The Institution of Engineering and Technology

IET skills for net zero and a green recovery

Examining the engineering skills needed to meet net zero.

This factfile is based on the full report that focuses on the skills requirements for delivering the UK Government's net-zero target by 2050.

The Institution of Engineering and Technology (IET) carries out an annual skills survey of engineering employers in the UK. In 2020 we focused on the skills requirements for delivering the UK Government's net-zero target by 2050, the subsequent impacts of COVID-19 on engineering employers, difficulties in recruiting engineers, and employer perceptions of the engineering skills gap.

The responsibility to drastically reduce our impact on the climate falls on us all, but engineering has an important role to play, and it is vital that we have the right knowledge and skills to address the complex engineering challenges we will face as a result. Responses from our survey highlighted that engineering employers take this responsibility seriously. Half of those questioned already have a sustainability strategy in place, however less than one in ten have all the skills their strategy needs to achieve its goals.

This factfile is based on the full report, which we commissioned and conducted in partnership with YouGov. The fieldwork was conducted between 7 August and 16 September 2020. All respondents were drawn from the YouGov panel of over 1.8m people in the UK.

The results of our survey are broken into six categories, exploring the current skills challenges employers are facing, employers' movement towards increased sustainability and how they can respond to future challenges by building skills for a green recovery. Based on the results of our survey we have outlined key recommendations for industry, government and academia to deliver net-zero targets and provide a workforce that's fit for purpose.

Contents

The IET is one of the world's leading professional engineering institutions. We provide independent, impartial and expert advice. We represent over 168,000 engineers in more than 150 countries, across multiple sectors including energy, built environment, transport, design and manufacturing, healthcare and digital.

Read our full survey at **theiet.org/skills**

1. Business views on climate change

Engineering employers' perceptions on climate change and the net-zero challenge.

There is a consensus amongst engineering employers that the world's climate is changing as a result of human activity. However, those in the aerospace and defence industry are most likely to think the world's changing climate is not a result of human activity.

Engineering employers think national governments have the highest responsibility to address climate change, for example making changes to prevent it from getting worse, but name business and industry as the second most responsible body. This highlights the need for government policy and business to work in partnership to address climate change.

The vast majority of engineering employers are aware of the UK Government's net-zero target (85%) and around half (53%) think it is achievable for their organisation to achieve net zero by 2050. However, they are less assured of the UK's overall success in meeting this target.

There is a consensus that **the world's climate is changing** as a **result of human activity.**

Engineering employers see **national governments** as having the **most responsibility** to tackle climate change, followed by **business and industry.**

80%

of employers **are aware** of the UK's **net zero by 2050** target.

A small majority believe net zero by 2050 is **achievable for their business**, but employers are **less assured** of the UK's overall success.

Achievable for own organisation **53%**

Achievable for UK **37%**

2. Strategies to achieve sustainability

How organisations are lowering their environmental impact, the skills needed to deliver sustainability strategies, and the barriers they face.

Corporate strategies

A small majority of engineering employers (55%) have a sustainability strategy; one that has specific activities and goals to lower their organisation's environmental impact. Of those with a sustainability strategy, two thirds (67%) say it's integrated into their overall business strategy.

Skills needed to deliver organisation's sustainability strategy

When thinking specifically about their engineering and technical staff, two thirds of employers believe they will need more skills and knowledge to respond to the changes being made to lower their business' environmental impact (66%). A quarter of employers say their engineering and technical staff have the skills they need (25%) and 2% say they will need less skills and knowledge.

Targeted actions

The most common activities undertaken by engineering employers to lower their environmental impact is using new, greener technologies (43%). This is followed by adapting their existing technologies (33%). Around a quarter of engineering employers are upskilling their workforce with relevant skills (23%), while one in ten are recruiting new employees (10%).

Employers whose engineering/technical staff do need additional skills as a result of changes to lower the organisation's environmental impact are divided about what skills their staff need. Roughly equal proportions report needing each type of skill they were questioned about, from efficiency (59%), and innovation skills (56%) through to management (53%) and delivery skills (53%).

Half of engineering employers have a **sustainability strategy.**

Eight in ten employers are doing activities to **lower their environmental impact**.

Using new, greener technologies **43%**

Adapting existing technologies **33%**

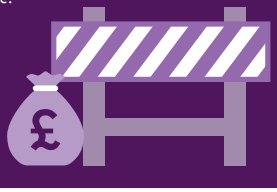
Financial incentives to adapt/purchase technologies would **motivate over half of employers** to lower their impact.

Less than one in ten employers have **all the skills** their strategy needs.

