NEWSLETTER
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ALL ABOUT AIR

The latest news and updates on Air Pollution, Impacts and Management

IN THIS ISSUE

Linking Air Pollution to Health & Economy

Can these evidences catch the eye of Policy makers?

According to various national and international studies, air pollution has been identified as a global concern due to its direct association with health and country economy (GDP). This previously missing link has been improved upon gradually over the years as the state of the art builds as the medical practitioners, air quality researchers, economists, and policymakers, globally collaborate to share the common goal.

The latest Global Burden of Diseases (GBD) reported a total of 6.67 million deaths (12% of the total global all-cause death) due to air pollution worldwide thereby ascertaining air pollution as the 4th leading risk factor of premature death for the year 2019. A rise in death by 36.1% and accommodating itself at 5th position among the leading risk factors for the year 2017. The assessed mortality is attributed to ambient PM2.5, ambient ozone, and household pollution exposures.

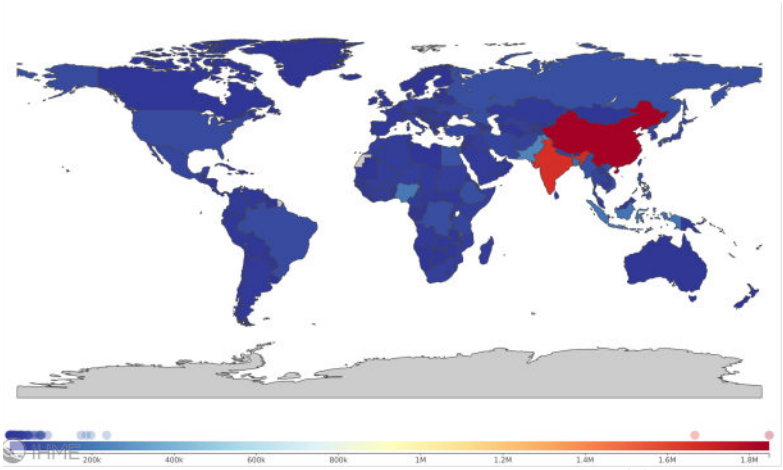
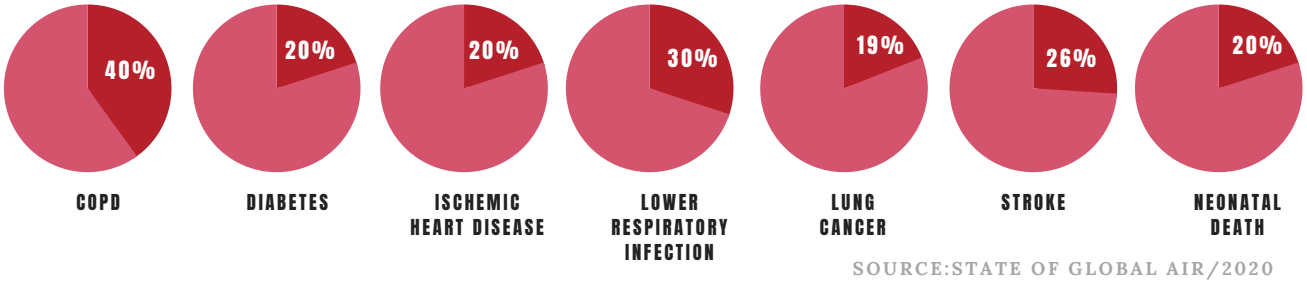


IMAGE: IHME

The highest mortality was accounted for PM2.5 exposure (7%) followed by household (4%) and ambient ozone (1%). India and China accounted for 52.7% of the total global mortality due to air pollution. China exhibited an overall reduction in all 3 exposures over the years 2010-2019. Whereas, India exhibited improvement only in household pollution levels.

Global cause-specific deaths attributable to air pollution



SOURCE:STATE OF GLOBAL AIR/2020

The highest mortality due to air pollution was among children and the elderly. In 2019, air pollution contributed to 0.5 million infant deaths during their first month. It is also believed that the effect of air pollution on the human immune system can increase a person's risk of developing COVID-19 respiratory infections and sufferings.

