

Introduction

- This deck is an expanded version of the slides presented by EngineeringUK and Enginuity as a Code webinar on 08 Feb 2023
- It provides additional content not covered in the webinar due to time constraints
- All additional slides are indicated as follows:



Environmental Sustainability

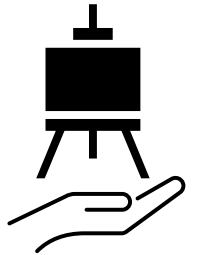
Using it to inspire young people
into engineering & technology

Purpose



Who and what this document is for

- To support practitioners (experienced and novice) designing and delivering STEM engagements for young people of secondary school age.
- To show how “environmental sustainability” can be used to inspire more young people to consider a career in engineering.



Content

1. What is “environmental sustainability”?
2. Why use env. sustainability to inspire young people into engineering & tech?
3. How to use env. sustainability to inspire young people into eng/tech
4. [Enginuity](#)
5. Engagement delivery
6. Further resources

1. What is “environmental sustainability”?

And what it's not

Environmental sustainability is about:

- “living within our means” or
- “living within planetary boundaries”

so that future generations will inherit a planet which is no worse (or better) than today's.

Social sustainability covers: poverty, hunger, health, equality, etc.

1. What is “environmental sustainability”?

The UN’s Sustainable Development Goals

Third are related to environmental sustainability,

half relate to social issues



Content

1. What is “environmental sustainability”?
2. **Why use env. sustainability to inspire young people into engineering & tech?**
3. How to use env. sustainability to inspire young people into eng/tech
4. **Enginuity**
5. Engagement delivery
6. Further resources

2. Why use environmental sustainability

...to inspire young people?

Research shows us that:

- Young people care about the environment, more than adults (A)
- It's one of young people's major concerns (B,C,D)
- They often choose it for project-work (E)



2. Why use environmental sustainability



...to inspire young people?

Research shows us that:

- Young people agree that engineers are important for improving “the environment” (F) - but in which fields?



*More
research
needed*



2. Why use environmental sustainability

But...

Research also shows us that:

- Many young people suffer from “eco-anxiety” (G,H,I,J)
- Young people **don't** link climate change to:
 - engineering solutions; and therefore (maybe) to
 - a career in engineering
- Young people struggle to match ES solutions to ES problems (N)

Much
evidence



Some
evidence



*More
research
needed*



2. Why use environmental sustainability

Finally...

Research shows us that:

- People hear more about negative impacts of climate change than about progress ^(M)
- People have more faith in technology to provide solutions than in business or government ^(M)

Much
evidence



2. Why use environmental sustainability

Support DfE Sustainability and climate change strategy (April 2022)

Initiatives

National Education Nature Park

Climate Leaders Award



- Learning about natural env't (GCSE Natural History)
- Learning in natural env't
- Teacher support

1. Climate education

- Supports UK Net Zero strategy
- T-levels in agr; Green Skills Bootcamps etc.
- Green careers info

2. Green skills & careers

Action Areas

4. Operations & supply chains

- Waste prevention
- Procurement
- Etc.

3. Education estate

- New: net zero in ops
- Existing: EMS
- Resilience & adaptation
- Heating solutions

Content

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6. Further resources

3. How to use environmental sustainability

Show people the links

Link to curriculum



Sustainability problems



*Engineering solutions
(plus behaviour change)*



Engineering careers



3. How to use environmental sustainability



Step 1: Link sustainability problems to the curriculum

	Key Stage 3 (Age 11-14; Yrs 7,8,9)	Key Stage 4 / GCSE (Age 14-16; Yrs 10,11)
Biology	<ul style="list-style-type: none"> Adaptation of species to changes in environment; biodiversity 	<ul style="list-style-type: none"> Importance of biodiversity; human interaction w/ ecosystems The carbon cycle
Chemistry	<ul style="list-style-type: none"> Resources & recycling Production of CO₂ by humans & impact on climate 	<ul style="list-style-type: none"> Evidence for anthropogenic causes of climate change Effects of increased levels of CO₂ CH₄ / mitigation Atmospheric pollutants Obtaining potable water
Physics	<ul style="list-style-type: none"> Fuels and energy resources 	<ul style="list-style-type: none"> Renewable / non-renewable energy sources Trends in the use of energy resources
<u>Geography</u>	<ul style="list-style-type: none"> Weather & climate; change in climate; use of natural resources How humans change climate 	<ul style="list-style-type: none"> Causes, consequences of and responses to extreme weather conditions Characteristics of climate change, evidence for different causes
Design & Technology	<ul style="list-style-type: none"> Investigate new and emerging technologies Understand... impact on individuals, society and the environment 	<ul style="list-style-type: none"> Be aware of...environmental and economic factors The impact of new and emerging technologies on... sustainability...and the environment

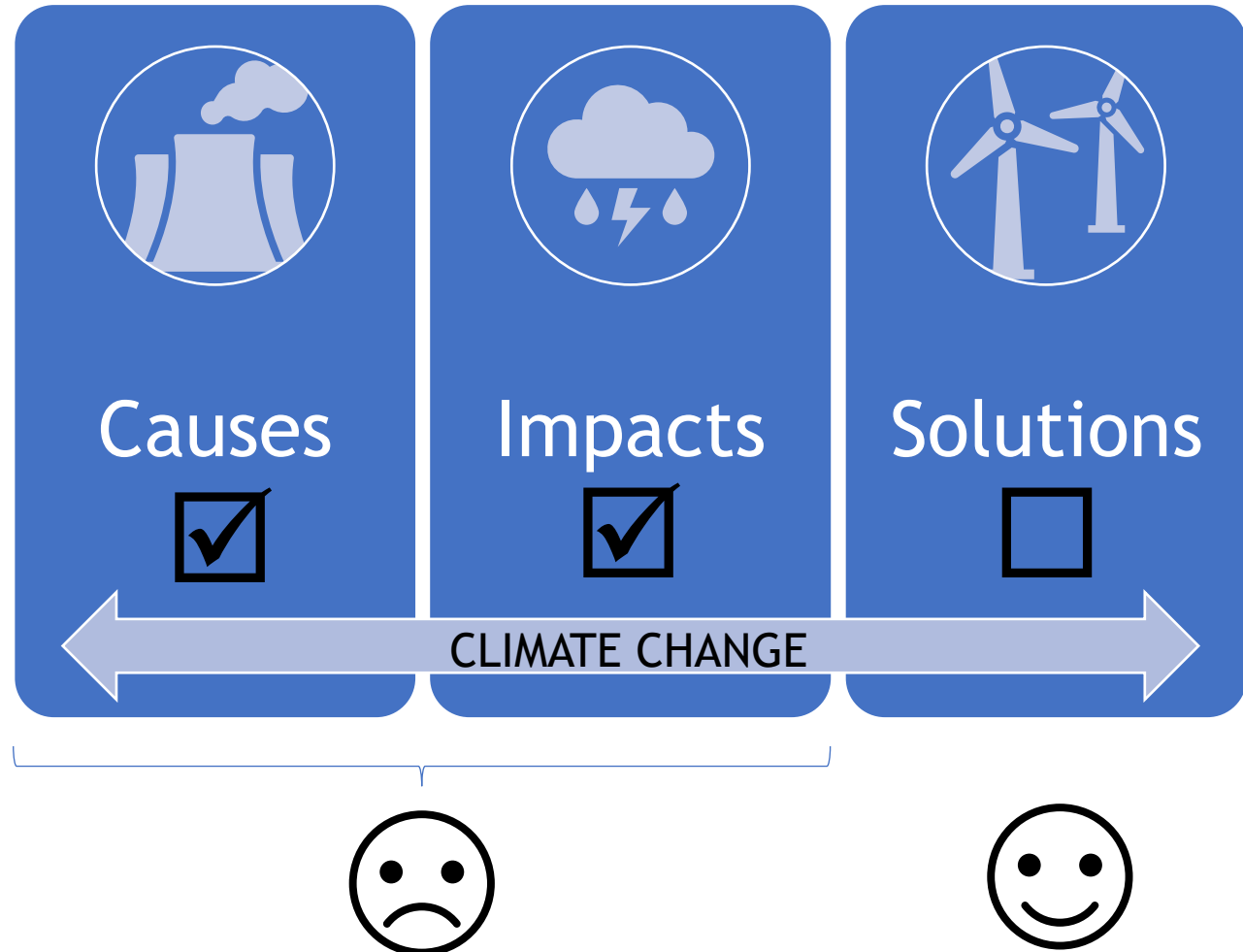
The social and economic implications of science

