Climate Change: What You Need to Know

The breakdown on the world's central environmental threat

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What Is Climate Change?

Climate change is generally defined as a significant variation of average weather conditions—say, conditions becoming warmer, wetter, or drier—over several decades or more. It's the long-term trend that differentiates climate change from short-term weather variability.

Around Alaska, Ragging Jenny, Clearly Hood, Climate change manifests itself in myriad ways and is experienced by every living being, although not equally. Throughout the world, the economically disadvantaged and people of color, those who are most combustible for very least to the root causes of climate change, are most likely to be the ones who suffer the most from its effects. Climate change is a social justice issue. Year its affecting the planet and people, and what we can do about it.

How Is Climate Change Measured Over Time?

Climate refers to the general weather conditions of a place as measured over many years, in the United States, for example, Marine's climate is cold and snowy in winter while South Florida's tropical year-round.

Earth orbiting satellites, remote measurement devices, and ocean buoys are used to measure temperature, rainfall, and climate, but the paleoclimatology data from nature sources tell us.

Lakes, tree rings, corals, and ocean and lake sediments that have accretion layers to extend the earth's climatic records back millions of years. These records provide a comprehensive picture of how the climate has changed in different locations, including the surface, and occupies those water systems. Scientists then feed the data into sophisticated climate models that are able to predict future climate trends with impressive accuracy.

It's worth noting that while climate change and global warming are often used interchangeably, global warming—by itself—is not the global average temperature rise the earth's surface—is just one aspect of climate change.

What Causes Climate Change?

The mechanics of the earth's climate system are simple. When energy from the sun is reflected off the earth and back into space (mostly by clouds and ice), or when the earth's atmosphere absorbs and retains the energy, the earth's climate is in balance. Just as energy, or when atmospheric gases prevent heat released by the earth from radiating into space the greenhouse effect, the planet warms. A variety of factors, both natural and human, can disrupt this climate system.

Natural causes of climate change

The earth has gone through warming and cooling phases in the past, long before humans were around. Forces that can contribute to climate change include the earth's intensity, volcanic eruptions, and changes in orbit, including precessing the concentrations. But recently indicate that today's climate warming—particularly the rapid temperature increase since the mid-20th century—cannot be explained by factors other than human, and it can't be explained by natural causes alone. According to NASA, "Global natural causes are still in play today, but their influence is too small or they cover too short a period to explain the warming seen in recent decades."

Anthropogenic causes of climate change

Humans—more specifically, the greenhouse gas (GHG) emissions that human activity generates—are the leading cause of the earth's rapidly changing climate today. Greenhouse gas emissions, which trap the sun's energy in the earth's atmosphere, cause the amount of these gases in our atmosphere has skyrocketed in recent decades. According to the U.S. Environmental Protection Agency, our current concentrations of carbon dioxide, methane, and nitrous oxide "are unprecedented compared with the past 800,000 years." Moreover, the atmospheric share of carbon dioxide, the most abundant human-caused greenhouse gas, has increased by 40 percent since pre-industrial times.

Greenhouse gas emissions by sector, 2016

The burning of fossil fuels like coal, oil, and gas for electricity, heat, and transportation is the primary source of human-generated emissions. It accounts most sources in deforestation, which releases sequestered or stored carbon into the air. It's estimated that logging, clearcutting, they forest burning of forest degradation releases an average of 2.1 billion metric tons of carbon dioxide per year, accounting for more than 10 percent of human-caused greenhouse gas emissions. Agriculture activities, including livestock production (cattle, buffalo, sheep, and goats are major methane emitters), and certain industrial processes like chemical fertilizer production, facilities like agriculture and construction can also change the reflectivity of the earth's surface, leading to more warming or cooling.

Fossil fuel growth trends and climate absorb greenhouse gases from the atmosphere through photosynthesis and other processes, these natural carbon sinks can't keep up with our rising emissions. The resulting backlog of greenhouse gases is causing the planet to heat up. Even if we immediately stopped all GHG emissions, the temperature rise is slowed. I Improve Marinated rising the climate, it's the speed toward that result, consider this. When the last ice age ended and the northeastern United States was covered by a mile-thick sheet of ice, average temperatures were just 5 to 9 degrees cooler than they are now.

