

# HCFI Dr KK Aggarwal Research Fund

## Round Table Environment Expert Zoom Meeting on “Heat Wave in Asia – Part 2”

May 19, 2024 (Sunday, 12 noon - 1 pm)

- Most Asian countries including India are experiencing extremes of heat since April this year.
- Temperature exceeding 40°C has been recorded in most parts of South and South-East Asia.
- IMD (India Meteorological Department) has issued a red alert for Delhi-NCR.
- The long-lasting effects of heat wave are very significant. There is high likelihood of developing heat-related illness in such high temperatures.
- IMD has issued a red alert for West Rajasthan and an orange alert for Haryana, Punjab, East Rajasthan, Delhi, UP, Bihar, and Gujarat. It cautioned for the need of extreme care of the vulnerable people especially the infants, elderly, pregnant women and those with chronic diseases. Other people at risk include outdoor workers and the low-income group.
- The Meteorological Department has advised people to stay indoors and avoid exposure to heat and keep themselves well-hydrated.
- Each one of us can contribute by participating in plantation activities in their nearby areas.
- Temperature in North-West India is constantly rising. The night temperature is also remaining high. The difference between night and day temperature is not much. So, the impact of the heat wave is higher.
- Europe is also reporting higher temperatures.
- According to climate scientists, this heat wave is a mix of El Nino effect, global warming, and seasonality.
- The year 2023 was the hottest year recorded so far. But 2024 may be hotter.
- By the year 2030, the temperature threshold of 1.5°C.
- The concept of cool pavement in road construction should be implemented. The conventional dark pavements absorb 80%-90% of sunlight and generates heat and act as urban heat islands. In cool pavements, sunlight is reflected with the use of additives. The purpose of cool pavements is to increase albedo so that the heat transfer can be reduced.
- The existing pavements can be converted to increase albedo by white topping or by adding reflective coats and seals.
- In concrete pavements, if white cement or light colored slag is used, then the reflectivity can be increased.
- Cold mix technology is being used for road construction. This reduces CO<sub>2</sub> emission.
- Road side plantation should be increased.
- The surface permeability should be more. The materials used in road construction should be carbon-friendly and safe.
- The Government of India has introduced the concept of green highways.
- Work is ongoing for the decarbonization of transport. Electric vehicles are an example.
- Researchers at Climate Central, a US-based group of climate scientists, state that 54.3 crore people in India will experience at least one day of extreme heat during May 18 to 21. Human-caused climate change has made this intense heat much more likely.
- Heat wave due to El Nino came once in a decade. But heat wave due to climate change has increased in frequency.
- Heat wave forms when high pressure areas in the atmosphere strengthens and remains over a region for several days up to several weeks. This traps heat near the earth's surface.
- UK Met office has created a heat-health watch system. It places each region into one of four levels.
- Level 1 represents normal summer conditions. Level 2 occurs when there is a 60% or higher risk that the temperature will be above the threshold levels for 2 days and the intervening night. Level 3 arises when the temperature has been above the threshold for the preceding day and night, and there is a 90% or higher chance that it will stay above the threshold in the following day. Level 4 is triggered if conditions are more severe than those

of the preceding three levels. Each of the first three levels gives rise to a particular state of readiness and response by the social and health services. Level 4 involves a more widespread response.

- ⇒ Heat illness is a spectrum of disorders due to increased body temperature. It can be caused by either environmental conditions or by exertion. Heat illnesses include heat stroke, heat exhaustion, heat syncope, heat edema, heat cramps, heat rash, heat tetany.
- ⇒ Health experts warn that exposure to extreme heat increases the risk of death from cardiovascular, cerebrovascular, and respiratory conditions and all-cause mortality. Heat-related deaths in people older than 65 years reached a record high of an estimated 3,45,000 deaths in 2019. More than 70,000 Europeans died as a result of the heat wave in Europe in 2003. More than 2,000 people died in Karachi, Pakistan in June 2015 due to a severe heat wave with temperatures as high as 49°C.
- ⇒ Urban heat islands form because of the materials used for pavements, roads and roofs, such as

concrete, asphalt (tar) and bricks, which are opaque, do not transmit light, but have higher heat capacity and thermal conductivity than rural areas, which have more open space, trees and grass.

- ⇒ Surface ozone levels have increased causing ozone pollution, which is also harmful to health. During heat waves in urban areas, ground level ozone pollution can be 20% higher than usual.
- ⇒ GDP declines due to heat wave as it affects agriculture, wildfires, and floods. Heat waves cause roads and highways to buckle and melt.
- ⇒ Heat wave causes spikes in electricity demands, which increases the burden on power plants.
- ⇒ One artificial lake was developed in Ghazipur village in 2018. It is being revived now.
- ⇒ There should be a heat response plan.

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