IET skills and demand in industry
## 2021 survey
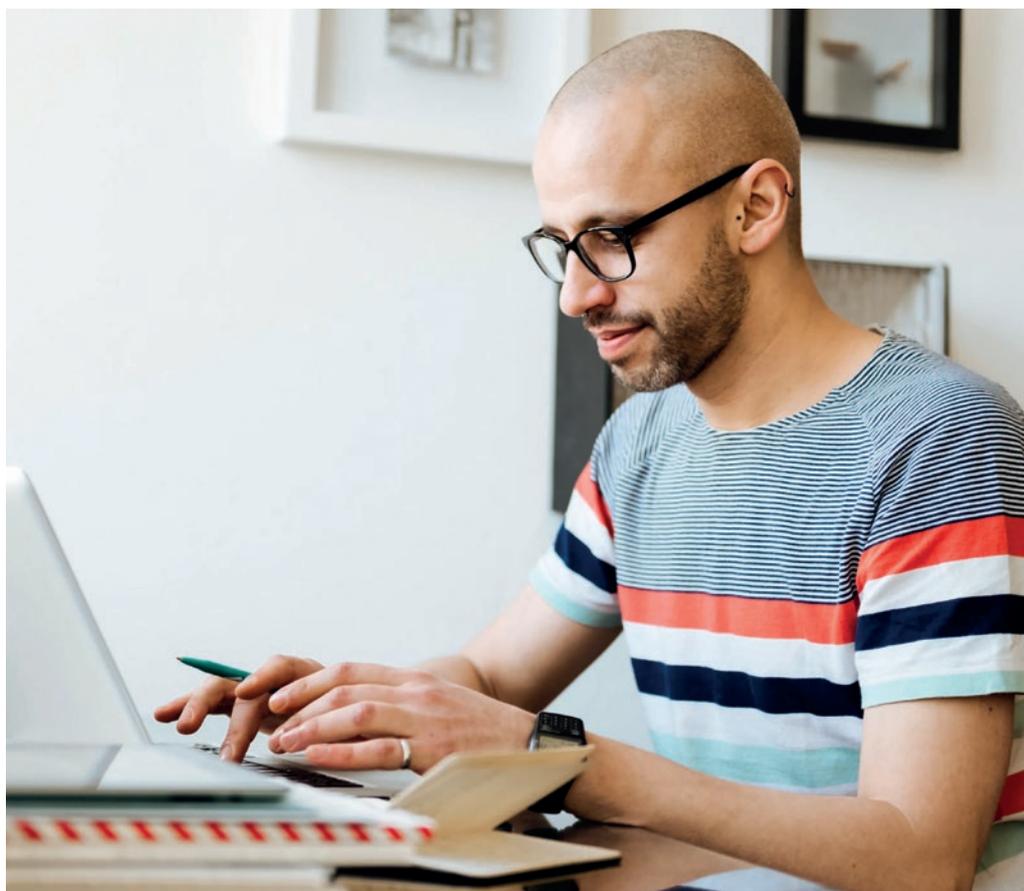
Examining the current skills challenges,
identifying barriers and the future skills needed.

Contents

1. Executive summary

We carry out an annual skills survey of engineering employers in the UK. In 2021 we focused on the current skills challenges employers are facing, identify barriers to building supply of the needed skills, and the skills that will be needed in future.

The last year has been particularly challenging for engineering employers, but business priorities are moving away from cost reductions and starting to consider new investments in facilities, operations and workforce now that the impact of the Covid-19 pandemic appears to be receding.

The majority of those that responded to our survey are positive about the future in terms of economic prospects. However, the skills gap is still a concern with more than half reporting shortages in skills within their own workforces.

This report breaks down the results of our survey into five categories, exploring the impacts of Covid-19 and Brexit, skills shortages, recruitment difficulties, sustainability strategies and new entrants to the workforce. We have also included key recommendations to ensure that current and future workforce needs are met.

The survey covers:
– The business context.
– Current workforce needs.
– Gaining skills.
– Skills for sustainability.
– Looking to the future.

This report is based on research we commissioned and conducted in partnership with YouGov in summer 2021.

Please note that the views expressed in this publication are not necessarily those of the IET. It is not intended to be a guidance note with a specified set of recommendations or actions but rather seeks to add understanding and debate around the topic.

The business context

Dealing with Covid-19

Half of engineering employers have had to deal with:

Staff ill/self-isolating because of Covid-19

55%

Staff being furloughed/ made redundant

51%

Requirement to shift to remote working

50%

Dealing with Brexit

The most common impacts of Brexit are:

Difficulty importing/ exporting to and from other countries

45%

Increased bureaucracy

40%

Economic outlook

The current outlook is positive:

79%

are confident in their organisation's economic prospects over the next 12 months.

Key priorities

12 months ago, the key priority for organisations was cutting costs

44%

Now, it's increasing profitability

67%

Current workforce needs

Current workforce profile

27% report that their UK staff is mostly high skilled (university level or higher).

28% report that they are mostly intermediate skilled (A-Level, NVQ 3 level, apprenticeships).

14% have a UK staff that is generally lower skilled (GCSEs, NVQ level 2, basic skills or lower).

26% report that their firm generally has a range of skills levels.

Workforce skills

67% of those who are experiencing an internal skills gap report gaps in engineering or technical skills.

44% report gaps in these skills at a technician or skilled craft level.

41% report gaps in these skills at a professional level.
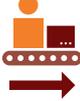
36% report gaps in these skills at operative or semi-skilled levels.

Gaining skills

The main responses to skills gaps continue to be:

Upskilling/retraining existing employees

40%

Recruiting new staff with these skills

39%

Government support

According to the businesses surveyed, the best thing the Government can do both nationally and in their local area to improve skills is to provide more funding for apprenticeships (54% nationally; 45% in their local area).

51% think that the Government should be providing more support to train or reskill.

The **third most popular Government action is better careers advice and guidance in schools and colleges.**

Gaining skills

Recruitment difficulties

96% of engineering employers who had identified a skills shortage within applicants say that this skills deficit impacts their business in some way.

The main area of difficulty remains applicants lacking technical skills

42%

However, more engineering employers than before report a lack of applicants for their roles **34%**

Diversity in the workforce

3 in 10

have taken action to improve the diversity of their engineering/ technical workforce across gender (33%) or ethnicity (30%).

Applicant's skills

63% of employers who think applicants lack technical skills continue to say they are missing specialist skills/knowledge.

49% of employers who think applicants do not have soft skills continue to think they lack teamwork.

71% of engineering employers who think applicants are lacking in technical skills say that it is specialist skills/ knowledge needed for the role that is likely to be lacking.

33% say that complex problem-solving skills specific to the situation are the concern.

Skills for sustainability

Reaching for net zero

50%

think it is achievable for their organisation to be net zero by 2050.

CO$_2$

38%

think this is unachievable.

Environmental attitudes

64%

think sustainability will become more important to their organisation in the next five years.

However, **37%** think sustainability is embedded in their organisation's work.

Actions for sustainability

51% of businesses surveyed have a sustainability strategy.

11% definitely say they don't.

The most common actions to lower environmental impact are:

Using new, greener technology
35%

Adapting existing technologies to be more green
30%

Adapting products/ services to be more green
27%

Barriers to sustainability

Of those with a sustainability strategy,

81% think their organisation needs additional skills in order to deliver it.
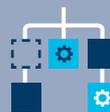
Only **20%** of businesses are upskilling their current workforce to improve their sustainability.

Looking to the future

Areas of growth

A third of engineering employers say the following skills are important for future growth in the next five years:

Design and manufacturing

36%
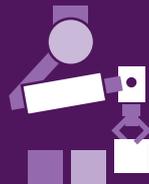
Energy and environmental sustainability

35%

Impact of missing skills

Of those who think young people lack skills,

45%

provide additional training.

However,

25%

recruit fewer apprentices/graduates as a result.

New entrants

Many employers think young people entering the workforce do not have the skills needed to work in their industry:

Have few/none of the necessary technical skills

46%

Have few/none of the necessary soft skills

46%

Engaging with education

Apprenticeships remain the most common way of engaging with the education system

29%

rising to more than a third of large employers (36%).

2. Recommendations

Engineering employers are aware that they are responsible for providing training to upskill their workforces as well as improving diversity. However, there are some barriers that must be overcome. These include a general lack of applicants as well as a shortage of applicants with the necessary technical skills required for their industry, especially in young people.

Based on the results of this survey, we have highlighted the following key action areas:

Current workforce needs

1. Investment in upskilling employees should be a priority

Engineering employers should ensure that they have a formal workforce development strategy and upskilling programs. Investing in employees will drive increases in profitability as well as providing competitive advantage over other organisations looking to recruit.

2. Apprenticeships should be leveraged both internally and externally

Apprenticeships can be used to grow talent among current employees, equipping individuals with new skills and knowledge to address skills shortages. More widely, increased Government funding of apprenticeships would also improve the skills profile of recruits both nationally and locally.

Gaining skills

3. Training can build resilience, but preparedness is key

Engineering employers recognise that training has helped employees deal with new novel challenges raised by the Covid-19 pandemic, but undertaking training during difficult periods provides its own issues. Employers should be forward-looking and ensure employees are well-trained throughout their employment, before the point of crisis.

4. Engineering employers should champion multiple areas of diversity in their workforce

Diverse employees bring with them a variety of perspectives and skillsets. While some progress has been made in improving proportions of technical staff across gender and ethnicity, more can be done – particularly in an environment where engineering employers are looking towards recruitment to address their skills gaps.

Skills for sustainability

5. Sustainability should be embedded within current workforce planning

As employers recognise that sustainability will grow in importance over the next few years, the skills needed for sustainability should be central to any current recruitment strategy. This will enable them to be embedded within the workforce as net zero targets approach.

Looking to the future

6. Future skills need addressing now

Engineering employers recognise that there are areas of skills particularly important for their growth in the future, but significant proportions acknowledge that they do not have these skills. Improving these skills within the workforce should be addressed in the current moment to avoid employers becoming uncompetitive or unprepared to deal with future challenges.

7. Employers should work with educators to improve the skills pipeline

There continues to be a mismatch between employers' desire for new entrants to the workforce to have experience and the proportion engaging with educators to offer this experience. Employers who engage with educators have the opportunity to shape the skills pipeline for the industry.

3. Introduction and methodology

Despite the gradual return to work and the 'new normal', the effects of the Covid-19 pandemic pervade and have compounded issues of uncertainty caused by Brexit. Now industry is looking to rebuild but requires some help to do so.

Engineering employers are calling for help from Government and the education sector to offer better guidance and funded training for young people so that they are better prepared and equipped with the appropriate skills for the roles that employers need to fill as they start to rebuild after the coronavirus pandemic and Brexit.

Claire Warnes, head of education, skills and productivity at KPMG UK, has said that action is required from businesses and Government to reskill and upskill furloughed and prospective workers "now more than ever, as the increasing skills gap in the workforce has the potential to slow the UK's economic recovery".[1]

In response to this, the Government has extended the deadline for employer incentives to the end of January 2022. Businesses are now offered a £3,000 grant per apprentice offered a contract on or before 31 January 2022.

This can be added to existing payments of £1,000 already available to help businesses cover the costs of hiring 16–18-year-old apprentices or 19–24-year-olds who have previously been in care or have a Local Authority Education, Health and Care Plan.[2]

This report explores the views of engineering employers on how they can respond to current labour market and economic challenges to upskill their workforces and attract new, highly skilled talent.

3.1 Approach and respondent profile

We commissioned the independent research agency YouGov to deliver this research with UK employers of engineering and technology staff. For an employer to be eligible to take part in this research they had to employ at least one engineering or technology employee and overall employ at least six employees. There was no upper limit on the number of employees and the research includes views from businesses with six employees through to those who employ thousands.

We worked with YouGov to develop a survey, which was delivered to senior decision makers in engineering businesses through an online mode. The fieldwork was conducted online between the 6 August and 2 September 2021. All of the business professionals who responded were drawn from the YouGov panel of over 1.8m people in the UK.

In total 1,039 respondents from engineering employers completed the survey. The employers identified to take part in the research were identified through an agreed list of standard industrial classifications (see appendix for the Standard Industrial Classification (SIC) definitions used).

All professionals who responded on behalf of the organisation they work for had managerial responsibility. The final achieved sample was weighted to be representative of engineering employers by size and region. The sample provided coverage across the following target sectors, size of business, and nation.

1 UK employers struggle with worst labour shortage since 1997 | Business | The Guardian.
2 Employer incentives for apprentices | ICAEW.

Figure 1: Breakdown of achieved sample by industry, business size and nation

	Unweighted base	Weighted base
Industry		
IT and communications	110	127
Transport	114	136
Construction	215	190
Electrical and electronics	80	69
Aerospace and defence	30	38
Manufacture	416	411
Energy	33	36
Other	41	31
Size		
Micro (6-9)	100	62
Small (10-49)	381	237
Medium (50-249)	273	178
Large (250+)	279	558
Nation		
England	882	921
Scotland	90	64
Wales	39	33
Northern Ireland	28	20

3.2 Guidance on analysis

The data in this report represents the views of a sample of employers who employ at least one engineering and technology employee in the UK. The demographic make-up of the sample closely matches that of the UK employer population by business size and location (region). Therefore, when looking at data at the total population level, inferences can be made that the views of the sample collected here represent the views of the wider employer population. Throughout the report, the results at the total sample level are described using the term 'engineering employers'.

A number of industries are covered by the sample however the views of these individual industries should be interpreted as the views of the employers that responded to this survey. The achieved samples are not necessarily representative of the wider employer population in those industries. A number of industries have response numbers under 100 and in particular the aerospace and defence and energy industry responses should be treated with caution.

The 2021 skills survey has been conducted using an online methodology. The 2020 IET skills for net zero and a green recovery study was also conducted by YouGov, using an online approach as well as the same sampling and weighting scheme. Where questions have been consistently asked in the same way, comparison with the 2020 study has been included in this report. Previous skills surveys (2019 and earlier) were conducted via telephone methodology and, while effort has been made to ensure the sample composition has remained consistent, comparison of figures with pre-2020 studies are indicative only and should be considered with caution.

All differences reported between 2021 and 2020 studies or within subgroups have been tested for statistical significance to the 95% confidence level. Any figures based on fewer than 30 responses are too small to be considered statistically reliable. These have only been included for illustrative purposes and are in bold.

4. Section 1 – The business context

In this section we explore:

– How engineering employers dealt with Covid-19.

– Past and current key priorities for businesses.

– Impacts of Brexit.

– Current economic outlooks.

4.1 The impacts of Covid-19 and Brexit

More than half of engineering employers say they have had to deal with staff ill/self-isolating as a result of Covid-19 (55%), with slightly fewer saying they have had to cope with staff being furloughed or made redundant (51%) or had to shift to remote working (50%). Over a third of respondents have temporarily had to close offices/workshops (38%) or experienced a drop in sales (34%).

Large employers are more likely than small and medium-sized enterprises (SMEs) to have seen staff ill with Covid-19 (63% vs 47%), had to shift to remote working (60% vs 37%) or had to close worksites (45% vs 30%). However, micro businesses are the most likely to have experienced a decrease in sales due to the Covid-19 pandemic (44%).

As may be expected, the transport industry has been the most heavily affected by the Covid-19 pandemic; employers from this area are the most likely to say they have furloughed/made staff redundant (63%), had staff ill/self-isolate (62%), or had decreased sales (42%). By comparison, the IT and communications sector has had fewer staffing issues as employers are the least likely to say they have had to furlough/make staff redundant (35%) or that their staff have been ill/self-isolating (42%).

Compounding to these staffing issues, a separate question showed that around one-in-ten engineering employers say they stopped some apprenticeships due to the pandemic, with no intention to complete them at a later date (9%).

