



भारतीय प्रौद्योगिकी संस्थान भुवनेश्वर
Indian Institute of Technology Bhubaneswar

Press Release

Urbanization alone has led to an overall 60% enhancement in warming in Indian cities: Study by IIT Bhubaneswar Researchers

Bhubaneswar, 22nd May 2024: A innovative study by the researchers from Indian Institute of Technology (IIT) Bhubaneswar reveals that urbanization alone has caused up to 60% additional warming in Indian cities, with significant variability among different cities. This research provides a science based quantitative ranking of urbanization for Indian cities. The study titled 'Urbanization and regional climate change-linked warming of Indian Cities' published in the journal 'Nature Cities' is first-of-its-kind and provides insight by carefully separating regional climate change and urbanization in multiple cities.

In the context of rising temperature, the study investigated the contributions of local-scale urbanization and regional climate change to the observed surface warming in 141 major Indian cities over the past two decades. By leveraging 18 years of high-resolution land surface temperature data from the MODIS sensor on NASA's Aqua satellite for the period between 2003 and 2020, the research team carefully compared urban and rural warming trends. Applying strict quality control measures, they subtracted the regional climate change effects observed in rural areas from the urban warming to isolate the urbanization effect.

Notably, Tier II cities in Eastern India showed stronger urbanization-driven warming compared to larger metro cities like New Delhi and Mumbai. This disparity underscores the importance of targeted urban planning and efforts to mitigate heat impacts, which could also address other urban issues like extreme rainfall, floods, and air pollution. Targeting smaller cities with systematic heat action plan is expected to be far more cheaper with positive outcome than for large urban agglomerations or megacities. The study emphasizes the urgent need for detailed urban climate studies and data generation as Indian cities rapidly expand.

The research was led by Dr. V. Vinoj, Associate Professor, School of Earth, Ocean & Climate Sciences and Soumya Satyakanta Sethi. Commenting about the study, Dr. Vinoj said: "A lot more aspects related to urbanization are still unexplored in the Indian context. However, this study provides an early glimpse of science-backed information that may be useful for national or state level policymaking to view each city differently and allocate limited resources systematically to reduce warming of our cities. Such an approach will help in implementing policies that may make our growing smart cities, smarter."

Link of the published paper: <https://rdcu.be/dH0cC>.
