

May 2024



Advanced Manufacturing Skills Assessment Executive Summary

Northern Ireland City and Growth Deals

PURPOSE OF RESEARCH ACTIVITY

To identify gaps in skills provision and to make recommendations to help ensure that an appropriately qualified workforce can be put in place to meet the anticipated development and growth of the Advanced Manufacturing Sector in Northern Ireland expected to result from the programme of investment through City and Growth Deals in the sector.

The work to achieve this included:

- An overview of current and expected future skills challenges impacting the sector and associated implications as a result of city deal investments (drawing from existing intelligence and direct engagement with businesses and representative bodies)
- A profile of:
 - the spectrum of existing employability and skills provision targeting the development of advanced manufacturing skills
 - a breakdown of the range and volume of current employability and skills provision (aligned to the sector)
 - an assessment of the potential of existing interventions to meet the needs of industry now and in the future
 - gaps in provision by volume and/or the scale of intervention
- Identification of the need for new interventions and/or scaling up existing provision to meet demand, principally aligned to areas of city deal investment;
- Consideration of solutions inside and outside of NI we can use/learn from;
- Recommendations regarding potential approaches to addressing gaps in provision and other challenges in the sector based on emerging findings;

This work was carried out by an Advanced Manufacturing Task and Finish Group which came together following the identification of a need to understand whether the skills needs emerging from City & Growth Deal Activity could be met by the current labour market. The approach, originally designed by the BRCD as the most advanced deal, was later extended to cover all four city and growth deals across Northern Ireland. More details on the methodology are included in the Full Report.

PRIORITY CONSIDERATIONS

In the course of this work, the key areas of focus reflecting the current policy priorities of City & Growth Deals, to align with regional strategic priorities included:

- Skills for Growth: Considering how skills programmes and employment opportunities can be aligned with the advanced manufacturing sector helping to unearth potential for new apprenticeship pathways, and the development of mid-tier and higher-level skills.
- Inclusive growth (Skills for Inclusion): Exploring opportunities to address skills imbalances and improve access to employment opportunities across the region through socially inclusive progression pathways and maximise inclusion and diversity.
- Digitalisation and the impact of technology: Increasing the adoption of digital technology within the Advanced Manufacturing sector and

considering the resulting implication on skills needs. As well as the general digital skills needs of employees in almost every sector there will be specific needs aligned to occupations within the advanced manufacturing sector that need to be considered if future demand is to be met. Areas of focus for skills development will be Industry 4.0 technologies such as automation and robotics, and digital technologies including modelling and design for manufacture.

- Supporting Innovation: Supporting the drive for increased innovation capability to help achieve world-leading advantage in the advanced manufacturing sector.
- Sustainability and Net Zero Sustainability: Considering the rising importance of sustainability and the drive to Net Zero and its impact for skills development.

THE POTENTIAL

Northern Ireland has a rich history in Manufacturing, it continues to be a key sector.

Northern Ireland has a higher concentration of manufacturing businesses than the UK.

Across Northern Ireland, manufacturing accounts for 11% of employment and over 15% of GVA and the sector drives innovation and exports and provides skilled and well-paid jobs, which has a significant multiplier effect throughout the economy.

“Advanced manufacturing and innovation are two of the key areas within my Department’s 10X Economic Vision which aim to deliver an economy which is ten times more innovative, more inclusive and more sustainable for the benefit of everyone.” Former Economy Minister Gordon Lyons

Northern Ireland is home to over 5,000 manufacturing companies supporting 120,000 jobs. As a sector, manufacturing delivers around £10.6 billion per annum to the local economy, including exports of around £6 billion of products and services to international markets. It is a significant sector in the Northern Ireland Economy and advanced manufacturing companies in Northern Ireland are already leading the drive for innovation with the sector recognised by the Department for the Economy as one of five clusters ready to adopt enabling technologies. Across Northern Ireland a firm foundation already exists from which the sector can continue to grow and innovate.