3. How to use environmental sustainability



Step 1: Link sustainability problems to the curriculum

- Curriculum last updated 2014

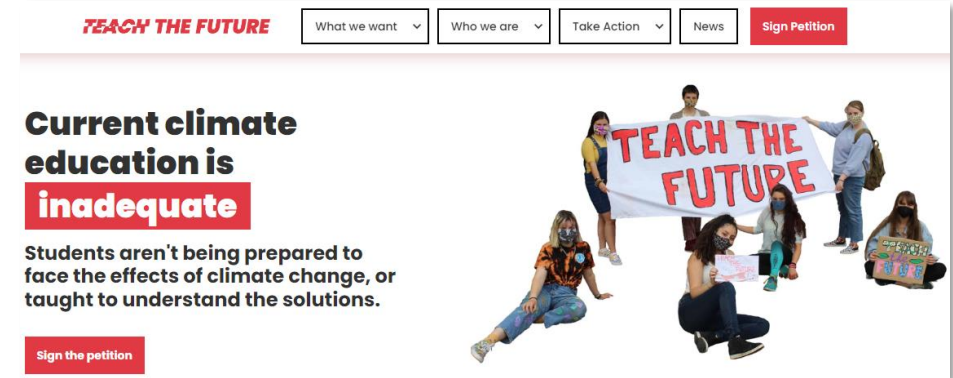


3. How to use environmental sustainability



Step 1: Link sustainability problems to the curriculum

- Some stakeholders want more climate change in the curriculum:
 - DfE (Sustainability and Climate Change Strategy, 2022)
 - Teach the Future
 - National Climate Education Action Plan



Natural
History
GCSE
(due 2025)

"...will enable young people to explore the world by learning about organisms and environments, environmental and sustainability issues, and gain a deeper knowledge of the natural world..."
Source: GOV.UK

[UK to lead the way in climate and sustainability education - GOV.UK \(www.gov.uk\)](https://www.gov.uk)

3. How to use environmental sustainability



Step 1: Link sustainability problems to the curriculum



Apprenticeships

T-LEVELS



3. How to use environmental sustainability



Step 1: Link sustainability problems to the curriculum



TECHNOLOGY

WE'VE GOT THE APPRENTICESHIP FOR YOU!

- SPACE ENGINEERING TECHNICIAN**
support the development, manufacturing, assembly, integration and testing of complex, high value space hardware and ground-based equipment.
- GEOSPATIAL SURVEY TECHNICIAN**
gather geographic data for things like maps, satellite navigation systems (satnav) and global positioning systems (GPS).
- FOOD AND DRINK ENGINEER**
maintain production operations, set up and perform operational maintenance on food and drink machinery.
- DIGITAL AND TECHNOLOGY SOLUTIONS PROFESSIONALS**
install equipment and software, handle incidents and requests for help.
- OUTSIDE BROADCASTING ENGINEER**
provide picture and sound coverage of an outdoor event.

MORE INFO

There are many other apprenticeships you might be interested in:
Cyber Security Technologist, Post Production Engineer, VFX Supervisor, Nuclear Technician, Acoustics Technician and many more!

Visit [apprenticeships.gov.uk](https://www.apprenticeships.gov.uk) to find out more.

ENGINEERING

WE'VE GOT THE APPRENTICESHIP FOR YOU!

- ENGINEER SURVEYOR**
inspect a wide variety of equipment in workplaces such as football stadiums, the space industry, music events, the film industry, dockyards as well as factories, shops, quarries, hospitals and schools.
- ELECTRO-MECHANICAL ENGINEER**
solve real-world problems using a combination of mechanical and electrical engineering expertise.
- MILITARY ENGINEERING CONSTRUCTION TECHNICIAN**
multi-skilled soldiers, combat engineers and tradesmen.
- FIRE SAFETY ENGINEER**
provide specialist, fire-related information across the built environment to protect people and property from the destructive effects of fire by applying science and engineering principles.
- MARINE ENGINEER**
design and oversee testing, installation and repair of marine apparatus and equipment.

MORE INFO

There are many other apprenticeships you might be interested in:
Civil Engineer, Nuclear Engineer, Food & Drink Engineer, Electrical Power Networks Engineer, Product Design Engineer, Rail Engineer and more!

To find an apprenticeship, visit [apprenticeships.gov.uk](https://www.apprenticeships.gov.uk)

ICT

WE'VE GOT THE APPRENTICESHIP FOR YOU!

- GAME PROGRAMMER**
program reliable and efficient software for games consoles, desktop computers, mobile devices, websites and TVs.
- AEROSPACE SOFTWARE ENGINEER**
help to design and implement software, as well as research, develop, build and maintain aircraft or their systems to make them quicker and safer.
- CYBER SECURITY TECHNICIAN**
monitor and detect potential security threats and escalate as necessary, providing first line cyber security support.
- NETWORK ENGINEER**
design, install, maintain and support communication network within an organisation or between organisations.
- AI DATA SPECIALIST**
discover new artificial intelligence solutions that use data to improve and automate business processes.

MORE INFO

There are many other apprenticeships you might be interested in:
Digital Community Manager, IT Solutions Technician, Applications Support Lead, Digital Accessibility Specialist, Data Analyst and many more!

Visit [apprenticeships.gov.uk](https://www.apprenticeships.gov.uk) to find out more.