Figure 2: Impacts of the Covid-19 pandemic
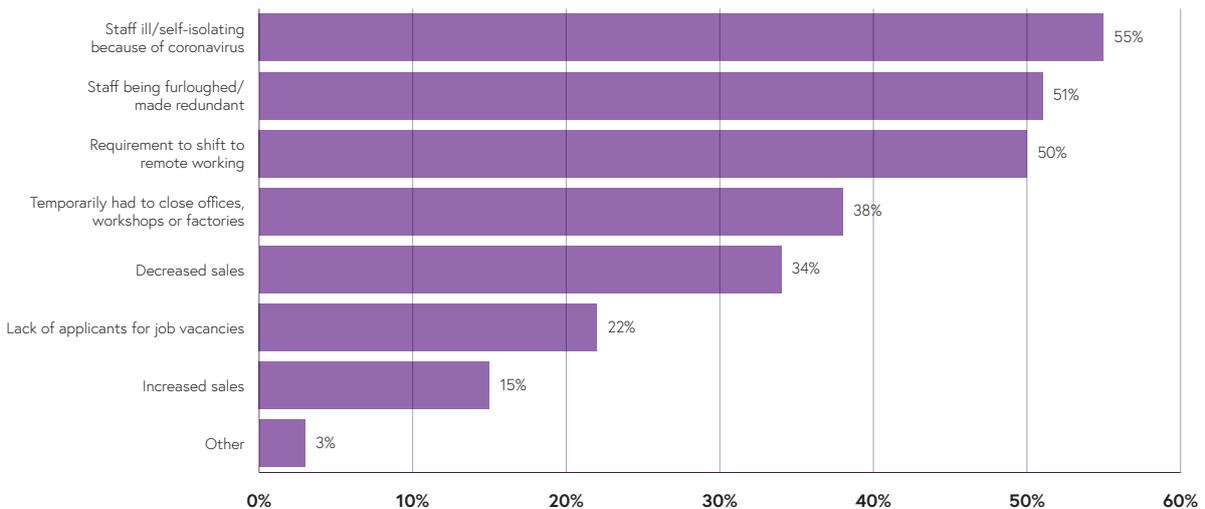
Q: **What impacts, if any, has the Covid-19 pandemic had on your business?**
Base size: All respondents (1,039).

The impacts of Brexit are less clear with one-quarter of engineering employers saying they do not know what impact leaving the EU has had on their business (23%). This is most evident within the transport industry, as over one-third (35%) say they do not know what impact Brexit has had.

45% of engineering employers have experienced difficulty importing/exporting to and from other countries. This is most prevalent among medium-sized businesses (52%) and businesses in the electrical and electronics industry (64%).

A quarter of employers say they have experienced a shortage of labour/skills (25%) and a slightly smaller proportion have felt the impact of tougher immigration controls for their non-UK labour (21%). The shortage of labour is most felt among medium-sized businesses – three-in-ten (30%).

Figure 3: Impacts of leaving the EU

Category	Percentage
Difficulty importing and exporting to and from other countries	45%
Increased bureaucracy	40%
Shortage of available labour or skills	25%
Tougher immigration controls for non-UK labour	21%
Increased domestic sales	8%
Other	10%
Don't know	23%
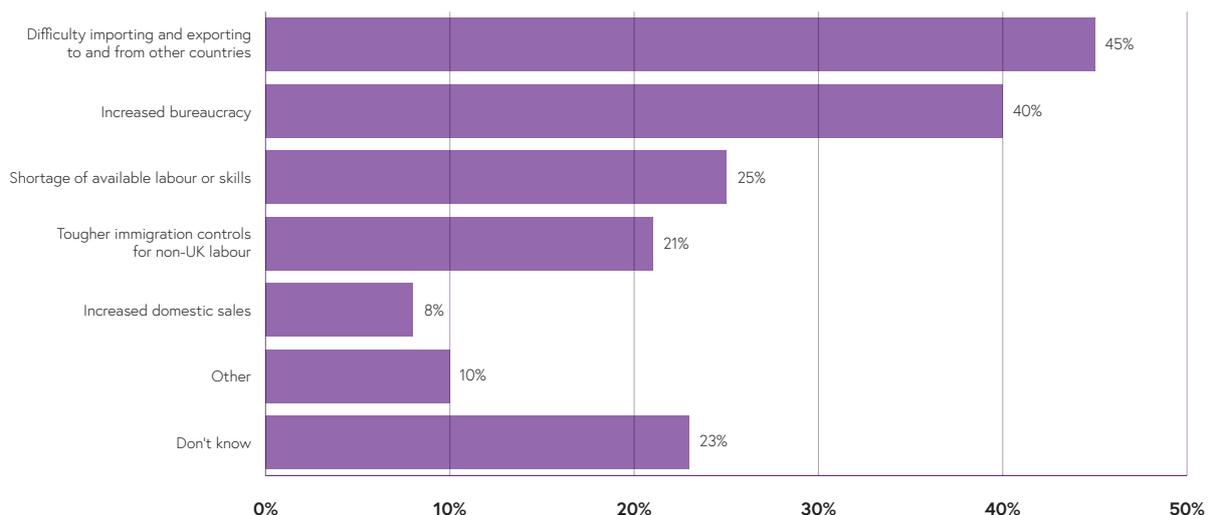
Q: And what impacts, if any, has leaving the EU had on your business?
Base size: All respondents (1,039).

4.2 Economic prospects

Perhaps in spite of Covid-19 and Brexit, engineering employers are optimistic about their organisation's prospects over the next 12 months, with eight-tenths saying they are confident in their economic prospects (79%).

Overall, respondents have similar levels of confidence in their sector over the next 12 months (77%). This rises to 82% for those in IT and communications and 87% in construction but falls to just over seven-tenths of those in the transport industry (71%).

However, employers are much less confident about the overall prospects for the economy as a whole – just half are confident in the national prospects over the next 12 months (52%). Employers from all business sizes are split on the nation's economic prospects as a whole, with around half from each business size being confident/not confident.

Across industries, engineering employers in construction are more optimistic about the economy as a whole than other sectors (55%), while those in electrical and electronics are the least confident (37%).

Figure 4: Confidence in economic prospects over the next 12 months

Figures do not always equate to 100% due to rounding.
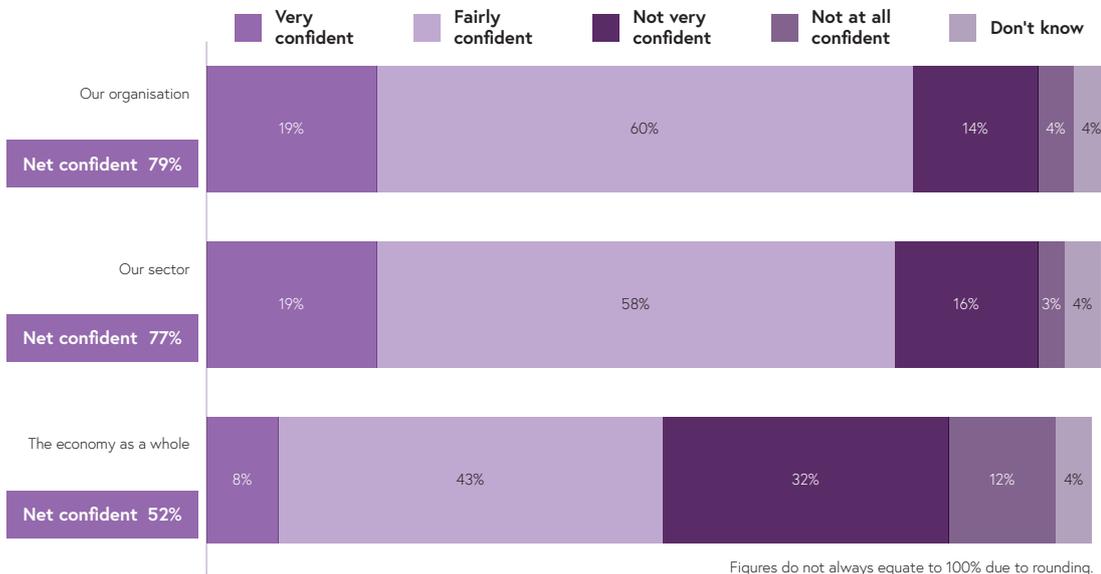
Q: How confident are you about the economic prospects over the next 12 months for your organisation, your sector, and the economy as a whole?
Base size: All respondents (1,039).

Engineering employers who are not confident about their organisations' economic prospects over the next 12 months were asked about the potential impacts – over half say they will reduce the number of new staff they hire (55%). A third of those not confident in their

prospects will reduce their training budget (33%) or the number of apprentices they hire (35%). Only one-in-eight will bid on fewer projects (15%), suggesting that productivity and profitability of the remaining workforce will be a chief concern.

4.3 Previous, current, and future business priorities

Engineering employer's priorities have shifted considerably to those they had 12 months ago or expect to have in 12 months' time. When asked to recall priorities 12 months ago, in light of both the Covid-19 pandemic and the Brexit transition period, they report top priorities were cutting costs (44%) and dealing with economic uncertainty (43%). Now though, they are prioritising improvements in profitability (67%) and productivity (62%). Dealing with economic uncertainty remains top of the agenda for over half (61%) of engineering employers.

Looking for new markets is now considered a priority by half (53%) of respondents, having climbed 22% from only 31% thinking this was a priority 12 months ago.

As may be expected, SMEs and large businesses have different priorities in the current times with larger employers putting more emphasis on recruiting staff with new skills than SMEs (43% vs 50%). In 12 months' time, two-fifths of micro businesses say they will be

prioritising recruitment of new skills (43%), but for the moment they are chiefly concerned with profitability (66%) and dealing with economic uncertainty (62%).

Engineering employers in IT and communications were the most likely to say they were prioritising the recruitment of staff with new skills 12 months ago (36%). Employers in this area have, if anything, become more focussed on recruitment with over half saying recruitment of staff with new skills is one of their current priorities (60%). This is particularly interesting, given that these employers were very unlikely to say Covid-19 had an impact on their staffing.

The transport industry, which did see significant impacts on its staffing due to Covid-19, is one of the industries least likely to say it is currently prioritising recruitment (32%) or upskilling (42%). Instead, engineering employers in transport are chiefly concerned about increasing profitability – this is their top priority both currently (62%) and in 12 months' time (50%).

Figure 5: Organisation's key priorities 12 months ago, currently, and in 12 months' time
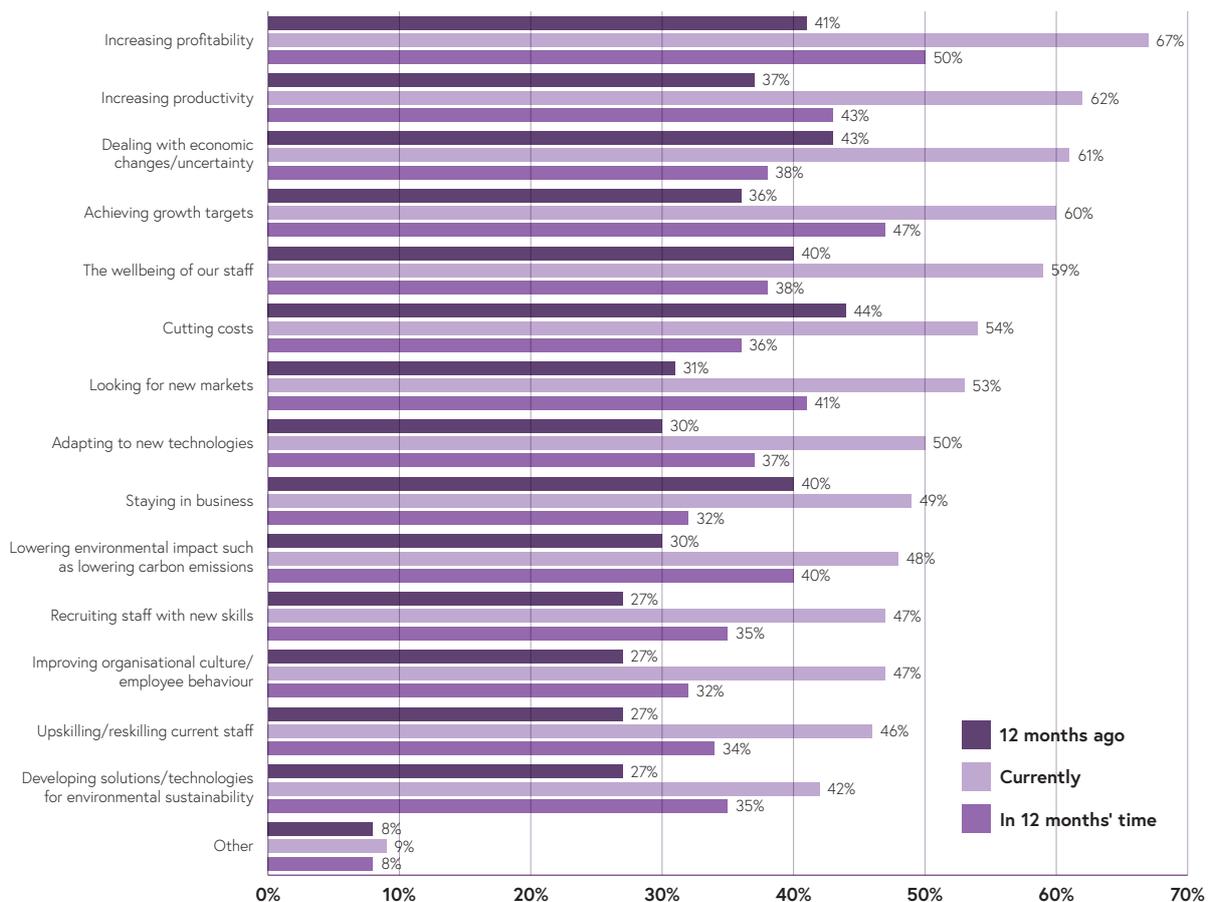
Q: Which, if any, of the following were/are key priorities for your organisation at each of the following points?
Base size: All respondents (1,039).

5. Section 2 – Current workforce needs

In this section we explore:

- Changes in the workforce over the last year.
- Beliefs on where skills gaps lie.
- How businesses respond to skills shortages.
- Ways Government can improve skills nationally and locally.

5.1 The current workforce profile

Of the firms surveyed for the 2021 survey, a quarter (27%) report that their UK staff is mostly high skilled (university level or higher) with a similar proportion (28%) reporting that they are mostly intermediate skilled (A-Level, NVQ 3 level, apprenticeships). Fewer (14%) have a UK staff that is generally lower skilled (GCSEs, NVQ level 2, basic skills or lower) and 26% report that their firm generally has a range of skills levels.

The workforce profile has changed significantly when compared to the 2020 survey. Then, a third (33%) reported a high skilled workforce with slightly fewer (30%) reporting an intermediate skilled one. Fewer in 2020 worked at a firm with a range of skills levels (22%) with the same proportion having a mostly lower skilled workforce (14%).

Of the firms surveyed, three-tenths (29%) say their UK organisation's headcount has increased in the past 12 months while 31% say it has decreased. For most, the change is not drastic – 23% say it has increased a little while only 7% say it has increased a lot – but 9% report that headcount has decreased a lot. These results are in line with the 2020 results where 25% reported an increase over the past 12 months and 35% reported a decrease.

Medium and larger businesses are more likely to be experiencing a decrease in headcount than micro or small businesses. In total, 36% of large businesses (250+ employees) and 30% of medium businesses (50 to 249 employees) have experienced a decrease compared to 19% of micro businesses (6 to 9 employees) and 23% of small businesses (10 to 49 employees). This is a consistent pattern evident in the 2020 results and suggests that larger businesses have had more staffing problems since the pandemic began.

Figure 6: Changes to UK headcount over the last 12 months by business size
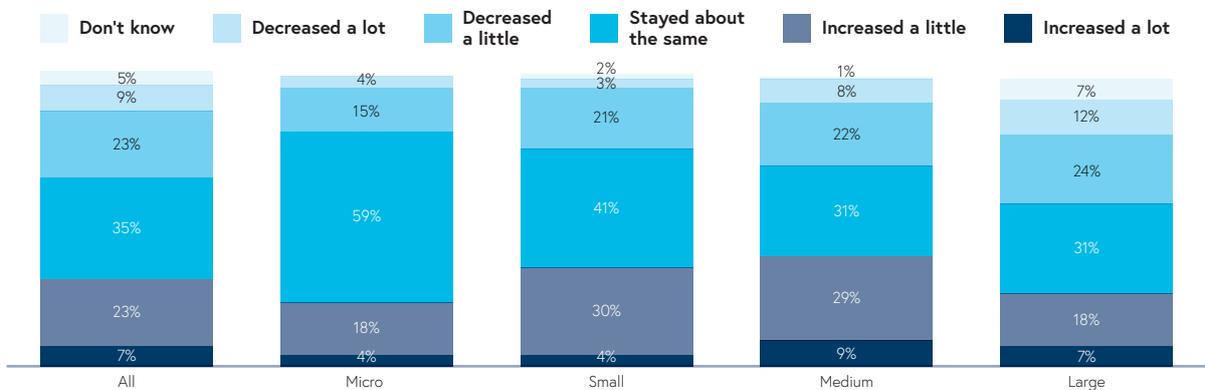
Q: Has your UK organisation's headcount increased, decreased, or stayed about the same over the last 12 months?
Base size: All respondents (1,039).

