

# Adapting to Climate Change

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*This article is the fourth of five in a series to understand the science of climate change. Previous articles in this series looked at the [basic concepts](#) of climate change, the [causes](#) of climate change, and the [consequences](#) of climate change.*

The global climate is changing as a result of human activity. But climate science is complicated, and it's not always taught in schools. If you do not understand climate change as well as you'd like to, let this be your introduction to a basic understanding of climate science. Welcome to Climate Change 101.

## The Situation

Global warming was [identified as a threat](#) in the mid-20th century. In 2008, 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 pre-industrial levels. That would result in a climate significantly unlike the one to which life on Earth is adapted. Since then, the atmospheric CO<sub>2</sub> concentration has topped 415 ppm and is still [increasing rapidly](#).

This doesn't mean that life on Earth is doomed – with appropriate action, atmospheric CO<sub>2</sub> levels can be brought back down to safe levels. But it does mean that global average surface temperatures have [already increased](#) 3.6 degrees Fahrenheit (2 degrees Celsius) beyond pre-industrial levels. And we are already experiencing some of the impacts of that change.

Unless and until civilization becomes carbon-neutral, climate change is already locked in; we need to adapt to its consequences.

## What to Expect

Scientists used to say that individual weather events aren't attributable to climate change, just as no single cough is blamed on cigarettes. But a lifetime of smoking does cause lung cancer, and as both climate science and climate change have progressed, we are [getting closer](#) to attributing disasters to their cause.

[A recent study](#) has found that a third of the world's population lives in areas predicted to reach Sahara Desert-like conditions within 50 years. Meanwhile, we are already seeing other impacts of climate change: heatwaves resulting in [tens of thousands of deaths](#); an increase in water and mosquito-borne [diseases](#) as well as increases in [wildfires](#), [droughts](#), [hurricanes](#), and [extreme storms](#). These, in turn, are creating an [insurance crisis](#).

The question is not whether impacts will be felt, but [how severe](#) we will let those impacts become, and how we will adapt to them. According to the [Fourth National Climate Assessment](#), a report that outlines how climate change affects the United States, the impacts that we are already experiencing threaten health, infrastructure,

ecosystems, and entire social systems.

## Studying Adaptation

Last year, the [Global Commission on Adaptation](#) demonstrated in its report that proactive adaptation to climate change improves human well-being and makes [better economic sense](#) than dealing with the consequences as they come. This year, the pandemic has redirected attention away from climate change. But it has also demonstrated the unsatisfactory outcomes of failing to plan for disaster.

Despite the triple dividends provided by adaptation, the world's [most extensive](#) climate adaptation plans are local. This is only partly due to the fact that climate change impacts vary locally.

## Key Adaptations

The Global Commission's [report](#) found that investing \$1.8 trillion globally from 2020 to 2030 could generate \$7.1 trillion in total net benefits. According to the report, governments should focus on six interrelated, key areas for adaptation planning.

### Food Systems

Global demand for food will increase by 50 percent and yields may decline by up to 30 percent by 2050 without sharp increases in agricultural research and realignment of government subsidies and incentives for farmers.

### Nature-based Solutions

Natural systems regulate water flows, protect shorelines, and complement built infrastructure. Those systems require large-scale protection and restoration. Governments should accelerate progress towards existing political commitments, such as the [Convention on Biological Diversity](#), and appropriately value natural assets in land-use decisions.

### Water Systems and Resources

Governments need to invest in healthy watersheds and water infrastructure; dramatically improve the efficiency of water use; and integrate disaster plans for flood and drought into every level of infrastructure operation.

### Cities

Urban areas are home to more than half the global population. Cities everywhere need to use community-level data to prioritize actions. They need better climate risk information and technical capacity to respond to changes supported by nature-based solutions. Governments should also invest in improvements to the living conditions of the people most vulnerable to climate change.

### Infrastructure

Good choices about where and what to build and which existing infrastructure assets

to upgrade can directly build resilience. The priority should be building green infrastructure with designs that ensure functionality even as damages occur.

## Disaster Risk Management

Governments need to proactively encourage the removal of people and assets from harm's way through better planning and investment decisions. Simultaneously, they need to step up efforts to warn and prepare people ahead of disasters. Finally, social safety nets and improvements in forecast-based planning can help hasten recovery from disasters when they do strike.

The United Nations has developed a [national adaptation planning](#) process to guide nations through climate adaptation planning. However, the U.S. does not have a national climate adaptation plan. In the U.S., the response has been for the [EPA to develop](#) guidelines and resources for communities to confront their local climate vulnerabilities.

## Personal Adaptations

Individuals can also adapt to ongoing climate changes.

The International Organization for Migration (IOM) estimates that, as a result of extreme environmental changes, there could be as many as [200 million](#) climate refugees by 2050. If they can, individuals living in high-risk areas – such as floodplains or coastal areas subject to inundation from sea rise – should consider voluntarily relocating before disaster strikes.

Wherever you live, it is worth taking a close look at your regional disaster [vulnerabilities](#). Choose your insurance plan accordingly and keep those risks in mind when planning home maintenance. You might need a [wildfire-resistant landscape](#) or choose a [roof for extreme weather](#). And every household should have a family [emergency plan](#).

Finally, register to vote. At every level of government, vote for candidates who acknowledge the importance of preventing and preparing for the impacts of climate change.

*The final article in this series will look at what we can do to stop the progression of climate change.*

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