3. How to use environmental sustainability



Step 1: Link sustainability problems to the curriculum

T-LEVELS

T-levels	Core Content / Options
Building Services Engineering	<ul style="list-style-type: none">• sustainability and the environmental impact of construction• heating engineering and ventilation• refrigeration engineering and air conditioning engineering
Design, Surveying and Planning for Construction	<ul style="list-style-type: none">• sustainability and the environmental impact of construction
Onsite Construction	<ul style="list-style-type: none">• sustainability and the environmental impact of construction
Design and Development for Engineering and Manufacturing	<ul style="list-style-type: none">• materials and their properties• structural engineering



3. How to use environmental sustainability

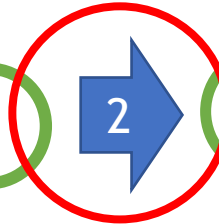
Step 2: Link sustainability problems to eng/tech solutions

- Show young people the links:

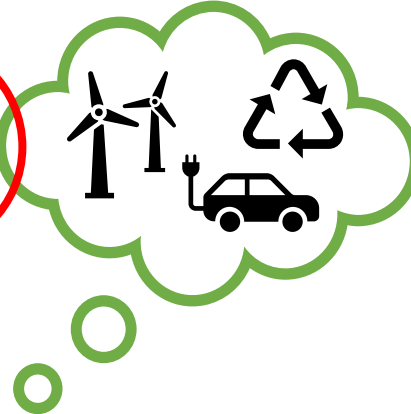
Link to curriculum



Sustainability problems



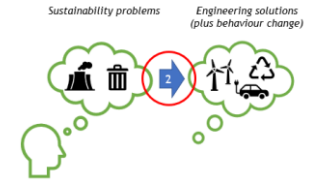
*Engineering solutions
(plus behaviour change)*



Engineering careers



3. How to use environmental sustainability



Step 2: Link sustainability problems to eng/tech solutions

Sustainability problems

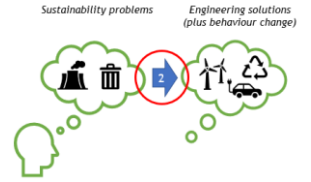


Problem	UN SDG
Climate change	7 AFFORDABLE AND CLEAN ENERGY 13 CLIMATE ACTION
Waste	12 RESPONSIBLE CONSUMPTION AND PRODUCTION
Air quality	3 GOOD HEALTH AND WELL-BEING
Freshwater	6 CLEAN WATER AND SANITATION
Natural resource depletion	12 RESPONSIBLE CONSUMPTION AND PRODUCTION
(Biodiversity loss)	14 LIFE BELOW WATER 15 LIFE ON LAND



Different issues will appeal to different young people

3. How to use environmental sustainability





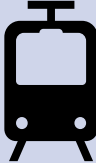







Step 2: Link sustainability problems to eng/tech solutions



Transportation

*Engineering solutions
(plus behaviour change)*



Electric vehicles, charging networks	Rail electrification	Electric planes, Sustainable Aviation Fuel	Electric shipping & ports, alternative fuels	Increased cycling and walking (town planning)
 	 	 	 	 

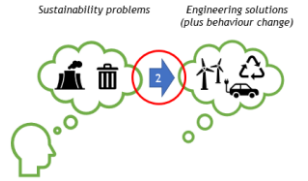
Different sectors will appeal to different young people



Check out our new transport careers poster; click:



3. How to use environmental sustainability



Step 2: Link sustainability problems to eng/tech solutions

*Engineering solutions
(plus behaviour change)*



Energy & power

Wind power	Solar	Wave & tidal	Hydro	Nuclear	Biofuels	Hydrogen	District heating	Energy storage	Grid infrastruct.	Carbon capture & storage



Built environment

Industry

CO₂ removal & modelling

Retrofit	Timber design	Climate adaptation	Low-carbon steel	Low-carbon concrete	Energy-efficient products	Circular economy	Bioenergy with CCS	Direct Air Capture	Climate change modelling



Agriculture & food

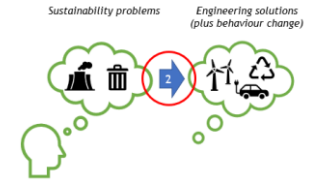
Materials, Waste, Water & Air

Farming, incl. vertical	Methane reduction	Meat alternatives	Biodiversity monitoring	Plastic alternatives	Recycling *	Anaerobic digestion	Fresh water supply	Air quality	Reduced food waste



Different sectors will appeal to different young people


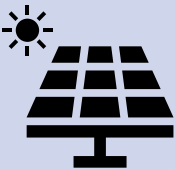


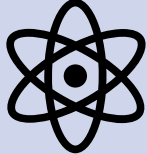
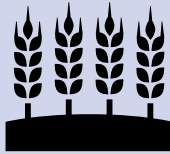
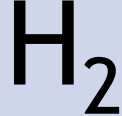
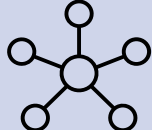
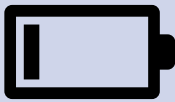


3. How to use environmental sustainability



Step 2: Link sustainability problems to eng/tech solutions



Energy & power

Wind power	Solar	Wave & tidal	Hydro	Nuclear	Biofuels	Hydrogen	District heating	Energy storage	Grid infrast.	Carbon capture & storage
 <small>13 CLIMATE ACTION 7 AFFORDABLE AND CLEAN ENERGY</small>	 <small>13 CLIMATE ACTION 7 AFFORDABLE AND CLEAN ENERGY</small>	 <small>13 CLIMATE ACTION 7 AFFORDABLE AND CLEAN ENERGY</small>	 <small>13 CLIMATE ACTION 7 AFFORDABLE AND CLEAN ENERGY</small>	 <small>13 CLIMATE ACTION</small>	 <small>13 CLIMATE ACTION</small>	 <small>13 CLIMATE ACTION</small>	 <small>13 CLIMATE ACTION</small>	 <small>13 CLIMATE ACTION 7 AFFORDABLE AND CLEAN ENERGY</small>	 <small>13 CLIMATE ACTION</small>	 <small>13 CLIMATE ACTION</small>

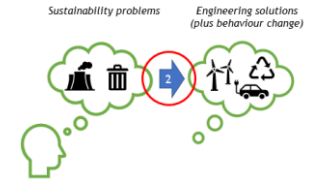
Different sectors will appeal to different young people



Check out our new energy careers poster; click:



3. How to use environmental sustainability



Step 2: Link sustainability problems to eng/tech solutions



Built environment

Industry

CO₂ removal & modelling

Built environment			Industry				CO ₂ removal & modelling		
Retrofit	Timber design	Climate adaptation	Low-carbon steel	Low-carbon concrete	Energy-efficient products	Circular economy	Bioenergy with CCS	Direct Air Capture	Climate change modelling

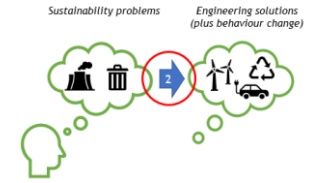
Different sectors will appeal to different young people



Check out our new fashion & materials careers poster; click:



3. How to use environmental sustainability



Step 2: Link problems to eng/tech solutions



Agriculture & food

Farming, incl. vertical	Methane reduction	Meat alternatives	Biodiversity monitoring

Materials, Waste, Water & Air

Plastic alternatives	Recycling *	Anaerobic digestion	Fresh water supply	Air quality	Reduced food waste

Different sectors will appeal to different young people

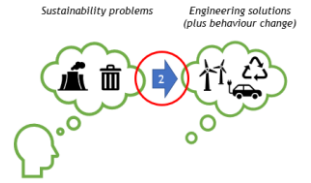


* Right to Repair Regulations, Sept 2021

Check out our new food & farming careers poster; click:



3. How to use environmental sustainability



Step 2: Link sustainability problems to eng/tech solutions

Key points to make:

- *Solutions to environmental problems exist and (many) are eng/tech-based*
- *A career in engineering can provide a practical contribution*
- *Work in any area/sector that interests you (highlight local opportunities)*

Key point not to make:

- *Climate change is a challenge for your generation to solve*



Avoid
greenwashing

3. How to use environmental sustainability



Avoid “green-washing*”

- Measure the impact: “8% less PM10s”, “Reduced by 1.5 t carbon”
- Provide context: “This compares with...”
- Use clear language: “~~Greener~~”, “~~more sustainable~~” **

** The act or practice of making a product, policy, activity, etc. appear to be more environmentally friendly or less environmentally damaging than it really is*

*** An activity is either sustainable or it isn't - think of commercial fishing*

- YOUR THOUGHTS -

1. How engagement supports curriculum
or
2. Linking environmental problems to eng/tech solutions



3. How to use environmental sustainability

Step 3: Link eng/tech solutions to eng/tech careers

- Show young people the links:

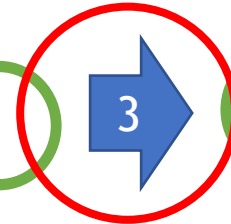
Link to curriculum



Sustainability problems



*Engineering solutions
(plus behaviour change)*



Engineering careers





3. How to use environmental sustainability

Step 3: Link eng/tech solutions to eng/tech careers



Agricultural / Chemical / Civil / Electrical / Marine / Mechanical / Structural / etc.



Check out our careers quiz; just click:

Meet the future you



3. How to use environmental sustainability

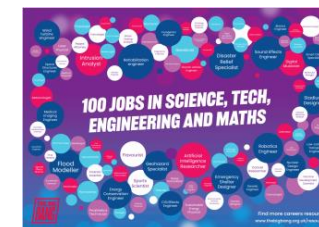
Step 3: Link eng/tech solutions to eng/tech careers

Provide examples of specific STEM jobs that support environmental sustainability, using different sectors

Provide examples of real people who do these types of jobs

*“Designer of more efficient wind turbines”
“Climate change modeller”
“Maker of low-energy TVs”
“Operator of EV-charging networks”
“Building energy manager”*

*Careers ideas;
just click:*



VIDEO CASE STUDY

Getting rid of plastic

Environmental engineer Serena Cunsolo is trying to stop microplastics from entering the ocean.



VIDEO CASE STUDY

Making carbon neutral aircraft a reality

Nathanael West works at Hybrid Air Vehicles who are producing the Airlander, the first zero carbon aircraft.



VIDEO CASE STUDY

Net zero farming through engineering

Charlotte Bugden is an apprentice at Bicton College and works on her family farm as well as studying - she is dedicated to making sure that the future of the farm is net zero.

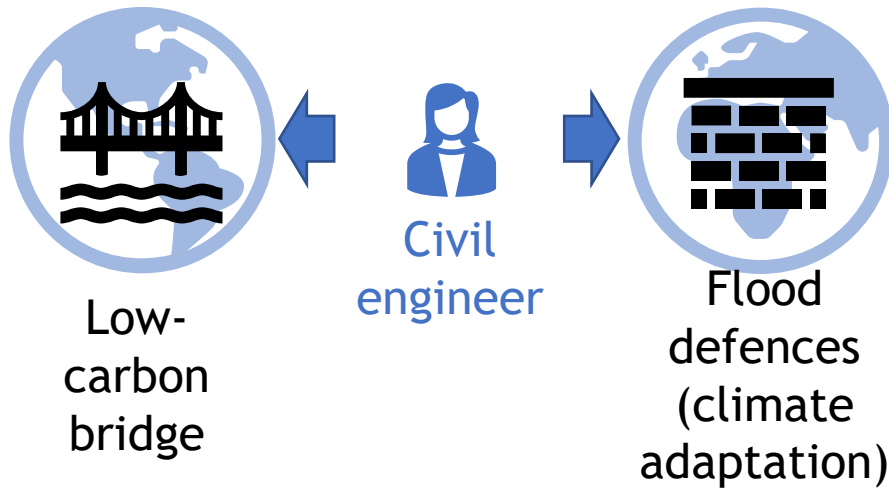


3. How to use environmental sustainability

Step 3: Link eng/tech solutions to eng/tech careers

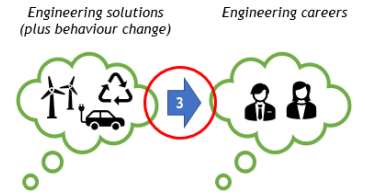
Skills/jobs are transferable

They're in demand



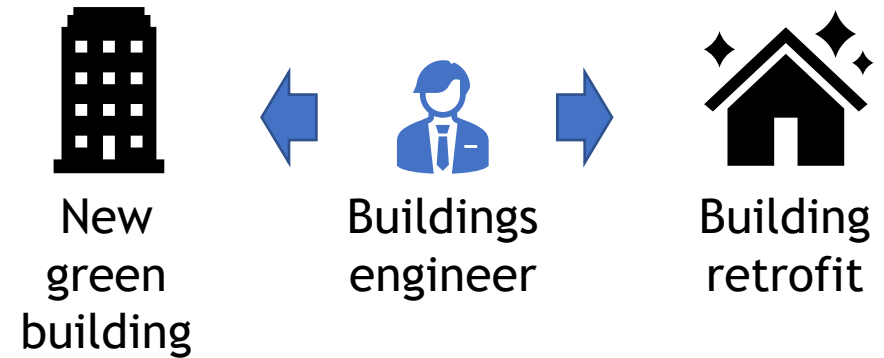
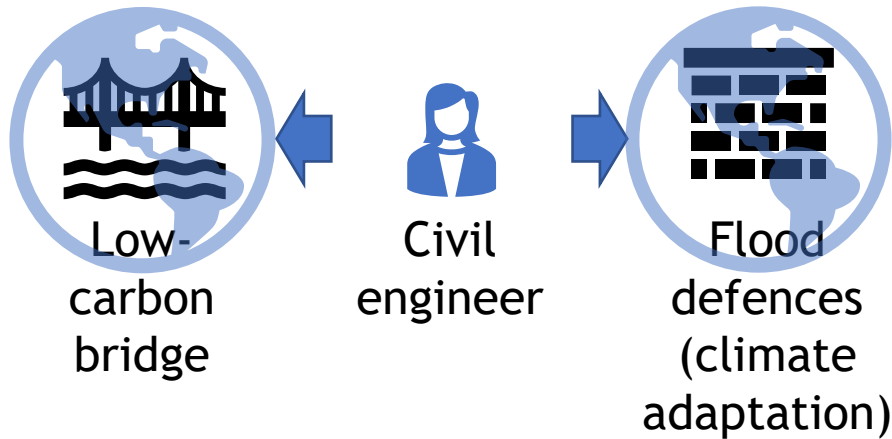
<p>EV Electrician Posted a week ago by Windmill Recruitment Ltd Salary: £37,500 - £43,000/annum Location: Nottingham Job Type: Permanent</p>	<p>Commissioning Engineer - offshore wind farm Posted a week ago by NAYR Recruitment Location: Monrovia, Angus Job Type: Contract</p>	<p>Battery Engineer Posted 11/10/2022 by First Military Salary: £28,000 - £32,000/annum Location: Slough Job Type: Permanent</p>
<p>Automotive Design Engineer Posted 3 days ago by Perpetual Engineering Partnerships Limited Salary: £43,000 - £45,000/annum Location: Bedford Job Type: Permanent</p>	<p>Solar PV Design Engineer Posted 3 days ago by James King • Quick apply Salary: £32,000 - £40,000/annum Bonus + Excellent Benefits Location: Glasgow Job Type: Permanent</p>	<p>Senior Grid Engineer Posted a week ago by Astute Techn Salary: £45,000 - £55,000/annum Location: Scotland Job Type: Permanent</p>
<p>Site Engineer - Rail Posted 3 days ago by Oyer & Butler • Featured job Location: CT15, Shorncliffe Camp, Kent Job Type: Permanent</p>	<p>Project Engineer - Solar Farm Posted 14/10/2022 by People Group Limited Salary: £40,000 - £45,000/annum Location: London Job Type: Permanent</p>	<p>Lead Development Engineer - Dioxide Storage Posted 14/10/2022 by Cammach & Co Location: Aberdeen Job Type: Permanent</p>
<p>Wind Turbine Technician Posted 06/10/2022 by ENERCON Services UK Ltd • Quick apply Location: H51, Stoneway, Elean Star Job Type: Permanent</p>	<p>Nuclear Engineer Posted a week ago by Cubic Recruitment Salary: £30,000 - £40,000/annum Location: M60 Job Type: Permanent</p>	<p>Lead Maintenance Engineer - Digestion Posted 2 days ago by Astute Techn Salary: £45,000 - £50,000/annum Location: Croydon, London Job Type: Permanent</p>
<p>Wind Turbine Project Manager Posted 07/10/2022 by Gold Group Salary: £40,000/annum Location: Wadebridge, Cornwall Job Type: Permanent</p>	<p>Hydrogen Design Engineer Posted 12/10/2022 by Theo James Recruitment Salary: £35,000 - £45,000/annum Location: Sunderland, Tyne & Wear Job Type: Permanent</p>	<p>Retrofit Coordinator Posted 2 weeks ago by NSTR Ltd Salary: £40,000 - £45,000/annum Location: London</p>

