



Political Leaders Position & Action on Air Quality 2014-19



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Executive Summary: City Highlights

This report presents a review of the political leadership, citizen perceptions and stakeholder initiatives in the 14 cities of India ranked by WHO in 2018 as the world's most polluted cities.

Kanpur (rank 1)

Manchester yesterday, most polluted today

- While the city administration and state government has recently started to acknowledge the issue of air pollution and accordingly take some steps, the MP has been very much silent and inactive in the constituency and Parliament.
- The local residents and stakeholders have been voicing their concerns on the health impacts of air pollution which have gone 3-4 times over the national prescribed safe limits.

Faridabad (rank 2)

The best of NCR at its worst in quality of life

- The warning bells had been ringing since long in this industrial NCR town and all types of pollution sources exist here that lead to high levels of pollution in both summer and winter months, contrary to the state government view.
- While the state government has been blaming Delhi and in denial of the issue so much as to open up Aravallis for mining and infrastructure against people's wish, there have been actions taken by the state and MP related to transportation infrastructure mostly to help address the issue of degraded air quality.

Varanasi (rank 3)

Timeless city becoming breathless

- Air quality in Varanasi has been deteriorating faster than other towns in the state largely due to lot of construction in the city. Doctors and residents are confirming the rise in allergies and respiratory diseases in the past few years with zero good quality air days.
- While a few knee-jerk actions have been taken by the state and local city government, the focus of the MP has been on beautification and infrastructure that do not fully address the primary causes of consistently poor air quality at the city and regional level.

Gaya (rank 4)

The city needs to be smart for her peoples

- The mainstream focus traditionally has been skewed towards one cause of air pollution - sand from the river Falgu - though the real culprits lie elsewhere. While the SPCB aims to do its own study on sources of pollution, its going to delay action on causes of premature deaths so research and civil society organisations have presented their own findings to the state government.
- The statement from Gaya MP in response to WHO report indicated the level of priority given to the issue. The state government has chosen to deny WHO ranking based on the SPCB data, which is based on inadequate monitoring, though fortunately there is increasing recognition of health impacts in State Health Ministry.

Patna (rank 5)

Most polluted, least liveable in Bihar

- Vehicular pollution and brick kilns emissions have been on the rise and recognising that, the state government has begun issuing directives to address the issue.
- The MP from Patna Sahib constituency has been seen more active in Delhi 'smog politics' than his own.

Delhi (rank 6)

The city with history, no memory

- In a peculiar situation wherein 70% of population comes from outside, the city of Delhi is at work to break free from the habit of forget and move on, on some issues including their right to breathe. The citizens' action in court, on the streets and studiously unravelling government actions effectiveness has been intensifying over the years.
- A city with 7 MPs and an elected government with several MLAs, the government institutional machinery can at best be described as reactive than pro-active based on evidence available. Instead of instant relief, the city is witnessing criminal negligence and laziness from elected caretakers and their implementation agencies in the form of piece-meal, limited, and short-term impact solutions being applied.

Lucknow (rank 7)

Pollution not on anyone's agenda

- A global study has found Uttar Pradesh 2nd highest in the country to suffer from premature deaths due to air pollution. Given the lack of robust data with the government on pollutants and links to diseases, the capital is not moving fast enough for itself and other

highly polluted cities in the state, except for giving a push to electrical vehicles.

- While the MP has stayed silent and country's central government has refuted global study findings on pre-mature deaths and diseases linked to air pollution, the city doctors have on their own started to engage the public through creative actions and information sharing.

Agra (rank 8)

Long history of pollution

- Agra remains in the top most polluted cities in India despite letting go of its polluting industries in the interest of Taj Mahal about 23 years ago, as more sources of particulate matter and gases have come about.
- The crackdown from city and state administration has been on polluting industries and garbage burning, while the MP mostly restricted to raising questions in parliament on the issue.

Muzaffarpur (rank 9)

The land of leechi trapped in pollution valley

- Besides toxins in agro-products, the polluted air is becoming a risk to the health of children, women and elderly due to construction, fuel emissions and partly from pollution of other states brought by the winds.
- Without adequate capacity building at the local city administration, the action plan for clean air from state pollution board will deliver limited results. State is engaging brick kiln owners and electric vehicles industry players. The MP has not been seen active in local pollution discourse or solutions except questions raised in Parliament on impact of polluted air on heritage monuments.

Srinagar (rank 10)

Tenth most polluted city in the world

- The people in the city have been noticing the ill-effects of unplanned and unmanaged urbanisation, including waste and pollution. Still the WHO rank came as a surprise to many, especially since the data was not provided by state pollution control board. Still the local experts recognise the issue's relevance to the city while finding the system unprepared to reduce the pollution and manage its impacts on health.
- The government and elected MP have so far mentioned the need to conserve natural spaces and resources due to their carrying capacity, though have not yet engaged local experts on the major cause of air pollution in the city which is domestic use of coal and firewood.

Gurugram (rank 11)

The city could still be Copenhagen

- As a high income city, life has not been easy in Gurugram and there are many issues to be dealt with. Despite poor air quality it does not yet feature in National Clean Air Programme (NCAP) of government of India and monitoring of air pollution in the past few years has not been carried out by CPCB. Only in 2018, continuous monitoring started.
- Though high levels of toxic metals are being found in children in the city, the sole focus in government policy and MP actions has been on road infrastructure and Metro Rail.

Jaipur (rank 12)

Aspiring to be in the pink of its health

- On the back of high vehicle density, construction and garbage burning, Jaipur has pollution levels at 3 times the safe standards. This has resulted in doctors seeing many cases of respiratory and other diseases in children.
- Although both the state government and MP placed focus mostly on solar power, the key issue of urgently addressing the causes of pollution such as vehicles saw initiatives from the citizens and entrepreneurs of the city.

Patiala (rank 13)

Aspiring to be in the pink of its health

- The SPCB recognises the sources of pollution though were surprised to find the city ranked in the WHO report. The consistent monitoring reported by CPCB indicates high pollution level from vehicles, crop burning and industries.
- While the MP gave the issue a miss most of his tenure, the state government engaged with central government and Delhi government on access to machines for solving crop burning issue.

Jodhpur (rank 14)

- In the city where sandstorms are frequent, additional sources of pollution have also become a factor although the monitoring network is not adequate to help prioritise the government action. The local discourse was largely found missing on the issue although multiple sources of pollution exist as well as are planned in near future as part of infrastructure and development projects.
- The MP showed interest in the issue through questions raised in parliament to learn about government plans to take action, though no actions seem to be taken by any elected leader or government agency on addressing the rising pollution levels in Jodhpur.

Context

“Air pollution does not recognise borders. Improving air quality demands sustained and coordinated government action at all levels.” – World Health Organisation

Indian Experts Reflections on WHO 2018 Report

A new global report on air pollution by the World Health Organisation (WHO) shows that 14 of the 15 cities with the highest levels of PM 2.5 pollutants in 2016 were in India. These 14 towns and cities study a broad swathe of northern India stretching west to east. Effectively then, the new WHO report identifies the Indo-Gangetic plain, along with Rajasthan and the Kashmir Valley, as having the worst air in the world.

While Delhi, Agra and Kanpur are known to have very high levels of air pollution, places like Varanasi, Muzaffarpur, Gaya, and Srinagar — all on the list of the 15 most-polluted — do not have a high concentration of polluting industries, or other common sources of pollution, such as vehicular emissions. And yet, Indian experts are not entirely surprised by the high levels of PM 2.5 recorded at these places.

“We have been noticing a steady rise in the particulate matter over the Gangetic plains for the last one decade or so. It is very well documented and published. This is not something new or surprising. Even satellite pictures have been showing that the Gangetic plains are emerging as one of major hotspots for air pollution,” Prof Sachchidanand Tripathi, an atmospheric sciences expert at IIT Kanpur, said.

Scientists like Prof Tripathi and Dr Gufran Beig of the Pune-based Indian Institute of Tropical Meteorology point out that the Gangetic plains are like an enormous valley, trapped between the Himalayas in the north and the Vindhyas in the south, from where pollutants are unable to disperse very far. Added is the fact that the region is one of the most densely populated in the world.

“The sheer number of people is so high, in excess of 600 million, that the demand for energy sources, and the consequent burning of fuels, is extremely high. That would release a large number of pollutants and particulate matter in the air,” said Prof Tripathi.

Dr Anumita Roy Chowdhury, head of the air pollution and clean transportation programme at the Delhi-based advocacy organisation

Centre for Science and Environment, said, “This region is land-locked — pollution cannot dissipate quickly — and does not have the advantage of the coast like Mumbai or Chennai. Also, a lot of the smaller cities have poor waste management, there is a lot of burning, solid fuel use, they are moving from non-motorised to motorised transport. Chulhas, we know, contribute to 25% outdoor pollution in India.”

But this is still only part of the story. It still does not explain why Gaya or Muzaffarpur should have such high levels of PM 2.5. According to Prof Tripathi and other scientists, neither Gaya nor Muzaffarpur — and not even Kanpur or Delhi — produce even half of the pollutants measured in these cities.

“You have to account for the wind direction. In this region, wind predominantly blows from north-west to east for most of the year, but more so in the winter, carrying along with it pollutants generated elsewhere. Even the pollutants found over Delhi are not all generated in Delhi, but transported from other places. We have published papers to show that more than 60% of the particulate matter found in Kanpur have been generated elsewhere. As they move from west to east, these particles gain in size and mass. Gases released from industries or vehicles, too, condense and are converted into particles. The high levels of humidity in this region is very conducive to the formation of secondary aerosols. Water facilitates the reaction between the emitted gases whose molecules form clusters and slowly nucleate into particles,” Prof Tripathi said.

Cities with the worst AQIs are mostly in the Indo-Gangetic plains, indicating that weather and location affect air quality as much as emissions. “There are geographical factors as well as anthropological (human),” said Gufran Beig, project director at System of Air Quality and Weather Forecasting and Research (SAFAR) under the Ministry of Earth Sciences. “Winds from the north and south of the plains converge in the zone, increasing the pollution”, he explained. “The area is also the second largest alluvial plain, it is very fertile land and so naturally it is the most polluted. It also has more emission sources like industries, vehicles and brick kilns,” he added.

The zone also has a concentration of thermal power plants. Dipankar Saha, Additional Director, Air Lab at CPCB, said reducing emissions is the only way to counter the zone’s meteorological disadvantage.

Though, north India is not destined to breathe polluted air. This is not the only part of the world with these or similar geographical constraints. There are international models in which similarly placed states/regions have laws that empower governments to invoke stringent measures whenever required. California, for example, is a valley with a propensity for pollution to build up — and it was the first state in the US to enact an anti-pollution law back in the 1940s.

Still, a few other experts nudged in another direction – of inadequate infrastructure for accuracy in monitoring.

"The present monitoring station was installed at a point which apparently was the most polluted part of the city and generalization about the whole town should not be made on the basis of single point data." – Prof Ranjit Verma, V-C of Munger University and former teacher of Chemistry, Bihar.

While admitting air pollution in Gaya and Patna, Bihar State Pollution Control Board (BSPCB) Chairman Dr Ashok Kumar Ghosh, however, challenged the WHO report saying, "How can a city be called polluted on the basis of the data related to just one parameter (PM2.5)? How can you leave out air pollutants such as carbon monoxide, ozone and petrol emission, among others?"

UrbanEmissions.Info clarifies, "Either way, while the (WHO) database sheds some light on what the pollution levels are, we have a long way to go to understand the true nature of the pollution levels in these cities. Except for few cities such as Delhi, Lucknow, Agra, the remaining cities in WHO report have one monitoring station each. Question to be asked is whether data based on one station per city is enough to rank them among the most polluted in the world? As of May 2018 in India, there were 700 manual stations measuring 3 criteria pollutants and 117 continuous stations measuring all the criteria pollutants. Of these 117 stations, 33 were operating in Delhi and most of the other cities have just one continuous station, which is not a representative sample in any calculation. To spatially and temporally represent the pollution levels in India, 4,000 continuous stations – 2,800 in the urban areas and 1,200 in the rural areas – are needed. We need to move away from the manual monitoring network to continuous monitoring network, with real-time data dissemination, to reflect on latest information, instead of looking at data from 2 years ago."

Sagnik Dey from IIT Delhi added, "It is not just the number of stations. Choice of locations also matters."

Bibliography

<https://indianexpress.com/article/explained/north-india-has-the-foulest-air-in-the-world-says-the-who-this-is-why-5160741/>

<https://timesofindia.indiatimes.com/city/patna/patna-5th-gaya-4th-most-polluted-who/articleshow/64005067.cms>

<https://timesofindia.indiatimes.com/city/patna/illegal-sand-mining-causing-air-pollution-in-gaya-say-experts/articleshow/64966442.cms>

<http://www.urbanemissions.info/blog-pieces/breaking-down-who-2018-aap-database-for-indian-cities/>

<https://economictimes.indiatimes.com/news/environment/pollution/delhi-air-not-worst-in-india-cpcbdata/articleshow/50873389.cms?from=mdr>

Union Government response to WHO 2018 Report

In a statement responding to WHO report, the MoEF&CC said the Central Government has made "serious" efforts to fight air pollution and the 2017 air quality data for fine particulate matter PM2.5 has shown improvement over the previous year. The WHO does not have the air quality report of 2017.

The statement further read, it is noteworthy that almost one million vehicles are added on the roads of Delhi every year and in spite of increased construction activities and vehicular movement, air quality in Delhi is showing signs of improvement. With similar intervention in other polluted cities and active participation of ULBs (urban local bodies) and state governments, air quality is expected to improve further. As most of the polluted cities lie around Delhi and along the Indo-Gangetic plain, it is critical that the governments of Uttar Pradesh, Bihar and West Bengal are sensitised to take up urgent action on cleaning air.

Earlier in 2017, the former Minister of Environment Late Anil Madhav Dave had informed the Rajya Sabha about the air quality index (AQI) status in India, "In general, AQI values observed for a period of November 2015 to October 2016 indicate poor air quality in Delhi, Faridabad, Varanasi, Lucknow, Jaipur, Kanpur, Patna and Muzaffarpur; moderately polluted air in Agra, Jodhpur, Gurgaon, Gaya, Pune, Solapur, Chandrapur and Chennai.

Government of India has initiated National Clean Air Program (NCAP) for 102 non-attainment cities. On 20th March 2019 the National Green Tribunal (NGT) has directed the Central Pollution Control Board (CPCB) to expand the list by including other cities and towns which do not meet the prescribed

national ambient air quality standards. The tribunal, in its Friday order, also focussed on issue of non-compliance where six defaulting states Assam, Jharkhand, Maharashtra, Punjab, Uttarakhand and Nagaland have so far, not submitted their respective action plans with liability to pay environment compensation of Rs 1 crore each if such action plans are not furnished till April 30, 2019. The states, where action plans are found to be deficient and deficiencies are not removed till April 30, they will be liable to pay Rs 25 lakh each. The time-line for execution will be six months from the date of finalisation of action plan. So far, the CPCB has received action plans of 83 cities. While 46 of these submitted plans got the final approval, 11 others could not be approved. Action plans of 26 cities are currently being reviewed by the central committee comprising of Prashant Gargava, Member Secretary, CPCB, Mukesh Khare, Professor, IIT Delhi, and Mukesh Sharma, Professor, IIT Kanpur.

Central Pollution Control Board is executing a nation-wide programme of ambient air quality monitoring known as National Air Quality Monitoring Programme (NAMP). The programme network consists of operating stations covering 29 states and 6 Union Territories of the country. The monitoring of pollutants is carried out for 24 hours (4-hourly sampling for gaseous pollutants and 8-hourly sampling for particulate matter) with a frequency of twice a week, to have one hundred and four (104) observations in a year.

