



## Editorial

Dear Readers,

In recent years, Delhi has found itself at the forefront of a battle against an invisible adversary - smog. The alarming rise in air pollution levels has not only affected the health of its citizens but has also cast a shadow over the city's pursuit of sustainable urban living. The detrimental impact of smog on various aspects of Delhi's environment, society, and economy calls for urgent attention and comprehensive strategies to mitigate this crisis. The vulnerable populations, such as children and the elderly, are particularly susceptible. The strain on the healthcare system due to the increasing number of respiratory illnesses further undermines the city's pursuit of a sustainable and healthy urban lifestyle. Reduced productivity, increased healthcare costs, and a decline in tourism are just a few consequences.



Businesses and industries are grappling with the challenges posed by the deteriorating air quality, thereby impacting their operations. Green spaces and biodiversity suffer as the pollutants settle on plants and disrupt ecosystems. Sustainable urban living necessitates a balance between human activities and the environment, making it imperative to tackle smog as a critical step towards preserving Delhi's ecological integrity. The social fabric of Delhi is also strained under the weight of smog. The daily lives of citizens are disrupted as outdoor activities become hazardous, schools are forced to close, and recreational spaces lose their appeal. The impact of smog on sustainable urban living in Delhi is undeniable, and urgent action is required to reverse the tide. A holistic strategy that addresses environmental, economic, health, and social aspects is crucial for mitigating the crisis and ensuring a future where Delhi can thrive as a sustainable urban center. The time to act is now, for the sake of the present and future generations who deserve a city that is vibrant, healthy, and environmentally sustainable.

Yours sincerely

**Hemant Kaushal**

Pr Coordinator,  
Arun Duggal Centre of Excellence for research in climate change and air pollution

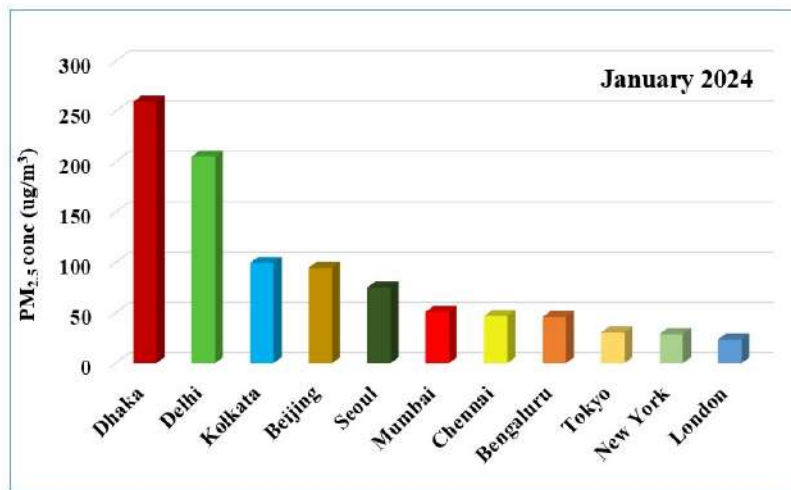


## Air Quality Trends



Indian & International Cities- January 2024

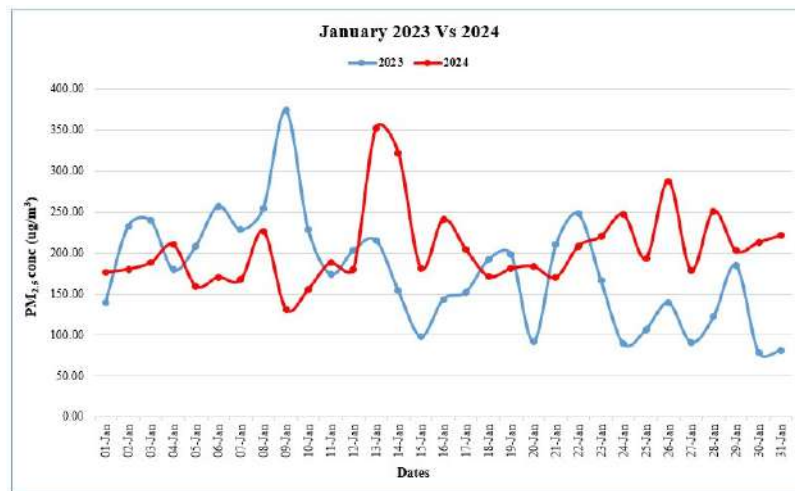
[Dhaka has the highest pollution levels](#)



Source:  
CPCB (Indian Cities)  
aqicn.org (Other Cities)

The graph above shows the daily average PM<sub>2.5</sub> for the month of January 2024. Amongst the major metros worldwide, **Dhaka** has shown the highest concentration of PM<sub>2.5</sub> followed by Delhi and Kolkata.

