

Destination STEM Week

Sustainability for a
Greener World.

01 to 05 July 2024



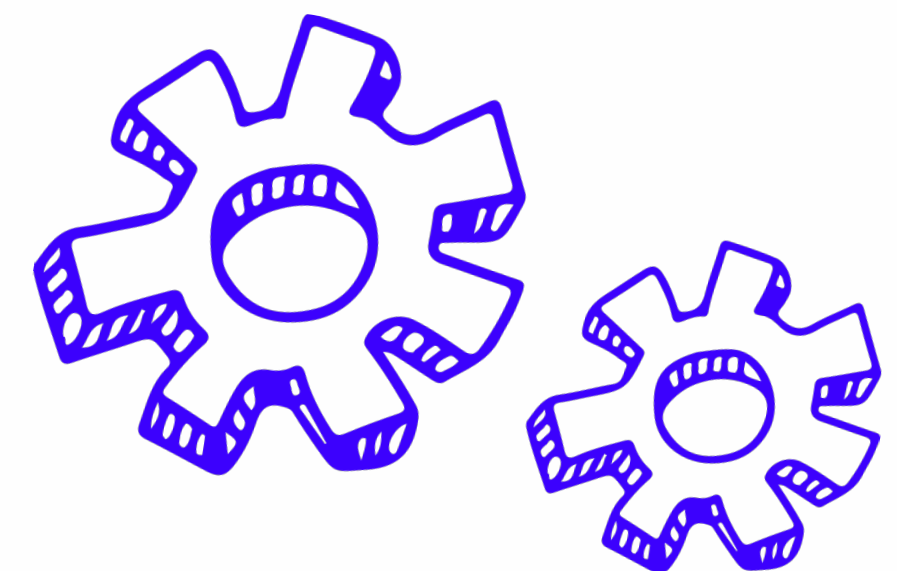
Sustainability for a Greener World



This collection of resources celebrates the use of STEM and the people involved in developing solutions and ideas to solve some of the key issues affecting the world around us. It is dedicated to developing our understanding of STEM subjects, real world context and potential careers for young people all within the theme of sustainability for a greener world.

We are excited to be exploring the world of sustainability through the knowledge and expertise of those seeking to effect change and make a difference. Through a series of videos, live webinars, articles, ideas, practical activities and opportunities, young people aged 11-18 and their educators can expand knowledge, question the world around them and seek to find ways where they too could make a difference.

Supportive of both curricular and STEM enrichment learning, the content explores sustainability through five topics: Environment, Engineering, Technology, Energy and Economy. Seeking to understand what it means and identify how scientific research and industry are tackling climate change, reducing carbon emissions, and finding solutions to very real problems.



A fascinating look into what sustainability really means and how it affects the world around us.



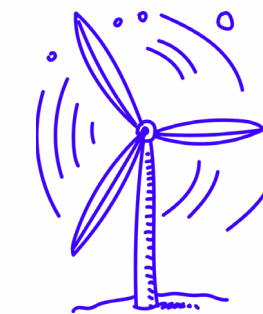
Live webinars, videos, practical activities, articles and ideas to expand knowledge and understanding for 11-18 year olds and their educators.



Content will continue to be available post event, ensuring Destination STEM Week is a practical and sustainable resource for schools.



