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What Would a 2°C Rise in Global Temperature Mean for India?

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TWC India

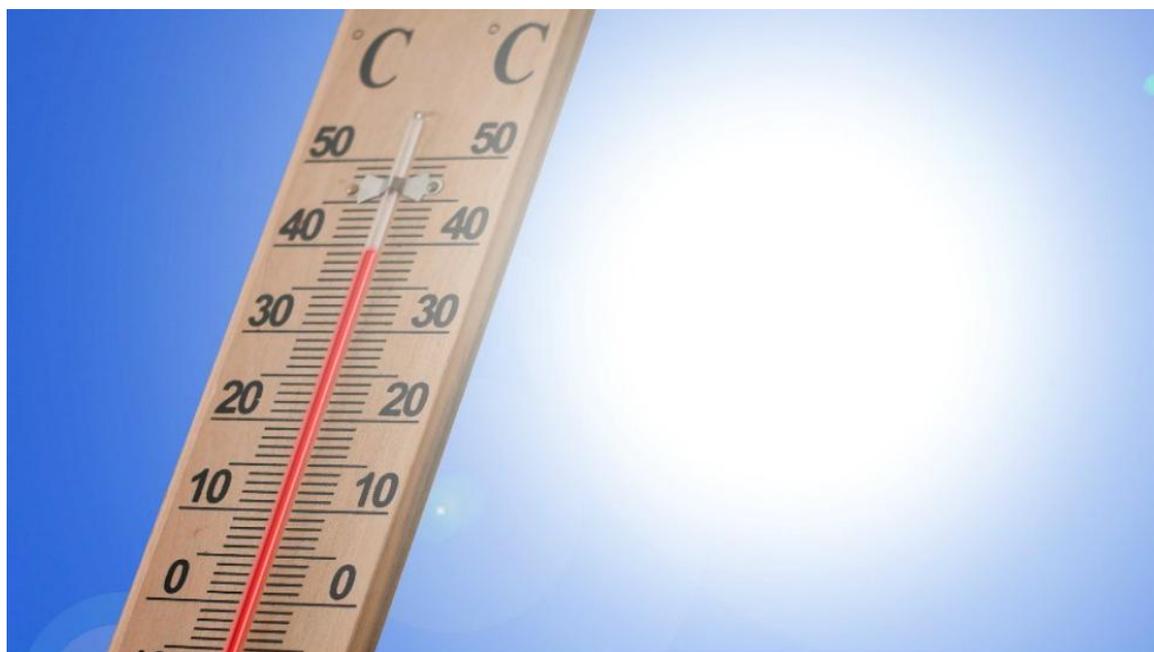


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At a Glance

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During 2015, a particularly bad year, heat waves killed over 2,000 Indians.

Rising temperatures could lower India's farm incomes by 12% in the coming years.

The deadly [effects of global warming](#) are all around us. California recently fought and subdued the deadliest wildfire in its history. Heat waves have claimed lives across Asia and parts of Europe and have caused power grids to crash. To top it all, [Arctic is warming](#) more than twice as fast as the rest of the world.

These are just a few of the events that scientists and researchers had been warning us about for years. This is the modern reality, and from the looks of it, most of the world is grossly unprepared to manage the ripple effects of global warming.

As the Intergovernmental Panel on Climate Change (IPCC) is all set to release the [special report](#) on the impacts of rising temperature this week, we take a closer look at the impacts of global warming on India.

Rising global temperature

According to the [World Meteorological Organization](#) (WMO), the past three years have been the hottest years on record globally. For over three decades now, the scientific evidence is conclusive about greenhouse gas emissions causing global warming and changes in climate. [Experts say](#) that by 2100, the global temperature is most likely to rise well above 2°C over what it was during the pre-industrial times (i.e. before 1850). It may not sound like much, but a world warmer by 2°C can put us on the verge of irreversible danger.

