

GOVERNMENT OF INDIA  
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

**RAJYA SABHA**  
**UNSTARRED QUESTION No. 831**  
TO BE ANSWERED ON 27.07.2023

**Airshed based approach to check air pollution**

831. SHRI SURENDRA SINGH NAGAR:

Will the Minister of ENVIRONMENT, FOREST AND CLIMATE CHANGE be pleased to state:

- (a) whether Government has earmarked and expanded special airsheds to effectively monitor and manage air quality levels across the country;
- (b) if so, the details of criteria and parameters in the definition of airshed;
- (c) whether Government has the latest information on the measures to be taken in the IndoGangetic plain using airshed-based approaches to check air pollution in the region; and
- (d) if so, the details of the measures being taken during the financial year 2022-23?

**ANSWER**

MINISTER OF STATE IN THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE  
(SHRI ASHWINI KUMAR CHOUBEY)

(a) & (b)

According to the study conducted by IIT-Delhi to demarcate the major air sheds in India, based on satellite data, across the seasons, India has 8-9 major air sheds of varying geographic coverage. The Indo-Gangetic Plain (IGP) behaves either as a gigantic single air shed (e.g., during the pre-monsoon season of Mar-May) or as two large air sheds, west and east during monsoon (Jun-Sep), north and south during post-monsoon (Oct-Nov) and north-west and the remaining during winter (Dec-Feb). North-Eastern India is divided into two or three (smaller) air sheds. The western region remains an isolated air shed during Dec-Sep, while it becomes part of the northern IGP air shed during Oct-Nov. Peninsular India is divided into two air sheds, which vary seasonally. The northern part of India is divided into two air sheds – one covering the mountainous regions and the other covering the foothills.

(c)& (d)

A joint committee has prepared a comprehensive report on the best possible technologies for various emission sources at all scales to be operational in IGP region to check air pollution. The sector wise specific recommendations of the Joint Committee to be taken in the IndoGangetic plain using airshed-based approaches are annexed as Annexure-I.

Further, under National Clean Air Programme (NCAP), 24 States/ UTs with non-attainment and million plus cities have been directed to prepare state action plans following an airshed based approach for implementing air quality management policies across the states. At present 41 out of 131 non-attainment and million plus cities have been identified in IGP States/ UTs for focused improvement in air quality through implementation of city action plans. The details of measures being taken during the financial year 2022-23 to check air pollution in the region is annexed at Annexure-II.

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**Sector wise Specific Recommendations of the Joint Committee**

**Domestic Sector:**

- i. A program for switching over from solid to cleaner gaseous fuel for domestic sector should be formulated and implemented in a time-bound manner. The plan may include expansion of LPG network and putting up Compressed Biogas (CBG) network using biomass such as crop residue, dung, wet organic municipal waste, etc., particularly in rural areas. To deal with high air pollution levels in critical winter months, feasibility of distributing two domestic LPG cylinders free of cost or on subsidized rate among the BPL families may be examined.
- ii. Promotion and rapid distribution of government-approved improved cook stoves in rural areas and among the urban road-side shanties.
- iii. Make all efforts at Block/Panchayat level to educate households through anganwadi workers and ANM nurses not to burn any biomass including dung and encourage and promote LPG usages.

**Transport Sector:**

- i. All the diesel city public transport should be phased out completely in next five years, and city transport should be operated only through metro, e-vehicle or on CNG. All new public transport should be CNG or electric buses.
- ii. Public transport to be strengthened with metro and/or adequate number of buses, route plan based on commute surveys and Mobile App based ticketing and seating system is developed in all major cities.
- iii. Public transport can be made cheaper than two-wheeler cost.
- iv. Adequate vehicle scrappage infrastructure should be developed in next three years. Extended Producer Responsibility (EPR) may be considered for vehicle manufactures, who will have to build required vehicle scrap plants.
- v. Incentivise and aggressively implement e-mobility including required charging infrastructure. Strategic plan for EV charging infrastructure at each 3 km in urban areas, 25 km on highways (both sides) and 100 km for buses and trucks and swappable battery stations.
- vi. Linking of PUC centres with remote server and elimination of manual intervention in PUC testing.
- vii. Use off-peak passenger travel times to move freight (within the city) and restrict the entry of heavy vehicles into cities during 6:00 am to 9:00 pm in winter and 6:00 am to 10:00 pm in other seasons.
- viii. Check Overloading: Use weigh-in-motion bridges/machines (WIM) and Weigh bridges at entry points to the city and at toll plaza to check the payload of commercial vehicles. As per CMVR, a penalty of 10 times the applicable rate for overloaded truck is applicable.
- ix. Prepare plan for improvement of infrastructure for decongestion of roads.
  - x. Prepare and implement zonal plans to develop an NMT (non-motorized transport) network
  - xi. Proper road maintenance and marking, smart traffic signaling, encroachment-free roads, the standard design of the speed breakers, speed warnings and traffic discipline should be enforced for emission reduction.

