regions depending on the composition of their industrial base. Ideally, programmes should be delivered across the whole of the UK, with provision for taking local needs into account.

Scotland's universities have pioneered multiple approaches to working with SMEs to improve absorptive capacity, which could be scaled-up in Scotland and expanded across the UK. Whilst Scottish universities partner on over 20,000 innovation projects with Scottish organisations every year, there is potential for greater collaboration that could improve technology adoption and diffusion. Policy solutions that could assist in leveraging the strengths of the university sector and its collaborations with industry include:

- Expand the **InnovateUK Catapult Network**, which has a proven track record at bringing together academia and industry to accelerate innovation, stimulate private research and innovation investment, and grow businesses through technology focus.
  - Successful Scottish Catapults which are contributing to both local and UK growth include the Aberdeen-based Offshore Renewal Catapult, the UK's leading technology,

innovation and research centre for offshore renewable energy; the High Value Manufacturing Catapult: NMIS Scotland, which is delivering manufacturing research to transform productivity levels, making companies more competitive and innovative while boosting the skills of the current and future workforce; and the Cell and Gene Therapy Catapult Edinburgh, which is working with industry in the development of novel processes and analytical techniques to help turn academic research into advanced therapy medicinal products.

- Fund **innovation vouchers** to encourage collaborations between SMEs and universities. Successful initiatives such as the Innovation Vouchers programme - funded by the Scottish Funding Council and delivered by Interface - could provide a scalable model. Since 2005, over 1,500 businesses have been supported to work with an academic partner for the first time. For example:
  - Through an Interface Innovation Voucher, Danu Robotics Ltd was connected to academic partners at Heriot-Watt University, University of Edinburgh, and University of Strathclyde to support the development of technology and software that automates waste sorting and contaminants removal with speed and accuracy. It reduces the contaminant rate from 50% to below 1%, enabling customers to produce higher purity recyclables, reduce operating costs and increase their profitability. Customers can expect a return on investment within two years. Glasgow City Council Recycling Centre is successfully trialling their new robotic sorting system, and further trials are in place with international companies at advanced stages of negotiation.<sup>23</sup>
- Expand **Knowledge Transfer Partnerships** which fund academic placements within companies to help them identify and implement innovation solutions.
  - As only one example of the many successful KTP programmes in Scottish universities, the West of Scotland KTP Centre supports organisations to secure KTP funding with universities located in Glasgow City Region, including Glasgow Caledonian University, Glasgow School of Art, Royal Conservatoire of Scotland, University of Glasgow and University of Strathclyde. Over its 28-year history the Centre has supported over 500 KTPs and secured over £75m in funding.
  - The North of Scotland KTP Centre is a joint venture between University of Aberdeen, Robert Gordon University, Abertay University, University of the Highlands and Islands, James Hutton Institute and University of Dundee. The average commercial impact of each KTP through the Centre is £4 million.
- Fund additional **collaborative research centres** to tackle industry-specific challenges that could be solved with technology-adoption. Public funding and tax incentives could encourage industries to co-invest in these centres.
  - The Power Networks Demonstration Centre (PNDC) is a collaboration led by the University of Strathclyde and funded by Scottish Enterprise, SSE, and Scottish Power. PNDC focuses on smart grid research and development, connecting industry partners with researchers to create and test solutions for power network challenges.
- Incentivise **industry-university innovation hubs** to bring together universities, industry, and public bodies. Hubs can provide shared physical spaces, equipment, and digital infrastructure, enabling rapid prototyping, testing, and commercialisation of new technologies. Co-location

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<sup>23</sup> Interface, 2023, [Case Study: Danu Robotics Ltd.](#)

of research and industry partners within innovation districts can accelerate technology diffusion.

