

Dear Parents,

Our next topic is called 'Climate Change.' Please help your children to prepare for this topic by helping them to learn some of the key words (in purple) and the facts on this sheet.

There are some homework activities on the back of this sheet. Your child can complete these at any time. Your child's teacher would love to see what they have created, so please send any completed homework into school for us to display.

Thank you for your support.

Kind regards,

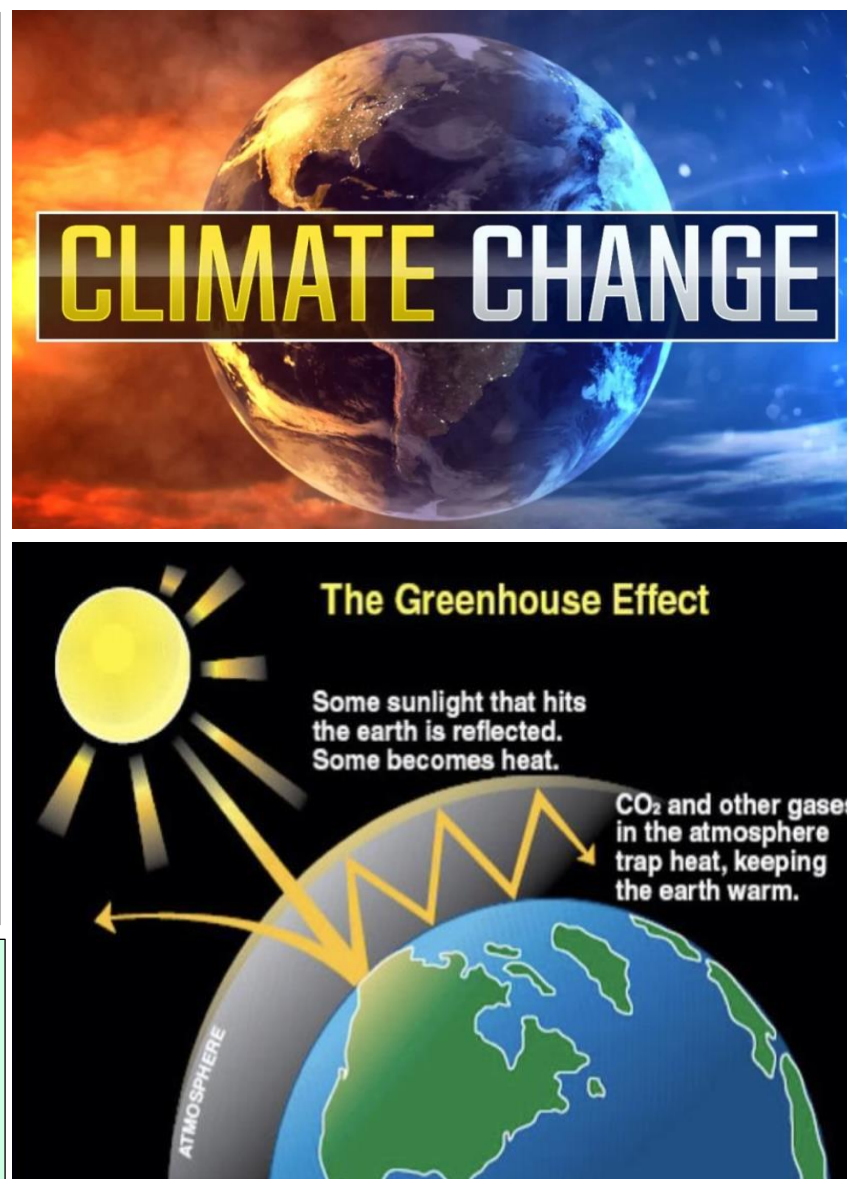
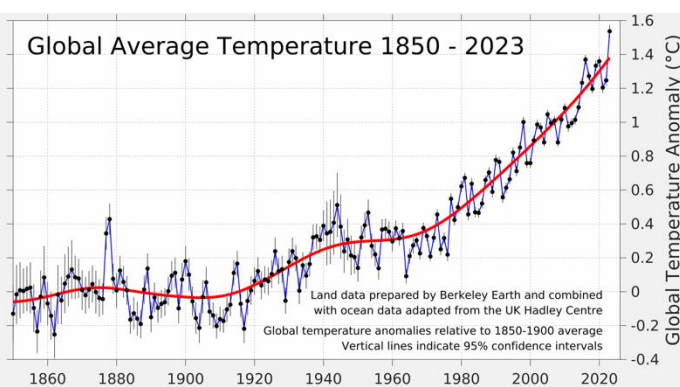
Year 5

The Greenhouse Effect (part 1)

The **greenhouse effect** is a naturally occurring event.

