Heatwaves in India

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Heatwaves in India: The Call for Action on Health, Economy, and Vulnerability

Context

India is witnessing an alarming rise in the frequency and intensity of heatwaves. In March 2025, the country faced severe heatwaves that began 20 days earlier than in 2024. This earlier onset of extreme heat underscores the urgent need for both **short-term and long-term strategies** to address heat stress and its cascading impacts. The rise in temperature is contributing to widespread health issues, economic losses, and exacerbating social inequities. Understanding the nature of heatwaves, their impacts, and the challenges faced in tackling them is critical, especially in the context of India's evolving climate crisis. Immediate policy action is needed to protect vulnerable populations and safeguard the country's economic and social fabric.

Understanding Heatwaves

Definition of Heatwaves:

- A heatwave is a prolonged period of excessively hot weather, often with high humidity, which can significantly impact human health, agriculture, and ecosystems.

Key Features of Heatwaves:

- **Heatwave Declaration Criteria in India:**
    - When the maximum temperature exceeds **40°C** in the plains and **30°C** in hilly areas.
- **Factors Intensifying Heatwaves:**
    - High **humidity**, low **wind speed**, and the presence of **urban heat islands** (urban areas that are significantly hotter than their rural surroundings).
- **Impact of Climate Change:**

- Global warming is a major driver behind the increasing frequency and intensity of heatwaves across the globe, particularly in India.

Impacts of Heatwaves

Health Impacts:

- **Heat Stress:**
  - Prolonged exposure to extreme heat can lead to heat stress, which affects vital organs such as the kidneys, liver, and brain, and can result in death.
- **Vulnerable Groups:**
  - **Elderly**, **women**, **outdoor workers**, and **poor communities** are most vulnerable to the adverse health impacts of heatwaves.
- **Mortality and Morbidity Data:**
  - Studies indicate that extreme heat events can significantly increase the incidence of heat-related illnesses and fatalities.

Economic and Livelihood Impacts:

- **Agricultural Losses:**
  - Heatwaves reduce agricultural productivity, damage crops, and lead to the death of livestock, which harms rural economies.
- **Reduction in Work Hours:**
  - **Informal sector workers** are especially affected by reduced work hours due to extreme heat. In 2023, **6%** of India's work hours were lost due to heat stress.
- **GDP Losses:**

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- The economic loss due to heatwaves is estimated to be around **3%–5% of GDP** annually, further exacerbating the economic instability.

Social Inequity:

- **Marginalized Communities:**
  - Heatwaves disproportionately affect **marginalized sections of society**, including **migrants**, **women**, and the **elderly**, who often lack access to resources like cooling systems and healthcare.
- **Urban and Rural Divide:**
  - The impact is more severe in **poor urban neighborhoods** and **rural areas**, where residents live in confined spaces without proper cooling infrastructure.

Challenges in Addressing Heatwaves

Inadequate Implementation of Heat Action Plans (HAPs):

- **HAPs exist** but face poor execution at both state and city levels, leading to delayed or insufficient responses to extreme heat events.

Lack of Comprehensive Data:

- There is a significant **gap in heat-related morbidity and mortality data**, making it challenging to devise effective heatwave management strategies.

Urban Vulnerabilities:

- Urban areas with dense housing and limited green spaces exacerbate heat risks. The **urban heat island effect** makes cities much hotter, especially in areas with inadequate infrastructure.

Infrastructure Gaps:

- There is an **insufficient number of cooling shelters**, **public water points**, and **oral**

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rehydration salt (ORS) distribution centers to address the immediate needs of vulnerable populations during heatwaves.

Limited Public Awareness:

- **Public education on heat safety** remains patchy. Many people are unaware of the risks posed by heatwaves or the preventive measures they can take.

Way Ahead: Short-Term and Long-Term Measures

Short-Term Measures:

1. **Strengthen Heat Action Plans (HAPs):**
    - **Update state and city-level plans** to factor in local vulnerabilities, including temperature, humidity, and geographic factors.
2. **Implement Early Warning Systems:**
    - **Heat Health Alert (HHA) systems** should use both **day and night temperatures** to provide early warnings and alerts.
3. **Immediate Public Health Actions:**
    - Ensure the **availability of drinking water**, provide **ORS** at public spaces, and implement **staggered work hours** to reduce exposure to heat during peak times.
4. **Targeted Heat Advisories:**
    - Issue **localized heat advisories** that are socially contextual and address the specific needs of vulnerable communities.

Long-Term Measures:

1. **Urban Planning Reforms:**

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- Promote the use of **cool roofing** materials, increase the number of **green spaces**, and encourage the use of heat-resistant **building materials** in urban areas.

2. **Establish Summer Shelters:**
    - Set up dedicated **'summer shelters'** for vulnerable populations such as the elderly, low-income groups, and outdoor workers.

3. **Skill Development for Heat-Resilient Workforce:**
    - Train workers in **heat-resilient construction** and urban management techniques to ensure long-term sustainability.

4. **Insurance for Wage Losses:**
    - Provide **insurance coverage** for workers, particularly in the informal sector, to compensate for income losses during extreme heat events.

5. **Policy Integration:**
    - Ensure a **coordinated climate action** approach across all sectors to achieve sustainable heat resilience and adaptation.

Conclusion

India's increasing vulnerability to heatwaves demands immediate and sustained action. A **science-based**, **people-centric**, and **equity-focused** approach is essential to mitigate the impacts of heat stress. **Proactive policies** today, incorporating both **short-term relief measures** and **long-term urban resilience strategies**, can prevent major public health and economic crises in the future. For India to successfully adapt to climate change, addressing heatwaves must be a key component of the national climate adaptation agenda, with an emphasis on **vulnerable populations** and **sustainable development**.

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