S.No.	CITY	Monitoring Stations		
		2014	2018	Required CAAQMS*
1	Kanpur	8	9	13
2	FARIDABAD	2	2	10
3	Varanasi	2	5	11
4	GAYA	0	1	9
5	PATNA	2	2	13
6	DELHI**	10	38	77***
7	Lucknow	6	8	13
8	Agra	6	6	12
9	MUZAFFARPUR	0	1	10
10	Srinagar	NA	5	9
11	GURGAON	0	0	9
12	JAIPUR	6	9	15
13	Patiala	2	4	8
14	JODHPUR	6	9	10

* Based on [thumb rule proposed by CPCB](#) and the district level urban and rural population (as per 2011 census), <http://www.urbanemissions.info> estimate the need for 4,000 continuous monitoring stations (2,800 in the urban areas and 1,200 in the rural areas of the districts, as per 2011 census) to spatially, temporally, and statistically represent the PM2.5 pollution in the urban and the rural areas of India.

** As per EPCA CAAQMS stations data, their list is not matching with the latest report of CPCB on NAMP. As per EPCA 38 CAAQMS are in operation while the NAMP is reporting 10 Stations only as on 31st Nov 2018.

*** Required CAAQMS for the NCT of Delhi Including Gurugram and Faridabad

Source:	1. For year 2014 the number of stations has been calculated out from the Data Reports for year 2014 from CPCB i.e. http://cpcb.nic.in/namp-data/ 2. For the latest operating monitoring stations data NAMP has provided the latest report dated 31st November 2018
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"We aim to increase the realtime monitoring system to 450 and the manual stations to 1,500 before 2024," Satyendra Kumar, deputy secretary, Ministry of Environment, Forests and Climate Change. "This system is not a pollution mitigating device but only to evaluate the presence of particles in air and the state of pollution. More the devices, more accurate the data," he added.

Bibliography

http://economictimes.indiatimes.com/articleshow/64003558.cms?from=mdr&utm_source=contentofinterest&utm_medium=txt&utm_campaign=cppst

<https://economictimes.indiatimes.com/news/environment/pollution/cpcb-is-directed-to-expand-the-list-of-cities-for-clean-air-action-plans/articleshow/68476560.cms?from=mdr>

http://nit.gov.in/writereaddata/files/document_publication/BreatheBooklet11thJuly.pdf

<https://timesofindia.indiatimes.com/city/delhi/delhi-faridabad-among-5-cities-with-worst-air-pollution-government/articleshow/57856970.cms>

<http://cpcb.nic.in/air-quality-standard/>

<http://cpcb.nic.in/about-namp/>

http://164.100.47.5/committee_web/ReportFile/19/108/316_2018_10_12.pdf

State Governments' and Medical community response to WHO 2018 Report

"The source data of WHO report is not clear. Haryana State Pollution Control Board (HSPCB) has been monitoring air quality since 2010 in Faridabad and Gurugram. As per details available with the Board, the PM2.5 value of both the cities are being monitored regularly since 2013. These (PM2.5) values increase above 170 only during a brief season, that is during a few days around Diwali, crop harvesting season during which residue burning

is reported and peak winter, when the temperature is low and wind velocity is minimum. Therefore, it is not justified to claim that the average PM2.5 value is above 170 in Faridabad... Delhi's pollution level has always remained higher than Faridabad and Gurugram as indicated by HSPCB reports. Now, placing Faridabad above Delhi is not even logical," said Vipul Goel, Minister of Environment and Climate Change, Government of Haryana.

The CM of Bihar and leader of JD(U), Nitish Kumar, expressed concern over the state capital Patna's dirty air, but said that the location of the air quality monitoring station in the city was not suitable for proper assessment of pollution levels. He also suggested that more such monitoring stations were needed in the city to provide a clearer picture.

"The situation is not so bad as it has been mentioned in the WHO report. There is a difference between the data given by WHO and the data furnished by the BSPCB. We have written to CPCB, asking it to share details about the statistics given to WHO. The WHO figures were average of 6 years and not current PM2.5 concentrations," said Sushil Kumar Modi, Deputy Chief Minister and Minister of Environment, Government of Bihar in May 2018.

Dr. Arvind Kumar, chairman of the Centre for Chest Surgery at Sir Ganga Ram Hospital in New Delhi, said: "Policy maker's reservations about the magnitude of the problem would only cost more and more lives in Bihar and the country. Instead of denying the scientific findings, the government should accept that it is a public emergency and take game-changer initiatives to reverse the trend."

Bibliography

<https://www.prharyana.gov.in/hi/node/24438>

<https://www.telegraphindia.com/states/bihar/burning-of-crop-stubble-emerging-as-factor-in-patna-air-pollution-says-nitish/cid/1677001>

<https://www.telegraphindia.com/states/bihar/govt-disbelief-at-who-claim/cid/1441751>

<https://www.telegraphindia.com/states/bihar/experts-decode-air-pollution-scare/cid/1444871>

Opposition Parties' Views in Summary

Deepender Hooda, a Member of Parliament from the opposition Congress Party, said that while air pollution is a big talking point in urban India, it is not "a political issue". The reason is not difficult to guess. Real action to tackle the key causes of air pollution – vehicular emissions, construction dust, factory chimneys, stubble burning – would hit special interest groups who

make up key 'vote banks'. No one is willing to take on these groups, and are unlikely to do so when the country is gearing up for parliamentary elections in 2019. In contrast, the victims are the amorphous 'general public'. Hooda said he plans to bring a private member's bill on the 'Right to Clean Air' in Parliament but the jury is out on when that may be and whether it has any chance of becoming a law.

The nub of the matter is political will or the lack of it to take all the tough measures that need to be taken on a war footing to tackle the problem of polluted air. For most Indian politicians, air pollution is something that is irksome for small periods at specific times of the year, and then forgotten. In reality, it is a year-long menace.

The Parties' Manifesto and Positions

This section reviews positions and promises made on environment and health in the parliamentary election manifestos of major political parties who fielded candidates in the 14 cities covered in this report.

People's Manifesto for Just, Equitable and Sustainable India, 2019

The manifesto, titled 'People's Manifesto for Just, Equitable and Sustainable India' is developed through the VikalpSangam network of about 50 organisations and groups focused on environment, conservation, sustainability, and community-based land/forest rights. They have asked all political parties to commit to the principles spelt out in the manifesto, released just ahead of the 2019 Lok Sabha polls.

The manifesto argues that a commitment "to the values of the Constitution of India and to a meaningful, democratic and dignified society" is urgently needed in the context of multiple crises faced by the country today. The manifesto lays out 16 different areas of commitment, each with a "talisman" question to judge the validity of any public action or policy. Some of the areas dealt with include peace and social harmony, direct democracy and transparency, livelihoods and employment, ecology and technology, food, water and energy, housing, health and education, law and the media.

"There is a growing tide of social conflicts and tension, intolerance, inequality, ill-health, erosion of cultural (including language) diversity, loss of traditional knowledge and skills, and massive ecological devastation," it says. "This is caused by currently dominant models of economic development and encouraged by authoritarian, religiously divisive tendencies in

the state, all of these building on traditional inequalities and discrimination of various kinds including gender and caste, and beginning to reverse the gains attained by these sections in the last few decades of democratic processes.”

Indian National Congress (INC), 2019

India is fast urbanising. Nearly 34 per cent of our population lives in towns and cities and the number is growing. As in the rest of the world, India's cities can become engines of growth. Congress promises to formulate a comprehensive policy on Urbanisation after wide consultation. We will address the issues concerning towns and cities including city governance, livelihoods, housing, habitat, pollution, climate change, urban transport and disaster management.

Congress promises an action agenda that will place India at the forefront of the battle against global warming and for the protection of the environment. At the same time, Congress will constitute, by law, an independent, empowered and transparent Environment Protection Authority (EPA) to establish, monitor and enforce environmental standards and regulations. The EPA will replace all other bodies that currently exercise jurisdiction and powers. Congress recognises that air pollution is a national public health emergency. We will significantly strengthen the National Clean Air Programme in order to urgently tackle the problem of pollution. All major sources of emission will be targetted, mitigated and reduced to acceptable levels. Sectoral emission standards will be set. Congress will formulate a policy on Clean Energy in existing power plants that use fossil fuels and promote Green Energy to enhance the share of solar and wind energy in the total supply of energy. Congress promises to enhance availability of, and access to, electricity in rural areas by encouraging investment in off-grid renewable power generation with ownership and revenues vesting in local bodies. In the long term, we aim to substitute LPG used in homes by electricity and solar energy. will work with State Governments to increase the forest cover from the current level of 21 per cent to 25 per cent by the year 2025. Congress promises to provide clean cooking fuels at affordable prices through subsidies the burden of price increases on the homemaker. The Annual Budget will adopt the core principles of Green Budgeting. will endeavour to make India a green manufacturing hub, will reduce tariffs and lift trade barriers for clean technology and provide incentives for the adoption of such technologies.

Indian National Congress (INC), 2014

“The Indian National Congress (INC) is committed to sustainable development in its true spirit. We will continue to accord the highest priority to environmental protection and to ensure that all people in India have the right to a clean environment, which secures their health, livelihood and nutritional well-being. The INC has always prioritised conservation of our national environment. The INC will bring a Bill to set up a National Environmental Appraisal and Monitoring Authority (NEAMA) - a professional agency to conduct rigorous and timebound environmental appraisals and recommend environmental clearances, where appropriate, in a time-bound and transparent manner. An overwhelming number of women, especially in rural India still use polluting biomass for cooking, which puts an unbearable health burden on them. The INC is committed to providing clean cooking fuel across the country in an accelerated manner in order to address this. We will launch “Green National Accounts” by 2016-17, to ensure that the costs of environmental degradation are clearly reflected in India's national accounts. We will also develop indicators that will provide data to the public on the state of our natural resources. We will continue to implement the various missions under the National Action Plan on Climate Change with purpose and determination. The Congress-led government launched the Jawaharlal Nehru National Solar Mission under which we set the ambitious target of deploying 20,000 MW of grid connected solar power by 2022. We will ensure this target is met well in advance. We will also launch a major new “National Mission on Wind Energy” to harness the power of this clean and renewable source of energy, which has tremendous untapped potential in India.”

UPA Report Card in manifesto - “Today, coal production is 554 million tonnes per year. Ten years ago, it was 361 million tonnes per year.”

AamAadmi Party (AAP), 2014

“The mainstream political parties ... do not have any fresh ideas to solve the country's problems. AamAadmi Party (AAP) believes in economic development that is equitable and sustainable where human and ecological capital are fully enriched. Phased shift towards renewable sources of energy (RE); promote decentralized RE solutions such as solar power, biogas plants, watermills, and wind pumps; Integrating economic and environmental policies, to render them increasingly consistent over time, in maximizing well-being today, without compromising the ability of future generations to do so.”

Bhartiya Janta Party (BJP), 2014

"Our Pledge - Inclusive and Sustainable Development; Quality life in Villages and Cities; Pro-active, Pro-people Good Governance; Cleanliness and Sanitation prioritized - integrated infrastructure rolled out in Model towns; Centre- State coordination and synergy in giving clearances to mega projects; Environment clearances decision-making transparent and time-bound; Freight Corridors and attendant Industrial Corridors expedited; Integrated Public transport - including roadways, railways and waterways; Railways modernized and upgraded - focusing on national development; Gas Grids to make gas available to households and industry; Energy security - maximize potential of Oil, Gas, Hydel, Ocean, Wind, Coal and Nuclear sources; Renewable Energy an important component of India's energy mix; Energy efficiency and conservation - crucial to energy security; Sustainability at the centre of thoughts and actions - Climate Change mitigation initiatives; Ecological Audit of projects and pollution indexing of cities and townships; Guidelines for Green buildings and energy efficient work places; National policies on critical natural resources like coal, minerals, spectrum etc.; Comprehensive national security - borders, military, economic, cyber, energy, food, water, health and social cohesion and harmony; Champion uniform international opinion on issues like Terrorism and Global Warming."

"We are governed by the belief that development must blend harmoniously with tradition and the environment. We believe that the economic foundations of India should not be built on over-consumption, waste and ecological destruction" - BJP National Council, 2004.

Samajwadi Party (SP), 2014

The manifesto of SP whose current president has an education in environmental engineering said: "The party shall develop an environmental policy which shall ensure balanced use of natural resources and a manufacturing process which includes maximum human efforts to reduce pollution. The party will impose strict ban on indiscriminate deforestation and tree-felling".

Bahujan Samaj Party (BSP), 2014

BSP chief declared at their party worker's rally that the party does not believe in releasing manifestos - "we do not release manifestos as we believe more in doing real development work for the people rather than making hollow claims which are never realised. You have to be cautious of the exaggerated claims made by other parties. You must not lower your guard and get fooled by their election manifestos".

BSP released on twitter their list of 8 issues under focus for 2017 UP Assembly elections and did not mention strategy for pollution in the state.

Bibliography

https://cdn.inc.in/manifestos/pdf_documents/000/000/005/original/English_Manifesto_MobilePDF_1April19-1.pdf?1554201123

<http://cdn.narendramodi.in/wp-content/uploads/2014/04/Manifesto2014highlights.pdf>

<https://www.thehindu.com/news/national/environmental-ngos-and-peoples-rights-groups-release-pre-poll-manifesto/article26359106.ece>

<http://webcache.googleusercontent.com/search?q=cache:g1X4xV9f3XcJ:www.bjp.org/hi/media-resources/speeches/presidential-speech-by-shri-l-k-advani+&cd=2&hl=en&ct=clnk&gl=in>

<https://aamaadmiparty.files.wordpress.com/2014/04/aap-national-manifesto-2014.pdf>

https://cdn.inc.in/manifestos/pdf_documents/000/000/001/original/Manifesto-2014.pdf?1506426027

http://www.indiaenvironmentportal.org.in/files/file/Samajwadiparty_Manifesto_2014.pdf

<https://www.thehindu.com/news/national/other-states/dont-get-fooled-by-manifestos-bjp/article5858202.ece>

<https://timesofindia.indiatimes.com/elections/assembly-elections/uttar-pradesh/news/despising-manifestos-yet-again-bjp-takes-to-social-media-with-issues-for-2017-polls/articleshow/56532288.cms>

The Pollution, Pollutants and Monitoring Infrastructure

The World Health Organisation (WHO) released their latest global ranking of most polluted cities last year in which top 14 of the 15 cities were from India, specifically northern states such as Uttar Pradesh, Rajasthan, Delhi Bihar, Punjab and J&K. Though there are gaps in monitoring, still the suspended particulate matter was found to be extremely severe above WHO permissible limits.

The WHO prescribes annual safe limit for PM10 at 20 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) and 50 $\mu\text{g}/\text{m}^3$ over 24 hours. The Central Pollution Control Board (CPCB) of India prescribes these limits to be at 60 and 100 $\mu\text{g}/\text{m}^3$, respectively. For PM2.5, the WHO prescribes annual safe limit at 10 $\mu\text{g}/\text{m}^3$ and 25 $\mu\text{g}/\text{m}^3$ over 24 hours. The CPCB prescribes these to be at 40 and 60 $\mu\text{g}/\text{m}^3$, respectively.

PM or Particulate Matter is microscopic solid or liquid matter suspended in Earth's atmosphere. PM impacts climate as well as precipitation that affect human health. The PM10 refers to coarse particulate matter of 10 microns diameter while PM2.5 is even finer that have a diameter of less than 2.5 micrometers, which is about 3% the diameter of a human hair.

