Blog

How is climate change affecting our planet?

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Abstract

This blog explores what climate change is and what it means to us. It gives a clear and precise insight into the effects global warming has on our planet, Earth, and how it affects everything around us. This blog contains relevant and essential information, including manageable tips to help combat climate change.

Keywords: Climate Change, Global Warming, Environment, Earth, Wildlife

What is climate change?

Climate change refers to a significant variation in average weather conditions, including conditions becoming wetter, drier, or warmer over time (Turrentine and Denchak, 2021). In Earth's current state, we are experiencing global warming, meaning the global temperature has increased over the years. The effects are primarily shown in the environment and wildlife and will eventually affect humans.

The Intergovernmental Panel on Climate Change (IPCC) 2021 report stated that the impact of human activities on the climate system is apparent, as indicated by rising concentrations of greenhouse gases in the atmosphere, a positive radiative forcing, observed temperature increases, and a comprehensive grasp of the climate system's mechanics (Intergovernmental Panel on Climate Change, 2023). Human-induced warming had already reached about 1°C above pre-industrial levels at the time of the writing of the Special Report. By the decade 2006–2015, human activity had warmed the world by 0.87°C (±0.12°C) compared to pre-industrial times (1850–1900). If the current warming rate continues, the world will reach human-induced global warming of 1.5°C by 2040 (Intergovernmental Panel on Climate Change, 2023). These concerning statistics, provided by the IPCC reports, indicate how fossil fuel (coal, oil, and natural gases) usages have drastically increased since the 1800s.

Humans have taken advantage of the useful resources that have been found but did not consider how detrimental these resources would be to our planet (United Nations, 2022). Although these resources have been extremely helpful for the growth of society, fossil fuels create dangerous greenhouse gases that surround the Earth and trap all the sun's heat inside, causing temperatures to rise. Greenhouse gas molecules consist of three or more atoms, and their atomic bonds are flexible enough to cause them to oscillate when they absorb heat. Over time, these oscillating molecules emit radiation, which is highly likely to be captured by another greenhouse gas molecule. This ongoing cycle effectively traps heat in the vicinity of Earth's surface (UCAR, 2023).

The main greenhouse gas is carbon dioxide, something everyone is familiar with. Every year, the summer heat record is beaten by a higher temperature, which is no coincidence, and we know why – everyone should! The Earth is now, roughly, 1.1°C hotter than it was in the 1800s; this may sound like a small number, but it has a huge effect (Met Office, 2022). This has resulted in more frequent and severe heatwaves, melting ice leading to rising sea levels, changing weather patterns, ocean warming, biodiversity loss, economic impacts, health risks, agricultural challenges, and water scarcity. These effects vary by region and pose significant risks to ecosystems, economies, and human well-being. Mitigating further temperature increases and implementing adaptation measures are crucial to addressing these challenges. If a number that small can affect the planet so much already, imagine what would happen if it got worse.

How is climate change affecting the environment?

It is expected that in the UK by 2070, summers will be hotter and drier, winters will be warmer and wetter, and there will be intense, random shifts in the weather. Summers will be between 1 and 6°C hotter and up to 60% drier, and winters will be between 1 and 4.5°C warmer and up to 30% wetter. But this is not the only thing that will change, and changes are already occurring. Intense wildfires have been happening in multiple areas, including Australia, the Amazon Rainforest, the United States, Canada, and British Columbia (Xu *et al.*, 2020). These fires, which occurred between 2017–2020, destroyed millions of acres of land and largely contributed to the greenhouse gas emissions that harm the planet. It is a cycle that continues to destroy the planet; the hot temperatures are causing wildfires to start, and the wildfires are making emissions worse,

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causing more climate change. Sea levels are rising because of melting glaciers, which is causing mass floods and lessening accessible land (WWF, 2022).