- The Edinburgh BioQuarter represents an ideal place to translate basic science into clinical therapies. The co-location of key academic research facilities with the Royal Infirmary of Edinburgh and the Edinburgh Medical School, brings together clinicians, patients, scientists and state-of-the-art pre-clinical and clinical research facilities on one site. Co-located with companies and the Cell and Gene Therapy Catapult Edinburgh, the BioQuarter is helping to accelerate technology diffusion to transform innovations in health. Similar innovation hubs for sectors like fintech or green energy in for example Glasgow or Aberdeen could provide dedicated spaces for collaboration, accelerating technology adoption in these growth sectors.
- Foster **regional innovation networks** connecting universities with local industries, SMEs, and government bodies. These networks can help small businesses access university expertise, shared resources, and funding for technology projects that would otherwise be inaccessible.
  - Scotland’s Innovation Centres, including the Digital Health & Innovation Centre, Data Lab, Industrial Biotechnology Innovation Centre, and Built Environment – Smarter Transformation (formerly Construction Scotland Innovation Centre), provide a potential model for regional innovation networks. These centres partner with universities to offer technology access, guidance, and collaboration to companies. Expanding such networks across other regions could promote technology diffusion nationally.
- Expand **UKRI’s place-based strategy** to incentivise collaboration between institutions and drive regional impact. UKRI can diversify its portfolio of partner institutions through strategic place-based interventions.
  - For example, an EPSRC Place Based Impact Acceleration Account (PBIAA) has invested £4.7M in the Photonics & Quantum Accelerator, bringing together researchers from Universities of Glasgow, Heriot Watt, St Andrews, and Strathclyde, plus a number of local authorities and industry bodies, to advance the growth of the photonics sector in Scotland’s Central Belt.
  - Another EPSRC PBIAA is seeing £2.5m invested in a collaboration between Universities of Edinburgh and Dundee, and the Forth and Tay Offshore Cluster, to address critical challenges in offshore wind technology, fostering innovations that will drive sustainable energy solutions and further strengthen Scotland’s position as a global leader in offshore wind.
- Enable **investment in training**. Universities already work with businesses of all sizes and with individuals to support the development of management and leadership skills through their business schools. Universities also offer support to start ups, which includes business advice. However, more could be done to incentivise businesses to invest in training, noting the connections to productivity and the fall in employer investment in training, which Skills England notes is at its lowest level since the survey began in 2011.<sup>24</sup>

There is widespread support within Scotland to develop a model of industry clusters - based around our strengths model - as set out in Scotland’s National Innovation Strategy, which was co-authored by

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<sup>24</sup> Department for Education, 2024, [Skills England: driving growth and widening opportunities](#).

the Scottish Government and Professor Sir Jim McDonald. The cluster model reinforces geographical proximity, helps to build networks, drives collaboration, and lowers risk. It is proven to drive the pace and quality of innovation, increase productivity and boost wage growth. Clusters are also strongly correlated with the formation of new high growth businesses, expanding and reinforcing the strength, competitive edge and innovation of the cluster. Higher education institutions are a strong feature of highly successful clusters around the world.<sup>25</sup> In Scotland, FinTech is a good example of a highly successful cluster.

### **11. What are the barriers to R&D commercialisation that the UK government should be considering?**

One of the most fundamental barriers to research commercialisation is risk appetite, particularly in the early stages of the commercialisation journey. Public funding for university spin-outs not only reduces risk for private investors, but is proven to improve survival rates. A recent report found that 97% of university spin-outs receiving support from Innovate UK and the British Business Bank survived, compared to 49% that did not receive such support. Spin-outs with additional funding support also raised more external equity capital - an average of £7.3 million, compared to £1.6 million for those not funded.<sup>26</sup> Government could support co-investment with other spin-out venture capital funds providing cornerstone investment only, thereby increasing the funding available.

University spin-outs are more likely to survive than the average start-up. While only half of all start-ups continue trading after five years, the average lifespan for an academic spin-out is almost nine years.<sup>27</sup> As mentioned previously, Scottish universities are the providers or key partners in most of Scotland's company incubation capacity, as well as leading in the hosting of Tech Scalars, both of which drive increased capacity in our R&D commercialisation eco-system. Scotland is one of the most successful areas of the UK for spin-out company formation and creates new companies at a rate second only to the golden triangle of Oxford, Cambridge and London.

As only a small sample of the many success stories of commercialisation of Scottish university research, we would like to highlight Blackford Analysis, a leading strategic imaging AI platform and solutions provider, which spun out from the University of Edinburgh in 2010 and was acquired by Bayer in 2023; the award-winning farm Carbon Calculator, Agrecalc, spun-out of leading research at Scotland's Rural College and which has produced carbon reports for more than 9,000 farm enterprises to inform and improve sustainability through data-informed decision making; and Elasmogen, a biopharmaceutical company developing next-generation drugs, which spun-out from the University of Aberdeen in 2006 before being acquired by first Wyeth then Pfizer.

In addition, in order to remove barriers to R&D commercialisation, the UK Government should invest in the resilience and performance of the overall research system, including through improving sustainability and predictability of funding. Treating R&D as a long-term capital investment through 10-year funding cycles will maximise the UK's ability to secure private investment by creating increased certainty.

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<sup>25</sup> Baily, M.N, and Montalbano, N, 2018, *Clusters and innovation districts: Lessons from the United States experience.*

<sup>26</sup> UKRI, 2022, *Spinouts twice as likely to succeed with funding agency support.*

<sup>27</sup> Royal Academy of Engineering, 2022, *Spotlight on Spinouts report.*

The UK Government should prioritise investment in R&D ecosystems outside of the Southeast of England and London, to drive more even distribution of economic growth and prosperity. It is important to be mindful of the varying levels of funding available across the UK for activities that underpin successful commercialisation of research and contribute to uneven growth across regions. For example, where Scottish knowledge exchange and innovation (KE&I) funding has remained essentially static in real terms over the last decade, Research England has increased their KE&I funding, creating a better resourced and more dynamic R&I ecosystem.<sup>28</sup> Pressure on funding is a significant limiting factor for Scottish universities trying to commercialise their research, collaborate with industry, and develop competitive bids to leverage funding from UK, EU, and other international sources. Increased funding to Scottish universities for KE&I activities would help the sector to expand its innovation and commercialisation activities, driving economic growth across the Industrial Strategy priority sectors and beyond.