Together these two particle types are called fine particles. Fine particles can come from various sources including power plants, motor vehicles, airplanes, residential wood burning, forest fires, agricultural burning, volcanic eruptions and dust storms. Some are emitted directly into the air, while others are formed when gases and particles interact with one another in the atmosphere. For instance, gaseous sulphur dioxide emitted from power plants reacts with oxygen and water droplets in the air to form sulfuric acid as a secondary particle.

Since they are so small and light, fine particles tend to stay longer in the air than heavier particles. This increases the chances of humans and animals inhaling them into the bodies. Owing to their minute size, particles smaller than 2.5 micrometers are able to bypass the nose and throat and penetrate deep into the lungs and some may even enter the circulatory system. Studies have found a close link between exposure to fine particles and premature death from heart and lung disease. Fine particles are also known to trigger or worsen chronic disease such as asthma, heart attack, bronchitis and other respiratory problems.

Professor S N Tripathi from IIT Kanpur said the focus should be on even smaller particles called PM1 (particles as small or smaller than one millionth of a metre in diameter) which can directly enter our cell membranes without any barrier, making them even more dangerous. While studying PM1, Tripathi found dangerously high levels of PM1 in Kanpur – over 200 micrograms per cubic metre in winters.

There are serious risks to health not only from exposure to PM, but also from exposure to ozone (O₃), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), lead (Pb), and carbon monoxide (CO). As with PM, concentrations are often highest largely in the urban areas of low- and middle-income countries. Ozone is a major factor in asthma morbidity and mortality, while nitrogen dioxide and sulfur dioxide also can play a role in asthma, bronchial symptoms, lung inflammation and reduced lung function. WHO and CPCB prescribe safe limits for all types of pollutants.

Bibliography

[https://www.who.int/en/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/en/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)

<http://cpcb.nic.in/air-quality-standard/>

<https://blissair.com/what-is-pm-2-5.htm>

<https://scroll.in/article/824796/the-pollution-problem-in-varanasi-lucknow-and-allahabad-could-be-worse-than-even-delhi>

WHO 2018 Report Methodology

The WHO database covers 100 countries, for the period of 2011 and 2016, compiled during Summer/Fall 2017 with some updates in the first quarter of 2018. The database does not report any information the other criteria pollutants – SO₂, NO₂, CO or Ozone.

For completeness, in cities with only PM10 reported, PM2.5 concentration was calculated using national conversion factors (PM2.5/PM10 ratio) either provided by the country or estimated for the country. The same applied for PM2.5. Country specific conversion factors were estimated as the mean ratio of PM2.5 to PM10 of stations for the same year. If country-specific conversion factors were not available, regional ones were used, which were obtained by averaging country-specific conversion factors. As the conversion factor PM2.5/PM10 may vary according to location, the converted PM10 (or PM2.5) value for individual settlements may deviate from the actual value (generally between 0.4 and 0.8), and should be considered as approximate only. All the PM10 measurements are older – 95% coming from 2012. There is a significant difference between the averages – cities with PM2.5 measurements and cities with a converted value – converted averages are 37% lower than the measurements. In absolute terms, the measured averages are 8 times and the converted averages are 5 times, over the WHO guideline for annual PM2.5 (10 mg/m³).

Bibliography

https://www.who.int/airpollution/data/AAP_database_methodology_2018_final.pdf?ua=1

<http://www.urbanemissions.info/blog-pieces/breaking-down-who-2018-aap-database-for-indian-cities/>

Health Impacts of Air Pollution

The 2017 Global Burden of Disease research by Lancet indicates that India has disproportionately high mortality and disease burden due to air pollution. According to these findings, air pollution was the second largest risk factor contributing to disease burden in India after malnutrition in 2016, with an increasing trend in exposure to ambient particulate matter pollution and a decreasing trend in household air pollution. This burden is generally highest in the low socio-economic index (SDI) states of north India. Reducing the substantial avoidable deaths and disease burden from this major environmental risk is dependent on rapid deployment of effective multi-sectoral policies throughout India that are commensurate with the magnitude of air pollution in each state.

CPCB AQI Health Legend

AQI	Remark	Color Code	Possible Health Impacts
0-50	Good	Blue	Minimal impact
51-100	Satisfactory	Green	Mild irritation/discomfort to sensitive people
101-200	Moderate	Yellow	Breathing discomfort in the people with lungs, asthma and heart diseases
201-300	Poor	Orange	Breathing discomfort to most people on prolonged exposure
301-400	Very Poor	Red	Respiratory distress on prolonged exposure
401-500	Severe	Dark Red	Affects healthy people and seriously impacts those with existing diseases



"Long-term and short-term plan needs to be there and a framework to evaluate the success need to be instilled. And the success should be measured on the basis of changes in health impacts." – SagnikDey, IIT-Delhi.

Bibliography

https://app.cpcbcr.com/AQI_India/

<https://scroll.in/article/901825/why-indias-politicians-are-unlikely-to-do-much-to-tackle-air-pollution-in-election-year>

<https://www.downtoearth.org.in/news/air/if-you-are-in-patna-you-are-exposed-to-very-high-levels-of-pm2-5-concentration-56759>

<https://www.sciencedirect.com/science/article/pii/S2542519618302614?via%3Dihub#bib35>

Highlights of 2018 WHO report on health impacts -

- About nine out of 10 persons in India breathe the most polluted air.
- The ambient air pollution led to 4.2 million deaths in 2016
- Pollution due to cooking fuels and technologies triggered off about 3.8 million deaths in 2016
- The main sources of air pollution from particulate matter, i.e., sulphate, nitrate and black carbon, are said to arise from "inefficient use of energy".
- Air pollution causes one-quarter, or 24 percent of adult deaths from heart disease, 25 per cent from stroke, 43 per cent from chronic obstructive pulmonary disease and 29 per cent from lung cancer.
- Pollutants are released in households, industry, agriculture, transport sectors as well as coal-fired power plants.
- Sand and desert dust, waste burning and deforestation too cause air pollution.
- The poorest and most marginalized sections are threatened the most.

A new report by the WHO reveals that in 2016, over a lakh (100,000) Indian children below the age of five were killed by exposure to air pollution, indoors and outdoors. With a death rate of 96.6 per 100,000, girls fared worse than boys, whose death rate was 74.3 per 100,000. Compare this with the situation with Indonesia, another country where forests are often set ablaze to clear land for palm oil plantation. In 2016, in Indonesia the death rate for girls below five was 35.6 per 100,000 and for boys in the same age group 35.2. In the same year, in China the death rate from air pollution of girls below five was 12.5 per 100,000, and for boys 13.8.

Acronyms

AAQI	Annual Air Quality Index (AAQI)	MP	Member of Parliament
ADB	Asian Development Bank	NAAQS	National Ambient Air Quality Standards
AFD	Agence Française de Développement	NAMP	National Air Quality Monitoring Programme
AIIMS	All India Institute of Medical Sciences	NCAP	National Clean Air Program
AMRUT	Atal Mission for Rejuvenation and Urban Transformation	NCR	National Capital Region
AQG	Air Quality Guideline of WHO	NCT	National Capital Territory
AQI	Air Quality Index	NEMMP	National Electric Mobility Mission Plan
BJP	Bhartiya Janta Party, Political Party	NGT	National Green Tribunal
BSPCB	Bihar State Pollution Control Board	NMCH	Nalanda Medical College & Hospital
BSPCB	Bihar State Pollution Control Board	PCC	Pollution Control Committee
CAAQMS	Continuous Ambient Air Monitoring System	PM10	Particulate Matter 10 microgram/m3 (as per CPCB)
CAG	Comptroller and Auditor General of India	PM2.5	Particulate Matter 2.5 microgram/m3 (as per CPCB)
CAMS	Continuous Air Monitoring Station	PMO	Prime Minister's Office
CAP	Comprehensive Action Plan	PPCB	Punjab Pollution Control Board
CEECC	Centre for Environment, Energy & Climate Change	PWD	Public Works Department
CEED	Center for Environment and Energy Development	RJD	Rashtriya Janta Dal, Political Party
CM	Chief Minister of State		
CMO	Chief Medical Officer	RSPCB	Rajasthan State Pollution Control Board
COPD	Chronic Obstructive Pulmonary Disease		
CPCB	Central Pollution Control Board, India	SAFAR	System of Air Quality and Weather Forecasting And Research, Ministry of Earth Science, Govt. of India, Indian Institute of Tropical Meteorology, Pune, India
CSE	Centre for Science and Environment	SAMEER	Society for Applied Microwave Electronics Engineering & Research
EPCA	Environment Pollution (Prevention & Control) Authority	SAPCC	of State Action Plan on Climate Change
EV	Electric Vehicle	SDC	Swiss Agency for Development and Cooperation
FAME	Faster Adoption and Manufacture of (Hybrid and) Electric Vehicles(A Scheme of GOI)	SDI	Socio-Demographic index
GHG	Green House Gases	SIAM	Society for Indian Automobile Manufacturers
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit	SPCB	State Pollution Control Board
GMDA	Gurugram Metropolitan Development Authority		
Gol	Government of India		
GRAP	Graded Response Action Plan		
HSPCB	Haryana State Pollution Control Board		
HUDA	Haryana Urban Development Authority		
ICMR	Indian Council of Medical Research		
IITM	Indian Institute of Tropical Meteorology, Pune, India		
JDU	Janta Dal United, Political Party		
MAPAN	Modeling Atmospheric Pollution and Networking		
MNIT	Malaviya National Institute of Technology		
MoEFCC	Ministry of Environment, Forest and Climate Change		

Kanpur

Manchester yesterday, most polluted today.



Picture Courtesy: Sindhuja Parthasarathy/IndiaToday

Kanpur is one of the largest industrial towns in north India with a population of over 3 million and, according to a 2013 survey by TOI and Janaagrah, has been rated as the worst city to live in India. More recently in 2018, it ranked 75th out of 111 Indian cities in Ease of Living Index.

Kanpur has the highest number of vehicles in the state of Uttar Pradesh with 7250 public and private new vehicles added every month. CPCB report indicates air pollution has gone up 3 times the prescribed safe limit. Featuring in the non-attainment cities list of the NCAP, Kanpur has PM10 and PM2.5 pollutants above the nationally approved safe limits.

People in the city recognize the issue and regard it high priority, hoping that high profile schemes such as Smart Cities Mission and AMRUT will resolve the long pending issue.

Vital Statistics of Kanpur

Census 2011	Estimated 2019	WHO Ranking	AQI Dec 2018*
2,768,057	3,095,530	1	359 (very poor)

*AQI: Air Quality Index by Central Pollution Control Board

Major public issues of Kanpur & voices

1.	Traffic congestion
2.	Health impacts of all forms of pollution
3.	Public spaces cleanliness
4.	Ganga river pollution and stench from drains
5.	Erratic electricity supply

"..I think it is right time to stand up together and tell the government that Kanpurites are in no mood of tolerating their lack of political interest in city, which in turn is pulling down the city. This is the only way which could wipe out the negativity of the city and push it towards betterment." – Dr Alok Bajpai, psychiatrist and social worker, Kanpur.

Smart City Kanpur Tagline Competition, 2015

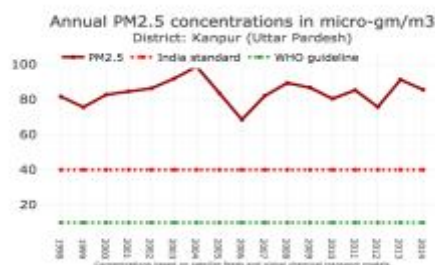


"I feel that if the local administration acts in a sensible manner then we can easily fight with the tag of the worst city. Also little strictness in government functioning could improve things." – Leena Nigam, social worker.

"My point is when Kanpur is one of the biggest tax-paying cities in the state then why are we compelled to live in a sorry state. There is an urgent need that legislatures, MP and administrative officials should take a call for addressing these problems." – Mickey Manchanda, Businessman and President of Provincial Industries Association, Kanpur Chapter.

Air quality history of Kanpur

In 2011, the CPCB released a National summary report on "Air Quality Monitoring, Emission Inventory and Source Apportionment Study" based on monitoring data from six cities (Delhi, Mumbai, Kanpur, Pune, Chennai and Bangalore). According to the report, in Delhi and Kanpur, the monitoring data at almost all locations and in all seasons were higher than the prescribed standards. WHO listed Kanpur as the most polluted in their 2018 database while in February 2019, a study by IIT-Kanpur and Shakti Foundation showed Kanpur suffered poor air quality for 70% of the days between October-November 2018 with PM2.5 levels crossing 170 microgram/m3.

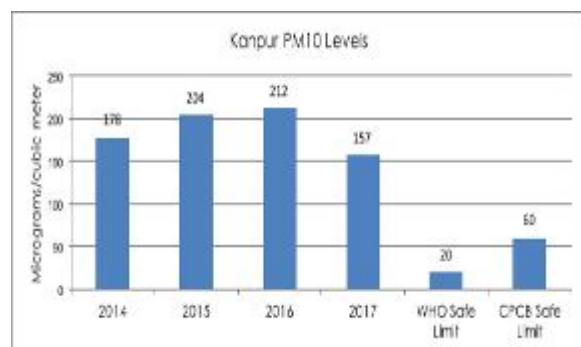


Number of air quality monitoring stations – Kanpur as an NCAP city has 1 continuous

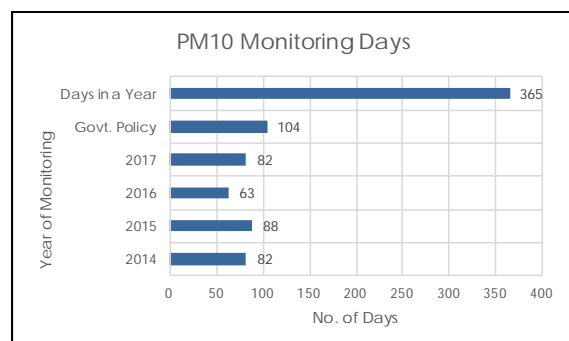
monitoring station (CAMS) reporting data for all types of pollutants¹ and 8 manual stations reporting data on PM₁₀, SO₂ and NO₂.

PM₁₀ microgram/m³(as per CPCB)

2014	2015	2016	2017	CPCB safe limit	WHO safe limit
178	204	212	157	60	20



This graph indicates the average of PM₁₀ pollutant recorded by the operating stations in a city in the indicated year, as reported by CPCB. When data is missing it is indicated as zero.



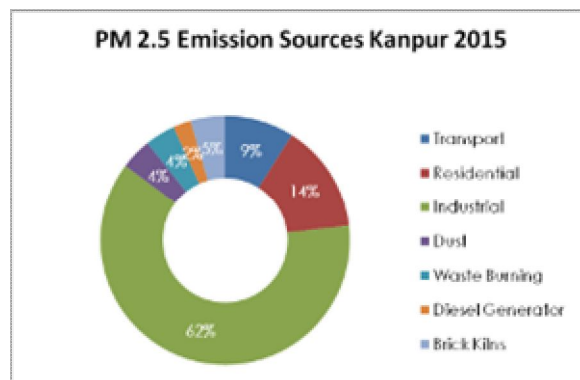
Government policy is to monitor air quality twice a week, that is, 104 days in a year of 365 days. This graph indicates on an average how many days in a year all the stations in a city have monitored the pollutants PM₁₀, NO₂ and SO₂, as reported by CPCB. That way, data is not available for more than the number of days indicated. When monitoring is not done, it is indicated as zero.

