

## Evaluating the skills gap in the hydrogen economy

### Introduction

The Hydrogen Development and Knowledge Exchange (HyDEX) project, funded by Research England, is investigating the skills needed to build a Hydrogen economy in the Midlands. The university partners working with industry collaborators are identifying gaps and existing expertise to provide the most appropriate interventions for enabling a hydrogen economy. HyDEX carried out a survey to evaluate the skills gaps in November 2022 and received over 50 responses from a range of industries.

### Responses

The organisations that responded to the survey represented a large range of business types, interest and experience. The majority of responders' interest in hydrogen was related to project development or research and development. Other areas of interest included, engineering, procurement and construction, consultancy, suppliers, client end use and local government. Over half the organisations surveyed had their base of operations in the Midlands, approximately one-fifth of business operating at the national level, and one-fifth of respondents having international or global presence and reach. We covered a large range of companies from sole traders and SMEs through to large multi-nationals. The companies represented a broad level of experience regarding the Hydrogen economy, some were in the early stages of considering how the hydrogen economy could affect their business to those that had been actively involved in Hydrogen for more than 10 years.

Due to the wide range of organisations that took part in the survey we feel that it gives a representative view of the sector as a whole.

### Expertise & increase in readiness is needed

Over half of participants stated that there was insufficient expertise and capacity in their organisation that could be deployed on ongoing or upcoming Hydrogen projects.

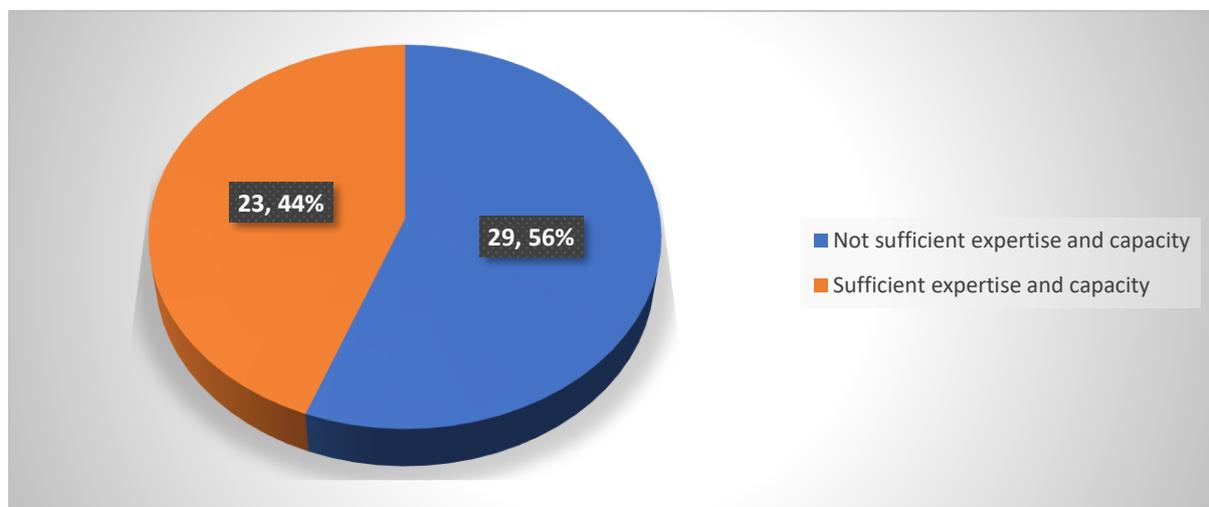


Figure 1: Over half of the businesses that responded to the survey stated that there was not sufficient expertise and capacity in their organization that could be deployed on ongoing or upcoming Hydrogen projects.

The majority of organisations indicated that they lacked personnel who specialised in Hydrogen, with at least one respondent stating that they relied on consultants to provide specialised Hydrogen knowledge. The other main area where they felt they lacked personnel was in technical skills relating to Hydrogen.

The majority of organisations surveyed felt that maturity of the Hydrogen economy represented a potential risk for their business. Over half declared that the lack of technology readiness, supply chain readiness and understanding on the benefits of Hydrogen presented a potential risk to their business. In addition, just under half of all those surveyed viewed the lack of supply of skilled workers as a potential risk.

## Technical competences required for a successful Hydrogen economy

The vast majority of those surveyed indicated that an increase in technical competences was required in order for there to be a successful Hydrogen economy. Over 75% of companies viewed Hydrogen storage, Hydrogen safety, and regulatory knowledge as essential for the Hydrogen economy with over 70% viewing Hydrogen production design as essential. However, only a small number of those surveyed (15%) viewed Software competency as essential to the hydrogen economy.

## Designing a training programme

The top five areas where respondents felt training should be delivered were Policy and Regulations (77%), System Integration (71%), Energy Modelling tools (56%), Climate change and sustainability (52%), and Future industry growth (52%).

