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COMPENDIUM ON AIR POLLUTION

PARLIAMENTARIANS' GROUP FOR CLEAN AIR





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MESSAGE BY CONVENER

The Parliamentarians' Group for Clean Air (PGCA) is a forum of Hon'ble Members of Parliament (MPs) from across India to deliberate upon and take action on matters related to Air Pollution. It gives me enormous satisfaction to see the concerns of fellow MPs and more so their enthusiasm to take action on the issues pertaining to Air Pollution.

Today, climate change is a priority of most countries across the world, and seeing our country as one of the leaders in this space encourages us to do more in our capacity as Parliamentarians.

The issue of Air Pollution is complex, multi-sectoral, and needs to be addressed urgently. The Government has taken multiple steps like; the launch of the National Clean Air Programme (NCAP), the establishment of the Commission for Air Quality Management (CAQM), and grants recommended by the Fifteenth Finance Commission, etc. It is a well-known fact that these positive steps have, to an extent, taken the conversation out of Delhi-NCR. However, we need to focus more on issues like; the availability of actionable data for local actions, capacity building of Urban Local Bodies (ULBs) as well as Gram Panchayats, increasing uptake of Electric Vehicles (EVs) or their alternatives and involving citizens. While doing so, we must remember that every action having a potential impact on livelihood must be implemented in a phased manner having equally rewarding alternatives at the core of it, especially for farmers and the workforce engaged in mining. Further, one essential step is to launch a nationwide survey to have a deeper understanding of the co-relation between Air Pollution and health, followed by appropriate policy-level interventions.

It is with the aforesaid views and beliefs that the Group set itself upon a project to draft a Compendium with high-impact monitoring indicators in consultation with numerous experts for the sole purpose to enable fellow Parliamentarians to effectively monitor the factors impacting levels of Air Pollution. The other significant objective of the monitoring indicators is to collect observations and data from our respective constituencies for its submission to the Hon'ble Minister of Environment, Forest and Climate Change (MoEFCC) to complement his efforts further.

I am hopeful that the Compendium on Air Pollution serves its intended purpose and fellow Parliamentarians make maximum use of it and provide their thoughts for its continuous upgradation.

Yours Sincerely,



Shri Gaurav Gogoi, MP (LS) and Convener, PGCA



Shri Gaurav Gogoi
*MP (LS) and Convener,
PGCA*

MESSAGE BY CO-CONVENER

It is a well-established fact that unhealthy Air has a detrimental effect on human health, the climate and on ecosystems. To address the issue of poor Air Quality in India's urban and rural areas, the Government has been actively introducing a variety of highly impactful interventions. Hon'ble Prime Minister Shri Narendra Modi Ji's promulgation of the five elements, i.e., 'Panchamrit', at CoP 26 positions our country as a global climate leader. The Government's actions on the ground are aptly reflected in high impact initiatives like; Unnat Jyoti by Affordable LEDs for All (UJALA), National Clean Air Program (NCAP), Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME), Swachh Bharat Abhiyan (SBA), Smart Cities Mission, GOBARdhan Scheme etc. Under the esteemed leadership of Hon'ble Minister of Environment, Forest and Climate Change (MoEFCC) Shri Bhupender Yadav Ji, India has consistently delivered on global climate commitments. Be it the use of renewables or increase in forest cover, the Ministry is driving every effort to ensure Clean Air Quality for our citizens.

Moreover, the need of the hour is to intensify efforts towards abatement of Air Pollution at the pan-India level, and to do so each one of us needs to synergize our actions. I firmly believe that any step for abatement of Air Pollution must be well thought through to have minimal impact on the livelihood of our citizens.

With that background, select Hon'ble Members of Parliament (MPs) created a dynamic forum and identified themselves as the "Parliamentarians' Group for Clean Air (PGCA)" with a sole vision to influence action on Air Pollution. This is a unique forum of MPs from across party lines to drive not only policy-level conversation but also to facilitate the implementation of various Government programs on the ground for the benefit of our constituents. The group since its inception has constantly enabled Hon'ble MPs with appropriate and credible knowledge.

In our efforts to enable Hon'ble MPs to act on the issues related to Air Pollution, we have come up with a Compendium on Air Pollution, drafted with the support of sectoral experts. Our objective of this exercise was to create a standard document that will further guide Hon'ble MPs to understand the issue better and take the necessary actions as well.

I also want to take this opportunity to thank my fellow Parliamentarians who have contributed immensely to the success of the group's activities by devoting their valuable time. We hope this Compendium will serve as a valuable resource to Hon'ble Parliamentarians.

Yours Sincerely,



Smt Sunita Duggal, MP (LS) and Co-Convenor, PGCA



Smt Sunita Duggal
MP (LS) and Co-Convenor,
PGCA

ACKNOWLEDGMENT

Parliamentarians' Group for Clean Air (PGCA) is grateful to Hon'ble Members of Parliament (MPs) for their proactive contribution in the drafting of an informative Compendium on Air Pollution, which not only guides fellow MPs on fundamentals but also lays down a list of comprehensive indicators to be deployed at their respective constituencies for robust monitoring of the issue concerning the well-being of constituents. We express special gratitude to all the MPs for their participation in numerous deliberations.

The group acknowledges and appreciates the contribution of Dr Arunabha Ghosh, Chief Executive Officer and Ms Tanushree Ganguly, Programme Lead, Council on Energy, Environment and Water (CEEW), Mr Mohit Sharma, Senior Counsellor, CII-ITC Centre of Excellence for Sustainable Development, Mr Shubhashis Dey, Director- Climate Policy Programme and Ms Aishwarya KS, Consultant (Climate Policy), Shakti Sustainable Energy Foundation, Ms Gunjan Jain, Engagement Lead and Ms Vinamrata Borwankar, Communications Associate, Climate Trends and Prof. Sachchida Nand Tripathi, IIT Kanpur, Department of Civil Engineering, for their periodic guidance on the subject.

We also express sincere thanks to Swaniti Initiative for their prompt Secretariat Support. The committed core team at Secretariat comprising; Mr Kumar Abhishek, Vertical Lead, Policy Engagement, Ms Bhavayta Mahajan and Ms Monal Singh, Analyst - Clean Air, Ms Shefali Sharan, Senior Analyst, Ms Jhanvi Sonakia, Mr Sparsh Kumar, Analyst, Parliamentary Engagement were instrumental in connecting PGCA to the distinguished experts and facilitating periodic convenings of the Group. Further, innovative cohort of Clean Air Associates of Swaniti Initiative; Ms Evita Rodrigues, Mr Challapareddi Dheeraj Venkata Manikanta, Mr Siddharth Srivastava, Ms Bedika Borah, Ms Bavanisha Kalyan and Mr Diwakar Kumar, were instrumental in driving various components of the Compendium from designing logos to the glossary.

The group appreciates and thanks each one of them for their services and timely support.

Shri Gaurav Gogoi,
MP (LS) and Convener, PGCA

Smt Sunita Duggal,
MP (LS) and Co-Convener, PGCA

ABOUT PGCA

In the year 2019, a few Hon'ble Members of Parliament (MPs) in the backdrop of rising levels of hazardous Air Pollution in Delhi collaborated to identify themselves as the MPs for Clean Air. These distinguished MPs of the group acknowledged the need for Air Pollution to be recognized as a public health threat. The group then strenuously engaged itself in numerous consultations with the experts and took action on a variety of subjects having linkages with Air Pollution.

The year 2021 was a defining year wherein the members decided to give structure to the group. A journey that started with a few stood tests of time and witnessed meteoric success leading to its consolidation as Parliamentarians' Group for Clean Air (PGCA). It is a non-partisan, self-governed collective of the MPs to deliberate, promote actions and facilitate the exchange of knowledge to reduce Air Pollution in the country.

Today, the constantly expanding Group has 35 members who are committed to take concrete actions in their capacity to mitigate the rising level of Air Pollution. The Group's pursuits are steered by two fundamentals; advocating for Air Pollution to be recognized as a public health issue and any response put forward must be balanced to account for the livelihood concerns of our beloved citizens. The Group consistently endeavors to engage with more fellow Hon'ble MPs and closely work with them to create an impact on the ground. In the future, the group will enthusiastically produce dedicated knowledge products on Air Pollution for Hon'ble MPs.

The way forward for this group is unique as apart from continuously convening on the contemporary issues related to Air Pollution, it intends to create and bring forward successful interventions for their replication at scale.

IMAGINE

what will happen when the Air becomes poison!

Every year with the onset of winter
the fear of Air Pollution gets refreshed in everyone's mind.

This is not limited to one city but across the country.

According to World Health Organization (WHO),

9 out of 10 people breathe unhealthy or polluted Air,
and this problem is more common in developing countries.

WHAT IS AIR POLLUTION?

The Air (Prevention and Control of Pollution) Act, 1981, defines Air Pollution as, the “presence of any solid, liquid, or gaseous substances in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment.”

The World Health Organization (WHO) definition says that *Air Pollution is contamination of the indoor or outdoor environment by any chemical, physical or biological agent that modifies the natural characteristics of the atmosphere. Household combustion devices, motor vehicles, industrial facilities and forest fires are common sources of Air Pollution.*

There are six common Air pollutants (also known as “*criteria Air pollutants*”) measured in most parts of the world, including India.

Criteria Air Pollutants

- Particulate Matter (PM)
- Carbon Monoxide (CO)
- Ground Level Ozone (O₃)
- Lead (Pb)
- Sulphur Dioxide (SO₂)
- Nitrogen Dioxide (NO₂)

Types of Air Pollution

- Indoor Air Pollution
- Outdoor Air Pollution

DO YOU KNOW?

Outdoor Air Pollution is also called ambient Air Pollution

WHY GOOD AIR QUALITY?

Air Quality is a measure of Air suitability for all living beings. On average, a human being breathes 14,000 litres of Air daily. Therefore, poor Air Quality adversely impacts the health of all living beings.

Good Air Quality is an essential component of the Right to Life. Its infringement is a possible violation of the fundamental right enshrined in our Constitution. The Hon’ble Supreme Court in Subhash Kumar vs the State of Bihar, held that Right to Life is a fundamental right under Article 21 of the Constitution and enjoyment of pollution-free Water and Air is integral to it.



AQI Satisfactory



AQI Severe

WHY DOES AIR POLLUTION BECOME UBIQUITOUS?

The growing population, urbanization, industrialization, vehicles, construction activities, and burning of agro-waste in an unsustainable manner are the primary

contributors to Air Pollution. Overall, sources of Air Pollution are classified into 2 broad categories – natural and man-made sources presented below:

Sources of Air Pollution

Man-made



Vehicular Emission



Mining activities



Construction



Industries and factories



Coal-fired power plants



Biomass and waste burning

Natural



Smoke from wildfires



Ash and gases from Volcanic eruptions



Dust storm

WHO IS VULNERABLE TO AIR POLLUTION?

