

Climate Change and Green House Effect

► **Greenhouse gases** keep the Earth's temperature warm enough to support living organisms. Without them, the planet would be too cold for most organisms to survive. The three main greenhouse gases in the atmosphere are:

1. **Water vapour**
2. **Carbon dioxide**
3. **Methane**

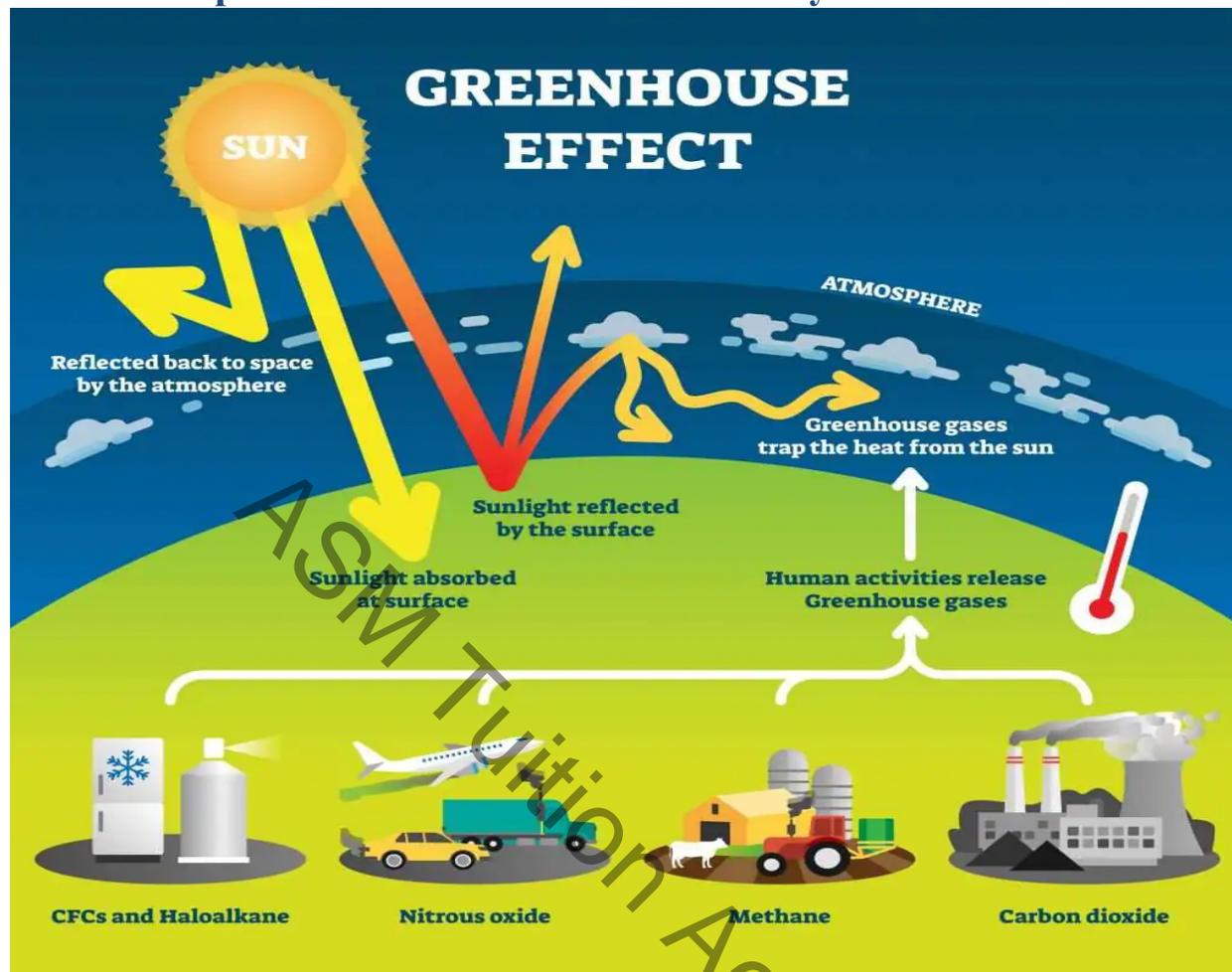
- The amount of water vapour in the atmosphere changes depending on the temperature.
- Water vapour is particularly significant because its amount in the atmosphere can change depending on temperature. This change can then affect the amount of energy trapped in the atmosphere.

