STEM from HOME
COP26

CGI and Smart DCC are passionate about all aspects of STEM, especially caring for the environment and building a sustainable world for future generations. Climate change is one of the most significant issues facing our planet, it is all of our responsibilities to be the change that we want to see.

The Data Communications Company, often called Smart DCC, is working with CGI to help digitise the energy system across Britain through the use of smart meters. Check out our other packs on smart homes and renewable energy.

Data Communications Company

So, what is COP26?

COP26 is a global event hosted by the United Nations that focuses on climate change and how countries are planning to tackle it. COP stands for 'Conference of the Parties', the event will be attended by countries that signed the United Nations Framework Convention on Climate Change (UNFCCC) IN 1994. 2021 will be the summit's 26th meeting, hence COP26. The event is taking place in Glasgow from 1-12 November and will see more than 200 world leaders attend.

What are we as a country doing to tackle climate change?

UK Prime Minister, Boris Johnson, pledged that 2020 would be a "defining year of climate action". Since then, the Government has bought in targets for transitioning the country to electric cars, as well as pledging to reduce the country's carbon emissions to "net zero" – meaning that we will release virtually no carbon into the atmosphere - by 2050.

In this pack, children will research climate change, learn about electric vehicles and take on climate coding challenges.

STEM@CGI
SCIENCE - TECHNOLOGY - ENGINEERING - MATHEMATICS

Understanding climate change

What is climate change?

Climate change (also known as global warming) is the process of our planet increasing in temperature, this extra heat is the product of greenhouse gases in the atmosphere. Scientists claim that since the industrial revolution, human activity has caused the earth to increase in temperature by around 1°C. This may not sound like a lot, but it has a big impact on the people and wildlife across the planet.

What causes climate change?

There are many causes of climate change, two of the biggest are burning fossil fuels and deforestation.

Burning fossil fuels

Over the past 150 years, many countries have been burning large amounts of fossil fuels such as oil and gas. The gases get released into the atmosphere and act like an invisible 'blanket', trapping heat from the sun and warming the earth. This is known as the 'Greenhouse Effect'.

Deforestation

Trees absorb large amounts of carbon dioxide (another greenhouse gas) from the air, releasing oxygen back into it. The process of deforestation involves cutting down large areas of forest to use the wood and make farms, resulting in more gases ending up in the atmosphere. Rainforests such as the Amazon produce a large amount of the world's oxygen, but are being destroyed at an alarming rate.

Can you name any other causes of climate change?

Cause:	Cause:	Cause:
Overview:	Overview:	Overview:

What is the impact on the environment?

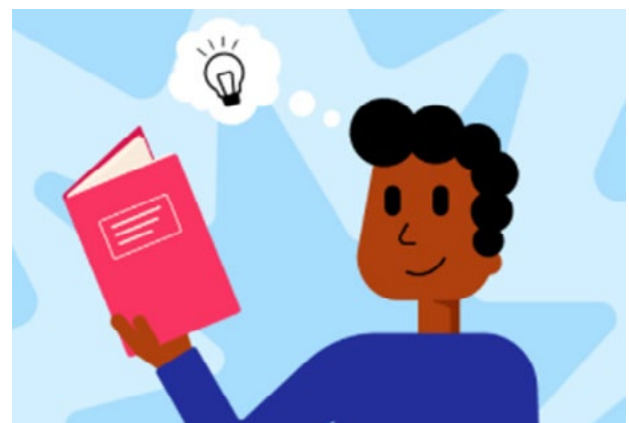| Increased rainfall	Changing seasons	Shrinking sea ice	Rising sea levels

Polar animals are particularly at risk, with their icy habitats melting away due to warmer temperatures. Apes are also losing their homes due to deforestation and sea turtles are struggling to lay their eggs due to rising sea levels. Us humans are also at risk, especially farmers who are struggling to deal with unpredictable weather conditions.

What can I do to help tackle climate change?

Everyone can take small steps to help with climate change, including recycling, switching to energy-saving lightbulbs and cycling or walking instead of driving, all of these little changes add up to make a BIG difference. **Using a smart meter in our homes can help us to understand and control how much energy we are using, helping us to take steps to reduce energy use and save money.**

Now that you know a little bit more about climate change, we want you to help spread the word! Using Raspberry Pi's 'I made you a book' activity, your task is to create a short information booklet to educate people on climate change and encourage them to make a difference. Include a definition of climate change, the causes and your top tips for making a difference.

Electric vehicles

Electric vehicles (EVs) are powered by electricity rather than diesel or petrol like a combustion engine. They can be charged at home or at charge points at supermarkets and petrol stations. Electric vehicles were first built in the 1830's, but combustion engine vehicles became more popular due to their reliability and performance. The UK government are encouraging people to drive electric cars in order to reduce pollution and create cleaner air for society.

You can purchase fully electric vehicles or hybrid vehicles, cars that combine a petrol or diesel engine with an electric motor. These aren't as good for the environment, but will likely form the next wave of vehicles before the UK becomes a majority electric country.

Take on our electric vehicles quiz!

Using your own research, how many of the following questions on electric vehicles can you correctly answer?

In which year did electric motive power first start and who invented it?

Why did electric vehicles not gain popularity when first introduced?

In the UK, You can get a discount on the price of brand new low-emission vehicles through a grant the government gives to vehicle dealerships and manufacturers. What is the maximum amount?

How many different types of electric vehicles can you name?

What is the average range of an electric car in the UK today?

What is the most sold electric car in the UK?

Which electric vehicle currently on sale in the UK has the highest range per charge?

When breaking in an a electric car, this adds range to your miles, true or false?

There are now more electric car charging points in the UK than petrol stations, true or false?

A new electric car is registered every 9 minutes in the UK, true or false?

Look out for our electric vehicles video in our next pack.

Climate coding

Green goals

The United Nations is an organisation in which countries work together to make the world a better place. In this project, you will create an animation about the United Nations Sustainable Development Goals that focus on the environment.

Tree life simulator

Use Scratch to create a simulation that shows the impact of land management and deforestation on trees, wildlife, and the environment. This project focuses on three of the United Nations Sustainable Development Goals.

Fetching the weather

This resource teaches you how to access the Raspberry Pi Weather Station database using a RESTful API, how to use the haversine formula to calculate which weather station is closest to you, and how to fetch the latest weather data from that station.

Ask your parent/guardian to upload pictures of your STEM creations to **Twitter**, **LinkedIn** or **Facebook** using **#STEMfromHome** and **#ExperienceCGI**, remember to tag us!

For more information or additional support with STEM activities when working remotely, contact **enquiry.uk@cgi.com**