Those who experienced a decrease are much more likely to identify the pandemic as the cause. Over half (52%) say that the pandemic was responsible either a great extent (31%) or somewhat (21%) with a quarter (25%) reporting that it had no influence at all over the decrease. In contrast, only 6% who experienced an increase reported that the pandemic was responsible to a great extent and 21% that it was somewhat responsible. Most of those experiencing an increase found that the coronavirus pandemic was not at all responsible (55%).

By sector, those in manufacturing who experienced a decrease tended to report that the pandemic was not the main cause. Of this group, 26% report that the pandemic was 'a little' responsible and 27% that it was not at all responsible. In contrast, those in the transport sector who experienced a decrease are more likely to blame the coronavirus pandemic; over half (53%) of this group say the pandemic is responsible to a great extent.

Figure 7: Extent to which headcount changes are a result of the coronavirus pandemic

	Don't know	Not at all	A little	Somewhat	To a great extent

Those who experienced a decrease: 2% | 25% | 21% | 21% | 31%

Those who experienced an increase: 6% | 55% | 12% | 21% | 6%
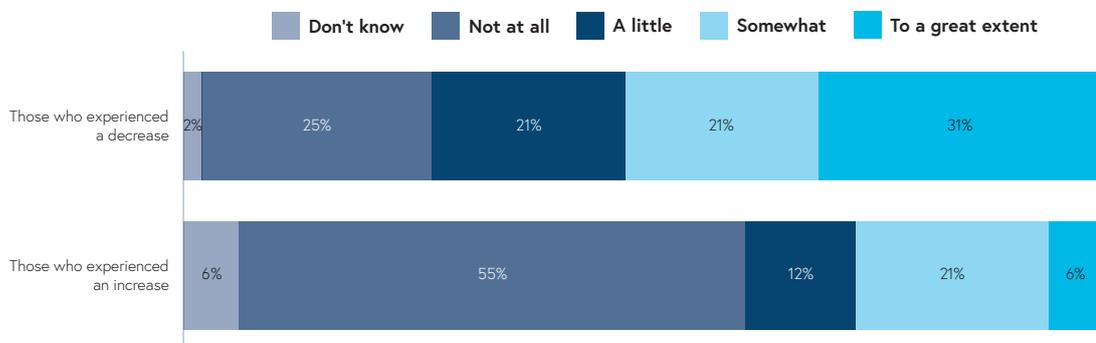
Q: You said that your organisation's headcount [increased/decreased] over the last 12 months. To what extent was this a result of the Covid-19 pandemic?
Base size: All who experienced an increase (326); All who experienced a decrease (292).

5.2 Skills shortages

The proportion of businesses experiencing difficulties in recruitment has remained consistent over the past few years. Almost half (47%) of those surveyed in 2020 or 2019 (48%) were experiencing difficulties in the skills available to them in the external labour market when they try to recruit and in 2021 this proportion had held steady at 49%. Similarly, in 2020, 46% were experiencing difficulties with skills gaps or limitations within their internal workforce and in 2021 this was unchanged at 45%.

Different sizes of businesses are all broadly experiencing the same level of skills gaps as they were in 2020 and there are no statistically significant differences by business size; around half of SMEs (52%) and large businesses (47%) are experiencing difficulties recruiting from the external labour market.

By sector, in 2021, construction businesses are most likely to be experiencing difficulties with the skills available (53%) followed by transport (51%). There are no significant differences by sector when comparing the 2020 and 2021 results.

Those who are experiencing an internal skills gap were asked what areas this gap concerned. In total, two-thirds (71%) reported gaps in engineering or technical skills.

– 44% reported gaps in these skills at a technician or skilled craft level.

– 41% reported gaps in these skills at a professional level.

– 36% reported gaps in these skills at operative or semi-skilled levels.

Just under a third (30%) are experiencing gaps in non-technical skills such as commercial, project management, or marketing skills and 24% say they have gaps in skills or apprentices and other young trainees.

Over a quarter (27%) say the greatest skills gaps in their organisation are in high skilled roles (university level or higher) with more (31%) finding them in intermediate roles (A-Level, NVQ 3 Level, apprenticeships).

The least common level to be experiencing the greatest skills gap is in lower skills roles (GCSEs, NVQ level 2, basic skills or lower) but 15% reported this was the most significant area. For around one-fifth (18%), the greatest skills gap is across a range of skill levels equally.

Figure 8: Level at which there is the greatest skills gap

Highly skilled	27%
Intermediate skilled	31%
Lower skilled	15%
A range of skills levels equally	18%
Don't know	8%
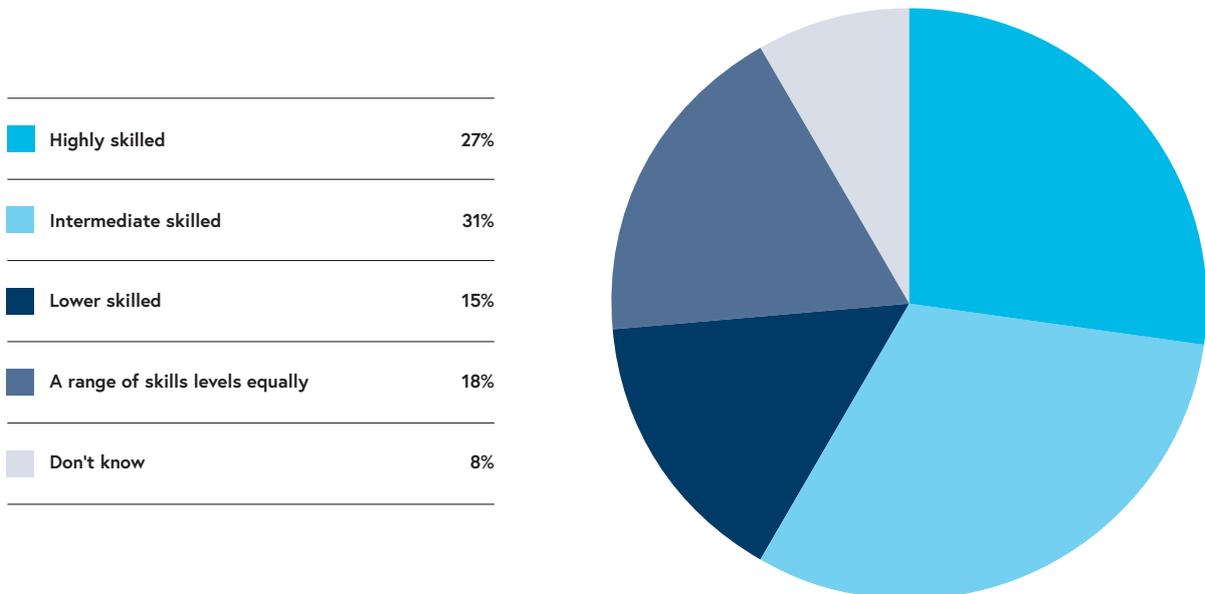
Q: And at what level of your organisation are you seeing the greatest skills gap?
Base size: All experiencing an internal skills gap (451).

5.3 Responses to skills shortages

When faced with a skills shortage, the most common responses continue to be upskilling or retraining existing employees (40%) and hiring new employees with those skills (39%). Other common responses include increasing contingent labour (25%), recruiting apprentices/graduates and training them up (24%) and outsourcing tasks to another organisation (22%).

Micro businesses are the most likely to do nothing as a result of skills shortages; one-fifth (20%) of these

businesses report this compared to 11% of SMEs and 9% of large businesses. Large sized businesses are the most likely to recruit apprentices or graduates and provide training (27% vs 20% of SMEs).

Generally, the responses are the same as in 2020. The largest decreases are in upskilling or retraining existing employees (47% in 2020; 40% in 2021) and recruiting apprentices or graduates and providing training (32% in 2020; 24% in 2021).

Figure 9: How businesses respond to skills shortages
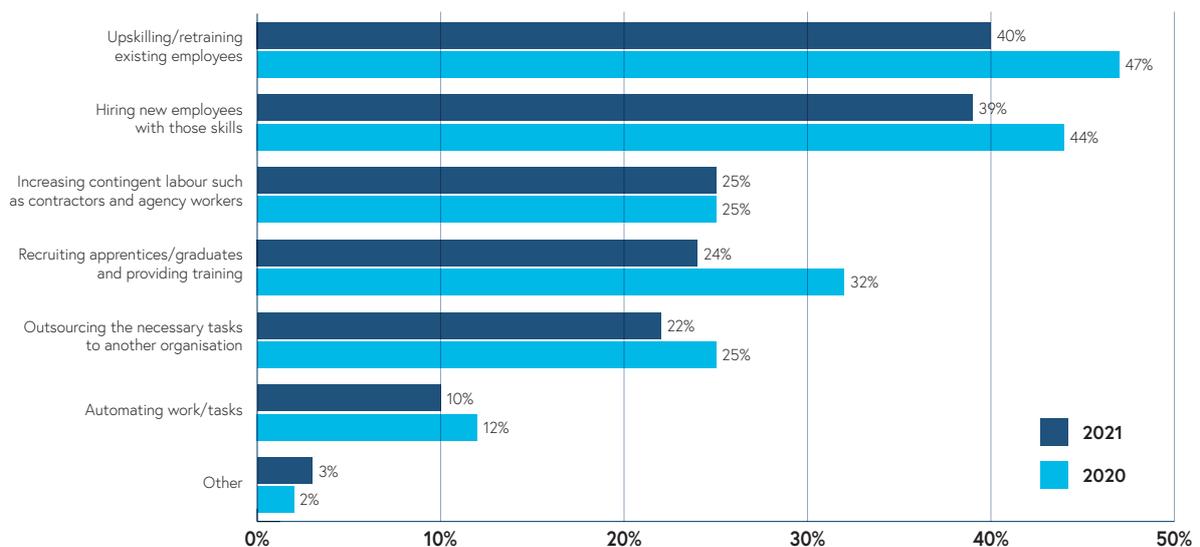
Q: **How does your organisation typically respond when faced with skills gaps in your workforce?**
Base size: All respondents (2021=1,039; 2020=1,010).

Those whose organisation would respond to a skills gap are broadly confident that they can mostly address the issue. Some (15%) believe their organisation could fully address any skills gaps identified, but far more (56%) think that they could do so to some extent but not completely. Only a minority (3%) believe their organisation could not address a skills gap at all, with 14% thinking they could not address it very much.

Of those who do not think that their organisation could address a skills gap, the main reason given is being under pressure to reduce costs (50%) which was also the main reason in 2020. This was followed by competition in the marketplace for workers (34%) and their business not driving the reskilling agenda (33%). Over a quarter (27%) say their business does not have a culture of learning.

Compared to 2020, there has been a marked fall in the proportion of engineering employers saying they are unable to address skills gaps due to a lack of growth mindset (19% vs 33%) or not having the technology to develop skills (8% vs 20%).

Figure 10: Reasons for being unable to address the skills gaps identified
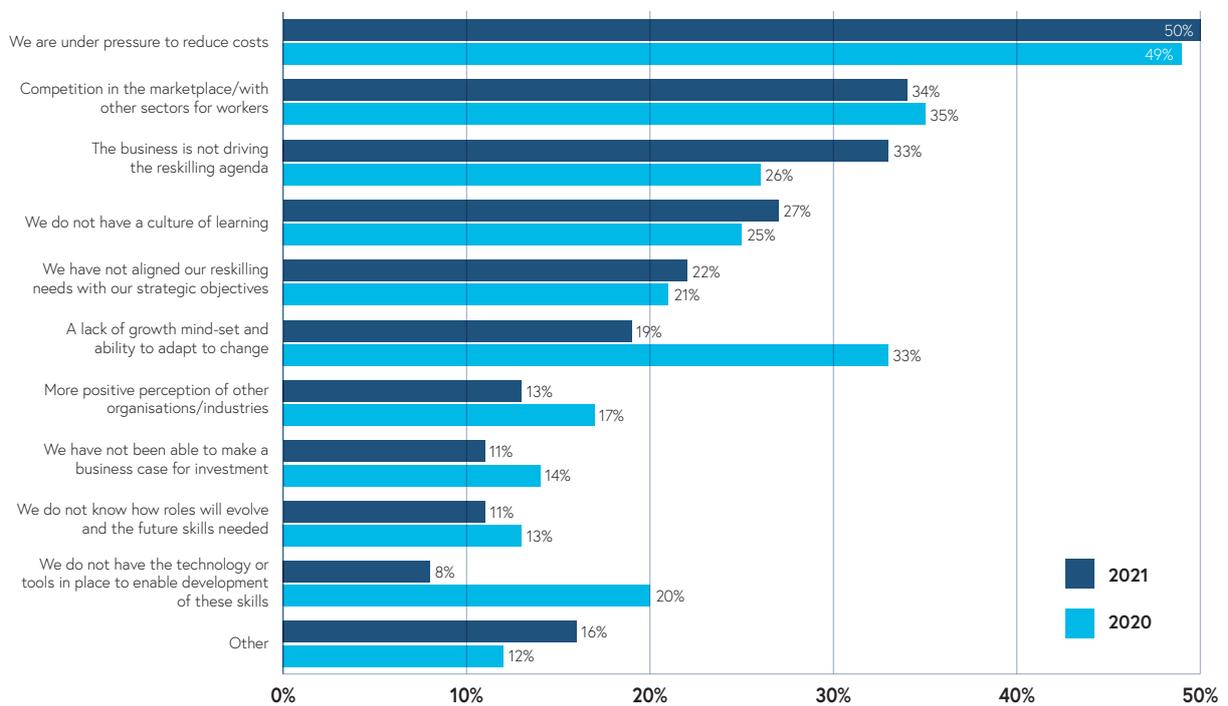
Q: Why do you think your organisation is not able to address the skills gaps you have identified?
Base size: All who identified a skills gap (2021=161; 2020=152).

5.4 Government support

The Government is one source of support for businesses and respondents were asked what the Government could do to improve skills both nationally and in their local area. The responses tended to follow one another, with actions seen as beneficial nationally and to their local area. According to the businesses surveyed, the best thing the Government can do both nationally and in their local area to improve skills is to provide more funding for apprenticeships (54% nationally; 45% in their local area).

Around half (51%) think that the Government should be providing more support to train or reskill in priority areas nationally with slightly less thinking the same about their local area (45%). Those in the IT sector are especially keen on more support for training or reskilling in their local area (56%).

The third most popular Government action is better careers advice and guidance in schools and colleges with 49% wanting this nationally and 44% wanting it in their local area. Large businesses tend to be more likely to think this could benefit their local area; 48% think the Government should take this action in their area compared to 32% of micro and 38% of small businesses.

Less significant is changes to the immigration system, with businesses not identifying this as a priority for them. In total, 28% say they would like to see the Government taking action on this nationally in order to improve skills with 25% reporting the same for their local area. However, it is further down their list of concerns than apprenticeships and reskilling.