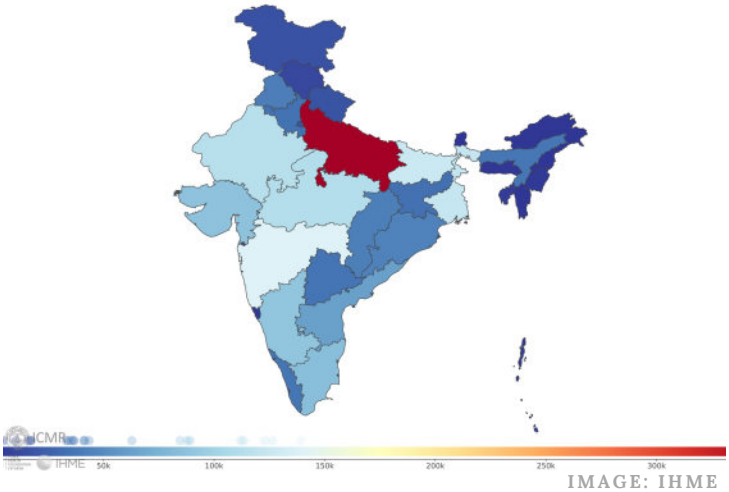


IMAGE: IHME

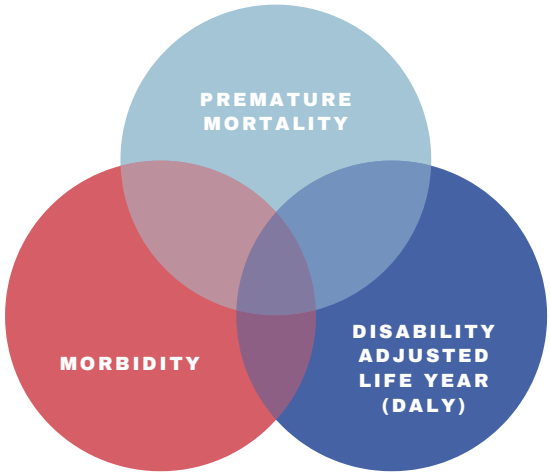
An India Perspective

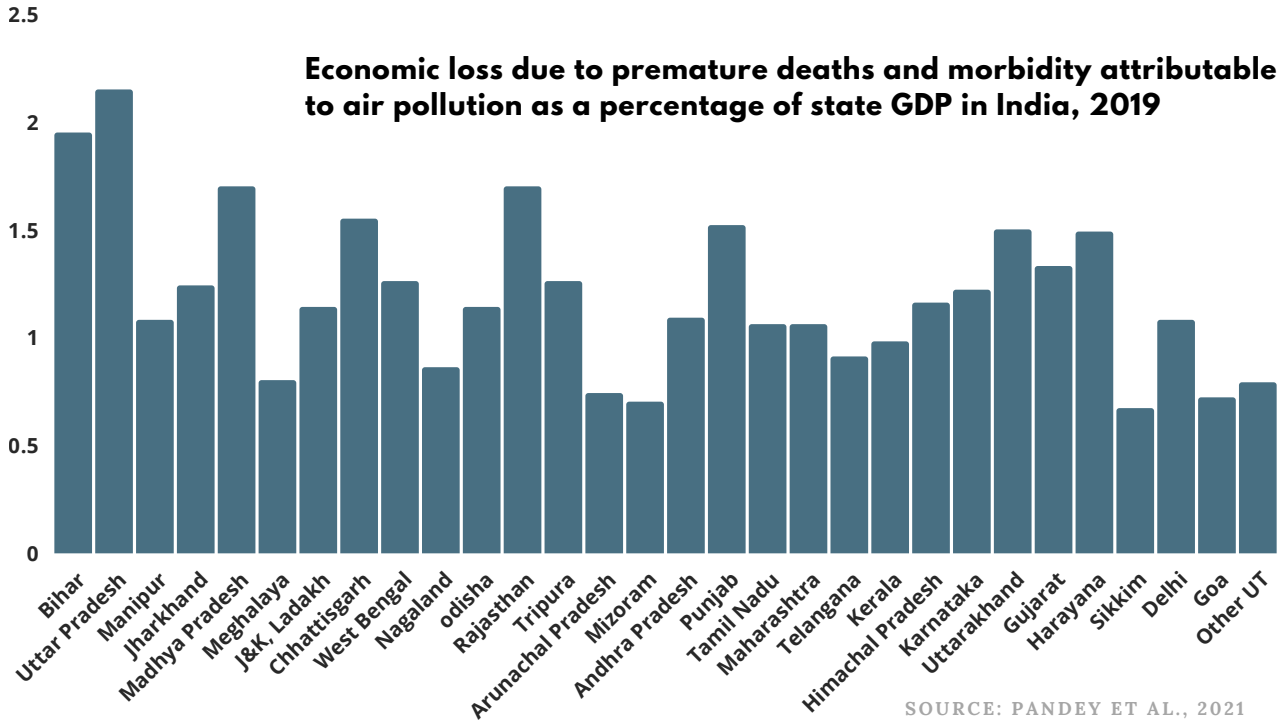
In the year 2019, 1.67 million deaths were attributed to air pollution in India. Exposure to PM2.5 and household pollution accounted for 58.6% and 36.5% of the total mortality respectively. A decrease in mortality rate due to household pollution decreased by 64.2%, while due to Ambient PM2.5 and ozone increased by 115.2% and 139.2% respectively.

