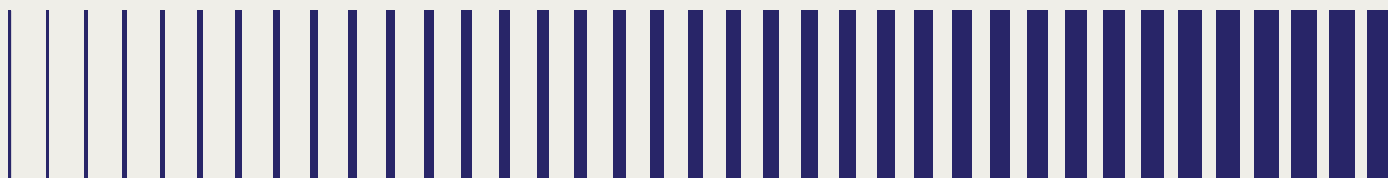


ENGINEERS 2030

Nations and Regions



Introduction

Following the launch of *Engineers 2030* Vision and its six Principles in April 2025, the Royal Academy of Engineering, in collaboration with the National Engineering Policy Centre (NEPC), hosted a series of national and regional roundtables across the United Kingdom. These sessions were held in March and April 2025 in Newcastle, Belfast, Glasgow, and Liverpool, provided a platform for engaging with a diverse range of stakeholders.

While a physical roundtable could not be hosted in Wales, the Academy ensured representation by conducting interviews with key Welsh stakeholders, capturing their perspectives and insights.

The roundtables brought together industry leaders, educational providers, government representatives, Fellows of the Academy, and professional engineering institutions. The primary purpose of the roundtables was to introduce the Vision and six Principles to a broader audience beyond London and understand how the Vision and Principles could be achieved through the education and skills systems across the UK. These discussions will help shape the final recommendations for *Engineers 2030*, ensuring they reflect the priorities and challenges faced across the UK.



National and Regional differences in engineering education and skills

The engineering education and skills systems across the United Kingdom are intricate and often fragmented. Each Devolved Administration follows distinct curricula and higher education frameworks, shaping the delivery of engineering education and training in different ways. Furthermore, regional socio-economic disparities affect both access to and the overall quality of engineering education and skills development across the UK.

A central aim of the roundtables was to gather evidence regarding the structure of national and regional engineering education and skills systems and understand their differences and commonalities. Throughout these discussions, distinct challenges emerged in each nation and region, reflecting varied approaches to education and workforce development. The following sections provide an analysis of these regional complexities, offering insights into the evolving landscape of engineering skills across the UK.

Newcastle

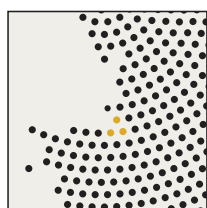


Newcastle has a strong tradition of engineering excellence, with a clear commitment to preserving and promoting this legacy. As the region undergoes an industrial transition – shifting from carbon-intensive sectors to a greater focus on renewable energy – stakeholders view this as a significant opportunity to position Newcastle as a centre of excellence in sustainable engineering.

The region also has a higher proportion of Small and Medium-sized Enterprises (SMEs) compared to other areas, presenting both opportunities and challenges. Many of these smaller enterprises have faced financial difficulties, particularly under the former Apprenticeship Levy, now renamed the Growth and Skills Levy. Addressing these funding constraints will be crucial to supporting SME growth and ensuring they can fully contribute to the evolving engineering landscape.

Participants emphasised that stronger collaboration across all parts of the engineering education and skills system would benefit young people and institutions alike – from schools to Further Education, Higher Education, and industry. It was felt that such efforts would help address engineering's perception challenges and provide students and their support networks with a clearer understanding of the potential career pathways within the sector.

Liverpool



Liverpool, like Newcastle, embodies a strong sense of individuality and boasts a rich heritage of engineering excellence. The city takes pride in its past innovations while maintaining a forward-thinking vision for the future of engineering in the region. This commitment is reflected in a culture that embraces risk-taking and pushes boundaries, positioning Liverpool as a key player in shaping the next era of engineering development.

During discussions, attendees highlighted the limited awareness and understanding of T-levels across industry and universities. This lack of recognition is significantly hindering their uptake among young people, particularly due to restricted availability and the limited number of universities that accept them for further study in engineering. To address this challenge, greater efforts are needed to promote T-levels as a viable route into the engineering sector, engaging young people, industry leaders, and academic institutions alike.

Other key topics of discussion included the lack of diverse engineering role models for young people to aspire to, the shortage of higher education teachers with relevant skills and experience to effectively deliver Science, Technology, Engineering and Maths (STEM) subjects, and the rigidity of the national curriculum, which was seen as a barrier to innovation in teaching.