Figure 11: Actions taken by the Government to improve skills nationally or in the local area
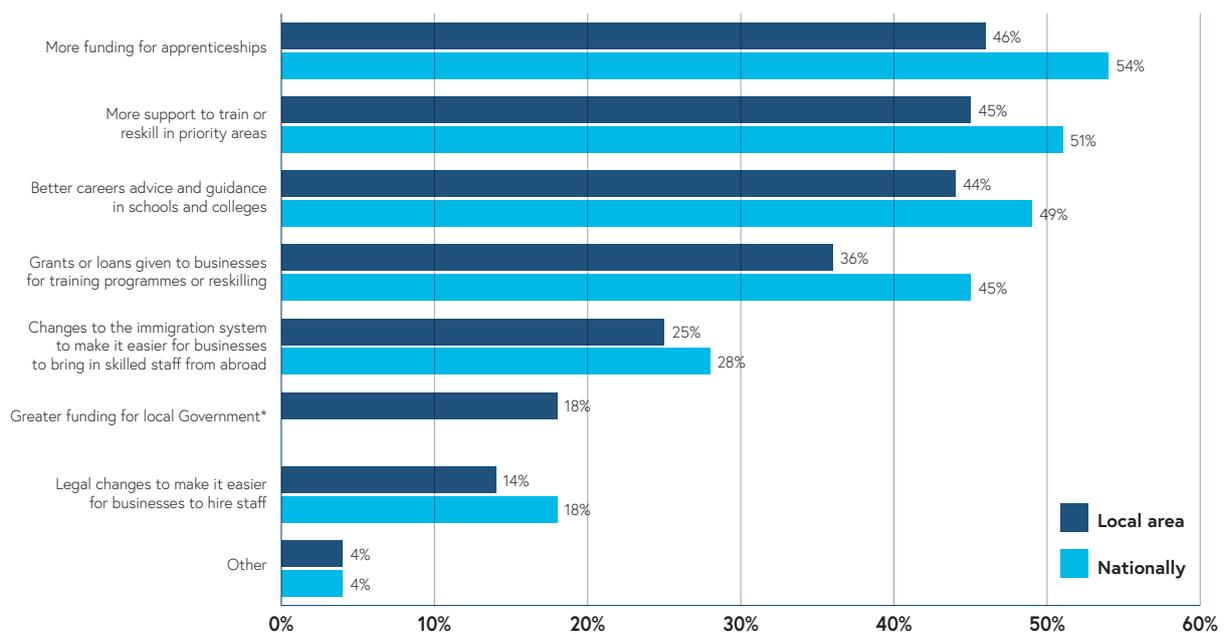
Q: And what actions do you think should be taken by the Government to improve skills [nationally/in your local area]? *Only asked locally
Base size: All respondents (1,039).

When asked what one single action would have the biggest impact on their businesses' ability to meet its skills needs, the most commonly selected are more support to train or reskill in priority areas and grants or loans given to businesses for training programmes or reskilling (both 19%).

These are followed by more funding for apprenticeships (15%). Micro businesses are especially likely to choose more grants or loans for training problems; 31% selected this option compared to just 20% of SMEs and 17% of large businesses.

Fewer chose changes to the immigration system (13%) or better careers guidance in schools (12%) and only a minority (3%) think that legal changes to make it easier to hire staff would have the biggest impact on their ability to meet their skills needs.

Respondents were given the opportunity to explain in their own words what one thing the UK Government could do to support their businesses. Many referenced specific issues affecting their sector or problems they were facing due to the coronavirus pandemic.

Others mentioned the impact that Brexit was having on their imports and exports from the European Union. Figure 12 shows some of the responses.

Figure 12: What, if anything, is the one thing that the UK Government can do to support your business?

" There is a severe labour shortage and skills gap within construction which, if not addressed, will have dire consequences for the industry. "

" Ensure that education is right for the workplace, there are some jobs that need common sense and not qualifications. "

" Get young kids to get work experience. "

" Enable business to get back to doing business, stop the self-isolating rules so staff are not off work every few weeks. "

" Need to look at allowing visas for those areas of industry where recruitment is becoming increasingly difficult due to a lack of skills and numbers of people available. "

" Have an education system that readies people for work. Avoid having too much regulation. Then stay out the way. "

" Provide financial assistance to supplement agency fees for recruitment which is crippling companies. "

" Lower business tax and subsidies costs for businesses to change their fleet from fossil fuels to hybrid/electric vehicles. "

> " I feel increasing minimum wage for apprenticeship, the pay is way to low and most are eager to learn. "

> " Rejoin the EU. "

> " Raise the standards in schools for teaching mathematics and computer science. "

> " Help exports by closer links to Customs Union requirements. "

> " Being allowed to use apprentice levy for anything linked to hiring apprentices including paying wages. "

6. Section 3 – Gaining skills

In this section we explore:

- Areas of difficulty when recruiting.
- Types of training provided two years ago, currently and in two years' time.

- Beliefs on what technical and soft skills applicants lack.
- Improving the diversity of engineering talent across gender and ethnicity.

6.1 Recruitment

There have been marked changes in the types of challenges engineering employers are facing to recruit the right skills into their businesses. There have been significant shifts downwards across all areas, with one exception – the proportion of businesses reporting that they have experienced a general lack of applicants has risen to a third (34%).

Applicants lacking the technical skills remains the main difficulty seen by engineering employers (42%), but applicants lacking work experience has dropped to three-in-ten (29%). There is no significant variation across industries or between SMEs and large businesses for the types of recruitment difficulties being experienced.

Figure 13: Areas of difficulty when recruiting
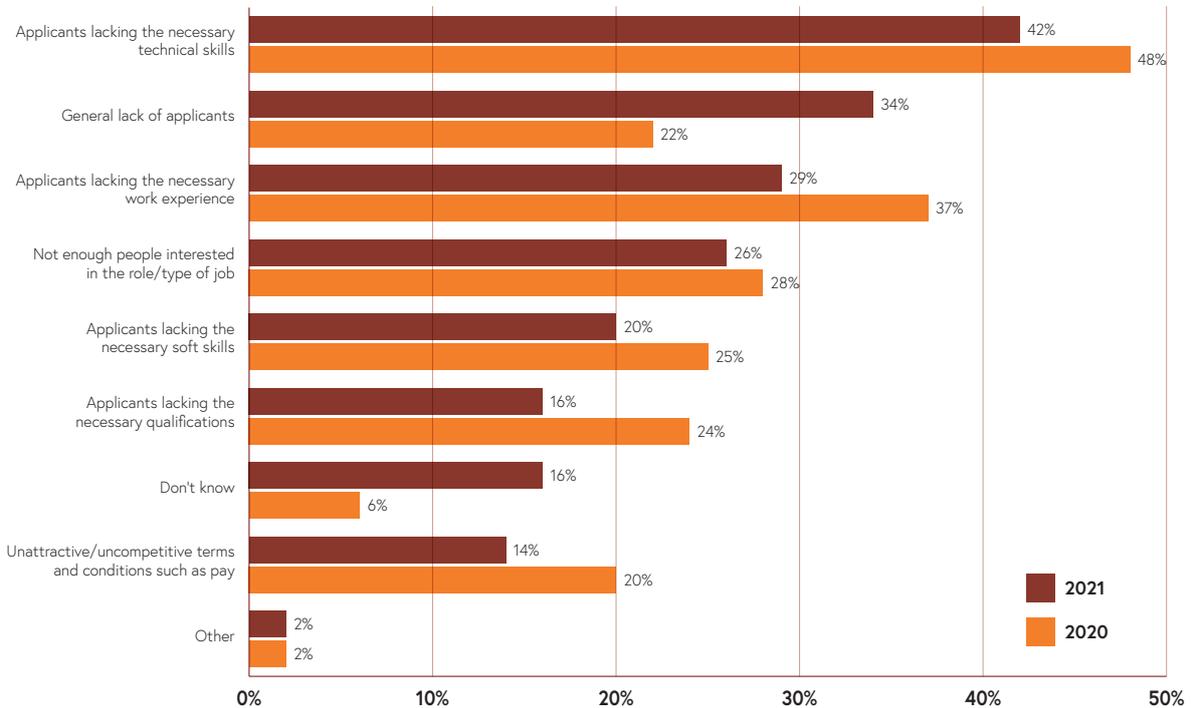
Q: **Thinking generally about your recruiting for your organisation, which, if any, of the following recruiting difficulties has your organisation experienced in the last 12 months?**
Base size: All respondents (2020=1,010; 2021=1,039).

Most engineering employers who think applicants are lacking in technical skills say that it is specialist skills/knowledge needed for the role that is likely to be lacking (63%), although this has dropped when compared to the 2020 data (68%). A third of employers who think technical skills are lacking say that complex problem-solving skills specific to the situation are the concern (33%) – this is unchanged from 2020 (34%).

The only other key shift in technical skills needs is a fall in the proportion saying that complex numerical/statistical skills are lacking (18% 2021, 24% 2020).

Larger employers were significantly more likely than SMEs to think applicants are lacking IT skills (either basic or specialist 41% vs 23%).

Figure 14: Types of technical skills lacking in respondents

Skill	2021	2020
Specialist skills/knowledge needed for the role	63%	68%
Solving complex problems requiring a solution specific to the situation	33%	34%
Knowledge of products/services offered by our organisation organisations like us	26%	25%
Advanced/specialist IT skills	23%	25%
Knowledge of how our organisation works for example understanding the organisation's structure and the business model it operates	21%	17%
Manual dexterity such as to mend, repair, assemble, construct or adjust things	21%	18%
Adapting to new equipment/materials	19%	15%
More complex numerical/statistical skills and understanding	18%	24%
Writing instructions, guidelines, manuals, or reports	16%	16%
Basic numerical skills/understanding	14%	16%
Computer literacy/basic IT skills	14%	15%
Reading/understanding instructions, guidelines, manuals, or reports	13%	14%
Don't know	4%	2%
Other	3%	5%

Q: You mentioned that some applicants lacked necessary technical skills, which, if any, of the following skills were they lacking?
Base size: All who felt applicants lack necessary technical skills (2020=487; 2021=442).

As previously seen, a fifth of engineering employers said they experienced recruitment difficulties with applicants lacking soft skills (20%). As with specific technical skills, there have been some shifts in the perception of which specific soft skills are lacking but the top answers have remained the same. Half of employers who said applicants lack soft skills say that it is teamworking skills missing (49%). Time management and prioritisation also remains second most popular with two-fifths of respondents selecting this option (43%).

There have been significant shifts outside of the top options. Four-in-ten now report a lack in management and leadership skills (39%), compared to just under half who reported this in 2020 (47%). Similarly, just over a fifth now report a lack of skills around setting objectives (21%) or a quarter for project management (25%) – both down from over a third reporting these in 2020 (34% and 37% respectively).

Figure 15: Types of soft skills lacking in respondents

| Skill	2021	2020
Team working	49%	47%
Time management and prioritisation	43%	44%
Leadership and management skills	39%	47%
Customer handling skills	31%	38%
Project management	25%	37%
Setting objectives for others and planning human/financial/their resources	21%	34%
Instructing, teaching, or training people	20%	22%
Sales skills	18%	11%
Other	10%	6%
Don't know	7%	3%
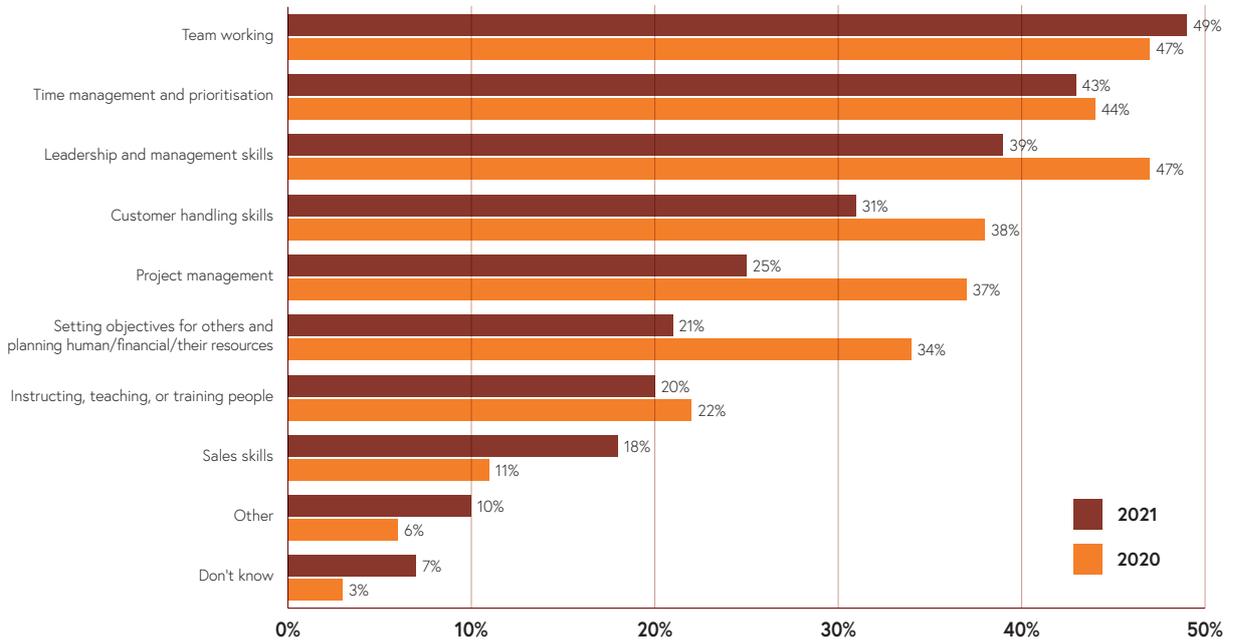
Q: You mentioned that some applicants lacked necessary soft skills, which, if any, of the following skills were they lacking?
Base size: All who felt applicants lack the necessary soft skills (2020=233; 2021=193).
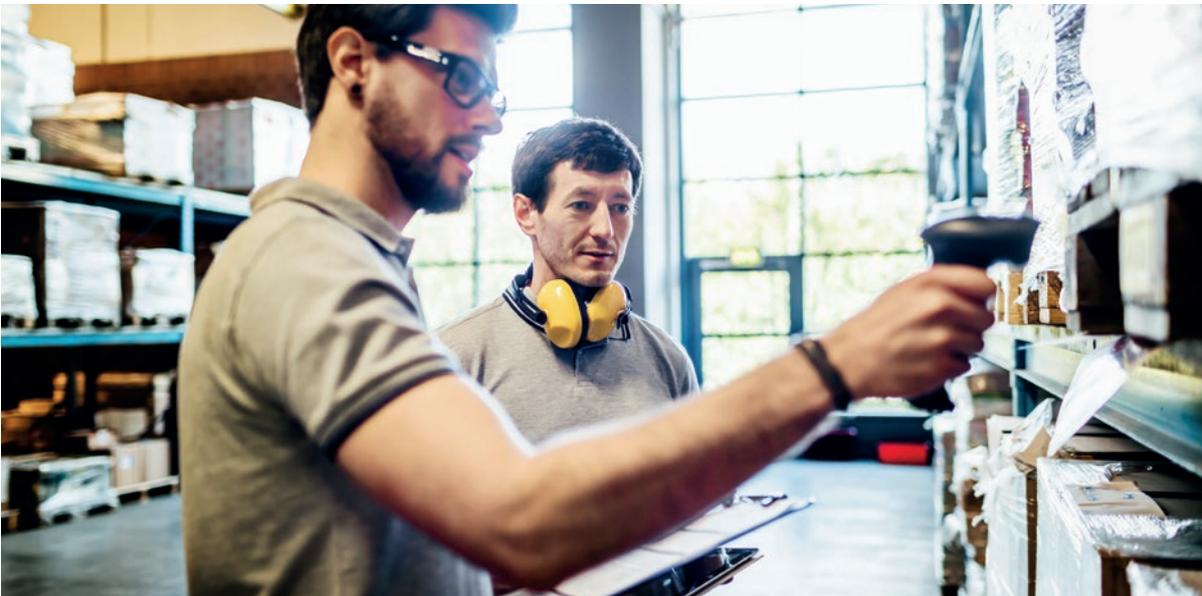
Almost all (96%) engineering employers who had identified a skills shortage within applicants say that this skills deficit impacts their business in some way – 0% reported no impact at all and 4% were unsure. The most common impacts of a skills shortage amongst applicants are around the recruitment pathway – either causing difficulty recruiting (50%) or making recruitment timelines longer (47%).

Two-fifths of employers who noticed a skills gap said that it negatively impacts productivity (40%) – and this particular impact may have ramifications for business' larger goals as over half of engineering employers say increasing productivity is a key priority (62%). In fact, three-quarters of employers who say that skills gaps have a negative impact on productivity actually do have increasing productivity as a current goal (75%).

Similarly, almost a third say that skills shortages in applicants restricts company growth (31%), which may cause particular worry for the majority of employers who have growth targets as a current priority (60%).

