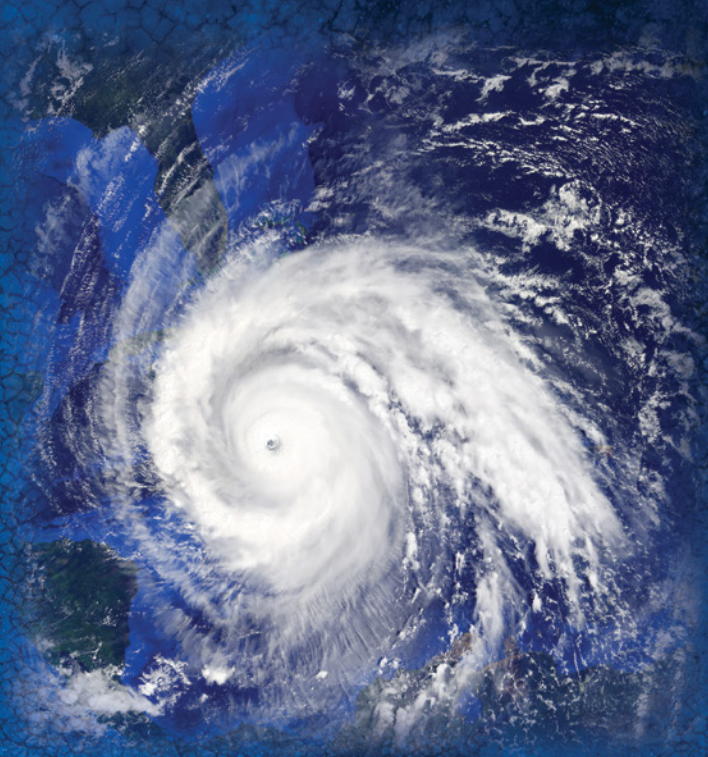

CLIMATE CHANGE:
Can Humanity Adapt?

Andrea C. Nakaya

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Why Does Humanity Need to Adapt?

Tens of thousands of Americans relocate every year. They are driven by many reasons, such as for a new job or to be closer to friends or family. For a growing number, however, climate change is a major motivation to move. For instance, worsening wildfires due to the changing climate are what drove Roy Parvin and his wife, Janet Vail, to relocate 2,600 miles (4,184 km), from Cloverdale, California, to Asheville, North Carolina. After experiencing numerous wildfires, they left in 2020 after one came within a quarter mile of their house. "We left . . . after getting tired of being evacuated in the middle of the night by a policeman saying, 'Pack your cars, take your dogs, don't pick up anything, just go,'"[5] says Parvin.

Like Parvin and Vail, more and more people are realizing that their communities are irrevocably changing because of climate change. In the United States, a 2023 survey by the Pew Research Center found that 41 percent of people believe that over the next thirty years climate change will make their community a worse place to live. Rather than continuing to suffer from the negative effects and increasing threats, they are attempting to make a change—to adapt.

The Climate Is Changing

Twenty years ago, there was widespread debate over climate change. Some people insisted it was happening, but others contended that the evidence was inconclusive. Today, howev-

er, climate change—which is primarily caused by human-generated greenhouse gas emissions—is widely accepted as a fact. The United Nations Development Programme (UNDP) explains that Earth is 1.9°F (1.1°C) warmer now that it was in the 1800s, prior to the Industrial Revolution. This might not sound like a lot, but that small temperature increase is having dramatic impacts on the world. The UNDP explains, "This warming is causing widespread and rapid changes in our planet's atmosphere, ocean and ecosystems."[6] It warns that within this century, the world is on track for an increase of 4.5°F to 5.2°F (2.5°C to 2.9°C) above preindustrial levels. Most scientists believe that a temperature increase of this size will have massive impacts on the climate, altering life as we know it in fundamental ways.

"Warming is causing widespread and rapid changes in our planet's atmosphere, ocean and ecosystems."[6]

—United Nations Development Programme

Weather and temperature patterns are changing and becoming more unpredictable, and both heat waves and droughts are more common. Extreme weather events like storms are also becoming more likely, and they cause more damage when they occur. In addition, as global temperatures rise, glaciers and sea ice are melting, and sea levels are rising. Climate change is also altering the habitats of plants and animals. For instance, melting Arctic ice is reducing the hunting grounds of polar bears, and ocean acidification is destroying coral reefs, which are home to many different ocean creatures. The effects of a changing climate do not stop there. As the weather and the environment change, food production, water security, water quality, air quality, wildfire risk, and the spread of infectious diseases such as malaria are some of the many other factors that are affected.

A Changing Climate Threatens Humanity

Most experts believe that climate change poses a significant threat to humanity's well-being. This is because the climate is closely tied to people's most basic needs. "Climate change affects the food we eat, the air we breathe, the water we drink, and the places that provide us with shelter,"[7] explains the US

A wildfire burns near homes in Azusa, California. Worsening wildfires are just one of many climate change–related threats that are forcing people to adapt.

Environmental Protection Agency (EPA). A changing climate will impact humanity's ability to adequately meet these needs.

The 2023 annual report of the *Lancet* Countdown, a collaboration of international scientists and health practitioners, provides concrete examples of how the changing climate is already harming people. One thing that its 2023 report looked at was heat, which is the biggest cause of weather-related deaths. The *Lancet* Countdown found that global temperatures are higher than they have been in more than one hundred thousand years, increasing the risk of heat-related illness or death for many people. "Adults older than 65 years and infants younger than 1 year, for whom extreme heat can be particularly life-threatening, are now exposed to twice as many heatwave days as they would have experienced in 1986–2005,"

"Climate change affects the food we eat, the air we breathe, the water we drink, and the places that provide us with shelter."[7]

—US Environmental Protection Agency

it states. The report also mentions drought, another climate change–related event that causes significant harm: "The global land area affected by extreme drought increased from 18% in 1951–60 to 47% in 2013–22 . . . jeopardising water security, sanitation, and food production." On another front, the *Lancet* Countdown reports that 27 percent of cities surveyed were concerned about their health systems (hospitals, medicinal and equipment supplies, caregivers) being overwhelmed by the impacts of climate change. Overall, the authors conclude that the "rising risks of climate change are amplifying global health inequities and threatening the very foundations of human health."[8]

In addition to health, climate change threatens humanity's well-being in many other ways. For example, extreme weather events that kill people and destroy their homes and belongings are becoming more common. For example, in August 2024, unusually

Sea Level Rise

Climate change is causing sea levels to steadily rise, which will cause a variety of problems for humanity in the future. There are two main causes for sea level rise. First, as the climate warms, the world's ice sheets and glaciers are melting, which is adding more water to the seas. Second, as existing seawater warms, it expands, meaning the existing water will take up more space, further causing a rise in sea level. Experts are not exactly sure how much the sea will rise in the future, but they do expect it to be significant. According to the National Oceanic and Atmospheric Administration's most recent estimate, by 2100 the seas could be between 1.0 foot and 6.6 feet (0.3 m and 2.0 m) higher than they were in 2000.

Humanity will experience many different harms as seas rise. There will be more flooding from extreme weather events, such as hurricanes, and from regular tidal activity. Rising seas will also erode coastlines and cover low-lying areas of land. Another significant harm is saltwater intrusion, where saltwater will contaminate freshwater supplies. SeaLevelRise.org stresses, "There's a lot at risk from sea level rise and flooding. . . . [It] not only damages personal property, but threatens human health, emergency response time, city infrastructure, the economy, military readiness, and important habitats."

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