

Institution of Mechanical Engineers Autumn Budget and Spending Review Representation

September 2024

Summary:

Engineers are the cornerstone of innovation, driving the development of technologies that tackle complex challenges. Engineers turn ideas into reality, shaping products and services that unlock the research and development potential, helping to build a balanced and vibrant economy. In doing so, engineers boost productivity and UK competitive advantage across industries propelling economic growth and societal advancement. Their work is essential in all sectors, from advanced manufacturing to clean energy, and the impacts of their contributions are felt far and wide.

Investing in engineers is an investment in the nation, as their skills directly drive efficiency and productivity growth. Engineers will be key to delivering the Government's missions, such as making Britain a clean energy superpower by 2030, while also breaking down barriers to opportunity through high skilled jobs and enhanced social mobility.

Engineering careers provide significant pathways for individuals from diverse backgrounds, promoting inclusivity and economic advancement across society.

The Institution of Mechanical Engineers is a professional membership organisation and learned society with a Royal Charter and a mission to improve the world through engineering. The Institution develops and upholds standards for the engineering profession, supporting engineers' growth and advancing mechanical engineering for the benefit of society.

We support the submission made by the National Engineering Policy Centre and Engineering UK. We welcome further engagement with the Treasury or individual Government departments on these important issues.

Representation to the Autumn Budget 2024 and the Spending Review: Invest in engineers to benefit the UK economy

Submitted by: The Institution of Mechanical Engineers

1. Introduction

The Institution of Mechanical Engineers (IMechE) welcomes the opportunity to contribute to the Government's spending review. As the representative body for over 110,000 professional mechanical engineers globally, with two thirds working across the UK, we are uniquely placed to highlight the critical role that engineering plays in driving economic growth and productivity, boosting opportunities locally through education and high skilled jobs, and enabling the UK to become a clean energy superpower and achieve its net zero targets.

We submit this representation to the budget to emphasise the necessity of sustained and enhanced investment in engineering talent, skills, and infrastructure. We argue that by prioritising investment in the engineering profession, the Government has the opportunity deliver on their missions and to generate significant, long-term returns for the UK economy, foster innovation, support green growth, and enhance global competitiveness.

2. Engineering as a driver of economic growth

Engineering is the backbone of the UK economy, contributing £645 billion annually, accounting for 32% of the total economic output across 729,000 engineering businesses.^[1] Mechanical engineering, as a core discipline, plays a pivotal role across key sectors, including manufacturing, transport, energy, and infrastructure. Investment in engineers has a strong multiplier effect, stimulating economic activity beyond the sector itself. According to a report from Engineering UK, for every £1 invested in engineering, £1.45 is generated in output, reflecting the sector's outsized return on investment.^[2]

Engineering is often the driver of local economies nationwide, driving local growth and providing high skill job opportunities.^[1] For example, in the Yorkshire and the Humber, engineering generates more than £44bn GVA for the region annually, employing over half a million people across nearly 49,000 engineering businesses. Furthermore, over 166,000 engineers in the region are employed in other industries, highlighting the impact and spread of engineering skills and talent. Investment in engineers is investment in local communities and economies, however there needs to be stronger alignment between the local education and skills provision and local industry needs from primary education through to reskilling and lifelong learning.

Engineering, with its strong emphasis on innovation, problem-solving, and high-demand skill sets, can serve as a powerful pathway for upward mobility. It offers competitive salaries, stable job prospects, and access to prestigious positions, making it a key driver for reducing income inequality. Efforts to promote diversity, inclusion, and equal access to STEM education further enhance social mobility by enabling underrepresented groups to enter and thrive in engineering careers.

Considering this, it is important that the investment into the skills required for engineers reflect this value. With the introduction of T Levels which provides young people with a preview of vocational training and skills, funding models should support the ongoing development of

¹ ['A hotbed of innovation: New research reveals engineering adds up to an estimated £645bn to the UKs economy'](#), Royal Academy of Engineering, November 2022

² ['EngineeringUK 2018: The state of engineering'](#) EngineeringUK

technicians who will be essential in the implementation and maintenance of technology in the key growth sectors for the UK. There should be a clear pathway of progression in place into apprenticeships, and current barriers faced by both businesses and young people need to be addressed.

Furthermore, the UK faces a projected shortage of engineers, despite already employing nearly a quarter of all UK workers. Research by EngineeringUK highlights that the UK needs 124,000 new engineers and technicians annually to meet demand.^[3] Failure to address this shortage will stymie economic growth and risk the UK's position as a global leader in innovation.

3. Boosting productivity through engineering skills

The UK's productivity challenge is well-documented. Productivity growth in the UK has stagnated in the past decade, with levels still below many G7 counterparts. Investment in engineering talent can directly tackle this issue. Research shows that sectors with a high concentration of engineers tend to exhibit above-average productivity. For instance, the manufacturing sector, which employs a large share of mechanical engineers, is one of the most productive in the UK economy.^[4] Increasing the availability of highly skilled engineers would lead to technological innovations, streamlined production processes, and efficiency gains, contributing to overall economic productivity growth.