- People with lung diseases, such as asthma, chronic bronchitis, etc.
- Infants and young children (under age 15 years)
- Elder people (above 65 years)
- People with a cardiovascular disease
- People in poverty; people who lack access to health care
- People working in occupations where there is high exposure to contaminated Air
- People having smoking habits
- Pregnant women

Shri Abdul Khaleque

Member of Parliament (Lok Sabha),
INC, Barpeta, Assam

Today, even our farmers are well aware of the ill-effects of Air Pollution and are taking steps to mitigate it. The current schemes like GOBARdhan and PM-KUSUM have immense scope to reduce pollution levels and will also serve the objectives of addressing livelihood concerns.

Air Pollution is a silent killer

and one of the biggest
public health risks in
India

HEALTH IMPACTS OF AIR POLLUTION

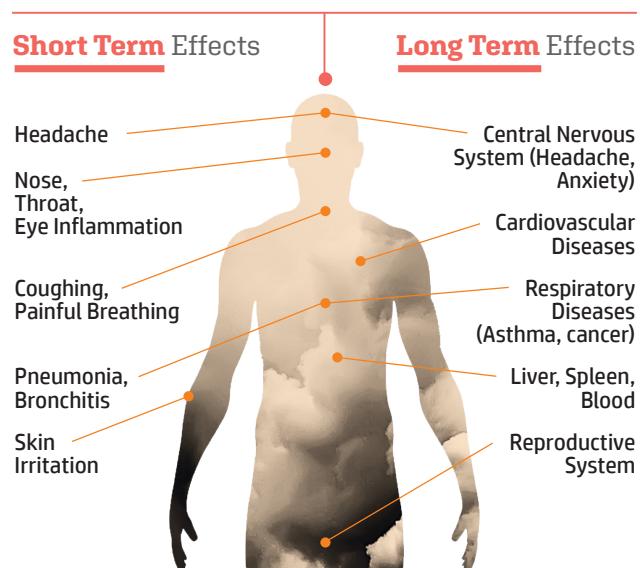
World Health Organization (WHO) describes Air Pollution as one of the greatest environmental threats to human health, alongside climate change. It recommended a new Air Quality level to safeguard the well-being of people, by reducing levels of key Air pollutants- Particulate Matter (PM) equal to or smaller than 10 and 2.5 microns (μm) in diameter.

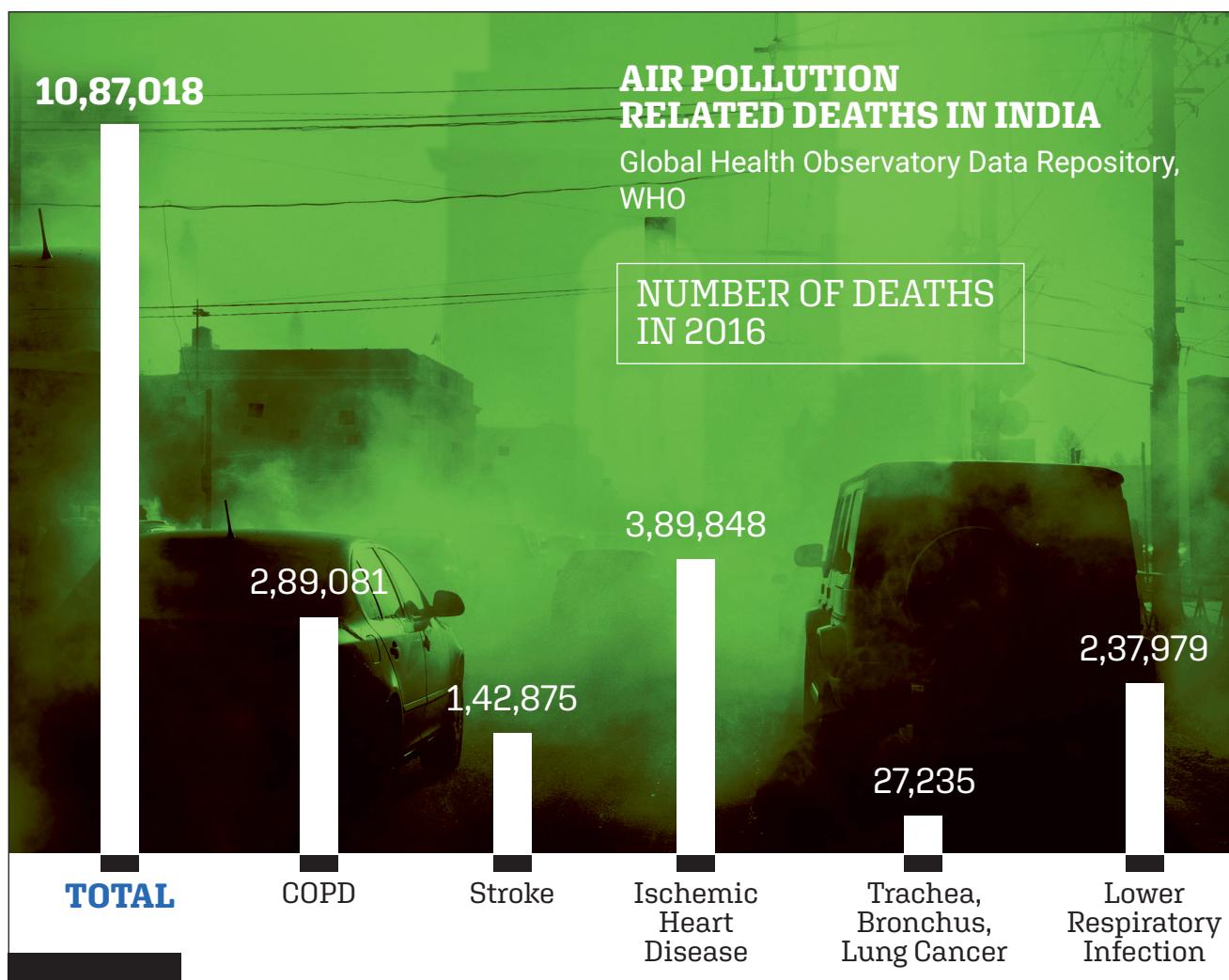
This risk factor encompasses both ambient Air Pollution and indoor Air Pollution. The combined effects of ambient and indoor Air Pollution contribute significantly to various diseases. The evidence suggests that the key pollutants like; NO_2 , CO , SO_2 , VOCs, and O_3 have an immediate impact on health like; respiratory disorders, shortness of breath, lower resistance to pneumonia and irritation in the eyes, among others. PM_{10} and $\text{PM}_{2.5}$ cause respiratory and lung diseases, which can be acute as well as chronic. Moreover, both short and long-term exposure to Air Pollution can lead to a wide range of diseases, including stroke, chronic obstructive pulmonary disease (COPD), trachea, bronchus and lung cancer, aggravated asthma and lower respiratory infections.

The World Air Quality Report, 2021 says that 48% of Indian cities have concentrations of $\text{PM}_{2.5}$ higher than 10 times the WHO Air Quality guideline level. A study conducted by the Indian Council of Medical Research (ICMR) in 2016 found that Air Pollution was the second leading health risk factor in India after child and maternal malnutrition. The same study also observed that ambient Air Pollution and indoor Air Pollution lead to 6.4% and 4.8% of India's total Disability-Adjusted Life (DALYs) years respectively.

Considering its wide-ranging impact on the health of various sections of society, there is an urgent need to engage with the Ministry of Health and Family Welfare (MoHFW). Further, efforts are required to be made in the direction of streamlining the relationship between Air Pollution and Public Health.

LONG AND SHORT TERM EFFECTS OF AIR POLLUTION ON HUMAN HEALTH





In 2017,
a child in India
died every three
minutes due to
Air pollution

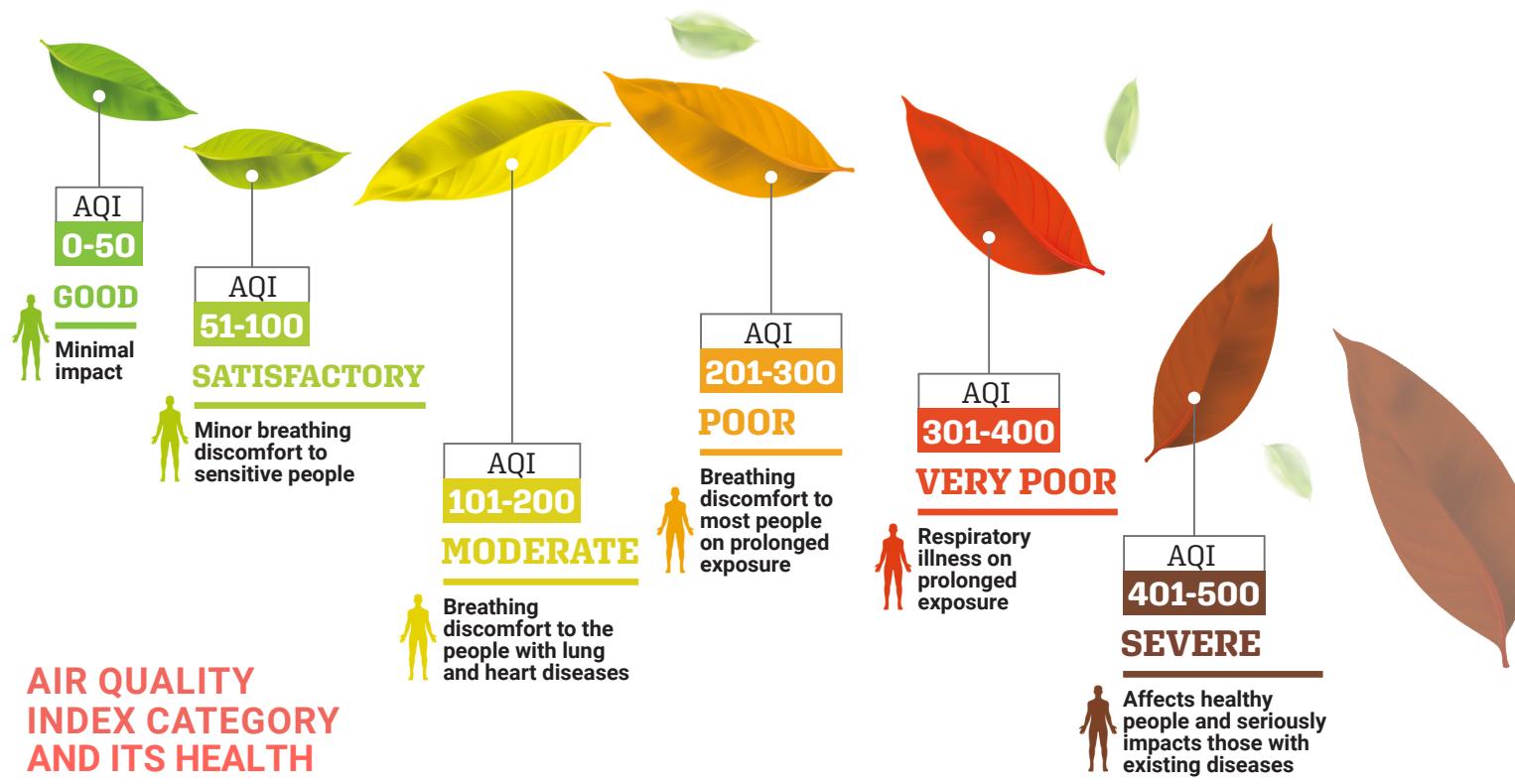
- The Global Burden of Disease, in 2017 ranked ambient Air Pollution as the 5th leading cause of death. The same study further suggested that 12.5% of the total deaths in 2017 were 'attributable' to Air Pollution.
- 1.7 million deaths in India in the year 2019 were linked to Air Pollution, according to a study on 'Air Pollution and its impact on business'.
- Death rate due to ambient Particulate Matter pollution increased by 115.3% between 1990-2019.