Invest NI recognises that **Northern Ireland has a vibrant and highly sophisticated advanced manufacturing and engineering sector, citing that in** recent years, employment in the Northern Ireland manufacturing sector has grown more than four times faster than the rest of the UK. Manufacturing accounts for 11% of employment and over 15% of GVA, making it a key sector in the Northern Ireland economy. Companies operating in the sector are diverse with a range of experience and there are a number of areas of developing global competitive strength. The sector is dominated by smaller employers with a high proportion of NI’s manufacturers (93%) employing less than 50 people. The region is home to both indigenous and international companies engaged across a range of activities from R&D, new product development to manufacturing. A key success factor for the sector in the future will be a continued focus on

research and development to drive innovation, further strengthening the sector’s global position as cutting edge and globally competitive.

The sector is currently supported by a number of research centres of excellence undertaking industrially relevant research and channelling university expertise into the development of sophisticated products and processes to assist the growth of companies in our advanced manufacturing and engineering sector including Northern Ireland Advanced Composites & Engineering Centre, Northern Ireland Technology Centre, Centre for Competitiveness and the Polymer Processing Research Centre. The planned City and Growth Deal investments totalling over £150m over the next ten years provide a platform for generational change in the manufacturing infrastructure, adding value to the environment by bringing together industrially relevant research and the business community to significantly expedite the rate of growth and innovation within the sector. By creating global centres of innovation excellence, they will provide opportunities for businesses, located both in and outside Northern Ireland, improving the interface between world-leading academia and research and provide access to breakthrough technologies, helping to drive innovation in processes and products development.

The new Centres will include:



Advanced Manufacturing Innovation Centre (AMIC)



Design Smarter Digital Twin Centre



Centre for Industrial Digitalisation Robotics & Automation (CIDRA)



Engineering & Skills Innovation Centre



i4C Innovation and Cleantech Centre



Robotics, Automation and Packaging Innovation Centre (RAPIC)



Agri-Tech Food Innovation Excellence Centre

This network will be the foundation of translating innovation to the wider economy, connecting businesses at all levels to new ideas and technologies and bringing to life the benefits for our people of a highly productive economy. They aim to build upon the strengths and unique characteristics of the region, through targeted innovation interventions and address barriers to economic growth across the region.

These City and Growth Deal projects will be one of the drivers of innovation in the advanced

manufacturing Sector and fundamental to the success of these Centres driving the sector forward is a skills eco-system to support Industry needs.

The planned City and Growth Deals investments with an advanced manufacturing focus have a good regional spread, reflecting the wide geographical spread of jobs in the sector across all local government districts.

RESPONDING TO CHALLENGES

The Advanced Manufacturing Sector is a key area of growth in Northern Ireland and the City and Growth Deals in the Region should act as a catalyst to innovation and scaling up of organisations leading to continued growth. **This cannot happen without a significant investment in people and skills.** However, the sector faces significant challenges which need to be addressed:

- Throughout the programme of research and stakeholder engagement which underpinned the development of the 10X Skills Strategy, there was a clear and consistent message that our 'skills system' is fractured and fragmented. Different institutions govern and deliver different elements and there is an absence of a consistent overall vision for what we expect our skills system to deliver. Addressing this, and the inefficiencies it causes, will require a refreshed approach to how we view and govern the system¹.
- Future skills are changing rapidly, industry needs support to forecast and plan. Traditional businesses within this sector are struggling to understand and equip themselves with the right skills and capabilities to take advantage of disruption within this sector. As innovation continues to drive changing skills needs, a mechanism is needed to integrate skills forecasting ensuring new skills provision can be introduced at an appropriate time. There is currently an absence of regional skills forecasting for the sector, involving a joining up of key stakeholders in this area.
- Rapid changes and innovations in the sector, such as digital technologies, data and automation will require continuous learning and upskilling to remain competitive and relevant in the global market.
- The difficulty of attracting and retaining talent in the sector, especially among young people and women, who may have negative perceptions or lack of awareness of the opportunities and benefits of working in advanced manufacturing. This requires more effective promotion and engagement of the sector with schools, colleges, universities and communities to showcase the diversity and potential of careers in advanced manufacturing.