The success of Pradhan Mantri Ujjwala Yojana (PMUY) an India initiative programme launched to provided liquified petroleum gas to over 80 million low-income households was evident from the reduction in household pollution levels. In the long run, it is important to exhibit continuous effort both in terms of LPG usage and supply to achieve a consistent reduction in household pollution levels.

The Economic Menace

In the year 2019, India accounted for a total economic loss of $36.8 billion due to air pollution. This total loss was 1.36% of the country's Gross Domestic Product (GDP). Out of the total welfare loss, premature death and morbidity accounted for economic loss of $28.8 billion and $8.0 billion respectively. A crude estimate of health-care cost associated with air pollution burden (measured as DALY) was $11.9 billion.





SOURCE: PANDEY ET AL., 2021

India Initiatives Towards Air Quality Management

SOURCE: PANDEY ET AL., 2021

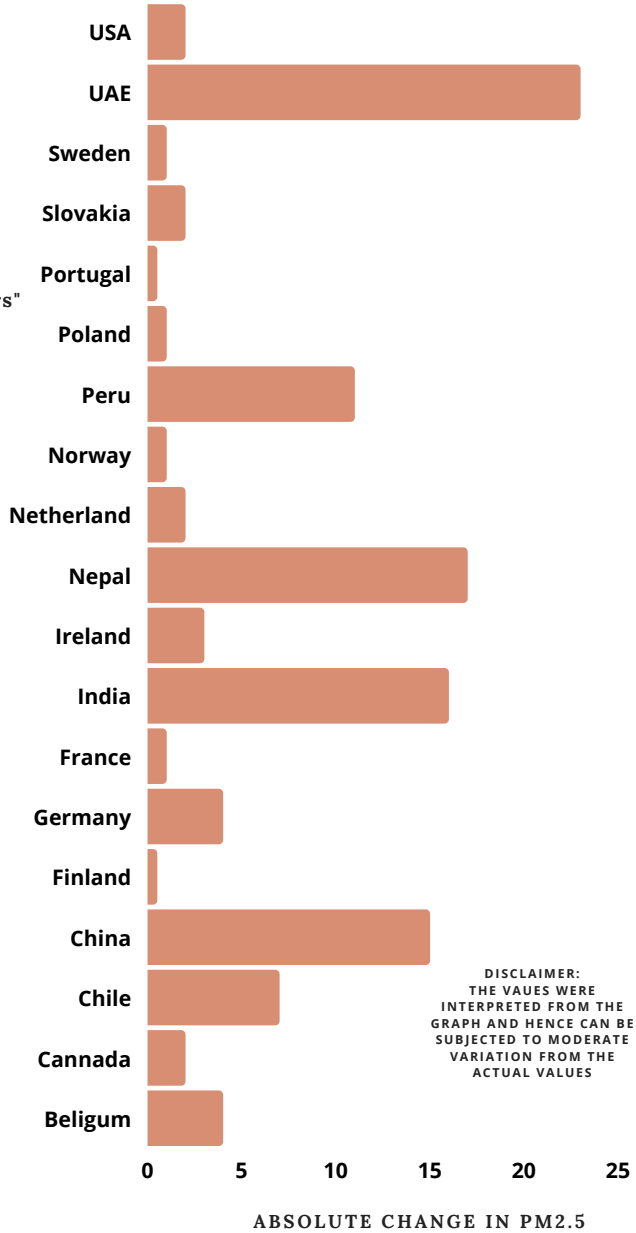
SOURCE: CBS NEWS

Air Quality During Lockdown: A Global Purview

"Lockdown improvements are temporary, consistency matters"

The outbreak of Novel Coronavirus (COVID-19) has turned out to be a pandemic declaring a global health emergency to enforce lockdown measures across the globe. Complete lockdowns were prevalent during the month of March and April 2020 across the nation. China (113) with the highest and Mexico (50) with the shortest lockdown days. In addition to economic damage conducive to lockdown, Studies depicted unprecedented improvement in global air quality.

The decline in ground-level NO2 and PM2.5 by 60% and 31% respectively were reported across 34 countries. However, the effects of long-range transport remained uninterrupted during the lockdown. , Additionally, agriculture activities and energy production were not completely disrupted due to lockdown policy restrictions.