Respondents working in large businesses are significantly more likely than those within SMEs to identify longer recruitment times as a key issue with applicants' skills shortages (55% vs 39%). Those within SMEs are more likely than larger employers to say skills gaps restrict their company growth (39% vs 24%).

Less than one-in-seven say their organisation will recruit multiple people to fulfil the skills needs (15%). This does not vary significantly across business sizes, but employers in manufacturing are the most likely to give this answer (20%).

Figure 16: Impacts of applicants lacking skills
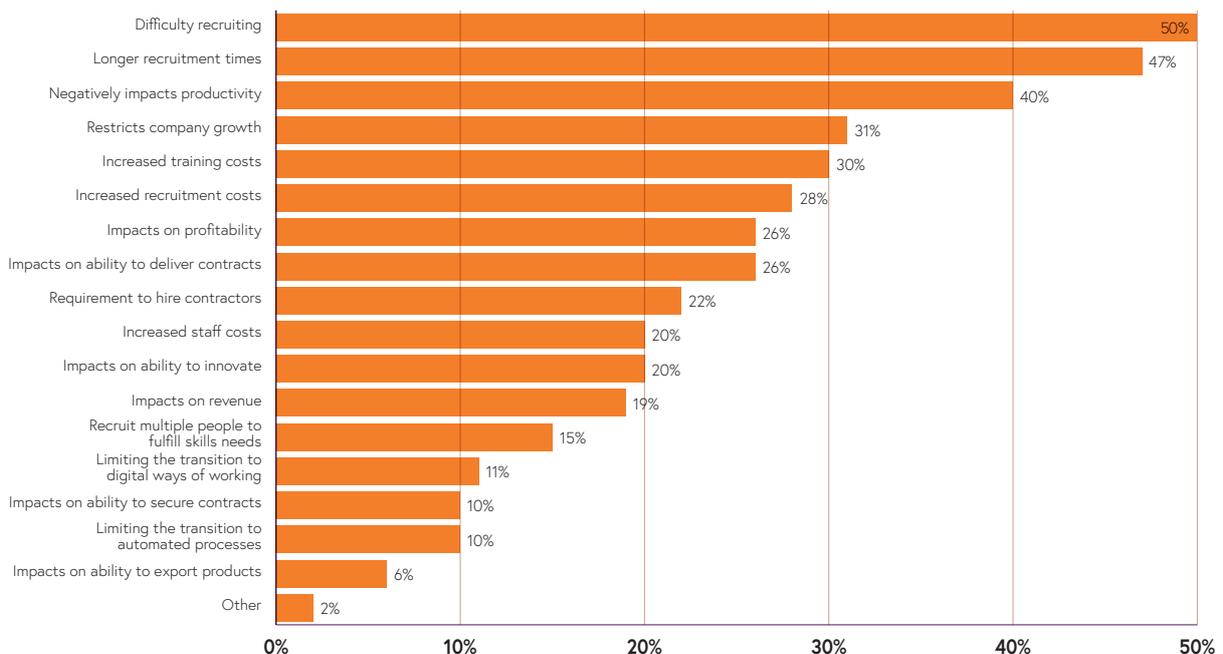
Q: **You mentioned that some applicants lacked necessary skills, which, if any, of the below impacts does this have on your business?**
*Base size: All who say applicants lack skills (494).*

6.2 Training

Aside from recruitment, the other key method for engineering employers to get skills into their businesses is to train their current staff. The types of training that engineering employers offer is markedly different to the training they provided two years ago and the training they expect to provide in two years' time. The most common form of training by far is currently on-the-job training – currently used by two-thirds of engineering employers (66%). However, half offered this two years ago (52%) and a similar proportion intend to offer it in two years' time (52%).

This pattern, of particular uplift in the proportions this year but not expecting to sustain that change, is seen across almost all training types. However, there is some

evidence that online learning is here to stay for some – half currently provide online training (52%) which drops to two-fifths expecting to use online training in two years' time (40%). While this is a notable drop from current levels, it is substantially more than the proportion who were offering it two years ago (32%).

Large employers are more likely than SMEs to be currently using online training (62% vs 40%) and more likely than SMEs to be continuing to use online learning in two years' time (49% vs 30%). IT and communications employers are the most likely to use online training at the moment (73%) and are marginally more likely than other industries to be using it in two years' time (51%).

Figure 17: Types of training provided two years ago, currently, and in two years' time
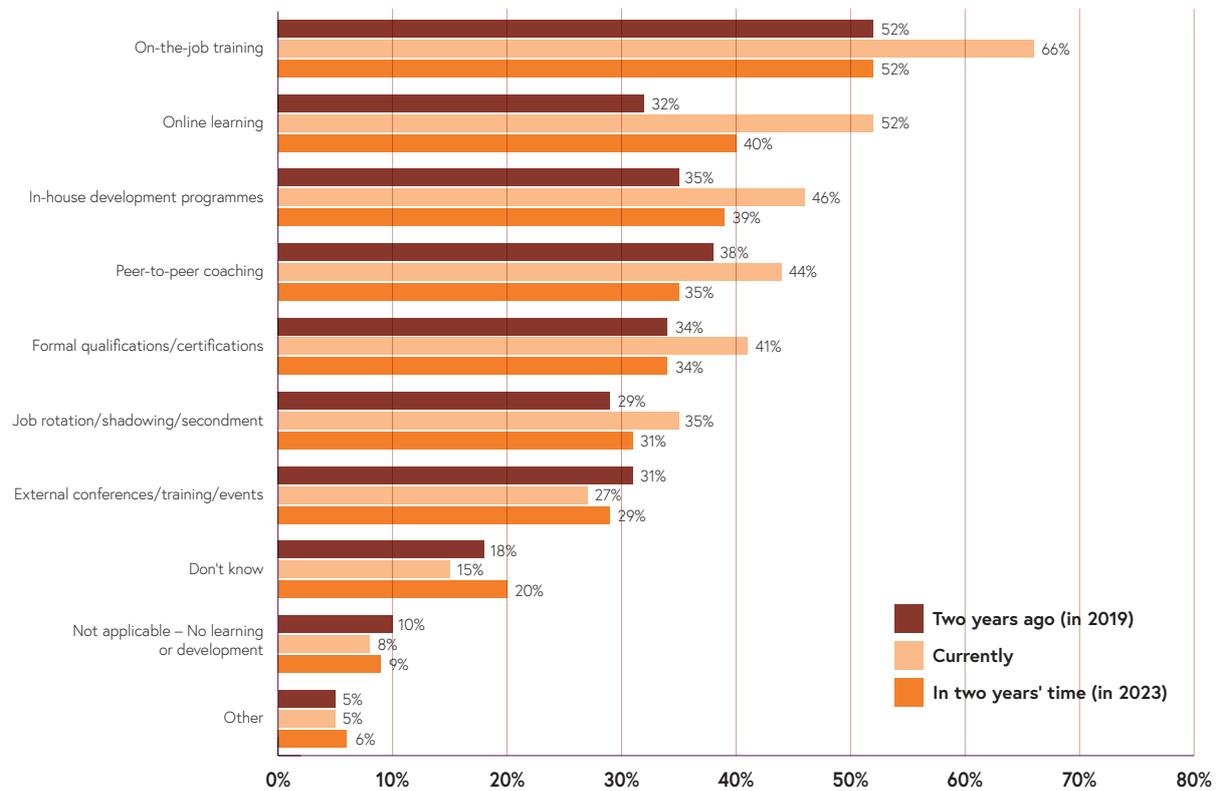
Q: **Which of the following types of training has/will your organisation arrange or fund for employees in each of the following timeframes?**
Base size: All respondents (1,039).

In fact, when engineering employers were asked about the division of training being done online or face-to-face, the median answer was that just over three-fifths of training should be done face-to-face (63%). Engineering employers in large businesses are more favourable to online training – giving a median answer of 59% of training should be done face-to-face while micro/small businesses gave a median answer of two-thirds (66%).

The value of training during difficult periods is evident – over half of engineering employers agree that training helps their employees deal with challenges arising from the Covid-19 pandemic (58%). However, a similar proportion report that undertaking training during the pandemic is more difficult than before (58%).

Large businesses are more likely than SMEs to think training has helped their employees deal with pandemic-challenges (65% vs 50%) but are also more likely to recognise the additional difficulties of undertaking training during the pandemic (64% vs 51%). IT and communications organisations are the most likely to think training helps their employees deal with Covid-19 challenges (70%).

Employers are less assured that pandemic-related challenges will have a long-term benefit – only two-fifths think the new skills learnt will benefit the organisation (45%). As before, large organisations were more likely than SMEs to agree with this statement (52% vs 37%). Just as they were the most likely to see the immediate benefit, IT and communications organisations are also the most likely industry to think the skills learnt during the Covid-19 pandemic will benefit the business (73%).

Figure 18: Agreement with statements around training during the Covid-19 pandemic

	Strongly agree	Tend to agree	Neither/ don't know	Tend to disagree	Strongly disagree
Undertaking training is more difficult than before the pandemic **Net agree 45%**	11%	34%	34%	15%	6%
Training helps our employees to deal with new challenges arising from the pandemic **Net agree 58%**	14%	44%	32%	6%	4%
Our employees have learnt new skills during the pandemic that will benefit the organisation **Net agree 58%**	15%	43%	27%	12%	4%

Q: Thinking about since the start of the Covid-19 pandemic in the UK, since March 2020, to what extent do you agree or disagree with the following statements?
*Base size: All respondents (1,039).*

6.3 Diversity

Around a third of engineering employers have taken some action to increase the diversity of their engineering, IT, and technical workforce in terms of gender (33%) or ethnicity (30%). These do represent increases compared to similar questions asked in 2019 (19% gender, 12% ethnicity) and 2017 (15% gender, 9% ethnicity) suggesting a long-term positive trend amongst engineering employers addressing imbalances in the gender and ethnic diversity of staff.

Most engineering employers are unsure if their organisation has taken any action to improve diversity, but this type of recruitment activity may be the remit of Human Resources departments and less visible to others. Indeed, those responding from large businesses, where there is likely to be a separate department concerned with workforce diversity are more likely to be unsure than SMEs.

However, it is worth noting that employers with more engineering/technical staff are more likely to be working to improve their workforce's diversity. For example, more than half of employers with more than 50 engineering/technical staff are doing something to improve the gender diversity of their engineering/technical workforce (55%), compared to around a quarter of those with fewer than 50 engineering/technical staff (23%).

Respondents from large businesses are also more likely than those from SMEs to report that they have done some activity to increase the diversity of their technical workforce across each of the characteristics. Those in IT and communications are the most likely industry to report undertaking actions to increase diversity across each characteristic.

Figure 19: Whether action taken to increase diversity of engineering, IT, and technical workforce
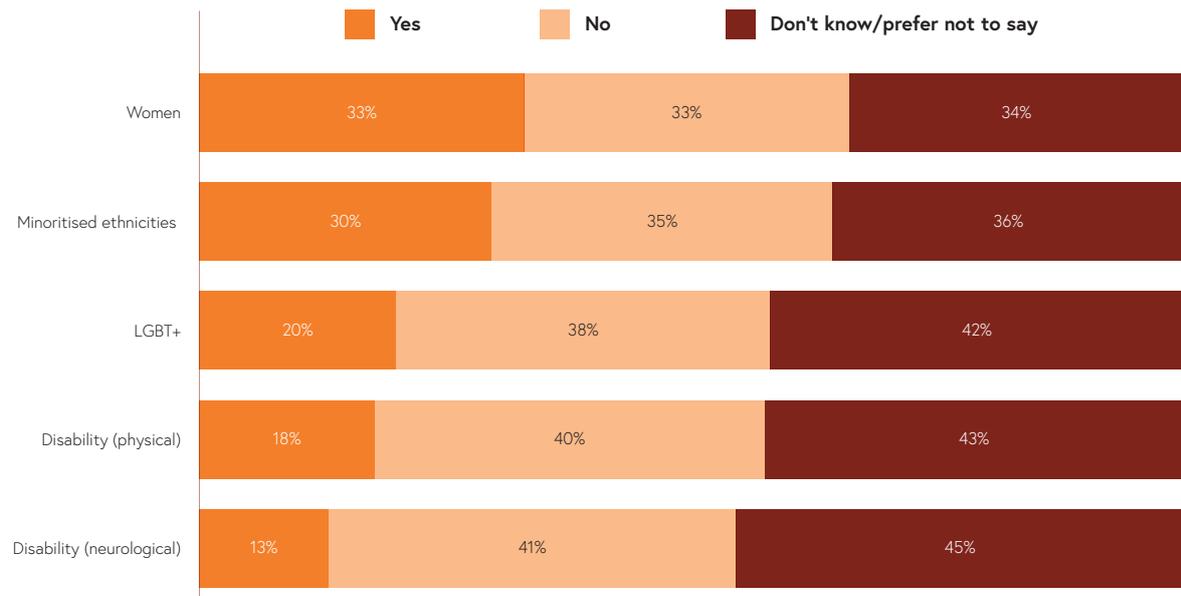
Q: **Are you taking, or have you taken, any action to increase the diversity of your engineering, IT, and technical workforce in terms of the following characteristics?**
Base size: All respondents (1,039).

The most common forms of activity cited by engineering employers who are working to increase the diversity of their technical staff are flexible/part-time working (40%), offering equal pay/transparency of policies (38%), and staff training/diversity ambassadors (35%). Around a quarter have development groups/networks (29%) or specific campaigns (26%).

Respondents in large employers are more likely than SMEs to undertake most activities but are particularly more likely to have provided staff training/diversity ambassadors (43% vs 19%) or run specific campaigns to encourage an underrepresented group into the workforce (33% vs 13%).

Figure 20: Activities undertaken to increase diversity of technical workforce in last two years
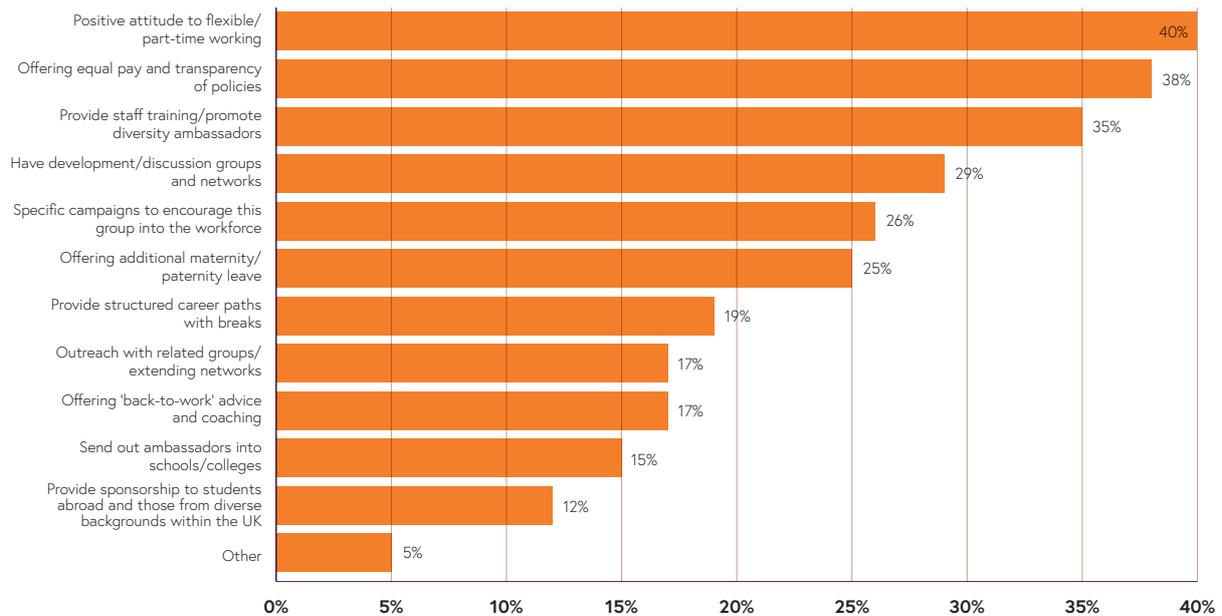
Q: **Which, if any, of the following actions has your firm undertaken to increase the diversity of your engineering, IT, and technical workforce in the last two years?**
Base size: All who report doing something to increase diversity of any characteristic (338).