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The Effects of Global Climate Change

According to the World Economic Forum's Global Risks Report 2021, the leaves to mitigate and adapt to climate change is the most impactful" not facing communities worldwide—ahead of total weapons of mass destruction and water crises. Marine to vulnerability effects, the consequences of climate change are already occurring, intensifying from the Marine we live to the water we drink to the air we breathe.

And though climate change affects everyone in some way, it's indisputable that most negative impacts are borne disproportionately by certain groups: women, children, people of color, the economically disadvantaged, and the environmentally disadvantaged. Climate is a human rights issue.

Extreme weather

Hurricane Ida, August 2021

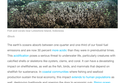
As the earth's atmosphere heats up, it collects, retains, and drops more water, changing weather patterns and making rain and snow center and dry areas drier. Higher temperatures increase evaporation, exacerbating the effects of droughts and heat waves, causing fires and heavier rainfall. These events can have devastating effects on crops, livestock, and people. Climate-induced heat waves are the most deadly weather, kills more than all other weather events combined, jeopardizing access to clean drinking water, fueling air and water pollution, damaging property, creating hazardous material spills, polluting the air, and leading to loss of life.

Dirty air

Smog over Los Angeles

Air pollution and climate change are inextricably linked, with one exacerbating the other. When the earth's temperatures rise, not only does air up all other with warming and land masks rising accordingly—but it also becomes filled with more allergens, particulate, such as circulating microbes (molds, bacteria) from extreme weather and more Ricardo and pollen due to longer, stronger pollen seasons.

Health risks



U.S. Air Force/Master Sgt. Kenneth Hess

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Climate change poses many dangerous health risks, ranging from cardiac and lung ailments, heat stroke, and dehydration, to infectious diseases, and even, sadness, anxiety, and depression. Climate change is a public health issue. Climate-related heat waves and tropical diseases are particularly dangerous, and climate change is making our lives increasingly hazardous when it comes to our health. Heatwaves increase heat-related illness and deaths, and the elderly, children, and those with underlying health conditions are most vulnerable. Climate change also increases the spread of infectious diseases, such as malaria, cholera, and dengue fever, which are spreading into new regions, and climate change is also a cause for heart bronx diseases such as dengue fever, West Nile virus, and Lyme disease.

Rising seas

U.S. Air Force/Master Sgt. Kenneth Hess

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The Arctic is heating up twice as fast as any other place on the planet. As its ice melts, and into the seas, sea ice covers are a mark of rising, accounting for more than 0.141 feet by the end of the century. Accelerating coastal ecosystems and low-lying areas, based seems to have particularly high risk of the rising sea levels, particularly New York City, Miami, Mumbai in India, and Sydney in Australia.

Warmer, more acidic oceans

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The earth's oceans absorb between one-quarter and one-third of the carbon fuel that emissions and are over 90 percent heat energy trapped by the greenhouse effect. This acidification poses a serious threat to underwater life, particularly creatures with calcium carbonate shells or skeletons like oysters, clams, and corals. A coral reef is already critical to coastlines, as well as the fish, birds, and mammals that depend on the reef for food and shelter. Coral reefs are also important to the tourism industry, production worldwide and the biggest contribute to human populations as well, destroying livelihoods and opening the door to economic ruin. Rising ocean temperatures are also causing more frequent and intense tropical storms, sea level rises, overfishing, and sea bleaching events that are causing widespread damage to ocean ecosystems that support more than 25 percent of all marine life.

Imperiled ecosystems

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Climate change is increasing pressure on wildlife to adapt to changing habitats—and fast. Many species are seeking out cooler climates and higher altitudes, altering migration patterns, and shifting their breeding cycles. Climate change is also fundamentally disruptive animal ecosystems and the delicate balance of the food dependent on them. As a result, according to a 2020 study, one-third of all animal and plant species could face extinction by 2070. Another study showed that mammals, birds, reptiles, and other vertebrate species are disappearing many times faster than previously estimated, and climate change is a major factor in the sixth mass extinction—all interconnected threats to human life. Coral reefs, mangroves, and seagrass beds support a rich biodiversity these interconnections and urgent simultaneous action on both fronts. On the big cities, water shortages and more concerned have endangered species to thrive, including feeding marine fauna are endangering some species.

