

# Roundtable Summary: Skills to Support the Future of Welsh Industry

## Executive summary

On Tuesday 17 March 2026, the Institution of Chemical Engineers (IChemE) convened a roundtable at Swansea University to discuss the role of education and skills in supporting Wales's changing industrial sector. The roundtable was chaired by IChemE President Raffaella Ocone and brought together representatives from academia, industry, and third sector bodies.

The attendees had a wide-ranging conversation on the nature of the Welsh (and wider UK) tertiary education sector, how skills are being framed within the context of industrial transition, and what this means for local communities in Wales. The main insights were:

- There is concern that poorly designed decarbonisation policy could lead to deindustrialisation rather than industrial transformation
- The transferability of chemical engineering skills needs to be highlighted especially in the context of industrial decarbonisation
- There would be great benefit from strengthening links between industry and various groups in the education sector
- Government needs to set a strong policy direction on non-university pathways in industry along with greater investment into apprenticeships
- There needs to be better alignment of devolved education systems to support UK level policy like the Industrial Strategy.

## Background

Wales has a long industrial heritage rooted in coal, steel, and copper production. In recent years, this has begun to shift as sustainable industries and decarbonisation initiatives gain momentum, and existing industries face increasing cost pressures. Industrial investment reflects this direction of travel, with notable developments including progress on floating offshore wind and Tata Steel's investment in an electric arc furnace for lower-emission steel production. These sustainable initiatives can only be sustained if the sector has access to an appropriately skilled and qualified workforce and this can only be achieved through a robust education sector.

To explore this topic, the Institution of Chemical Engineers (IChemE) convened a roundtable at Swansea University's Bay Campus, chaired by IChemE President Raffaella Ocone. The session brought together representatives from academia, industry, and third sector bodies to reflect on the current shifts occurring in Wales's industrial sector and explore how to ensure the workforce is appropriately skilled to support it. This document provides a summary of the key themes from this discussion.

## Changing industry landscape

The panel noted that public debate often frames industrial decarbonisation as primarily an energy-sector issue. In reality, emissions-intensive activity spans a much wider range of sectors,

including cement, steel, and copper production. In Wales, the latter of these industries are already taking steps to reduce emissions but face significant cost and competitiveness pressures.

A recurring concern was that poorly designed decarbonisation policy could lead to deindustrialisation rather than industrial transformation. Such policies, combined with rising energy costs and underinvestment risk making domestic manufacturing uncompetitive, downsizing industry, and leading to a shrinking workforce over time. Participants also questioned the credibility of net-zero claims if domestic production were to be displaced by imports, effectively outsourcing emissions overseas. Policy makers need to be conscious of these externalities when considering their policies and interventions.

## Conceptualising skills

Early in the discussion, it was raised whether universities in their role of developing conceptual depth, critical reasoning, and intellectual independence should be training people for specific industries or giving their students broader “soft” skills that could be applied to wider sets of circumstances. It was recognized that there is the need for both and there has been a growing focus on soft skills in recent years. Multiple drivers for this were identified but one is the need for graduates to be flexible in a changing job market.

This prompted several attendees to raise how certain skills have been erroneously conceptualized in recent years. They noted how educators are increasingly being encouraged to teach “green skills”, but these are simply the application of traditional chemical engineering concepts in different contexts. Chemical engineering courses have long taught students how to operate systems and processes efficiently and applying these skills to minimise emissions, consume less energy, or promote circularity is not a foreign concept.

There was consensus that there is no such as green skills, it is simply the application of broad concepts to specific problems and in order to highlight the importance of chemical engineering, the wide applicability of chemical engineering skills needs to be emphasised.

## Connections between education and workforce

One participant noted that secondary education is the most influential period for students considering their career options, yet teachers often lack knowledge about the wider workforce and the skills that are needed for certain roles. It was also noted that universities can occasionally lack this understanding as well, especially in subjects that have many career options. Organisations like IChemE have an important role to play here by conducting outreach activity in schools and facilitating connections between tertiary education and businesses.

A novel idea was raised by discussing how industrial clusters operate. It was noted that industrial clusters do a good job of providing consolidated ancillary services (like permitting, shipping, and other infrastructure) to the businesses that make them up and this concept could be expanded to education. An entity representing all the businesses in a cluster could organise placements and apprenticeships that strengthen the links between education facilities and industry.

## The benefits of non-university pathways

There was general agreement by those in attendance that there needs to be increased investment into non-university pathways into chemical engineering roles. In chemical engineering, university has long been considered the gold standard which has potentially led to other tertiary educational routes, such as apprenticeships, suffering negative perceptions. This needs to be corrected as apprenticeship schemes have many benefits, especially compared to typical university pathways.

It was noted that apprenticeships are a better return on investment (in terms of both time and money) for students, businesses, and the economy. The ability to learn on the job allows those in apprenticeship schemes to get into work sooner than their university counterparts, meaning they can start earning money and contribute to the local economy, all while taking on less debt. Additionally, those completing apprenticeships are less likely to transfer out of the industry leading to greater workforce retention and a consistent pipeline of talent so that businesses have good access to workers at all stages of their career.

The benefits of micro-credentials were also raised. These programs allow workers to complete small courses enabling them to build custom groups of qualifications suited for specific roles or broad industries. Because individual qualifications are relatively compact, workers can get into work sooner and show the progression of their skills overtime by snowballing their qualifications.

However, non-university pathways are not just limited by negative perception. There is a general lack of availability of apprenticeship schemes nationwide and attendees wanted to see more political ambition in the space. Large businesses could invest in their own apprenticeship schemes, however for small to medium enterprises (SMEs) access to these kinds of programs will always be reliant on external support, and overall there needs to be government recognition otherwise courses will have no credibility.

It should also be noted there are other preconceptions that prevent certain groups from accessing higher education. In some communities, there are still strong preconceived notions on the kinds of people who can (and cannot) attend university and families who have experienced generational financial instability have more negative opinions about personal debt which deter them taking out student loans in order to pursue university degrees.

## Impact of devolved education

The discussion also highlighted tensions between the UK's Industrial Strategy, which has an important skills component, and the devolved nature of education policy. The outcomes which the Industrial Strategy are trying to achieve are reliant on training and maintaining a highly skilled workforce. The devolved nature of the UK's education sector means that there are inconsistencies in the approach to education across the devolved nations which may make the development of this workforce inefficient. It was also noted that different apprenticeship schemes are starting to be developed in England, Scotland, and Wales which not only duplicate each other's work, but may also lead to courses that are incongruous with each other. This misalignment is especially relevant for companies that operate in multiple jurisdictions.

## International considerations

One participant raised that people studying subjects related to the public sector tend to stay local after graduation, while graduates in private sector subjects tend to move. This flowed into a wider conversation on the benefits of retaining students as workers versus attracting workers from elsewhere, and how Wales can become a more attractive place for skilled workers. It was noted that SMEs do not have the resource to invest the time or money in targeted job adverts and government and third sector organisations had a role to play in supporting that.

### **Institution of Chemical Engineers**

Institution of Chemical Engineers (IChemE) is a qualifying body, membership organisation, and learned society for chemical, biochemical, and process engineers. We have over 30,000 members in the UK and worldwide. We support our members and the profession by setting professional standards, facilitating training and events, and advocating on behalf of the profession. Our mission is to champion the input of chemical engineers to create a sustainable future.