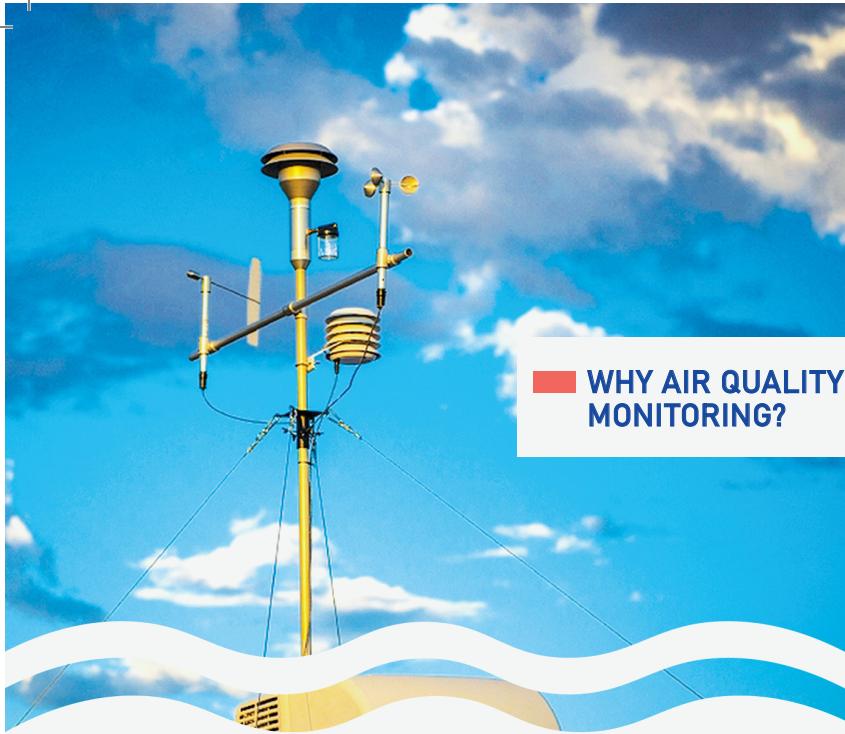
WHAT IS AIR QUALITY INDEX (AQI)?

AQI is an effective tool deployed by the Government to communicate on how polluted or clean the Air is and its associated health impacts. Its prime focus is on simplifying the complex Air Pollution data for common people. The higher the AQI value, the more will be the level of Air Pollution and the public health risk. The revised National Ambient Air Quality Standards (NAAQS) recommend 12 parameters (PM₁₀, PM_{2.5}, SO₂, NO₂, CO, O₃, Pb, NH₃, Ni, As, Benzene, Benzo(a)pyrene) for AQI measurement. However, AQI is calculated at continuous monitoring stations mostly featuring 6 parameters

(PM₁₀, PM_{2.5}, SO₂, NO₂, CO, O₃) and NH₃ at times. Ideally, 8 parameters (PM₁₀, PM_{2.5}, SO₂, NO₂, CO, O₃, NH₃ and Pb) should be measured for continuous monitoring.

For the calculation of AQI value, the average concentration of pollutants should be minimum for the period of 16 hours. Simply put, AQI transforms complex Air Quality data of 8 pollutants into a single number (index value), nomenclature and color. Below is a sample representation of AQI category, color, and health impacts:





■ WHY AIR QUALITY MONITORING?

Monitoring of pollutants is necessary for effective Air Quality management. The government monitors Air Quality in various regions through continuous and manual monitors to keep track of pollutants for appropriate mitigation strategies.

1. Measurement of Air Quality Using Continuous Ambient Air Quality Monitoring Stations

Continuous Ambient Air Quality Monitoring Stations (CAAQMS) use high-end technology for automated data collection (Air Quality and meteorological parameters) and it transfers the data with its analytics to its centralized server. It provides real-time data on AQI. The data generated is disseminated online through the Central Pollution Control Board's (CPCB) portal of automated Air Quality data. There are 443 CAAQMS present in India (CPCB data as on 7th March, 2023).

Advantages: High accuracy and reliability in real-time.

Disadvantages: Costly and requires regular maintenance.

2. Measurement of Air Quality Using Manual Air Quality Monitoring System

Manual Monitoring system uses devices that sample the Ambient Air using manual sampler and after the sample is collected it is taken manually for analysis. The filter is analysed for different pollutants and the report is generated manually based on analytics, and the data is archived on the server. The process takes two to seven days to complete to get the pollution information of the location. The monitoring of pollutants is carried out for 24 hours with twice a week frequency.

Advantages: Relatively low cost than CAAQMS

Disadvantages: Time-consuming and duplication of data

3. Measurement of Air Quality Using Low-Cost Sensors

A new technology which measures specific Air pollutants, mostly Particulate Matter (PM) and gaseous pollutants. These are smaller in size; lightweight and also use less power.

Advantages: Relatively low-cost and much more compact than traditional automated monitoring stations.

Disadvantages: Data accuracy is yet to be verified and needs regular calibration.

Dr (Prof.) Kirit Premjibhai Solanki

Member of Parliament (Lok Sabha),
BJP, Ahmedabad West, Gujarat

It's now a known fact that Air Pollution is hurting marginalized populations disproportionately. The efforts of the Government and Hon'ble Members of Parliament (MPs) through the forum of PGCA in tandem will certainly have visible impacts.



AIRSHED

WHAT IS IT AND WHY IS IT IMPORTANT?

World Bank defines Airshed as
"the common geographic area where pollutants mix and create similar Air Quality for everyone."

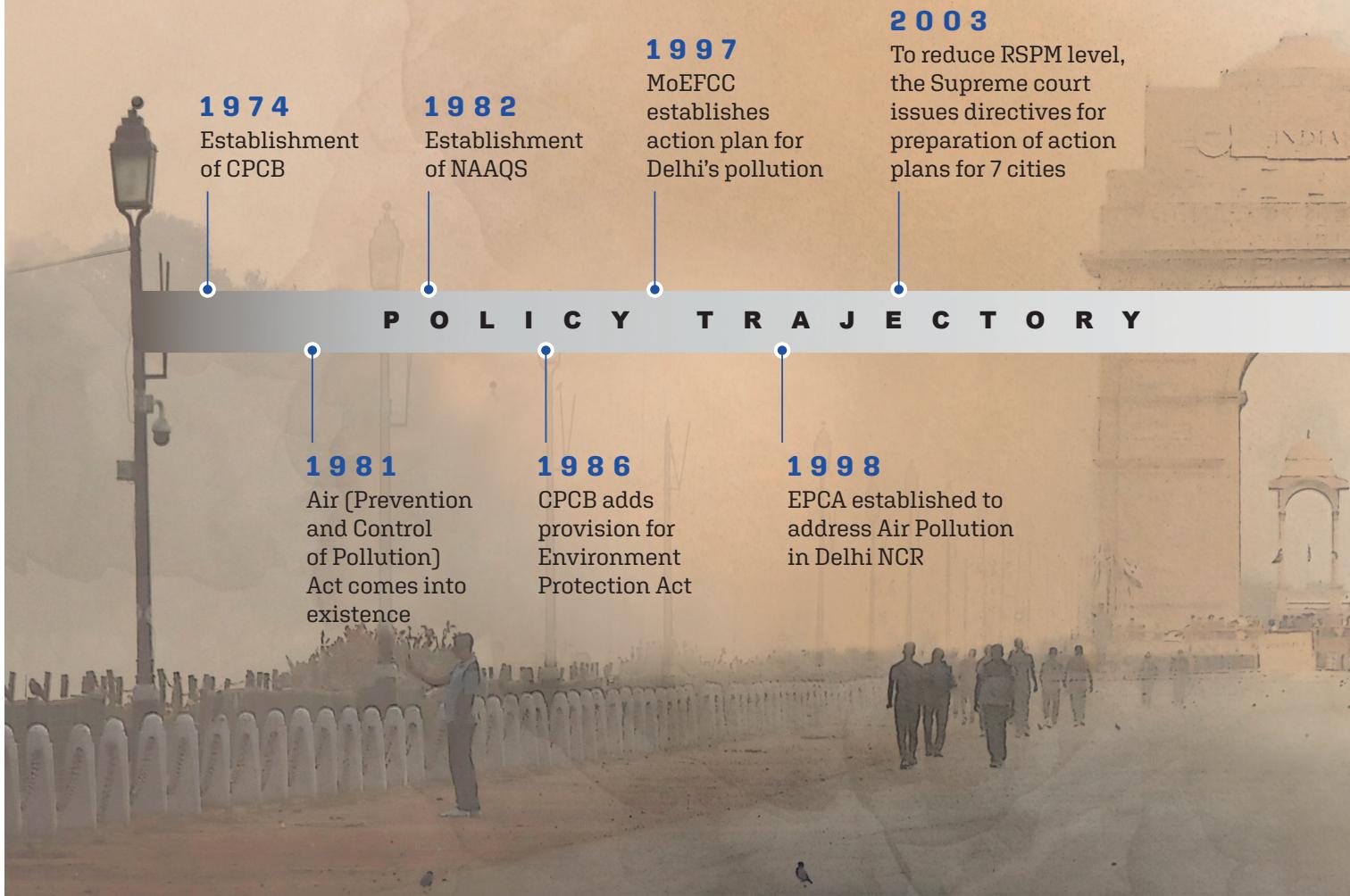
The Airshed approach helps to tackle the complex issue of Air Pollution through a unified regional strategy. It helps to drive coordinated action between various agencies located at different jurisdictions.