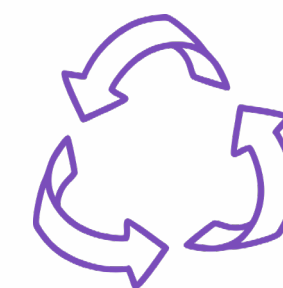
Sustainable Environment – 01 July



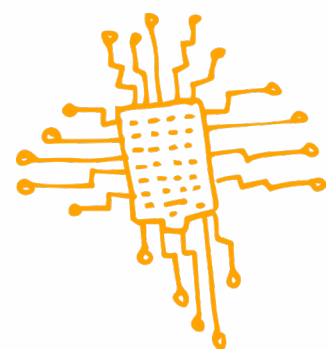
Sustainable Energy – 04 July



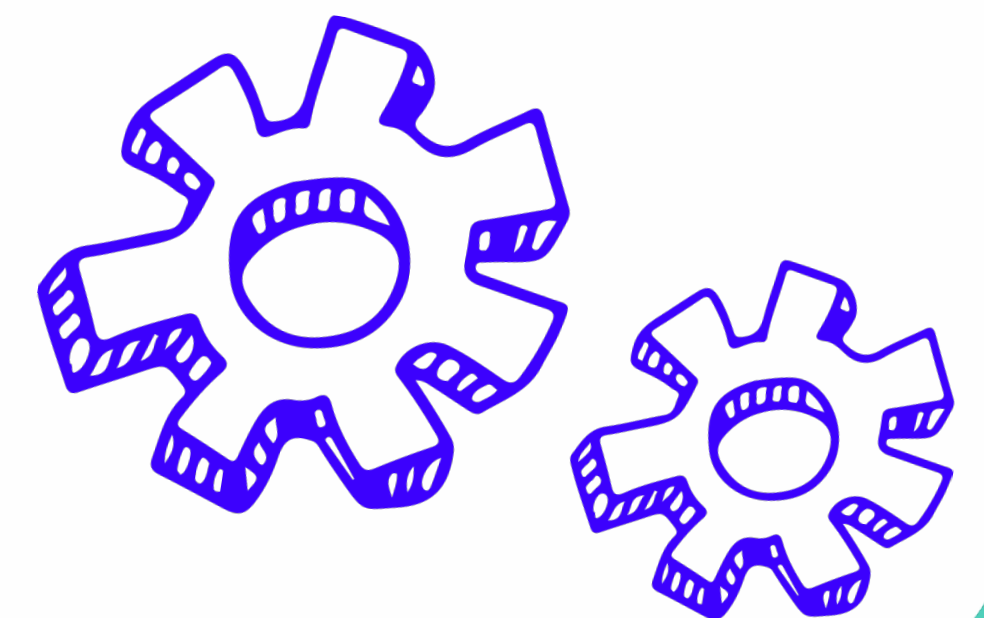
Sustainable Engineering – 02 July



Sustainable Economy – 05 July



Sustainable Technology – 03 July



Visit our [YouTube Playlist](#) for all the videos.

Note: live webinar recordings will be added post event.

Sustainable Environment

Monday 01 July

Introduction

Alex Brown, STEM Learning

Time: 08.45 / Age Range: 11-18+

[YouTube Playlist](#)

Civil Engineering a More Sustainable World

by Rachel Hayden, WSP Ltd

Exploring how civil engineers are key to improving the environment and ensuring buildings and structures limit the damage to the environment.

Time: 09.30 / Age Range: 11-18+

<https://youtu.be/7krLKDz3EqM>

Premier!



Understanding the Nature of Nature

by Omer Motiwala, Reboot Earth

Discover the profound parallels between the diversity found in nature and the uniqueness of human beings. In 'Understanding the nature of nature,' we explore how, just as nature accommodates elements that may seem incongruous, this moment presents an opportunity for us to come together, transcending our differences. Despite varying backgrounds and perspectives, we're invited to unite at the same table, embracing inclusivity and understanding. Let's leverage this chance to celebrate our diversity while fostering a collective commitment to harmony and cooperation, mirroring the resilience and adaptability observed in the natural world.

Time: 11.00 / Age Range: 13-18+

[YouTube Playlist](#)

Premier!



Eat Bugs: why we should all eat bugs

by Roberto Padovani, Eat Bugs!

Founder of the educational outreach group Eat Bugs! Roberto Padovani, shares his scientific findings and ideas for the environmental, ethical, and health benefits of eating insects..

Time: 13.00 / Age Range: 11-16+

<https://youtu.be/G42WfxGI25w>

STEM Clubs Activity - Cleaning our Oceans

by Helen Rose, STEM Learning

Revisit an exciting activity from Senior Technician at STEM Learning, Helen Rose, sets the challenge of cleaning an oil spill. She simulates a small-scale oil spill and investigates methods of cleaning it up by creating a boom to absorb and contain the oil.

Time: 15.00 / Age Range: 11-18+

<https://youtu.be/dX4kE4JO5PU>



Sustainable Engineering

Tuesday 02 July

Introduction

Tom Lyons, ESERO UK

Time: 08.45 / Age Range: 11-18+

[YouTube Playlist](#)

Space Sustainability: keeping our orbits safe and secure

by Melissa Quinn, Slingshot Aerospace

As space grows increasingly congested & contested, the complexity and risk of orbital operations are rising exponentially. Slingshot Aerospace is making space safe, sustainable and secure. Enabling space operators around the world to utilise Slingshot's industry-leading AI, data, and insights to support mission-critical training, planning, and operations.

Time: 09.30 / Age Range: 11-18+

Live webinar: [Microsoft Teams Link](#)

Post event: [YouTube Playlist](#)

Live
Webinar!


Protecting our Planet through Engineering

Careers panel video from POP23. Be inspired by hidden heroes revealing their engineering-based career paths from school to working on innovations and projects protecting our planet.

Time: 11.00 / Age Range: 13-18+

https://youtu.be/q_s-_klu42U

Protecting Our Planet: STEM Clubs hour

by Matt and Boaty, National Oceanography Centre

Revisit STEM Clubs Hour from Protecting Our Planet Day 2022, which was hosted live from the National Oceanography Centre. Our hosts Dallas and Suzie take part in practical activities and learn about the engineering behind the Boaty McBoatface submarines.

Time: 15.00 / Age Range: 11-18+

<https://www.youtube.com/watch?v=MzVX3yxsapE>

Reduce Food Waste via Space Technology and Thermal Engineering

by Katherine Ostojsic, RAL Space

Katherine Ostojsic is a STEM Ambassador working at RAL Space, Oxfordshire. Here Katherine shares her work using space technology and thermal engineering to reduce food waste in India.

