

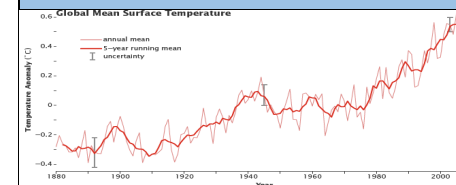
How is climate change affecting the world

Overview

- Climate change is a long-term change in the average weather patterns across the world.
- Climate change includes global warming, which is the increase in the world's temperature over a sustained period of time.
- The Earth has gone through several changes of temperature before (e.g. the ice ages). However, most scientists agree that the world's temperature is changing faster than before due to human activities.
- Small changes in the world's climate and temperature can have a huge impact on the environment. These include glaciers melting and rising ocean levels, the disappearance or destruction of some eco-systems and extreme weather.



Effects of Climate Change



-Over the past few decades, scientists have been tracking the world's average temperature.
 -It has become increasingly clear that the world's average temperature has been rising since 1850.
 -As of 2023, it is thought that the world's average temperature has risen by about 1.1°C.

Global Warming	
Sea Level Rise	
Extreme Weather Events	
Ocean Acidification	

-The effects of a rising average temperature on Earth are causing a number of problems, including heat-related illnesses and difficulty carrying out daily activities. Wildfires start more easily and spread more rapidly when conditions are hotter, and famines are also more likely.

-Global warming causes glaciers across the world, and ice at the poles, to melt, increasing sea levels. Sea levels are rising at their fastest level, and are predicted to rise by a foot by 2050, threatening low-lying land across the world.

-The world is now experiencing more extreme weather events than in the past. Rising temperatures cause deadly heatwaves, whilst a combination of heat and rising sea levels etc. can cause heavier, more extreme storms.

-The oceans absorb a significant portion of the CO₂ emitted by human activities. This leads to a decrease in the pH of seawater, making it more acidic. Ocean acidification can harm marine ecosystems.

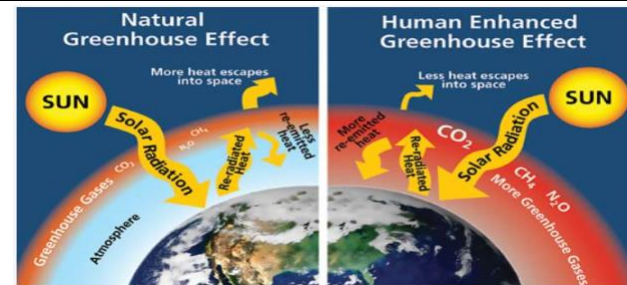
Key Vocabulary

- Climate
- Global
- Warming
- Weather
- Pollution
- Deforestation
- Carbon dioxide
- Greenhouse effect
- Fossil Fuel
- Renewable
- Migration
- Biodiversity
- Resilience
- Sea level rise
- Carbon footprint
- Afforestation
- Climate Action
- Carbon neutral
- Sustainable

Causes of Climate Change

The Greenhouse Effect

Climate change is largely driven by greenhouse emissions, such as carbon dioxide, methane and nitrous oxide. As greenhouse gas emissions blanket the Earth, they trap the sun's heat. Some element of this is needed to prevent the Earth becoming too cold. However, as we release an excess of greenhouse emissions, this leads to global warming and climate change. The world is now warming faster than at any point in recorded history.



Burning Fossil Fuels: Since the Industrial Revolution (late 18th Century) humans have burnt fossil fuels such as coal, oil and natural gas for energy and to fuel transport. This is the largest source of greenhouse emissions, particularly carbon dioxide, and contributes significantly to the greenhouse effect. It is likely the biggest contributor to climate change.



Agriculture: Agriculture often requires forests to be cleared to create space (see deforestation). Livestock production and rice cultivation, produce methane (CH₄) and nitrous oxide (N₂O), both potent greenhouse gases. Livestock release methane during digestion, and the use of nitrogen-based fertilizers leads to nitrous oxide emissions.



Deforestation: Trees and plants absorb carbon dioxide from the atmosphere throughout photosynthesis – thus meaning there are less greenhouse gases in the atmosphere. When forests are cleared or burned, this stored carbon is released back into the atmosphere as CO₂, increasing greenhouse gas concentrations.



Natural Processes: Not all causes of climate change are man-made. The Earth has often naturally warmed and cooled throughout its history. Natural processes also contribute to greenhouse gas emissions, however human activities have accelerated their release. For instance, volcanic eruptions can release CO₂ and other gases, but their impact is comparatively small.



Addressing Climate Change

- The world is addressing climate change through a combination of international agreements, national policies, technological advancements, and grassroots efforts.
 -Most scientists agree that, at present, these measures are not going far enough to prevent climate change from spiralling out of control.

Paris Agreement: Adopted in 2015 under the United Nations Framework Convention on Climate Change (UNFCCC), the Paris Agreement aims to limit global warming to well below 2 degrees Celsius above pre-industrial levels, with efforts to limit it to 1.5 degrees Celsius. Countries set their own nationally determined contributions (NDCs) outlining their climate goals and strategies.

Renewable Energy Transition: Governments, businesses, and individuals are increasingly adopting renewable energy sources like solar, wind, hydroelectric, and geothermal power to reduce reliance on fossil fuels and lower greenhouse gas emissions. Advances in technology have made renewable energy more affordable and accessible, contributing to a shift away from fossil fuels.

Afforestation and Reforestation: Planting trees (afforestation) and restoring forests (reforestation) help remove CO₂ from the atmosphere and contribute to biodiversity and ecosystem restoration.
Sustainable Agriculture: Sustainable farming practices reduce emissions from livestock, improve soil health, and decrease deforestation.

Public Awareness and Education: Increasing awareness about climate change through education, media, and advocacy efforts encourages individuals and communities to take action. Movements like Fridays for Future, led by young activists, have drawn attention to the urgency of climate action.



Climate Change Timeline

Millions BC The Earth has been through several natural global temperature fluctuations.	Pre-1750 Global temperatures remain stable.	Late 1800s Svante Arrhenius proposes the idea that CO ₂ levels from humans could lead to global warming.	1900s Widespread industrialization and burning of fossil fuels result in large CO ₂ rise.	1960s-1990s Global evidence mounts that rising CO ₂ levels are leading to global temperature rise.	2000s The first decade of the new millennium is warmer than any recorded decade.	2010s An even hotter decade, marked by extreme weather events.	2015 Paris Agreement adopted.	2020 The Covid-19 global pandemic leads to a temporary reduction in greenhouse emissions.	2020s Global efforts to tackle climate change intensify, but temp rises continue.
--	--	--	---	--	---	---	--------------------------------------	--	--