

# Impacts of Global Warming on the Environment

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## Perspective

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### DESCRIPTION

Climate change threatens people with increased flooding, extreme heat, increased food and water scarcity, more disease, and economic loss. Human migration and conflict can also be a result. Societies and ecosystems will experience more severe risks in the future without action to limit warming. Adapting to climate change through efforts like flood control measures or drought-resistant crops reduces climate change risks, although this may not be possible with increasing warming. Poorer countries are responsible for a small share of global emissions, yet they have the least ability to adapt and are most vulnerable to climate change.

Many climate change impacts are already felt at the current 1.2 °C (2.2 °F) level of warming. Additional warming will increase these impacts and can trigger tipping points, such as the melting of the Greenland ice sheet. Under the 2015 Paris Agreement, nations collectively agreed to keep warming "well under 2 °C". However, with pledges made under the Agreement, global warming would still reach about 2.7 °C (4.9 °F) by the end of the century. Limiting warming to 1.5 °C will require halving emissions by 2030 and achieving net-zero emissions by 2050

Reducing emissions requires generating electricity from low-carbon sources rather than burning fossil fuels. This change includes phasing out coal and natural gas fired power plants, vastly increasing use of wind, solar, and other types of renewable energy, and reducing energy use. Electricity generated from non-carbon-emitting sources will need to replace fossil fuels for powering transportation, heating buildings, and operating industrial facilities. Carbon can also be removed from the atmosphere, for instance by increasing forest cover and by farming with methods that capture carbon in soil.

Greenhouse gases are transparent to sunlight, and thus allow it to pass through the atmosphere to heat the Earth's surface. The Earth radiates it as heat, and greenhouse gases absorb a portion of it. This absorption slows the rate at which heat escapes into space, trapping heat near the Earth's surface and warming it over time. Before the Industrial Revolution, naturally-occurring amounts of greenhouse gases caused the air near the surface to be about 33 °C

warmer than it would have been in their absence. While water vapour (~50%) and clouds (~25%) are the biggest contributors to the greenhouse effect, they increase as a function of temperature and are therefore feedbacks. On the other hand, concentrations of gases such as CO<sub>2</sub> (~20%), tropospheric ozone, CFCs and nitrous oxide are not temperature-dependent, and are therefore external forcing

Human activity since the Industrial Revolution, mainly extracting and burning fossil fuels (coal, oil, and natural gas), has increased the amount of greenhouse gases in the atmosphere, resulting in a radiative imbalance. In 2019, the concentrations of CO<sub>2</sub> and methane had increased by about 48% and 160%, respectively, since 1750. These CO<sub>2</sub> levels are higher than they have been at any time during the last 2 million years. Concentrations of methane are far higher than they were over the last 800,000 years

Humans change the Earth's surface mainly to create more agricultural land. Today, agriculture takes up 34% of Earth's land area, while 26% is forests, and 30% is uninhabitable (glaciers, deserts, etc.).[94] The amount of forested land continues to decrease, which is the main land use change that causes global warming. Deforestation releases CO<sub>2</sub> contained in trees when they are destroyed, plus it prevents those trees from absorbing more CO<sub>2</sub> in the future. The main causes of deforestation are: permanent land-use change from forest to agricultural land producing products such as beef and palm oil (27%), logging to produce forestry/forest products (26%), short term shifting cultivation (24%), and wildfires (23%)