Despite the Paris Agreement's (2015) goal to keep the increase in global average temperature under 2°C above pre-industrial levels, [studies](#) have shown that even if all the countries fulfil the current commitments, we will not meet this goal. In addition, many of the signatory countries are not on track, shows the [Climate Action Tracker](#), risking dire consequences.

So, what would a rise above 2°C average temperature do?

The [main effects](#) are well-known: an increase in the intensity and duration of heat waves, decrease in the availability of fresh water, an increase in irregular and heavy rainfall patterns, decrease in the yield of basic crops such as wheat and maize, a significant rise in sea levels and deteriorating coral reefs.

Could India be affected?

India's relationship with weather is a fraught one. We celebrate the arrival of the seasons, and yet live exposed to their vagaries and destruction. Extreme weather

accounted for 25% of accidental deaths in India between 2001 and 2014, [according to one study](#). Within this, lightning and precipitation accounted for over 60% of weather-related deaths, while heat waves were responsible for 20%.

During 2015, a particularly bad year, heat waves killed over 2,000 Indians. [Efforts by authorities](#) to spread better awareness brought this number down to 220 last year. This is indeed good news, but studies suggest that India will keep heating up, thanks to a combination of increasing population and continued global carbon emissions, among other factors.

An [international study](#) published last year said that a global temperature rise of 2.25°C (not far from the Paris Agreement goal) by the end of the century could create dangerous heat conditions across South Asia, including India.

If this happens, millions of human lives could potentially be at risk. Under the same scenario, deadly heat wave conditions could happen every two years in South Asia, instead of 25 years at present, and they may impact 55% of the region's population, as against 15% today. The numbers are far grimmer if temperatures are to rise by 4.5°C by 2100, which is a possibility, as many studies suggest.

Closer home, a study by IIT Gandhinagar researchers said that the frequency of severe heat waves in India [will rise by 30 times](#) by 2100 under a 2°C warming scenario. The duration of the heat waves, too, could increase 92-fold under the 2°C scenario, the study says.

Even the [World Bank](#) recently said that, in a best-case scenario, India's average annual temperatures could rise by 1-2°C by 2050. This could go up to 3°C, if no preventive steps are taken in line with the Paris Agreement. By 2050, 600 million people could be living in climate hotspots, particularly in central, northern and north-western India.

What would be some of the most obvious effects of rising temperatures on India?

One of the biggest concerns would be heat-related deaths. States like Andhra Pradesh, Telangana, Gujarat and Rajasthan already see large numbers of people perishing, or suffering from health problems, due to heat exposure before and during the monsoons. But the problem goes beyond that. The World Bank report mentioned earlier says that rising temperatures, coupled with erratic rain could force rural people into poverty, and lower the living standards of 800 million people across South Asia.

Rising heat will also badly hit agriculture, due to the sector's dependence on rain. The Intergovernmental Panel on Climate Change (IPCC) has said that rising temperatures could lower India's farm incomes by 12% in the coming years. The [2018 Economic Survey](#) also said that climate change (including temperature and rain shocks) could reduce annual agricultural incomes by 15-18% on average, and up to 20-25% for unirrigated areas. And such problems will only intensify if temperatures keep rising.

While agrarian and rural communities will definitely be affected by warmer temperatures, cities will pay a heavy price as well, due to the 'urban heat island' effect (a rise in the temperature of the air above cities due to concrete buildings and traffic). Further unplanned construction, removal of green cover and pollution could worsen this turning our cities into heat bubbles.

Fortunately, there are solutions at hand to contain the effects of global warming. Better city planning and architecture, systems to monitor and control industrial and vehicular pollution, providing environmentally [sustainable cooling solutions](#) to citizens, developing and implementing [heat action plans](#) for both rural and urban areas, and conserving water resources are some steps that can help the world, and India, avoid the dire consequences of continuing on its current path. The Weather Company's primary journalistic mission is to report on breaking weather news, the environment and the importance of science to our lives. This story does not necessarily represent the position of our parent company, IBM.