GOVERNMENT EFFORTS TO MITIGATE AIR POLLUTION

Source:

National Clean Air Programme (NCAP) for Indian cities:
Review and outlook of Clean Air Action Plans







Graded Response Action Plan (GRAP)

GRAP came into existence after consulting the Environment Pollution (Prevention and Control) Authority (EPCA) (now dissolved), State Governments and experts. The plan institutionalised measures, which were to be taken when Air Quality deteriorates.

Implemented in 2018, GRAP was prepared for implementation under different Air Quality Index (AQI) categories. Under the plan, a new category of "Severe+ or Emergency" was added. GRAP provides a step-by-step guide for Delhi-NCR to address the different levels of Air Pollution as per the AQI.

MAJOR ACTION PLANS BY GOVERNMENT TO CURB AIR POLLUTION

Comprehensive Action Plan (CAP)

Ministry of Environment, Forest and Climate Change introduced a Comprehensive Action Plan (CAP) in 2018 for Air Pollution mitigation to meet ambient Air Quality standards in Delhi-NCR including the states of Haryana and Rajasthan.

The objective of CAP is to design a source-wise action plan, which will be implemented in a time-bound manner with proper monitoring and compliance in order to meet the clean air targets.

CAP is the first-ever comprehensive set of short, medium and long-term measures for key sources of Air Pollution in Delhi and NCR. It devises a source-wise action plan, which is implemented in a time-bound manner to meet the clean Air targets.

National Clean Air Programme (NCAP)

National Clean Air Programme (NCAP) launched in 2019 is India's flagship programme for better Air Quality in 132 cities.

These cities are referred to as Non-Attainment cities (NACs) as they did not meet the National Ambient Air Quality Standards (NAAQS) for the period of 2011-15 under the National Air Quality Monitoring Programme (NAMP).

The NCAP has set a target of reducing key Air pollutants by 40% by 2026 taking the pollution levels in 2017 as the base year to improve upon.

Non-Attainment cities: Cities that have fallen short of the National Ambient Air Quality Standards (NAAQS) for over five years.

Currently, there are 132 Non-Attainment cities

ROLE OF VARIOUS GOVERNMENT BODIES

Ministry of Environment, Forest & Climate Change (MoEFCC)

A nodal agency with primary concern of implementation of policies and programmes related to environment, biodiversity and climate change. The Control of Pollution division of MoEFCC emphasises on adopting best available technologies to prevent pollution. The Ministry abates Air Pollution through; enforcing compliance, defining standards and operating programmes like; NCAP, etc.



Ministry of Power

An apex body responsible for planning, implementing, monitoring and policy formulation of power projects. The Ministry through its various initiatives aids in the mitigation of Air Pollution. It has adopted environmentally sustainable strategies for power generation.

Ministry of Road, Transport and Highways

The Ministry's primary task is to formulate and administer policies for road transport, national highways and transport research. This is keeping in mind the need to increase mobility and the efficiency of road transport system in the country. Considering, transport is one of the major sources of Air Pollution in India, the Ministry's initiatives like; Green Highways and Voluntary Vehicle-Fleet Modernization Programme becomes important in reducing the level of Air Pollution.



Ministry of Petroleum and Natural Gas

The Ministry is responsible for exploration and production of oil and natural gas along with refining, distributing, marketing and conserving petroleum products. It leads initiatives like; Pradhan Mantri Ujjwala Yojana (PMUY), bio-fuels and bio-CNG, which have potential to reduce Air Pollution. Further, the Ethanol Blending Programme, launched in 2003, synergistically leads to reduction in the levels of Air Pollution.

Ministry of Heavy Industries

The Ministry aims to promote and modernize the engineering industry. Department of Heavy Industries (DHI), under the Ministry of Heavy Industries and Public Enterprises, is the nodal department for the Faster Adoption and Manufacturing of (Hybrid) and Electric Vehicles (FAME). The scheme is instrumental in fostering the e-vehicles ecosystem in India.



Commission for Air Quality Management (CAQM)

A new body established in 2021 to coordinate, research, identify and resolve the problems related to Air Quality in the National Capital Region (NCR) and adjoining areas. The CAQM has been vested with the power to restrict activities that negatively influence Air Quality. The CAQM is the sole authority with jurisdiction over matters related to Air Quality management in Delhi-NCR and adjoining states of Haryana, Punjab, Rajasthan and Uttar Pradesh.



Central Pollution Control Board (CPCB)

A statutory body constituted in September, 1974 under the Water (Prevention and Control of Pollution) Act. Later, the functions and powers under Air (Prevention and Control of Pollution) Act were also brought under its purview.

CPCB guides the policy framework of the Central Government on any matter related to Water and Air Pollution.

State Pollution Control Board (SPCB)

The SPCBs were also constituted under the Water (Prevention and Control of Pollution) Act. Their nomenclature was revised after the enactment of Air (Prevention and Control of Pollution) Act. They advise the states regarding the programmes for prevention, abatement and control of pollution. SPCBs also play a pioneering role to tackle Air Pollution at the State level.

Urban Local Bodies (ULBs)

These bodies came into existence with the 74th Constitutional amendment and are mandated to drive a range of services. ULBs are at the core of city planning and infrastructural expansion. Most of the interventions to abate Air Pollution, like the NCAP, fall under the domain of Urban Local Bodies.



Dr Amar Patnaik

Member of Parliament
(Rajya Sabha), BJD, Odisha

The Urban Local Bodies are prime stakeholders in mitigating Air Pollution. Therefore, building their capacity will substantially aid our collective efforts.



Shri Ram Mohan Naidu Kinjarapu

Member of Parliament (Lok Sabha), TDP,
Srikakulam, Andhra Pradesh

Air Pollution is a serious health hazard, particularly for the vulnerable communities who are most exposed to its adverse effects.

WHERE CAN YOU ACCESS AIR QUALITY DATA OF YOUR CITY?



CPCB Website

SAFAR

Sameer App

AQI dashboard

Urban Emissions (urbanemissions.info)

PRANA Portal



*Shri Pradyut Bordoloi
Member of Parliament (Lok Sabha),
INC, Nawgong, Assam*

Even though endemically the Northeast has the characteristics of providing succour to the entire country of offsetting the ill-effects of pollution and carbon emissions, the reckless deforestations, mindless destruction of the ecosystem and the progressive shrinkage of the traditional 'Carbon Sinks' in the Northeast have posed very grave challenges today. The cities in the Northeast now need urgent support under the NCAP- to create massive awareness among the civil society stakeholders, to put up mechanisms to specifically quantity and quality of air quality monitoring - if we are to avert further degradation and ecological jeopardy in this vulnerable region.

CASE STUDIES

Maharashtra [Source Apportionment Study and Control Measures]

Maharashtra recorded the second-highest number of deaths due to Air Pollution in the country in 2017-19. Vehicular and industrial emissions, including thermal power plants, construction dust, and solid fuel emissions were major contributors to Air Pollution. The Government is working towards Air pollutant source-specific strategies through policy support for pollution control systems in the industry and also promoting district-specific policies for less/non-polluting industries, installation of pollution control systems in thermal power plants, and utilizing renewable energy potential. The State is also working to provide incentives to shift to electric vehicles, promoting public transport, cycling and carpooling, encouraging pedestrians, and greening cities to tackle heat and dust. Maharashtra Pollution Control Board (MPCB) cleared mandatory source apportionment studies by March 2023 for 19 Non-Attainment cities.

West Bengal [Monitoring Network Enhancement using Low-Cost Sensors]

Sensor-based monitoring stations across the State have been set up by the West Bengal Pollution Control Board (WBPCB). The sensors were placed at strategic locations (from Darjeeling to the Sundarbans). The project targets the setting up of 150 sensor-based stations for boosting infrastructure in Air Quality monitoring. These sensors were installed on the campus of schools, colleges, and universities. The WBPCB has started sprinkling water with the aim to stop dust re-suspension to keep AQI in check.

Rajasthan [Road dust - Major Contributor to Air Pollution]

In 2016, the Rajasthan State Pollution Control Board (RSPCB) started a detailed study in Non-Attainment cities in collaboration with IIT, Kanpur. The aim of the study was to prepare an emission inventory, which would highlight the sources and magnitude of Air Pollution. One of the major observations was that the road dust significantly contributed to Air Pollution in the state. Dust contribution on Jaipur Road makes up to 46% of total PM_{2.5} emissions; and in Bhiwadi, it accounts for 48%. Moreover, municipal waste treatment has also been given focus, as evidence suggests that the large-scale burning of municipal waste and horticulture waste contributes significantly to emissions of PM_{2.5} and PM₁₀. More than 65 municipalities have already installed facilities to recycle municipal waste.

KEY GOVERNMENT VERTICALS CONTRIBUTING TOWARDS AIR POLLUTION MITIGATION

Based on CEEW's Report "How Robust are Urban India's Clean Air Plans? An Assessment of 102 Cities"

DEPARTMENT	ACTION PLAN	ACTION POINTS
Transport Department	Vehicle emissions control	<ul style="list-style-type: none"> ● Plying of electric buses for public transport including establishment of sufficient charging stations ● Using bio-ethanol as an alternative to GHG emitting gases in the city/ urban transport system/waste to energy ● Construction of expressways/bypasses to avoid congestion due to non-destined vehicles ● Preparing & implementing the plan for the widening of roads and improvement of infrastructure including parking for decongestion of roads ● Measuring for retrofitting diesel vehicles with particulate filters
Nagar Nigam	Suspension of road dust	<ul style="list-style-type: none"> ● Preparing a plan for the creation of green buffers along the traffic corridors ● Using treated effluents from STPs in Pollution Control measures such as watering of plants, and sprinkling for dust suppression purposes
	Control of emissions from biomass/ crop residues/ garbage/ municipal solid waste burning	<ul style="list-style-type: none"> ● Launching awareness drives against open burning of biomass, crop residue, garbage, leaves, etc. ● Regular checking and control of burning of municipal solid wastes and using fire extinguishers for controlling the fire in municipal solid waste and biomass ● Door to door collection of segregated waste by the agency and then its disposal and treatment directly in the plant
Pollution Control Boards (CPCB and SPCB)	Industrial control/other steps to control Air Pollution	<ul style="list-style-type: none"> ● Installation of CAAQMS by polluting units/institutions etc. under "Polluters Pay Principles" ● Calculating and disseminating AQI to the people through the website and other media channels ● Establishing an Air Quality Management Division at SPCB/PCB headquarters to oversee Air Quality management activities in the State and interact with the CPCB ● Identifying brick kilns and monitoring them regularly ● Ensuring a ban on the burning of agricultural waste and crop residues

AIR POLLUTION MONITORING IN CONSTITUENCIES

The below proposed indicators can be deployed by Hon'ble MPs at their respective constituencies to understand the actions undertaken to address the rising levels of Air Pollution.