- xii. Poor quality lubricants and their inappropriate recycling is important cause of real driving emissions. The quality of lubricants should improve and recycled unorganized sales of the lubricants should be stopped.
- xiii. EVs should be aggressively promoted. However, till the time battery-EVs take over, strong hybrid electric vehicles (HEVs) that blend fuel and electric power are much more fuel-efficient and should be promoted.
- xiv. Control of particulate emission through gasoline particulate filter (GPF) is a new technology and can be adopted in new BSVI vehicles for reducing emissions in the near to mid-term period.

**Industry (Brick kiln, MSME, Induction Furnace, etc.):**

- i. All the industries must stop using solid and liquid fuel and switch over to cleaner source of energy viz. electricity, gaseous fuel or bio-mass, in a time-bound and phased manner (say five years). Industrial clusters having uncontrolled PM emission of 500 tons per day (equivalent to 100 MW coal power plant) may be taken up on priority. Such clusters should also become candidate for priority of PNG infrastructure.
- ii. In the industrial clusters, wherever feasible, common boilers (to supply steam) with adequate emission control measures may be installed, which will be a win-win option for industries and regulators.
- iii. Brick kilns should be converted to Zig-Zag technology. The revised norms notified by MoEFCC should be strictly enforced.
- iv. In induction furnaces new technology requiring collection of emission from sideways but with much higher suction rate that does not interfere with the movement of crane should be adopted.
- v. Small scale sugar mills (<1000 tons cured per day) (Khandsari) should be treated as MSMEs. These should shift to forced draft from current practice of natural draft for better combustion and install simple air pollution control devices like cyclones and multi-clones.
- vi. Technology upgradation must be targeted in MSMEs and adequately supported. Regular training program should be conducted for the skill development.
- vii. Carry out pollution load estimation from industrial sector to enable setting of target for emission.
- viii. For MSMEs, a resource centre on technology-linked emissions achievements and multiple technology options and vendors (with the cost) linked to different levels of control be established at national and state levels; however, standards should be attained with the industry.

**Open burning:**

Action plans for crop residue management are already in place for States of Haryana, Punjab, Delhi and NCR districts of Uttar Pradesh & Rajasthan. These should be implemented expeditiously. Every year, target and focus on at least five districts for zero crop residue burning in the States of Haryana and Punjab during post-monsoon.

**Dust Control:**

- i. Identification and greening of open spaces, green cover on central verges and on the roadsides, repair and re-laying of pavements, grassing of road shoulders, washing and mechanical/vacuum-based street sweeping and proper disposal of collected dust must

be ensured in cities and towns with more than 5 lakh population. Indian Road Congress/Bureau of Standards must bring out silt load standards for roads. All major urban roads, State Highways and NHAI must maintain silt load of 2.0 g/m<sup>2</sup> or less on their roads and assess the silt load twice a year (winter and summer) at an interval of 50 km on both sides of the road.

- ii. All the Railway Siding should construct warehouse for storage of cement bags or other dusty material to minimize fugitive emissions during loading, unloading and storage and avoid these operations on open platforms. Mechanical handling of bags of cement or dusty material be done using conveyor belts, possibly horizontally movable belts. Enclosures in the form of flexible belt curtain may be provided on the warehouse openings used for transfer of material.
- iii. Construction & Demolition (C&D) waste processing facilities of adequate capacities should be set up, to begin with, in cities having population more than 5lakh. C&D waste collection points must be created in different zones of the cities, and in no case, it should be allowed to be dumped in non-designated areas, particularly along roadside. Recycling of processed waste must be encouraged, facilitated and, wherever feasible, mandated.

#### **Research & Development, Training and Capacity Building:**

- i. Focused research on IGP air pollution problems must be taken up, which can be coordinated through a dedicated Center/Cell established specifically for the purpose. The Center may collaborate with research & academic institutes and encourage/facilitate startups for developing affordable cleaner technologies (particularly for small scale polluting industries) and best process practices & guidelines for various air polluting sectors.
- ii. Training and capacity building of regulatory agencies, urban local bodies, panchayats, industries must be taken up as a regular and important component to create skilled human resource.

#### **Enforcement and Administrative Issues:**

- i. An independent body to better coordinate performance measurement among the Central, State and other agencies (e.g., Industry, Municipal Corporation) responsible for taking air pollution control measures as per the targets should be established. The sector-wise report, clearly stating air quality achievements and evaluate air program results should be published and available for public scrutiny.
- ii. The unorganized sectors should be facilitated to come on the mainstream within a specified timeframe and apply for consent under Air Act and meet emission standards.
- iii. The review of existing technologies, emission norms, guidelines, process practices, etc. should be taken up every three to five years for upgradation.

