Study Warns of Cascading Health Risks From the Changing Climate


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Crop yields are declining. Tropical diseases like dengue fever are showing up in unfamiliar places, including in the United States. Tens of millions of people are exposed to extreme heat.

These are the stark findings of a wide-ranging scientific report that lays out the growing risks of climate change for human health and predicts that cascading hazards could soon face millions more people in rich and poor countries around the world.

The report, published Wednesday in the public health journal The Lancet, incorporates the work of 24 academic institutions and United Nations agencies and follows a major climate assessment issued last week by the United States government. The two studies represent the most serious warnings to date that climate change is posing a series of interconnected health risks for the global population.

“We don’t see these health impacts individually,” said Kristie L. Ebi, a professor of global health at the University of Washington and one of the authors of the Lancet study. “We see them jointly. We see them coming at communities all at the same time.”

Among the biggest threats humans face in a warming climate is heat stress, which not only kills people directly but can also lead to kidney and cardiovascular disease, the report noted. Higher temperatures can also diminish people's ability to work, particularly in agriculture, leading to tens of billions of hours of lost labor capacity each year.

Most worrying, according to the authors, is the compounding effect of extreme weather events that are exacerbated by climate change. Heat waves, floods and storms can batter the very public health systems that are meant to help people, the report says. A failure to rein in emissions, it warns, could lead to disasters that "disrupt core public health infrastructure and overwhelm health services."

The American report, called the National Climate Assessment, says that extreme rainfall could overwhelm the nation's ailing water and sewer systems, contributing to shortages of drinkable water and increasing exposure to gastrointestinal disease. In some parts of the country, like Florida and Texas, higher temperatures will be a boon to a type of mosquito that transmits the viruses that cause dengue, Zika, chikungunya and yellow fever.

Echoing these warnings on Wednesday, the United Nations Secretary General, António Guterres, urged world leaders to swiftly curb greenhouse gas emissions as they had promised under the Paris climate accord three years ago. Nine out of 10 people breathe unsafe air, according to the World Health Organization, Mr. Guterres said. "Meeting the Paris Agreement commitments could save more than a million lives a year," he said.

Cutting emissions from sources like coal-fired power plants and diesel-burning trucks would also result in enormous savings to public health systems, the Lancet authors said. "Doing that now would be good for us, it would be good for our livelihoods and would be good for the planet," Dr. Ebi said.

But as the world continues to warm, the study warned of a number of potential domino effects.

Extreme heat

In 2017, 157 million more people were exposed to heat-related health risks than in 2000, the report said. And that was before the scorching summer of 2018.

In England and Wales, for instance, over a 15-day period of exceptionally high temperatures this summer, there were 700 “excess deaths” compared to a comparable period in previous years, said Nick Watts, the report’s lead author.

Some of the most vulnerable people are in relatively prosperous countries in Europe and the Eastern Mediterranean region, particularly because these places have large populations of older people living in cities. In both regions, more than 40 percent of people over the age of 65 were found to be at risk.

In the United States, the National Climate Assessment found that some of the largest increases in heat-related mortality in future years would occur in the Northeast. By midcentury, there could be 50 to 100 excess deaths per one million people due to heat in that region, the report said.

Workers paving a road in Ourense, Spain. An estimated 153 billion hours of labor were lost to heat in 2017, according to a new study. Brais Lorenzo/EPA, via Shutterstock

Lost labor

Heat makes it hard for people to work, especially on farms.

According to the Lancet report, in 2017, 153 billion hours of labor were lost worldwide because of heat, with the largest share in vulnerable rural communities in countries like India. That's 64 billion more lost labor hours than in 2000.

By midcentury, "Prevalence of heatstroke and extreme weather will have redefined global labor and production beyond recognition," The Lancet warned in an accompanying editorial. "Multiple cities will be uninhabitable and migration patterns will be far beyond those levels already creating pressure worldwide."

Infectious diseases

The risk of debilitating, often deadly infectious diseases is moving to new places. That's because even small changes in temperature and rainfall can have a significant effect on where diseases that are spread by bugs and water can take hold.

Habitats for dengue-spreading mosquitoes have expanded significantly, the Lancet study concluded. The National Climate Assessment noted that warmer conditions may have helped transmit Zika in the United States.

Since 1950, the Lancet study said, the cholera bacteria has expanded its reach to the Baltic coastline, and the risk of malaria has spread to higher altitudes in sub-Saharan Africa.

"I don't want people to be surprised when they see cases of what used to be tropical diseases now being found in the United States as a result of changing climate," said Gina McCarthy, a professor of public health at Harvard and a former administrator of the Environmental Protection Agency during the Obama administration.

Droughts and floods

Extreme droughts and floods are affecting already vulnerable communities, particularly in Southeast Asia and South America. Drought affects agricultural yields, in turn heightening the risk of early death, hunger and childhood malnutrition, according to the Lancet report.

With drought often comes more dust, which can aggravate allergies and asthma and can also accelerate the reproduction of disease-causing fungi in soil, according to the National Climate Assessment. Floods can wash away farmland and homes and spread waterborne diseases.

Food production

Though the world still produces more than enough food to feed itself, rising temperatures and extreme weather events are affecting food production. Crop yields are diminishing in 30 countries, reversing a trend of rising agricultural productivity and threatening food security around the world and in the United States.

The quality of some food itself is also expected to decline, according to the National Climate Assessment. Rising levels of carbon dioxide will reduce the presence of key nutrients — including iron, zinc, and protein — in crops and seafood.

Transporting a man from a hospital tent in the aftermath of Hurricane Florence in North Carolina in September. Eduardo Munoz/Reuters

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