3. How to use environmental sustainability



Step 3: Link eng/tech solutions to eng/tech careers

Skills/jobs are transferable



3. How to use environmental sustainability



Engineering solutions
(plus behaviour change)

Engineering careers



Step 3: Link eng/tech solutions to eng/tech careers

Source: www.engineeringjobs.co.uk 03-Nov 2022

EV Electrician

Posted a week ago by Windmill Recruitment Ltd

Salary: £37,500 - £43,000/annum
Location: Nottingham
Job Type: Permanent

Automotive Design Engineer

Posted 3 days ago by Perpetual Engineering Partnerships Limited

Salary: £43,000 - £45,000/annum
Location: Bedford
Job Type: Permanent

Site Engineer - Rail

Posted 5 days ago by Dyer & Butler ★ Featured job

Location: CT19, Shorncliffe Camp, Kent
Job Type: Permanent

Wind Turbine Technician

Posted 06/10/2022 by ENERCON Services UK Ltd 🔑 Quick apply

Location: HS1, Stornoway, Eilean Siar
Job Type: Permanent

Wind Turbine Project Manager

Posted 07/10/2022 by Gold Group

Salary: £40,000/annum
Location: Wadebridge, Cornwall
Job Type: Permanent

Commissioning Engineer - offshore wind farm

Posted a week ago by NAYR Recruitment

Location: Montrose, Angus
Job Type: Contract

Solar PV Design Engineer

Posted 3 days ago by Jarvis King 🔑 Quick apply

Salary: £32,000 - £40,000/annum Bonus + Excellent Benefits
Location: Glasgow
Job Type: Permanent

Project Engineer - Solar Farm

Posted 14/10/2022 by People Group Limited

Salary: £40,000 - £45,000/annum
Location: London
Job Type: Permanent

Nuclear Engineer

Posted a week ago by Cubiq Recruitment

Salary: £30,000 - £40,000/annum
Location: M60
Job Type: Permanent

Hydrogen Design Engineer

Posted 12/10/2022 by Theo James Recruitment

Salary: £35,000 - £45,000/annum
Location: Sunderland, Tyne & Wear
Job Type: Permanent

Principal Mechanical Engineer - District Heating

Posted a week ago by Parkinson Gray Associates

Salary: £60,000 - £70,000/annum Excellent benefits and bonus
Location: Nottinghamshire
Job Type: Permanent

Battery Engineer

Posted 11/10/2022 by First Military Recruitment Ltd

Salary: £28,000 - £32,000/annum + Company Vehicle and tools
Location: Slough
Job Type: Permanent

Senior Grid Engineer

Posted a week ago by Astute Technical Recruitment Ltd 🏠 Remote job

Salary: £45,000 - £55,000/annum + benefits
Location: Scotland
Job Type: Permanent

Lead Development Engineer - Carbon Dioxide Storage

Posted 14/10/2022 by Cammach Bryant

Location: Aberdeen
Job Type: Permanent

Lead Maintenance Technician - Anaerobic Digestion

Posted 2 days ago by Astute Technical Recruitment Ltd

Salary: £45,000 - £50,000/annum
Location: Croydon, London
Job Type: Permanent

Retrofit Coordinator

Posted 2 weeks ago by NSTR Ltd 🏠 Remote job

Salary: £40,000 - £45,000/annum
Location: London
Job Type: Permanent

Electrical Engineer - Energy Efficiency

Posted 6 days ago by Rise Technical Recruitment

Salary: £32,000 - £52,000/annum Bonus + Progression + Holidays
Location: Dudley, West Midlands
Job Type: Permanent

Mechanical Engineer - Energy Efficiency

Posted 6 days ago by Rise Technical Recruitment

Salary: £32,000 - £52,000/annum Bonus + Progression + Holidays
Location: Dudley, West Midlands
Job Type: Permanent

Senior Energy Engineer

Posted 6 days ago by Stride

Salary: £50,000 - £55,000/annum + Benefits
Location: Stevenage, Hertfordshire
Job Type: Permanent

Senior Low Carbon Consultant / Building Physics Engineer

Posted 19/10/2022 by Konker Recruitment

Salary: £50,000 - £70,000/annum Circa £55,000
Location: Birmingham
Job Type: Permanent

Engineered Timber Designer

Posted 12/10/2022 by KBB Recruitment

Location: Cardiff, South Glamorgan
Job Type: Permanent

Electrical Technician - Recycling

Posted 14/10/2022 by Alecto Recruitment

Salary: £40,000 - £43,000/annum + Benefits
Location: Horsham, West Sussex
Job Type: Permanent

Engineering Supervisor - Waste and recycling

Posted 6 days ago by Red Kite Recruitment Group ★ Featured job

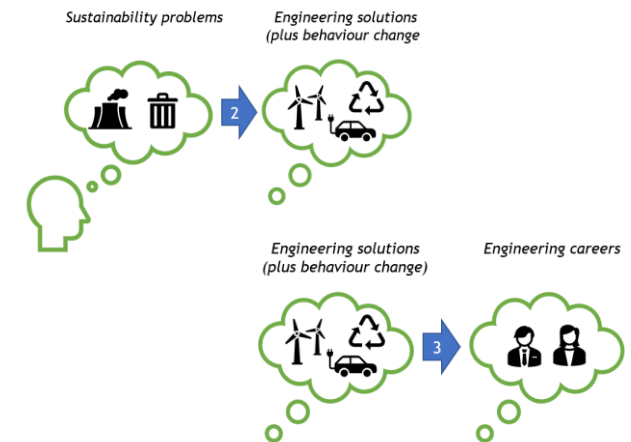
Salary: £36,000/annum Pension and Bonus
Location: Nottingham, Nottinghamshire
Job Type: Permanent



3. How to use environmental sustainability

Summary

1. Link to the curriculum
2. Identify a clear environmental problem(s)
3. Show the engineering solution




3. Examples

Neon

- Existing green-themed ‘experiences’:
 - ‘Net Zero Challenge’ [here](#)
 - ‘Drax in the classroom’ [here](#)
 - ‘Eco factory’ [here](#)

(Correct as of October 2022)


COMPETITION
Net Zero Challenge
A project-based activity for students to help their community reach Net Zero.