Where Scotland does secure investment in research, development and innovation, the data points to one of the strongest rates of returns in any part of the UK, coming second only to London – delivering a benefit to cost ratio of 11:1 and an economic impact of £8.7 billion, or 14% of the UK's total (relative to only ~8% of the UK's population).<sup>29</sup>

#### **15. How can investment into infrastructure support the Industrial Strategy? What can the UK government do to better support this and facilitate co-investment? How does this differ across infrastructure classes?**

As flagged in our response to question 7, investment by government is necessary to attract private investment into research and innovation infrastructure. The translation of the UK's high-quality research into economic impact, via the commercialisation of research results, concepts and expertise, depends increasingly on the availability of sector- and subject-specific innovation space(s) such as incubators, innovation hubs, and technology parks. This infrastructure is necessary to drive the innovation activities that will power the economic growth the UK Government is seeking. Private investment in innovation is frequently lagging, with weak investment affecting sectors that the UK Government has identified as growth-driving, including manufacturing, finance and insurance, and business services.<sup>30</sup> In Scotland, the public sector is the most frequent investor in business innovation through various enterprise and funding agencies.<sup>31</sup>

Where the private sector, with specialist sector-specific developers, has demonstrated willingness to invest in infrastructure which underpins research commercialisation and company scaling, this investment has been primarily concentrated in the South East of England. This has largely served to further concentrate high growth businesses (even ones originating in Northern England or the devolved nations) in the South East. As previously noted, UK Government should consider investing public funds in necessary innovation infrastructure, and should additionally consider investing a particular focus on regions which are especially poorly-served by private investors. Measures could

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<sup>28</sup> <https://www.hesa.ac.uk/data-and-analysis/finances/table-7>; <https://www.sfc.ac.uk/publications/university-indicative-funding-allocations-2024-25/>; <https://www.ukri.org/publications/research-england-funding-budgets-for-2023-to-2025/research-england-funding-budgets-for-2023-to-2024-and-2024-to-2025>

<sup>29</sup> London Economics, 2024, *The economic impact of higher education teaching, research, and innovation*.

<sup>30</sup> Van Ark, B, and O'Mahony, M, 2023, *The UK's productivity challenge: people, firms, and places*.

<sup>31</sup> Scottish Government, 2023, *Scotland's National Innovation Strategy*.

include mandating organisations like British Business Bank or Scottish National Investment Bank to dedicate a percentage of funding for this purpose or creating new sub-funds and operating models.

The combination of both place and excellence is key when considering the location of major UK research and innovation infrastructure. It will be critically important that both the UK and Scottish governments continue to invest in infrastructure in Scotland. This will be key to sustaining the excellence of Scotland's research base while also contributing to UK and Scottish R&I priorities, and to crowding in other public and private investment.

City Region and Regional Growth Deals and Regional Growth Deals could provide a model for UK Government investment in infrastructure - in both urban and rural areas - that would support growth-driving sectors. The Deals programmes demonstrate the results that can be achieved when all relevant partners - spanning local government, universities and colleges, the private and third sectors, and key national agencies - are brought together in pursuit of long-term strategic growth.

As only one example of the successes driven by the current programme, the Edinburgh and Southeast Scotland City Region Deal includes the data driven innovation (DDI) initiative, a visionary collaboration between the University of Edinburgh and Heriot-Watt University. The DDI initiative is a network of hubs where academic experts and external partners come together to tackle some of the world's most pressing issues. £290m capital investment from the UK Government and £60m from the Scottish Government has leveraged £353m in partner capital and £227m in partner revenue. In the 2022-23 academic year alone, the DDI initiative achieved:

- 35,000 course completions, equipping learners with essential skills for the data and AI era.
- £127 million in research activity, surpassing the annual target by 125%.
- Support for 41 data-centric technology companies, bringing the total to 433 innovative start-ups driving fresh ideas and solutions in the region.<sup>32</sup>

## **22. What are the main barriers faced by companies who are seeking finance to scale up in the UK or by investors who are seeking to deploy capital, and do those barriers vary for the growth-driving sectors? How can addressing these barriers enable more global players in the UK?**

As with our response to questions 11 and 15, the main challenges for companies seeking finance to scale up include investment availability, premises, and skills. It is important to note that there is an additional challenge for devolved nations and their regions in achieving economies of scale as their industries grow. It takes time to build strength and scale in different industries capable of fostering an ecosystem of investors, C-suite managers, favourable policy settings etc, with an ever-present risk that successful companies will be tempted to relocate before a cluster has reached critical mass. The UK Government should take this challenge and the differing level of resourcing available into account when determining how best to support clusters to grow.