Sources of pollution

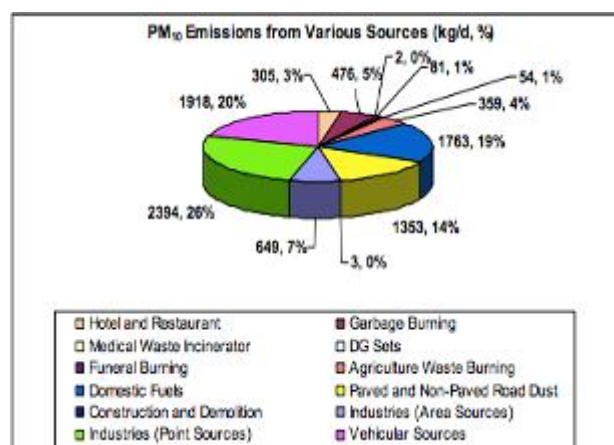
1.	Vehicles
2.	Industry, restaurants & brick kilns
3.	Coal power and DG sets (including in unauthorized markets without legal connection)
4.	Domestic cooking
5.	Garbage burning by municipal workers & residents
6.	Construction and road dust
7.	Winter bonfire from plastics & tyres

1

CO, SO₂, NO, NO₂, NO_x, OZONE, PM₁₀, PM_{2.5}, Benzene, Toluene, Xylene, Ethylbenzene, MP xylene, CH₄, NH₃, HCHO, Hg and more as per CAAQMS guidelines by CPCB



Source: www.urbanemissions.info



Source: CPCB 2010

Kanpur's Chief Environmental Officer, Kuldeep Misra, rejected the tag of the world's most polluted city, saying "if the situation was as bad as the WHO describes, we would have been dead by now."

"As a resident of the city it makes me sad and appalled but this ranking should at least wake up the government and citizens to take some immediate steps to end the pollution." – 55-year-old Kanpur resident Ramesh Soni.

"The state government does not have the mechanism to understand the sources of air pollution, how will they tackle it? The state needs to act. This was very much coming." – Sachchida Nand Tripathi, a professor in IIT Kanpur, who is working with the federal environment ministry to track particulate matter in real time.

"It is not surprising. The number of vehicles on the roads is increasing every day and as compared to that, there is relatively very little green cover left." – Sudhir Gupta, Kanpur leather goods manufacturer.

"Now I cannot imagine stepping outside my home without covering my nose and mouth." – Savita Saxena, an elderly woman.

Impacts of air pollution on health

The research Global Burden of Disease Study 2017 by *Lancet* says air pollution is now the second largest cause of pre-mature deaths in India after cardio-vascular diseases. In the 1990s, air pollution was the third largest cause of such deaths in India. As per study, Uttar Pradesh had the second-highest disease burden linked directly to air pollution among all states as of 2016, after Rajasthan.

In Kanpur, three times increase in respiratory diseases has been reported from 2013:

1. Bronchial asthma
2. COPD
3. Pneumonia

While other impacts such as eye discomfort and respiratory issues are commonly observed by all locals and visitors, doctors are concerned about increase in cancer patients.

Vehicle owner's view: About 87% of drivers and vehicle owners surveyed by Climate Trends across India would buy an electric vehicle, if that helped reduce air pollution. About 76% said that they, their friends, family and neighbours, were suffering the effects of poor air quality.

City stakeholder actions to address air pollution

By NGOs -

- Public engagement by UEDS

Public awareness to build public pressure for policy action on clean air, mobility and other urban issues; solid waste management including door to door collection and safe disposal which otherwise is burnt, with public participation.

- Kanpur Parivartan Forum

Parivartan highlights the inadequate infrastructure facilities for a modern urban center, dusty congested roads with no drains or pavements among others.

- CEED in collaboration with Indian Institute of Technology, Delhi (IIT-D)

"The largest share of premature death burden in Agra, Gaya, Kanpur, Gorakhpur, Lucknow, Patna, Muzaffarpur and Varanasi is attributed to acute lower respiratory infections, primarily emanating from residential (cooking, heating and lighting) sources, followed by industry, transport and energy sectors. Chronic obstructive pulmonary diseases (COPD) are the cause of the largest share of premature deaths in these cities," says the study by CEED in

collaboration with Indian Institute of Technology, Delhi (IIT-D). The study recommends to concerned state governments strengthening public awareness and expediting the process to replace solid fuels with cleaner fuels, besides coordinating with each other to prepare an efficient regional clean air action plan.

By Scientists & Educational Institutions -

Year - 2019

Scientists at IIT-Kanpur funded by Department of Science & Technology have developed a low-cost air pollution sensor capable of measuring the level of harmful gases such as ozone and nitrogen oxides. The sensor is priced at Rs 50,000 as compared to commercial instruments that cost Rs 1-2 crore in the international market.

Year - 2018

IIT-Kanpur organized courses on "Impact of RE and EVs" for FIs, manufacturers and consultants.

By Industry/Businesses -

Year - 2019

EV Motors India, provider of infrastructure solutions for E-mobility electric vehicles (EV) charging outlets, is opening such outlets under the name "PlugNgo" in Delhi, Jaipur and Kanpur.

NTPC has completed tender process to set up a 225MW solar plant by mid-2020 on the site originally acquired for a 1320 MW Bilhaur coal plant.

Year - 2018

Mahindra Electric launched its all-electric cars, commercial vehicle for both passenger and goods carrier and rickshaw for passenger movement in Lucknow, Kanpur and Agra.

EIL will invest Rs 1,750 crore in phased manner with the launch of 250 charging stations, 1,000 battery swapping stations in 20 cities of Uttar Pradesh.

By International Development Agencies -

Year - 2018

GIZ organized a roundtable with MoEFCC, other sectoral ministries, state governments and development agencies, research institutions on implementation of NCAP.

By local city administration -

2019 March

District Magistrate of Kanpur Kaushal Raj Sharma, who heads the district level environment committee, has asked the CPCB to "give details of the factors which could be

immediately controlled to reduce air pollution". 3 roads on the outskirts of the city have been identified for use as by-pass for heavy vehicles coming from other districts; issued newspaper ads asking people to WhatsApp photos of burning of waste to any of the six zonal officers of the Kanpur Municipal Corporation; discussed with managements of schools located on the main roads to change their timings in order to decongest traffic during arrival and pick-up times.

2018 February

Former District Magistrate Surendra Singh issued notices to 7 government departments, including the UP Pollution Control Board (UPPCB), for failing to check air pollution.

Actions & policies by state government -

2019 February-March

State government allocated 175 crore for Kanpur metro rail project in UP Budget 2019-20 and received approval of union cabinet to be completed in 5 years. UP Metro Rail Corporation project will connect major public nodes and city clusters through multimodal integration.

2018 November

State government asked the civil aviation ministry for its approval regarding artificial rains in Kanpur through cloud-seeding.

2018 November

UP government identified 10 cities including Kanpur for 100% Multi-Modal Electric Public Transport (passenger and goods) by 2030. The state government released EV Manufacturing Policy 2018 to incentivize EV battery and charging infrastructure development in the state through public and private interventions. The policy also includes incentives to buyers for creating demand.

Bibliography

City profile, major issues of public concern and people's voices

<https://www.hindustantimes.com/lucknow/kanpur-traffic-congestion-bottlenecks-top-list-of-concerns/story-yKWGfwmoX45hCuYhvAED8L.html>
<https://www.mygov.in/task/tagline-competition-smart-city-https://www.thehindu.com/news/national/other-states/nowhere-to-hide/article24835411.ece>
<https://timesofindia.indiatimes.com/What-is-actually-ailing-Kanpur/articleshow/19425820.cms>
<https://in.reuters.com/article/health-pollution-india-kanpur/with-worlds-worst-air-kanpur-struggles-to-track-pollution-idINKCN1IG1AN>

Air quality history of Kanpur

<http://www.urbanemissions.info/india-apna/kanpur-india/>
<https://www.ndtv.com/india-news/3-cities-beat-delhi-to-indias-most-polluted-list-patna-at-top-spot-1993210>
<http://envfor.nic.in/sites/default/files/press-releases/NCAP%20Report%20Full.pdf>

[https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)
https://www.who.int/airpollution/data/aap_air_quality_data
<http://cpcb.nic.in/namp-data/>

Sources of pollution

<http://www.urbanemissions.info/india-apna/kanpur-india/>
<http://cpcb.nic.in/displaypdf.php?id=S2FucHVYLnBkZg==>
<https://www.indiaspend.com/87-of-indian-vehicle-owners-ready-to-buy-electric-vehicles-if-that-reduces-pollution-survey-98547/>
<https://indianexpress.com/article/india/india-news-india/kanpur-dust-diesel-fumes-choke-industrial-hub/>
<https://phys.org/news/2018-05-kanpur-blacklist-cities-worst-air.html>

Impacts of air pollution on health

<https://www.ncbi.nlm.nih.gov/pubmed/23697693>
<https://www.timesnownews.com/mirror-now/civic-issues/article/respiratory-problems-tripled-since-2013-in-kanpur-city-with-world-s-highest-levels-of-air-pollution/228873>

City stakeholder actions - NGOs

<https://www.cseindia.org/kanpur-1749>
<https://www.cseindia.org/citizen-forum-for-environmental-improvement-2158>
<https://www.downtoearth.org.in/news/air/poor-air-quality-a-major-cause-of-premature-deaths-60634>

City stakeholder actions - Scientists & Educational Institutions

<https://yourstory.com/2019/01/iit-kanpur-develops-pollution-sensor>
<http://www.iitk.ac.in/ime/anoops/LEX%20Training-2018/>
<http://home.iitk.ac.in/~mukesh/>

City stakeholder actions - Industry/Businesses

<https://www.thehindubusinessline.com/economy/logistics/ev-motors-partners-dlf-abb-and-delta-to-set-up-electric-vehicle-charging-stations/article25613712.ece>
https://www.business-standard.com/article/companies/ntpc-to-invest-rs-10-300-cr-in-greenfield-thermal-and-solar-plants-in-up-119010800728_1.html
<https://www.mahindra.com/news-room/press-release/mahindra-drives-its-electric-range-of-vehicles-to-https://economictimes.indiatimes.com/industry/auto/auto-news/essel-plans-to-invest-rs-1750-cr-to-set-up-electric-vehicle-charging-infrastructure/articleshow/65186147.cms?from=mdr>

City stakeholder actions - International Development Agencies

<http://seip.urban-industrial.in/live/hrdpmp/hrdpmaster/igep/content/e62771/e63552/e69049/e69079/e69110/AboutRoundtable.pdf>

City stakeholder actions - local city administration

<https://indianexpress.com/article/india/india-news-india/kanpur-dust-diesel-fumes-choke-industrial-hub/>
<https://www.hindustantimes.com/lucknow/kanpur-notices-to-7-government-departments-for-failing-to-check-air-pollution/story-IX3kxXCIAkACuLOOakh6fJ.html>

City stakeholder actions - state government

https://www.business-standard.com/article/news-cm/cabinet-approves-kanpur-metro-rail-project-119030100274_1.html
<https://www.businessinsider.in/how-iit-kanpur-scientists-are-planning-to-curb-pollution-in-uttar-pradesh/articleshow/61739544.cms>
<https://niveshmitra.up.nic.in/Documents/DraftPolicies/Uttar Pradesh Electric Vehicles.pdf>

Political Leaders Position and Activities on Constituency Air Quality



MP: Murli Manohar Joshi

Member of Parliament since 2014

Lok Sabha Constituency: Kanpur

Party: Bhartiya Janta Party (BJP)

Award: Padma Vibhushan (2017)

MP's statements on air quality

Year – 2014

The MP requested UP Chief Minister to include Kanpur in 'Clean City, Green City' scheme to which the Chief Minister of UP agreed. The MP said "...cities are being cleaned and it is a good thing. If any creative thing is being done whether it's a copy or (a new) initiative, its good."

Opposition parties' statements on air quality

Year – 2012

Former INC MP from Kanpur & Union coal minister, Sriprakash Jaiswal pitched for metro rail project to help ease traffic congestion in Kanpur.

City-focussed actions announced/taken by MP

Year – 2016

The MP inaugurated 3x660 MW Ghatampur thermal (coal-based) power plant in Kanpur district to bring industrialisation to the city. The project EIA aimed to reduce addition to the city's polluted air. Most of the power generated from 2021 will be evacuated to other cities and users.

Year – 2014

MP Murli Manohar Joshi wanted to launch a website for Kanpur where people's opinion will be sought on how to make the industrial city pollution-free. The MP said all BJP workers and common people should take the responsibility to make Kanpur pollution-free. The website is not available now.

Actions & policies by MP's union government

Year – 2019

NCAP with Rs. 300 crore launched as a mid-term, five-year action plan from 2019 to reduce air pollution by 20-30% by 2024 in all 102 non-attainment cities, taking 2017 as the base year.

Year – 2018

Niti Aayog proposed a 15-point action plan to combat air pollution, titled, Breathe India.

National Auto Policy released including EV, CNG, bio fuels, and hydrogen vehicles, though without timelines and no link with EV 2030 vision, FAME II or Make in India. Under the FAME II India scheme around Rs. 5,500 crore over a five year period has been set aside to provide grants for all kinds of electric vehicles.

Gol sealed a deal with World Bank, GIZ, ADB, SDC, AFD and Bloomberg Philanthropies, to build capacities of all 102 polluted cities across the country. The initial small budget of 300 crore is meant for expanding air quality monitoring capacities in states, setting up national emission inventories and conducting source apportionment studies in cities to identify nationwide pollution hotspots. Studies in Delhi and Kanpur have been initiated already.

Year – 2017

Railways Ministry announced new reforms and services such as Roll On Roll Off and long-term contracts to enhance freight traffic and reduce dependence on commercial vehicles.

Year – 2016

Government of India announced the advancement of vehicular emissions and fuel quality norms to BS-VI levels by the year 2020 across the country.

All non-attainment cities were given a set of 42 action points to improve air quality and as a follow-up, 94 cities were asked to prepare detailed action plans. The states concerned had been urged to steer implementation of action plans in these cities. The CPCB has also

launch a mobile app - SAMEER - for grievance redressal.

Year – 2015

Government of India announced FAME scheme under NEMMP to promote electric vehicles. Instead, EV manufacturers and sellers were expecting a policy and regulatory framework laying out a roadmap for creating an ecosystem comprising, most importantly, charging stations, as well as rolling out incentives for both manufacturing and purchasing EVs.

