

What is global warming?

Since the Industrial Revolution, the global annual temperature has increased in total by a little more than 1 degree Celsius, or about 2 degrees Fahrenheit. Between 1850—the year that accurate recordkeeping began—and 1980, it rose on average by 0.07 degrees Celsius (0.13 degrees Fahrenheit) every 10 years. Since 1981, however, the rate of increase has more than doubled: For the last 40 years, we've seen the global annual temperature rise by 0.2 degrees Celsius, or 0.36 degrees Fahrenheit, per decade.

The result? A planet that has never been hotter. The 10 most recent years are the warmest years on record. And the warmer it gets, the more probable it becomes that we trigger climate tipping points (such as rapid glacier melt or thawing permafrost) that can transform natural systems into entirely different states and lead to more warming.

In 2015, the Paris Agreement codified the recommendation of climate scientists to limit global warming to 1.5 degrees Celsius. Working toward that goal continues to give us our best chance to stave off the worst, most devastating effects of climate change: the extreme droughts, wildfires, floods, tropical storms, and other disasters that are so widespread and costly to both our infrastructure and our health.

What causes global warming?

Global warming results from the increasing concentration of carbon dioxide (CO₂) and other greenhouse gases that trap heat in the earth's atmosphere. This trapped energy comes from incoming solar radiation absorbed by the earth's surface and re-radiated back into the atmosphere as infrared energy.

Though natural cycles and fluctuations have caused the planet's climate to change continually over the last 800,000 years, it is human activity that has driven our current era of global warming. In particular, our burning of fossil fuels—such as coal, oil, gasoline, and natural gas—has led to the greenhouse effect. In the United States, the largest source of greenhouse gases is transportation, followed closely by electricity production and industrial activity. (Learn about the natural and human causes of climate change.)

To support global efforts to limit warming to 1.5 degrees Celsius, the United States now faces the monumental (yet achievable) task of cutting greenhouse gas emissions to net zero no later than 2050. We also must fulfill

our commitments to help developing nations meet their climate goals—a responsibility that we (and other rich, polluting nations) are currently falling short on. In better news, countries continue to work toward scaling up climate finance to developing countries to at least \$1.3 trillion per year by 2035.