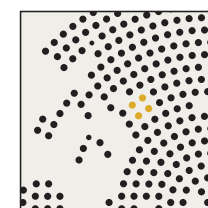
Belfast



Participants highlighted the vital role of degree apprenticeships in shaping the future of Northern Ireland's engineering sector. However, university courses remain the dominant and widely perceived primary pathway into engineering careers, which may limit alternative routes. There is a clear need for enhanced collaboration across Northern Ireland to ensure STEM and engineering education initiatives work in synergy, creating a more cohesive and effective skills development system.

Additionally, concerns were raised about the decline in practical science teaching at both primary and secondary levels. This reduction is impacting students' skillsets as they enter higher education, leaving them underprepared for science and science-related degree courses. Without hands-on practical lessons, young people may lack the foundational skills required to succeed in these fields, prompting universities to implement additional upskilling measures to support students in progressing through their degree programs.

Glasgow



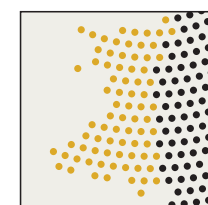
Scotland's higher education funding system differs from the rest of the UK, and participants expressed concerns about the lack of long-term financial support for universities. This uncertainty poses challenges for institutions in effectively planning for the future. Additionally, engineering courses remain consistently oversubscribed, leaving many prospective students unable to secure places. Addressing these capacity constraints is crucial to meeting the growing demand for engineering education in Scotland.

Participants also highlighted concerns about the limited investment in overseas students and graduates by both universities and industry. International students are a key source of financial stability for higher education institutions, while skilled graduates play a vital role in addressing the UK's engineering skills gap. However, bureaucratic obstacles and policy changes within the visa system, along with its costly and time-consuming nature, were cited as major barriers to attracting international talent.

There was also a shared perception that university programs are not equipping undergraduates with a realistic understanding of modern engineering careers. With technology advancing rapidly, degree courses – and even the national curriculum – have struggled to keep pace with emerging developments, including AI. As a result, industry leaders are increasingly required to train graduates before they can effectively integrate into the workforce. Strengthening collaboration between universities and industry was seen as a positive step toward ensuring that young people are adequately prepared for successful careers in engineering.

More broadly, there was a perception that STEM and engineering in particular lacks sufficient emphasis within the curriculum and is not viewed as a strategic priority in Scotland. As a result, interdisciplinary skills such as problem-solving have increasingly been removed from the curriculum. In addition, engineering continues to face a wider perception challenge, not only among young people but also within industry and manufacturing, where the diversity and breadth of the sector are often under-recognised.

Wales



The National Curriculum in Wales is still in its early stages of implementation, making it difficult to fully assess its impact. However, recent incentives have influenced how STEM education is taught. Schools are now required to engage directly with industry, though the choice of sector and partnership remains at the discretion of individual institutions. Similarly, industry outreach is left to individual organisations, meaning engagement varies widely across different sectors.

The Welsh industrial landscape is shifting away from carbon-intensive sectors towards more renewable-focused industries. This transition presents a significant opportunity for meaningful change, as highlighted in the previous section, with the potential to develop key areas of excellence.

One of the most pressing concerns raised by interviewees was the shortage of mid-level engineering roles. While Wales offers strong opportunities for entry-level positions and senior roles, mid-career opportunities are scarce. As a result, many engineers seek experience overseas before returning later in their careers.

UK wide synergies and shared challenges

Throughout the roundtables and interviews, several recurring themes emerged:

■ **Perception of engineering as a career:**

Engineering is typically introduced to students only at the stage of formal career education, which many consider too late to effectively generate students' interest. Participants highlighted the importance of embedding engineering concepts throughout the education journey from primary through to further education demonstrating clear links to potential career pathways within the sector.

■ **Limited promotion of technical pathways:**

Apprenticeships and T-levels remain under-promoted compared to university routes, potentially overshadowing alternative pathways that offer valuable hands-on experience.

■ **STEM curriculum delivery:** The curriculum often prioritises content coverage over deeper exploration of subjects. Attendees suggested integrating systems thinking and a multidisciplinary approach to enhance student engagement and align with real-world engineering challenges.

■ **Teacher training & STEM confidence:** Across both primary and other educational levels, there was a perceived lack of sufficient training and ongoing continuous professional development in STEM subjects. This shortfall is often attributed to already demanding workloads faced by teaching staff. Addressing this gap is seen as essential to strengthening the quality and confidence in engineering education.

Additionally, two systemic barriers to engineering education and skills development were identified:

■ **Limited local transport infrastructure:**

Restricting access to apprenticeships, industrial placements, and Further/Higher Education opportunities.

■ **Digital poverty:** A lack of access to equipment hampers students' ability to fully engage with engineering education and career development.

These findings highlight the need for systemic improvements to ensure that engineering education is accessible, well-promoted, and effectively structured to support future talent across the UK.

Conclusion/next steps

We will use the findings from national and regional roundtables to inform the final recommendations for the *Engineers 2030* report. This approach ensures that the recommendations reflect the distinct differences in engineering education and skills systems across the UK, acknowledging the varying enablers and barriers affecting different regions.



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