Time: 13.00 / Age Range: 11-16+

https://youtu.be/UuNXIWe_Mvk



Sustainable Technology

Wednesday 03 July

Introduction

Paul Robson and Katie Joyce, National Centre for Computing Education

Time: 08.45 / Age Range: 11-18+

[YouTube Playlist](#)

How to Create a More Sustainable Future

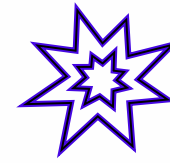
by BP

With many young people openly sharing their anxiety around climate emissions, this discussion with BP explores how they are contributing to the UK's net zero emissions goal by helping cities and corporations decarbonise by 2050 or earlier. Taking a close look at Carbon Capture and the potential careers necessary to developing and supporting the technology needed.

Time: 09.30 / Age Range: 11-16+

[YouTube Playlist](#)

Premier!



From Pit to Plate: the story of technology, polyhaylite ore, fertiliser and farmers

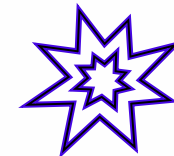
by Anglo American

From Pit to Plate is a unique exploration of the technology and engineering required to help meet a global need. Agriculture faces a challenge in being able to produce enough crops to meet the needs of an increasing world population. Under North Yorkshire is a solution that not only supports the economy and the farmers but respects the environment. Join Ruby as she takes you on a journey to understand how your food will be supported from the pit to the plate.

Time: 13.00 / Age Range: 11-16+

<https://youtu.be/tRLa4ZlluCA>

Premier!



Chemical Looping: the climate avenger

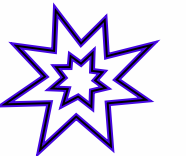
by Isabel Pazmiño Mayorga, Research Associate, Department of Chemical Engineering, The University of Manchester

Exploring Isabel's exciting work into the development of a novel technology that generates heat whilst avoiding the release of carbon dioxide into the atmosphere.

Time: 11.00 / Age Range: 11-16+

https://youtu.be/MD9FN_EBuBs

Premier!



Sustainability and Wildlife Conservation

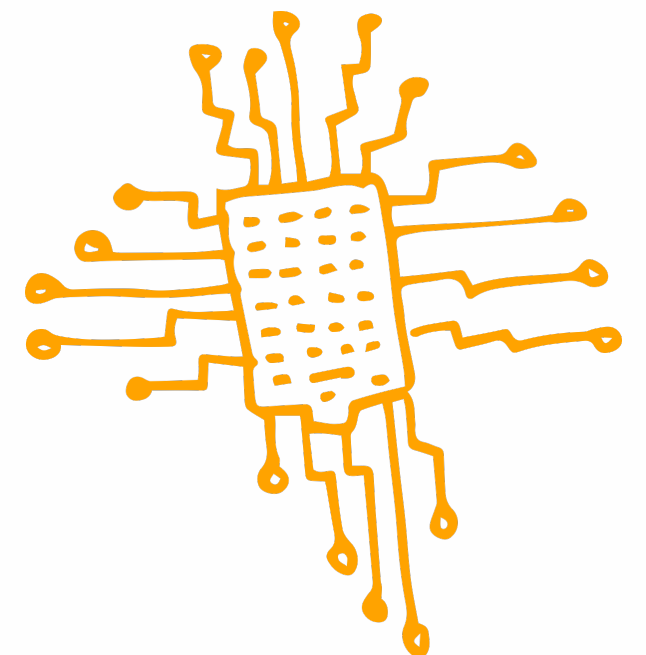
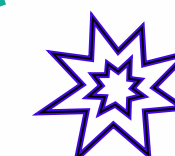
by ZSL

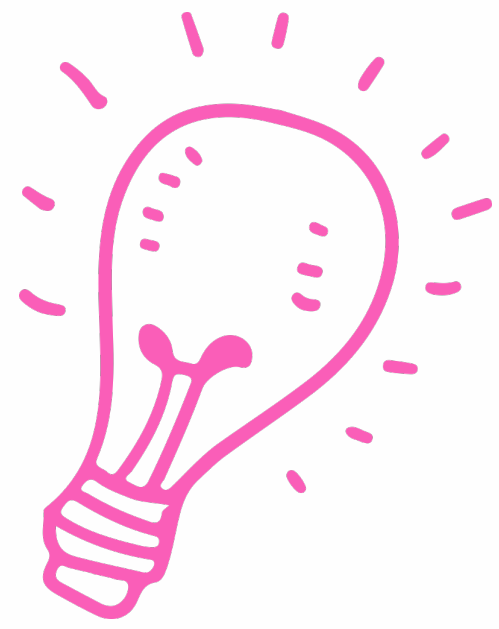
ZSL is an international conservation charity driven by science, working to restore wildlife in the UK and around the world by protecting critical species, restoring ecosystems, helping people and wildlife live together and inspiring support for nature.

Time: 15.00 / Age Range: 11-18+

[YouTube Playlist](#)

Premier!