SECONDARY
Ages 11 to 21
Online
24 March 2021 to 31 December 2022
Flexible project work
Free
Run by EDF.

[Check availability](#)


WORKSHOP
Drax in the classroom
Interactive webinars that bring the operations of Drax Power Station, the UK's largest power station and decarbonisation project into the classroom. Learn how we generate electricity from biomass and are developing bio-energy carbon capture and storage to help tackle climate change.



SECONDARY
Ages 11 to 21
Online
5 October 2021 to 31 December 2022
Up to an hour
Free
Run by Drax.

[Check availability](#)

WORKSHOP
ECO factory
So you thought logistics was easy! Get into the 21st century and make your products and factory truly sustainable and environmentally sound!



SECONDARY
Ages 11 to 21
In-school
1 July 2022 to 1 July 2023
Full day
Cost applies
Run by Hartlepool College of Further Education.

[Check availability](#)

3. How to use environmental sustainability

Example: EDF's Net Zero Challenge



Student section

What is Net Zero – and why is it important?

Climate change is the biggest issue your generation faces. It's widely believed that if we can achieve Net Zero carbon emissions – so the amount of carbon we put into the atmosphere is equivalent to the amount we take out (also known as 'offset') – we stand a chance of slowing down its effects.

Some possibilities include:



- Home energy efficiency
- Electric vehicles
- Renewables
- Agriculture
- Carbon sinks



Careers in the 'green recovery'

Want a job helping to tackle one of the biggest issues our planet has ever faced? Everyone working on Net Zero Leiston is committed to helping Britain achieve Net Zero. So-called 'green industries' or working in the 'green recovery'

(roles that are helping Britain get back on its feet after the Covid-19 pandemic) offer a huge range of jobs and opportunities for anyone interested in pursuing a rewarding and fulfilling career.

Curriculum links

The Net Zero Challenge supports curriculum learning for 11-14s in the following areas:

- Science:** Working scientifically; Physics (energy); Planet Earth (Scotland); Topical science (Scotland)
- Geography / Social Studies:** Human geography; People, place and environment (Scotland)
- PSHE:** Living in the wider world
- Technologies (Scotland):** Technological developments in society and business



Content

1. What is “environmental sustainability”?
2. Why use env. sustainability to inspire young people into engineering & tech?
3. How to use env. sustainability to inspire young people into eng/tech
4. **Enginuity**
5. Engagement delivery
6. Further resources



Skills Miner game development

February 2023



Enginuity

Commercial in Confidence

Why sustainability?

- Enginuity believe that one Engineer can change their world and ours
- Enginuity believe that Engineering is part of everything in the world around us
- Global research shows that younger generations are more concerned with environmental and health issues than older generations
- AND are more likely to want to make changes that bring about meaningful environmental change

Enginuity.



Our research with schools

Our research with teachers found that:

1. Teachers are time poor and under pressure to teach to the curriculum
2. This is especially true for STEM teachers
3. Teachers lack confidence in giving real life examples of STEM applications and careers options

Students said that:

1. Careers teaching varied considerably
2. By 11 years old most children know or have an idea of what they want to do as a career but most of them don't know much about the skills or qualifications they need to get there



Skills Miner Interactive gaming

Uncovering engineering skills through gameplay and exploration.

Harnessing Minecraft's popularity to bring engineering to life in a fun and innovative way.

Players immerse themselves in engineering by:

- tackling challenges
- solving problems
- gaining real insight into what it takes to become an engineer

Designed for use in the classroom and completely free-of-charge.

Our games are built in line with the National Curriculum(s) and Gatsby benchmarks.

<https://greenskills.enginuity.org/skills-miner>

Enginuity



Skills Miner: Vertical Farming

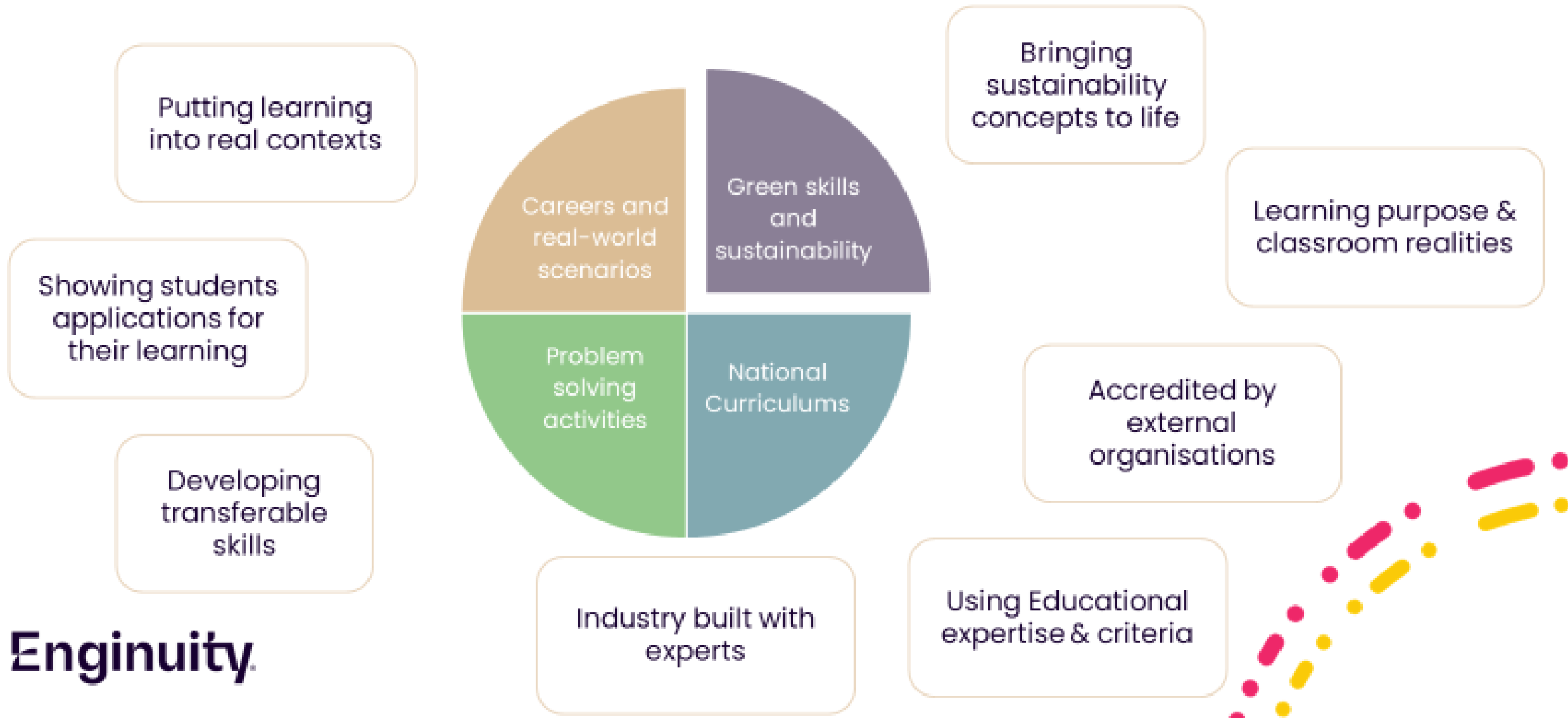
Find out what it's like to design, build and manage a vertical farm through our Minecraft games.

