



## Heat Extremes in India

This editorial is based on [“India Needs an Emergency Plan for Heat Extremes”](#) which was published in Hindustan Times on 22/03/2022. It talks about the impact of heat waves and suggests measures to overcome the same.

**For Prelims:** Heatwaves, Global Warming, Climate Change, India Meteorological Department (IMD), Lancet Countdown on Health and Climate Change report, IPCC, AR6 Report

**For Mains:** Heat Waves - causes and impacts, Measures to tackle extreme heat waves, Findings/Analysis of IPCC and Lancet Reports

Recently, the parts of **Antarctica** recorded maximum temperatures that are **more than 40°C** warmer than average and areas of the **Arctic more than 30°C** warmer than average.

In many parts of India too, winter switched to summer, with not even a fleeting spring in between.

**Heatwaves** associated with **abnormally high temperatures over certain areas**, which could also be **fatal to humans and animals**, are also on a rise across the country, while there is a **declining trend in the occurrence of cold waves**.

### What are Heat Waves?

- A heat wave is a period of abnormally high temperatures, more than the normal maximum temperature that **occurs during the summer season** in the **North-Western and South Central parts of India**.
  - It is a condition of air temperature which becomes fatal to the human body when exposed.
- The [India Meteorological Department \(IMD\)](#) requires that temperatures should reach **at least 40°C in the plains** and **at least 30°C in the hilly regions**, and should reflect an increase of at least 5°C-6°C above the normal temperature **to be classified as a heatwave**.
- The combination of **global warming and population growth** in already-warm cities in India is the primary driver of increased heat exposure.
  - The **Urban Heat Island** also elevates temperatures within cities, which will be amplified during the heatwaves.
  - UHIs occur when cities replace natural land cover with dense concentrations of pavement, buildings, and other surfaces that absorb and retain heat.

### What is the Scenario of Heat Waves in India?

- **India**, along with **Bangladesh and Pakistan**, recorded the **greatest losses to work hours (295 billion hours)** due to heat exposure in 2020, according to the [Lancet Countdown on](#)

## Health and Climate Change released in 2021.

- India has become **15% more vulnerable** to extremes of heat than in 1990.
- Indian **senior citizens were among the most affected ones** due to heatwave exposure.
- More recently, most parts of western **Rajasthan, Maharashtra**, and parts of **Gujarat, Odisha** are reeling under **severe heat wave-like conditions**, with maximum **temperatures hovering well over 40°C**.
  - The foothills of the Western Himalayas recorded very high day and night temperatures - 7 to 10 degrees above normal.
  - Delhi recently recorded a 36.6°C, 6 degrees above normal.
- The IMD's long-term temperature trends indicate that the **climate crisis is having a pronounced impact** on increasing the frequency and severity of heatwaves in India.
  - Average temperatures across seasons have seen a **sharp upward trend in the country since 1991**.
  - The temperature rising trend is **more evenly pronounced during monsoon** (June to September) and **post-monsoon** (October to December) seasons.

## What is the Impact of these Heat Waves?

- **Mortality and Morbidity:** The [Intergovernmental Panel on Climate Change \(IPCC\)](#) in the [Second Part of AR6 Report](#) flagged that heat extremes are causing **human deaths and morbidity**.
  - The increased heat will lead to an increase in diseases like [diabetes](#), circulatory and [respiratory conditions](#), as well as [mental health challenges](#).
- **Crop Damage:** The fallout of these heat waves is far more complex - the concurrence of heat and drought events are causing crop production losses and tree mortality.
- **Less Food Production and High Prices:** The risks to health and food production will be made more severe from the **sudden food production losses exacerbated by heat-induced labour productivity losses**.
  - These interacting impacts will **increase food prices, reduce household incomes**, and lead to **malnutrition** and climate-related deaths, **especially in tropical regions**.
- **Labour Productivity Loss:** A higher urban population also implies heat-induced labour productivity loss, **resulting in economic impacts**.
  - Millions of **farmers and construction workers could have lost income** because on some days it's just too hot for them to work.
- **Wildfires and Droughts:** The Lancet report, 2021 showed that populations of **134 countries** experienced an **increase in exposure to wildfires** with **droughts becoming more widespread** than ever before.

## What Steps Can Be Taken in this Regard?

- **Adopting A More Sensitive Approach:** The **impact of such excessive heat needs to be understood from the point of view of common people — daily labourers; farmers; traders; fishermen** etc.
  - Beyond numbers and graphs that capture the impact of the climate crisis, the **human experience of living in oppressive heat needs to be understood** by policymakers and measures should be taken accordingly.
- **Cooling Shelters:** The government should come out with a policy to deal with the suffering and disability caused by heat extremes in different parts of the country.
  - **Water kiosks, staggered outdoor work hours, cool roofs for buildings** and homes are certain things that should be put in place immediately.
  - A number of emergency **cooling shelters can be opened** so that people without domestic air conditioning units can escape the heat.
    - **Portable air-conditioning units**, along with fans and even ice are also useful.
- **Passive Cooling to Reduce Urban Heat Islands:** [Passive cooling technology](#), a widely-used strategy to **create naturally ventilated buildings**, can be a vital alternative to address the urban heat island for residential and commercial buildings.
  - The IPCC report cites **ancient Indian building designs** that have used this technology, which could be adapted to modern facilities in the context of global warming.

- **Action Plans Similar to Ahmedabad:** As per the IPCC Report, Ahmedabad has shown the way to combat heat extremes by **heat-proofing buildings**.
  - After the heat action plan was implemented in 2013 in Ahmedabad, **heat-related mortality reduced by 30% to 40%** over the years. Similar plans like that of Ahmedabad can be implemented in vulnerable regions.
- **Replacing Dark Roofs:** A big reason that cities are so much hotter than rural areas is that they are covered by dark roofs, roads and parking lots that absorb and retain heat.
  - One of the long term solutions can be **replacing the dark surfaces with lighter and more reflective materials**; it will result in a comparatively cooler environment.

***Drishti Mains Question:***

“Reducing the health impacts of extreme heat is an urgent priority and should include immediate changes to infrastructure, urban environment, and individual behaviour to prevent heat-related deaths”. Discuss.

PDF Reference URL: <https://www.drishtias.com/printpdf/heat-extremes-in-india>