7. Section 4 – Skills for sustainability

In this section we explore:

– Beliefs on achieving net zero for the UK.

– Actions taken to lower environmental impact.

– Barriers to lowering environmental impact.

– Skills needed to deliver sustainability strategy.

7.1 Sustainability strategies

Most (89%) are aware of the UK Government's target to bring all greenhouse gas emissions to net zero by 2050 with awareness slightly, but not significantly higher than in 2020 (84%).

Those surveyed are pessimistic about the likelihood of the UK reaching net zero by 2050. Only one-in-twenty (6%) think this is very achievable and just over a quarter think it is achievable (28%) - far more consider it either not very achievable (40%) or not at all achievable (21%). Moreover, the proportion considering it to be achievable has decreased slightly but not significantly from a net score of 37% in 2020 to 34% in 2021.

When it comes to their own organisations, half of respondents consider it achievable (50%) to reach net zero by 2050, compared with 38% who think it is not achievable. However, again this has decreased slightly but not significantly since 2020 when over half (53%) believed it to be achievable and 38% did not. Large businesses are more likely to think that their organisation reaching net zero by 2050 is achievable (58% vs 41% of SMEs) and by sector those in IT and communications are the most likely to think it's achievable (73%).

Figure 21: How achievable reaching net zero is for the UK as a whole and for their organisation
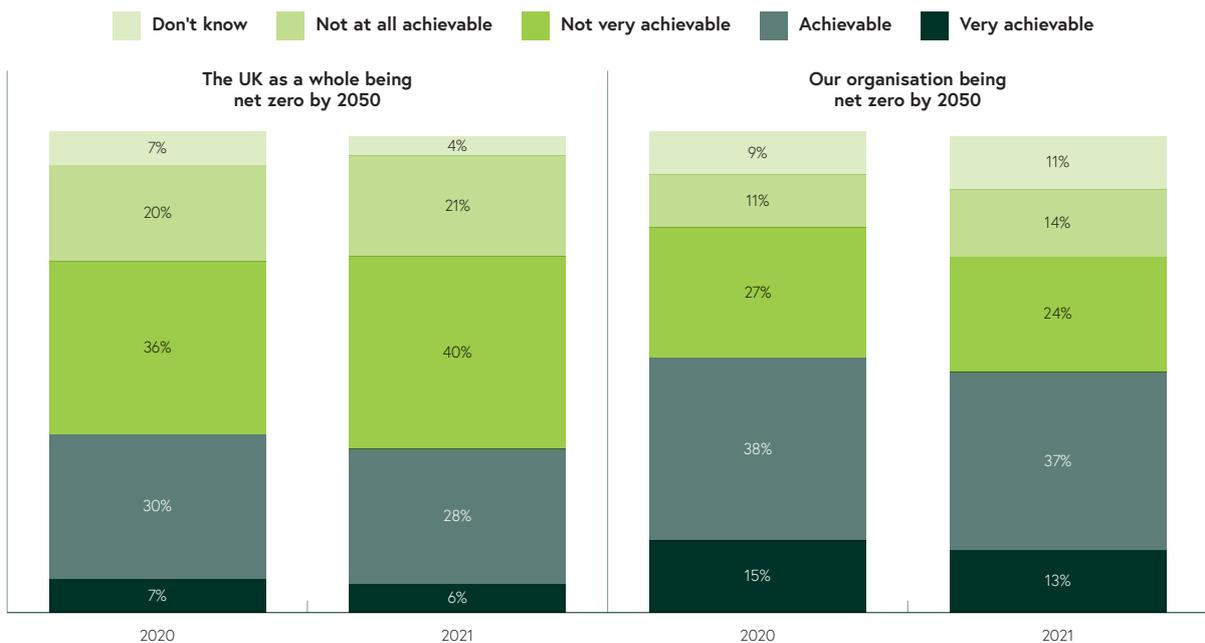
Q: **How achievable, if at all, do you think each of the following scenarios are?**
Base size: All respondents (2021=1,039; 2020=1,010).

In total, 51% of businesses surveyed have a sustainability strategy with large businesses much more likely to have one. Two-thirds (67%) of large businesses have one with only 11% definitely saying that they do not. This is the only business size where a majority have a sustainability strategy and the likelihood of having one decreases with business size; 43% of medium businesses, 26% of small businesses and 17% of micro businesses have a sustainability strategy. This pattern was evident in the 2020 results, but overall, slightly fewer respondents report that their business has a sustainability strategy in 2021 than they did in 2020 (55% in 2020; 51% in 2021).

Those with a sustainability strategy recognise its growing importance; four-fifths (83%) agree that sustainability will become more important to their organisation in the next five years. However, just 60% agree that it is currently embedded in the work that their organisation does, suggesting that a substantial proportion have a gap in where they need to be. Respondents are fairly split when asked whether their organisation's sustainability has become less of a priority since the coronavirus pandemic with 30% agreeing and 40% disagreeing.

Figure 22: Agreement with sustainability statements
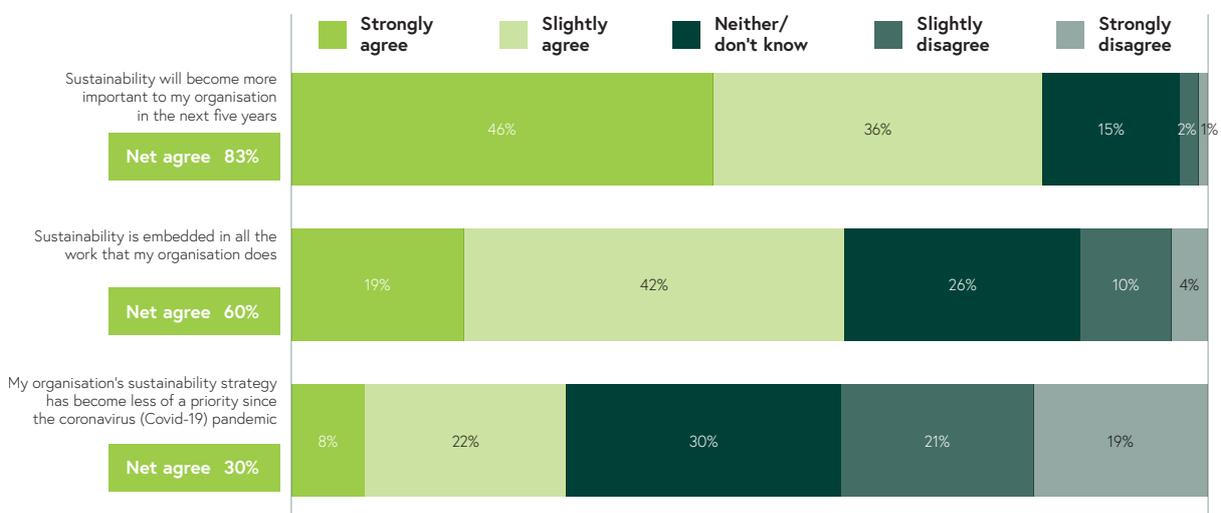
Q: To what extent do you agree or disagree with the following statements?
Base size: All with a sustainability strategy (421).

7.2 Actions

Most firms are taking some kind of action to lower their environmental impact; only 13% say they are definitely not taking any action. Consistent with 2020, the most common actions refer to technology. A third (35%) are using new, green technologies and three-in-ten (30%) are adapting their existing technology to be greener. A similar proportion (27%) are adapting products or services to be greener.

Skills are a factor in lowering environmental impact; 20% are upskilling their current workforce to improve their sustainability and 12% are recruiting new employees with the relevant skills to do so.

Larger companies are more likely to be taking action. Three-quarters (74%) of large businesses are doing at least one action compared to 62% of SMEs. This is perhaps because larger firms have more environmental costs to their business practices or because they have more resources to dedicate to sustainable strategies.

Figure 23: Actions taken to lower environmental impact

Action	Percentage
Using new, greener technologies	35%
Adapting existing technologies to be more green	30%
Adapting our products/services to be more green	27%
Using sustainable suppliers/sustainable procurement policies	26%
Measuring our carbon footprint	26%
Encouraging telecommuting/remote working	25%
Offering new, greener products/services	25%
Upskilling our workforce on relevant skills	20%
Introduced automation to improve efficiency	17%
Offsetting our carbon emissions	13%
Recruiting new employees on relevant skills	12%
We are part of an industry/business initiative	9%
Other	2%
Not applicable – my organisation is not doing anything to lower its environmental impact	13%
Don't know	19%

Q: Which, if any, of the following is your organisation doing to lower its environmental impact?
Base size: All respondents (1,039).

When asked what the barriers are to lowering environmental impact, no clear answer emerges from those surveyed. Three-in-ten (29%) report increased operating costs with a similar number referencing a lack of appropriate substitutes or alternatives (27%). A quarter (24%) mention initial investment costs or a lack of resources (20%). An existing lack of skills within the workforce is mentioned as a barrier by 16% of businesses.

One-tenth (10%) say there are no barriers to lowering their environmental impact and micro businesses are especially likely to report this, with 19% of this group not seeing any barriers compared to 11% of SMEs and 9% of large businesses. Large businesses however are more likely to view lowering their environmental impact as a priority. Over a quarter of SMEs (23%) report that sustainability actions not being considered a priority limits their ability to lower their environmental impact; only 10% of large businesses report the same.

Figure 24: Barriers to lowering environmental impact

Barrier	Percentage
Increased operating costs	29%
Lack of appropriate substitutes/alternatives	27%
Initial investment costs	24%
Lack of resources	20%
It would make our organisation uncompetitive	19%
Lack of knowledge or skills within the workforce	16%
Not being considered a priority within the organisation	16%
Lack of knowledge or skills within management	16%
Lack of appropriate infrastructure	15%
Necessity of business travel/flights	15%
Other	2%
Don't know	24%
Not applicable – there are no barriers to my organisation lowering its environmental impact	10%

Q: What, if any, of the following are barriers to your organisation lowering its environmental impact?
Base size: All respondents (1,039).

7.3 Skills needed

Of those with a sustainability strategy, four-fifths (81%) think their organisation needs additional skills in order to deliver it. Medium sized businesses are especially likely to need new skills with 86% respondents citing this as a barrier compared to 76% of small businesses and 80% of large businesses.

As in 2020, employers are split on what type of skills they need to deliver their strategy and there have been no significant shifts in the proportions requiring each. Around three-fifths name each as necessary; 60% need innovative thinking to create new technologies (62% in 2020), 60% need management or strategic stills to implement new processes (60% in 2020), and 59% need agility to adapt to new technologies and implement new processes (60% in 2020).

Of those who reported needing additional skills, as in 2020, organisations are most likely to upskill or retrain their existing employees (62%) than hire new employees (46%). However, there has been a significant increase since 2020 in the proportion who report an intention to recruit for these skills, perhaps linked to the wider trends around staff retention and recruitment discussed earlier in this report.

Consistent with last year, a minority look outside of upskilling and recruiting. Just under a third (35%) say they will recruit apprentices and train them up

to address the skills gap and a quarter (27%) would outsource their sustainability strategy tasks to another organisation.

Figure 25: Actions taken to addressing the skills gaps needed to deliver their sustainability strategy

Action	2021	2020
Upskilling/retraining existing employees	62%	60%
Hiring new employees with those skills	46%	38%
Recruiting apprentices/graduates and providing training	35%	32%
Automating work/tasks	28%	31%
Outsourcing the necessary tasks to another organisation	27%	26%
Increasing contingent labour such as contractors and agency workers	13%	18%
Other	1%	1%
Not applicable – my organisation will not do anything in particular	4%	3%
Don't know	12%	10%

Q: Thinking about the skills your organisation will need to deliver your sustainability strategy, how is/ will your organisation respond to needing these skills in your workforce?
Base size: All who need skills to deliver sustainability strategy (2021=341; 2020=395).

8. Section 5 – Looking to the future

In this section we explore:

- Skills needed in the next five years.
- Impact of missing skills.

- Beliefs on whether new entrants have the appropriate skills.
- Ways education system is being engaged.

8.1 Growth and skills

In addition to considering what skills their organisation currently needs, businesses should also consider the future skills they will need to keep up with industry and technology trends. When engineering employers are asked what skills they anticipate being important areas for growth in their sector over the next five years, over a third say design and manufacturing skills (36%). This is closely followed by energy and environmental sustainability skills (35%), which is considered the top future skill by engineering employers with a sustainability strategy (46%).

Slightly fewer anticipate needing artificial intelligence (AI)/machine learning skills (29%), data analytics (28%), or manual dexterity (26%) skills over the next five years. Large employers are more likely than SMEs to think AI/machine learning (37% vs 20%) or data analytics (38% vs 17%) are areas for growth, while SMEs are focussed on manual dexterity (33% vs 21%).

Across industries, design and manufacturing is particularly important for engineering employers in electrical and electronics – over half say this skill is an important area for growth in the next five years (56%). IT and communications organisations consider AI/machine learning and data analytics (both 51%) as more important for their growth.

Figure 26: Skills important for sector growth in the next five years

| | All | Size | | | | Sector | | | | | | | |
		6 to 9 employees	10 to 49 employees	50 to 249 employees	250+ employees	IT and communications	Transport	Construction	Electrical and electronics	Aerospace and defence	Manufacture	Energy	Other engineering related activities
Design and manufacturing	36%	42%	37%	44%	33%	17%	20%	32%	**56%**	37%	**48%**	14%	32%
Energy and environmental sustainability	35%	24%	25%	32%	**41%**	26%	35%	36%	25%	41%	35%	**75%**	26%
Artificial intelligence and machine learning	29%	13%	14%	29%	**37%**	**51%**	25%	17%	34%	**48%**	25%	**49%**	27%
Data analytics	28%	10%	15%	21%	**38%**	**51%**	28%	17%	20%	**52%**	24%	**52%**	19%
Manual dexterity	26%	29%	**34%**	31%	21%	18%	30%	28%	26%	17%	28%	9%	**45%**
Material technologies	24%	23%	20%	25%	25%	15%	19%	15%	32%	31%	**31%**	12%	20%
Unweighted N	1039	100	381	273	279	110	114	215	80	30	416	33	41

Q: Which skills areas do you anticipate being important areas for growth for your sector in the next five years?
Figures in bold are statistically significantly higher than average based on a 95% confidence level.

Some of these skills areas will present more challenges than others – 69% of those who anticipate manual dexterity becoming more important and 64% of those who anticipate design and manufacturing becoming more important say that their organisation currently has the skills they need in this area. However, only half of those who think energy and environmental sustainability is on the rise (51%) and only a third who think AI/machine learning is important (33%) have the skills they need.

SMEs are more likely than large businesses to say they do not have the skills needed in material technologies (36% vs 20%) or energy and environmental sustainability (44% vs 31%).

Employers who have a sustainability strategy are more assured of their skills around energy and environmental sustainability; three-fifths of them say they have the skills needed in this area (61%). However, a considerable proportion report the negative – even with a sustainability strategy in place, three-in-ten do not have the environmental sustainability skills they need (30%).

Figure 27: Currently have the skills needed for growth areas
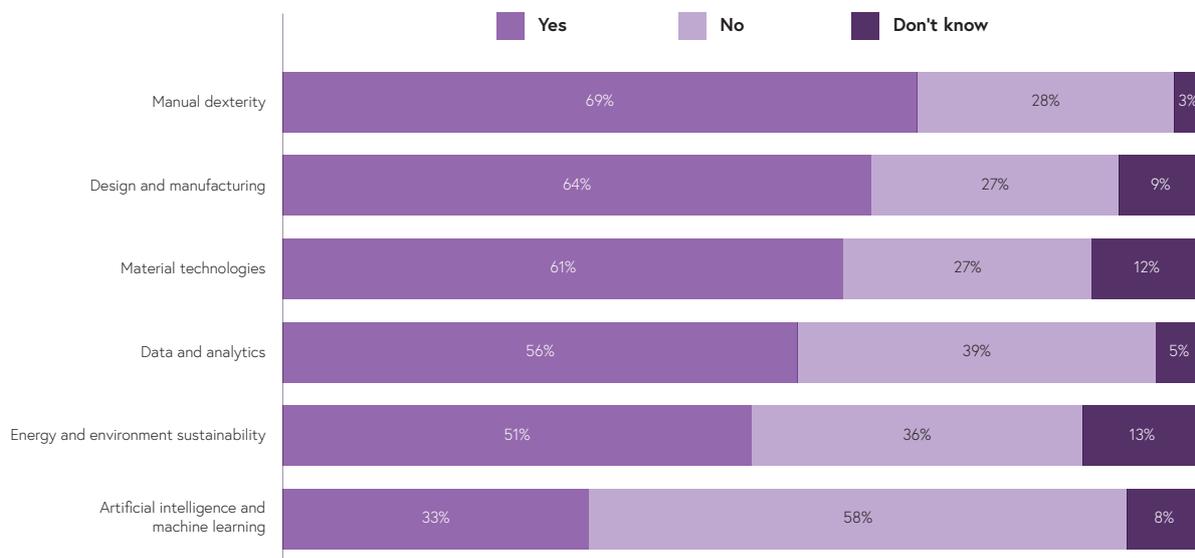
Q: **And do you think your organisation currently has the necessary skills in these areas?**
Base size: All who anticipate each to be an area for growth (AI/machine learning=251; data analytics=229; material technologies=238; manual dexterity=306; energy and environmental sustainability=325; design and manufacturing=392).