60% will **upskill** employees.

38% will **hire** for skills.

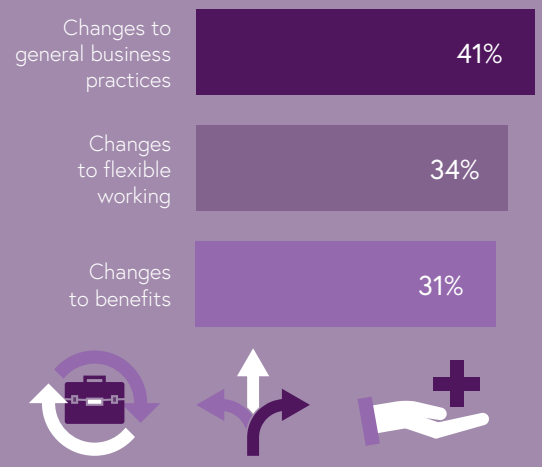
Costs are the **main barrier** to lowering environmental impact.



Increased operating costs **31%**

Initial investment costs **30%**

Top three workforce impacts from environmentally friendly challenges:



Read our full survey at **theiet.org/skills**

3. Reaching sustainability: the future

Introducing technological change to lower environmental impact and upskilling to deliver change.

Technological change

One in five (19%) engineering employers haven't introduced any technological change in order to lower their environmental impact over the past five years. Smaller employers (27%) were much more likely not to have introduced any technological change (12%).

Looking to the future, a similar pattern emerges to which types of technological change have previously been introduced. In the next two years, three in ten engineering employers plan to introduce or expand online communication platforms (30%) or introduce/upgrade IT hardware (29%) to reduce their environmental impact.

People and organisational change

With regards to the current workforce, a third (34%) of engineering employers plan to train their workforce in efficiency skills to optimise processes as a way of lowering their organisation's environmental impact.

Over the next two years, the most common planned organisational change to lower environmental impact is flexible working. Over a quarter of engineering employers will either improve their flexible working arrangements (28%) or introduce flexible working arrangements (27%).

How business and education can deliver change

The majority of engineering employers see the key priorities for the education system as more opportunities for young people to acquire relevant work experience (60%) and for there to be increased engagement with businesses (58%). Half (49%) of engineering employers also want to see increased involvement of industry expertise as a priority for the UK education system.

One in five have not introduced any technological change to **lower their environmental impact** over the past five years.

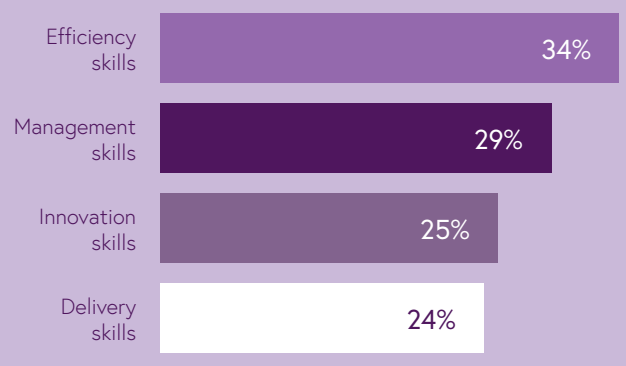
Flexible working is the most **common area** of organisational change to lower environmental impacts.

28% will **improve** flexible working arrangements.

27% will **introduce** flexible working.

A **quarter do not** engage with **schools, colleges or universities.**

A **third** will **train staff** in **efficiency skills** to help **lower environmental impacts.**



Most employers think key priorities for the UK education system are:

60% More opportunities for young people to acquire relevant **work experience.**

58% Increased **engagement** with businesses.

41% say that **time is the biggest barrier** to encourage greater **engagement with education.**

Read our full survey at **theiet.org/skills**

4. The business context

The impacts of COVID-19 on engineering employees and changing business priorities.

Previous, current and future business priorities

Engineering employers' current priorities are somewhat different to those they had 12 months ago or expect to have in 12 months' time. A year ago, their top priority overall was increasing profitability (50%). This is also the priority they expect to be most important one year from now (57%). However, in the current economic climate, engineering employers indicate that their key priorities are the wellbeing of their staff (68%) and dealing with economic changes/ uncertainty (68%). By a small margin, increasing profitability (66%) is currently of secondary importance.

Recruiting staff with new skills is currently the lowest priority for engineering employers (35%) and this continues to be the case in their expectations for one year from now (35%). Twelve months ago, however, recruiting staff with new skills featured somewhat higher in employers' priority ranking (38%).

