PRESS RELEASE

Title 1: Slashing black carbon emissions can save lives and deliver climate co-benefits in IGP

Title 2: UP's domestic sector contributes the most to black carbon in IGP

Title 3: Reducing black carbon emissions has climate co-benefits in IGP

For Immediate Release

Bengaluru, 20 August 2026: A 50% reduction in black carbon emissions from the domestic sector across the Indo-Gangetic plain (IGP) can prevent 1,455 particulate matter ($PM_{2.5}$)–attributable premature deaths in the region. This analysis forms part of a study titled 'Climate Co-Benefits of Black Carbon Mitigation in the Indo-Gangetic Plain' by a research-based think tank, the Center for Study of Science, Technology and Policy. The study was released at the India Clean Air Summit (ICAS) 2026 in Bengaluru on Thursday.

The study focused on identifying sources of black carbon emissions in the IGP, one of the most densely populated regions in the world and a major hotspot of $PM_{2.5}$ pollution.

Black carbon, also known as soot, is a component of $PM_{2.5}$. It forms during the incomplete combustion of fossil fuels and biomass, resulting from industrial processes, diesel engines, open waste burning, crop-residue burning, forest fires, and cooking and heating with biofuels. Black carbon contributes not just to atmospheric heating by absorbing visible light but is also associated with severe health risks and life-threatening diseases such as cardiovascular diseases, hypertension, and premature mortality.

The study findings show that domestic-sector emissions are the dominant source of black carbon across IGP states, with Uttar Pradesh accounting for the largest share. A 60% reduction in black carbon emissions from Uttar Pradesh's domestic sector alone could avoid 836 $PM_{2.5}$-attributable premature deaths across the IGP.

The study also assessed climate co-benefits by using two carbon dioxide–equivalent (CO_2-equivalent) metrics: Global Warming Potential (GWP) and Global Temperature Potential (GTP). GWP measures the energy absorbed by a pollutant relative to CO_2 over a specified time period. GTP measures the global mean temperature change caused by a pollutant relative to CO_2 over a specific point in time. Reducing black carbon emissions from all major sources in the IGP provides climate co-benefits up to 639.3 million tonne (Mt) CO_2-equivalent using GWP and 352.2 Mt CO_2-equivalent using GTP.

The study proposes an airshed-based, multisectoral approach, focusing on the geographical area within which the air is frequently confined or channelled. When the IGP is treated as a single airshed rather than separate states, the benefits are substantially greater.

Integrating black carbon more explicitly into existing clean air and climate policy frameworks can strengthen ongoing efforts to reduce $PM_{2.5}$ while also enhancing near-term climate mitigation.

The study proposes that air quality and climate policy need to be better aligned in highly polluted regions such as the IGP. Stronger alignment between India's Nationally Determined Contributions and the National Clean Air Programme can support coordinated action across states and sectors.

Read the full report here.

For more details and interviews, please write to us at cpe@cstep.in

For more information on our projects, follow us on our socials:

Instagram: https://www.instagram.com/cstep_ind/

LinkedIn: https://www.linkedin.com/company/cstep/posts/?feedView=all

YouTube: https://www.youtube.com/channel/UCROj7dD9PqkZj4My5En829A

Spotify: https://open.spotify.com/show/5UCBFANC1t5TUEsxj73HhK

Bluesky: https://bsky.app/profile/cstep-india.bsky.social

X: https://x.com/CSTEP_India

About CSTEP: The Center for Study of Science, Technology and Policy (CSTEP) is a science and technology–based think tank with a mission to enrich policymaking using innovative approaches for a sustainable, secure, and inclusive society. Our interdisciplinary research cuts across energy, air quality, climate, development, and technology. CSTEP provides policy recommendations to governments, industries, and not-for-profit organisations for informed decision-making. We actively participate in government committees and collaborate with national and international research institutions to create a comprehensive understanding of policy challenges and solutions for India's sustainable development.

About Air Quality Sector: The Air Quality Sector at CSTEP supports government bodies in science-based air quality management at the city, state, and regional levels. We apply a wide range of advanced measurement and modelling tools to inform air pollution mitigation strategies.

About ICAS: The India Clean Air Summit (ICAS) is CSTEP's flagship event on improving air quality in India. Every year, ICAS brings together researchers, policymakers, practitioners, and academics from across the globe to discuss the air we breathe.