Barriers to investment do vary across the growth-driving sectors. Life sciences companies for example often encounter significant challenges in securing appropriate laboratory facilities, particularly once they have reached a scale that exceeds the capacity of existing incubator or accelerator facilities at universities. Scotland has a thriving life sciences sector, with around 770 life sciences organisations

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<sup>32</sup> Edinburgh and South East Scotland City Region Deal, 2024, [Current status](#).

employing over 42,500 people and generating annual turnover of £10.5 billion, but this could be further enhanced if these barriers to growth were addressed.

Universities have extensive experience in attracting finance into the UK and collaborating with globally significant companies. Scotland is the UK's strongest performing region, outside of London, for the attraction of foreign direct investment and for growing the UK's success in R&D-based FDI. For example, Scotland secured a record 142 inward investment projects in 2023, representing a 12.7% rise on the previous year. With projects into the UK as a whole rising by just 6%, Scotland's increased FDI flow saw its share of all UK projects rising to 14.4% (up from 13.6%), the fifth consecutive year of increase and its highest over the past decade. Scotland has come second to London for projects in nine of the past ten years.<sup>33</sup>

**26. Successful clusters are characterised by strong concentrations of employment, output, high productivity, and innovation and can take any geographical shape and often span large geographical areas.**

**Do you agree with this characterisation of clusters? Are there any additional characteristics or dimensions of cluster definition and strength we should consider, such as the difference between services clusters and manufacturing clusters?**

Universities Scotland supports and welcomes a cluster-based approach to economic growth and innovation, and notes that clusters are referenced in the Industrial Strategy as well as Scotland's National Innovation Strategy. However, a coordinated approach between the UK Government and devolved administrations will be necessary in order to realise clusters' full potential, particularly in terms of attracting businesses to locate and grow across the UK. Our universities will be crucial to unlocking the full economic and social benefits of a cluster-based approach. The inclusion of R&D facilities in clusters can accelerate innovation through a rapid learning 'grapevine' effect that drives diffusion of technological advances and new processes, machinery and production techniques.<sup>34</sup> Programmes such as the Research England development fund, if expanded to a UK-wide programme, could facilitate collaborations between higher education institutions, businesses, and regional stakeholders to play a significant role in fostering industry clusters.

We support the Strategy's recognition of the diverse geographical shapes and distances that can characterise clusters. Scotland for example has numerous research and industrial strengths that could be characterised as clusters across large areas of the nation. Dundee, Edinburgh, and Glasgow for example function as a world-leading life sciences cluster that brings together complementary expertise in fields including regenerative medicine and precision medicine, infectious disease and virology, neuroscience, industrial and marine biotechnology, and digital health. Likewise, the Scottish Government is supporting the development of a deeptech supercluster across Scotland's central belt that will bring together world-class university research and spin-out capability with existing start-up support assets, in order to build advanced manufacturing pathways for key technologies.<sup>35</sup>

Clusters can also span across the borders of nations. For example, an east coast energy corridor could range from the northeast of Scotland to England's northeast to capitalise on the east coast's natural

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<sup>33</sup> EY, 2024, *Showing resilience: EY UK Attractiveness Survey- Scotland*.

<sup>34</sup> Scottish Government, 2023, *Scotland's National Innovation Strategy*.

<sup>35</sup> Mark Logan, 2024, *Scotland is building a Deeptech supercluster*.

resources, including its proximity to offshore wind, oil and gas infrastructure, and ports that can facilitate the transportation and storage of renewable energy resources. Such a cluster could be underpinned by universities' world-leading expertise in energy transition, including the University of Edinburgh's carbon capture and storage leadership, Heriot-Watt University's International Centre for Island Technology on marine-based energy research, University of Aberdeen and Robert Gordon University's Energy Transition Institutes, and the University of St Andrews' Centre for Energy Ethics. An east coast energy corridor could be linked with the work of GB Energy, which will be based in Scotland's northeast. The complexity of governance arrangements across devolved administrations, Mayoral Combined Authorities and the UK Government should not dissuade governments from pursuing ambitious cross-border clusters like this, which would maximise the UK's collective potential in growth-driving sectors.