Energy from the sun (**solar radiation**) hits the Earth and is reflected back. Some of this energy and heat (approximately 30%) is however reflected back down to the Earth by **greenhouse gases**.

This causes the Earth's temperature to be around 15°C. Without the **greenhouse effect**, the Earth's average temperature would be around -18°C, which would be too cold for many forms of life that exist on our planet.



The Greenhouse Effect (part 2)

Over the last few centuries more **fossil fuels** are being burnt and more livestock (cows, sheep etc) are being kept. This is due to the world's population growing and more industry and building in countries around the world. This releases more **greenhouse gases** into the **atmosphere**.

The Earth's average temperature has increased by 1°C since 1880 with two thirds of the warming occurring since 1975.

Most of the world's scientists believe that this **climate change** is due to human creating more **greenhouse gases**, although some scientists believe that this warming is being caused by other factors.

Year 5 Geography



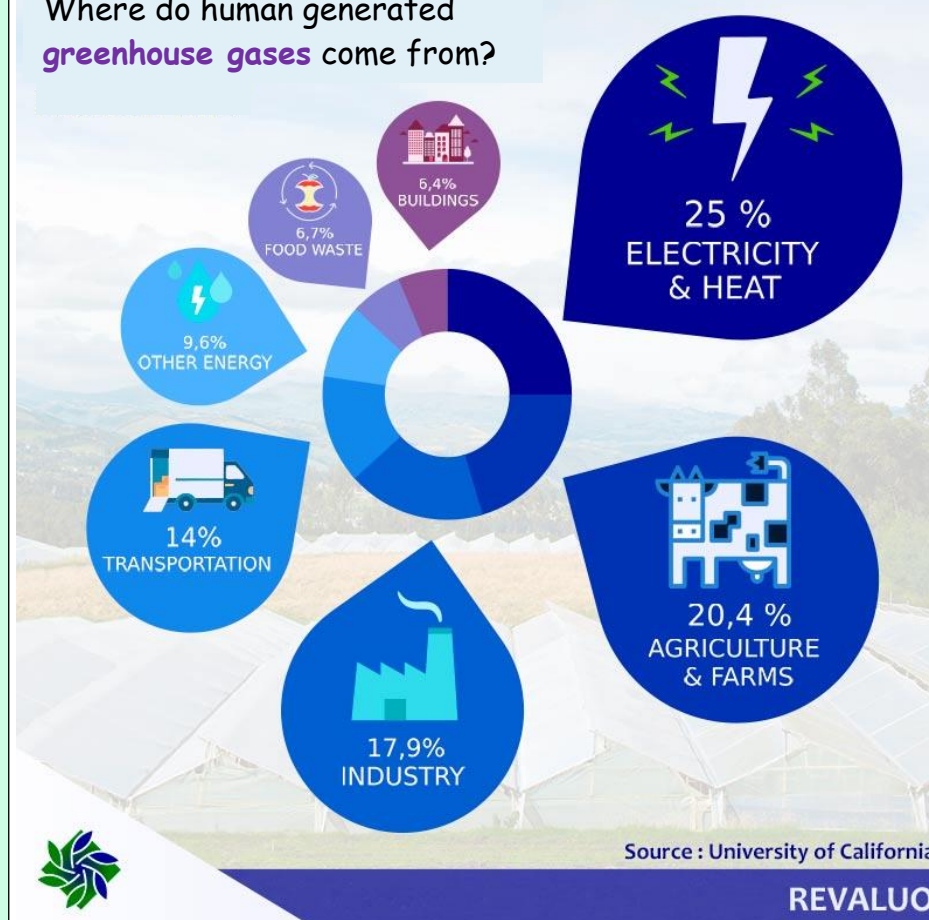
The Greenhouse Effect (part 3)

Climate change has happened for millions of years, before human were ever present. There have been period of warmth and cold.

Possible reasons for this include:

- changes in the Earth's orbit around the sun;
- changes with the Earth's tilt on its axis;
- the sun entering periods of more intense or quieter periods of activity;
- volcanic eruptions on Earth releasing large amounts of dust which blocks out sun light and leads to cooler temperatures.

Where do human generated **greenhouse gases** come from?



Key Vocabulary

atmosphere - A layer of gases surround the Earth.

carbon dioxide (CO₂) - A greenhouse gas caused by burning fossil fuels such as coal and gas, cutting down and burning trees and from making products such as cement. This is the most common greenhouse gas in the atmosphere.

climate change - The long-term change of Earth's average temperature.

emissions - The production and release of a gas.

fossil fuels - Fuels such as coal and gas which are made from the remains of living organisms who died millions of years ago.

