

Himalayan Glacier Loss Speeding Up, New Report Finds

Glaciers in the region melted faster between 2010 and 2019 than in the previous decade. “Things are just happening so fast,” one researcher said.

By Delger Erdenesanaa

June 19, 2023

Climate Forward There’s an ongoing crisis — and tons of news. Our newsletter keeps you up to date. [Get it in your inbox.](#)

New research from scientists in Nepal confirms that ice and snow in the world’s highest mountains are disappearing as a result of rising temperatures and at a faster pace than previously thought. The report from the International Centre for Integrated Mountain Development in Kathmandu finds that glaciers in the Hindu Kush and Himalaya mountain range region melted 65 percent faster from 2010 through 2019 than in the previous decade.

The finding adds to a growing body of evidence that the consequences of climate change are speeding up, and that some changes will be irreversible.

Nearly two billion people who live in more than a dozen countries within the mountain region or in the river valleys downstream depend on melting ice and snow for their water supply. Melting glaciers are destabilizing the landscape and raising the risks of hazards like floods and landslides. These rapid changes are squeezing much of the region’s unique wildlife into smaller and more precarious habitats. For some unlucky species, it’s already too late.

“Things are happening quickly,” said Miriam Jackson, a cryosphere researcher at the International Centre for Integrated Mountain Development and one of the authors of the report. “Just from two decades ago to the last decade, there’s been quite big changes. And I think that’s a surprise for lots of people, that things are just happening so fast.”

Dr. Jackson and her colleagues studied an area of approximately 1.6 million square miles that they call the Hindu Kush Himalaya, stretching from Afghanistan in the west to Myanmar in the east. Their research was funded in part by the federal governments of several countries in the region, which are scrambling to understand how climate change is affecting their natural resources and how their citizens might adapt.

A second report released Tuesday by the World Meteorological Organization and the European Union's Copernicus Climate Change Service also recorded significant glacier loss. In 2022, glaciers in the European Alps experienced a record amount of ice mass lost in a single year, according to *The State of the Climate in Europe 2022*.

The new Himalayan report updates work published by the same group in 2019, which found that even in the most optimistic case that average global warming is limited to 1.5 degrees Celsius compared to preindustrial levels, the Hindu Kush Himalaya would lose at least one-third of its glaciers. This estimate remains the same, but improved satellite data since have allowed for more precise measurements of how much the region's glaciers have already shrunk, and better projections of how fast they might shrivel beyond 1.5 degrees of warming.

"Technically speaking, I think it's amazing," said Marco Tedesco, a professor of marine geology at Columbia University who was not involved in the research. Dr. Tedesco also praised the new report's focus on the societal and ecological implications of fast-melting glaciers. It's a welcome sign, he said, that public attention on global warming is shifting away from a narrow scientific focus on physical changes to a broader understanding of how these changes will affect people around the world.



An 8-year-old Nepali villager collected water from the Karnali River in Nepal. Rebecca Conway/Getty Images

As these mountain glaciers shrink, meltwater will increase — for a little while. The system will eventually reach a point, around approximately 2050, when the glaciers have shrunk so much that their meltwater starts to dwindle, the report said. The researchers call this turning point

“peak water.”

The timing and locations of meltwater in the region will change, too.

“There will be too much water in some places and there will be too little water in some places,” said Santosh Nepal, a researcher at the International Water Management Institute and another author of the report.

For now, meltwater will start to become available earlier in the year. Dr. Nepal expects that as climate change makes rainfall patterns more erratic around the world, people in the Hindu Kush Himalaya will depend more on meltwater in place of rainwater — even though this meltwater can’t be relied on for more than 20 or 30 years.

As the glaciers melt, there are other risks to people. Natural hazards, already a fact of life in the mountains, would become worse. Eroding mountain slopes and hillsides would set the stage for cascading disasters like floods and landslides when sudden shocks to the system, like earthquakes, occur.

Emergency preparedness and response systems in the region “are not designed to cope with that kind of disasters,” Dr. Nepal said.

The ecosystems of the Hindu Kush Himalaya are similarly unprepared for the changes already underway. A number of scientific studies point out that some of the region’s unique species, especially butterflies, have already gone extinct. Frogs and other amphibians are also at high risk.

Seeing the data pile up as they compiled studies from across the Himalayas was “really shocking for us to see,” said Sunita Chaudhary, an ecosystems researcher at the International Centre for Integrated Mountain Development and another author of the report. Dr. Chaudhary’s team concluded that by 2100, a quarter of the plants, animals and other life-forms only found in the region could be “wiped out,” she said, adding that the Indian segment of the Himalayan mountains would be especially hard hit.

While it’s too late to save some species, there’s still time to help many animals as well as the millions of humans whose lives are being radically changed by glacier loss, the researchers said. Their report includes a range of policy recommendations, including formal protections for biodiversity hot spots; encouraging collaboration among experts in separate sectors of the economy like agriculture and water; and additional research in related topics like permafrost.

A version of this article appears in print on , Section A, Page 6 of the New York edition with the headline: Himalayan Glaciers Shrinking at Faster Pace, Researchers Find