Bibliography

MP's statements on air quality

https://economictimes.indiatimes.com/news/politics-and-nation/murli-manohar-joshi-meets-akhilesh-discusses-plans-to-develop-kanpur-as-defence-hub/articleshow/45149500.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

State government's statements on air quality

<https://www.downtoearth.org.in/news/rajsthans-new-solar-energy-policy-simplifies-regulations-for-investors-46880>

Opposition parties' statements on air quality

<https://m.economictimes.com/industry/transportation/railways/sriprakash-jaiswal-pitches-for-metro-rail-project-in-kanpur/articleshow/13085796.cms?from=desktop>

Parliamentary initiatives by MP

<http://164.100.47.190/loksabhaquestions/annex/8/AU957.pdf>

City-focussed actions announced/taken by MP

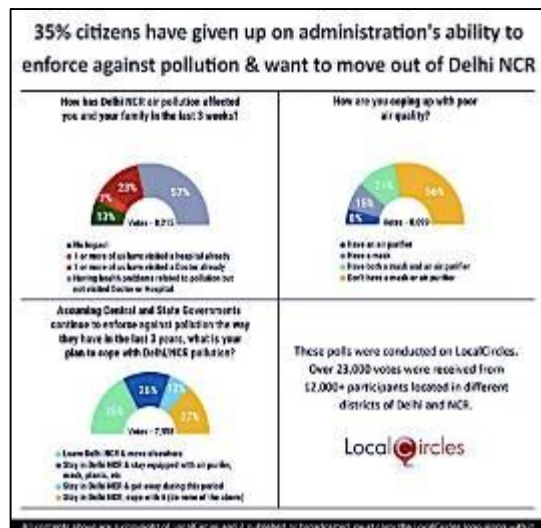
<https://www.indiatoday.in/pti-feed/story/ghatampur-power-project-will-be-functional-by-2021-joshi-673974-2016-07-27>
<http://www.rectpcl.in/ghatampurpp.php>
<https://www.news18.com/news/india/bjps-new-website-to-see-peoples-opinion-on-making-kanpur-pollution-free-695671.html>

Actions & policies by MP's union government

<https://www.iamrenew.com/policy/little-late-govt-earmarks-300-crores-fight-air-pollution-102-cities/>
http://niti.gov.in/writereaddata/files/document_publication/BreatheBooklet11thJuly.pdf
https://dhi.nic.in/writereaddata/UploadFile/DHI-NAB-Auto%20Policy%20Draft%20Document_vDRAFT.pdf
<https://economictimes.indiatimes.com/news/environment/pollution/four-international-agencies-to-join-govts-effort-to-tackle-air-pollution-in-102-cities/articleshow/66548971.cms?from=mdr>
<http://pib.nic.in/newsite/PrintRelease.aspx?relid=158793>
[http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20\(2\).pdf](http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20(2).pdf)
<https://www.thehindu.com/opinion/op-ed/advancing-bs-vi-emission-norms/article25438769.ece>
<https://archive.indiaspend.com/cover-story/0-02-new-cars-are-electric-heres-what-govt-must-do-to-reach-all-electric-goal-78119>
<https://economictimes.indiatimes.com/news/environment/pollution/govt-has-made-serious-efforts-to-curb-air-pollution-govt-after-who-report/articleshow/64003558.cms?from=mdr>

Faridabad

The best of NCR at its worst in quality of life.



Faridabad is the most populous and the largest city in the state of Haryana and also part of National Capital Region of Delhi. As a leading industrial centre, once called the 'Manchester of north India', Government of India included the city in the second list of Smart Cities Mission in 2016. Faridabad has been described as the 8th fastest growing city in the world and 3rd fastest in India by City Mayors Foundation Survey 2018 while it ranked 72nd in Ease of Living Index 2018.

Industrialization came at a price – pollution has always been high in the city and although not featuring in the non-attainment cities list of the NCAP, Faridabad clocked 413 for PM2.5 (severe) level in October 2018.

Vital Statistics of Faridabad

Census 2011	Estimated 2019	WHO Ranking	AQI Dec 2018*
14,14,050	17,86,183	2	444 (very poor)

*AQI: Air Quality Index by Central Pollution Control Board

Major public issues of Faridabad

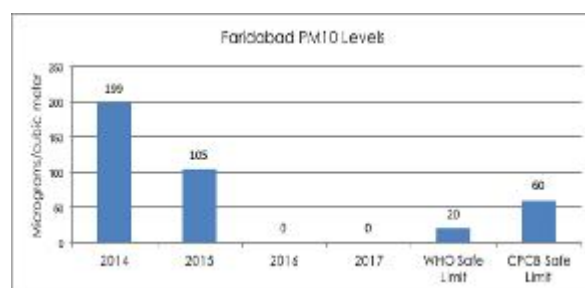
1.	Proximity of residential areas with industrial units
2.	Public health issues such as vector-borne diseases, lack of medical facilities & staff
3.	Air pollution, inadequate solid waste & sewage management
4.	Urban infrastructure – road condition & water logging, inadequate public transport & traffic congestion, shortage of water & electricity supply, condition of parks and greenery
5.	Lack of basic amenities to large slums

Air quality history of Faridabad

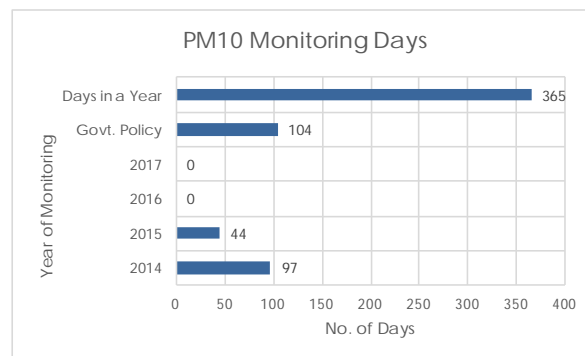
Number of air quality monitoring stations – Faridabad does not feature in the non-attainment cities list under National Clean Air Programme (NCAP) although it has a long history of pollution. The city has 1 continuous monitoring station (CAMS) which is operational reporting data for all types of pollutants².

PM10 microgram/m³ (as per CPCB)

2014	2015	2016	2017	CPCB safe limit	WHO safe limit
199	105	NA	NA	60	20



This graph indicates the average of PM10 pollutant recorded by the operating stations in a city in the indicated year, as reported by CPCB. When data is missing it is indicated as zero.



Government policy is to monitor air quality twice a week, that is, 104 days in a year of 365 days. This graph indicates on an average how many days in a year all the stations in a city have monitored the pollutants PM10, NO₂ and SO₂, as reported by CPCB. That way, data is not available for more than the number of days indicated. When monitoring is not done, it is indicated as zero.

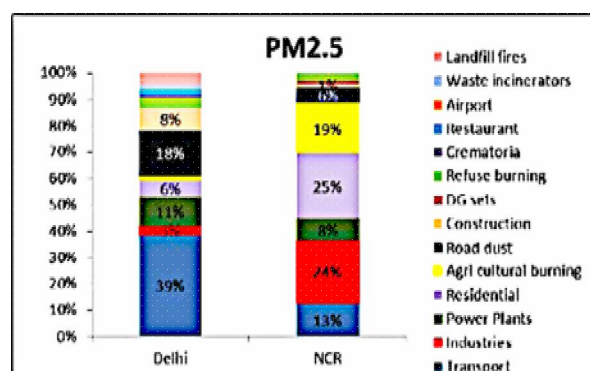
"If the pollution levels continue to rise in the same vein, Faridabad is in for smoky times ahead. The speed with which the pollution is increasing in Faridabad, it can be easily said that in the coming five years most of the

newborns will have respiratory disorders. Even adults are going to be in the grip of respiratory diseases.”– Dr. S.P. Singh Bhatia, CMO, Faridabad (2003).

Sources of air pollution & stakeholder views

1.	Vehicles
2.	Construction and road dust
3.	Crop stubble burning
4.	Garbage burning
5.	Industries, brick kilns

PM2.5 Emission Sources in Delhi-NCR



Source: www.urbanemissions.info

Citizen views:

“One of the major issues facing Faridabad city is lack of a proper city transportation system,” says Varun Sheokand, an RTI Activist in Faridabad. This has led to the growth of auto-rickshaws as the main transportation mode. More than 25,000 auto-rickshaws ply in the city, causing pollution and adding to traffic chaos. “The Smart City project without an efficient public transport system will not be successful,” he adds.

“The Metro Rail facility has only limited use. Almost 60 per cent of the 109 buses in the city bus service have not been operating,” says Ramashray Prasad of the Haryana Roadways Workers Union. “Poor upkeep has rendered these buses defunct,” he adds.

“All factors contributing to air pollution are present here,” says Jitender Bhadana, an environment activist. “The Agra and Gurugram canals, chaotic traffic or industry, everything is contributing to air pollution. Construction and illegal mining have been going on unchecked,” he adds.

Government views:

Vipul Goel, Haryana Industries & Environment Minister, says, “Faridabad air is affected mostly due to the pollution in neighbouring Delhi. The Gurugram and Agra canals have been getting filthy water from their source in Delhi. The green

cover has increased due to continuous plantation in the past few years. A proposal to link Faridabad with Noida and Gurugram (through metro) is on the cards.”

Expert views:

“Heat waves and stronger sunshine increase the frequency of days during summer when ozone begins to cross the standards posing public health risk, especially to those suffering from asthma and respiratory problems. Ground-level ozone is not directly emitted by any source. This is formed when oxides of nitrogen (NOx) and a range of volatile gases primarily from vehicles and other sources are exposed to each other in sunlight,” the CSE said. Delhi and its neighboring cities - Faridabad and Gurgaon - have witnessed “substantial ozone build-up” from February to May (2018), CSE claimed, cautioning that it was early signs of a “dangerous trend”. Gurgaon and Faridabad, in the National Capital Region (NCR), have recorded “highest number” of days with ozone levels exceeding the standards.

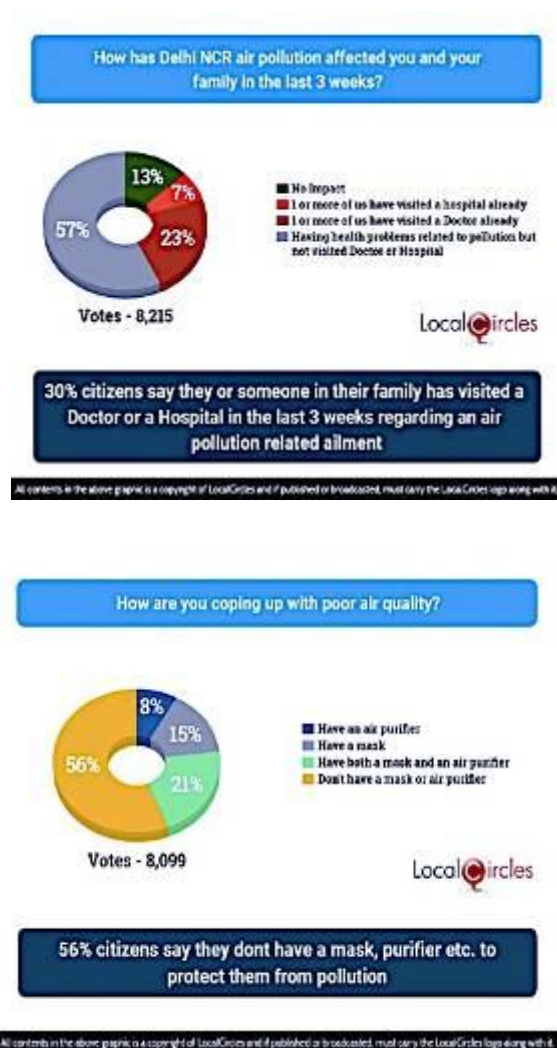
While winter haze was a product of stubble burning in farms, vehicles emissions and fog, the summer haze is due to a new factor: the increasing sandstorms. Air-quality data for NCR released recently (in summer of 2018) by Central Pollution Control Board shows only a marginal improvement over winter in the AQI in summer months as they continued to record “very poor” and “poor” air quality even in March, April and May (of 2018). Summer pollution may exacerbate in the coming years depending on meteorological trends. A study conducted by Wildlife Institute of India (WII) in south Haryana also pointed towards early desertification of the Delhi-NCR. According to the study, the Aravalis are gradually becoming barren mountains. Open forest cover has decreased in the last three decades, while scrub has increased by 5.7%, and barren area is fluctuating.

“There has been an increase in frequency, longevity and density of summer sand storms in the NCR over the past decade. All deserts are expanding, and so is the Thar,” said Dr Rajendra Kushagra, head of the department at Amity School of Earth and Environmental Sciences, Manesar.

Impacts of air pollution on health

There has been an increase in:

- Infections and allergies
- Bronchitis, breathlessness
- Chronic cough, sneezing, itching, eye problems



About a quarter of elderly (21%) in Delhi-NCR during a survey by Agewell Foundation claimed that their major concern is rising pollution level during winters, which causes many health related problems and restrict their outings.

"During winters with high level of pollution, older people are forced to live alone inside their houses. At this juncture, it's our moral responsibility to care for elders and keep them engaged in some kind of activities of their choice. We should share the warmth with them, as they just need warmth," Himanshu Rath, Chairman, Agewell Foundation said.

"Even before the health risk from particulate matter could be addressed, ozone has raised its ugly head in Delhi and NCR. The comprehensive action plan will require stringent and time-bound action to avert public health crisis," said Anumita Roy Chowdhury, CSE (June 2018).

City stakeholder actions to address air pollution

By Individuals -

- **Mobilising Judiciary**

The NGT ordered closure of about 500 illegal dyeing units on a petition in 2016 from Varun Sheokand, social and environmental activist in Faridabad, who intends to file a contempt petition against departments concerned for their failure to implement the order. HSPCB is of the view that closure order was sent to approximately 377 units and now all operating units have online monitoring devices controlled by HSPCB.

- **No Aravallis No Vote**

Environmental activist Jitender Bhadana said that a group of several organisations, activists and concerned citizens are already running a daily campaign 'No Aravallis No Vote' in Faridabad and Gurugram to sensitise citizens and ensure that politicians who seek votes for Haryana assembly elections and Lok Sabha elections, first "listen" to their concerns. A group of social activists has launched a signature campaign against the recent amendment brought by the Haryana Government to reduce the area falling under preserved forest in Faridabad and Gurugram districts.

By NGOs & Educational Institutions -

- **I Love My City**

In 2017, I Love My City launched an initiative called 'Swachta 365' to encourage cleanliness and citizen action against pollution throughout the year.

- **Air Filter Unit**

A team of researchers from Manav Rachna Educational Institutions based in Faridabad devised an air pollution mitigation system titled "Pariyantra" which is an air filter unit that can be mounted on the roof of any vehicle — buses, cars, auto-rickshaws and even two-wheelers. As the vehicle moves, air passes through the holes in front of the device. The filters fitted inside the unit trap the pollutants releasing clean air. Pariyantra does not require any power to operate and is equivalent to the filtration provided by 6 room air filters. CPCB approved the pilot project for 30 buses in Delhi, flagged off by Minister of Environment Dr Harsh Vardhan, in the winter of 2018. The university set up a piped natural gas cremation facility for the city, reducing air pollution.

By Pollution Control Board/Authority -

Year – 2018

The NHAI, HUDA and Public Works Departments directed by the HSPCB to contain dust during their construction activities. Teams have been constituted by HUDA, Urban Local Bodies, HSPCB and District Administration to monitor the violations and impose penalties on violations in construction projects, pollution control norms for vehicles, burning of garbage. Mechanical sweeping machines and vacuum machines are being used in Gurugram and Faridabad for cleaning purposes to reduce road dust. Vehicles not destined for these cities are diverted through another route. 3 more CAAQMS ordered to be installed in Faridabad and Gurugram. Pollution sources attribution study is being planned.

HSPCB tasked to coordinate a state level committee chaired by Chief Secretary to review progress of 2010 air action plan.

EPCA has been working with NCR state governments to move all brick kilns to zig-zag technology, which will reduce PM pollution by 70%. Non-zigzag technology brick kilns were to be allowed to operate in NCR districts till June 30, 2018 for one last season. There were 75 brick kilns in Faridabad which gave affidavits to EPCA that they will convert to zig-zag technology by June 30, 2018.

According to members of the brick kiln owners federation, labour shortage is the biggest hurdle in shifting to zigzag technology. Ramesh Mittal, who owns a kiln in Faridabad, Haryana, says, "I am struggling to find labourers to carry out the conversion. Even the ones available are not trained to do the task."