SOURCE:VENTER ET AL., 2020

50 most polluted capitals (as per WHO) exhibited an average decrease up to 12% in PM2.5 during the lockdown. It is noteworthy, that the highest reduction was among the Asian capitals such as Dhaka, Delhi, Ulaanbaatar, Katmandu, Bejing and Kabul. Whereas, it was approx. 30% reduction in the Air Quality Index (AQI) for Indian cities. The northern region comprising of cities such as Agra, Kanpur, Faridabad, Delhi, Jodhpur, Varanasi and Amritsar showed the highest overall reduction followed by southern, western and eastern regions of India.

SOURCE: SHARMA ET AL., 2020
URREGO ET AL., 2020

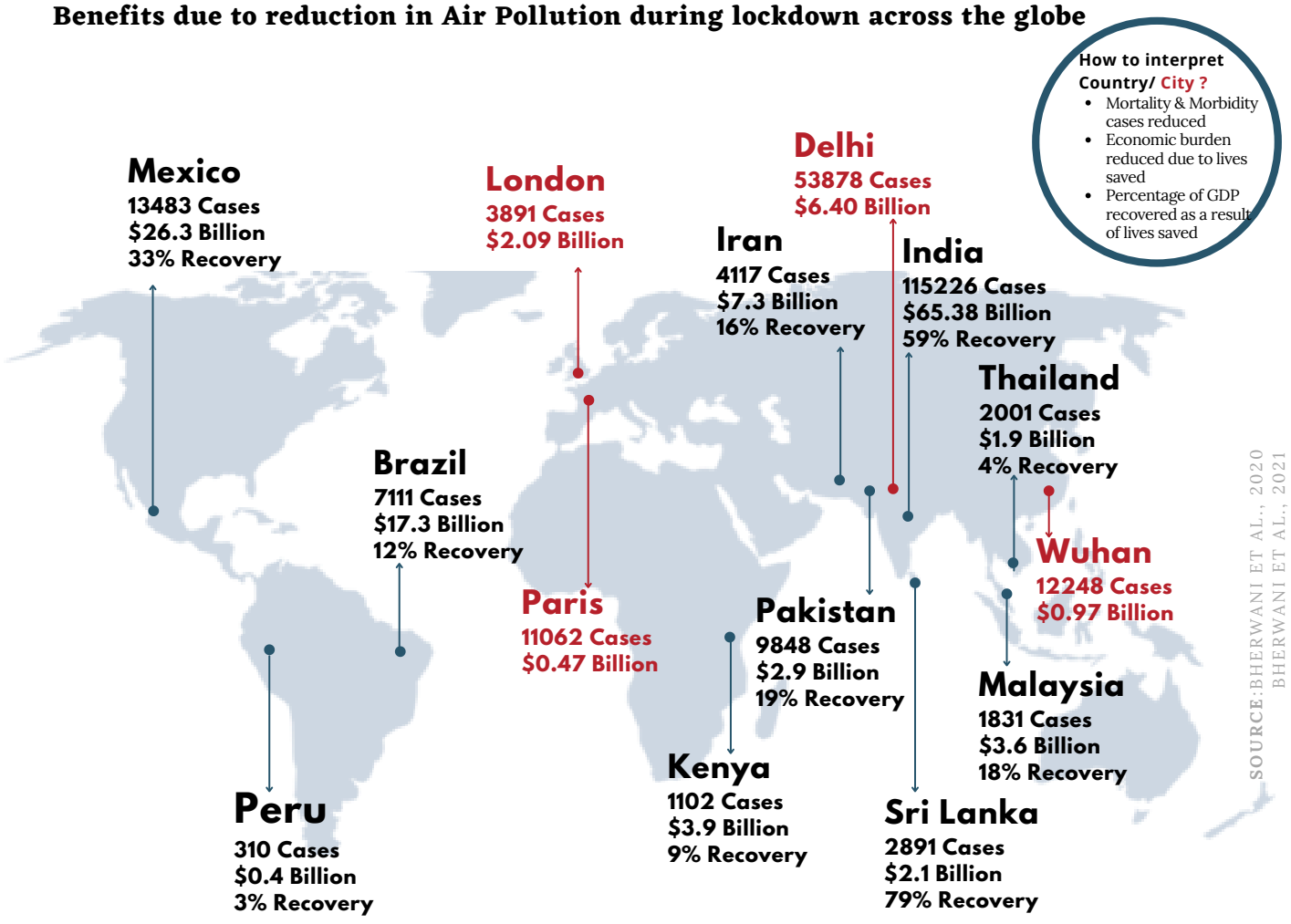
What about Ozone?