Introduction

Tim Bradbury, STEM Learning Community Group

Time: 08.45 / Age Range: 11-18+

[YouTube Playlist](#)

Sustainable Energy

Thursday 04 July

Designing Ocean Wind Farms

by Amelia Couldrey, HR Wallingford

STEM Ambassador, Amelia Couldrey is an Oceanographic Scientist and in this video she explores her role as it impacts on the design and construction of designing wind farms based out at sea.

Time: 09.30 / Age Range: 11-18+

<https://youtu.be/JLk6tB1d8cc?si=OgEuzLWhv34jeQct>

Driving the Future: the rise of electric trucks

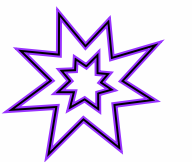
by Kate Wardle, Project Development Manager, SSE

Electric trucks are expected to help keep the air clean and protect the planet from dangerous greenhouse gas emissions. But there are a number of issues which make getting these trucks moving an exciting challenge.

Time: 11.00 / Age Range: 11-14+

https://youtu.be/_Ou2mzmGvTM

Premier!



DREAM - Demo of Renewable Energy Assets Monitoring

by Amazon

Explore how Amazon uses Lego and other models to demonstrate how AWS technologies collect data from edge locations through IoT devices, store it in the cloud and use it to make actionable decisions around sustainability and power consumption. See how to monitor and operate wind and solar farms in a sustainable way using digital twins and detect real time anomalies using AI/ML.

Time: 13.00 / Age Range: 11-16+

Live webinar: [Microsoft Teams Link:](#)

Post event: [YouTube Playlist](#)

Live Webinar!



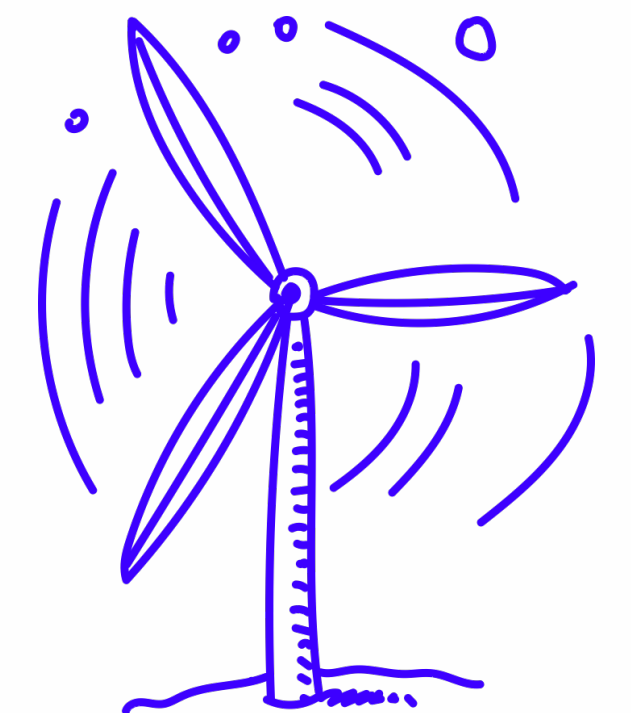
Electrifying our Railway Lines

by Paul Houston

STEM Ambassador, Paul Houston, talks about the electrification of railway lines in the UK as part of a careers talk for students, teachers and STEM Club Leaders.

Time: 15.00 / Age Range: 11-18+

<https://youtu.be/hF934kZV8PE>



Sustainable Economy

Friday 05 July

Introduction

Danielle Smith and Yasmin Khan, STEM Ambassador Programme

Time: 08.45 / Age Range: 11-18+

[YouTube Playlist](#)

Building Effective and Sustainable Drainage Systems

by Nick Jerrard

The development of innovative solutions and the importance of climate change and the economy.

Time: 09.30 / Age Range: 11-16+

<https://youtu.be/FThcD6zJgCw>

Compassion in Economics: illuminating the path to a sustainable future

by Omer Motiwala, Reboot Earth

Join us on a journey to explore the transformative essence of a compassionate economy, where empathy and social responsibility illuminate the path forward. In this exploration, we delve into the profound impact of viewing economics through the lens of compassion, fostering deeper understanding and empathy towards the challenges we face. Through prioritizing the well-being of people and the planet, we pave the way towards a fairer and more sustainable future for all, guided by principles of empathy and social responsibility.

Time: 11.00 / Age Range: 13-18+

Live webinar: [Microsoft Teams Link:](#)

Post event: [YouTube Playlist](#)



Time for Climate Action

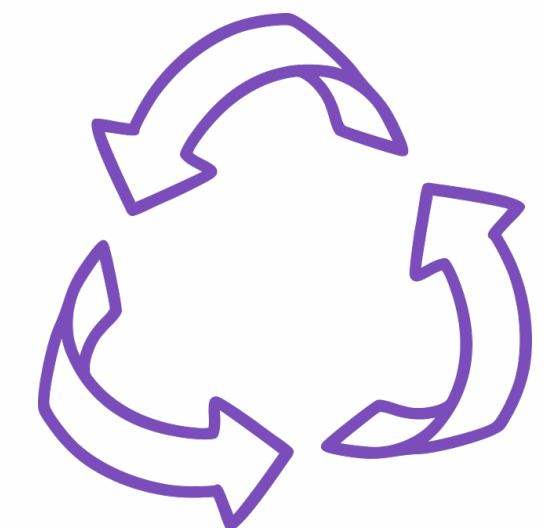
by Kim Biddulph, Engineering UK

You would be forgiven for thinking that no one is doing anything to tackle climate change. Traditional and social media just focus on the problems. Find out about the ground-breaking solutions that are being developed and implemented by engineers and technologists to decarbonise our energy sources, retrofit our lives to a low carbon economy and sequester the excess carbon dioxide in our atmosphere. Kim will showcase some of the amazing inventions and technological innovations, and the people putting them into practice, that have been gathered for their Climate Schools Programme.