### Measures taken by the Government for Air Quality Management

I. Details of State-wise funds allocated to address air pollution during the financial year 2022-23 under National Clean Air Programme:

S. No.	State	Fund allocated during the Year (amount in ₹ crores) FY 22-23
1	Andhra Pradesh	75.06
2	Assam	24.10
3	Bihar	7.09
4	Chandigarh	6.87
5	Chhattisgarh	57.94
6	Delhi	22.50
7	Gujarat	173.29
8	Haryana	19.28
9	Himachal Pradesh	3.59
10	Jammu &Kashmi	32.50
11	Jharkhand	42.00
12	Karnataka	128.52
13	Madhya Pradesh	135.04
14	Maharashtra	386.83
15	Meghalaya	0.45
16	Nagaland	3.95
17	Odisha	38.52
18	Punjab	56.88
19	Rajasthan	103.76
20	Tamil Nadu	129.22
21	Telangana	92.96
22	Uttar Pradesh	672.83
23	Uttarakhand	22.30
24	West Bengal	173.42

\* The funds were provided to SPCB/PCC for taking up pollution abatement measures

\*\*Funds provided include funds under XV Finance Commission air quality grant for million plus cities and the fund provided by MoEFCC for taking measures for improvement of air quality in 82 non-attainment cities

## II. Various measures taken by the Government to address air pollution *inter-alia* include:

### i. Vehicular Emissions:

- Leapfrogging from BS-IV to BS-VI norms for fuel and vehicles since April, 2018 in NCT of Delhi and from 1st April, 2020 for rest of the country.
- Network of metro rails for public transport are enhanced and more cities are covered.
- Development of Expressways and Highways are also reducing the fuel consumption and pollution.
- Eastern Peripheral Expressway & Western Peripheral Expressway has been operationalized to divert non destined traffic from Delhi.
- Ban on all diesel vehicles older than 10 years and all petrol vehicles older than 15 years, in Delhi and NCR. (Hon'ble SC order dated 29.10.2018).
- Environment protection charges (EPC) have been imposed on diesel vehicles with engine capacity of 2000cc and above in Delhi NCR.
- Introduction of cleaner/alternate fuels like CNG, LPG, ethanol blending in petrol.
- Permit requirement for electric vehicles has been exempted.
- Promotion of public transport and improvements in roads and building of more bridges to ease congestion on roads.
- RFID (radio-frequency identity) system implemented by South Delhi Municipal Corporation (SDMC) for collection of toll and Environment Compensation Charges from commercial vehicles entering Delhi.
- Introduction of BS VI compliant vehicles across the country since April, 2020.
- Sustainable Alternative Towards Affordable Transportation (SATAT) has been launched as an initiative to set up Compressed Bio-Gas (CBG) production plants and make CBG available in the market for use in automotive fuels.
- Subsidy on e-vehicles under Faster Adoption and Manufacture of (Hybrid &) Electric Vehicles in India (FAME -II India) scheme of Ministry of Heavy Industries is provided.
- Installation of Vapour Recovery System (VRS) in new and existing petrol pumps selling gasoline >100kl per month in million plus cities and those selling >300kl per month in cities with population between 1 lakh to 1 million.

### ii. Industrial Emissions:

- Notification regarding SO<sub>2</sub> and NO<sub>x</sub> emission standards have been issued for Thermal Power Plants
- Ban on use of pet coke and furnace oil as fuel in NCR States since October 24, 2017 and ban on use of imported pet coke in the country since July 26, 2018, with exception for use in permitted processes (processes in cement plants, lime kilns and calcium carbide manufacturing units).
- Shifting of industrial units to PNG.
- Installation of online continuous emission monitoring devices in highly polluting industries.
- Brick kilns shifting to zig-zag technology or vertical shaft or use Piped Natural Gas as fuel in brick making to reduce pollution.
- System and Procedure for Emission Compliance Testing of Retro-fit Emission
- Control Devices (RECD) for Diesel Power Generating Set Engines up to Gross Mechanical Power 800 kW developed.
- Development of low carbon strategies across sectors such as phasing out older coal based power plants, compliance of standards, City Gas Distribution (CGD) network, emphasis on improved power reliability in urban areas, etc.

- Developing an eco-system for processing biomass/agriculture residue as fuel in industrial applications in Delhi-NCR.
- Uniform and affordable PNG pricing policy for aggravating use PNG as fuel in industrial applications in Delhi-NCR.