#### Delhi PM<sub>2.5</sub> (24 hr. daily average) Trend



Source: CPCB

In January, the average PM<sub>2.5</sub> concentration was 205.32 ug/m<sup>3</sup> for the current year 2024 as compared to the previous year (176.93 ug/m<sup>3</sup> for January 2023). The amount of PM<sub>2.5</sub> has fluctuated in some days and increased in others.

\*\*\*Stations with missing values for more than 15 days have been excluded



Henceforth, the CERCA expert talk series shall be organised on a quarterly basis. We shall announce our next expert speaker soon.



**Workshop for Brainstorming on methodologies for establishing a standard methodology for calculation of burnt area caused as a result of crop residue burning along with GDI partners**



## Objective

The primary objective of the workshop is to facilitate focused brainstorming sessions among diverse stakeholders from different domains for the development/selection/adoption of methodology to accurately calculate the area burnt after crop residue burning. This collaborative effort aims to propose a standard operating procedure for calculating burnt area and submit it to CAQM for further consideration.

## Expected Outcomes

- A whitepaper based on workshop discussions will be published
- Enhanced collaboration and communication between agencies for a more unified approach to post-paddy harvesting burnt area analysis
- Improved accuracy, consistency, and comparability in burnt area estimations
- Development of a standardised methodology for burnt area calculation that remote sensing agencies can uniformly adopt

## Event Date

16th February 2024, IIT Delhi



With a vision to support India's commitment to combat climate change and air pollution, CERCA is delighted to announce a collaboration with **Clean Air Fund**. **Prof. Sagnik Dey**, faculty coordinator in CERCA is the PI of the project, along with **Prof Dilip Ganguly**, co-PI, from **IIT Delhi** will be leading this project.

India's strong commitment to combat climate change and air pollution requires an interdisciplinary and evidence-based approach. This project aims to generate India-specific evidence on the health and climate impacts of air pollution. By linking clean air and climate actions seamlessly, the project will provide strategic knowledge to Indian policymakers, aiding in prioritizing emission reduction sectors for maximum health and climate benefits.

The **Arun Duggal Centre of Excellence for Research in Climate Change and Air Pollution (CERCA) at IIT Delhi** will assist in implementing various outreach activities envisaged under the project. At CERCA, we have always been dedicated to creating positive change, and this new partnership takes our commitment to a whole new level. With a shared vision and aligned goals, we are confident that this project will bring about transformative results. As we embark on this exciting journey, we invite all stakeholders to register for our newsletter subscription and know more about its future activities.

Stay tuned for regular updates on the progress and impact of this project.

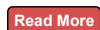
Kindly use this button below to register:



## High ambient air pollution erodes the benefits of using clean cooking fuel in preventing low birth weight in India.

*Rita Parchure, Ekta Chaudhary, Shrinivas Darak, Santu Ghosh, Alok Kumar and Sagnik Dey*

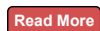
Rural India's population still uses biomass fuel for cooking and heating, increasing the risk of low birth weight (LBW). Mitigating HAP by switching to clean cooking fuel (CCF) is expected to minimize LBW risk. However, ambient air pollution (AAP) in India also affects LBW risk. The present study analyzed data from the National Family Health Survey and found that CCF users had a 7% lower adjusted odds ratio of LBW, with aOR increasing with increasing ambient PM<sub>2.5</sub> exposure.



## Excess mortality risk due to heat stress in different climatic zones of India

*Rohit Kumar Choudhary, Pallavi Joshi, Santu Ghosh, Dilip Ganguly, Kalpana Balakrishnan, Nidhi Singh, Rajesh Kumar Mall, Alok Kumar, and Sagnik Dey*

India faces high risks of heat stress-induced health impacts and economic losses due to its tropical climate, high population density, and inadequate adaptive planning. The present study used 42 years of meteorological data from ERA-5 and climate-zone-specific human comfort class thresholds and found that heat stress is usually 1-4°C higher on heatwave days than non-heatwave days. The study also found that the India Heat Index (IHI) was associated with daily all-cause mortality in three cities, revealing heterogeneity in heat stress impact across different climate zones and calling for an early warning system.