The cluster-based approach signals to investors which industries are long-term priorities for government and which have the greatest potential for growth. There is significant complementarity between the clusters identified in the Industrial Strategy and those of Scotland's National Innovation Strategy 2023 to 2033. The Innovation Strategy identifies four priority clusters (health and life sciences, data and digital technologies, advanced manufacturing, and energy transition), which align with four of the Industrial Strategy's eight growth-driving sectors. The intersection between the clusters presents opportunities to align investment by UK Government and Scottish Government, though we would note that Scotland also has notable strengths across all of the Industrial Strategy's growth-driving sectors and is ideally positioned to foster cluster development across all sectors. Further detail on Scottish strengths across all growth-driving sectors is provided at our response to question 29.

It is critical that the Industrial Strategy, and particularly the in-development Sector Plans, recognises the importance of cross-cluster and cross-sector collaboration. There are significant complementarities between clusters, with digital and technologies and advanced manufacturing acting as enablers and drivers of innovation for other clusters. For example, Scotland's strengths in digital and technologies (underpinned by our world-leading research in AI and data science) is a key driver of Scotland's role as a major financial hub. Financial services are supported within the Glasgow Innovation Accelerator and fintech is a key component of the Edinburgh City Region Data-Driven Innovation programme, demonstrating the strong synergies between these two clusters, as well as the strengths across Scotland's central belt in both of these fields.

There are numerous strong relationships between other clusters, including advanced manufacturing as an enabler of the defence industry; finance as a critical input for clean energy industries; digital and technologies as a significant support for professional and business services; and creative industries as the source of innovative and creative thinking across all clusters. Six in 10 FTSE350 leaders say creative thinkers are essential to making the most of new AI tools, with half believing arts and humanities graduates will be crucial to future success.<sup>36</sup>

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<sup>36</sup> Universities UK, 2023, [Jobs of the Future](#).



## **28. How should the Industrial Strategy accelerate growth in city regions and clusters of growth sectors across the UK through Local Growth Plans and other policy mechanisms?**

UK Government policy must be alive to the divergent conditions, needs and priorities of the devolved nations and regions. We understand that the requirement to develop Local Growth Plans applies to England only, meaning collaboration between the UK Government and devolved administrations will be crucial – both to ensure policy coherence at the regional level within Scotland, and to enable complementary and co-investment in the growth driving sectors. The Scottish City Region and Growth Deals programme is an existing, successful collaboration mechanism that brings together both governments and other regional partners, including universities, in pursuit of accelerated growth. Development and implementation of the Industrial Strategy presents a new opportunity to build on those existing partnerships to the benefit of both Scotland’s regions, and the UK as a whole.

Universities are key economic actors in regions and will be crucial partners for UK Government in its pursuit of more equitable economic growth across the UK. Universities act as anchor institutions within their local areas and play a crucial role in attracting mobile private investment and FDI across Scotland’s regions. Universities are also major employers, with HEIs in Scotland directly employing over 55,000 people in high-quality jobs – recruiting locally, whilst also attracting talented people to work in Scotland from all over the world. The Scottish higher education sector is the second highest-performing in the UK for ROI from public sector funding; in 2021-22, £10.8 of economic activity was generated for every £1 of public investment in research and knowledge exchange activities, with the ROI rising to 11.7:1 when accounting for the sector’s combined activities, including teaching and learning.<sup>37</sup> As high-performing economic actors as well as generators of the knowledge and innovation that will underpin advancements in the UK’s high-growth sectors, universities are the ideal partners for UK Government in its efforts to drive prosperity and economic growth across the country.

Growth across regions can be advanced by ensuring that pan-UK bodies with responsibility for research and innovation, such as UKRI, Innovate UK and ARIA, are structured and deliver in ways that widens their impact across the UK, including investing in university and business research and innovation in Scotland. This should include measures such as:

- Broader, UK-wide mapping and consultation exercises as led by UKRI, Innovate UK and ARIA, to ensure that the development of partnerships, funding models and investments are informed by key regional differences in the business base and associated infrastructure. That will in turn ensure that all parts of the UK have equal potential to benefit.
- Extending UKRI’s Executive Committee membership to include other UK Research Councils on the same basis as Research England, and expanding the unique model of regional engagement contacts as found in EPSRC to all UKRI Councils. This would help ensure need and opportunity in the devolved nations is considered equitably alongside need and opportunity in England.

UKRI’s Strategy 2022-2027 makes clear the importance of place, with a strategic objective recognising the need to have outstanding institutions, infrastructures, sectors and clusters across the breadth of the country. Over the period of its Strategy, UKRI has committed to further enhance the place-based benefits of its investments, and to working in partnership in ways that takes account of the different

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<sup>37</sup> London Economics, 2024, [The economic impact of higher education teaching, research, and innovation](#).

innovation system architecture in each devolved nation. We welcome the opportunity to work closely with UKRI to realise this shared ambition.