Greenhouse Effect - The natural process by which the Earth's atmosphere traps solar radiation (heat), warming the Earth enough to support life. This can be increased by increasing the amount of greenhouse gases in the atmosphere.

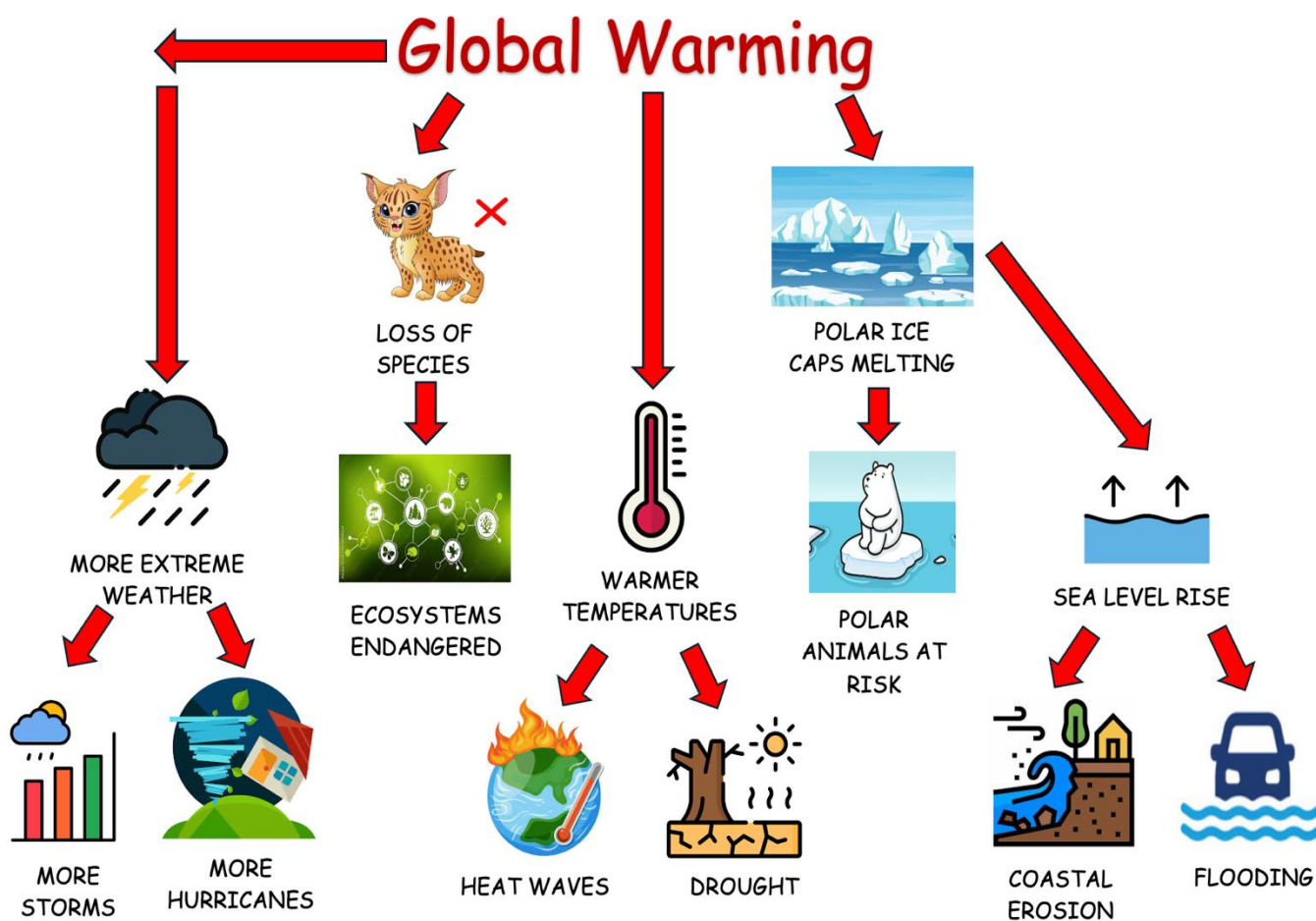
greenhouse gases - Gases which help to reflect the sun's energy/heat back to the Earth. The most common examples include carbon dioxide, methane, nitrous oxide and water vapour.

methane (CH₄) - A greenhouse gas which is 28 more times powerful than CO₂ at trapping heat. It is released by livestock, such as cows and sheep, producing natural gas and landfills. This is the second most common greenhouse gas in the atmosphere.

nitrous oxide (N₂O) - A greenhouse gas released by certain types of farming and by burning fuels. It is nearly 300 times more powerful than CO₂.