- The existing apprenticeship offering is dated with regard to both the curriculum and the apprenticeship frameworks (standards) and does not meet the emerging demands of employers in response to the evolving opportunities afforded by technology and the move to more advanced manufacturing. There is a need to develop new training curriculum and content to underpin the ambition of the advanced manufacturing sector, this content must align with the development of new apprenticeship frameworks at Level 3 and also feed on into Higher Level Apprenticeships.
- There is a gap between the skills demand and supply in the sector, which may result from mismatches between the qualifications and competencies of the existing and potential workforce and the requirements and expectations of the employers. This requires more collaboration and alignment between the education and training providers and the industry to ensure that the skills provision meets the current and future needs of the sector.
- Skills provision for sustainability and reaching net zero in advanced manufacturing is a complex and multifaceted challenge. Designing and implementing effective programmes to support skills development, reskilling and upskilling of workers, especially in emerging and critical technologies for net zero, such as hydrogen, carbon capture and storage, circular economy and renewable energy will need to be addressed if we are to meet net zero targets.

Findings from this research highlights that skills clearly lie at the heart of the success of the vision of Northern Ireland as a leader in advanced manufacturing and the sector is already facing a significant skills challenge. This report gives greater context behind the issues raised and the following diagram summarises the recommendations, actions and interventions which may go some way to address them.

¹ Skills Strategy for Northern Ireland Skills for a 10X Economy

RECOMMENDATIONS

ACTIONS

1 Develop a collaborative approach to future skills provision for the advanced manufacturing sector	- Establish a Collaborative Skills Working Group - Create a Digital Platform for User Groups - Increase interaction with employers and work with LMPs to identify potential academies that will fill entry level vacancies	Ensure that transversal skills are incorporated into each training course	
2 Align and re-scale existing provision to meet current and future demand reflecting industry needs	- Increase interaction with employers to understand skills needs / create solutions - Explore potential for AM Assured Skills Academies - Identify funding opportunities for delivery of specialised training	- Increase provision of robotic and automation academies regionally - Develop a Micro-credential Framework Collaborate to: - Develop funding proposals to enable delivery of new Centres for Doctoral Training - Develop specialised training provision in emerging sectors	- Increase awareness across the Sector - Increase interaction with employers to understand and address digital upskilling requirements, including targeting additional support to micro/SMEs in the sector
3 Expand the range of apprenticeship and higher-level apprenticeship pathways in line with 10x implementation plan 23/24 (FE/HE)	Review apprenticeship standards and existing frameworks across UK and Ireland to identify opportunities to expand NI provision	- Establish working groups with College Hubs and Universities to identify new apprenticeship frameworks and qualifications - Inform standards and frameworks through engagement with HVMC - Consult with sectoral employer groups to sign off new apprenticeships and qualifications	
4 Increase attractiveness and raise awareness of career potential in sector	Develop targeted campaigns and interventions to engage and support under-represented groups into the sector following examples set by the MEGA, MTF and GEMX initiatives	- Review existing initiatives and highlight opportunities to scale up to increase participation of under-represented groups - Engage with LMPs to establish sectoral promotional initiatives including developing a range of programmes specifically targeted at encouraging women into the AM Sector	City and Growth Deal Partners to review programme and promotional campaigns to remove gender bias and promote positive gender role models across the sector
5 Prepare for emerging skills needs associated with sustainability and Net Zero	- Develop a Programme, through innovation centres, for Net Zero champions in AM including through the new i4C Cleantech Centre - Increase Skill Up provision from entry level to postgraduate focusing on green technologies.	Explore trialing a micro credentials model of delivery for net zero skills	