But these reasons do not carry much weight. "Zigzag design for brick kilns has been used since the 1970s and is a well-tested technology. In West Bengal, for instance, 2,500-3,000 brick kiln owners have been using it for years without waiting for any government order," counters Sameer Maithel, director of Green-tech Knowledge Solutions, a clean energy research and advisory firm based in Delhi. "In Bihar, despite the cost and labour issues, most kiln owners are keen to shift to zigzag. According to our survey conducted around Patna, about 65 per cent of those who made the transition found that the zigzag technology was more fuel efficient and produced better bricks," Maithel adds.

Year – 2017

Following Supreme Court order, CPCB issued directions regarding prohibition on use of pet coke and furnace oil in NCR states. EPCA and

state pollution boards will need to review and monitor progress as per notification issued by MoEF&CC.

Year – 2015

Annual report of HSPCB lists number of orders issued for closure of polluting industries.

By Judiciary -

Year – 2019

Haryana government got the Punjab Land Preservation (Haryana Amendment) Bill of 2019 passed in the state's legislative assembly that will open up much of the formerly protected land, especially the Aravalli hills, for mining, construction and urbanisation. The hills are instrumental in checking the spread of dust and sand from Rajasthan towards the Indo-Gangetic plains. "We are concerned with Aravalli. If you are doing anything with Aravalli or Kant Enclave (where the top court had ordered demolition of buildings due to illegal constructions in forest area) you will be in trouble. If you are doing anything with forest, you will be in trouble. We are telling you," the bench told Solicitor General representing Haryana government.

Year – 2018

As of October 25, 2018 35% brick kilns in NCR states had converted to less polluting zig-zag technology, with 1601 units still remaining in Haryana. The association of brick kiln owners sought direction from National Green Tribunal to HSPCB to allow them to operate from February 2019 after temporary closure in the till January 2019 when pollution remains high. NGT disposed-off the application saying HSPCB orders are clear and no further orders are necessary.

Year – 2017

The Supreme Court banned the use of Petroleum Coke (pet coke) and Furnace Oil (FO) for combustion in the states of Delhi, Haryana, Rajasthan and Uttar Pradesh on October 24, 2017. Furthermore, certain industry sectors, namely cement, limekiln and calcium carbide have been allowed the use of pet coke in their manufacturing process though under regulation. The court also directed MoEF&CC and CPCB to fix and implement SOx and NOx emission standards for 34 industries by December 31, 2017. The MoEF&CC issued standards for 23 industries by March 2018.

Actions & policies by state government

Year - 2018

"Diesel vehicles of more than 10 years age have been banned from registration in Faridabad, Gurugram and Jhajjar districts," said

Vipul Goel, Minister of Environment & Industries, Government of Haryana.

Delhi Metro extension linking Faridabad, Gurugram and Ballabhgarh with Badarpur between 2015-18; all stations and depot to be powered by solar panels, LED lighting, and CO2 sensors installed for good quality air. Faridabad-Gurugram link will be ready by 2021 while Greater Noida and Greater Faridabad will also be linked.

Bibliography

City profile, major issues of public concern and people's voices

http://www.citymayors.com/statistics/urban_growth1.html
<https://indianexpress.com/article/india/full-list-of-indias-ease-of-living-index-see-where-your-city-is-ranked-5306185/>
<http://population.city/india/faridabad/>
<https://timesofindia.indiatimes.com/city/delhi/delhi-faridabad-among-5-cities-with-worst-air-pollution-government/articleshow/57856970.cms>
https://www.ripublication.com/ijcer16/ijcer16n1_05.pdf
<http://www.nayaharyana.com/english/faridabad-effects-industrialisation/>
<https://www.localcircles.com/a/press/page/delhi-ncr-residents-want-to-leave-the-city-due-to-air-pollution#.XJkPKM8zb-Z>

Air quality history of Faridabad

<http://cpcb.nic.in/non-attainment-cities/>
[https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)
https://www.who.int/airpollution/data/aap_air_quality_data_base_2018_v14.xlsx?ua=1
<http://cpcb.nic.in/namp-data/>
<https://timesofindia.indiatimes.com/city/chandigarh/haryana-a-questions-who-report-which-put-faridabad-among-worlds-polluted-cities/articleshow/64032229.cms>
<https://www.localcircles.com/a/press/page/delhi-ncr-residents-want-to-leave-the-city-due-to-air-pollution#.XJkPKM8zb-Z>
<https://www.ndtv.com/delhi-news/delhi-faces-major-ozone-spike-shows-sings-of-dangerous-trend-study-1864055>

Sources of pollution

<http://www.nayaharyana.com/english/faridabad-effects-industrialisation/>
<https://www.indiaspend.com/87-of-indian-vehicle-owners-ready-to-buy-electric-vehicles-if-that-reduces-pollution-survey-98547/>
<https://www.prharyana.gov.in/hi/node/24438>
<https://www.orfonline.org/research/the-herculean-task-of-improving-air-quality-the-case-of-delhi-and-ncr-45459/>
<http://citizenmatters.in/top-five-out-of-14-air-pollution-killer-cities-6698>
<https://www.ndtv.com/delhi-news/delhi-faces-major-ozone-spike-shows-sings-of-dangerous-trend-study-1864055>
<https://www.tribuneindia.com/news/weekly-pullouts/haryana-tribune/faridabad-s-growth-in-the-slow-lane/620377.html>

Impacts of air pollution on health

<https://www.livemint.com/Politics/nJLLRXBdWKM7qsBf7WzL/Pollution-restrains-elderlys-movement-worsens-health-condition.html>
<https://www.localcircles.com/a/press/page/delhi-ncr-residents-want-to-leave-the-city-due-to-air-pollution#.XJkPKM8zb-Z>
<https://www.ndtv.com/delhi-news/delhi-faces-major-ozone-spike-shows-sings-of-dangerous-trend-study-1864055>

<https://www.thehindu.com/news/national/other-states/supreme-court-warns-haryana-on-damage-to-aravalli-range/article26476637.ece>
<https://india.mongabay.com/2019/02/no-aravallis-no-vote-people-want-haryana-government-to-spare-the-hills/>
<https://www.tribuneindia.com/news/haryana/saving-aravallis-may-become-poll-issue-signature-drive-launched/745358.html>

City stakeholder actions – NGOs & Educational Institutions

<https://ilovemycity.in/index.php/swachta-365-initiative-by-i-love-my-city/#more-1727>
<https://manavrachna.edu.in/latest/cpcb-approves-manav-rachnas-solution-to-fight-against-air-pollution-in-delhi/>
<https://manavrachna.edu.in/latest/manav-rachnas-revolutionary-air-filtration-project-flagged-off-by-cpcb/>
<https://mrsl.edu.in/wp-content/uploads/2019/02/Campus-Buzz-November.pdf>
<https://www.hindustantimes.com/gurugram/faridabad-second-most-polluted-city-in-country-gurugram-12th/story-MJoViOnWDehKw1QEFelIO.html>

City stakeholder actions – Judiciary

https://www.sci.gov.in/supremecourt/1985/63998/63998_1985_Order_24-Oct-2017.pdf
<http://epca.org.in/state-air-winter-2017-18.pdf>
<http://www.indiaenvironmentportal.org.in/content/459690/order-of-the-national-green-tribunal-regarding-closure-of-brick-kilns-operating-in-haryana-19112018/>

City stakeholder actions – Pollution Control Board/Authority

<http://www.epca.org.in/EPCA-Reports1999-1917/Report-draft-no.66.pdf>
<http://cpcb.nic.in/displaypdf.php?id=RmFyaWRhYmFkLnBkZg==>
<http://cpcb.nic.in/displaypdf.php?id=RmFyaWRhYmFkLnBkZg==>
<http://hspcb.gov.in/14-15.pdf>
<https://indianexpress.com/article/cities/delhi/action-taken-on-pollution-remains-dismal-open-storage-of-construction-material-biggest-culprit-5420585/>
<http://cpcb.nic.in/openpdf.php?id=UHVibGllYXRpb25GaWxkLzNf8xNTEyMDMyNDY2X2I1ZGIhcGhvdG8xNDI1Mi4xMQ==>
<http://epca.org.in/state-air-winter-2017-18.pdf>
<https://www.downtoearth.org.in/news/environment/74-brick-kilns-in-delhi-ncr-have-not-shifted-to-cleaner-technology-61624>
<https://www.tribuneindia.com/news/haryana/air-monitoring-stations-set-up-at-19-sites/707732.html>

City stakeholder actions – state government

http://www.delhimetrorail.com/press_reldetails.aspx?id=63aQSC8zmhslld
<https://www.hindustantimes.com/gurugram/faridabad-gurugram-metro-link-to-be-operational-by-april-2021/story-UwoKebUngjUlnutMW23b7M.html>

Political Leaders Position and Activities on Constituency Air Quality



MP: Krishan Pal Gurjar

Member of Parliament since: 2014

Lok Sabha Constituency: Faridabad

Party: Bhartiya Janta Party (BJP)

Portfolio: Minister of State for Social Justice and Empowerment

Assuming Central and State Governments continue to enforce against pollution the way they have in the last 3 years, what is your plan to cope with Delhi/NCR pollution?



35% citizens have given up on administration's ability to enforce against pollution and want to move out of Delhi NCR

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MP's statements on air quality

Year – 2014

"Throughout the world, more than 30 lakh people die every year due to air pollution. That is why, each resident of this area should plant at least one tree and nurture it", said the MP during a tree plantation event.

State Government's statements on air quality

Year – 2018

"The source data of WHO report is not clear. Haryana State Pollution Control Board (HSPCB) has been monitoring air quality since 2010 in Faridabad and Gurugram. As per details available with the Board, the PM2.5 value of both the cities are being monitored regularly since 2013. These (PM2.5) values increase above 170 only during a brief season, that is during a few days around Diwali, crop harvesting season during which residue burning is reported and peak winter, when the temperature is low and wind velocity is minimum. Therefore, it is not justified to claim that the average PM2.5 value is above 170 in Faridabad," said Vipul Goel, Minister of Environment, Climate Change & Industries, Government of Haryana. "Faridabad is affected mostly due to the pollution in neighbouring Delhi... Delhi's pollution level has always remained higher than Faridabad and Gurugram as indicated by HSPCB reports. Now, placing Faridabad above Delhi is not even logical," said the Minister while stating that Haryana has already prepared a detailed action plan to contain air pollution in the state.

"The worsened AQI during several summer months shows that pollution is now becoming a year-round phenomenon in NCR rather than an event triggered in winters by stubble burning." – ET Online, June 2018.

Year – 2014

Haryana Chief Minister ML Khattar said, "it is easy to plant trees, more challenging is to maintain them. In this polluted environment, one should plant more trees".

Statements from other parties

Year – 2019

"One has not seen or heard what Gurjar (MP) has done. There is filth, air and water pollution has increased manifolds. There is no one to check deteriorating law and order situation," said RK Anand, INLD leader.

"Nothing has improved even after Gurjar's (MP) elevation as Union minister. Nothing has been done to make Faridabad a 'Smart City' and law-and-order situation is at its worst..the works he takes credit for were started during the

Congress rule,' said Karan Singh Dalal, Congress leader.

Jagdish Nagar of Congress alleges that the MP has been patronising illegal mining and illegal plying of buses in the constituency.

"I may be from an opposition party but the fact is that the chief minister deserves kudos for getting a five-km long open sewerage cemented with wide roads on both sides," NLD MLA from Faridabad NIT Nagender Bhadana, lauds the ruling BJP, especially chief minister Manohar Lal Khattar.

City-focussed actions announced/taken by MP

Year – 2019

"Several major works completed during his (my) stint in this constituency, however, speak for him (me) – Delhi Metro, which was up to Ajrona has been made operational up to Ballabgarh; completion of much delayed Kundli-Manesar-Palwal and Kundli-Ghaziabad-Palwal expressways and six flyovers on Delhi-Faridabad-Agra national highway (NH-2). All these works have brought a major relief from painful traffic jams for motorists not only from his constituency but the entire National Capital Region (NCR)."

Year – 2018

"Faridabad and Gurugram will be connected by a Metro and the project will be ready by March 2021", Union minister of state for social justice and empowerment and Faridabad Member of Parliament Krishan Pal Gurjar said. "Both the government of India and the Haryana government have given in-principle approval to the project, and its detailed project report will be completed within six months," he added. Though this was first announced in 2015, there was disagreement in leaders of governing party on the route. Currently 1.5 lakh people ply daily on the chosen route.

Year – 2016

Inclusion of Faridabad in Smart City scheme to address various issues including causes of air pollution. The scheme will cover a part of the city with the aim of having cascading effect on other parts, and the various projects underway will be completed by 2021.

Activities & policies by MP's union government

Year – 2018

Niti Aayog proposed a 15-point action plan, titled Breathe India, to combat air pollution in the most polluted cities of India.

National Auto Policy released including EV, CNG, biofuels, and hydrogen vehicles, though without timelines and no link with EV 2030 vision, FAME II or Make in India. Under the FAME II India scheme around Rs. 5,500 crore over a five year period has been set aside to provide grants for all kinds of electric vehicles.

Gol sealed a deal with World Bank, GIZ, ADB, SDC, AFD and Bloomberg Philanthropies, to build capacities of all 102 polluted cities across the country. The initial small budget of 300 crore is meant for expanding air quality monitoring capacities in states, setting up national emission inventories and conducting source apportionment studies in cities to identify nationwide pollution hotspots.

The PMO set up a sub-committee on solutions for crop burning. Budget 2018 allocated Rs 1200 crore for the strategy recommended by the sub-committee, endorsed by EPCA and to be implemented by MoEF&CC.

MoEF&CC notified the Comprehensive Action Plan (CAP) to combat air pollution in the long-run for Delhi-NCR. The plan will work in collaboration with Graded Response Action Plan (GRAP) which comes into effect when air quality degrades.

Year – 2017

Railways Ministry announced new reforms and services such as Roll On Roll Off and long-term contracts to enhance freight traffic and reduce dependence on commercial vehicles.

NITI Aayog formed task forces in collaboration with CII on clean fuel, clean transport, clean industries and biomass management to submit roadmap with recommendations for managing the air-quality of the Indo-Gangetic plain as a whole.

Year – 2016

Government of India announced the advancement of vehicular emissions and fuel quality norms to BS-VI levels by the year 2020 across the country.

All non-attainment cities were given a set of 42 action points to improve air quality and as a follow-up, 94 cities were asked to prepare detailed action plans. The states concerned had been urged to steer implementation of action plans in these cities. The CPCB has also launch a mobile app - SAMEER - for grievance redressal.

Year – 2015

Government of India announced FAME scheme under NEMMP to promote electric

vehicles. Instead, EV manufacturers and sellers were expecting a policy and regulatory framework laying out a roadmap for creating an ecosystem comprising, most importantly, charging stations, as well as rolling out incentives for both manufacturing and purchasing EVs.