MONITORING BUCKETS	DESCRIPTION	PROPOSED INDICATORS
Monitoring Air Quality	<p>Air Quality Monitoring systems assess the level of pollution in relation to the ambient Air Quality standards. Pollution Control Boards are responsible for measuring ambient Air Quality using Continuous Ambient Air Quality Monitoring Stations (CAAQMS) and manual monitoring stations. Since most of these monitoring stations are in urban areas, the network of monitors needs to be expanded to rural areas. Mapping regions with higher levels of pollution concentration called "Hotspots" is critical in deciding local (Hyperlocal) action.</p>	<ul style="list-style-type: none">● Check with the Pollution Control Boards on the number of functional Continuous Ambient Air Quality Monitoring Stations (CAAQMS)● Check with the Pollution Control Boards (PCB) on the number of manual Air Quality monitoring stations● Check with the ULBs on the plans to install low-cost monitoring sensors● Check the last three-year data available with PCBs on reduction in the Particulate Matter levels● Ask the Local Administration about the number of identified hotspots in the city● Ask ULBs about the nature of local sources contributing to the creation of these hotspots
Road Dust and Construction Activities	<p>Construction activities and road dust are major sources of Particulate Matter pollution in cities. Vehicular emissions further add to Air Pollution in these areas and exposure to such pollutants is harmful to people. Therefore, periodic assessment of maintenance and paving of roads is integral to the Air Quality management system. Adherence to CPCB's guidelines at construction sites to control fugitive emissions from material handling, conveying and screening operations through water sprinkling, curtains, barriers and dust suppression units are also very critical.</p>	<ul style="list-style-type: none">● Ask ULBs whether CPCB guidelines are followed for construction and demolition waste management● Ask ULBs about the % of unpaved roads● Ask ULBs on the % of roads that have potholes or require repairs● Ask Panchayat Samiti about the % of unpaved roads● Ask Panchayat Samiti on % roads that have potholes or require repairs● Number of complaints received and action taken for non-compliance with CPCB guidelines at construction sites in the last three years by ULBs● Ask ULBs about the provisions for road sweeping and water sprinkling along with their daily frequency

MONITORING BUCKETS	DESCRIPTION	PROPOSED INDICATORS
Open Waste Burning	<p>Combustion of solid waste produces toxic Air pollutants such as Particulate Matter, volatile organic compounds, and aromatic hydrocarbons. By identifying major hotspots of garbage burning, mitigative actions can be undertaken in residential areas. To effectively manage waste, an adequate number of recycling and sanitary landfill sites should be present in the city.</p>	<ul style="list-style-type: none"> ● Ask ULBs for a list of garbage burning hotspots in the city limits ● What measures have the local bodies undertaken to reduce instances of garbage burning ● What % of waste generated is treated by the ULBs ● ULBs can also be asked about the % of households covered for door-to-door waste collection ● What methods are being deployed for effective implementation of door-to-door collection of segregated waste ● Ask ULBs whether the segregated waste generated from households is treated separately ● Ask ULBs about the number of dry waste collection centres ● Ask ULBs about the number of landfills/dump yards ● Ask ULBs about the age of landfill sites
Industrial Air Pollution Control	<p>Industrial emissions are one of the major causes of Air Pollution in the country. The CPCB has prescribed emission standards for industries to comply. There is immense scope to collaborate with local industries to sensitize them on the merits of cleaner fuel. Additionally, various local initiatives can be undertaken to facilitate and motivate industries to shift to cleaner technologies.</p>	<ul style="list-style-type: none"> ● Ask State Pollution Control Board (SPCB) on number of complaints it has received against polluting industries in the past year ● Ask the SPCB on the nature of complaints received against polluting industries in the past year ● SPCBs can be asked on the details of action taken by them ● Ask ULBs whether there are any training sessions being conducted for local industry ● Meet with the PCB or Industry Associations to identify the % of local industries using Pollution Control Technologies (PCT) ● What campaigns have the PCB and ULBs conducted to sensitize the industries on the benefits of clean technologies

MONITORING BUCKETS	DESCRIPTION	PROPOSED INDICATORS
Green Cover Plan (GCP)	<p>Trees contribute positively to the Air Quality in an area by shading surfaces, reducing temperatures and increasing oxygen concentrations. Lower temperatures decrease the risk of pollutants like ground-level ozone that commonly spikes on hot days in urban areas. Moreover, the ULBs must practice proper land planning to provide green spaces for all kinds of structures.</p>	<ul style="list-style-type: none"> ● Ask ULBs and PCBs whether precipitators are installed in industrial areas to measure pollution. ● If yes, whether they are functioning properly ● Check with ULBs whether the city has a Greening Plan ● Are ULBs planting or planning to plant trees having the ability to absorb pollutants ● What measures ULBs are taking to create green belts in open areas, community parks, schools and housing societies in urban areas ● What are the measures being taken to maintain and sustain new plantation drives
Public Transport and Electric Vehicles	<p>India has one of the world's largest road networks, hence transportation is a significant contributor to emissions. Adoption of clean sources of energy will significantly reduce Air Pollution. A few things which can be pursued in that direction are: promoting the usage of public transport systems relying on clean fuels, the presence of enabling infrastructure, and usage of Electric Vehicles.</p>	<ul style="list-style-type: none"> ● Ask the Local Transport Office about the number of city buses available per lakh people ● Ask the transport department whether public buses are checked regularly for pollution ● Ask the transport department about the number of state-run electric and CNG buses ● Ask the transport department about the number of private-run electric and CNG buses ● Check with ULBs on the provision of cycling infrastructure at all bus stops for smooth last-mile connectivity ● Check with ULBs on the provision of walking infrastructure at all bus stops for smooth last-mile connectivity ● Check with the Regional Transport Office (RTO) on the number of Electric Vehicles that have been registered in the last three years ● Check with the ULBs on availability of public charging stations in the city

MONITORING BUCKETS	DESCRIPTION	PROPOSED INDICATORS
Crop Residue Burning	<p>Issue of crop residue burning is recognized as one of the major sources of Air Pollution. It contributes to the high Particulate Matter (PM) in the Air. Steps must be taken to shift from crop residue burning to more sustainable ways as it severely impacts the Air Quality of the region.</p>	<ul style="list-style-type: none"> Ask District Administration about the presence of existing frameworks to monitor agricultural burning Ask District Administration about the action taken upon identification of sites of agricultural burning
Clean Energy	<p>Biomass burning is a significant source of Air Pollution. Schemes like the Pradhan Mantri Ujjwala Yojana (PMUY) have reduced it. The GOBARdhan scheme, aims to transform waste into energy and simultaneously empowers rural communities. Both the schemes can be complemented with 24*7 electricity supply, removing the reliance on the use of diesel generators to meet household power demand.</p>	<ul style="list-style-type: none"> Check with Local Administration on the % of households using clean fuels for cooking and heating Local Electricity Department can apprise on the % of households with 24*7 electricity supply Check with the Local Administration on the status of the GOBARdhan scheme Check with the Local Administration on the increase in PMUY beneficiaries in the last financial year (2021-2022) Inquire about the number of biogas plants with ULBs/District Administration Inquire on the status of the number of solar street lights with ULBs Inquire about the number of beneficiaries under the PM KUSUM scheme



Shri Mahesh Poddar
Ex-Member of Parliament
(Rajya Sabha),
BJP, Jharkhand

The increasing volume of waste associated with the modern economy and way of life is also contributing to rising levels of Air Pollution. Therefore, a robust and practical solid waste management approach can lead us towards sustainability and abatement of Air Pollution.

MONITORING BUCKETS	DESCRIPTION	PROPOSED INDICATORS
Resources with ULBs	Adequate mechanical resources including trained personnel can add to the city's fight against Air Pollution. Functioning machinery, sprinklers, sweeping devices are few such devices which can really make a great difference in implementation of mitigation strategies.	<ul style="list-style-type: none"> ● Ask ULBs whether all the mechanical infrastructure required to adequately mitigate the Air Pollution is available with them ● If not, then ask ULBs on the top three devices which could have added strength to their efforts to mitigate Air Pollution ● Ask ULBs on availability of a dedicated personnel trained in Air Quality management ● Ask ULBs whether they are adequately staffed ● If not, number of vacant positions ● Check with PCB whether they have trained ULBs on Air Quality management ● If yes, then frequency of yearly training
Mining	Mining, especially coal mining, has a direct relation with the Air Pollution. It can have a hazardous impact on human health. The mining techniques like open cast mining constantly release dust and gaseous pollutants. Therefore, while balancing our energy and livelihood requirements, steps can be undertaken to reduce mining's impact on human health.	<ul style="list-style-type: none"> ● Ask the Local Administration about the steps taken against the uncovered transportation from mining areas ● Ask Local Administration whether there is a different strategy to mitigate Air Pollution in the mining areas ● If yes, then what is different ● Whether SPCB is taking steps to reduce fugitive dust due to open-cast mining ● If yes, details of the same ● Ask ULBs on their strategy on road maintenance because of frequent vehicular movement in the mining areas ● Ask Panchayat Samiti, whether steps are being taken to reduce open Air coal burning ● Ask District Administration whether industries are using techniques like blast-less mining ● Ask District Administration if they have observed people being displaced/migrated due to Air Pollution from mining and dust prone areas

MONITORING BUCKETS	DESCRIPTION	PROPOSED INDICATORS
Public Health	<p>Numerous studies indicate the hazardous impact of Air Pollution on health. Hence, the engagement of health officials and functionaries is a must to reduce its burden on public health. Further, there is a need to understand the cause of respiratory ailments to design better interventions.</p>	<ul style="list-style-type: none"> ● Ask the local Chief Medical Officer (CMO) about the number of trainings conducted for physicians on Air Pollution and its impact on human health ● Ask the local Chief Medical Officer (CMO) about the number of trainings conducted for ASHA workers on Air Pollution and its impacts on human health ● Ask the CMO about the number of admissions related to respiratory diseases ● Ask the CMO about the number of admissions related to cardiopulmonary diseases ● Ask the CMO, how much budget is allotted and utilized for undertaking Air Pollution-related Information, Education and Communication (IEC) activities ● Ask CMO, how many hospitals are collecting patient information taking Air Pollution as a socio-economic risk factor
Training and Capacity Building	<p>Periodic capacity building of the local ecosystem reduces reliance on external expertise. To devise hyperlocal action plans, consistent capacity building of Urban Local Bodies (ULBs) and Panchayati Raj Institutions is a must. This can be done through seminars, webinars, lecture series, demonstration methods, experimentation, field visits and campaigns to enable the localization of issues, interventions, and local participation.</p>	<ul style="list-style-type: none"> ● Ask the Local Administration, what training sessions or capacity building programmes on Air Pollution have been conducted for the ULBs representatives ● Inquire with the Panchayat Samiti on similar training programmes being organized for Panchayati Raj Institutions (PRIs) ● How many such sessions are being organized for both Urban and Rural areas and at what intervals ● Is the issue of Air Pollution featured in District Development Coordination and Monitoring Committee (DISHA) meetings

