



## A Long Term Strategy to Tackle Heat Waves

**This editorial is based on “[Long-Term Plan Needed to Combat Heat Waves](#)” which was published in The Hindu BusinessLine on 11/05/2022. It talks about the harmful impacts of heat waves and suggests long-term strategies that can be adopted to combat its impact.**

**For Prelims:** Heatwaves, Global Warming, Climate Change, India Meteorological Department (IMD), IPCC's AR6 Report, Western Disturbance, NDMA, Sendai Framework for Disaster Reduction.

**For Mains:** Heat Waves - causes and impacts, Measures to tackle extreme heat waves, Long term heat wave impact mitigation strategy for India.

India has been in the grip of what seems like an **eternity of heat waves**. The temperatures over north-west and central India in April 2022 were the highest in 122 years.

India is no stranger to heatwaves but what stands out about the heatwaves this year is the remarkably earlier timing, and the large spatial extent, extending from the northwestern to the southeastern parts of the country.

It is time now that concrete plans are put in place to deal with heat waves and closely linked extreme weather events. Early warning systems, heat-proof shelters and major afforestation are of vital need to reduce heat wave fatalities.

### What are Heat Waves and Causes of its Occurrence?

- A heatwave is a **period of abnormally high temperatures** 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 proximate causes for the searing heat are an **absence of rain-bearing Western Disturbances** or tropical storms that bring rain from the Mediterranean over north India.
  - 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 (**UHI**) **also elevates temperatures within cities**, which will be amplified during the heatwaves.
    - It occurs when cities replace natural land cover with dense concentrations of pavement, buildings, and other surfaces that absorb and retain heat.

### How Intense the Heat Waves have Become in India?

- Heatwaves are a common phenomenon in India during the months of May-June, however, heatwaves in the year 2022 began early due to the gradually increasing maximum temperatures in many parts of India.
- As per IMD, the **number of heatwave days in India has increased** from 413 over 1981-1990 to **600 over 2011-2020**.
  - This sharp rise in the number of heatwave days has resulted due to the increasing impact of climate change.
- The number of **people killed due to heat waves has also increased** from 5,457 over 1981-1990 to **11,555 over 2011-2020**. Since 1967, 39,815 people have been killed due to heat waves across India.

## What is the State-Specific Scenario of Heat Waves' intensity?

- Based on the geo-climatic and socio-economic conditions, the **highest number of people have been killed in Uttar Pradesh (6,745)**, followed by Andhra Pradesh (5,088), Bihar (3,364), Maharashtra (2,974), Punjab (2,720), Madhya Pradesh (2,607), West Bengal (2,570), Odisha (2,406), Gujarat (2,049), Rajasthan (1,951), Tamil Nadu (1,443), Haryana (1,116), Telangana (1,067), Delhi (996), Jharkhand (855), Karnataka (560), Assam (348), and 954 people were killed across the remaining 12 States.
- According to the Maharashtra Health Department, this year's heat waves have claimed 25 lives in the State.

