

People and Skills in UK STEM

The Energy Institute (EI) welcomes the opportunity to respond to the House of Lords Science and Technology Committee on people and skills in UK STEM.

We appreciate the importance of the consultation. From our perspective, a part of the broader topic of the STEM skills should be a debate on skills needed for the energy transition to net zero. Although the EI members believe that the transition to net zero will have a generally positive impact, it is also acknowledged that it will require greater flexibility and adaptability by the workforce.

Most often the discussions about how to achieve challenging climate goals focus on the various low-carbon technologies and their relative importance. The EI members believe that skills and human capacity issues are not yet being given due attention and could even eclipse technology as the biggest barrier to meeting net zero, as the lead times required to bring on these sorts of skilled workers could be longer than the lead times involved in building new power plants.

Developing STEM skills and building the energy workforce requires close cooperation between academia, industry and government. As a membership organisation as well as a training provider for energy industry, the Energy Institute is well-positioned to coordinate such cooperation and convene expertise on this important issue.

About the Energy Institute

The Energy Institute (EI) is the chartered professional membership body for people who work across the world of energy.

Our purpose is creating a better energy future for our members and society by accelerating a just global energy transition to net zero.

We do this by attracting, developing and equipping the diverse future energy workforce; informing energy decision-making through convening expertise and advice; and enabling industry and consumers to make energy lower carbon, safer and more efficient.

1. Energy Institute response

The EI's response draws on its seventh annual Energy Barometer report: "The net zero skills issue" published in July 2021. The report is based on survey responses from more than 400 professionals selected to represent views right across the UK energy system, from renewables to oil and gas to energy efficiency. The survey was conducted in March - April 2021.

The full report is available on [Barometer 2021 | Energy Institute](#)

Additionally, the response is based on ongoing discussion and engagement with industry specialists and subject matter experts.

The EI response addresses the education sector section of the consultation, specifically questions on measures needed to be taken by the Government to address a STEM skills gap.

2. Executive summary

- Skills gap is perceived by the Energy Institute members as one of the greatest challenge the UK faces in building a net zero workforce, second only to energy policy.
- For the EI members it is clear that decarbonisation won't happen at the necessary speed and scale without the assembly of a mass skilled workforce.
- To meet net zero targets, growth is required across a range of low-carbon sectors, including resource and energy efficiency, carbon capture, usage and storage (CCUS), hydrogen and domestic heating. A large number of skilled engineers, electricians, technicians and scientists will be required to make this growth possible.
- Given many of these roles need to be filled by talented individuals who have a strong grounding in science, technology, engineering and maths (STEM), the EI members recommend supporting school programmes and apprenticeship schemes to ensure that there is a supply of suitably skilled workers entering the industry. This reflects the reality that many roles in the net zero economy will be skilled vocations not necessarily requiring a university degree.
- Our survey respondents are concerned that not enough action is being taken to build the skilled workforce that will deliver the transition to net zero. Half of respondents want to see more action from their sector, and nearly three quarters want more action from government.
- The EI members call for long-term, stable energy policy. There is also a particular desire to see a national net zero skills strategy at the heart of the Government's long-term plans and a detailed action plan – practical measures that give substance to the strategy.

Consultation Question Responses

3. What measures is the Government taking to address any STEM skills gap? Are they sufficient to address the requirements of wider government policy aims for science and technology, including net zero?

- 3.1. The government's priority should be to invest in the UK's most important asset – our workforce – ensuring that people from every region of the UK have the right skills for the green industrial revolution and thrive in the jobs this will create.
- 3.2. The Government's powers include its ability to lead market reform, set the policy agenda and lend financial support to low-carbon sectors that are not yet commercially viable.
- 3.3. The EI members have a number of asks for the UK government to help build long-term net zero capacity within the energy workforce. They call for long-term, stable energy policy. This generates a *pull*: creating commercial drivers to develop the workforce that will bring forward key technologies. But there is also a particular desire to see a national net zero skills strategy at the heart of the Government's long-term plans. Such a strategy could create a *push*: Government working with industry to identify the skills needed to reach a net zero future and focusing on their development, from school onwards.

- 3.4. The survey respondents call for a detailed action plan – practical measures that give substance to the strategy.
- 3.5. It is believed that a national net zero skills strategy equally needs to focus on parts of the existing highly skilled workforce facing the most change. In the transition over the coming decades, roles in energy intensive industries, fossil fuel production and their supply chains will change markedly, so it's vital for the reskilling to keep pace.
- 3.6. The EI members stress that the industry requires regulatory certainty and financial incentives to make large-scale changes. For example, establishing a clear framework and timeline for regulated energy efficiency improvements could provide the certainty businesses need to train the engineers, electricians, builders and glaziers who will work to insulate and improve housing stock in the years ahead.
- 3.7. The respondents to our survey recommend supporting school programmes and apprenticeship schemes to ensure that there is a supply of suitably skilled workers entering the industry. This reflects the reality that many roles in the net zero economy will be skilled vocations not necessarily requiring a university degree.

4. Do cultural influences such as social media have a role to play in increasing uptake in STEM careers? Could the Government do more to encourage this?

- 4.1. A critical ambition is improving the diversity of those in STEM subject roles, particularly engineering. [An Engineering UK report on gender disparity](#) reveals that just 14.5% of total jobs in engineering are held by women – and perceptions play a part in this too.
- 4.2. The view of engineering as a “masculine profession” excludes women from areas of opportunity, and the industry misses out on a huge pool of talent as a result. This perception must change, not just for the sake of the industry but also to find solutions that benefit the entire population and bring about the societal and behavioural changes called for by net zero.

5. Is there sufficient training in STEM skills available for workers who want to retrain? What schemes are there and how easy are they to access?

- 5.1. Our survey revealed that nearly 60% of respondents are pursuing training specifically as a result of net zero. Many of them see some effort by their employer to support them in this.
- 5.2. However, half of our respondents are experiencing barriers to their personal development. These barriers are varied, from cost and lack of time to the lack of availability of appropriate training courses, pointing to a need for more direction and support.
- 5.3. There is also a reported confusion, especially among oil and gas workers, of which skills they need to develop.

6. How much of a role could (and should) the private sector play in retraining their workers, or supporting workers to retrain?

- 6.1. Our survey respondents are concerned that not enough action is being taken to build the skilled workforce that will deliver the transition to net zero. Half of respondents want to see more action from their sector.
- 6.2. EI members stress the need for industry leaders to work on enhancing the perception of STEM subjects and careers.
- 6.3. They suggest that the industry should provide good job security and good pay, as well as jobs that show commitment to tackling climate change.
- 6.4. EI members recommend the industry should collaborate with educational institutions to improve curricula and careers information. This could help to ensure that students in the STEM pipeline arrive in energy jobs with the crucial engineering and technical skills required.
- 6.5. On the other hand, it was stressed that there is a clear danger that the pace required by the low carbon transition could leave some professionals and some communities stranded. The right investment early in low carbon technologies and the related skills required can help drive a fair and just transition. When asked how government and industry could help to realise the positive economic impact of net zero on communities, over half of respondents cited the need to invest in upskilling and retraining of workers.
- 6.6. There is also strong backing among our survey respondents for support specifically for skills and retraining to avoid oil and gas professionals being left stranded. As the nature of the energy industry changes, this particular workforce's required skill set will change too, calling for upskilling (refresh or development of skills) or retraining (learning a new vocation or set of skills).