The studies observed an unprecedented behaviour in ground-level Ozone portraying a marginal increase instead of reduction. Researchers attributed this unusual behaviour to the chemistry behind the Ozone formation. Ozone is a secondary pollutant is formed by photochemical reactions between VOC and NOx and other gases under sunlight. Thus formed Ozone is further titrated by high NOx levels initialising a reduction. The Ozone that escaped to urban areas remained undiluted due to the absence of in-situ NOx emission sources (mainly vehicular emission) building up the gaseous. concentration levels

SOURCE: CENTRE FOR SCIENCE & ENVIRONMENT
INDIAN EXPRESS

COVID-19 imposed lockdown: A blessing in disguise?

Benefits due to reduction in Air Pollution during lockdown across the globe



SOURCE: TIMES

Can NCAP Flagship Set a Global Paradigm: Intiutions

"With a Rational to Secure the Right to breath Cleaner Air"

After China successfully achieving a reduction of approx 30% PM2.5 through its 5 years implementation plan between 2013-2017, it's India now that's set to achieve a similar reduction in PM through NCAP by 2024.

NCAP coined in the year 2017 was effectively launched by the Ministry of Environment Forest & Climate Change (MoEF&CC) in the year 2019 in 122 critically polluted cities of India with a rationale to develop a clean air action plan to reduce PM level by 20-30%. Approx Rs 100 Million to cities with a population above 1 million, Rs 2 million for cities with a population 0.5-1.0 Million and Rs 1 million for cities with a population less than 0.5 million was allotted to initiate the programme.

Need of the Hour

Researchers have scrutinized the city-specific clean air action plan submitted to the Central Pollution Control Board (CPCB) and have come up with imperative recommendations to facilitate holistic improvement in air quality as envisaged by the NCAP initiative. The recommendations are as follows:

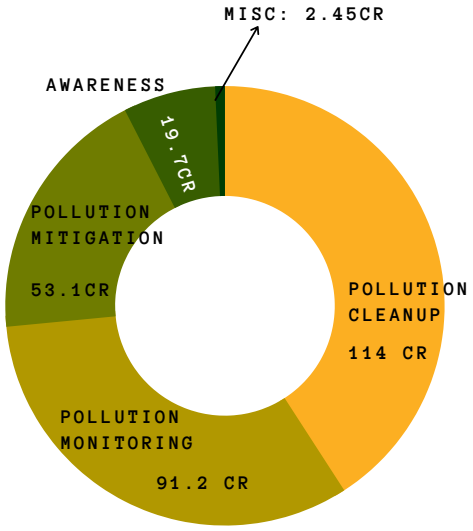
1. Augmenting source apportionment to prioritise the city-specific clean air action plan
2. Airshed based approach involving interstate coordination to reduce regional transport of pollutants
3. Identification of key milestone to track department-specific action compliances
4. Digitized reporting mechanism of compliance of action plan thereby converging all the discussions at a single platform
5. Mandate regular update on emission and pollution loads with a robust air quality infrastructure

