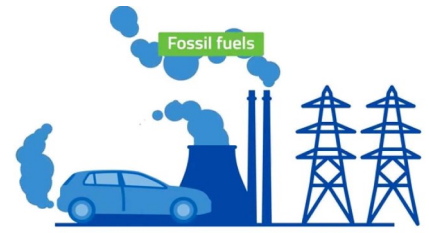


Climate change refers to a large-scale, long-term shift in the planet's weather patterns and average temperatures.

Climate change is the long-term shift in average weather patterns across the world. Since the mid-1800s, [humans have contributed to the release of carbon dioxide](#) and other greenhouse gases into the air. This causes global temperatures to rise, resulting in long-term changes to the climate.



How are humans changing the climate?

In the 11,000 years before the Industrial Revolution, the average temperature across the world was stable at around 14°C. The Industrial Revolution began in the mid-1800s when humans began to burn fossil fuels such as coal, oil, and gas for fuel.

Burning fossil fuels produces energy, but also releases greenhouse gases such as carbon dioxide, methane, and nitrous monoxide into the air. Over time, large quantities of these gases have built up in the atmosphere.

For example, the level of carbon dioxide in the atmosphere rose by 40% during the 20th and 21st century and is now over 400ppm (parts per million). This level of carbon dioxide is higher than at any time in the past 800,000 years.

State of the UK Climate report for 2018 shows the ten hottest years in the UK since 1884 have all happened in the last 17 years.

What is the greenhouse effect?

When greenhouse gases such as carbon dioxide build in the atmosphere, they act like a blanket around the earth. When sunlight (short-wave radiation) hits this blanket, it passes straight through and continues until it reaches the surface of the planet.



The earth then absorbs this sunlight and emits a different type of light, infrared radiation, back out to space. As it leaves the atmosphere, the infrared radiation also hits the greenhouse gas blanket. Most of it goes straight through, but some of it is absorbed and goes back down to earth. This traps the infrared radiation and causes the surface to heat – a process we call the 'greenhouse effect'.

It is crucial to understand that the greenhouse effect is critical to life on earth. Without a blanket of greenhouse gases trapping in heat, the temperature would be bitterly cold, and humans would be unable to survive. However, by adding extra greenhouse gases into the atmosphere, humans have created an enhanced greenhouse effect.



The greenhouse gas blanket is now thicker and is absorbing more infrared radiation than before. In other words, the greenhouse effect is stronger and, instead of keeping the earth at a stable temperature, it is causing the planet to heat up.