

## 6.1 Climate Change: Causes and Effects

Climate change refers to long-term changes in temperature, rainfall, wind, and other weather conditions. It has become one of the greatest environmental challenges affecting the world today. Human activities and natural processes both contribute to climate change.

### Definition of Climate Change

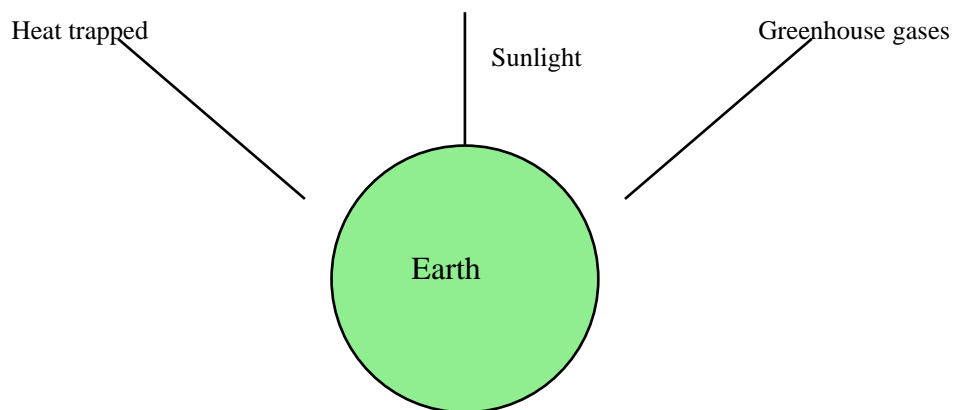
Climate change is the long-term alteration of global or regional climate patterns. It mainly refers to the rise in global temperature caused by increased greenhouse gases in the atmosphere.

### The Greenhouse Effect

The greenhouse effect is the warming of the Earth's surface caused by greenhouse gases such as carbon dioxide, methane, and water vapor. These gases trap heat in the atmosphere.

Main greenhouse gases include: Carbon dioxide (CO<sub>2</sub>) Methane (CH<sub>4</sub>) Nitrous oxide (N<sub>2</sub>O) Water vapor

### Diagram of the Greenhouse Effect



### Causes of Climate Change

Climate change results from both human activities and natural causes.

**Human Causes:** Burning fossil fuels. Deforestation. Industrial pollution. Agricultural activities. Vehicle emissions.

**Natural Causes:** Volcanic eruptions. Changes in solar radiation. Natural climate cycles.

## Effects of Climate Change

Climate change affects the environment, human health, agriculture, and ecosystems.

Increase in global temperature. Melting of glaciers and polar ice. Rise in sea level. Drought and desertification. Flooding and storms. Loss of biodiversity. Spread of diseases. Food shortages.

## Effects on Agriculture

Climate change affects farming and food production. Changes in rainfall and temperature reduce crop yields and affect livestock.

Reduced agricultural productivity. Crop failure during drought. Increased pest infestation. Loss of grazing land.

## Effects on Human Health

Climate change increases health risks for humans.

Heat-related illnesses. Spread of malaria and other diseases. Malnutrition due to food shortage. Respiratory diseases from pollution.

## Methods of Reducing Climate Change

Climate change can be reduced through environmental conservation and sustainable practices.

Planting trees (afforestation). Reducing fossil fuel use. Using renewable energy. Recycling waste materials. Protecting forests. Using public transportation.

## Comparison Between Causes and Effects

Cause	Effect
Deforestation	Loss of biodiversity
Burning fossil fuels	Global warming
Industrial pollution	Air pollution
Greenhouse gases	Increase in temperature

## Important Notes

- Climate change is mainly caused by greenhouse gases.
- Carbon dioxide is a major greenhouse gas.
- Deforestation increases climate change.

- Climate change affects health, agriculture, and ecosystems.
- Renewable energy helps reduce climate change.

## Summary

Climate change is a major environmental issue caused by both human and natural factors. The greenhouse effect increases global temperature and leads to problems such as drought, flooding, sea level rise, and health risks. Reducing pollution, protecting forests, and using renewable energy sources are important methods of controlling climate change.

## Review Questions and Answers

### 1. What is climate change?

Climate change is the long-term change in climate conditions.

### 2. What is the greenhouse effect?

It is the trapping of heat by greenhouse gases in the atmosphere.

### 3. Mention one greenhouse gas.

Carbon dioxide or methane.

### 4. Give one human cause of climate change.

Burning fossil fuels.

### 5. Mention one effect of climate change.

Flooding, drought, or global warming.

### 6. How can climate change be reduced?

By planting trees and using renewable energy.

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