SOURCE: GANGULY ET AL., 2020

Metrics for NCAP expenditure

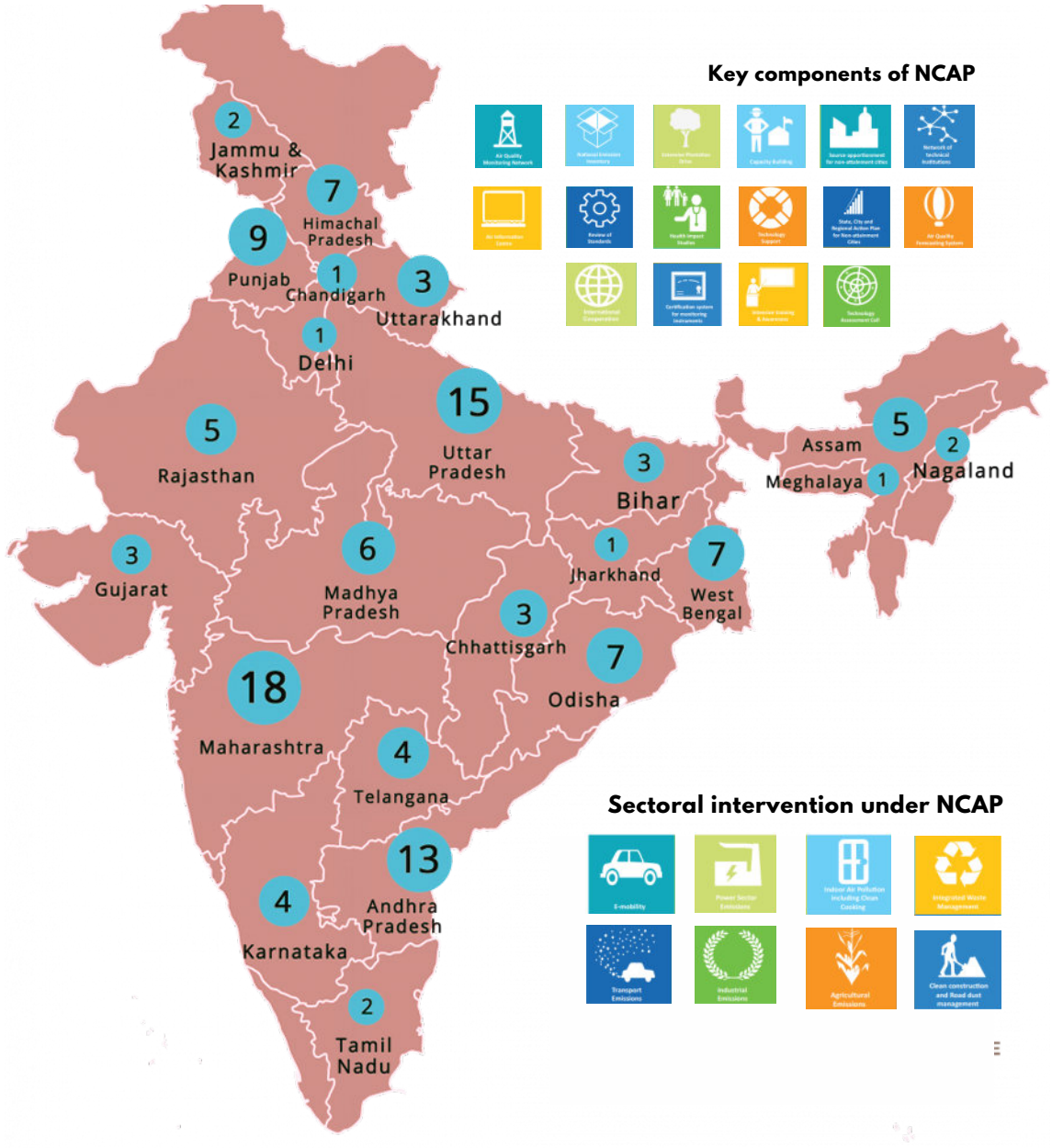
1. Pollution Monitoring; 2. Pollution Clean-up; 3. Pollution Mitigation; 4. Public Engagement and Awareness; 5. Miscellaneous

The spending in the chart is limited to 28 cities namely Agra, Amritsar, Bengaluru, Bhilai, Bhopal, Ahmedabad, Chandigarh, Gwalior, Dhanbad, Hyderabad, Jaipur, Jodhpur, Kanpur, Kolkata, Kota, Lucknow, Ludhiana, Mumbai, Nagpur, Navi Mumbai, Pune, Patna, Prayagraj, Raipur, Surat, Bhubneshwar & Cuttack, Varanasi, Vijayawada.



SOURCE: NCAPTRACKER

List of 122 Non - Attainment Cities Identified Under NCAP India Initiative



SOURCE: NCAP, 2019
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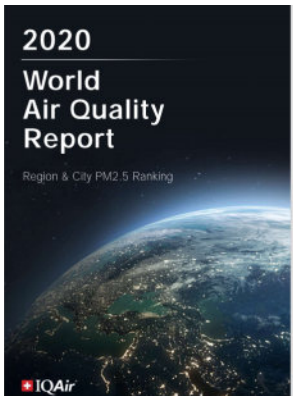
In The News: Global

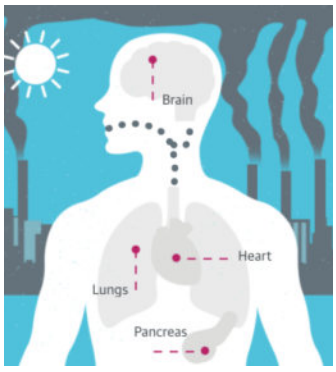


2020 world air quality report for 106 countries released by IQAir

World air quality report, 2020 prepared by SWISS organisation mentions 22 of 30 most pollutes cities are in India. Delhi is the world most polluted capital followed by Dhaka, Ulaanbaatar, Kabul, Doha. Bangladesh is the most polluted country followed by Pakistan and India. Hotan in China is the most polluted city followed by Ghaziabad in Uttarpradesh. Puerto Rico is the least polluted country.

Asia is home to 99 of 100 most vulnerable city: Says Risk assessment report

Residents of Asian urban centres such as Jakarta, Delhi, Tokyo, Shanghai, etc are exposed to air pollution, heat stress and climate change vulnerabilities. Out of the 99 most vulnerable cities, 43 are in India and 37 are in China. The report revealed 19 out of 20 most polluted cities are from India causing one out of 5 deaths with total economic damage of US$ 36 billion for the year 2019.