The Earth is experiencing increasing aridity, leading to more frequent droughts that disrupt crop growth and elevate the risk of wildfires. Simultaneously, intense rainfall events are causing widespread flooding, contributing to rising sea levels that pose significant threats to coastal regions and ecosystems. These climate-related changes are approaching critical tipping points, where the impacts may become even more severe and challenging to reverse. A few potential irreversible changes include the loss of Arctic Sea ice, the melting of ice sheets in Greenland and Antarctica, coral reef collapse, disruptions in ocean circulation, and the release of methane from thawing permafrost. Tipping points vary in their sensitivity to temperature increases and can have far-reaching impacts on the climate and natural environment. Understanding and preventing the crossing of these thresholds is crucial to mitigating the most severe consequences of climate change (Wang, 2023).

How is climate change affecting life forms?

Animal species are more often becoming extinct or close to extinct because they cannot survive in the new conditions that climate change has provided for them. Ecosystems and habitats are being demolished as they cannot bear the changes that climate change has caused. Drought and wildfires burn down habitats, animals, and sources of food, which can cause animals and humans to struggle to survive (NASA, 2022). Flooding and mass rainfall can also break down habitats and ruin food sources. An example of an animal that is suffering from climate change is the Asian elephant (GVI, 2022). These elephants survive on fresh water and plants, such as bamboo and bananas. The increase in temperatures can cause droughts, which make it harder for the elephants to find fresh water every day. The warmer conditions also make it easier for invasive plants to grow. This restricts the growth of nutritious plants, such as bamboo and bananas, and the elephants' food is now becoming less accessible, like fresh water. It is likely that invasive species, such as mosquitos, will migrate to the UK as it will be too hot for them to survive in their countries of origin (LEDee *et al.*, 2021). The UK will eventually have the best climate for invasive species to thrive in, meaning their new home will be the UK and similar countries.

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How can we act against climate change?

There are many simple ways by which we can help to reduce global warming and the risk of climate change; they can be small steps that go unnoticed in your day-to-day life. Something most people do is drive to get around; it is convenient but comes at a price as vehicles emit a large amount of greenhouse gases. A better approach would be investing in an electric or hybrid vehicle, public transport, or bicycles as these are safe options (WEHO, 2022). Although public transport, like buses, still emits greenhouse gases, it can carry more people whilst using fewer vehicles, which means fewer greenhouse gases are emitted overall. Recycling and reusing items are also easy and important. When items are properly recycled, they can be made into new things instead of starting over again and creating more greenhouse gases. Food waste is another big component that plays into human activity in climate change. Food that is wasted sits in landfills and lets off large amounts of methane, a harmful greenhouse gas that has 80x more warming power than carbon dioxide (Love Food Hate Waste, 2023). A structured meal plan could easily cut down the amount of food waste caused by a household, and it could also save a bit of money!

Summary

Earth is currently experiencing global warming, with the global temperature rising over time. This warming is primarily driven by human activities. Climate change has various environmental impacts, including more frequent heatwaves, melting ice leading to rising sea levels, changing weather patterns, ocean warming, biodiversity loss, economic consequences, health risks, agricultural challenges, and water scarcity. These effects vary by region and pose significant threats to ecosystems, economies, and human well-being. Global warming also affects the environment by leading to hotter and drier summers, warmer and wetter winters, and more erratic weather patterns. Intense wildfires have become common in various regions, contributing to greenhouse gas emissions. Rising sea levels and melting glaciers result in mass floods and the loss of land. The impacts of climate change on life forms are also profound. Many animal species are at risk of extinction due to their inability to adapt to the changing conditions. Habitats and ecosystems are being destroyed by droughts, wildfires, flooding, and extreme rainfall events.

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However, there remains reason for optimism! Together, we can reshape our future and the future of our planet in a progressive direction. Individuals have the power to take various initiatives. Shifting to electric or hybrid vehicles, utilising public transportation, and embracing cycling can all contribute to the reduction of greenhouse gas emissions from transportation. Embracing recycling and reusing items aids in waste reduction and curbing emissions associated with the production of new goods. It is equally vital to minimise food waste, as the decomposition of food in landfills emits methane, a potent greenhouse gas. These measures, coupled with broader community and global endeavours, are indispensable in addressing the challenges of climate change and its consequences.

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