8.2 New entrants to the workforce

Around a quarter of engineering employers think their firm is liable to pay the apprenticeship levy (24%) – although, as might be expected, SMEs are less likely than large employers to think they pay the levy (14% vs 32%).

Thinking about the workforce pipeline and the skills new entrants bring with them, engineering employers are divided – around half believe young people entering the workforce have the technical skills required (48%) to work in their industry with slightly fewer (45%) thinking they have the soft skills required, but a similar

proportion believe that young people do not have the necessary skills (46% technical, 46% soft). In fact, only a small minority believe that new entrants to the workforce have all the skills necessary to work in their industry (6% technical, 5% soft).

This divide is consistent across all industry types. It does vary somewhat across business size, as SMEs are more likely than large employers to think young people are lacking in the technical skills required for their industry (50% vs 43%). However, when it comes to soft skills, medium-sized employers are just as likely as large employers to say young people do have the soft skills they need (both 45%).

Figure 28: Whether new entrants have the skills they need

	Have all the necessary skills	Have some, but not all	Have few of the necessary skills	Do not have any	Don't know
Technical skills needed — Net have skills 48%	6%	42%	35%	11%	6%
Soft skills needed — Net have skills 45%	5%	41%	36%	10%	9%
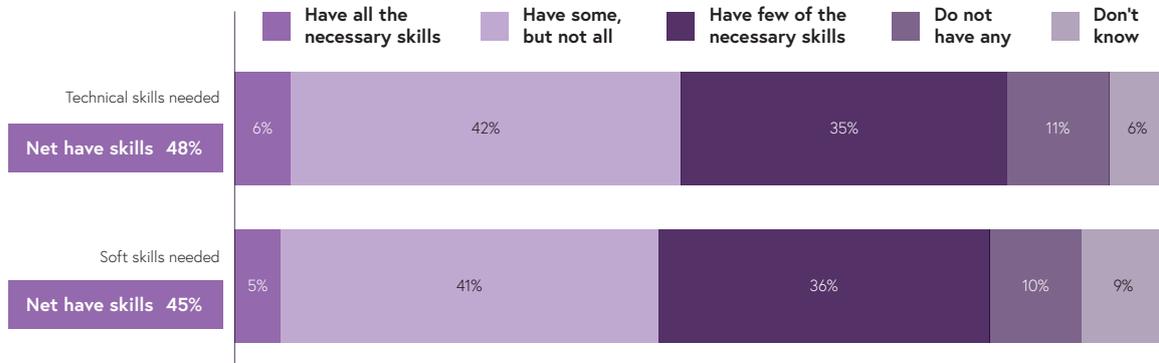
Q: Thinking about the skills young people entering the workforce have, to what extent do you think they have the necessary technical/soft skills they need for work in your industry?
*Base size: All respondents (1,039).*

Around half of engineering employers who think young people do not have necessary technical skills say they are lacking time/project management skills (52%), business knowledge (50%), or specialist skills/knowledge needed for the role (49%). Two-fifths think that new entrants are missing complex problem-solving skills (41%) or leadership skills (40%), while a third say they are missing reading/writing skills (38%) or numerical skills (35%).

Respondents in large businesses are significantly more likely than those in SMEs to think that young people are lacking in a number of skills but particularly in need of complex problem solving (44% vs 36%), leadership skills (43% vs 36%), team working (33% vs 26%), and IT skills (31% vs 21%). On the other hand, SMEs are more likely than large businesses to say new entrants lack manual dexterity (33% vs 24%) or skills to adapt to new equipment/materials (21% vs 16%).

Those in IT and communications firms are the most likely to say that young people are lacking IT skills (47%) or sales/customer skills (41%).

Figure 29: Types of technical skills new entrants lack

Skill	%
Time/project management	52%
Business knowledge such as products/services and how the organisation works	50%
Specialist skills/knowledge needed for the role	49%
Solving complex problems requiring a situation-specific solution	41%
Leadership skills including setting objectives and instructing/training people	40%
Reading/writing instructions, guidelines, manuals, reports	38%
Basic/complex numerical skills	35%
Sales/customer skills	30%
Team working	30%
Manual dexterity	28%
Basic/advanced IT skills	27%
Adapting to new equipment/materials	18%
Other	3%

Q: You said that young people do not have all the necessary technical skills for work in your industry. What skills specifically are missing?
*Base size: All who do not think young people have all necessary technical skills (921).*

When thinking about the impact of these missing skills on their recruitment of new entrants, two-fifths of engineering employers who think young people are lacking skills say they provide additional training for new entrants to the industry (45%). However, a quarter recruit fewer apprentices/graduates as a result (25%) and one-in-seven provide lower salaries/benefits than they would otherwise (16%). Although 16% are unsure of the impact of these missing skills, only a minority say there is no impact on their recruitment of young people at all (13%).

Larger engineering employers tend to be the ones providing additional training –half of respondents in large businesses say they do so (50%), compared to only two-fifths of SMEs (39%). SMEs are much more likely to either recruit fewer apprentices/graduates than they would otherwise (30% vs 21%) or provide lower salaries and benefits (21% vs 12%). Across industry, IT and communication firms are the most likely to provide extra training for new entrants lacking skills (58%).

**Figure 30:** Impacts of new entrants lacking skills
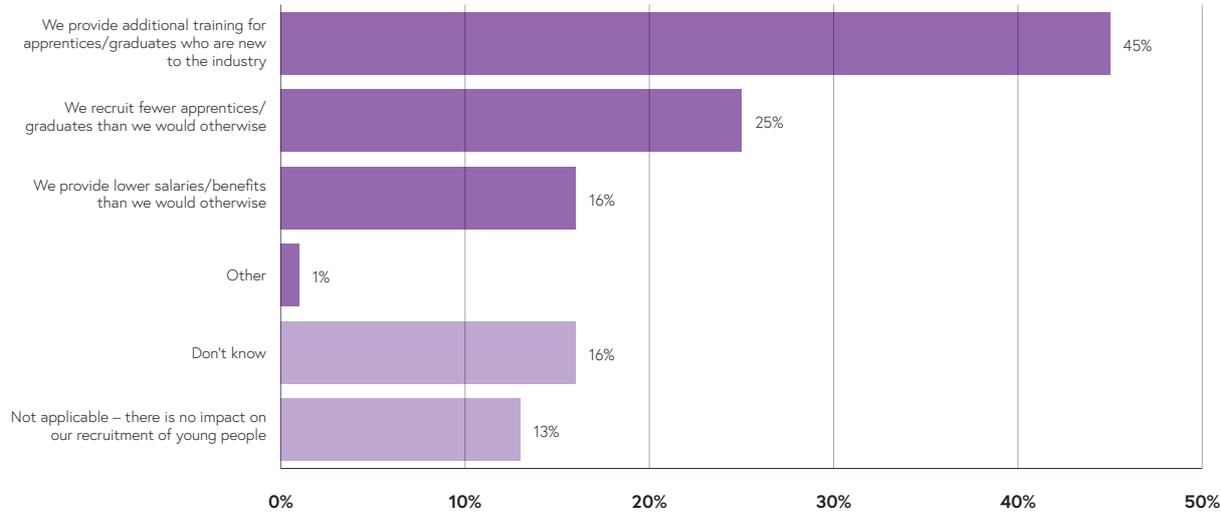
Q: You said that young people do not have all the necessary skills for work in your industry. How does this impact on your recruitment of young people into roles in your organisation?
Base size: All who do not think young people have all necessary skills (957).

In terms of how young people can gain these necessary skills, engineering employers continue to think a key priority for the education system is for more opportunities to acquire relevant work experience (56%) as well as increased engagement with businesses (50%) – the latter of which is a significant fall in popularity compared to 2020. Additionally, the popularity of other priorities has fallen including involvement of industry expertise (49% 2020 vs 41% 2021) and increased project management (40% vs 27%).

However, there have been some shifts across business sizes and industries. Large employers are now more likely than SMEs to support wider signposting to a range of higher education options (28% vs 21%) where there had previously been no significant difference. Similarly, IT and communication employers are now the most likely to support wider signposting to a range of higher education options (35%).

Figure 31: Key priorities for the UK education system

| Priority	2021	2020
More opportunities to acquire relevant work experience	56%	60%
Increased engagement with businesses such as giving students a better understanding of the world of work	50%	58%
Improving the quality of careers advice/guidance	43%	38%
Increased involvement of industry expertise	41%	49%
Clearly defined targets for basic skills such as literacy, numeracy, science and digital skills	41%	45%
Wider provision of and signposting to a range of vocational options such as T Levels and apprenticeships	36%	38%
Increased project management such as coursework and managing a task from start to finish	27%	40%
Wider provision of and signposting to a range of higher education options such as part-time and distance learning	25%	25%
Other	3%	4%

Q: Thinking about young people entering the workforce, what, if anything, do you think should be key priorities for the UK education system to ensure they are prepared to enter the workforce? *Base size: All respondents (2020=1,010; 2021=1,039).*

As in 2020, there is a mismatch between the desire from engineering employers for increased employer engagement to help young people obtain relevant work experience and the actual amount of employer engagement with the education system. A quarter (26%) of engineering employers do not do anything with schools, colleges, or universities.

The most common forms of engagement with the education system continues to be apprenticeship partnerships (29%) and paid internships (24%).

All forms of engagement tend to be more prevalent amongst large engineering employers as shown in Figure 32.

Figure 32: Top five ways in which large and SME employers engage with education

Apprenticeship partnerships such as providing training to your apprentices	Large 36% / SME 22%
Paid internships/year in industry placements	Large 34% / SME 12%
Pupils visiting the workplace	Large 31% / SME 111%
Employees talking to pupils about the industry	Large 30% / SME 12%
Unpaid work experience placements	Large 21% / SME 14%
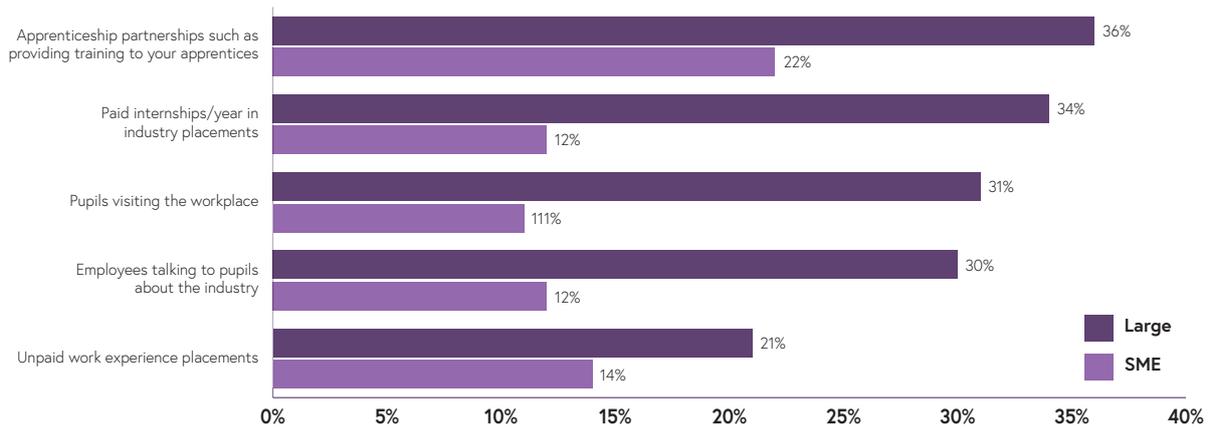
Q: Which, if any, of the following does your organisation currently do with schools, colleges, or universities?
Base size: All large businesses (279); All SMEs (754).

Similarly, the biggest barrier to engineering employers engaging with the education system more is a lack of time/resources within their organisation (31%). Consistent with 2020, this barrier is more prevalent amongst micro (42%) and small employers (36%) than large employers (27%).

9. Conclusion

Disruption due to the Covid-19 pandemic has greatly affected businesses of all sizes with some staff switching to working from home, some becoming ill and having to self-isolate, and others being furloughed or made redundant, not to mention site closures and decreases in sales. There are also impacts caused by Brexit. This survey found around half of respondents have experienced difficulties importing/exporting and a quarter claimed that leaving the EU has caused a shortage of labour/skills.

However, eight-in-ten are confident about their economic prospects and are beginning to turn their attention to upskilling their workforces, both for reducing the skills gap as well as preparing themselves for net zero carbon emissions by 2050. Around half of the respondents call on the UK Government to provide more funding for apprenticeships and better careers advice in schools as well as business grants for training and reskilling programmes to help them hit these targets.

The 2020 Skills for net zero and a green recovery survey took place in the context of the coronavirus pandemic and the end of the transition period for the UK leaving the EU. The 2021 Skills survey is in a slightly different context, with the vaccination programme allowing some semblance of normality to return for businesses in the engineering and technology sector. The impact of the pandemic on staff recruitment and skills has been grave and immediate, with over half (55%) having to deal with staff being ill or self-isolating as a result of Covid-19. Nevertheless, firms remain positive about the future with most confident about the economic prospects for their firm (79%) and sector (77%).

As the economic situation evolves, so do the priorities of businesses. While in 2020, the top priorities were cutting costs (44%) this has been replaced with a focus on improvements in profitability (67%) and productivity (62%).

However, one of the long-term impacts from the pandemic is skills related. Three-in-ten have experienced a decreased headcount over the last 12 months (31%) and half attribute this directly to Covid-19. Looking to improve profitability and productivity with fewer staff than before means having key skills within their workforce is paramount for many.

In fact, businesses are facing skills gaps, with half (49%) citing a lack of skills available in the external labour market and 45% limited skills within their internal workforce. However, the proportion facing these has declined since 2020 – a sign that the immediate impacts of the pandemic may have been overcome. The main responses to skills gaps continue to be upskilling existing employees and recruiting new staff, but workers are in high demand and a third (34%) acknowledge that competition in the labour market means they cannot address their skills needs. Additionally, engineering employers report a general lack of applicants causing difficulty in recruitment (34%) – a marked increase on 2020.

Then, when we turn to upskilling of the workforce, online training is on the rise. The Covid-19 pandemic spurred a sea-change in training formats – two years ago only a third offered online training (32%) but two-fifths expect to keep some online provision two years from now (40%). Training can be beneficial during challenging periods, with over half of respondents reporting that their training had helped employees deal with pandemic-related issues, but a similar proportion note that training during the pandemic was more difficult than before. To ensure that they are resilient in the face of future challenges, engineering employers should endeavour to identify their training needs well in advance of when the resulting skills will become critical.

Looking to the next five years, engineering employers do recognise particular areas of skills as important for their organisation's growth. However, whether or not they currently have these skills within the workforce varies considerably. Design and manufacturing is recognised as a key area by (36%) and most (64%) of those have the skills they think they need. However, energy and environmental sustainability is the second most cited area for growth (35%) and only half (51%) have the skills they need.

In light of this lack of skills, it is unsurprising that only half (50%) think it is achievable for their organisation to be net zero by 2050, in line with the UK target.