Time: 13.00 / Age Range: 11-16+

Live webinar: [Microsoft Teams Link:](#)

Post event: [YouTube Playlist](#)



Survive on a Desert Island

An activity set around surviving on a desert island using only natural and waste materials. Activities explore the themes of recycling and sustainability and includes the Cleaning our Oceans activity.

<https://www.stem.org.uk/rxfmzm>

Future Forests

Empower your learners to consider the causes, effects and solutions of key issues surrounding climate change using this series of lessons. Students will work together to identify and pitch a solution addressing a key climate change issue. Emphasis is placed on group work and presentation skills.

<https://www.stem.org.uk/rxj7tz>

Engineering Materials for a Greener Planet

Engineering materials for a greener planet features a series of real-world engineering activities that puts the environment at the heart of learning. Students will explore the creative and practical side of STEM (science, technology, engineering, and maths) subjects, as well as being introduced to the essential role that engineers have in creating sustainable solutions to environmental issues.

<https://www.stem.org.uk/rxh4bt>

Highways of the Oceans:

Sea currents and the connection to climate

In this resource from the European Space Agency, students use a multimedia module to learn about sea currents, the highways of the oceans, and how they are important for understanding local climates. Through a hands-on activity students investigate the causes of ocean currents.

<https://www.stem.org.uk/rxg3o5>

Pollution Monitor

The video and worksheet set out a measurement challenge for students that can be carried out at home or in school. Students make their own pollution monitors to investigate visual particle pollutants in their home or outdoor environment.

<https://www.stem.org.uk/rxhfmr>

Energy Farm Game

This interactive online game from Siemens introduces students to the opportunities and challenges presented by different energy technologies. Students are required to implement an energy system that meets the demand to run a farm whilst minimising the cost and environmental impact.

<https://www.stem.org.uk/rxgany>

Practical Action: Climate change

Practical Action's climate change teaching resources are suitable for KS2 to KS5. They include activities, posters, complete lessons, homework and extension activities.

<https://www.stem.org.uk/cxdsv3>

Suggested Activities

Survive an Asteroid Impact

An activity set around surviving the impact of an asteroid collision, with strong sustainability and recycling themed activities, including growing crops to protecting yourself from acid rain and building solar cookers from scrap materials.

<https://www.stem.org.uk/rxfn3k>

Circular Economy

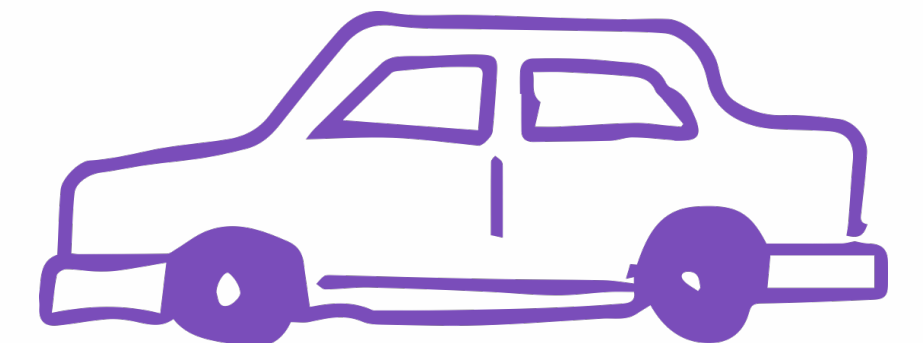
This activity allows students to develop understanding of two conceptual approaches to environmental issues - the linear economy and the circular economy - in the context of the design and operation of a new school.

<https://www.stem.org.uk/rx32cg>

Climate Change negotiations Activity

An activity that encourages students to form opinions on the issues of climate change and put forward arguments in a simulated world climate change conference scenario. Groups are assigned to one of ten countries from around the world and represent them and pledge emission reductions.

<https://www.stem.org.uk/rxh75u>



Suggested Reading

How will tomorrow's lithium-ion batteries be better than today's?

Petrol and diesel are convenient forms of fuel because we know how to safely store and burn them. We are familiar with how these fuels work with an internal combustion engine...

[Read more at Destination STEM](#)

The Interconnectedness of Environmental, Social, and Economic Issues

In an era marked by environmental challenges and a pressing need for global solutions, sustainability education has emerged as a cornerstone in shaping the perspectives and actions of the next generation.