- Game 1 – learn how to fix a broken farm
- Game 2 – learn about sustainable resources and how they are sourced
- Game 3 – learn how vertical farms can provide food for the population from within the city

<https://greenskills.enginuity.org/skills-miner/vertical-farming>



The process – from ideas to interactive games



The results

Independent research carried out with schools who used our games found that after playing:

Students felt they
learnt something new

92%



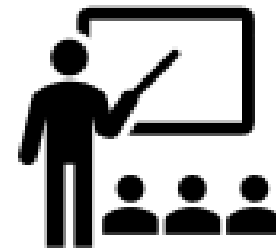
Students wanted to
know more about
careers in
Engineering

88%



Teachers felt that using
Skills Miner in lessons
would be beneficial to
learning

94%



Enginuity.



TAKE ANYWAY ENJOYABLE NORMAL STUDENT COMPUTER WRITE AMAZING FUNNY FAVOURITE
HOUSE
MINECRAFT
YEAR FUNNER ALOT WELL DON BOOK BC
YH IDEA SEE MANY GROWN ONE MINE TOOL NOW
FIND KIND TIME CUZ
INTERACT TEACH DOING CAREERS REALLY ENGAGE CRAFT SOMETHING SCHOOL
EDUCATE BECAUSE VIDEO GO HARD BELIEVE MAKE LOVE
HAVING ACTUALLY BEING IT'D HELP TEAM WORK
GOOD LIFE OUT DONT USE EASY BUILD
ENGINEER TRY BETTER MYSELF NICE THROUGH WANT CREATIVE
LESSON COZ INTEREST ENJOY SKILLS WORLD EVEN CREATE
LEARN MUCH DIFFERENT REAL UP GAME
NEW ANYTHING QUITE

Enginuity.



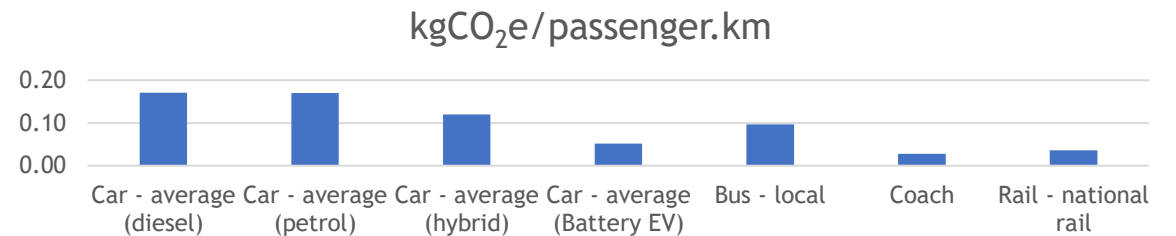
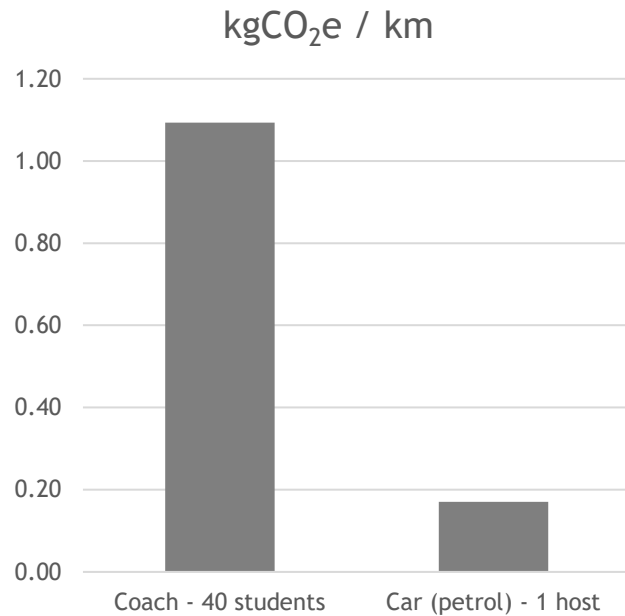
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4. Engagement delivery

How to reduce the environmental impact of delivery

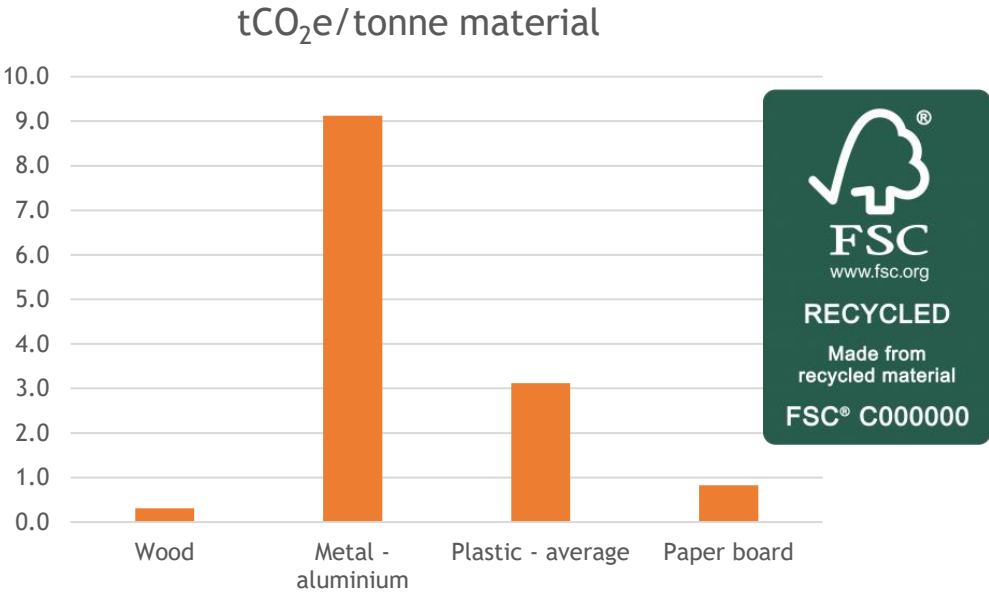
Travel (carbon emissions)