Examples of programmes designed to respond to the differing strengths and potential of the UK's regions, which the UK Government could further build on, include:

- **UKRI's Strength in Places Fund (SIPF)**, which supports innovation-led regional growth through a focus on collaboration. Scotland-based institutions are leading three of the Fund's 12 full-stage projects, two of which directly relate to the growth-driving sectors identified in the Industrial Strategy.
  - The Living Laboratory project has brought together a consortium of partners from across the University of Glasgow, NHS Greater Glasgow and Clyde, and industry to use healthcare innovation to improve health outcomes and economic development.
  - The Digital Dairy Value-Chain project is supporting innovation in, and decarbonisation of, the dairy industry in south-west Scotland and Cumbria. This project is led by Scotland's Rural College (SRUC), with the University of the West of Scotland and University of Strathclyde as key partners.
  - The University of Edinburgh's leadership of the Global Open Finance Centre of Excellence, which is enabling research, innovation and skills development in financial services and fintech.
- **City Region Deals and Regional Growth Deals.** As outlined in our response to question 15, City Region and Regional Growth Deals have enabled groundbreaking collaborations between the Scottish Government, the UK Government, local authorities, the HE and FE sector, the private sector and other partners in pursuit of accelerated growth across Scotland's regions. Scottish universities play a central role across most of the Deals, leveraging millions of pounds of additional investment in projects that drive high value job creation and economic growth. For example, the Glasgow City Region Deal is estimated to have attracted over £880 million of follow-on investment since it was signed in 2014. The Islands Growth Deal is strengthening the islands' place as unique 'living laboratories' for global innovation in low carbon technologies, wellbeing research and sustainable food production in partnership with their leading universities and research institutes. The UK and Scottish governments should work together to consider the successes and challenges of the City Region and Regional Growth Deal programme to date, and the associated implications for the future of collaborative, regionally-tailored growth programmes.
- **Investment Zones.** The UK and Scottish governments have recently approved the establishment of two Investment Zones in Scotland – in the North East, and in Glasgow City Region. The Zones focus on facilitating the co-location of businesses and fostering collaboration between industry and research institutions within defined economic areas as a means of attracting investment and driving growth. Universities will be critical to the success of these Investment Zones in leveraging regional research and innovation strengths to capitalise on the economic potential of areas.
- **Regional Innovation Investment Plans.** We welcome enhanced collaborative working between Scottish Enterprise and InnovateUK, which has underpinned the development of a collaborative regional Innovation Action Plan for Glasgow City Region. The development of similar plans for Edinburgh and SE Scotland and the North East is also encouraging. However,

further thought needs to be given to the implications for Scotland's other regions, and the ways in which their latent potential across the growth sectors can be unlocked.

## **29. How should the Industrial Strategy align with devolved government economic strategies and support the sectoral strengths of Scotland, Wales, and Northern Ireland?**

As previously noted, collaboration between the UK Government, the Scottish Government and Scotland's regions is a prerequisite of successful Industrial Strategy implementation. Governments need to build on existing collaborations such as the City Region and Growth Deals in order to develop a better shared understanding of the potential of Scotland's regions, and the contribution each government – and other partners, including universities and businesses – can make to accelerated growth.

There are significant complementarities between the focus areas of the Industrial Strategy and those of the Scottish Government's major economic policy frameworks, the National Strategy for Economic Transformation (NSET) and National Innovation Strategy. Both the NSET and the Innovation Strategy look beyond the medium-term to delivery by 2030 and 2033 respectively. Proposals for post-school reform of skills and education (the Withers Report) also take a long-term view of change. These long-term frameworks align well with the Industrial Strategy, but it will require concerted effort from both the UK Government and the Scottish Government to ensure implementation efforts are also well-aligned, with investments and interventions made in complementary ways.

We understand that the Industrial Strategy will be underpinned by sector plans for each of the growth-driving sectors. Devolved administrations and other stakeholders, including the higher education sector and the business community, should be closely involved in the development of those plans from the outset. The interaction between the UK Government's approach to delivering the sector plans and its wider approach to regional devolution in England will also be critical. If activity is to be regionalised in England, it will be crucial for the UK Government to provide early clarity on the associated implications and impacts for regions within devolved nations.

Many of Scotland's regions already have long term regional growth plans in place, led by Regional Economic Partnerships or their equivalent. These partnerships vary considerably across the country and are generally informal groupings of stakeholders from across the public, private, and third sectors. They have neither the powers nor the institutional structures that underpin Mayoral Combined Authorities in England, but most grew out from City Region and Growth Deal programmes and have a long track record of effective collaboration. These partnerships will be important stakeholders for the UK Government as it seeks to better understand what each region can contribute to the success of the Industrial Strategy. The Scottish Government should also be party to those discussions, ensuring actions taken by one or both governments at the regional level are complementary and not duplicative.

Scotland has considerable strengths across all growth-driving sectors identified in the Industrial Strategy. Many of Scotland's high-performing economic sectors have their origins or growth based in, or linked to, university research.