## How Harmful are these Heat Waves?

- **Human Mortality:** Mortality due to heat waves occurs because of rising temperature, lack of public awareness programmes, and inadequate long-term mitigation measures.
  - According to a 2019 report of the Tata Centre for Development and the University of Chicago, **by 2100, annually, more than 1.5 million people will be likely to die** due to extreme heat caused by climate change.
  - The increased heat will lead to an increase in diseases like [diabetes](#), circulatory and [respiratory conditions](#), as well as [mental health challenges](#).
- **Impact on Economy:** The frequent occurrence of heat waves also adversely affects different sectors of the economy. For instance, the **livelihood of poor and marginal farmers is negatively impacted** due to the loss of working days. Heatwaves have an **adverse impact on these workers' productivity**, impacting the economy.
  - According to an ILO report of 2019, **India lost around 4.3% of working hours** due to heat stress in 1995 and is **expected to lose 5.8% of working hours in 2030**.
    - It also shows that **9.04% of working hours are expected to be lost in each agriculture and construction sectors**, respectively, due to heat stress in 2030.
- **Crop Damage and Food Insecurity:** The **concurrence of heat and drought events** are causing **crop production losses and tree mortality**.
  - 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.
- **Impact on Workers:** Workers in sectors like agriculture and construction will be severely impacted in 2030 because India's large population depends on these sectors for their livelihoods.
  - What should be of interest to India is that **countries and regions with precarious labour market conditions are likely to suffer higher** productivity losses with such extreme heatwaves.
    - In absolute terms, **India is likely to lose around 34 million full-time jobs** in 2030 due to heat stress.
- **Weaker Sections to be Specifically Impacted:** The climate science community has reported overwhelming evidence that extreme events such as **heatwaves are likely to become more intense, more frequent and of longer duration** in future unless emissions of greenhouse gases and aerosols are significantly cut globally.
  - It is important to remember that heatwaves in India, such as the current event, have the **potential to influence thousands of vulnerable and poor people who contributed very little to the climate crisis**.

## Where does India Stand in terms of a Heat Wave Impact Mitigation Strategy?

- Before 2015, **no national-level heatwave action plan** was available to fight against such calamities.
  - At the regional-level, **Ahmedabad Municipal Corporation (AMC)** prepared the **first Heat Action Plan in 2013**, followed by the devastating heatwave-related deaths in 2010.
- In 2016, the [National Disaster Management Authority \(NDMA\)](#) issued **comprehensive guidelines** to prepare national level key strategies for mitigating the impact of heatwaves.
- Although some preventive measures have been undertaken to mitigate and adapt to extreme weather-related shocks, such initiatives are **insufficient to prevent human fatalities from heatwaves** as implementing preventive measures, mitigation, and preparedness actions remains difficult.

## What Long-Term Strategies does India need to Adopt to Mitigate the Impacts of Heat Waves?

- **A Heat Waves Action Plan:** The adverse impacts of heat waves indicate that **effective disaster adaptation strategies** and more robust disaster management policies are required in heatwave zones to lessen the impact of heatwaves.
  - As deaths due to heatwaves are preventable, the government must prioritise preparing a long-term action plan to **safeguard human lives, livestock, and wildlife**.
  - [Effective implementation of the Sendai Framework for Disaster Risk Reduction 2015-30](#) with the **State playing a leading role** and sharing responsibility with other stakeholders is now the need of the hour.
- **Early Warning Systems:** Death from heat waves can be prevented by installing **improved early warning systems that communicate heatwave threats**, recommend different preventative measures, and constrain disaster impacts.
  - Disseminating **public awareness through print, electronic and social media**, providing **heat-proof shelter facilities** during summer, easing access to public drinking water, and huge afforestation in urban and rural areas would help mitigate heatwave fatalities.
- **Declaration of Heat Waves as a Natural Disaster:** Recognising heat waves as a major disaster is long due. India still has a long way to go in building public awareness, particularly on how individuals and local communities can take care of themselves.
  - Also, there needs to be **clear guidelines regarding when to shut schools or about the optimal ranges of temperatures** that a household AC should be kept at or **how long one should stay outdoors** if that's unavoidable.
- **Local Level Preparedness:** Heatwave is **India's second most lethal disaster** after the flood. Declaring heat waves as a natural disaster would help the state and district administration prepare a **heatwave action plan at the regional level**.
  - This will help **build resilience infrastructure**, develop early warning infrastructure, and create public awareness.
  - It is also **crucial to prepare a database at the district level** involving the age, gender, and occupation of people who have died due to heatwaves.
- **Passive Cooling to Reduce UHIs:** [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's AR6 report](#) cites **ancient Indian building designs** that have used this technology, which could be **adapted to modern facilities** in the context of global warming.
- **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

"Heatwave is India's second most lethal disaster after the flood and declaring it as a natural disaster has

become the need of the hour." Suggest some long-term measures that can be taken to mitigate the sufferings caused the extreme heat waves.

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