

Urban Heat Islands

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In news- Currently, several parts of the country are reeling under heat wave conditions due to a phenomenon called an “urban heat island effect”.

Key updates-

- Recently, **two areas in Delhi recorded temperatures close to 50 degrees Celsius.** Mungeshpur recorded a temperature of 49.2 degrees Celsius, while at Najafgarh, it was 49.1 degrees.
- **Experts say these temperature differences are due to variations in heating over highly urbanised and semi-urbanised areas** and the comparative availability of open and green spaces in the surroundings.
- **NASA’s Ecosystem Spaceborne Thermal Radiometer Experiment (Ecostress)** captured an image recently, covering an area of about 12,350 square kilometres, which showed a large red patch around Delhi and smaller red patches around neighbouring cities of Sonipat, Panipat, Jind and Bhiwani.
- **These red patches, implying higher temperatures, were the heat islands,** while the rural areas around the cities witnessed lower temperatures.
- **Ecostress is an instrument with a radiometer which was sent onto the International Space Station in 2018.**
- **It can measure temperatures on the ground, as opposed to the air temperature.**
- Ground temperatures are likely to be higher during the day than air temperatures and almost the same during the night.

What is an urban heat island?

- An urban heat island is **a local and temporary phenomenon experienced when certain pockets within a city experience higher heat load than surrounding or**

neighbouring areas on the same day.

- For example, a greener locality like Pashan in Pune often records cooler temperatures than urban areas like Shivajinagar, Chinchwad or Magarpatta.
- The **variations are mainly due to heat remaining trapped within locations** that often resemble concrete jungles.
- The temperature **variation can range between 3 to 5 degrees Celsius**.
- **The main way to cut heat load within urban areas is increasing the green cover**; filling open spaces with trees and plants.
- Other ways of heat mitigation include appropriate choice of construction materials, promoting terrace and kitchen gardens, and painting white or light colours on terraces wherever possible to reflect heat.



Why are cities hotter than rural areas?

- **Rural areas have relatively larger green cover in the form of plantations, farmlands, forests** and trees as compared to urban spaces. This green cover plays a major role in regulating heat in its surroundings.
- **Transpiration** is a natural way of heat regulation. This is the scientific process of roots absorbing water from the soil, storing it in the leaves and stems of plants, before processing it and releasing it in the form of water vapour.
- **On the contrary, urban areas lack sufficient green cover** or gardens and are often developed with highrise buildings, roads, parking spaces, pavements and transit

routes for public transport.

- **As a result, heat regulation is either completely absent or man-made.**
- Black or any dark coloured object absorbs all wavelengths of light and converts them to heat, while white reflects it.
- Cities usually have buildings constructed with glass, bricks, cement and concrete – all of which are dark-coloured materials, meaning they attract and absorb higher heat content.
- **Thus forms temporary islands within cities where the heat remains trapped.**