- Scotland is one of the leading **financial and fintech regions** in Europe. The sector is the biggest sectoral contributor to Scotland's economy, representing £13.6 billion or 9.2% of GVA. Scotland's financial and related professional services sector employs 160,000 people – around 9% of national

employment.<sup>38</sup>

Universities are integral to the sector's success, providing a pipeline of highly skilled graduates and pioneering research in specialised areas such as corporate financial governance, sustainable finance, international finance, banking, and data analytics. In collaboration with the University of Strathclyde, the University of Glasgow is a founding partner of the Financial Regulation Innovation Lab, and the University of Edinburgh hosts the Global Open Finance Centre of Excellence, which is enabling research, innovation and skills development in financial services and fintech.

- Scotland's **creative sector** employed over 155,000 people in 2022 and contributed £4.4 billion GVA in 2020. The creative sector in Scotland is characterised by small Scottish-owned businesses; in March 2022, there were 13,285 registered enterprises operating in the 'Creative Industries growth sector', representing 7.6% of all registered business in Scotland.<sup>39</sup> Scottish universities are integral to the ongoing strength of our creative industries through their development of the talent pipeline, including equipping students with entrepreneurial skills to thrive in the creative field, and in their delivery of research and innovation activities. Scotland has two internationally recognised small specialist institutions in the Royal Conservatoire of Scotland and Glasgow School of Art, as well as schools dedicated to creative fields across multiple other Scottish universities.
- Scotland is home to numerous defence companies and facilities that together comprise a flourishing **defence sector**, which is complemented by Scottish strengths in the aerospace, cybersecurity and space sectors. Scotland's defence sector benefits from close collaboration between industry, academia and government, ensuring a steady pipeline of talent and innovation.<sup>40</sup> Ministry of Defence spend in Scotland was £2 billion in 2021/22, which represents an increase of 13% since 2018.<sup>41</sup>
- Scotland has 150,000 employees working within the **professional and business services sector**, with highly-skilled university graduates comprising the core of this workforce.<sup>42</sup> Scottish professional and business services companies and graduates provide expertise and leadership that drives economic growth. According to government research, increased student numbers have played a pivotal role in preventing a steeper decline in the UK's productivity. Investing in human capital will continue to be a crucial aspect of building an economy that is both more productive and fairer.<sup>43</sup>
- Scotland's **clean energy industries** builds on Scotland's long-standing leadership and expertise in energy, underpinned by university research. Our universities work closely in sector collaborations such as Scotland Beyond Net Zero and with industry partners to generate solutions to some of the biggest challenges for a just net-zero transition, including renewables technology and manufacturing, finance, transport, food, and built environment. GB Energy's headquartering in Aberdeen provides an opportunity for UK Government to leverage Scotland's unique combination of academic excellence, skilled workforce, and natural resources to drive growth across the energy transition sector.

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<sup>38</sup> Scottish Financial Enterprise, 2024, [Financial Services in Scotland](#).

<sup>39</sup> Scottish Government, 2024, [Building a New Scotland: Culture in an independent Scotland](#).

<sup>40</sup> Officers' Association Scotland, 2024, [Industry Sector: Defence](#).

<sup>41</sup> ADS, 2023, [A guide to the aerospace, defence, security and space sectors: Scotland Facts and Figures 2023](#).

<sup>42</sup> Scottish Development International, 2024, [Global Business Services](#).

<sup>43</sup> Costa et al, 2023, [Learning to grow: How to situate a skills strategy in an economic strategy](#).