Findings presented earlier in this report evidence that only a minority of engineering employers believe they have all the skills they need to deliver their organisation's sustainability strategy. When acknowledging the fact that recruiting staff with new skills has been deprioritised, it could be important to consider the impact this will have on the recruitment of these green skills and in turn furthering sustainability.

60% of employers have **furloughed staff through the Job Retention Scheme**, making it the **most commonly taken workforce measure** in response to the impact of **COVID-19**.

34% have or **plan to make redundancies** as a **result of COVID-19.**

Twelve months ago, the **top priority** was **increasing profitability (50%)**. This priority is **also expected in twelve months' time (57%)**.

55% report that COVID-19 will result in **permanent redundancies** for up to **10%** of their workforce.

However, in current times, the most **key priorities** are the **wellbeing of their staff** and **dealing with economic changes/uncertainty.**

Read our full survey at **theiet.org/skills**

5. Current workforce needs

Organisations responses and attitudes towards the continued skills shortages.

Skills shortages

Among engineering employers currently experiencing a skills gap or limitations in their internal workforce, it's by far in engineering where they're seeing the greatest skills gap, with one in two (53%) reporting this. Secondarily, roughly a quarter are experiencing skills gaps in production/manufacturing (28%) and IT (24%).

Responding to skills shortages

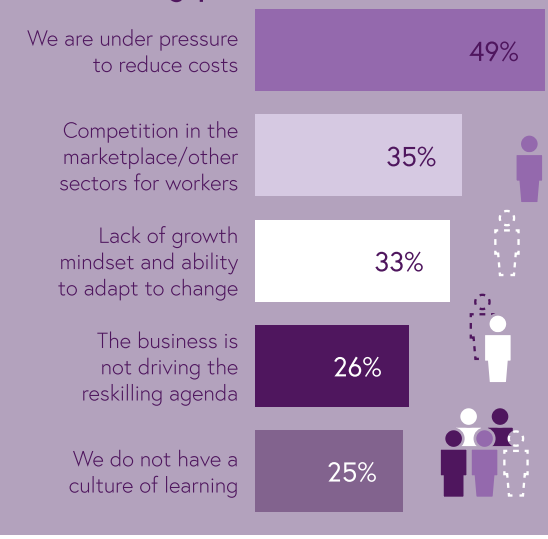
When faced with skills gaps in their workforce, engineering employers most often upskill/retrain existing employees (47%) or hire new employees with those skills (44%). It's somewhat less common for them to recruit apprentices/graduates and provide training, although this is still an action taken by roughly a third (32%). Employers are less likely to increase contingent labour (25%) or outsource to another organisation (25%) in the face of skills gaps. Automating work/tasks is also a less popular solution (12%).

Notably, upskilling and retraining existing employees could be highly important for advancing green recovery. This course of action is seen by engineering employers as the primary way they'll develop the skills needed to deliver their sustainability strategy, with expectations for a particular focus on efficiency skills. These green skills are expected to be sourced, to a somewhat lesser extent, through hiring new employees or automating tasks.

The majority of employers think their engineering and technical staff will need more skills and knowledge to respond to the changes being made to lower their environmental impact. Therefore, it will be highly important for these engineering employers to be able to effectively address their skills gaps.

33% of **engineering employers** report that their **UK workforce is mostly high** or **intermediate-skilled (30%)**. A **smaller proportion** say their work-force is mostly **low-skilled (14%).**

Top reasons for not being able to effectively address skills gaps:



25% vs 35%

A quarter say their headcount has increased over the past 12 months, but **a larger proportion report that it has decreased.**

47% of engineering employers report currently having difficulties with the skills available to them through **recruitment** and their **internal workforce (46%)** ...however, in **five years' time,** smaller proportions expect to have **difficulty with external recruitment (38%)** or **internal skills gaps (34%).**

47% of employers often **upskill/retrain existing employees** when faced with **skills gaps** in their workforce **or hire new people** with those skills **(44%)**.

Read our full survey at **theiet.org/skills**

6. Recruitment difficulties

The main technical skills job applicants lack and engineering employers' perceptions of new entrants.

Areas of difficulty

To deliver on the net-zero challenge it's important that engineering employers have the right skills in their businesses. Currently, the standout recruitment issue for engineering employers is applicants lacking the required technical skills, with close to half (48%) reporting this. Four in ten (37%) engineering employers also feel that recruitment is difficult because applicants don't have the necessary work experience.

The majority of engineering employers who feel applicants lack the necessary technical skills (68%) think that it's specialist skills or knowledge that's most likely to be lacking.

