

**5** Who is responsible for the biggest contribution of greenhouse gases?  
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**6** Can you suggest why they (Q5) are the biggest contributor?  
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**8** What does IPCC stand for?  
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**1** When do scientists believe that the warming trend began?  
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**2** Name 2 ways that CO<sub>2</sub> is released into the atmosphere by humans  
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**3** Why was the industrial revolution significant in warming?  
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**4** What is the main difference between CO<sub>2</sub> and methane?  
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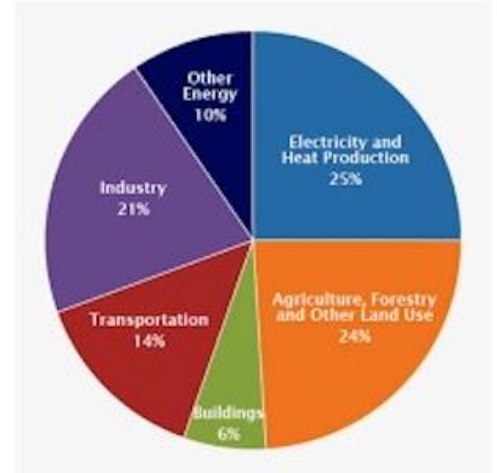
## HOW DO HUMAN ACTIVITIES CONTRIBUTE TO CLIMATE CHANGE?

European Environment Agency investigates the effects of greenhouse gases produced by humans

Scientists believe that the global warming trend since the mid-20<sup>th</sup> century is due to human influence on the "greenhouse effect" — warming that happens when the atmosphere traps heat radiating from Earth from space. Certain gases in the atmosphere block heat from escaping. Two gases that contribute to the greenhouse effect are:

- Carbon dioxide (CO<sub>2</sub>). This is released through natural processes such as breathing and volcanic eruptions and through human activities such as deforestation, land use changes, and burning fossil fuels (oil, coal and gas) . Humans have increased atmospheric CO<sub>2</sub> by more than a third since the Industrial Revolution (around 1750).
- Methane. This is a gas produced both through natural sources and human activities, including waste in landfills, agriculture (farming) and livestock manure (such as cows). Methane is a far more active greenhouse gas than carbon dioxide, but there is less of it in the atmosphere.

The pie chart below shows where the majority of greenhouse gases are produced.



The consequences of changing the natural atmospheric greenhouse are difficult to predict, but certain effects seem likely.

On average, Earth will become warmer. Some regions may welcome warmer temperatures, but others may not. Warmer conditions will probably lead to some places becoming wetter and others dryer. This will affect the types of plants and animals that can live in different climates around the world.

The IPCC (Intergovernmental Panel on Climate Change) says a 1.5°C average rise may put 20-30% of species at risk of extinction.

A stronger greenhouse effect will also warm the oceans and melt glaciers and other ice, increasing sea level. Ocean water also will expand if it warms, contributing further to sea level rise.

Some crops and other plants may respond well to increased atmospheric CO<sub>2</sub>, growing faster and using water more efficiently. At the same time, higher temperatures and moving climates may change the areas where crops grow best and affect what farmers are able to grow.

It is thought that the human impact on climate is larger than the impact of natural processes, such as solar changes and volcanic eruptions. There are a lot of predictions for how much the world will warm by. This is because it is hard to know if humans will reduce their burning of fossil fuels. The countries that burn the most fossil fuels are places such as the USA, Russia and China.

**9** What will happen to oceans? Why will this affect humans?  
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**10** Can you think of one benefit of climate change for farmers?  
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**11** Why is it hard to predict the amount of warming?  
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**7** Will the impacts be universal? (*the same globally?*)  
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**12** Write a sentence to explain chain why you think these countries contribute so much to climate change (*There are a number of reasons!*)  
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