

# Climate change impacts

Reading Time: 5 min | 931 words

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## Hope for the future

There is still time to lessen the impacts and severity of climate change. We already know many of the problems and solutions offsite link, and researchers continue to find new ones. Experts believe we can avoid the worst outcomes by reducing emissions to zero as quickly as possible, which will limit warming offsite link. To meet this goal, we will have to invest in new technology and infrastructure, which will spur job growth. For example, we will need to continue improving technology and facilities that capture and process renewable energy. Lowering emissions will also benefit human health, saving countless lives and billions of dollars in expenses related to health.

## Water

The effects of climate change on our water resources can have a big impact on our world and our lives. Patterns of where, when, and how much precipitation falls are changing as temperatures rise. Some areas are experiencing heavier rain events while others are having more droughts.

Flooding is an increasing issue as our climate is changing. Compared to the beginning of the 20th century, precipitation events are stronger, heavier, and more frequent across most of the United States.

Drought is also becoming more common, especially in the Western United States. We are using more water during hot weather, especially for agriculture. Much like we sweat more when it is hot out, hot weather causes plants to lose, or transpire, more water. Then, farmers must give their crops more water.

Snowpack is an important source of fresh water for many people. As the snow melts, fresh water becomes available for use. Snowmelt is particularly important in regions like the Western United States where there is not much precipitation in warmer months. But as temperatures warm, there is less snow and snow begins to melt earlier in the year. This means that snowpack is less likely to be a reliable source of water.

## The environment

Climate change affects all living things, or organisms, and the environment they live in, but not equally. The Arctic is one of the ecosystems most vulnerable to the effects of climate change. It is warming at least twice as fast as the global average. Warming in the Arctic has impacts that are felt across the globe -- melting land ice sheets and glaciers contribute dramatically offsite link to sea level rise. Sea levels are also rising due to thermal expansion. Higher sea level puts coastal areas at greater risk of erosion and storm surge.

Effects of climate change can build upon one another to damage ecosystems. Sea level rise can cause sediment to smother corals. But, coral reefs are also vulnerable to many other effects of climate change: warming waters can lead to coral bleaching and stronger hurricanes can destroy reefs. Coral reef ecosystems are home to thousands of species, which rely on healthy coral reefs to survive.

Some organisms are able to adapt to and even benefit from climate change. Some plants have longer growing seasons or are blooming earlier. But, these changes can happen too fast for other plants and animals to keep up. For example, an earlier blooming plant may depend on a pollinator that does not adapt as quickly.

There are also species that have adapted by expanding or shifting their geographic range, meaning they live in new places that used to be too cold or unsuitable in other ways. As a species expands or shifts its range, it may harm other species that already live in the new area. Existing invasive or nuisance species, like lionfish and ticks, may also thrive in even more places because of climate change

Ocean ecosystems face an additional challenge: ocean acidification. The ocean absorbs about 30% of the carbon dioxide we release into the atmosphere by burning fossil fuels. As a result, the water is becoming more acidic, which affects marine life.

### Infrastructure

Physical infrastructure includes bridges, roads, ports, electrical grids, broadband internet, and other parts of our transportation and communication systems. People often design it to be in use for many years. Because of this, most communities have infrastructure that was designed without climate change in mind.

Existing infrastructure may not be able to withstand extreme weather events that bring heavy rains, floods, wind, snow, or temperature changes. Impacts that result from these events occur in many different ways. For example, increased temperatures require more indoor cooling, which can put stress on an energy grid. Sudden heavy rainfall that exceeds storm water drainage capacity can lead to flooding that shuts down highways, major transportation routes, and businesses.

Coastal infrastructure, such as roads, bridges, water supplies, and much more, is at risk from sea level rise. Nearly 40% of the United States population lives in coastal counties, meaning millions of people will be impacted by related risks. Sea level rise can also lead to coastal erosion and high-tide flooding. Researchers project that some communities could end up at or below sea level by the year 2100. They will face decisions about how to respond. Most likely, communities will both adapt their infrastructure and strategically move away from the shoreline, a process called managed retreat.

Many communities are not prepared to face threats related to climate change. Researchers are studying current and future impacts of climate change on communities and can recommend best practices. Going forward, it is important for communities to invest in resilient infrastructure that can withstand future climate risks. Resilience education is important for every role of our society, including city planners, emergency managers, educators, and risk communicators. Everyone can learn how to prepare for climate change through resilience education.

# Analysis

## SUMMARY

There is still hope to mitigate the impacts of climate change by reducing emissions to zero as quickly as possible, which can limit global warming and spur job growth through investments in new technology and infrastructure. Climate change is altering precipitation patterns, leading to increased flooding and droughts, particularly in the Western United States, where agricultural water use is rising. Snowpack, a crucial fresh water source, is diminishing due to earlier melting, threatening water availability. The Arctic is warming at an alarming rate, contributing to global sea level rise and increased risks for coastal areas. Ecosystems are suffering as climate change effects compound, with coral reefs facing threats from warming waters and rising sea levels. While some species adapt to changing conditions, others struggle to keep pace, leading to potential disruptions in ecosystems. Ocean acidification, caused by increased carbon dioxide absorption, further endangers marine life. Existing infrastructure, designed without considering climate change, is often inadequate to withstand extreme weather events, putting communities at risk. To address these challenges, communities must invest in resilient infrastructure and prioritize resilience education for effective climate adaptation strategies.

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## SAFETY CHECK

Verdict: Appears Safe

The content appears to be safe and informative, focusing on the impacts of climate change and potential solutions. It provides factual information without promoting any suspicious activities or requests. Readers can feel comfortable engaging with this material, but it's always good to verify sources if they come across links or claims that seem unusual.

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## OBJECTIVITY

Verdict: Primarily Objective

The text is primarily objective, as it presents factual information about climate change and its impacts on water resources, ecosystems, and infrastructure without expressing personal opinions or emotions. For the reader, this means they can rely on the information as being based on research and expert consensus, helping them understand the seriousness of climate change and the potential solutions.

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## BIAS ANALYSIS

Detected biases: educational

The text shows an educational bias by presenting information in a way that emphasizes the urgency of addressing climate change and the need for technological solutions. It focuses on expert opinions and scientific findings, which may lead readers to accept these views without considering alternative perspectives or the complexity of the issue. Readers should be aware of this bias to ensure they seek a balanced understanding of climate change, including differing viewpoints and potential uncertainties.

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## SOURCE

<https://www.noaa.gov/education/resource-collections/climate/climate-change-impacts>