### Exposure to air pollution associated with an increase in sedentary time, study finds

A study published in the Journal of Public Health has found that long-term exposure to UK air pollution is associated with an annual increase of up to 22 minutes of sedentary time each day. Researchers from the NIHR Leicester BRC discovered this trend in the first study of its kind to closely examine the relationship between background pollution levels and physical activity and sedentary behavior. Sedentary behavior is linked to poorer health, including heart disease, several types of cancer, and earlier death. The study examined observations made on 644 people at risk of type 2 diabetes taking part in the 'Walking Away from type 2 diabetes' behavioral intervention. The researchers found that an increase of 1  $\mu\text{g}\text{m}^{-3}$  in the average concentration of atmospheric nitrogen dioxide was associated with an increase in sedentary time of 1.52 minutes per day per year in the most conservative model.

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### Wildfire smoke and exhaust fumes are triggering spikes in eczema and other skin conditions

In June 2022, Boston experienced a spike in dermatology visits due to higher-than-average air pollution from wildfires. The study found a correlation between air pollution levels and hospital visits for atopic dermatitis. The patients were noticed with eczema flare-ups or itchy skin during the summer. In June 2023, carbon monoxide levels were three times higher, and the number of dermatology visits increased to 160. Day-to-day pollution from vehicles and industry also affects the skin. Airborne pollutants can cause inflammation and age faster, leading to flare-ups in people with weakened skin barriers.

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### **Glasgow to monitor air pollution around schools, hospitals and care homes**

Glasgow is set to conduct a comprehensive review of air pollution monitoring around schools, hospitals, and care homes as part of the city's Air Quality Action Plan. The plan aims to improve air quality up until 2029, with a focus on schools, hospitals, and care homes. Other actions include lowering emissions from council vehicles, delivering a local heat and energy efficiency strategy, and supporting the expansion of new cycling and walking routes. The draft Glasgow Air Quality Action Plan (AQAP) outlines actions the council will deliver between 2024 and 2029 to reduce concentrations of air pollutants and exposure to air pollution, positively impacting the health and quality of life of residents and visitors to the Glasgow area.

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### **Children are more vulnerable to poor air quality, says Dundee study**

A study by the University of Dundee's medical school has found that increased air pollution leads to more children being admitted to hospital with lung conditions but does not have the same impact on adults. The study examined 35,000 cases over 14 years in Tayside and concluded that young people may be vulnerable to much lower levels of pollution than adults. The research also found that people in socially deprived areas are more susceptible to pollution. The study found that many more people under 16 were admitted with asthma and chest infections in the days after air quality had dropped, and only around half of them would have needed hospital care if pollution had been within legal limits. Hospital admissions among children were "significantly associated" with exposure to higher levels of air pollution over two weeks, but this was not the case for adults. The study concluded that more should be done to improve and enforce air pollution limits in cities "for the sake of our children's health."

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#### How can nearby villages help in solving Delhi's killer smog?

A study by the University of Surrey suggests that Delhi can combat smog by involving its rural neighbors. The research, in collaboration with officials from the Delhi Pollution Control Committee, CSIR-NEERI, and IIT-Delhi, suggests that regional air quality plans should be drawn up for Indian cities. The study also suggests using satellites to detect pollution sources and predict their interaction with weather conditions. The research emphasizes the need for regional action to tackle air pollution.

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#### 4 ways megacities are tackling air pollution

Air pollution, a major global issue, kills millions of people annually, particularly in the world's largest cities. However, a recent analysis by DW reveals that air pollution levels are slowly improving in many megacities. The analysis focused on PM 2.5, a measure of air pollution, which is smaller than a human hair and can enter the lungs and bloodstream, causing respiratory issues, heart disease, and lung cancer. Cities are mainly affected by emissions from cars, solid fuels, industrial emissions, and waste burning. Almost all (21) of the 25 megacities with available data showed improvement in air pollution levels between 2017 and 2022. To combat air pollution, cities are implementing strategies such as clean transport, promoting walking, or cycling, and expanding public transportation. Low-emission zones are also being explored, with street design adjusting to make more room for pedestrians and cyclists. Industrial sources are also being addressed, with Delhi reducing pollution levels by 15% between 2017 and 2022.

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### Improvement In Delhi's Air Quality Since 2015-17 Halted In 2023

Delhi-NCR experienced the longest spell of poor air quality and the maximum number of smog episodes in the last six years, according to a new analysis by the Centre for Science and Environment (CSE). The long-term improvement in annual PM2.5 levels since 2015-17 halted in 2023, despite cleaner-than-usual summer and monsoon seasons and reduced smoke intrusion from farm fires in northern states. This winter saw unusually low surface wind speeds trapping high levels of local pollution. The overall annual levels have plateaued and worsened, reversing the gains of the long-term downward trend. The analysis revealed that while summers are becoming cleaner, winters are becoming more polluted.

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