[Read more at Catalyst Magazine](#)

Zero Emission Energy From the Heat Beneath Our Feet

The world is crying out for plentiful, low-cost, zero-emission sources of energy. What if there was a source of energy that could be accessed anywhere in the world to generate heating, cooling, or electricity...

[Read more at Destination STEM](#)

Fridging the Gap – revolutionising logistics for a greener, healthier planet

In a world that spins faster every day, where technology evolves at the speed of light, and trends come and go like the seasons, one thing remains constant: the urgent need for sustainability. As we navigate the complex web of climate change, pollution, and resources, it's crucial for us to understand that our choices shape the world...

[Read more at Catalyst Magazine](#)

De-carbonising Ammonia: alternatives to the Haber Bosch process?

Throughout the 19th century the demand for nitrates and ammonia for use as fertilizers and industrial feedstock rose steadily. A principal source of nitrate was the droppings of sea birds (guano) found in the arid Atacama Desert in Chile...

[Read more at Destination STEM](#)

Save the world – the best way you know how

It can be difficult to know how to apply yourself, particularly if what you really want is to make an impact. Independent wildlife Filmmaker Andy Clark tells us how he wound up making films to change the world, and shares his advice on using your natural talents to follow your dreams.

[Read more at Catalyst Magazine](#)

How do you deal with 20 million tonnes of suffocating seaweed?

Since 2011, a huge raft of free-floating seaweed has been growing every summer in the Atlantic Ocean. The seaweed, called Sargassum, is a macroalgae, a large, brown, open ocean species which can be identified by small air sacs which help it to float...

[Read more at Destination STEM](#)

Driving Change for a Hunger-Free Future

Learn about FareShare and the Department for Transport who are decreasing food waste across Yorkshire, in collaboration with growers, packers, manufacturers, distributors and retailers...

[Read more at Catalyst Magazine](#)

To climate change or not?

No one would dispute that climate change is one of the biggest threats that we all face over the forthcoming generations, or would we? When faced with any scientific or cultural change to our society there comes with it a 'resistance to change'...

[Read more at Destination STEM](#)

How to eat healthily for the planet and your body

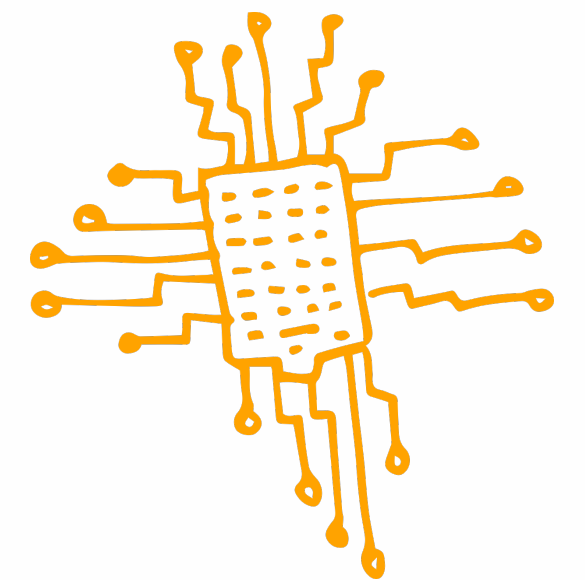
Do you know that the production of food produces CO₂? This article compares different types of food and suggests how people could choose a more healthy diet that produces less CO₂ and helps to tackle the Climate Emergency...

[Read more at Catalyst Magazine](#)

How studying plant biology and ecology will help us to build a sustainable future

What can we do about a growing human population, increasing demand for food and a shrinking supply of resources and perhaps most importantly the threat of climate change? Understanding plant biology and ecology is now more important than ever before...

[Read more at Destination STEM](#)





Climate Change Videos

A selection of videos relating to themes concerning climate change. Collection 1 focuses on the rise in Carbon Dioxide levels in the atmosphere over time. Collection 2 offers three perspectives on rising sea levels with a focus on Liverpool.

<https://www.stem.org.uk/cxgbbv>

Health and Climate Change

The Earth's climate is changing. In fact, it has always been changing. What is different now is the speed of change and the main cause of change – human activities. Asking: What are the biggest threats to human health? Who will suffer as the climate changes? What can be done to minimise harm? And how do we cope with uncertainty?

<https://www.stem.org.uk/cxg3gf>

Renewable Energy and Climate Change Podcasts

These naked Scientist podcasts look at renewable energy and climate change in an accessible and informative way and explore the following three topics: The science of rubbish / Biodiesel based on algae / Turning rubbish into hydrogen.

<https://www.stem.org.uk/rxyq2>

Sustainability Case Study

This case study describes how Hull and Stockton Riverside Colleges used the topic of sustainable development to improve aspects of STEM careers guidance.

<https://www.stem.org.uk/rxyhn>

Interesting Links and Information

Effects of Climate Change Images

Several images from Practical Action showing the effects of climate change and climate change adaptation. The images can be freely used by students and/or incorporated into teaching resources.

<https://www.stem.org.uk/rxu6n>

Green Careers Information

A collection of resources, information, case studies and activities all linked to green careers.