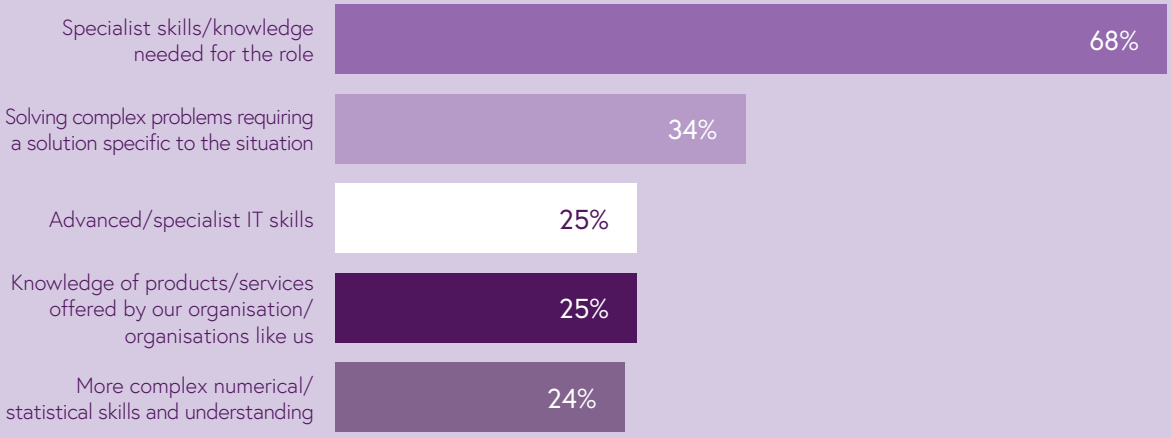
Types of technical skills lacking in applicants

Close to half (47%) of those who felt applicants lack the necessary soft skills report that these are related to team working, or leadership and management skills. A further 44% report time management and prioritisation as an issue. Customer handling (38%) and project management skills (37%) are also mentioned by four in ten.

Perceptions of new entrants

The quality of young people entering the engineering sector is important to meeting future sustainability targets. Engineering employers are also more likely to question whether university graduates have the necessary skills needed to work in their industry (43% agreeing that they don't have them). However, there are also concerns over the apprentices that enter the engineering industry. Over a third (38%) of employers agree that apprentices don't understand the realities of work in their industry, and that apprentices don't have the necessary technical skills (34%).

The top five types of technical skill lacking in applicants:



When recruiting...

engineering employers most commonly cite that the **soft skills lacking** are **team working** or **leadership and management skills.**

48%

of **applicants lacking the required technical skills** is the **main area of difficulty** for employers.

University graduates

are more likely **to NOT understand the realities of work** in their industry **than technicians or apprentices.**

Read our full survey at **theiet.org/skills**

7. Recommendations

Overall, industry, government and academia need to collaborate to identify the essential skills required to deliver net-zero targets and provide a workforce that's fit for purpose. By improving the understanding of the net-zero challenge we face, we will be able to create work-ready new recruits that understand the importance of sustainability and the issues around it. Based on the results of this survey, we have highlighted the following key action areas:

Education

1. **Collaborate to improve work-readiness of new recruits.**
   Industry and educators, including universities, further education (FE) colleges and schools, should work together to improve work-readiness and equip young people with the skills needed to tackle complex multi-disciplinary activities.
2. **Improve the understanding of the net-zero challenge.**
   Industry and educators should work together to ensure that young people have a good understanding of the importance of sustainability and the issues around it.
3. **Provide meaningful and valuable work experience.**
   Industry and educators should strive to offer hands-on work experience and placements wherever possible.
4. **Encourage greater opportunities in small and medium-sized enterprises (SMEs).**
   Government and large corporates should help SMEs to provide work experience and placements.

Government and policy

5. **Promote a green post-pandemic recovery.**
   Industry, government and academia need to collaborate to identify the essential skills required to deliver net-zero targets and provide a workforce that's fit for purpose.
6. **Provide certainty by long-term planning.**
   It's essential that government provides long-term planning and guarantees investment in these skills through future governments.
7. **Support innovation and drive down costs.**
   Government, industry and academia must continue to support innovation to provide improvements in efficiency and cost.

Skills

8. **Build a more flexible and agile workforce.**
   To effectively innovate and deliver in increasingly complex systems.
9. **Ensure vital specialist skills aren't overlooked.**
   Industry should work more closely with schools, colleges and universities to address future needs.
10. **Communicate the importance of engineering skills that address climate change.**
    General public must be engaged and support the skills needed to achieve net zero.

For further information and to read our full survey, visit
theiet.org/skills

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