

EngineeringUK's Consultation response – Department for Transport: Transport Labour Market & Skills May 2022

About EngineeringUK

EngineeringUK is a not-for-profit organisation, which works in partnership with the engineering community to inspire tomorrow's engineers and increase the number and diversity of young people choosing academic and vocational pathways into engineering. EngineeringUK aims to grow the collective impact of work across the sector to help young people understand what engineering is, how to get into it, and be motivated and able to access the educational and training opportunities on the way. We also aim to inspire young people to choose careers in engineering and technology through our own programmes, including [The Big Bang programme](#).

We also undertake research and work with partners in the engineering sector to influence government thinking in relation to the educational pipeline into engineering. Our focus is on the systems, structures and funding that need to be in place to enable all young people to decide whether a career in engineering is for them.

Overview and key asks

As the consultation document rightly identifies, the transport system in the UK is undergoing some fundamental changes in response to the climate crisis and the need to address social and economic inequalities across the UK. To meet these challenges and provide clean, green, and effective transport systems in every region of the country, we will need to train many more engineers in expanding and emerging technologies. We are pleased to see acknowledgement throughout the consultation of the importance of investing in skills and of the need to connect young people into roles in the transport sector.

In order to ensure that the UK has the skills pipeline to meet the demands of the transport sector going forward, we at EngineeringUK believe that more needs to be done to ensure that every young person in the UK, regardless of their gender, ethnicity or socio-economic background can access and succeed in this sector. To achieve this, we recommend the following.

1. The Department for Transport must actively invest in building career pipelines to meet its workforce needs especially in areas of growth or particular geographic demand.

Ensuring that young people understand the careers pathways available to them within the transport sector, and building new pathways, is an important tool to ensure that the UK's future transport skills needs are met. The DfT should be investing in careers activities to attract curious young people into the sector, this could be achieved by working with employers to create more work experience opportunities and extra school engagement sessions. We believe that this proactive investment must speak to the government's wider ambitions for the UK and reflect both existing regional infrastructure projects, and future skills demands. There is a concern that young people are not as aware as they could be about the pathways into careers within the transport sector. To overcome this DfT must intervene early to inspire and connect with the next generation of engineering talent and ensure that interested young people are offered consistent support into the career of their choice within the sector.

However, this must be within the context of a wider government strategy surrounding future workforce planning.

2. We urge government to take a more strategic approach to workforce planning and ask that the Department for Transport be closely linked into this.

We are pleased that the Government has a 250k green jobs target, many of which will be in the transport sector, but they must ensure that these jobs are targeted in the areas they are most needed and supported with the skills required in order to succeed. To achieve this, we need a more strategic approach to workforce planning across government and the Department for Transport needs to be closely linked into such planning

We call on government to take cross-sectoral approaches to policymaking that underlines the interconnectedness of different policy areas and economic sectors. For example, through the creation of a long-term STEM education strategy, mapped across educational careers needs, and the governments infrastructure plans. We believe that doing so will ensure that policy interventions across departments work most effectively together to deliver the governments goals, and be responsive to social, cultural and behavioural factors, which can act as both barriers to and levers for change.

3. We ask that the Department for Transport support our call for government to invest in a long-term STEM education strategy that covers

- a. a guarantee that all pupils receive high quality, up-to-date STEM careers provision
- b. boosting STEM teacher recruitment so that pupils in all regions are taught by subject specialists
- c. raising and maintaining teaching standards by providing ringfenced resources for STEM subject specific Continuing Professional Development for primary and secondary teachers
- d. accelerate the expansion of technical education provision and higher technical qualifications
- e. promote high-quality engineering apprenticeship opportunities to all young people with a focus on improving addressing under-representation.

The pandemic has exacerbated inequalities in school-age education, hugely disrupted further and higher education, and risks reducing the diversity of young people going into engineering. The UK must have a plan to meet its long-term engineering and technical skills needs including ensuring that it has the skilled workforce to meet demand in the transport sector. A long-term STEM education strategy, informed by strategic workforce planning, as called for in recommendation 2, and evidence of what works, must target key challenges in STEM skills including increased pupil attainment and progression in STEM subjects, high-quality STEM careers advice and guidance, teacher recruitment and retention and targeted support for delivery of technical qualifications.

4. We ask that the Department for Transport supports our recommendation for additional funding in the region of £40 million to support careers activities in schools.