<https://www.stem.org.uk/secondary/careers/green-careers>

Green School Collection

This collection of resources uses the example of Howe Dell Primary School, which was designed with the principle of being a sustainable school, as a context for exploring a school's carbon footprint and the use of technology to reduce energy usage.

<https://www.stem.org.uk/cx5wh>

Sustainability: Making a Start video

In this Teachers TV video, designer Kursty Groves visits Haydon School to help the design and technology department introduce sustainable issues into its projects. Most design and technology teachers are aware that environmental issues and sustainable development have never been more important, learn how to deliver these topics in subject learning.

<https://www.stem.org.uk/rxxz9>

Carbon Emissions and Surface Warming Video

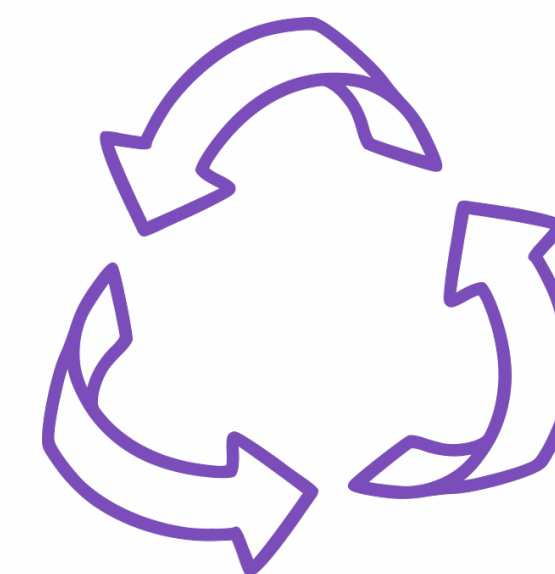
This short video focuses on carbon dioxide levels in the atmosphere. It shows the complex inter-relationships between and among various climatic factors and human-induced carbon dioxide increases, resulting in ocean surface warming.

<https://www.stem.org.uk/rxg5av>

Climate Change Resources

A collection of resources linked to climate change, suitable for secondary aged students. Themes include: global warming, recycling and sustainability, flooding, pollution, renewable energy, the carbon cycle, the greenhouse effect and global goals for sustainable development.

<https://www.stem.org.uk/cxh3nn>





About Destination STEM

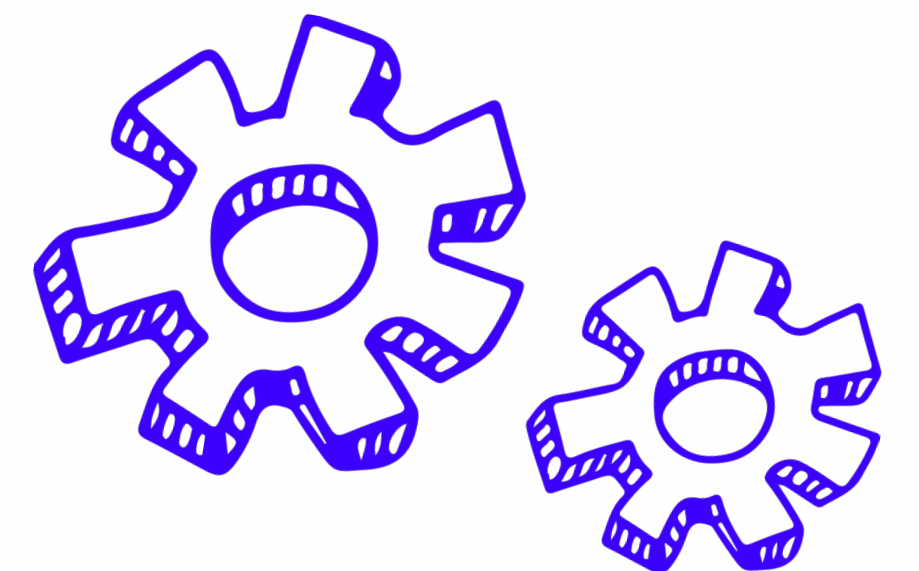
Destination STEM provides support, advice, and opportunities to help young people explore pathways into STEM careers, develop STEM skills, and connect with STEM employers.

It is designed to help young people find their way in the diverse and exciting fields of STEM and to see the possibilities and opportunities that await them.

Providing support, guidance, ideas and more for students, teachers, parents and employers.