Engineers play a pivotal role in the commercialisation of research, serving as the bridge between innovative ideas and real-world applications. Their expertise in the deployment and development of new technologies ensures that research can be transformed into viable products and services that drive economic growth. Engineers bring technical know-how, problem-solving skills, and practical implementation strategies that are essential for scaling innovations from the lab to the marketplace. By investing in engineering talent, governments can accelerate technological advancement, stimulate industry competitiveness, and foster sustainable development across sectors.

Reskilling is essential for those who are affected by significant changes in the labour market, such as automation, shifting industry demands and business closure. Providing targeted reskilling programmes helps individuals adapt to new roles, ensuring they remain competitive and employable in evolving job landscapes. This proactive approach not only supports economic stability but also empowers workers to transition smoothly into emerging sectors.

4. Engineering and green growth

The transition to a net zero economy by 2050 and making the UK a clean energy superpower by 2030 is one of the UK's most ambitious economic transformations. Achieving this goal will require engineering expertise at every level—from the design and development of low-carbon technologies to the construction and maintenance of energy-efficient infrastructure.

Mechanical engineers are already playing a leading role in the development of clean energy technologies, such as wind turbines, hydrogen fuel cells, and electric vehicle (EV) powertrains. According to the Institution for Engineering and Technology (IET), the low-carbon energy sector will need 400,000 new workers, the majority of whom will require engineering qualifications, by 2050 to achieve net-zero targets. Investment in engineering education and skills development

³ 'EngineeringUK response: The Net Zero Review' EngineeringUK, October 2022

⁴ '[Why manufacturing matters to the UK economy](#)' Make UK

is, therefore, critical to ensuring the UK has the workforce required to develop and scale these green technologies.

5. Global competitiveness and export potential

The UK's engineering expertise is highly regarded worldwide, particularly in sectors such as aerospace, automotive, and renewable energy. The export potential for British engineering services and products is significant. Currently, the UK exports £275 billion worth of engineering goods and services annually, representing around 50% of total exports (ONS, 2021). Further investment in engineering talent will enhance the global competitiveness of UK industries and enable the country to capitalise on growing global demand for high-tech engineering solutions, particularly in emerging markets.

In addition to goods and services, the UK has a strategic opportunity to position itself as a global leader in exporting engineering knowledge, particularly in the fields of sustainability and digital transformation. UK engineers are at the forefront of advancements in artificial intelligence (AI), automation, and data-driven design. Investment in skills development in these areas will enhance the UK's position as a global innovation hub and unlock significant export revenues in the future.

6. Recommendations

To maximise the economic benefits of the mechanical engineering profession, the Institution of Mechanical Engineers urges the UK Government to consider the following:

- i. **Increased funding for engineering education and training:** This includes enhanced investment in apprenticeships, vocational education, and higher education programmes focused on engineering and related disciplines. Initiatives to close the skills gap should be prioritised, particularly targeting underrepresented groups in engineering to broaden the talent pool.
- ii. **Incentives for industry collaboration:** Encourage closer collaboration between engineering institutions, industry, and academia to ensure that the curriculum is aligned with the future needs of key sectors, including green energy, transportation, and healthcare.
- iii. **Support for engineering research and innovation:** Greater public funding for engineering research, particularly in the fields of low-carbon technologies, AI, and advanced manufacturing, will deliver high returns and keep the UK at the forefront of technological innovation. Particular attention should be given to the development and deployment stages of research and development funding.
- iv. **Infrastructure investment:** Investing in engineering-intensive infrastructure projects, such as transport systems, energy networks, and digital infrastructure, will provide immediate economic stimulus and create high skilled jobs and long-term benefits for the economy.
- v. **Investment in regions:** Government should consider approaches that encourage investments and foster innovation in engineering jobs in local regions through their industrial strategy. This could include mapping local needs and ensuring local education and training providers are equipped to provide those skills, providing incentives for development and training including apprenticeships.
- vi. **Incentives for lifelong learning and professional development:** Policies are required that encourage and incentivise lifelong learning and continuous professional

development for engineers. This could include tax incentives for companies investing in employee education and training.

- vii. Rapid reskilling programmes:** Implementing short-term reskilling programmes to address emerging skills gaps in the engineering workforce, especially in areas where demand is high. These programmes should address specific local needs.
- viii. Deliver a National Engineering and Technology Workforce Strategy.** Deliver a long-term holistic plan encompassing all education stages to deliver a diverse engineering profession equipped for the future. This should include:
 - **Promotion of engineering careers:** Campaigns to raise the profile of engineering as a career option and increase the number of young people pursuing STEM subjects should be a government priority, especially for increasing diversity in the profession.
 - **Reversing the shortage of STEM teachers in schools and further education providers:** Strategic recruitment and retention initiatives should be considered to encourage more teachers and improved training programmes.

7. Conclusion

Investment in engineers is investment in the future of the UK economy. Their skills underpin productivity growth, drives innovation, supports green growth, and enhances the UK's global competitiveness. Failure to address the current skills shortage in engineering will result in missed opportunities for economic growth and undermine efforts to transition to a sustainable, net-zero economy.

The Institution of Mechanical Engineers looks forward to working with the Government to ensure that the UK's engineering profession remains a vital contributor to the nation's prosperity in the decades ahead.