

## Working together to secure global STEM talent:

Output of a collaborative workshop organised by the Institution of Chemical Engineers and the American Institute of Chemical Engineers

### The problem

There is an urgent need for more people to join the global STEM workforce. This workforce will be critical to addressing some of the biggest challenges of the 21<sup>st</sup> Century – including the transition to a net zero future and securing sustainable food and water supplies. Yet we are now seeing shortages of workers in this area worldwide, and this is only predicted to increase.

Recent analysis by Boston Consulting Group found one in three engineering roles unfilled each year in the US<sup>i</sup> and in the UK it is little better, with Engineering UK suggesting the UK faces a shortfall of 37,000 to 59,000 people each year in core engineering roles,<sup>ii</sup> Further afield, the Institution of Civil Engineers reported in 2021 that "there are fewer than 100,000 engineering students in sub-Saharan African countries and 70% of them are in South Africa",<sup>iii</sup> and the Engineering Council of South Africa observed that "the country has one engineer for every 3,100 people, compared to Germany which has one for every 200 people".<sup>iv</sup>

### What needs to change

Alongside retraining and upskilling the existing workforce, it is crucial that – collectively – we attract more young people to enter the STEM workforce year on year. We must embed positive attitudes towards Science, Technology, Engineering and Mathematics (STEM) subjects in young people and their influencers from an early age, maintaining that interest and momentum throughout their education and early careers. There has been progress on this in recent years in many countries, including the USA and UK. It is vital that we scale, build upon and spread this success more widely.

### What will we do

AIChE and IChemE believe that – together and with others – we have a collective responsibility to help all countries develop sustainable STEM talent pools. To this end, IChemE and AIChE will:

- During 2024, establish the beginnings of an on-going collection of free online resources for teachers and others across all geographies (a) to encourage young people to see STEM as interesting and something they could pursue as an option for study and employment (b) to encourage and support young people into chemical engineering studies and careers.
- Identify key gaps in this suite of resources and work out how to supplement and improve usability as needed, in collaboration with others (including the Heads of Chemical Engineering

UK and the AIChE's Department Heads Forum) and input from young people and their influencers.

- Welcome others to join this collaboration (for example, the Chemical Institute of Canada and Engineers Australia) and to explore how to share such resources even more widely, working with stakeholders such as Society of Chemical Engineers, Japan and the Brazilian Society of Chemical Engineering.
- These actions will be taken forward by Andrew Foster and Rachel Bibby from IChemE who will meet with Gina Gatto and Michelle Bryner from AIChE once per month, with the first meeting happening in August 2024.

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<sup>i</sup> <https://www.bcg.com/publications/2023/addressing-the-engineering-talent-shortage>

<sup>ii</sup> <https://www.engineeringuk.com/research-policy/data/2019-excel-resource/>

<sup>iii</sup> <https://ice.org.uk/news-insight/news-and-blogs/latest-news/news/massive-collaboration-needed-to-fill-african-engineering-skills-gap>

<sup>iv</sup> <https://www.ecsa.co.za/about/sitepages/transformation.aspx>