Connecting young people with the world of work, and in this case, careers in transport, is an important part of the skills puzzle that will ensure that the UK has the skilled young people to work in the UK's transport sector, which is key to the UK's economic success. Careers provision provided in schools and colleges is integral to that and must be addressed within the context of a wider STEM education strategy

as alluded to above. However, recent EngineeringUK research¹ has highlighted that careers provision in schools is underfunded, limiting what schools can offer to young people.

In order to be guarantee all pupils receive high quality, up-to-date STEM careers provision, including insights into careers in transport, the we now ask that the government invest more in careers provision in schools to ensure that young people have the knowledge to navigate the pathways into a variety of roles and careers giving them the opportunity, for example, to better understand what a career in transport has to offer and how to get there. We recommend an investment of about £30 million annually, an average of £8k per secondary school or college, to ensure that schools are better resourced to support all young people with their career's choices. In addition to this additional general funding, we ask that the government invest an additional £10 million annually for a 'STEM Diversity Fund' for careers provision activities.

Consultation response

Future skills

In your view, what skills does the transport sector need in the future?

The transport sector is facing significant changes over the next decade. Notable infrastructural projects such as HS2, Northern Powerhouse Rail, the phasing out of petrol and diesel cars, and the DfT's decarbonisation strategy will bring about wide-ranging changes in the sector. To meet these goals and provide clean, green, and effective transport systems in every region of the country we will need to train many more engineers in expanding and emerging technologies. Reskilling our economy to the extent that is needed will provide both an opportunity and challenge to policy makers.

Engineers will play a key role in the future of UK transport. From the installation of electric vehicle charging ports, to the design and implementation of railway expansion engineering skills will be required. However, research for our Engineering Brand Monitor (EBM) shows that currently only 3.5% of engineering sector jobs are currently in transport, a number that has fallen from 4% in 2019, a loss of around 60,000 jobs². In addition, EngineeringUK member City and Guilds highlight that more than a quarter of current workers in the rail industry are over the age of 50 and therefore close to retirement and estimate that up to 120,000 additional people will be required over the next 5 - 10 years, with demand for skills peaking around 2025³. Engineering jobs are central to the transport sector supply chain via manufacturing, construction, and electricity.

We are pleased that the Government has a 250k green jobs target, many of which will be in the transport sector, but they must ensure that these jobs are targeted in the areas they are most needed and supported with the skills required on order to succeed. EngineeringUK believe that providing the educational base via vocational training courses and the training of engineering teachers is vital to deliver on these skills. To achieve this, we need a more strategic approach to workforce planning across government and we call on government to take cross-sectoral approaches to policymaking that underline the interconnectedness of different policy areas and economic sectors, and we want to see the Department for Transport being linked into this. We believe that doing so will ensure that policy interventions across departments work most effectively together to deliver the governments goals, and

¹ <https://www.engineeringuk.com/media/232356/our-careers-our-future-briefing.pdf>

² [Demand tables - EngineeringUK | Inspiring tomorrow's engineers.](#)

³ [Back on Track - Research | City & Guilds \(cityandguilds.com\)](#)

be responsive to social, cultural and behavioural factors, which can act as both barriers to and levers for change.

We are delighted that this consultation highlights DfT's intention to work across government departments to address the issues around skills. We very much hope that the Future Skills Unit and Skills and Productivity Board will help deliver this objective. However, currently much of the available data on workforce planning is piecemeal making it very hard to garner comprehensive and consistent long-term insights. Developing this data foundation is a critical first step for the DfT and the Future skills unit in developing a future workforce strategy.

Careers provision in and vocational pathways

How, in your view, can current qualification and training routes be made more accessible for those who want to pursue a career in the transport sector?

What, in your view, are effective ways to attract young people and career changers into a career in the transport sector?

At EngineeringUK we believe that supporting young people in their careers choices and equipping them with the tools to access those choices is a win-win situation. It ensures that young people can take up the employment opportunities on offer and at the same time secures the future workforce needed for net zero, economic growth and levelling up. It is also important that careers advice and guidance is based on good-quality, up-to-date information on the labour market, helping young people to benefit from new and emerging job opportunities in sectors such as engineering.

