

8.6

Global warming

What's the problem?

All scientists agree that the Earth is getting hotter. This is **global warming**. By 2100 the average temperature of the Earth may be between 2 and 5 °C hotter than it is now.

Scientists from many specialisms predict what will happen when the Earth warms up.



I'm a biologist. I study polar habitats. I predict that by 2050 polar bears will be an endangered species.



I'm an agriculturalist. I predict that by 2020 the climate in some African countries may be so hot and dry that food crop harvests are halved.

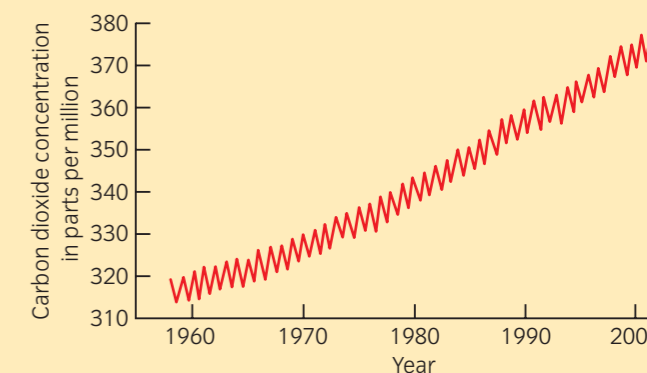


I'm an oceanographer. Ice is melting in the Arctic and Antarctic. And seawater expands when it heats up. So I predict that sea levels will rise. Millions of people living near the sea may lose their homes – and lives – to flooding.

Learn about

- What causes global warming
- What its effects are

Now, nearly all scientists agree that increasing amounts of carbon dioxide in the atmosphere cause global warming. But why is there more carbon dioxide in the atmosphere now than ever before? One big cause is the increase in the burning of fossil fuels like coal, oil and natural gas (methane) to heat houses and make electricity.



- Why do you think there has been an increase in the burning of fossil fuels?
- Explain why this adds to the amount of carbon dioxide in the atmosphere.
- Write a word equation for the reaction of burning methane.
- What does the graph show?
- Measurements made by many scientists were used to plot the graph. Why couldn't one scientist have collected all the data?

Global warming – taking action

Everything you do adds carbon dioxide to the atmosphere – even breathing! The table shows how much carbon dioxide is produced by travelling.

For one person to travel one mile:	Approximate amount of carbon dioxide made in g
in a 'family diesel' car	250
by train	40
by bus	170
by aeroplane	600

- Why are the amounts of carbon dioxide only approximate?
- Which method of transport makes the most carbon dioxide?
- Which method of transport in the table makes least carbon dioxide? Can you think of a method of transport that makes even less carbon dioxide than this?

Generating electricity also makes lots of carbon dioxide. You can find out about this in Unit 12 *Energy*.

The amount of carbon dioxide a person's activity produces in a year is their **carbon footprint**.

- The average carbon footprint of a British person in 2007 was 11 000 kg. The average carbon footprint in 1907 was much less than this. Suggest **two** reasons for the difference.
- Suggest **three** ways of reducing your carbon footprint.

Brainache

- Q** Is carbon dioxide the only greenhouse gas?
A No, methane is a greenhouse gas, too. One cow burps 280 kg of methane into the air every year!



Get this

- Extra carbon dioxide in the atmosphere causes global warming.
- Global warming may cause flooding, extinctions and poor harvests.

- Give **three** problems that global warming might cause.
- What do you think an oceanographer studies?
- Why are scientists from many specialisms interested in global warming?

- The scientists cannot be sure that their predictions are correct. Why?
- Do you think it's up to scientists to decide what to do about global warming? Why?

Carbon dioxide in the atmosphere

Carbon dioxide gas has been part of the Earth's atmosphere for millions of years. It helps keep the Earth warm. Plants use it to make their food. Without carbon dioxide there would be no life on Earth.

HOW SCIENCE WORKS