Many recognise that sustainability will become more important in the near future (64%), driving this

skills growth, but much fewer think sustainability is currently embedded in their organisation's work (37%). Echoing the earlier point, it is important that engineering employers act now to gain these skills – training is likely to be much more difficult at the point of immediate need, as it was in the pandemic.

Young people entering the workforce is often a valuable pipeline of new skills, but many engineering employers have concerns. Just under half think that young people do not have the technical skills or soft skills they need (both 46%). While some are prepared to offer training to supplement these skills (45%), others do not have the resources and instead do not recruit from this pipeline (25%). As ever, there is a mismatch between the priorities employers stress for the education system and their own activity within that system. Given the importance of getting new skills into the industry, employers who lend their expertise have the opportunity to shape the future workforce.

Overall, the results of this survey suggests that businesses are recovering from the uncertainty of last year. However, there is also a cautionary note in that engineering employers should be conscious of the skills they will need in the near future, building resilience and preparedness into their current strategies.

10. Appendix A: Standard industrial classifications (SICs)

The following SICs show the range of employers that are included within the engineering footprint and were eligible to take part in this research.

Energy

- **06100** Extraction of crude petroleum
- **06200** Extraction of natural gas
- **09100** Support activities for petroleum and natural gas mining
- **05101** Deep coal mines
- **05102** Open cast coal working

- **35110** Production of electricity
- **35120** Transmission of electricity
- **35130** Distribution of electricity
- **35210** Manufacture of gas
- **35220** Distribution of gaseous fuels through mains
- **35300** Steam and air conditioning supply

IT and Communications

- **18201** Reproduction of sound recording
- **18202** Reproduction of video recording
- **18203** Reproduction of computer media
- **58210** Publishing of computer games
- **58290** Other software publishing
- **59111** Motion picture production activities
- **59112** Video production activities
- **59113** Television programme production activities
- **59120** Motion picture, video and television programme post-production activities
- **59200** Sound recording and music publishing activities
- **61100** Wired telecommunications activities
- **61200** Wireless telecommunications activities

- **61300** Satellite telecommunications activities
- **61900** Other telecommunications activities
- **62011** Ready-made interactive leisure and entertainment software development
- **62012** Business and domestic software development
- **62020** Computer consultancy activities
- **62030** Computer facilities management activities
- **62090** Other information technology and computer service activities
- **63110** Data processing, hosting and related activities
- **63120** Web portals
- **95110** Repair of computers and peripheral equipment
- **95120** Repair of communication equipment

Transport

- **28301** Manufacture of agricultural tractors
- **29100** Manufacture of motor vehicles
- **29201** Manufacture of bodies (coachwork) for motor vehicles (except caravans)
- **29202** Manufacture of trailers and semi-trailers
- **29203** Manufacture of caravans
- **29310** Manufacture of electrical and electronic equipment for motor vehicles
- **29320** Manufacture of other parts and accessories for motor vehicles and their engines
- **30110** Building of ships and floating structures

- **30120** Building of pleasure and sporting boats
- **30200** Manufacture of railway locomotives and rolling stock
- **30910** Manufacture of motorcycles
- **30920** Manufacture of bicycles and invalid carriages
- **30990** Manufacture of other transport equipment n.e.c.
- **51220** Space transport
- **33150** Repair and maintenance of ships and boats
- **33170** Repair and maintenance of other transport equipment n.e.c.
- **45200** Maintenance and repair of motor vehicles

Built environment

- **41201** Construction of commercial buildings
- **41202** Construction of domestic buildings
- **42110** Construction of roads and motorways
- **42120** Construction of railways and underground railways
- **42130** Construction of bridges and tunnels
- **42210** Construction of utility projects for fluids
- **42220** Construction of utility projects for electricity and telecommunications
- **42910** Construction of water projects
- **42990** Construction of other civil engineering projects n.e.c.

- **43110** Demolition
- **43120** Site preparation
- **43130** Test drilling and boring
- **43220** Plumbing, heat and air-conditioning installation
- **43290** Other construction installation
- **43999** Other specialised construction activities n.e.c.
- **71111** Architectural activities
- **71112** Urban planning and landscape architectural activities
- **74901** Environmental consulting activities
- **74902** Quantity surveying activities

Aerospace

- **30300** Manufacture of air and spacecraft and related machinery

- **33160** Repair and maintenance of aircraft and spacecraft

Defence

- **84220** Defence activities
- **30400** Manufacture of military fighting vehicles

- **25400** Manufacture of weapons and ammunition

Manufacturing

- **10130** Production of meat and poultry meat products
- **10200** Processing and preserving of fish, crustaceans and molluscs
- **10310** Processing and preserving of potatoes
- **10320** Manufacture of fruit and vegetable juice
- **10390** Other processing and preserving of fruit and vegetables
- **10410** Manufacture of oils and fats
- **10420** Manufacture of margarine and similar edible fats
- **10511** Liquid milk and cream production
- **10512** Butter and cheese production
- **10519** Manufacture of other milk products
- **10520** Manufacture of ice cream
- **10611** Grain milling
- **10612** Manufacture of breakfast cereals and cereals-based food
- **10620** Manufacture of starches and starch products
- **10710** Manufacture of bread: manufacture of fresh pastry goods and cakes
- **10720** Manufacture of rusks and biscuits: manufacture of preserved pastry goods and cakes
- **10730** Manufacture of macaroni, noodles, couscous and similar farinaceous products
- **10810** Manufacture of sugar
- **10821** Manufacture of cocoa and chocolate confectionery
- **10822** Manufacture of sugar confectionery

- **10831** Tea processing
- **10832** Production of coffee and coffee substitutes
- **10840** Manufacture of condiments and seasonings
- **10850** Manufacture of prepared meals and dishes
- **10860** Manufacture of homogenized food preparations and dietetic food
- **10890** Manufacture of other food products n.e.c.
- **10910** Manufacture of prepared feeds for farm animals
- **10920** Manufacture of prepared pet foods
- **11010** Distilling, rectifying and blending of spirits
- **11020** Manufacture of wine from grape
- **11030** Manufacture of cider and other fruit wines
- **11040** Manufacture of other non-distilled fermented beverages
- **11050** Manufacture of beer
- **11060** Manufacture of malt
- **11070** Manufacture of soft drinks: production of mineral waters and other bottled waters
- **12000** Manufacture of tobacco products
- **13100** Preparation and spinning of textile fibres
- **13200** Weaving of textiles
- **13300** Finishing of textiles
- **13910** Manufacture of knitted and crocheted fabrics
- **13921** Manufacture of soft furnishings
- **13922** Manufacture of canvas goods, sacks, etc.
- **13923** Manufacture of household textiles

- **13931** Manufacture of woven or tufted carpets and rugs
- **13939** Manufacture of other carpets and rugs
- **13940** Manufacture of cordage, rope, twine and netting
- **13950** Manufacture of non-wovens and articles made from non-wovens, except apparel
- **13960** Manufacture of other technical and industrial textiles
- **13990** Manufacture of other textiles n.e.c.
- **14110** Manufacture of leather clothes
- **14120** Manufacture of workwear
- **14131** Manufacture of other men's outerwear
- **14132** Manufacture of other women's outerwear
- **14141** Manufacture of men's underwear
- **14142** Manufacture of women's underwear
- **14190** Manufacture of other wearing apparel and accessories n.e.c.
- **14200** Manufacture of articles of fur
- **14310** Manufacture of knitted and crocheted hosiery
- **14390** Manufacture of other knitted and crocheted apparel
- **15110** Tanning and dressing of leather: dressing and dyeing of fur
- **15120** Manufacture of luggage, handbags and the like, saddlery and harness
- **15200** Manufacture of footwear
- **16100** Sawmilling and planing of wood
- **16210** Manufacture of veneer sheets and wood-based panels
- **16220** Manufacture of assembled parquet floors
- **16230** Manufacture of other builders' carpentry and joinery
- **16240** Manufacture of wooden containers
- **16290** Manufacture of other products of wood: manufacture of articles of cork, straw and plaiting materials
- **17110** Manufacture of pulp
- **17120** Manufacture of paper and paperboard
- **17211** Manufacture of corrugated paper and paperboard, sacks and bags
- **17219** Manufacture of other paper and paperboard containers
- **17220** Manufacture of household and sanitary goods and of toilet requisites
- **17230** Manufacture of paper stationery
- **17240** Manufacture of wallpaper
- **17290** Manufacture of other articles of paper and paperboard n.e.c.
- **18110** Printing of newspapers
- **18121** Manufacture of printed labels
- **18129** Printing n.e.c.
- **18130** Pre-press and pre-media services
- **18140** Binding and related services
- **19100** Manufacture of coke oven products
- **19201** Mineral oil refining
- **19209** Other treatment of petroleum products (excluding petrochemicals manufacture)
- **20110** Manufacture of industrial gases
- **20120** Manufacture of dyes and pigments
- **20130** Manufacture of other inorganic basic chemicals
- **20140** Manufacture of other organic basic chemicals
- **20150** Manufacture of fertilizers and nitrogen compounds
- **20160** Manufacture of plastics in primary forms
- **20170** Manufacture of synthetic rubber in primary forms
- **20200** Manufacture of pesticides and other agrochemical products
- **20301** Manufacture of paints, varnishes and similar coatings, mastics and sealants
- **20302** Manufacture of printing ink
- **20411** Manufacture of soap and detergents
- **20412** Manufacture of cleaning and polishing preparations
- **20420** Manufacture of perfumes and toilet preparations
- **20510** Manufacture of explosives
- **20520** Manufacture of glues
- **20530** Manufacture of essential oils
- **20590** Manufacture of other chemical products n.e.c.
- **20600** Manufacture of man-made fibres
- **21100** Manufacture of basic pharmaceutical products
- **21200** Manufacture of pharmaceutical preparations
- **22110** Manufacture of rubber tyres and tubes: retreading and rebuilding of rubber tyres
- **22190** Manufacture of other rubber products
- **22210** Manufacture of plastic plates, sheets, tubes and profiles
- **22220** Manufacture of plastic packing goods
- **22230** Manufacture of builders' ware of plastic
- **22290** Manufacture of other plastic products
- **23110** Manufacture of flat glass
- **23120** Shaping and processing of flat glass
- **23130** Manufacture of hollow glass
- **23140** Manufacture of glass fibres
- **23190** Manufacture and processing of other glass, including technical glassware
- **23200** Manufacture of refractory products
- **23310** Manufacture of ceramic tiles and flags
- **23320** Manufacture of bricks, tiles and construction products, in baked clay
- **23410** Manufacture of ceramic household and ornamental articles
- **23420** Manufacture of ceramic sanitary fixtures
- **23430** Manufacture of ceramic insulators and insulating fittings

- **23440** Manufacture of other technical ceramic products
- **23490** Manufacture of other ceramic products n.e.c.
- **23510** Manufacture of cement
- **23520** Manufacture of lime and plaster
- **23610** Manufacture of concrete products for construction purposes
- **23620** Manufacture of plaster products for construction purposes
- **23630** Manufacture of ready-mixed concrete
- **23640** Manufacture of mortars
- **23650** Manufacture of fibre cement
- **23690** Manufacture of other articles of concrete, plaster and cement
- **23700** Cutting, shaping and finishing of stone
- **23910** Production of abrasive products
- **23990** Manufacture of other non-metallic mineral products n.e.c.
- **24100** Manufacture of basic iron and steel and of ferro-alloys
- **24200** Manufacture of tubes, pipes, hollow profiles and related fittings, of steel
- **24310** Cold drawing of bars
- **24320** Cold rolling of narrow strip
- **24330** Cold forming or folding
- **24340** Cold drawing of wire
- **24410** Precious metals production
- **24420** Aluminium production
- **24430** Lead, zinc and tin production
- **24440** Copper production
- **24450** Other non-ferrous metal production
- **24460** Processing of nuclear fuel
- **24510** Casting of iron
- **24520** Casting of steel
- **24530** Casting of light metals
- **24540** Casting of other non-ferrous metals
- **25110** Manufacture of metal structures and parts of structures
- **25120** Manufacture of doors and windows of metal
- **25210** Manufacture of central heating radiators and boilers
- **25290** Manufacture of other tanks, reservoirs and containers of metal
- **25300** Manufacture of steam generators, except central heating hot water boilers
- **25500** Forging, pressing, stamping and roll-forming of metal: powder metallurgy
- **25610** Treatment and coating of metals
- **25620** Machining
- **25710** Manufacture of cutlery
- **25720** Manufacture of locks and hinges
- **25730** Manufacture of tools

- **25910** Manufacture of steel drums and similar containers
- **25920** Manufacture of light metal packaging
- **25930** Manufacture of wire products, chain and springs
- **25940** Manufacture of fasteners and screw machine products
- **25990** Manufacture of other fabricated metal products n.e.c.
- **28110** Manufacture of engines and turbines, except aircraft, vehicle and cycle engines
- **28120** Manufacture of fluid power equipment
- **28131** Manufacture of pumps
- **28132** Manufacture of compressors
- **28140** Manufacture of taps and valves
- **28150** Manufacture of bearings, gears, gearing and driving elements
- **28210** Manufacture of ovens, furnaces and furnace burners
- **28220** Manufacture of lifting and handling equipment
- **28230** Manufacture of office machinery and equipment (except computers and peripheral equipment)
- **28240** Manufacture of power-driven hand tools
- **28250** Manufacture of non-domestic cooling and ventilation equipment
- **28290** Manufacture of other general-purpose machinery n.e.c.
- **28302** Manufacture of agricultural and forestry machinery other than tractors
- **28410** Manufacture of metal forming machinery
- **28490** Manufacture of other machine tools n.e.c.
- **28910** Manufacture of machinery for metallurgy
- **28921** Manufacture of machinery for mining
- **28922** Manufacture of earthmoving equipment
- **28923** Manufacture of equipment for concrete crushing and screening and roadworks
- **28930** Manufacture of machinery for food, beverage and tobacco processing
- **28940** Manufacture of machinery for textile, apparel and leather production
- **28950** Manufacture of machinery for paper and paperboard production
- **28960** Manufacture of plastics and rubber machinery
- **28990** Manufacture of other special-purpose machinery n.e.c.
- **31010** Manufacture of office and shop furniture
- **31020** Manufacture of kitchen furniture
- **31030** Manufacture of mattresses
- **31090** Manufacture of other furniture
- **32110** Striking of coins
- **32130** Manufacture of imitation jewellery and related articles
- **32200** Manufacture of musical instruments
- **32300** Manufacture of sports goods

- **32401** Manufacture of professional and arcade games and toys
- **32409** Manufacture of other games and toys, n.e.c.
- **32500** Manufacture of medical and dental instruments and supplies
- **32910** Manufacture of brooms and brushes
- **32990** Other manufacturing n.e.c.
- **33110** Repair of fabricated metal products
- **33120** Repair of machinery
- **33190** Repair of other equipment

- **33200** Installation of industrial machinery and equipment
- **71121** Engineering design activities for industrial process and production
- **71122** Engineering related scientific and technical consulting activities
- **71129** Other engineering activities
- **71200** Technical testing and analysis
- **72190** Other research and experimental development on natural sciences and engineering

Other

- **01630** Post-harvest crop activities
- **01640** Seed processing for propagation
- **05200** Mining of lignite
- **07100** Mining of iron ores
- **07210** Mining of uranium and thorium ores
- **07290** Mining of other non-ferrous metal ores
- **08110** Quarrying of ornamental and building stone, limestone, gypsum, chalk and slate
- **08120** Operation of gravel and sand pits: mining of clays and kaolin
- **08910** Mining of chemical and fertilizer minerals
- **08930** Extraction of salt
- **08990** Other mining and quarrying n.e.c.
- **09900** Support activities for other mining and quarrying
- **36000** Water collection, treatment and supply
- **37000** Sewerage

- **38210** Treatment and disposal of non-hazardous waste
- **38220** Treatment and disposal of hazardous waste
- **38310** Dismantling of wrecks
- **38320** Recovery of sorted materials
- **39000** Remediation activities and other waste management services
- **49500** Transport via pipeline
- **58110** Book publishing
- **58120** Publishing of directories and mailing lists
- **58130** Publishing of newspapers
- **58141** Publishing of learned journals
- **58142** Publishing of consumer and business journals and periodicals
- **58190** Other publishing activities
- **80200** Security systems service activities
- **95220** Repair of household appliances and home and garden equipment

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