MONITORING BUCKETS	DESCRIPTION	PROPOSED INDICATORS
Public Outreach and Media	<p>Broadcasting updates, Air Quality Index (AQI) levels, sources, health effects, and actions taken to control Air Pollution to the general public or specific target group can help sensitize the public at large. Short Message Services (SMS), posts on social media, and digital signboards (displaying AQI levels and concentration of critical Air pollutants) on roads and areas with highly polluted regions are popular modes to engage with the community. Specific campaigns as per the local context can be launched for dust control, burning of waste and importance of public transport, etc.</p>	<ul style="list-style-type: none"> ● Local Pollution Control Boards can be asked to provide details on the number of screens displaying AQI information available for public display ● Ask Pollution Control Boards about the rationale for the locations for stationing such screens ● What systems are in place for the ULBs or Pollution Control Board to run online campaigns for local issues such as dust control and waste burning ● What systems have been institutionalized to inform the public about health precautions needed to be taken during poor, bad, emergency, and hazardous levels of Air Pollution
Evaluation of Existing Programs (NCAP and Fifteenth Finance Commission Grant)	<p>The Ministry of Environment Forest and Climate Change (MoEFCC) launched the National Clean Air Programme (NCAP) in 2019 with the goal of reducing Air Pollution by 40% by 2026. The NCAP encompasses a total of 132 Non-Attainment cities, which failed to meet the National Ambient Air Quality Standards (NAAQS) for the years 2011 to 2015 under the National Air Quality Monitoring Programme (NAMP). In addition to the NCAP, the Fifteenth Finance Commission has allocated 12,139 crores to 42 cities with a million-plus population, out of which over 6,000 crores have been disbursed to ULBs.</p>	<ul style="list-style-type: none"> ● Request details on the funds allocated to the ULBs under the Union Budget and the Fifteenth Finance Commission for Clean Air activities ● Request details on the funds received and utilized by the ULBs and for what activities/measures ● Check with the State Pollution Control Board (SPCB) on the status of the source apportionment study for the city ● Request annual average PM₁₀ and PM_{2.5} concentration data from the Pollution Control Board to understand the city's Air Pollution trend since the NCAP was implemented in 2019 ● Check with the ULBs on the status of the implementation of the City Clean Air action plan mandated for all Non-Attainment cities

HON'BLE MEMBERS OF PGCA

SL. NO.	NAME OF HON'BLE MP	CONSTITUENCY
1.	Shri Abdul Khaleque	Barpeta, Assam
2.	Dr Amar Patnaik	Odisha
3.	Shri Arvind Ganpat Sawant	Mumbai-South, Maharashtra
4.	Shri Brijendra Singh	Hisar, Haryana
5.	Dr Dhal Singh Bisht	Balaghat, Madhya Pradesh
6.	Dr DNV Senthilkumar S	Dharmapuri, Tamil Nadu
7.	Dr Fauzia Khan	Maharashtra
8.	Shri Gaurav Gogoi	Kaliabor, Assam
9.	Shri Guman Singh Damor	Ratlam, Madhya Pradesh
10.	Shri Hasnain Masoodi	Anantnag, Jammu and Kashmir
11.	Dr Heena Vijaykumar Gavit	Nandurbar, Maharashtra
12.	Shri Jagannath Sarkar	Ranaghat, West Bengal
13.	Dr (Prof.) Kirit Premjibhai Solanki	Ahmedabad West, Gujarat
14.	Shri Krupal Balaji Tumane	Ramtek, Maharashtra
15.	Shri Mohammed Nadimul Haque	West Bengal
16.	Shri Pradyut Bordoloi	Nawgong, Assam
17.	Shri Pratap Chandra Sarangi	Balasore, Odisha
18.	Shri Rahul Kaswan	Churu, Rajasthan
19.	Shri Rajendra Agrawal	Meerut, Uttar Pradesh
20.	Shri Ram Mohan Naidu Kinjarapu	Srikakulam, Andhra Pradesh
21.	Shri Ramcharan Bohra	Jaipur, Rajasthan
22.	Shri Ritesh Pandey	Ambedkar Nagar, Uttar Pradesh
23.	Dr Santanu Sen	West Bengal
24.	Shri Satyadev Pachauri	Kanpur, Uttar Pradesh
25.	Dr Shrikant Eknath Shinde	Kalyan, Maharashtra
26.	Shri Shyam Singh Yadav	Jaunpur, Uttar Pradesh
27.	Shri Sri Krishna Devarayalu Lavu	Narasaraopet, Andhra Pradesh
28.	Shri Su. Thirunavukkarasar	Tiruchirappalli, Tamil Nadu
29.	Shri Sujeet Kumar	Odisha
30.	Smt Sunita Duggal	Sirsa, Haryana
31.	Dr T Sumathy (A) Thamizhachi Thangapandian	Chennai South, Tamil Nadu
32.	Shri Sunil Kumar Singh	Chatra, Jharkhand
33.	Shri Sushil Kumar Singh	Aurangabad, Bihar
34.	Smt Vandana Chavan	Maharashtra
35.	Dr Veeraswamy Kalanidhi	Chennai North, Tamil Nadu
36.	Shri Mahesh Poddar	Ex- Member of Rajya Sabha, Jharkhand
37.	Dr Vikas Mahatme	Ex- Member of Rajya Sabha, Maharashtra

ANNEXURE A

The below questionnaire can be of great help to Hon'ble MPs/Elected Representatives/Civil Society to understand the state of local actions undertaken to address the rising level of Air Pollution.

Please Mark ✓ on Relevant Option

MONITORING AIR QUALITY

Check with State Pollution Control Board whether Continuous Ambient Air Quality Monitoring Stations (CAAQMS) are present in the constituency?

Yes No

Check with the Pollution Control Boards if manual Air Quality monitoring stations are present in the area?

Yes No

Whether low-cost sensor network under ULBs is present?

Yes No

Whether last three-year data is available with Pollution Control Boards on reduction in Particulate Matter (PM) levels?

Yes No

Is information on number of hotspots in the city, and the nature of local sources contributing to the creation of these hotspots available with local administration?

Yes No

ROAD DUST AND CONSTRUCTION ACTIVITIES

Whether ULBs ensures adherence to CPCB guidelines at construction sites?

Yes No

Whether data on % of unpaved roads available with ULBs?

Yes No

Whether data on % of roads that have potholes or requires repair available with ULBs?

Yes No

Whether data on % of unpaved roads available with Panchayat Samiti?

Yes No

Whether data on % of roads that have potholes or requires repair available with Panchayat Samiti?

Yes No

Whether ULBs has details on the number of complaints received and action taken for non-compliance to CPCB guidelines at construction sites in the last three years?

Yes No

Whether ULBs undertakes road sweeping and water sprinkling?

Yes No

OPEN WASTE BURNING

Whether ULBs has list of garbage-burning hotspots in the city limits?

Yes No

Are there any measures undertaken by the local bodies to reduce the instances of garbage burning at the hotspots?

Yes No

Whether ULBs has details of % of waste generated versus treated?

Yes No

- Whether ULBs has data on % of households covered for door-to-door waste collection? Yes No
- Does ULBs undertake the door-to-door collection of segregated waste? Yes No
- Whether segregated waste generated from households treated separately by ULBs? Yes No
- Whether ULBs have dry waste collection centers? Yes No
- Whether ULBs has landfills/ dump yards? Yes No
- Whether ULBs has details about the age of landfill sites available? Yes No

INDUSTRIAL AIR POLLUTION CONTROL

- Whether details of what and how many complaints SPCB have received against polluting industries in the past year available? Yes No
- Whether SPCB has details on the nature of complaints it has received against polluting industries in the past year? Yes No
- Whether SPCB has details on actions taken by them? Yes No
- Whether ULBs has conducted any training sessions for local industries? Yes No
- Whether ULBs has details of campaigns conducted to sensitize the industries on the benefits of clean technologies? Yes No
- Whether ULBs/SPCB have details of precipitators that are installed to measure pollution? Yes No
- Whether ULBs and SPCB installed precipitators to measure pollution are functioning properly? Yes No

GREEN COVER PLAN

- Are ULBs taking any actions to create green belts in the open areas, community parks, schools and housing societies in urban areas? Yes No
- Whether ULBs has details of the city's greening plan? Yes No
- Whether ULBs is planting or planning to plant trees having the ability to absorb pollutants? Yes No
- Are there any measures taken to maintain and sustain new plantation drives? Yes No

PUBLIC TRANSPORT AND ELECTRIC VEHICLES

- Whether the local transport office has list of the number of city buses available per lakh people? Yes No
- Whether the transport department checks public buses regularly for pollution? Yes No

- Whether transport department has details on the number of state-run electric buses and CNG buses? Yes No
- Whether transport department has details on the number of private-run electric buses and CNG buses? Yes No
- Whether ULBs is taking measures to construct provision of cycling infrastructure at all bus stops for smooth last-mile connectivity? Yes No
- Whether ULBs is taking measures to construct the provision of walking infrastructure at all bus stops for smooth last-mile connectivity? Yes No
- Whether Regional Transport Office (RTO)/ ULBs has details on the number and type of Electric Vehicles that have been registered in the past 3 years? Yes No
- Whether ULBs have details about available public charging stations in the city? Yes No

CROP RESIDUE BURNING

- Whether district administration has existing frameworks to monitor agricultural burning? Yes No
- Whether district administration has taken action to identify sites of agricultural burning? Yes No

CLEAN ENERGY

- Whether local administration has details on the % of households using clean fuels for cooking and heating? Yes No
- Whether the local electricity department has details on the % of households with 24*7 electricity supply? Yes No
- Whether the local administration is taking action on the GOBARdhan? Yes No
- Whether the local administration has details on the increase in PMUY beneficiaries in last financial year (2021-2022)? Yes No
- Whether ULBs/ local administration has details on the number of biogas plants? Yes No
- Does ULBs have details on number of solar street lights? Yes No
- Does ULBs have any details on action taken on the KUSUM scheme? Yes No

