



# Inspiring Young People on Environmental Sustainability in Engineering

Good Practice Resource

Engineering has played a vital role in transitioning the UK to become more environmentally sustainable by developing renewable energy solutions, designing electric vehicles, building technology for efficient recycling and much more. We need to inspire tomorrow's engineers to design and build an environmentally sustainable future and achieve Net Zero by 2050.

The resource is to support practitioners designing and delivering STEM engagements with young people. It includes findings on current knowledge and perception of engineering in environmental sustainability among young people, key messages and top tips on inspiring young people in this topic, examples of current, exciting engineering careers and a list of useful links for further support.

### **Findings on knowledge and perceptions of STEM and engineering within environmental sustainability**

In our survey<sup>1</sup> with 4,500 responses from young people aged 7 to 19 and their parents we found:

- Students who agreed that 'engineers are important for improving the environment' were almost 7 times more likely to be interested in a career that involves engineering than those who did not agree. This shows many young people are interested in helping the environment are aware of the importance of a career in engineering.
  - 70% of young people agreed that engineers are important for improving the environment
- Overall:
- Boys were slightly more likely than girls to agree engineering is important for improving the environment
  - Older students were slightly more likely than younger students to agree engineering is important for environmental sustainability
  - 17% of young people ranked 'improving environmental sustainability' as an important factor in their career choice
  - There were no differences in opinion between different ethnic groups
  - There was a clear difference between household income, with those from a higher household income at £40k+ were 19% more likely than those from a lower income of £20k to think engineering is important for improving the environment

### **Key messages to share with young people**

- Engineering is all around us and engineers shape and improve our lives – engineers will be crucial to tackling climate change and achieving Net Zero
- 21st century engineering is exciting and innovative (see the exciting engineering career examples below)
- You might be surprised by the different industries that rely on engineering skills to improve sustainability, see case studies of [mechanical engineering](#) to find out where businesses can make changes to become more energy efficient or [material engineering](#) to improve product life cycles.
- Keep your options open by studying maths and science
- Engineering is for everyone, including people from all backgrounds, and it allows you to follow your passion, whether that be sustainability, entertainment, or sport.

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<sup>1</sup> EngineeringUK Engineering Brand Monitor 2021 (forthcoming, autumn 2021)

- There are lots of well-paid jobs across the country in environmental engineering and employers are looking for new talent. Currently, 2 million skilled jobs are being created by 2030 to help deliver a Net Zero economy! More information: [Green Jobs Taskforce Report](#)

### Top tips

- Explain clearly and simply what engineers do and how they can benefit the environment
  - Show a variety of career options available in engineering for sustainability, making them relatable and easy to imagine (such as engineering more sustainable ways to grow food or create other everyday products or services) - use basic concepts everyone understands
  - Position engineering in sustainability as a profession for real people – rather than portraying engineers as experts
- Show what skills and tasks are involved in these jobs and explain how students may already have many of these skills (such as creativity and problem solving) and how they can build more relevant skills
- Take care with big statements such as ‘become an engineer to save the planet’ – some students think this is more relevant for those who like science, or may disconnect with such ambitious goals, thinking ‘it’s not for them’
- Students may not understand the meaning of broad statements such as ‘help improve the environment’. Using specific examples students can relate to with tangible objects can resonate better, for example, reducing pollution from cars
- Link engineering jobs for sustainability to important job aspects for young people, such as salary, job availability and security, creativity
- Enable students to put the skills and knowledge they have learnt into practical action towards sustainability, for example, a project showcased on social media to help promote engineering for sustainability

### Exciting careers in engineering within environmental sustainability:

- Agricultural engineering – building environmentally friendly farming technology such as vertical farming
- Civil engineering - creating sustainable buildings – example case study: [Geoffrey working for the United Nations on infrastructure](#)
- Software engineering - enabling accessible, high quality healthcare <sup>2</sup> and harnessing data to enable water and sanitation access to all
- Research engineering - developing sustainable textiles and manufacturing processes to improve the fashion industry - example case study: [Lauren, water engineer](#)
- Solar and wind engineering - designing and building clean energy solutions such as hydro-power and solar panels - example case study: [Georgia working on an offshore wind farm](#)

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<sup>2</sup> Engineering A Better World Brochure: Achieving the United Nations Sustainable Development Goals, Royal Academy of Engineering

- Engineering project managing eco-engineering projects, for example, the Gardens by the Bay nature park in Singapore or the Eden Project in the UK
- Mechanical engineering - designing and implementing technologies to clean our oceans and planning and building carbon capture technology

Resources to support your engagements:

- An overview of the many ways engineers can support us to reach the SDGs: [Engineering A Better World Brochure: Achieving the United Nations Sustainable Development Goals](#), Royal Academy of Engineering
- Understanding engineering skills with the [Thinking like an Engineer poster](#), Royal Academy of Engineering and the Centre for Real World Learning
- Understand how students can build essential skills for an engineering career with the [Skills Builder Partnership](#)
- Case studies of real engineers working in a variety of sectors including sustainability: [Real engineers area](#), Neon
- Finding STEM volunteers to support your engagements and bring engineering to life: [STEM Ambassador programme](#)
- Downloadable environmental sustainability in engineering activity resources for students: [STEM Learning resources](#)
- [Tomorrow's Engineers Website](#), information, guidance and insight to support you to engage and inspire tomorrow's engineers
- Promote your experience for free when you're ready via the [Submit an experience area on Neon](#)