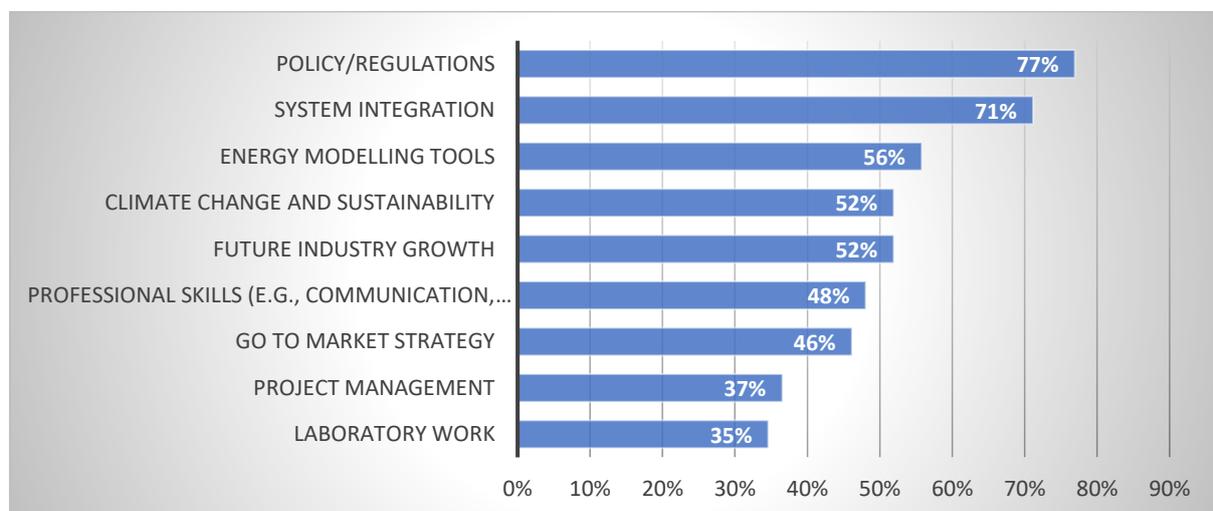


Figure 2: The main areas where respondents felt training should be delivered were policy and regulation and systems integration.

From this initial survey apprenticeships did not appear to be highly sought-after or desirable, and the vast majority (over 70%) did not value credit bearing courses more highly than CPD/Micro credentials style courses. Indicating that HyDEX should focus on CPD style training potentially with micro-credentials attached. Hybrid delivery was considered the method most suitable to teach about renewable energies and hydrogen technologies. Over 90% of those surveyed considering this a suitable method, compared to approximately 50% who thought only on-line learning with access to virtual materials or face-to-face teaching was the most suitable.

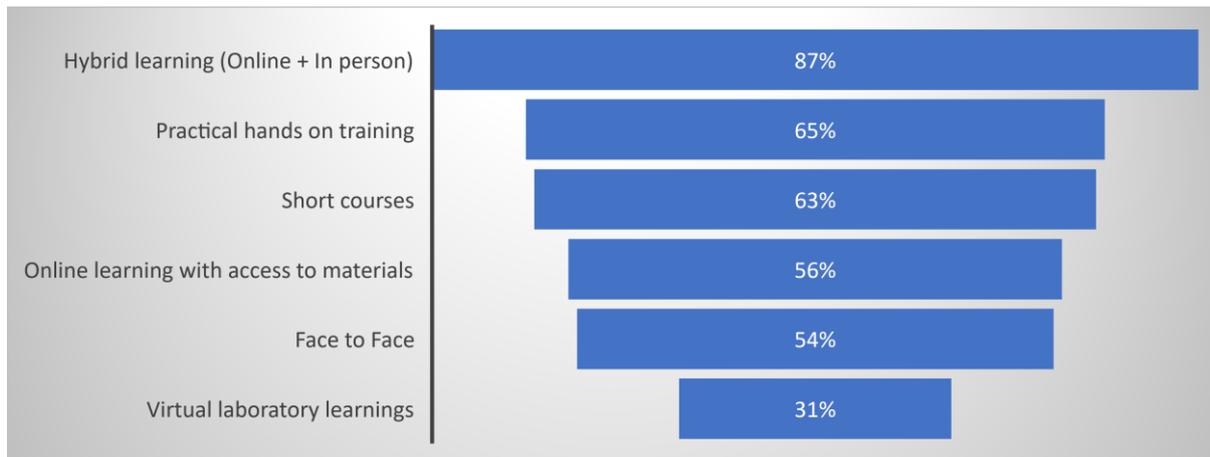


Figure 3: Hybrid methodology was viewed as most suitable to teach about renewable energies and hydrogen technologies.

## Conclusions

A non-credit bearing short course delivered using hybrid methodologies that covers subject matter relating to Policy and Regulations, System Integration, Energy Modelling tools, Climate change and sustainability and Future industry growth would cover the majority of those surveyed training and development requirements. In addition, technical training on Hydrogen storage and Hydrogen safety are viewed as a priority area for skills and training to support an emerging Hydrogen economy in the Midlands.

Continuing the dialogue and building upon the HyDEX partnerships will help us inform development of wider hydrogen skills base and enable us to develop and deliver training for HyDEX partners aligned with their priorities.

## Next Steps

HyDEX Skills has undertaken a mapping of existing training across the partnership, and those areas most aligned with the priorities identified in the survey will be developed to meet the needs of industry.