RESOURCES FOR ULBs

- Whether ULBs has all the mechanical infrastructure required to adequately mitigate the Air Pollution? Yes No

- Whether ULBs have dedicated personnel trained in Air Quality management? Yes No
- Whether ULBs are adequately staffed? Yes No
- Whether ULBs has details of vacant positions? Yes No
- Whether SPCB trains ULBs on Air Quality management? Yes No

MINING

- Whether the local administration has taken steps against the uncovered transportation from mining areas? Yes No
- Whether local administration has used a different strategy to mitigate Air Pollution in the mining areas? Yes No
- Whether SPCB is taking steps to reduce fugitive dust due to open-cast mining? Yes No
- Whether ULBs have details on their strategy of road maintenance because of frequent vehicular movement in the mining areas? Yes No
- Whether Panchayat Samitis are taking steps to reduce open Air coal burning? Yes No
- Ask district administration if techniques like blast-less mining are used? Yes No

PUBLIC HEALTH

- Whether the local Chief Medical Officer (CMO) has information on training being conducted for physicians and ASHA workers on Air Pollution and its impacts on human health? Yes No
- Whether the CMO has details about the number of admissions related to respiratory disease? Yes No
- Whether the CMO has details about the number of admissions related to cardiopulmonary disease? Yes No
- Whether the CMO has details of the budget allotted and utilized for undertaking Air Pollution-related Information, Education and Communication (IEC) activities. Yes No
- Whether the CMO has details about the hospitals that are collecting patient information taking Air Pollution as a socio-economic risk factor? Yes No
- Whether there is data on the number of people migrated or displaced from region due to Air Pollution? Yes No

TRAINING AND CAPACITY BUILDING

Whether the local administration has details of training sessions or capacity building programmes on Air Pollution being conducted for the ULBs representatives?

Yes No

Whether the training programmes on Air Pollution are being organized for Panchayati Raj Institutions (PRIs)?

Yes No

Whether the issue of Air Pollution featured in District Development Coordination and Monitoring Committee (DISHA) meetings?

Yes No

PUBLIC OUTREACH AND MEDIA

Whether the local Pollution Control Boards have details on the number of screens displaying AQI information available for public display?

Yes No

Whether Pollution Control Boards have any rationale for the locations for stationing such screens?

Yes No

Whether the systems (that are in place for the ULBs or SPCB) operate online campaigns for local issues such as dust control and waste burning?

Yes No

Whether details of the system that have been institutionalized to inform the public about health precautions needed to be taken during poor, bad, emergency, and hazardous levels of Air Pollution available with local administration?

Yes No

EVALUATION OF EXISTING PROGRAMMES (NCAP AND FIFTEENTH FINANCE COMMISSION GRANT)

Whether details of the funds allocated to the ULBs under the Union Budget and the Fifteenth Finance Commission for clean Air activities available?

Yes No

Whether the details of the funds received and utilized by the ULBs available?

Yes No

Whether the State Pollution Control Board (SPCB) has details on the status of the source apportionment study for the city?

Yes No

Whether the annual average PM₁₀ and PM_{2.5} concentration trend is available with SPCB since NCAP was implemented?

Yes No

Whether the status of source apportionment study available with SPCB?

Yes No

Whether the ULBs has details about the status of implementation of the city clean Air action plan mandated for all Non-Attainment cities?

Yes No

GLOSSARY

TERM (ENGLISH & HINDI)	DEFINITION (ENGLISH)	DESCRIPTION (ENGLISH)	DESCRIPTION (HINDI)
Air Pollution वायु प्रदूषण	Air Pollution refers to the release of pollutants into the air, which is detrimental to human health and the planet as a whole.	Release of harmful particles (e.g., dust, dirt, toxic gases) into the air, which makes the air dangerous for human health, and causes damage to the environment (e.g., through climate change and acid rain, etc.).	वायु प्रदूषण एक ऐसी स्थिति है, जब “हानिकारक” धुआँ, धूल तथा गैस, “स्वच्छ” वायु के परिवेश में मिल जाती हैं। वायु प्रदूषण, अवांछनीय गैसों जैसे मोनो ऑक्साइड, सल्फर ऑक्साइड, कार्बन डायऑक्साइड के स्वच्छ वायु के परिवेश में आवश्यकता से अधिक अनुपात में उपस्थिति के कारण होता है।
Ecosystem पारिस्थितिकी तंत्र	An ecosystem is a geographic area where plants, animals, and other organisms, as well as weather and landscape, work together to form a bubble of life.	An ecosystem is a community of organisms (e.g., plants, animals, birds, fungi, bacteria) and the physical environment in which they live (e.g., water bodies, mountains, air, transportation, shelter). They interact with each other through the food cycle and for the energy flow.	<p>पारिस्थितिकी तंत्र एक कार्यशील क्षेत्रीय इकाई है, जो क्षेत्र विशेष के सभी जीवधारियों एवं उनके भौतिक पर्यावरण के सकल योग का प्रतिनिधित्व करता है।</p> <p>इसकी संरचना तीन मूलभूत संघटकों से होती है—</p> <ul style="list-style-type: none"> (क) ऊर्जा संघटक (ख) जैविक (बायोम) संघटक (ग) अजैविक या भौतिक (निवास्य) संघटक (रथल, जल तथा वायु)।
Particulate Matter (PM) कणिका तत्व	PM stands for Particulate Matter (also called particle pollution); the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are very small that they can only be detected using an electron microscope.	These are very fine particles that have severe impacts on health that are not visible to the naked eye.	ये अत्यंत सूक्ष्म कण होते हैं, जो की खुली आँखों से दिखाई नहीं देते हैं। इनका स्वास्थ्य पर, विशेषकर सौंस और हृदय रोग से ग्रसित जनसंख्या पर, गंभीर प्रभाव पड़ता है। इनका निर्माण मुख्य रूप से तब होता है जब हवा में पानी की बूँदों के साथ धूल, गंदगी, कालिख या धुएं का रासायनिक रूप से संयोग होता है। मूल रूप से सूक्ष्म कणों के स्त्रोत — परिवहन या निर्माण गतिविधियों के दौरान अपूर्ण रूप से जला हुआ ईंधन, गोबर, और लकड़ी, आदि जैसी वस्तुएं हैं।

TERM (ENGLISH & HINDI)	DEFINITION (ENGLISH)	DESCRIPTION (ENGLISH)	DESCRIPTION (HINDI)
	<p>Particle pollution includes:</p> <p>PM₁₀: inhalable particles, with diameters that are generally 10 micrometres and smaller</p> <p>PM_{2.5}: fine inhalable particles, with diameters that are generally 2.5 micrometres and smaller</p>	<p>When dust, dirt, soot, or smoke mixes with water droplets in the air – Particulate Matter is formed. Sources may be – not completely burnt fuel during transportation, construction activities, burning of cow dung and wood, etc.</p> <p>Depending on the size it is classified as PM_{2.5} or PM₁₀.</p>	
Black Carbon काला कार्बन	<p>Black carbon (BC) is the light-absorbing component of Particulate Matter (PM) and is formed by the incomplete combustion of fossil fuels, biofuels, and biomass.</p>	<p>Black carbon is a part of Particulate Matter that traps the heat leading to change in the climate. It is produced when fuel is not fully burnt or combusted.</p> <p>Black carbon warms the Earth by absorbing sunlight, contributing to climate change (e.g., leads to melting glaciers, and rising sea level).</p>	<p>ब्लैक कार्बन जीवाश्म एवं अन्य जैव ईधनों के अधिकतम होने से निकलने वाला एक पार्टिकुलेट मैटर है। यह एक अत्यकालिक प्रदूषक है, जो उत्सर्जन के बाद कई सप्ताह तक वायुमंडल में बना रहता है।</p> <p>ब्लैक कार्बन सूर्य के प्रकाश को अवशोषित करके पृथ्वी को गर्म रखता है, जो जलवायु परिवर्तन का प्रमुख कारण है।</p>

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Shri Hasnain Masoodi
Member of Parliament (Lok Sabha),
JKNC, Anantnag,
Jammu and Kashmir

Polluters' pay principle should always be upheld and they should own the responsibility for compensating the environmental damages caused. It needs to be monitored through an effective framework.

TERM (ENGLISH & HINDI)	DEFINITION (ENGLISH)	DESCRIPTION (ENGLISH)	DESCRIPTION (HINDI)
Methane मिथेन	A hydrocarbon that is a greenhouse gas that contributes to global warming, estimated at 25 times that of carbon dioxide (CO ₂), produced through anaerobic (without oxygen), decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion.	Methane is a toxic gas that comes from various sources, majorly from bacterial breakdown of household, animal, and human waste (sewage), burning of coal, and mixing of fertilizers and water. Methane contributes to 25% of global warming today.	मिथेन एक जहरीली गैस है जो विभिन्न स्रोतों, जैसे घरेलू कचरे के विघटन, पशु और मानव अपशिष्ट के सड़ने, खेती में प्रयोग किए जाने वाले विभिन्न रासायनिक उर्वरक और पानी के मिश्रण, इत्यादि से उत्पन्न होती है। आज वैश्विक जलवायु परिवर्तन के विभिन्न कारणों में मिथेन का योगदान 25% है।
Global Warming वैश्विक तापमान में वृद्धि	The recent and ongoing global average increase in temperature near the Earth's surface.	The burning of fossil fuels, logging of forests, and raising of livestock all have a rising impact on the climate and temperature of the planet. This increases the greenhouse effect and causes global warming by adding a significant amount of greenhouse gases to those that are already present in the atmosphere.	जीवाश्म ईंधन के जलने, जंगलों की कटाई, और अनियंत्रित रूप से पशुओं को पालने से ग्रह के जलवायु और तापमान पर प्रभाव पड़ता है। यह कारक वातावरण में पहले से उपस्थित ग्रीनहाउस गैसों की विशेष मात्रा को घातीय रूप से बढ़ाते हैं जिसके फलस्वरूप वैश्विक तापमान में वृद्धि हो रही है।
Fossil Fuels जीवाश्म ईंधन	A general term for organic materials formed from decayed plants and animals that have been converted to crude oil, coal, natural gas or heavy oils by exposure to heat and pressure in the earth's crust over millions of years.	Fuels like coal, petroleum, and natural gas are formed by extracting (taking out) remains of dead plants and animals from the outer layer of the earth, after burning.	जीवाश्म ईंधन एक प्रकार का कई वर्षों पहले बना प्राकृतिक ईंधन है जो मृत पौधों और जानवरों के अवशेषों को निकालने (बाहर निकालने) से बनता है।