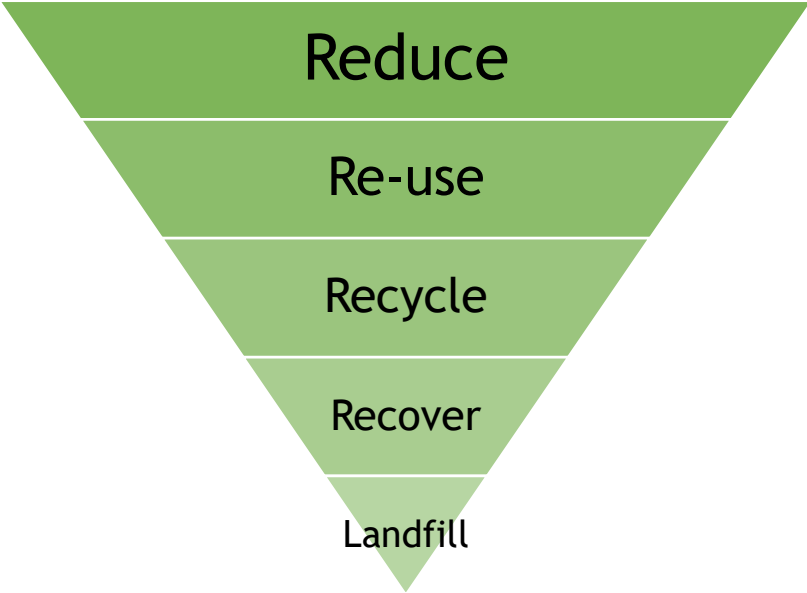
4. Engagement delivery

How to reduce the environmental impact of delivery

Materials



Waste

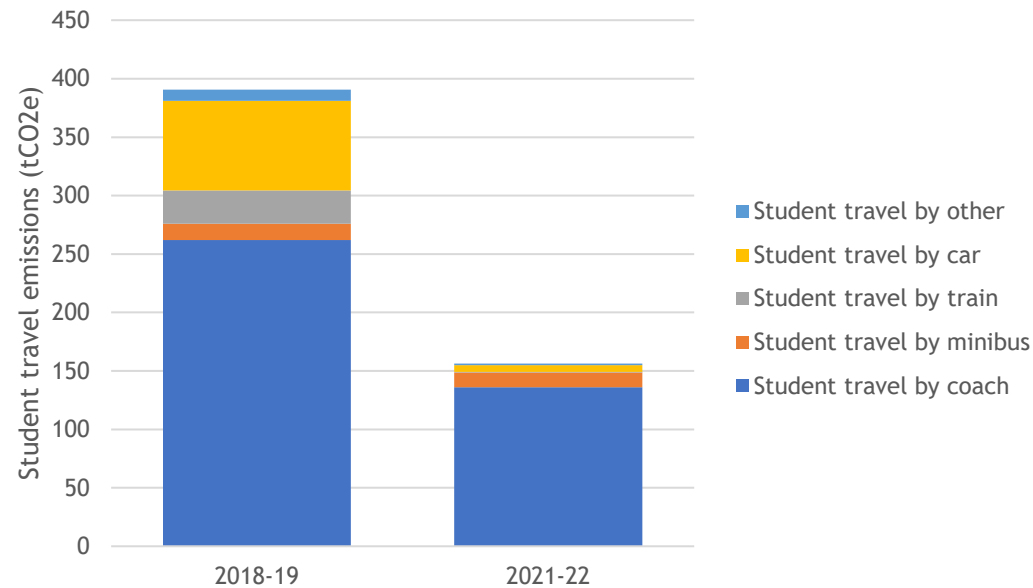


4. Engagement delivery

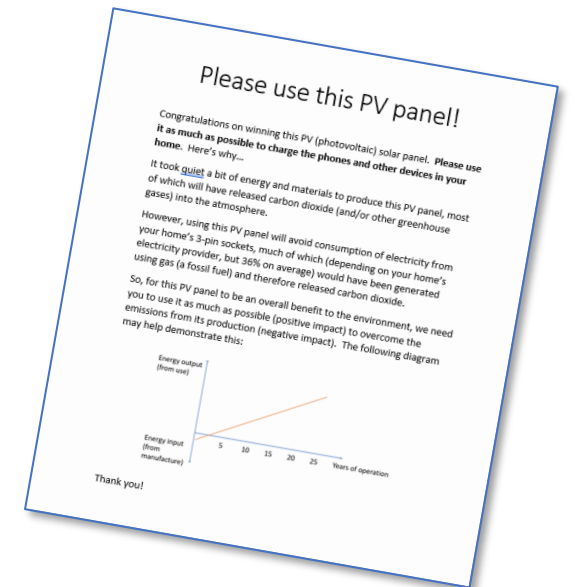
Example: The Big Bang Fair



Travel



Materials



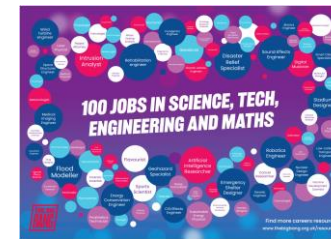
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5. Resources

Neon

- Careers resources, available [here](#)



- Interviews with young engineers, available [here](#) (filter on ‘Engineering sector’ = ‘Environment’)

Real engineers

Hear from the professionals in these inspiring case studies.

Engineering sectors Engineering routes Video case studies [Clear all](#)

Protecting otters
Civil engineers Bob and Marc came up with an ingenious way to keep otters safe!

Changing impacts on the environment
Irene Serrano Gonzalez is a civil engineer and sustainability consultant in the Strategic Consultancy team at AECOM London

Stemming the flood
Hiba Khan keeps people's homes safe from flooding and erosion.

5. Resources

Meet the Future You quiz

- Available [here](#)



End
Thank you



Appendix

Research evidence

Young people care about the environment



Statistics refer only to those surveyed

- A. 72% of young people (aged 7-18) were willing to support key habits in reducing climate change compared to 62% of adults (Source: UWE Bristol, 2021 [here](#))
- B. 78% of children and young people (aged 8-15) agreed that looking after the environment was important to them (Source: UK Government, 2021 [here](#))
- C. 78% of 11-18 year olds feel climate change is an urgent priority to solve and a shared responsibility (Source: Royal Society of Chemistry, 2021 [here](#))
- D. 62% of 15-16 year olds were concerned about climate change (Source: the Royal Meteorological Society, 2022 [here](#))
- E. 42% of Big Bang Competition 2022 submissions were environmental, sustainability or conservation themed (Source: EngineeringUK, 2022)
- F. 70% of young people agreed that ‘engineers are important for improving the environment’ (Source: EngineeringUK, 2022 [here](#))

Young people care about the environment... BUT



Statistics refer only to those surveyed

- G. 75% of 11-18 year olds feel anxious about the future of the planet (Source: Royal Society of Chemistry, 2021 [here](#))
- H. 72% of UK young people agreed that the “future is frightening” (Source: Caroline Hickman et al, 2021 [here](#))
- I. 62% of school children say they are ‘Very’ or ‘Fairly’ concerned about climate change (Source: Schools Sustainability Survey 2019-20 & 2020-21, [here](#))
- J. *“Students struggle to see or feel the impact of work on [sustainability] given its scale and complexity: they feel unable to make an impact.”* (Source: Research conducted by Everfi for EUK on their Robotics Challenge programme, 2022)
- K. Informal discussions with EUK’s Teacher Network and others
- L. 17% of young people selected ‘improving environmental sustainability’ as an important factor in their career choice, and 6% included this in their top 3 important factors (Source: EngineeringUK, 2022 [here](#))
- M. 20% of young people globally believe it’s too late to fix climate change, vs. 12% of those aged 50+; 62% of Europeans say they heard more about negative impacts than about progress; 65% of Europeans have greatest faith in technology to provide solutions, rather than business or government (Source: Futerra, 2021 [here](#))
- N. EUK Youth Insight Group session on environmental sustainability, 22-Nov-2022