These greenhouse gases:

1. Absorb heat radiated from the Earth
2. then release energy in all directions, which keeps the Earth warm

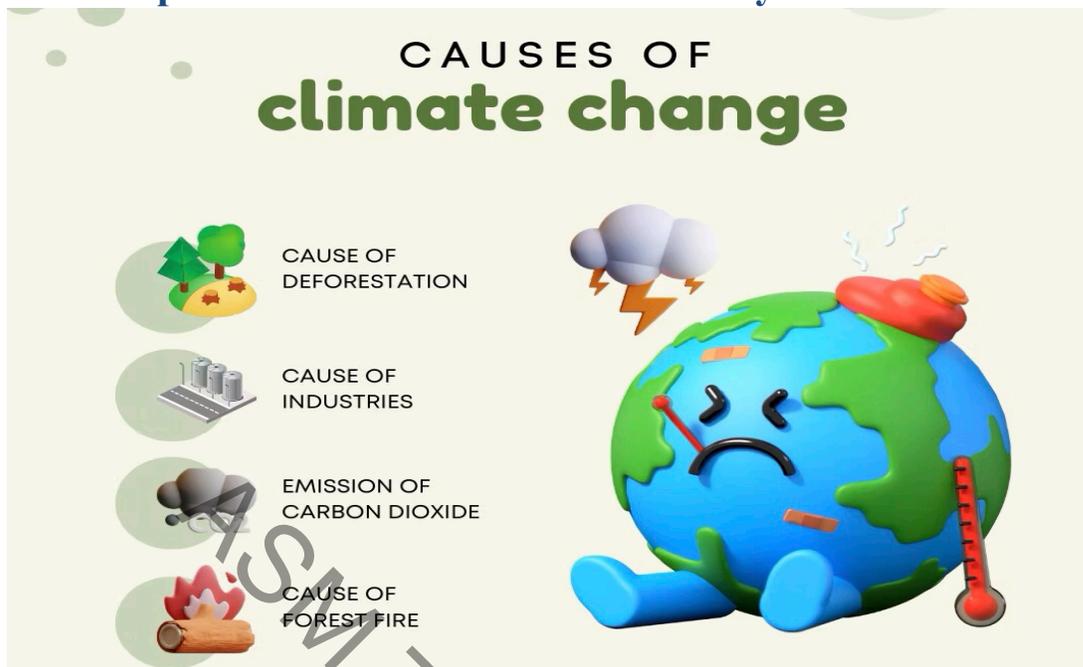
How the greenhouse effect works.

1. The Sun emits energy as shortwave radiation, such as ultraviolet (UV) rays and visible light.
2. Most of the shortwave radiation easily passes through the Earth's atmosphere and reaches the surface. However, some of it is reflected back into space.
3. The Earth's surface absorbs most of the solar energy, and then re-emits it as longwave radiation, such as infrared.
4. Greenhouse gases in the atmosphere absorb some of this longwave radiation.
5. By absorbing this energy, greenhouse gases increase the temperature of the atmosphere. This increase in temperature is known as the greenhouse effect.



Human activities and the greenhouse effect

- ▶ Human activities are increasing the amount of some greenhouse gases in the atmosphere. For example:
 1. **Farming animals** releases methane
 2. **landfill site and waste** from Agriculture releases methane
 3. **Burning fossil fuels** in vehicles and power stations releases carbon dioxide
 4. **Deforestation** releases carbon dioxide and reduces the absorption of carbon dioxide through photosynthesis



Increase in carbon dioxide is linked to global warming

- ▶ One of the commonly used pieces of evidence that humans are causing global warming or climate change. There is a strong correlation between the increase in global carbon dioxide levels caused by human activities and the increase in global temperatures over the same timescale.

Effects of Climate Change

1. **Global climate change has several effects:** The increasing temperature of the Earth and resulting climate change have several effects.
2. **Ice caps can melt:** The polar ice caps can **melt** due to the increased temperature, leading to an increase in sea levels. This results in flooding and even coastal erosion.
3. **Habitats will be lost:** Reduction of ice caps reduces the **habitat** of certain species like polar bears.
4. **Food production can be affected:** Due to changes in amount of **rainfall**, food production can be affected in certain areas. There may be too much rainfall or too little rainfall for crops to grow.
5. **Increased desertification:** Some areas will become hotter and drier, with more drought, leading to increased **desertification**.
6. **Species distribution can change:** Again, due to changes in rainfall and storms, the **distribution** of species can change. The water levels in their habitats may be negatively affected. Some animals may not evolve fast enough and increased rates of extinctions will occur

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7. **More severe weather is likely:** More hurricanes and storms are likely to occur.

Causes and Effects of Climate Change

Causes

- Rapid industrialization
- Energy use
- Agricultural practices
- Deforestation
- Consumer practices
- Livestock
- Transport
- Resource extraction
- Pollution



Effects

- Rising temperatures
- Rising sea levels
- Unpredictable weather patterns
- Increase in extreme weather events
- Land degradation
- Loss of wildlife and biodiversity

What are the social impacts of climate change?

Displaced people. Poverty. Loss of livelihood. Hunger. Malnutrition. Increased risk of diseases. Global food and water shortages.