TERM (ENGLISH & HINDI)	DEFINITION (ENGLISH)	DESCRIPTION (ENGLISH)	DESCRIPTION (HINDI)
Sustainable Development सतत् विकास	Sustainable development is an organizing principle for meeting human development goals while also sustaining the ability of natural systems.	Development that meets the needs of the present, without compromising the ability of future generations to meet their needs.	सतत् विकास वह विकास है जो भविष्य की पीढ़ियों की अपनी जरूरतों को पूरा करने की क्षमता से समझौता किए बिना वर्तमान की जरूरतों को पूरा करता है।
Air Quality Index (AQI) वायु गुणवत्ता सूचकांक	Air Quality Index (AQI) is used by government agencies to communicate how polluted the air is. The higher the AQI value, the greater the level of Air Pollution and the greater the health concern.	It is a scale to measure air quality that runs from 0 to 500. The higher the AQI value, the greater the level of Air Pollution and health concerns.	यह लोगों को वायु की गुणवत्ता बताने का एक माध्यम है। AQI जितना अधिक होगा, वायु प्रदूषण और स्वास्थ्य संबंधी चिंताओं का स्तर उतना ही अधिक होगा।
Climate Change जलवायु परिवर्तन	The term “climate change” refers to the gradual rise in the earth’s average surface temperature as well as the resulting significant changes in the world’s, regions’, and local areas’ weather patterns. These shifts are triggered by the significant increase in greenhouse gas concentrations brought on by the burning of fossil fuels.	Long-term changes in the climate, which may be due to natural or man-made activities, cause water scarcity, extreme temperatures, rising sea levels, flooding, etc. Climate change has harmful effects on human health, food production, livelihoods and can lead to temporary or permanent displacement of the communities.	प्राकृतिक या मानव जनित कारण जैसे प्राकृतिक संसाधनों का अत्यधिक दोहन, जीवाशम ईंधन का अत्यधिक प्रयोग, इत्यादि गतिविधियों के कारण जलवायु में दीर्घकालिक परिवर्तन हो रहे हैं। तापमान में अप्रत्याशित वृद्धि होने से स्वच्छ पानी की अनुपलब्धता, समुद्र का बढ़ता स्तर, अनियंत्रित बाढ़, आदि की समस्या हो रही हैं। इसके अतिरिक्त जलवायु परिवर्तन का मानव स्वास्थ्य, खाद्य उत्पादन, आजीविका पर हानिकारक प्रभाव भी पड़ रहा है – इससे समुदायों का अस्थायी या स्थायी विस्थापन हो रहा है।

TERM (ENGLISH & HINDI)	DEFINITION (ENGLISH)	DESCRIPTION (ENGLISH)	DESCRIPTION (HINDI)
Emissions (in terms of Air Pollution) उत्सर्जन	The release of substance (usually a gas when referring to the subject of climate change) into the atmosphere.	Release of the gaseous and other very fine solid particles like Particulate Matter, nitrogen oxides, ammonia, etc. into the environment.	वातावरण में गैसीय और अन्य सूक्ष्म कणों जैसे पार्टिकुलेट मैटर, नाइट्रोजन ऑक्साइड, अमोनिया आदि का विमोचन।
Source Apportionment Study स्त्रोत विभाजन अध्ययन	The practice of deriving information about pollution sources and the amount they contribute to the ambient Air Pollution levels.	This study gives us information on how much each source of pollution contributes to the total Air Pollution in an area.	स्त्रोत विभाजन अध्ययन प्रदूषण के प्रत्येक स्त्रोत जानकारी देता है साथ ही साथ यह भी बताता है कि किसी क्षेत्र के कुल वायु प्रदूषण में किस स्त्रोत का कितना योगदान है।
Air Quality Monitoring वायु गुणवत्ता निगरानी	It is the process of assessment of pollutants present in the atmosphere by their quantity and types as per Air Quality standards.	A process by which major pollutants are measured, either continuously or with gaps to understand the level of Air Pollution in a particular area.	यह वायु गुणवत्ता मानकों के अनुसार वातावरण में मौजूद प्रदूषकों की मात्रा और प्रकारों के आधार पर उनके आकलन की प्रक्रिया है।



Dr T. Sumathy (A) Thamizhachi Thangapandian

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Air Pollution as an issue is also intricately related to livelihood. Therefore, mitigation strategies must be proposed in wider consultations to allay apprehensions of affected communities.

TERM (ENGLISH & HINDI)	DEFINITION (ENGLISH)	DESCRIPTION (ENGLISH)	DESCRIPTION (HINDI)
Incineration भस्मीकरण	Incineration is a waste treatment process that involves combustion of substances like sanitary and hazardous waste that have no other means of treatment.	A form of waste disposal by burning at high temperatures, that converts solid waste to gaseous form. This process is used only for hazardous waste like medical waste or chemical waste, which cannot be treated otherwise.	उच्च तापमान पर जलाकर अपशिष्ट निपटान का एक रूप, जो ठोस अपशिष्ट को गैसीय रूप में परिवर्तित करता है। इस प्रक्रिया का उपयोग केवल खतरनाक अपशिष्ट जैसे चिकित्सा या रासायनिक अपशिष्ट के लिए किया जाता है, जिसका अन्यथा उपचार नहीं है।
Pollution Control Technology प्रदूषण नियंत्रण प्रौद्योगिकी	Technologies used in industrial processes and transportation to control pollution.	Machines and devices that can be added to existing machinery to control harmful emissions right at the source to stop entry into the atmosphere. E.g., diesel particle filters, and settling chambers for particulate matter.	वातावरण में प्रदूषण के हानिकारक कारकों के प्रवेश को स्त्रोत पर ही रोकने के लिए विभिन्न मशीनों और उपकरणों की सहायता ली जा सकती है, जैसे: डीजल पार्टिकल फिल्टर, और पार्टिकुलेट मैटर के लिए सेटलिंग चैंबर आदि।
Renewable Energy/ Clean energy स्वच्छ ऊर्जा	Clean energy, often referred to as renewable energy, comes from natural sources or processes that are constantly replenished.	Energy from natural sources or processes like the sun (solar), wind, water (hydro), biomass, earth's crust (geothermal), sea & ocean (marine), tides (tidal), and rain that does not get exhausted/finished and can always be renewed.	स्वच्छ ऊर्जा वह ऊर्जा स्त्रोत है जिससे कार्बन उत्सर्जन नहीं होता है। स्वच्छ ऊर्जा का तात्पर्य ऐसी ऊर्जा उत्पादन प्रक्रिया से हैं जिससे जलवायु पर कोई नकारात्मक प्रभाव नहीं पड़ता है। सोलर ऊर्जा, पवन-ऊर्जा, जैव-एथेनॉल से प्राप्त ऊर्जा, इत्यादि स्वच्छ ऊर्जा के रूप में कार्बन उत्सर्जन का नियंत्रण करने में सक्षम हैं।

TERM (ENGLISH & HINDI)	DEFINITION (ENGLISH)	DESCRIPTION (ENGLISH)	DESCRIPTION (HINDI)
Respiratory Diseases साँस की बीमारी	A type of disease that affects the lungs and other parts of the respiratory system caused by infection, smoking or breathing in tobacco smoke, or other forms of Air Pollution.	Any disease that affects lungs and the breathing process. E.g., asthma, pneumonia, lung cancer etc.	जो बीमारी फेफड़ों और साँस लेने की प्रक्रिया को प्रभावित करती है। उदाहरण: अस्थमा, निमोनिया, फेफड़ों का कैंसर, आदि।
Stubble Burning पराली जलाना	Stubble burning is burning or setting on fire the crop residue to remove them from the field in order to sow the next crop.	Burning of the remains of crops after harvesting, releases polluting particles into the air. E.g., burning of the remaining paddy crop in October/November, to clear the fields to sow wheat.	कटाई के बाद फसलों के अवशेषों को जलाने से हवा में प्रदूषक कण सम्मिलित हो जाते हैं। उदाहरण: गेहूं की बुवाई के लिए खेतों को साफ करने के लिए अक्टूबर/नवंबर में धान की बची हुई फसल को जलाना।
Solid Waste Burning ठोस अपशिष्ट जलना	Burning of waste that is generated by humans due to commercial, industrial, and household activities, etc.	When solid waste is burnt, instead of treating it, it causes high levels of Air Pollution.	जब ठोस अपशिष्ट को पर्याप्त उपचार के बिना जलाया जाता है, तो यह उच्च स्तर के वायु प्रदूषण का कारण बनता है।



Shri Sri Krishna Devarayalu Lavu

Member of Parliament (Lok Sabha),
YSR Congress Party, Narasaraopet, Andhra Pradesh

Air Pollution is now a reality for the entire nation, regardless of lifestyles, backgrounds, rural or urban life, and social strata. Keeping this in mind, we must look towards building a consensus and synergy between the various stakeholders which will help us understand how policy can be formulated and implemented in the most effective manner.

TERM (ENGLISH & HINDI)	DEFINITION (ENGLISH)	DESCRIPTION (ENGLISH)	DESCRIPTION (HINDI)
Green Fuels हरित ईंधन	Green fuels, also called green hydrocarbons, or biofuels, are fuels produced from biomass sources through a variety of biological and thermochemical processes.	Fuels produced from renewable (sustainable, capable of being renewed) sources, such as plants and animal materials. These are believed to be less harmful to human health and the environment, than fossil fuels (coal, petroleum, etc).	नवीकरणीय (टिकाऊ, नवीनीकरण योग्य) स्त्रोतों से उत्पादित ईंधन, जैसे पौधे और पशु सामग्री। माना जाता है कि ये जीवाश्म ईंधन (कोयला, पेट्रोलियम आदि) की तुलना में मानव स्वास्थ्य और पर्यावरण के लिए कम हानिकारक हैं।
Biodegradable बायोडिग्रेडेबल	It refers to ability of things to get decomposed by bacteria or other living organisms.	Materials that naturally break down into smaller components, and can become part of the environment without affecting it.	ऐसी पदार्थ जो स्वाभाविक रूप से अपने वास्तविक आकर के तुलना में छोटे घटकों में टूट जाए और पारिस्थिकी तंत्र को प्रभावित किए बिना पर्यावरण का हिस्सा भी बन जाए।

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Shri Ritesh Pandey
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BSP, Ambedkar Nagar,
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Our collective fight to abate Air Pollution can gain immense strength if the current arrangement of monitoring stations can be expanded to the rural areas for robust monitoring to drive localized interventions.





COMPENDIUM ON AIR POLLUTION



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