<http://www.epca.org.in/EPCA-Reports1999-1917/EPCA-note-supreme-cCourt-prevention-crop-residue-burning.pdf>

Bibliography

MP's statements on air quality

<https://navbharattimes.indiatimes.com/state/punjab-and-haryana/faridabad/mp-krishan-pal-gujjar-plantation-by/articleshow/36120038.cms>
<https://www.localcircles.com/a/press/page/delhi-ncr-residents-want-to-leave-the-city-due-to-air-pollution#.XJkPKM8zb-Z>

State government's statements on air quality

<https://www.prharyana.gov.in/hi/node/24438>
<https://timesofindia.indiatimes.com/city/chandigarh/haryana-a-questions-who-report-which-put-faridabad-among-worlds-polluted-cities/articleshow/64032229.cms>
<https://navbharattimes.indiatimes.com/state/punjab-and-haryana/faridabad/mp-krishan-pal-gujjar-plantation-by/articleshow/36120038.cms>
<https://economictimes.indiatimes.com/news/et-explains/why-delhites-must-learn-to-love-the-pollution-mask/articleshow/64599120.cms?from=mdr>

Statements from other parties on air quality

<http://www.tatkalnews.com/news/184176-faridabad-bjp-leader-krishan-pal-gurjar-riding-on-metro-rail-not-an-easy-sail.aspx>

City-focussed actions announced/taken by MP

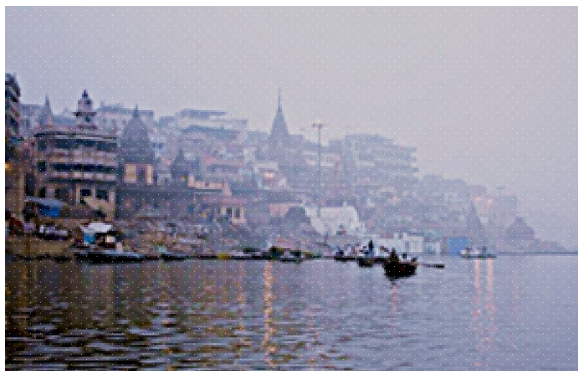
<https://www.hindustantimes.com/gurugram/faridabad-gurugram-metro-link-to-be-operational-by-april-2021/story-UwoKebUngjUlnutMW23b7M.html>
<https://www.jagran.com/delhi/new-delhi-city-ncr-metro-rail-run-between-faridabad-and-gurugram-soon-common-man-issues-18785540.html>
<http://www.tatkalnews.com/news/184176-faridabad-bjp-leader-krishan-pal-gurjar-riding-on-metro-rail-not-an-easy-sail.aspx>
<https://www.smartcityfaridabad.co.in/smart-city-vision-cocept/>

Activities & policies by MP's union government

<https://www.iamrenew.com/policy/little-late-govt-earmarks-300-crores-fight-air-pollution-102-cities/>
<https://economictimes.indiatimes.com/news/environment/pollution/dedicated-plan-for-100-cities-to-reduce-air-pollution-levels/articleshow/62905770.cms>
http://niti.gov.in/writereaddata/files/document_publication/BreatheBooklet11thJuly.pdf
https://dhi.nic.in/writereaddata/UploadFile/DHI-NAB-Auto%20Policy%20Draft%20Document_vDRAFT.pdf
<https://economictimes.indiatimes.com/news/environment/pollution/four-international-agencies-to-join-govts-effort-to-tackle-air-pollution-in-102-cities/articleshow/66548971.cms?from=mdr>
<http://pib.nic.in/newsite/PrintRelease.aspx?relid=158793>
[http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20\(2\).pdf](http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20(2).pdf)
<https://www.thehindu.com/opinion/op-ed/advancing-bs-vi-emission-norms/article25438769.ece>
<https://archive.indiaspend.com/cover-story/0-02-new-cars-are-electric-heres-what-govt-must-do-to-reach-all-electric-goal-78119>
<https://economictimes.indiatimes.com/news/environment/pollution/govt-has-made-serious-efforts-to-curb-air-pollution-govt-after-who-report/articleshow/64003558.cms?from=mdr>
<https://www.downtoearth.org.in/news/air/niti-aayog-releases-reports-on-biomass-management-clean-fuel-and-clean-transport-59790>

Varanasi

Timeless city becoming breathless.



Picture Courtesy: Yatra

The culture of Varanasi is deeply related with the river Ganga and the river's religious importance, to which a political dimension got added on becoming Indian Prime Minister's constituency in 2014. The city core was established in 2nd century B.C.

Manufacturing industries account for the most employment and principally include household industries and small-scale industries. The mobility within the city is a mix of 2-wheelers (34%), Autos (20%), cycles (16%), walk (14%), 4-wheelers and cycle rickshaws (6% each) and others (4%).

The overall mobility scenario within the city is in a poor state. 50% of the carriageway capacity in the heart of Varanasi is occupied by irregular parking as no proper parking facilities exist. Since tourism is a very important sector for Varanasi, with over 3 million domestic and 200,000 foreign tourists visiting annually – there is a significant strain on city infrastructure.

The city was ranked 33 in the ease of Living Index and is featured in both Smart City and AMRUT schemes of the government of India that are the expected vehicles of meeting city's modern challenges.

Vital Statistics of Varanasi

Census 2011	Estimated 2019	WHO Ranking	AQI Dec 2018*
1,198,491	1,645,737	3	384 (very poor)

*AQI: Air Quality Index by Central Pollution Control Board

Major public issues of Varanasi & voices

1.	Traffic congestion due to encroachment, lack of parking spaces, road width & condition, lack of pedestrian and cycling pathways
2.	Inadequate electricity supply
3.	Ganga river pollution, sewage treatment, open drains
4.	Solid waste disposal inside and outside city
5.	Internet access & CCTV for security in public areas, law & order
6.	Poverty, livelihoods/jobs

"Just look at that," said Bablu Pandey, student and guide, pointing to a half-burnt corpse bobbing in the Ganga. "That happened because there was no electricity, so the crematorium (set up in 1984 to cut down strain on the river) didn't work. The family must have had to burn the body on the ghat and probably didn't have enough money to pay for the wood. This is what our city has been reduced to."

Air quality history of Varanasi

Varanasi as a non-attainment NCAP city consistently appears in top polluted cities of India. The concentration of particulate matter is growing at the highest rate in Varanasi (1.9 µg/m³), which has taken the PM_{2.5} exposure up by 28.5 µg/m³ in the last 17 years, which is three times the WHO annual standards.

In February 2019, a study by IIT-Kanpur and Shakti Foundation showed Varanasi suffered poor air quality for 70% of the days between October-November 2018 with PM_{2.5} levels crossing 170 microgram/m³. WHO ranked Varanasi on 3rd spot in the world based on data till 2016 compiled in 2018.

The Air Quality Index (AQI) for Varanasi in November 2017 was at an alarming 491, just nine short of 500 that indicates a "public health emergency" as per Central Pollution Control Board (CPCB). This was much worse than Delhi's AQI of 468 that day. PM_{2.5} was the major pollutant.

CPCB data, released in 2015, ranked the air of Varanasi as one of the most toxic in the country with zero 'good' quality days in the year.

UPPCB's Varanasi Regional Officer Anil Kumar Singh added that Varanasi has no polluting industry around, and it (pollution) is because most of its roads are dug up and drains are being constructed, so there is heavy civil construction going on. This is the reason of high bad AQI value. "Sulphur dioxide and nitrogen oxides are all under control," he added.

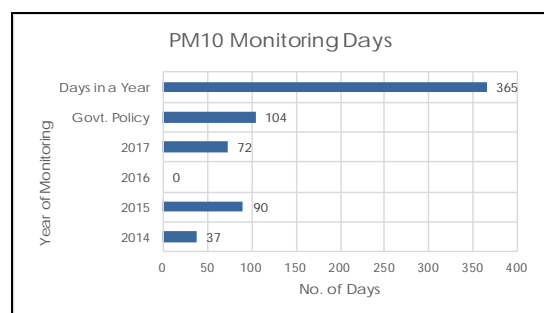
Number of air quality monitoring stations – Varanasi as an NCAP city has 2 continuous monitoring stations (CAMS) reporting data for all types of pollutants ³ and 3 manual stations reporting data on PM10, SO₂ and NO₂.

PM10 microgram/m³ (as per CPCB)

2014	2015	2016	2017	CPCB safe limit	WHO safe limit
NA	NA	NA	77	60	20



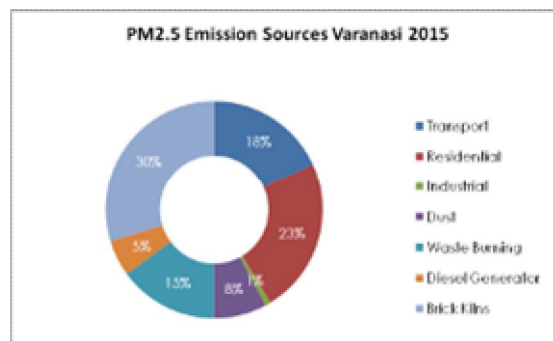
This graph indicates the average of PM10 pollutant recorded by the operating stations in a city in the indicated year, as reported by CPCB. When data is missing it is indicated as zero.



Government policy is to monitor air quality twice a week, that is, 104 days in a year of 365 days. This graph indicates on an average how many days in a year all the stations in a city have monitored the pollutants PM10, NO₂ and SO₂, as reported by CPCB. That way, data is not available for more than the number of days indicated. When monitoring is not done, it is indicated as zero.

Sources of pollution

1.	Vehicles
2.	Industry, diesel generators & brick kilns
3.	Domestic cooking & heating
4.	Garbage burning
5.	Cremation fires
6.	Urban air-shed pollution from surrounding regions



Source: www.urbanemissions.info

"The city has an estimated 31% of the annual PM2.5 pollution (in 2015) originating outside the urban air-shed, which strongly suggests that air pollution control policies in the Indo-Gangetic plain need a regional outlook. The city's infrastructure is inadequate to keep up with the increase in population and visitors, especially with the solid waste management. Much of the waste is either burnt, or dumped in landfills or the river. By 2030, the vehicle exhaust emissions are expected to remain constant, if and only if, Bharat 6 fuel standards are introduced nationally in 2020, as recommended by the Auto Fuel Policy. However, biomass and coal burning to provide warmth in the winter will still be an issue by 2030." - UrbanEmissions.Info.

Yogeshwar Ram Mishra, former District Magistrate of Varanasi, pressed the need to act instead of focusing on gathering more data. "I don't think we need more data to know that there is a problem. Indo-Gangetic plain is most fertile and we find that our position is very bad when it comes to pollution. You go to any ghaat (riverbank) and without any technology you would know that the situation is bad. What we need are solutions and what we normally find is that redressal parts in various studies are not consistent."

Impacts of air pollution on health

The research Global Burden of Disease Study 2017 by Lancet says air pollution is now the second largest cause of pre-mature deaths in India after cardio-vascular diseases. In the 1990s, air pollution was the third largest cause of such deaths in India. The study said that Uttar Pradesh had the second-highest disease burden linked directly to air pollution among all states as of 2016, after Rajasthan.

In Varanasi, an increase in respiratory diseases has been reported from 2013:

- Bronchial allergies and asthma
- Chest infections
- Allergic rhinitis, sinusitis,
- Skin allergies, urticaria
- COPD
- Pneumonia

Ghanshyam, regional officer of the SPCB, said, "Pollution level in Varanasi is still three times more than the danger mark set by the central government. During Diwali (2016), it went up to five times higher than the danger mark. As per the latest data, the PM10 has reached 167 Air Quality Index (AQI)." He said, "In such a situation, everyone in Varanasi may begin to experience health problems, particularly children and senior citizens."

Rohit Tandon who runs a shop in the Chowk area said, "my cough is a continuous problem. Every 2nd person in the area suffers from allergies and chest congestion. Initially we were happy to be in the PM's constituency but so far there is no impact."

Dr Pradeep Jindal, a paediatrician in Sagra, Varanasi says the increase in respiratory illnesses among children could be as high as eight fold in the last 22 years. "There is dust on all sides of the roads, very high emission load from vehicles along with Nagar Nigam setting trash on fire."

Dr R N Vajpayee, a pulmonologist and chest physician, says, "cases of asthma and breathlessness have gone up by 20-25%.. but what I find most common in Varanasi is most people suffer from allergies and its probably linked to pollution. Skin allergies are also common – Urticaria is on the rise."

City stakeholder actions to address air pollution

By NGOs -

Yoga with Pollution Mask

To draw attention towards high air pollution levels, a group from Climate Agenda performed "asanas" at the Shivala Ghat with masks on their faces at an event held on the International Day of Yoga. All participants had put on masks, not only to prevent themselves from the poor air quality, but also to create awareness among the people.

Varanasi Chokes

IndiaSpend.com released a report 'Varanasi Chokes' in collaboration with CEED and Care4Air highlighting that people in the city of Prime Minister's constituency did not get to breathe 'good' quality air even for a single day in 2015, as per CPCB. In comparison, Delhi had 24 'good' air days in 2015. Essentially, the report highlighted that lack of adequate air quality monitoring infrastructure in Varanasi and other cities in the Indo-Gangetic Plan leads to lack of focus on controlling emissions in the region. Compared to 13 continuous monitoring stations in Delhi back then, Varanasi had only 1 station.

The report also quotes doctors and patients on rising pollution.

CEED in collaboration with Banaras Hindu University released another report 'Vibrant Varanasi, Transformation through Solar Rooftop' with a roadmap to 300MW solar generation by 2025.

Know What You Breathe

The researchers at CEED and IIT Delhi have conducted research - titled "Know What You Breathe" - that estimated air pollution contributed to about 2,500 premature deaths in Patna, 500 in Gaya and 700 in Muzaffarpur through cardiovascular and respiratory diseases every year between 2000 and 2016. "The largest share of premature death burden in Agra, Gaya, Kanpur, Gorakhpur, Lucknow, Patna, Muzaffarpur and Varanasi is attributed to acute lower respiratory infections, primarily emanating from residential (cooking, heating and lighting) sources, followed by industry, transport and energy sectors. Chronic obstructive pulmonary diseases (COPD) are the cause of the largest share of premature deaths in these cities," says the study. The study recommends to concerned state governments strengthening public awareness and expediting the process to replace solid fuels with cleaner fuels, besides coordinating with each other to prepare an efficient regional clean air action plan.

Whistleblower's Trust

According to a post-Diwali study conducted by the Whistleblower Trust, a citizens' organisation that runs a state-wide campaign called Care4Air, air quality data collected from 13 major locations of the city on October 31, 2016 showed that "PM 2.5 particles rose much above even the alarming levels, and in certain parts of the city like Sonarpura, Machhodari, Lanka, Godauliya and Sarnath, the levels were 15 to 20 times above the norms set by the government of India." In a press meet, members of the trust said, "The Centre has set a standard of 60 micrograms per cubic metre (mpcm), but in the Sonarpura area the PM 2.5 reached as high as 999 mpcm."

Keeping the alarming data in mind, prominent members of various political parties came together at an event organised by the trust along with other concerned citizens in Varanasi on December 9, 2016. The event saw the launch of an environment manifesto, the first by a civil society initiative in Uttar Pradesh. Representatives of political parties present at the occasion – Ravindra Jaiswal and Jyotsana Srivastava (BJP MLAs), Ajay Rai (Congress MLA), Piyush Yadav (Samajwadi Party's district in-charge), Deepchand Chaudhari (Bahujan

Samaj Party district president), Ramjanam (state general secretary, Swaraj Abhiyan) and Sanjeev Singh (Aam Aadmi Party's eastern Uttar Pradesh convener) – expressed their support for the environment manifesto and pledged to include issues pertaining to the environment in their forthcoming election manifestos.

By Industry -

EIL will invest Rs 1,750 crore in phased manner with the launch of 250 charging stations, 1,000 battery swapping stations in 20 cities of Uttar Pradesh.

Actions & policies by state government

2018 November

UP government identified 10 cities including Kanpur, Varanasi, Lucknow, Agra for 100% Multi-Modal Electric Public Transport (passenger and goods) by 2030. The state government released EV Manufacturing Policy 2018 to incentivize EV battery and charging infrastructure development in the state through public and private interventions. The policy also includes incentives to buyers for creating demand.

2017 November

UP CM Yogi Adityanath took note of rising pollution in the state and directed municipal corporations to ensure garbage and farm waste is not burnt, dust is controlled and traffic movement is smooth.