EngineeringUK's '[Our careers our future](#)' research paper found that 82% of young people aged 11 to 19 who said they knew 'quite a lot' or 'a lot' about engineering would consider a career in the sector (compared to just 40% of 11 to 19 year olds who reported not knowing a lot about engineering). There is a clear link between knowledge of engineering and the extent to which young people would consider a career in the profession. Young people who know a lot about engineering are far more likely to consider it as a possible job, highlighting the importance of improving engineering careers provision among young people. However, our latest data has found that only 15% of young people aged 11-19 would describe themselves as 'very knowledgeable' about the different apprenticeship options available compared to 25% who described themselves as 'not knowledgeable'⁴⁴. This is concerning and is likely to make careers in engineering within the transport system more difficult to access to many young people.

It is not enough to have educational and skills pathways into engineering and science careers. Young people also need to know about them. Our EBM survey results suggests more needs to be done to increase young people's awareness and understanding of vocational pathways, including apprenticeships and T levels. This year we released our [Levelling Up Engineering Skills](#) briefing paper which highlighted geographic inequalities regarding awareness of skills pathways. This research found that young people (aged 13 to 19) in London were, for example, twice as likely to know what subjects or qualifications they needed to become an engineer than young people in the West Midlands. (60% compared to 30%).

We need to close this gap and ensure that young people across the country have the opportunity to find out about the different educational and skills pathways into engineering careers, including in transport. To achieve this, we need a well-resourced careers system in schools and colleges. However, schools do not currently have the money to provide the vital careers services that the UK needs. This is why Engineering have been clear that we want to see an additional £40m annual investment in careers services across the UK. Our recent research has shown that careers provision in schools is underfunded, limiting what schools can offer to young people in a time when they need guidance, insights and

⁴⁴ [Our Careers, Our Future - EngineeringUK](#)

inspiration more than ever. The government acknowledged this fact when they committed to an additional £32m for the National Careers Service last year. Now we feel that the government needs to go further and build out a robust careers provision within schools if we are to unlock the potential of the next generation and we ask that the Department for Transport support this recommendation.

We are pleased with measures introduced in the Skills and Post-16 Education Bill, namely the additional careers interactions and local skills improvement plans (LSIPs). However, a lot depends on the practical implementation of LSIPs and how they function. We are currently waiting for the government to publish the statutory guidance promised during the Skills and Post-16 Education Bill debate which will give us a better idea of their effectiveness. It is vital that an understanding of the national skills gaps in sectors such as transport are addressed in local skills planning and help to inform local and regional skills delivery. There is otherwise a risk that employer-led skills development at a local level will occur in isolation from national strategies relating to transport infrastructure. These concerns were reflected in last year's House of Lords Youth Unemployment Committee report where the need for future workforce planning via inter-linked local and national strategies was strongly emphasised⁵. We support the need for clear processes and feedback mechanisms that ensure that there is a good understanding of the skills and training needs and gaps both locally and nationally and a clear two-way communication channel between national and local priorities.

We welcome DfT's intention to work closely with DfE and DWP, and hope that DfT feed into the practical deployment of LSIPs with the intention of linking regional skills needs with national transport projects such as the Northern Powerhouse Railway. Specifically, within the transport sector we would like to see considerable improvements made to careers sign posting based on data from the Future Skills Unit, ensuring that students in all regions are aware of the potential careers available to them. To achieve this the DfT should be investing in careers activities to attract curious young people into the sector, funding proactive engagement with schools and work experience programmes.

Diversity and inclusivity

What, in your view, are the barriers to further increasing diversity, inclusion and social mobility in the transport sector?

How, in your view, can barriers to diversity, inclusion and social mobility in the transport sector be reduced?

Knowledge of engineering among young people remains limited and often distorted by negative perceptions and gendered stereotypes of who can be an engineer. These perceptions can be detrimental for young people, especially those underrepresented in the sector, who do not see engineering as an option that is open to them.

It is no secret that the engineering sector has diversity issues. As it stands only 16.5% of the engineering workforce are women and 10% are of minority ethnic heritage. While progress has clearly been made since 2010 when only 10% of the workforce were women, there is still a long way to go and more can be done⁶.