More diseases linked to air pollution: Reveals several researchers across the globe

More studies reveal a surprising linkage of air pollution to diseases such as anaemia, Parkinson' disease, infertility, impaired thinking among older, smell loss, child asthma, impoverished childhood mental health, bain damages, infant mortality, etc. The list doesn't stop here, more such Cohort studies are carried out globally to identify cause specific health issues attributable to air pollution.

World second biggest GHG emitter to halve its emission this decade

The United States the world second biggest GHG emitter has committed to halving its emission for this decade. A statement was made on China that without robust action by the worlds biggest emitter, climate change breakdowns would be inevitable. The country has a long term target of achieving net-zero emission by 2060. But is yet to produce a national plan for its emissions this decade under the 2015 Paris Climate Agreement.

LEADERS SUMMIT ON CLIMATE

In The News: National

Centre releases Rs 2,200 crores to support air quality improvement measures [SOURCE: LIVE MINT]

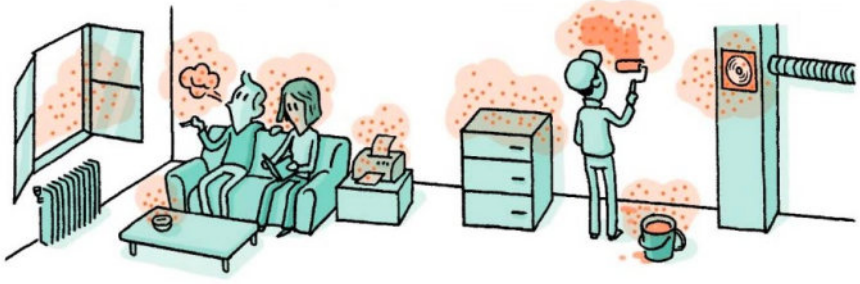
The Union Ministry of Finance on the basis of recommendation of the Fifteenth Finance Commission released the first instalment grant of Rs 2,200 for 42 Million plus cities in 15 states to undertake air quality measures, including capacity-building of the local bodies within their million-plus cities/agglomerations. The Union government has remained committed for disbursement of Rs 4,400 crore for million-plus cities in its Union Budget for 2020-21.

Smog towers to fight Delhi's air pollution

Delhi's Anand Vihar and Connaught Place are about to get one each smog towers having 1,200 air filters. The work is underway and is jointly undertaken by Tata projects limited IIT-Delhi, IIT-Bombay and National Building Construction Corporation (NBCC). DPCC for Connaught Place and CPCB for Anand Vihar has been identified as the nodal agency. Delhi had its first smog tower installed at Lajpat Nagar capable of catering 2,50,000 - 6,00,000 m3 of air per day.

[SOURCE: INDIAN EXPRESS]

India needs stringent indoor air quality standards: IIT-Delhi study [SOURCE: INDIAN EXPRESS]

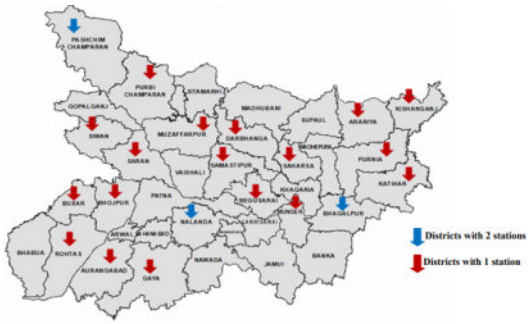


An indoor air quality study conducted on 37 building including schools, colleges, offices, hospital, restaurants, malls, theatre, etc. revealed a high concentration of both PM2.5 and PM10 being approximately 2.5 times the CPCB ambient air quality standards. Researchers suspect re-suspension of chalk powder during writing and dusting activities in schools a major factor. Pollution level rose at night due to poor ventilation. High Total Volatile Organic Carbon (TVOC) was reported in hospitals and restaurants due to the regular use of chemical cleaning agents, floor cleaners and cooking oil. High CO2 levels at offices, hospitals, colleges, restaurants were attributed to high occupancy and inadequate ventilation.

In The News: Bihar

BSPCB to expand state wide ambient air quality monitoring network

With a total of 11 existing CAAQMS, BSPCB is in process of setting up 24 additional stations across the state. The work had been initiated in the year 2020 and was delayed due to pandemic and lockdown situations. The board is about to expedite the process of installation to ensure the functioning of some stations before the onset of the monsoon.