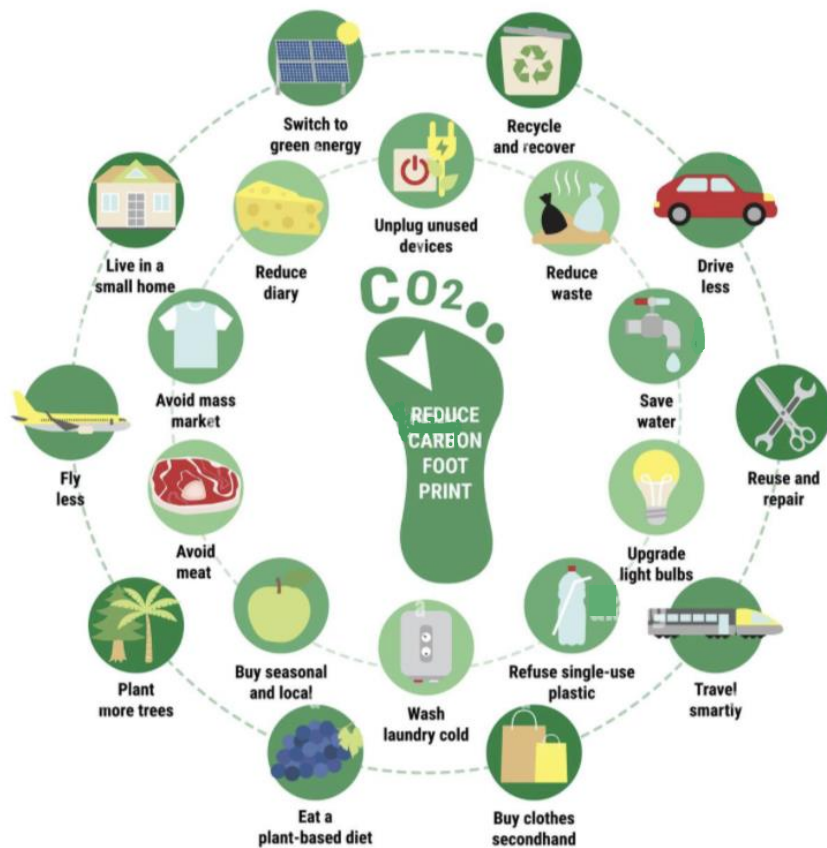
solar radiation - Energy from the sun.

water vapour (H₂O) - Water is a gaseous state. This is a greenhouse gas.



Homework Ideas

- (1) Create a model showing one of the effects of climate change/global warming.
- (2) Create a model showing one of the ways humans put greenhouses into the atmosphere e.g. a factory.
- (3) Create a presentation explaining what global warming is.
- (4) Write a letter to your Member of Parliament explaining your concerns about global warming.
- (5) Create a paper mâché globe of our planet.
- (6) Design a poster which discourages the creation of greenhouse gases e.g. persuading people to buy an electric car.
- (7) Create a model of an energy efficient house (with solar panels and a wind turbine).



Trees and Plants

Trees/plants absorb **carbon dioxide (CO₂)** as part of photosynthesis, removing it from the atmosphere.

Countries With The Highest Carbon Footprint

In MtCO₂ (million tons of CO₂)



China currently produces 30% of the world's **carbon dioxide (CO₂) emissions**. The USA produces 15% of these, with Europe responsible for 9%, India responsible for 7% and Russia 5%. The UK produces approximately 1% of the world's carbon dioxide.

The average person in the UK is responsible to 10 tonnes of **carbon dioxide (CO₂)** per year. This is double the world's average.

How do we know that the Earth's climate has changed?

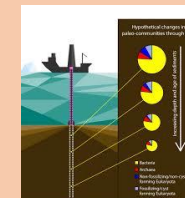
Climate change has taken place on Earth many times over the last 2.6 million years long before humans. Scientists know this by collecting a range of evidence that is trapped and stored in the environment around us.

Fossil Evidence



Plants and animal fossils which favour certain climates have been found in areas which today show very different climates.

Ocean Sediment



Layers of sediment build up over time in oceans. These trap chemicals in the ocean floor that scientists can use to calculate and understand atmospheric temperatures over time. Scientists can examine these chemicals by drilling into the ocean floor.

Ice Cores



Scientists can drill into thick layers of ice to retrieve cores of ice. Each layer within the ice represents a different historical time. By exploring the water molecules of these cores, scientists can calculate temperatures.

Historical Records

Historical records from ancient cave painting, diaries and written measurements/observations all provide evidence of climate change through personal accounts