Increasing the diversity of the engineering workforce is complex and there are many reasons why women, those from lower socio-economic backgrounds, different ethnic backgrounds and disabled people are under-represented in the sector. These reasons range from non-inclusive working and

⁵ [Skills for every young person \(parliament.uk\)](https://www.parliament.uk/business/committees/committees-a-z/commons-select/skills-and-education-committee/pages/skills-for-every-young-person/)

⁶ [Women in Engineering extended analysis – EngineeringUK 2022](#)

recruitment practices to disparities in attitudes to careers in engineering, differing levels of social and science capital and differences in educational attainment.

At EngineeringUK we understand that preconceived attitudes towards engineering held by young people can act as a barrier to diversity, inclusion, and social mobility within the sector. As an organisation we think it is important to look at the educational routes into engineering and what more needs to be done to ensure that young people feel they are 'for them'. We know that for example, young people from lower socio-economic backgrounds generally perform less well in STEM subjects compared to young people from more affluent backgrounds. Our [briefing on social mobility](#) highlighted that 44% of pupils eligible for free school meals (FSM) achieve an A*-C grade GCSE in maths compared with 71% of non-FSM pupils; the respective figures for physics are 8% compared with 23%. In A level Maths, 54% of those eligible for FSM in school achieve an A*-B grade, compared with 66% of those who were not eligible. Furthermore, just 1 in 10 engineering and technology first year undergraduates come from the most disadvantaged POLAR4 quintile⁷.

On the other hand, as highlighted earlier, students from a minority ethnic background are more likely to study STEM in school and at HE, though this is not necessarily the case for all ethnic minority groups. And while the proliferation of students from different ethnic backgrounds entering into the UK HE system is a positive trend, research shows there is a large difference in how they experience HE in terms of retention, outcomes and progression. For example, of those qualifying from first degree engineering and technology courses in 2018 to 2019, 83.5% of white students achieved a first or upper second-class degree, compared with 73.7% of students from minority ethnic backgrounds.⁸

In addition to the differences in educational attainment for some groups of young people, which undoubtedly impact on these young people's access to some engineering careers, we also observe very different attitudes to engineering as a career as well as levels of knowledge among different groups of young people. Our Engineering Brand Monitor (EBM) Young People and Parent report⁹ shows that boys provided consistently more positive responses than girls when asked about their knowledge, image, idea of 'fit', and overall interest in engineering. This is an enduring trend, and previous iterations of the EBM have found similar gender differences in responses. Boys were more likely to say they know what engineers can do in their jobs, to have a positive overall image of engineering, to say that being an engineer fits with who they are, and that they were interested in a career in engineering. Our research shows that young people from more affluent backgrounds were more likely to say that they know what engineers can do in their jobs, had a positive image of engineering, said that they 'fit' with being an engineer and that they are interested in a career in engineering than young people from lower socio-economic backgrounds. Young people whose parents were both highly educated¹⁰ and had a higher income had the most positive responses.

To help overcome these barriers, a new STEM Education strategy will be needed and we are now calling on the Department for Transport to support this recommendation, including the call that all young people receive good quality STEM careers provision. In addition, DfT should also invest, and encourage others in the sector to invest in inclusive and well-targeted STEM, and particularly transport focused, engagement and careers activities for young people, including workplace experience opportunities.

We are pleased that DfT are keen supporters of the Tomorrow's Engineers Code¹¹. The Code makes a commitment to working towards the common goal of increasing the diversity and number of young

⁷ <https://www.engineeringuk.com/media/1762/social-mobility-in-engineering.pdf>

⁸ <https://www.engineeringuk.com/media/232298/engineering-uk-report-2020.pdf>

⁹ Engineering Brand Monitor - forthcoming publication.

¹⁰ Parents with a degree or higher qualification and a household income of above £40k/yr.

¹¹ <https://code.tomorrowsengineers.org.uk/>

people entering engineering careers and we look to the Department for Transport to encourage others in the transport sector to sign it and work proactively together to achieve its aims. There are no easy fixes to increasing diversity within the transport sector, but we can share best practice across sectors and learn from it. For example, TfL's recent changes in approach have meant that they have nearly achieved a 50:50 gender split for their apprentices, with 42% of their 2021 cohort coming from Black, Asian, and Minority Ethnic backgrounds. This was achieved through specific changes to their engagement and admissions processes such as repeated engagement with local boroughs, route to work development with their engagement partners, focused applicant tracking, a new website and the removal of mechanical and ability tests. We encourage DfT to engage with TfL and explore the strategies that they have put in place to achieve this success.