The state is all set to monitor brick kiln hotspots using GEO-AI platform

BSPCB has inked MOU with UNDP to carry out brick kiln monitoring using Artificial Intelligence (AI) technology. Officials claim that, out of 6000 odd brick kilns, 1000 odd are yet to adopt Zig-Zag technology and are located in remote areas making it difficult to monitor physically. GEO-AI technology will be utilised in tracking brick kilns operating under conventional technology.

More electric bus added to the fleet. A pathway towards zero emissions [SOURCE: TIMES OF INDIA]

12 electric buses were launched by the state recently as an initiative towards environmental protection. 13 more will soon join the fleet. Most of the buses will be plying in the state capital Patna and one each will be sent to Muzaffarpur and Rajgir. More procurement will be made once the operation of E-Buses is streamlined.

IIT-Delhi to support GIS-based air quality management study

MOU signed between IIT-Delhi and BSPCB in monitoring and tracking air pollution sources and emissions using satellite data and GIS software. The MOU includes long term aerosol trend study, long-range pollutant transport analysis, identification of crop burning area and generation of high resolution PM2.5 spatial maps.

BSPCB inks MOU with ADRI, Patna to provide handholding support in air quality management

CEECC at ADRI, Patna & BSPCB inks MOU for - (a) air quality management and implementation of clean air action plan in Patna, (b) developing and deploying a web-based interface on air quality monitoring and management, (c) carrying out research work on air and water quality. BSPCB is leveraged by the Programme Management Unit (PMU) established by Bloomberg Philanthropies, Shakti Sustainable Energy Foundation and ADRI in 2020 for Patna air quality management.

157 farmers debarred from government subsidies for 3 years

As stringent punitive measures against farmers indulged in crop burning, the state government has blocked the Direct Benefit Transfer (DBT) accounts of 157 farmers in Kaimur and Rhotas districts in Rabi season 2020-21. monitoring is done using Kisan Mitras and agriculture coordinators. The DBT account of 900 farmers was blocked in the previous paddy season of 2020. The districts Rhotas (462) and Kaimur (133) has the largest number of ban. During the wheat season, 2020-21, DBT of 52 and 105 farmers were blocked in the districts of Rhotas and Kaimur respectively. [SOURCE: HINDUSTAN TIMES]

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Future Activities

Bihar soon to get comprehensive State Air Action Plan

Just like Non-Attainment cities have their city-specific clean air action plan on board, Bihar is soon to get a state-specific clean air action plan. Technical assistance for the study will be provided by the World Bank augmenting various state-specific stakeholder departments.

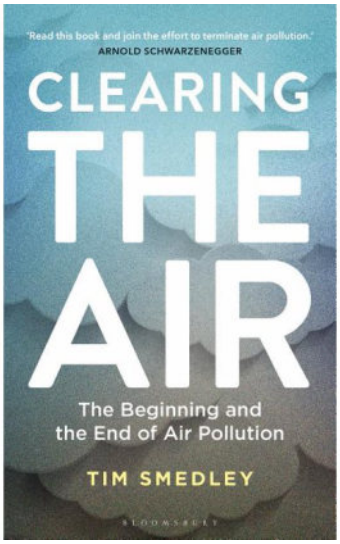
The PMU for air quality management at CEECC, ADRI is preparing traffic emissions inventory for Patna city

Patna being the only million-plus city in the state is envisaged to have a larger vehicle fleet and is likely to be a major indigenous source of pollution in the city. A high-resolution traffic emissions inventory spatial map developed will facilitate policymakers in identifying hotspot areas for effective traffic management.

HYBRID machine learning approach to develop high-resolution PM2.5 spatial map for Bihar

A high resolution PM2.5 spatial map developed at ward/ block level will ease the process of identifying the daily hotspots providing necessary insights among policymakers for suitable mitigative measures. The state of the art model will be a combination of satellite data and CAAQMS stations using advanced machine learning methods.

Important Read



Tim Smedley is an award-winning sustainability journalist from the United Kingdom. His book revolves around air pollution: what it is, which pollutants are harmful, where they come from and, most importantly, what we can do about them in immediate terms. Amidst terrifying statistics, he uncovers the hope that remains for the planet. He tells inspiring stories of how cities like Mexico have drastically reduced air pollution, meets the people trying to make lasting change, and outlines blueprints to help readers take the problem into their own hands and improve the situation for themselves, their family, and their local community.

The Programme Management Unit (PMU) at the Centre for Environment, Energy and Climate Change (CEECC, ADRI) focuses on air quality management in Bihar. The Unit is stationed at the Bihar State Pollution Control Board (BSPCB), and sponsored by the Bloomberg Shakti grant. The Unit is providing handholding to the Board for effective and timebound implementation of the city-specific clean air action plan.

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