How Can We Stop Climate Change?

Gemma Alexander

This is the final article in a series of five exploring the science of climate change.

Climate science is complicated, and it's not always taught in schools. We know the global climate is changing as a result of human activity, but for many of us, the details are a little unclear.

If you do not understand climate change as well as you would like to, this Climate Change 101 series has looked at the basic science of climate, the causes of climate change, the consequences of climate change, and necessary adaptations to climate change that is already happening. But what everyone really needs to know is how to *stop* climate change.

Crossing the Line

Early in the 21st century, scientists determined that atmospheric carbon dioxide levels above 350 parts per million (ppm) would raise global average surface temperatures more than 2 degrees Celsius above preindustrial levels. Those temperatures would create a climate significantly different from the one to which humans are adapted, essentially making earth hostile to life as we know it.

Since then, the atmospheric carbon dioxide concentration has topped 417 ppm and is still increasing rapidly. To some people, crossing this threshold is cause to lose hope. To others, our continued survival despite seeing the impacts from global average surface temperatures 3 (2°C) beyond pre-industrial levels means we've nothing to fear.

But both of these attitudes are wrong. Climate change is not a switch that turns on or off, and neither are its impacts. Even though the climate has already changed, continued increases in the concentration of atmospheric greenhouse gases will continue to amplify the changes. Climate conditions exist along a gradient; we can choose whether to continue sliding into worse conditions, to stop contributing to the problem, and even to pull ourselves back to sustainable, healthy atmospheric conditions.

Continuing Change

It's true that a certain amount of climate change is already locked in. We need to adapt to the consequences we are already experiencing. But if we do nothing to reduce our emissions, carbon dioxide levels will hit 500 ppm within 50 years. That will increase average temperatures by 5.4°F (3°C). That is only 1°C more than the change we've already seen. But at that average, some regions would be experiencing much higher temperatures.

The last time average temperatures were so high was in the Pliocene epoch, three million years ago. At Pliocene temperatures, the northern hemisphere would be free of glaciers and ice sheets; sea levels would be 80 feet higher; the Amazon would be a massive savannah, and areas that are currently hot and dry would be uninhabitable.

If we don't stop the progression of climate change, we can expect areas that are currently hot and dry to become uninhabitable.

Stopping the Slide

Annual global CO_2 emissions reached 37.1 gigatons in 2017. That is a lot of carbon, but carbon neutrality is an achievable goal, pursued by organizations as varied as airports and national governments. Unfortunately, there is still more greenwashing than actual progress. More than a decade ago, scientists concluded that "the only realistic way to sharply curtail CO_2 emissions is to phase out coal use."

Coal power is one of the largest sources of atmospheric carbon dioxide. Today, it still provides 27 percent of electricity in the U.S. and 40 percent globally.

But making the switch to sustainable power is not enough. We must also rethink our approach to agriculture and land use (which currently contribute to climate change almost as much as electricity and heat production does). And we must offset the emissions that are unavoidable.

Net-Positive

It may seem that fixing the climate is like trying to remove the salt from an over-seasoned soup. It is possible to capture the carbon already released into the atmosphere.

A carbon sink is any system that absorbs more carbon than it emits. The main natural carbon sinks are soil, forests, and oceans. Natural sinks are estimated to remove between 9.5 and 11 gigatons of CO_2 per year. Since 1751, the world's population has cumulatively emitted over

Carbon sequestration is when people take action to remove carbon dioxide from the atmosphere and store it. Two approaches are geologic sequestration, which involves storing CO_2 underground, and biologic sequestration, which involves enhancing the effects of natural carbon sinks. In many polluting industries, innovators are exploring ways to capture carbon dioxide by trapping it in products such as concrete. But to date, no sequestration efforts remove carbon from the atmosphere at a scale useful to fight climate change.

Attempts at climate restoration are being made in regenerative agriculture and even corporate operations. Starbucks recently became one of the first major corporations to pledge a commitment to achieve resource-positivity, including achieving a negative carbon footprint.

Natural carbon sinks like soil, forests, and oceans can help stop climate change by absorbing CO_2. Image: Free-Photos, Pixabay

Individual Action

Individuals cannot stop climate change. The scope of the problem requires decisive action from governments around the world. Exercising your democratic rights may be the most impactful environmental action individuals can take. Vote for environmentally-minded candidates and contact your elected officials in support of environmental legislation.

Did you miss the first article in this series? Read Climate Change 101: What Is Climate Change?

Feature image by Reimund Bertrams from Pixabay

You Might Also Like...