### **iii. Air Pollution due to dust and burning of waste:**

- Notification of eight waste management rules covering solid waste, plastic waste, e-waste, waste tyres, bio-medical waste, C&D waste, hazardous waste and battery waste.
- Setting up infrastructure such as waste processing plants.
- Extended Producer Responsibility (EPR) for plastic and e-waste management has been mandated on producers.
- Ban on burning of biomass/garbage.
- Bio-mining of three dumpsites at Bhalswa, Okhla and Ghazipur is being carried out.
- Under Central Sector Scheme on 'Promotion of Agricultural Mechanization for in-situ management of Crop Residue in the States of Punjab, Haryana, Uttar Pradesh and NCT of Delhi', agricultural machines and equipment for in-situ crop residue management are promoted with 50% subsidy to the individual farmers and 80% subsidy for establishment of Custom Hiring Centers.
- The Commission for Air Quality Management in NCR and Adjoining Areas (CAQM) on 17.09.2021 directed the coal-based Thermal Power plants situated up to a radius of 300 Km of Delhi to co-fire biomass based Pellets, Torrefied Pellets/Briquettes (with focus on paddy straw) with Coal (up to 5-10%).
- Guidelines prepared for providing one-time financial assistance for establishment of paddy straw based pelletisation and torrefaction plants, under which individuals /entrepreneurs / companies, interested in setting up pelletisation and torrefaction plants, using only paddy straw generated in the NCT of Delhi, States of Punjab & Haryana, and NCR districts of Rajasthan & Uttar Pradesh can submit an application for obtaining a one-time grant on capital investment.
- Guidelines issued for supporting Municipal Corporations of the states of Punjab, Haryana, NCT of Delhi and NCR districts of Uttar Pradesh and Rajasthan, for establishing paddy straw based briquetting plants, for use of paddy straw based briquettes for cremation purpose only.
- Daily monitoring of Active Fire Events (AFE) is done during stubble burning period and reports are shared with Commission on Air Quality Management in National Capital Region and Adjoining areas for suitable action.

### **iv. Monitoring of Ambient Air Quality:**

- Expansion of air quality monitoring network in the country under National Air Monitoring Programme (NAMP).
- Initiation of pilot projects to assess alternate ambient monitoring technologies such as satellite-based monitoring.

### **v. National Clean Air Programme:**

- With the prime objective of abating Air Pollution, the Ministry, in 2019 launched a National Clean Air Programme (NCAP) as a National-level Strategy outlining the actions for reducing the levels of air pollution at city and regional scales in India.
- NCAP targets to achieve upto 40% reduction in Particulate Matter concentrations by 2026 or achievement of National Ambient Air Quality Standard in 131 NACs & MPCs.



- Under NCAP, Non-attainment cities have been identified based on ambient air quality levels exceeding National Ambient Air Quality Standards (NAAQS) which were notified to protect human health. City Specific Clean Air Action Plans have been prepared and rolled out for implementation in 131 non-attainment and million plus cities.
- Activities in these cities include strengthening of ambient air quality network, source apportionment studies, dust mitigation measures, composting units, infrastructure for non-motorized transport, shifting to clean energy in unorganized sectors, etc.
- The NCAP focuses on multi-sectoral sources of pollution including power plants, industries, vehicles, open burning of waste, construction & demolition activities, etc.; inter-Ministerial coordination for convergence of actions and interventions; and partnership with Institutes of National repute and International Agencies as Knowledge Partners
- Public Grievances and Response System (PGRS) is developed under NCAP.
- Emergency Response System (ERS) has been prepared in NCAP cities.
- Air quality monitoring cell has been constituted across the country in NCAP Cities.
- PRANA a portal for monitoring implementation of NCAP has been launched.
- Introduction of new modules within PRANA
  - Mission LiFE Module
  - Ranking Module
  - State Action Plan Module
  - IoR&NKN Module
  - International Agencies Module
- Implementing Swachh Vayu Survekshan (SVS) 2022- Evaluation of self-assessment reports of NCAP cities and awarded top 9 best performing cities under SVS-2022.

**vi. Other Steps:**

- Public Complaints regarding air pollution issues in Delhi NCR are taken through ‘Sameer App’, ‘Emails’ (Aircomplaints.cpcb@gov.in) and ‘Social Media Networks’ (Facebook and Twitter).
- Introduction of green crackers with low emission and noise levels. Green Crackers have 30% potential reduction of PM and gaseous emissions compared to conventional firework.
- Ministry is promoting people’s participation and awareness building among citizens for environmental conservation through Mission Life activities and Green Good Deeds that focus on promotion of cycling, saving water and electricity, growing trees, proper maintenance of vehicles, following of lane discipline and reducing congestion on roads by car-pooling etc.
- Extension of Ujawala Yojana to ensure shifting to cleaner fuel.
- Swachh Bharat Mission and Waste Management initiatives.
- The Commission for Air Quality Management in NCR and Adjoining Areas (CAQM) has come out with a policy to curb air pollution in NCR, along with a standard list of approved fuels for NCR for industrial and other applications.