- With around 770 life sciences organisations employing over 42,500 people, Scotland is one of the largest **life sciences clusters** in Europe, with the latest data showing turnover of almost £10.5 billion.<sup>44</sup> Universities are central to the sector, with our expertise in fields such as industrial biotechnologies, animal bioscience, AgriTech, aquaculture, precision medicine, future medicines manufacturing, and digital health, contributing to the economic success of the sector. Eight of Scotland's top 10 start-ups (by value raised as at 2022) were health technology related, including Amphista Therapeutics, a University of Dundee spin-out, and Resolution Therapeutics, a University of Edinburgh spin-out. Significant investments in life sciences infrastructure, including in the Medicines Manufacturing Innovation Centre and Precision Medicine Living Lab in Glasgow, BioHub in Aberdeen, Tayside Biomedical Cluster, and the Edinburgh BioQuarter, are supporting the sector to retain our world-leading capabilities.
- Scotland's universities undertake internationally leading research in a number of areas within **advanced and digital manufacturing**, driving the growth and innovation of the sector. Scotland was ranked as the UK's most productive manufacturing region by PwC in 2023, and manufacturing accounts for over half of Scotland's international exports. The Glasgow-based Advanced Manufacturing Innovation District (AMIDS), including anchor tenants National Manufacturing Institute Scotland and CPI's Medicines Manufacturing Innovation Centre, leads projects in high-value manufacturing, materials research, and automation. These initiatives enable companies to adopt advanced techniques like additive manufacturing and digital twinning, improving productivity and sustainability. More than £185 million of investment has been attracted into AMIDS so far, including Boeing choosing the district for its first-ever research and development (R&D) project in Scotland, part of plans to double their supply chain.<sup>45</sup>
- Scotland has developed a **super cluster of digital technologies** (including quantum, AI, photonics and semiconductors), across research, design, development and manufacturing, which is unrivalled in the UK outside the South-East of England. More than 83,000 people are employed across our digital and technology industries, with over 10,000 registered businesses.<sup>46</sup> Scotland is the UK's leader for Quantum research, and plays a prominent role in the UK's National Quantum Technologies Programme. In the first round of the Quantum Technologies Hubs programme, Scottish universities led two of the four hubs, and were involved in the other two. Of the 5 recently announced new QT Hubs, Scotland is again leading two and co-leading one other. The University of Edinburgh's Bayes Centre and the Data Lab supports a thriving eco-system of over 1,000 companies in AI and data-driven solutions, fostering startups and driving advancements in AI ethics, fintech, and health diagnostics. The National Robotarium is a world-leading centre for robotics, artificial intelligence and autonomous systems, located on the Heriot-Watt University campus in Edinburgh. Scotland's world-leading expertise in these technologies also underpins and powers impact across multiple sectors, including defence, energy transition, financial services, and advanced manufacturing.

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<sup>44</sup> Scottish Development International, 2024, [Health and life sciences industries](#).

<sup>45</sup> Scottish Government, 2023, [Scotland's National Innovation Strategy](#).

<sup>46</sup> Scottish Development International, 2024, [Digital and technology industries in Scotland](#).

### **30. How can the Industrial Strategy Council best support the UK government to deliver and monitor the Industrial Strategy?**

Membership of the Industrial Strategy Council (ISC) must reflect the breadth of experience and expertise required to deliver the Strategy effectively. We welcomed confirmation in the recent UK Government Budget that the ISC will include HE sector representation.

As demonstrated elsewhere in our response, Scotland's universities have a pivotal role to play in realising the UK Government's ambitions for the IS. The sector has internationally significant research and innovation expertise - and a track record of translating that into economic impact through effective industry engagement - across all eight growth sectors. It will be important for the ISC to understand those strengths – both existing, and emerging - and how they can be further exploited for the benefit of the UK economy.

That will in turn require the ISC to be sufficiently knowledgeable about the complexities of the devolved context and the regional economies in which Scotland's universities and businesses operate. As the representative body for all 19 institutions, Universities Scotland is well placed to provide that expertise. As such, we would welcome the opportunity to sit on the ISC.

We understand that the primary mechanism for delivering the Industrial Strategy's vision will be the sector plans, each of which will need to identify deliverables and associated milestones against which progress can be monitored. However, it is unclear from the consultation documentation how, when, and by whom the sector plans will be produced, and the link between any associated governance mechanisms and the ISC. This is a concern, given the centrality of the plans to delivering the Strategy and the expectation that they will be published alongside the final Strategy in the spring.

Further clarity on the ISC's role and remit, particularly as it relates to sector plan development and delivery, would help ensure the ISC's role in delivering and monitoring the Strategy is clear to all stakeholders.

### **31. How should the Industrial Strategy Council interact with key non-government institutions and organisations?**

As set out in our response to question 30, clear governance and accountability arrangements will be key. Both the ISC and any associated sector plan development/delivery groups should be fully representative of the UK's nations. In addition, they should be required from the outset to develop comprehensive stakeholder engagement strategies that identify how, when, and to what end non-government institutions and organisations will be involved in key workstreams.

Engagement with representative bodies will be an important means of effectively capturing the breadth of interested stakeholders. Given the long-term nature of the Strategy, it would be helpful to consider at the outset how the role of non-government stakeholders might evolve over time, for example through sector plan development, initial delivery, midpoint review, etc.

**32. How can the UK government improve the interface between the Industrial Strategy Council and government, business, local leaders and trade unions?**

The UK Government will want to consider how the ISC engages with regional structures across the UK, many of which already bring together local leaders from across government and business, as well as the third and tertiary education sectors. However, the nature of those regional structures varies considerably across the UK, particularly in the devolved nations.

It is essential for the ISC to understand the latent growth opportunities presented by Scotland's regions, which will in turn help ensure that the benefits of growth are shared across the country. We urge the UK Government to work with the Scottish Government but also to engage directly with other stakeholders in Scotland, including the university sector, to develop a shared understanding of how best to engage at the regional level within Scotland. The existing network of City Region and Growth Deal structures, as well as Regional Economic Partnerships, provide a good starting point.