Visit Destination STEM to find out more.

www.destinationstem.org.uk





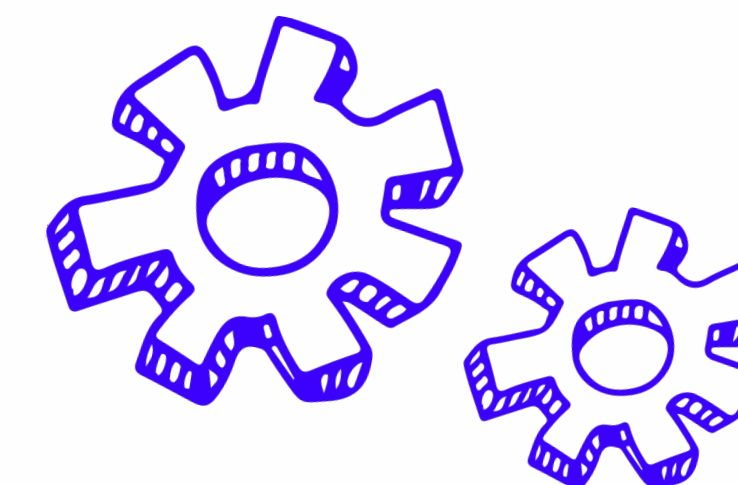
About STEM Learning

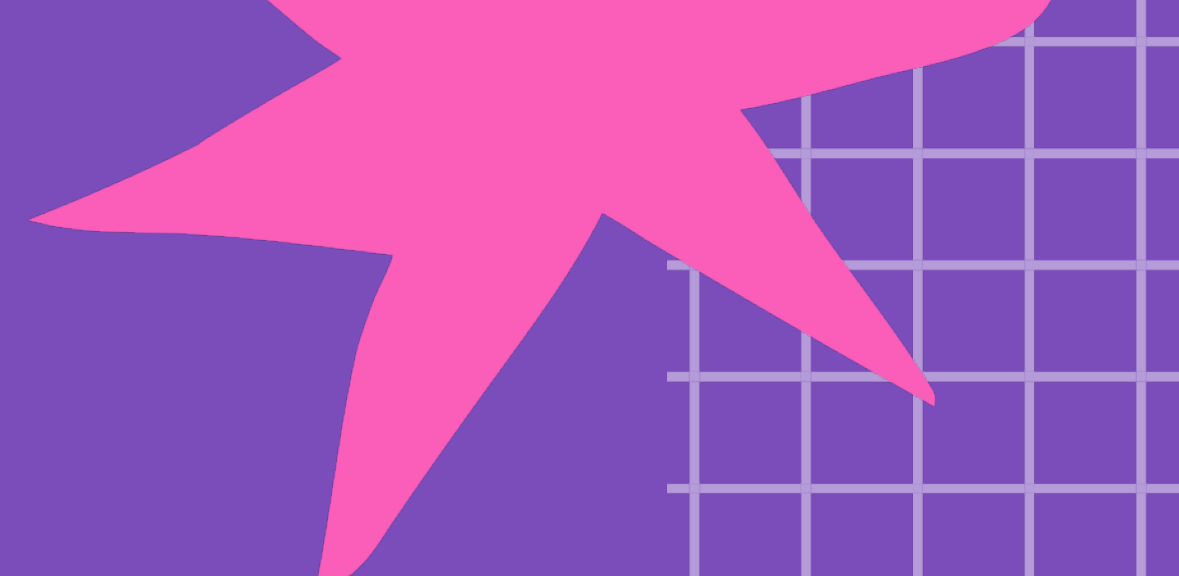
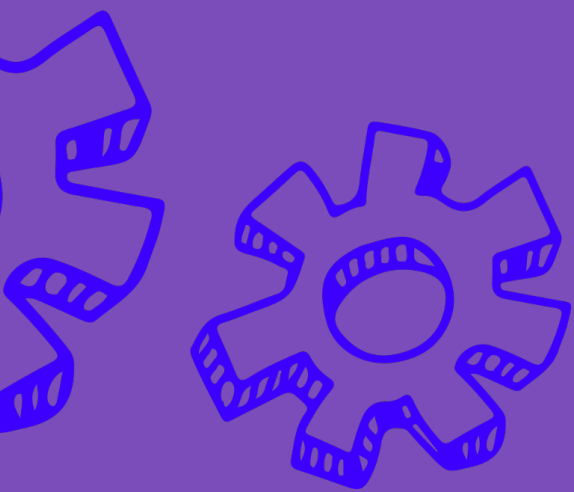


Our vision is to improve lives through STEM education. We are dedicated to empowering young people with the skills and knowledge to thrive through effective teaching and learning. We offer an exciting array of support and opportunities for teachers, technicians, students and employers, here are a few of our key engagements:

- CPD – high impact, quality courses that kickstart professional development, perfect for teachers and technicians in both primary and secondary education: [Secondary and Post-16 STEM teacher CPD](#)
- STEM Enrichment – encourage young people to develop important life skills through enrichment and engage with the wider community in practical, enjoyable, and meaningful ways: [Enrichment – secondary](#)
- NCCE – the National Centre for Computing Education, our vision is for every child in every school in England to have a world-leading computing education by transforming how computing is taught in schools: [Teach Computing](#)
- STEM Ambassadors – is a volunteer programme with over 28,000 individuals offering their time, passion, and energy to support schools, colleges, higher education institutions, and youth group organisations: [STEM Ambassadors](#)
- STEM Community – a friendly, supportive network of over 20,000 teachers and technicians helping each other. Featuring exclusive events, subject-specific groups, lively debates and topical news: [STEM Community](#)

Visit STEM Learning to find out more: www.stem.org.uk





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