

Climate change

The big idea about climate change is that it involves long-term changes in temperature and weather patterns in a place. Climate change is primarily driven by human activities, especially the burning of fossil fuels such as coal, oil and gas, which increases the concentration of greenhouse gases in the Earth's atmosphere and warms the planet. Climate change includes global warming, but also the impacts of global warming, such as weather changes and other environmental changes such as deforestation.

To make the most of this idea, encourage pupils to investigate the impacts of climate change locally and globally, and to consider the actions that they can take to mitigate climate change. Real-world examples, such as the changing seasons or extreme weather events, can make these concepts more tangible for pupils.

The key challenge in teaching about climate change lies in its complexity and scale. The mechanisms driving climate change involve many different processes and systems – from atmospheric science to energy production to economics. Furthermore, the effects of climate change are wide-ranging and long-term, making them difficult to observe directly in the short term. Using images, models and case studies can help to explain these concepts and show the impacts of and solutions to climate change.



● Key questions

○ What do you understand by the term 'climate change'?

Climate change means the long-term changes in temperature, rainfall, wind, and all other aspects of the Earth's climate. It is getting warmer in many places and this affects the weather.

○ How do you think climate change affects our planet?

Climate change can cause more extreme weather events such as storms, floods and droughts. It can also make sea levels rise, which could cause problems for people living near the coast.

○ What is the difference between climate and weather?

Weather is the condition of the atmosphere over a short period of time, and climate is how the atmosphere 'behaves' over relatively long periods of time (usually 30 years or more).

- **Can you name some human activities that contribute to climate change?**
Burning fossil fuels like coal, oil and gas for energy, cutting down trees and driving cars can all contribute to climate change.
- **How might climate change affect the animals and plants around us?**
Some animals and plants might not be able to survive if their habitat changes too much because of climate change. For example, polar bears need ice to live on, and it's melting because of the warmer climate.

● Common misconceptions

- **Climate change and global warming are the same.**
While related, these terms refer to different things. Global warming is the long-term heating of Earth's climate system, while climate change includes global warming, but also other changes such as sea level rise, ice mass loss and shifts in weather patterns.
- **Weather events can prove or disprove climate change.**
Weather is what we experience in the short term, while climate is the long-term average of weather patterns. An unusually cold day doesn't mean global warming isn't happening.
- **Climate has always been changing; humans are not responsible.**
While it's true that Earth's climate has changed throughout its history, the current rate of change is much faster than most past changes, and scientists have linked this directly to human activities.
- **All effects of climate change are in the future.**
Some effects of climate change are already happening, including increased frequency and intensity of some extreme weather events, rising sea levels and changes in ecosystems.

● Progression

Key Stage	Development of ideas
EYFS	• Pupils can begin by understanding the basic concept of weather and seasonal changes.
KS1 (ages 5-7)	• Pupils start learning about the different types of weather and how it changes over time. They can also start to understand the basic human activities that impact the environment.
LKS2 (ages 7-9)	• Pupils can delve deeper into the concept of climate and understand the differences between weather and climate. They can also learn more about how human activities can affect the natural world.
UKS2 (ages 9-11)	• Pupils can learn about the role of greenhouse gases and how human activities contribute to their increase. This stage may involve a more detailed exploration of climate change, its causes and effects.
KS3 (ages 11-14)	• Pupils should deepen their understanding of climate change, including the scientific evidence for it, its potential impacts and mitigation strategies. This can involve learning about the carbon cycle, renewable energy sources and global climate policies.