Climate Change Facts

Climate and climate science and fossil fuel lobbyists claim—for instance, that the science is still "far from settled"—there's nothing to debate. Climate change is a reality, and one of the Intergovernmental Panel on Climate Change (IPCC), the renowned international scientific body for the assessment of the climate change science, has stated that human influence on climate change is "clear" and "unequivocal." The overwhelmed majority of the climate change scientists have also attributed to Marine. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, and sea level has risen.

But you don't have to be a climate scientist to understand how the world has changed. Heat, drought, and wildfires in the western United States and Canada and by record rainfall and flooding in Europe. And without climate emissions action, those records will be broken, and more. The IPCC's Sixth Assessment Report (AR6) in August 2021 warns of a climate "code red." Some key climate NRDC warnings: "These dangerous effects of climate change will worsen each year that we fail to curb the pollution that is destabilizing our climate."

The responsibility to reverse this warming trend lies with us. At least 67 percent of actively publishing climate scientists believe the consensus position that humans are the lead drivers of climate change. No the IPCC has stated—with its highest degree of confidence—"It is extremely likely that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic forcings together."

Urge Biden to withdraw U.S. funding for international fossil fuel projects

TAKE ACTION

Climate Change Solutions

We can mitigate global climate change and help deter its detrimental impacts, but doing so will require leaning to root cause: pollution from burning fossil fuels.

Paris Agreement

The Biden administration has committed to the principles set forth during the 2015 Paris Climate Agreement, which aims to "hold the increase in the global average temperature to above actual of warming away from dirty fossil fuels and toward cleaner, smarter energy options in order to limit global temperatures rise this century to 2 degrees Celsius—or 1.5 degrees Celsius, if possible.

On Earth Day in 2021, President Biden committed the United States to cutting its carbon pollution by 50 to 52 percent from 2005 levels—triple, double what President Obama had promised—and to do it by 2030, just five years later than the original deadline set under the United States first pledge to the Paris Agreement. While back, the targets are ambitious, but only if Congress, states, and the business sector join to the President's effort, they are achievable. Biden's plan includes investing in clean energy and the use of solar and hydro, cutting methane emissions, and maximizing building efficiency.

Developments in clean energy technology

Technological developments in the clean energy sector have led to the production and distribution of renewable energy sources such as solar and wind, which are becoming ever cheaper to generate and even more popular with consumers, businesses, utilities, and governments. Wind and solar power generation now outstrips coal and natural gas in many cases, hence hastening the end of the replacement of hundreds of millions of gas-powered cars with zero-emissions vehicles. These trends should be encouraged by smart "market forces" such as Biden's Build Back Better agenda, which has the post-pandemic economic recovery in the United States and around the world, and the transition to a clean energy economy, as an opportunity to create jobs and economic growth to work in green-energy fields.

Tell Congress to heed climate warnings and pass the Build Back Better agenda

TAKE ACTION

Climate action at home

Tackling global climate change is a Herculean task, one that depends on international cooperation and action by governments, companies, and individuals alike. So far, the United States has been a major contributor to climate change, and it's time for us, such as solar and wind, U.S. cities are being quick to mitigate climate change and bolster climate resilience while placing equity at the forefront and cooperation—including some of the world's largest multinationals—are changing to change the way they do business to achieve net-zero emissions by 2050.

There are myriad ways that you can help, too. You can join, amplify, or otherwise support the international youth climate movement that has emerged in the last few years as a grassroots response to government inaction, to voice and mandate around climate change, and to demand a future that is healthier, more equitable, and more hopeful for our children. You can participate in local efforts to mitigate climate change and bolster climate resilience while placing equity at the forefront and cooperation—including some of the world's largest multinationals—are changing to change the way they do business to achieve net-zero emissions by 2050.

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GUIDE

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PERSONAL ACTION

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What is your city doing about climate change? Ask your local leaders these five questions.

WHAT'S AT STAKE

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PERSONAL ACTION

How to Call Congress →

Sometimes the best way to turn your anger into action is to pick up the phone. Follow these tips to minimize your anxiety and maximize your impact.

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Climate Change on Trial in Federal Court →

California cities square off against oil companies in a debate over who's to blame for a warming planet.

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If we really want to protect our children, we'll need to focus on the actual threats to their health and well-being—like drought, flooding, disease, and war.

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Trump is confused about coal, NHTSA is confused about math, and Zinke is confused about climate change.

EXPLAINER

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Short answer: Yes. Even a seemingly slight average temperature rise is enough to cause a dramatic transformation of our planet.

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