Bibliography

City profile, major issues of public concern and people's voices

<http://spa.ac.in/writereaddata/EXECUTIVE-SUMMARY-VARANASI.pdf>
https://www.business-standard.com/article/economy-policy/development-the-issue-in-varanasi-112020900104_1.html
<https://economictimes.indiatimes.com/news/economy/infrastructure/smart-city-plan-of-varanasi-identifies-traffic-congestion-and-encroachment-as-major-problems/articleshow/50226443.cms>
<https://economictimes.indiatimes.com/news/environment/pollution/zero-sewer-discharge-in-ganga-in-varanasi-by-nov/articleshow/67817061.cms>
<https://www.sciencedirect.com/science/article/pii/S1512188716301142>
<https://timesofindia.indiatimes.com/city/varanasi/Sewage-management-system-in-Varanasi-inadequate/articleshow/45799362.cms>
<https://timesofindia.indiatimes.com/city/varanasi/Varanasi-faces-garbage-disposal-crisis/articleshow/51638444.cms>
<http://population.city/india/varanasi/>
http://cpcb.nic.in/upload/Downloads/AQI_Bulletin_20181224.pdf

Air quality history of Varanasi

<http://www.urbanemissions.info/india-apna/varanasi-india/>
<https://www.ndtv.com/india-news/3-cities-beat-delhi-to-indias-most-polluted-list-patna-at-top-spot-1993210>
[https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)

https://www.who.int/airpollution/data/aap_air_quality_data_base_2018_v14.xlsx?ua=1
<http://cpcb.nic.in/namp-data/>
<https://www.indiatimes.com/news/india/pm-modi-s-constituency-varanasi-is-the-most-polluted-among-41-cities-in-the-country-333481.html>
<http://urbanupdate.in/polluted-city/>
<https://www.downtoearth.org.in/news/air/poor-air-quality-a-major-cause-of-premature-deaths-60634>
<https://www.downtoearth.org.in/news/air/poor-air-quality-a-major-cause-of-premature-deaths-60634>

Sources of pollution

<http://www.urbanemissions.info/india-apna/varanasi-india/>
<https://www.indiaspend.com/87-of-indian-vehicle-owners-ready-to-buy-electric-vehicles-if-that-reduces-pollution-survey-98547/>
http://shodhganga.inflibnet.ac.in/bitstream/10603/166996/8/08_chapter%203.pdf
<https://timesofindia.indiatimes.com/city/varanasi/Burning-of-garbage-adds-to-air-pollution-in-Varanasi/articleshow/17500543.cms>
https://www.business-standard.com/article/pti-stories/waste-emissions-dust-cause-air-pollution-in-indian-cities-experts-118050200836_1.html
<https://thewire.in/environment/varanasi-air-pollution>

Impacts of air pollution on health

<https://www.ncbi.nlm.nih.gov/pubmed/23697693>
<https://timesofindia.indiatimes.com/city/varanasi/No-good-air-quality-day-in-Varanasi-last-year-activists-want-air-pollution-to-be-election-agenda-in-UP/articleshow/55935102.cms>
<https://timesofindia.indiatimes.com/city/varanasi/No-good-air-quality-day-in-Varanasi-last-year-activists-want-air-pollution-to-be-election-agenda-in-UP/articleshow/55935102.cms>

City stakeholder actions - NGOs

<https://timesofindia.indiatimes.com/city/varanasi/No-good-air-quality-day-in-Varanasi-last-year-activists-want-air-pollution-to-be-election-agenda-in-UP/articleshow/55935102.cms>
<https://www.indiatoday.in/pti-feed/story/varanasi-activists-performs-asanas-with-masks-on-to-draw-attention-towards-air-pollution-1266421-2018-06-21>
<https://economictimes.indiatimes.com/news/science/varanasi-can-generate-676-mw-from-solar-rooftop-panels/articleshow/58764549.cms?from=mdr>
<https://thewire.in/environment/varanasi-air-pollution>
<https://www.downtoearth.org.in/news/air/poor-air-quality-a-major-cause-of-premature-deaths-60634>

City stakeholder actions – Industry

<https://economictimes.indiatimes.com/industry/auto/auto-news/essel-plans-to-invest-rs-1750-cr-to-set-up-electric-vehicle-charging-infrastructure/articleshow/65186147.cms?from=mdr>

City stakeholder actions – state government

https://niveshmitra.up.nic.in/Documents/DraftPolicies/Uttar_Pradesh_Electric_Vehicles.pdf
<https://swachhindia.ndtv.com/chief-minister-yogi-adityanath-gets-serious-air-pollution-orders-measures-tackle-14843/>

Political Leaders Position and Activities on Constituency Air Quality



MP: Narendra Modi

Member of Parliament since 2014
Lok Sabha Constituency: Varanasi
Party: Bhartiya Janta Party (BJP)
Portfolio: Prime Minister of India

MP's statements on air quality

Year – 2018

Referring to the arrival of the first inland container vessel in Varanasi, the Prime Minister said that the inland water-way would save time and money, reduce congestion on roads, reduce the cost of fuel, and reduce vehicular pollution.

Blaming the previous governments for the state of the pilgrim city, Prime Minister Narendra Modi today said the city was in neglect when the Samajwadi Party was in power in Uttar Pradesh. "Four years back there were overflowing sewers, dangling cables, and traffic jams all over." He said he wanted to see it (Varanasi) developed as a place with an ancient soul but in a modern shell so projects related to roads, transport, cooking gas, beautification, cleanliness and other schemes have been inaugurated to help people living here.

State government's statements on air quality

Year – 2017

Observing that traffic jam leads to air pollution, the Chief Minister Yogi Adityanath said, "Proper traffic operations and movement should be ensured, so that there is no traffic jam. To reduce air pollution, old vehicles should be reviewed, and if needed they will be removed."

Opposition parties' statements on air quality

Year – 2018

"The moot issues of Varanasi still remain. People of the city say: Kyoto to nahi ban paya par toto ban gaya (People of Varanasi say we could not become Kyoto but have become toto — a term for a battery-operated auto-rickshaw)," Ajay Rai, a former Congress MLA who lost to Modi from Varanasi in 2014, told ET, referring an Indo-Japanese partnership to transform Varanasi into a Kyoto-style smart city. There is a huge sewage and drinking water problem in Varanasi. Roads are dug up all over and traffic is perpetually congested."

City-focussed actions announced/taken by MP

Year – 2018

The PM focused on the beautification and renovation of all bathing ghats on the River Ganga and lighting them up with LEDs, widening and re-doing major roads of Varanasi with LED lighting, underground electricity cabling being attempted in the entire city and new sewage treatment plants.

PM laid foundation of Rs 900 crore worth projects under Smart City Mission for Varanasi to improve connectivity and road infrastructure.

Actions & policies by MP's union government

Year – 2019

NCAP with Rs. 300 crore launched as a mid-term, five-year action plan from 2019 to reduce air pollution by 20-30% by 2024 in all 102 non-attainment cities, taking 2017 as the base year.

Year – 2018

Niti Aayog proposed a 15-point action plan to combat air pollution, titled, Breathe India.

National Auto Policy released including EV, CNG, biofuels, and hydrogen vehicles, though without timelines and no link with EV 2030 vision, FAME II or Make in India. Under the FAME II India scheme around Rs. 5,500 crore over a five year period has been set aside to provide grants for all kinds of electric vehicles.

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Government of India announced FAME scheme under NEMMP to promote electric vehicles. Instead, EV manufacturers and sellers were expecting a policy and regulatory framework laying out a roadmap for creating an ecosystem comprising, most importantly, charging stations, as well as rolling out incentives for both manufacturing and purchasing EVs.

Bibliography

MP's statements on air quality

<https://economictimes.indiatimes.com/news/politics-and-nation/pm-modi-blames-previous-governments-for-the-state-of-varanasi-says-change-visible-now/articleshow/64991123.cms>
<http://pib.nic.in/newsite/PrintRelease.aspx?relid=184709>

State government's statements on air quality

<https://swachhindia.ndtv.com/chief-minister-yogi-adityanath-gets-serious-air-pollution-orders-measures-tackle-14843/>

Opposition parties' statements on air quality

<https://economictimes.indiatimes.com/news/politics-and-nation/kashi-in-4-years-not-quite-kyoto-but-got-rs-30000-crore-bonanza/articleshow/64981283.cms>

City-focussed actions announced/taken by MP

<https://economictimes.indiatimes.com/news/politics-and-nation/kashi-in-4-years-not-quite-kyoto-but-got-rs-30000-crore-bonanza/articleshow/64981283.cms>
<https://accommodationtimes.com/development-of-smart-city-varanasi-govt-to-spend-over-rs-900-cr/>

Actions & policies by MP's union government

<https://www.iamrenew.com/policy/little-late-govt-earmarks-300-crores-fight-air-pollution-102-cities/>
http://niti.gov.in/writereaddata/files/document_publication/BreatheBooklet11thJuly.pdf
https://dhi.nic.in/writereaddata/UploadFile/DHI-NAB-Auto%20Policy%20Draft%20Document_vDRAFT.pdf
<https://economictimes.indiatimes.com/news/environment/pollution/four-international-agencies-to-join-govts-effort-to-tackle-air-pollution-in-102-cities/articleshow/66548971.cms?from=mdr>
<http://pib.nic.in/newsite/PrintRelease.aspx?relid=158793>
[http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20\(2\).pdf](http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20(2).pdf)
<https://www.thehindu.com/opinion/op-ed/advancing-bs-vi-emission-norms/article25438769.ece>
<https://archive.indiaspend.com/cover-story/0-02-new-cars-are-electric-heres-what-govt-must-do-to-reach-all-electric-goal-78119>
<https://economictimes.indiatimes.com/news/environment/pollution/govt-has-made-serious-efforts-to-curb-air-pollution-govt-after-who-report/articleshow/64003558.cms?from=mdr>

Gaya

The city deserves to be smart for her peoples.



©Santosh/HT Photo

Located in the southern part of Bihar state, Gaya has been a gateway to the region and hub of commercial and tourism activities. G.T. Road and other highways pass through the district bringing heavy vehicles traffic from the west while the international airport services travellers for religious tourism. Population of over 5 lakh makes it 2nd largest city of the state. Stone cutting for construction, clay statue-making, incense stick cottage industry, powerloom/handloom, engineering works and chemicals based MSMEs have been the main source of livelihoods besides tourism, agriculture and agro processing units.

While people of Gaya have been recognizing and complaining about the various pollution issues, even then environmental degradation has not become a political issue or election agenda – this is because other issues take primacy, stalling of local administration processes due to demonetization, and/or top-down as well as bottom-up political apathy.

Still to improve the quality of life, the local stakeholders have been pushing for Gaya to be included in various prestigious national schemes such as Smart Cities, NCAP, AMRUT, and HRIDAY, of which they managed with all except the Smart City project, due to local dynamics.

Featuring in the non-attainment cities list of the NCAP, Gaya (including Bodhgaya) has only 1 air quality monitoring station. CPCB report of October 2018 indicates PM_{2.5} level has gone 3 times the fixed standard.

Vital Statistics of Gaya

Census 2011	Estimated 2019	WHO Ranking	AQI Dec 2018*
474,093	552,639	4	318 (very poor)

*AQI: Air Quality Index by Central Pollution Control Board

Major public issues of Gaya & voices

1.	Law and order enforcement
2.	Inadequate healthcare and medical facilities
3.	Poverty, livelihoods, and education
4.	Public spaces cleanliness, clean drinking water access, drought relief, and sanitation
5.	Illegal sand mining and tree felling*
6.	Urban infrastructure – road condition, traffic congestion, old buildings, electricity supply*

* Air quality and pollution features here as an issue.

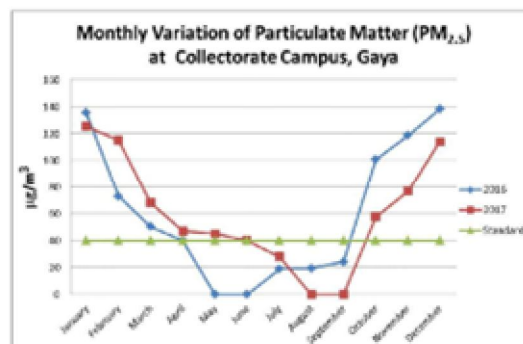
“Gaya deserves to be there.” – former Mayor of Gaya, Soni Kumari, referring to exclusion of Gaya from Smart Cities list.

Blaming the town MLA Prem Kumar, RTI activist Brajnandan Pathak said, “Prem not only represented Gaya in the assembly for the last 25 years, for eight-long years he held important positions including that of urban development department, and still Gaya could not make it to the coveted list (of Smart Cities). The fault to a great extent lies at the MLA’s doorstep.”

Refusing to own responsibility, Prem Kumar said he could not be held responsible as the town did not meet the criteria. At best he can appeal to the Union development minister to relax the criteria.

Air quality history of Gaya

PM_{2.5} and PM₁₀ which come from multiple sources have been identified as the main air pollutant. NO₂ has also been observed at an alarming level linked to vehicular emissions from old vehicles and traffic congestion.

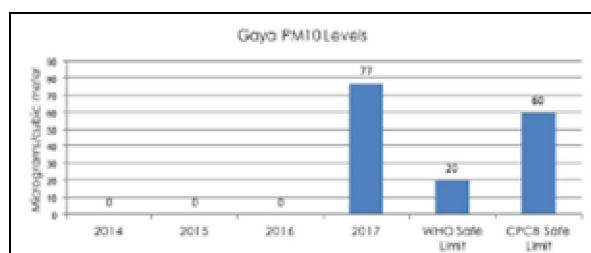


Number of air quality monitoring stations –

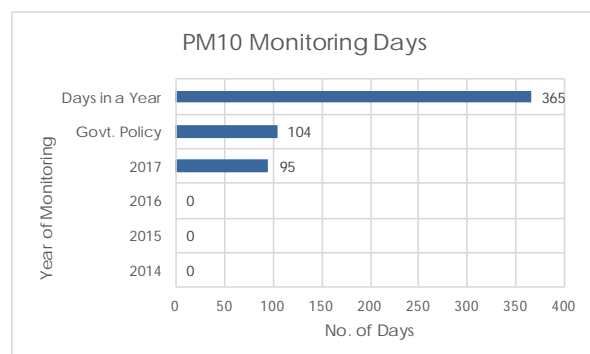
Gaya as an NCAP city has 1 (one) continuous monitoring station (CAMS) reporting data for all types of pollutants⁴ and 1 manual station reporting data on PM_{2.5}, PM₁₀, SO₂ and NO₂ (SO_x & NO_x). The Bihar State Pollution Control Board (BSPCB) has identified the need for at least 12 CAMS for efficient and comprehensive reporting.

PM₁₀ microgram/m³ (as per CPCB)

2014	2015	2016	2017	CPCB safe limit	WHO safe limit
NA	NA	NA	77	60	20



This graph indicates the average of PM₁₀ pollutant recorded by the operating stations in a city in the indicated year, as reported by CPCB. When data is missing it is indicated as zero.



Government policy is to monitor air quality twice a week, that is, 104 days in a year of 365 days. This graph indicates on an average how many days in a year all the stations in a city have monitored the pollutants PM₁₀, NO₂ and SO₂, as reported by CPCB. That way, data is not available for more than the number of days indicated. When monitoring is not done, it is indicated as zero.

Sources of air pollution & stakeholder views

1.	Vehicles
2.	Construction, stone quarrying and road dust
3.	Coal use by dhabas, brick kilns and diesel generator sets
4.	Wood burning for fuel and domestic needs
5.	Garbage burning
6.	Sand mining and dry river dust

4

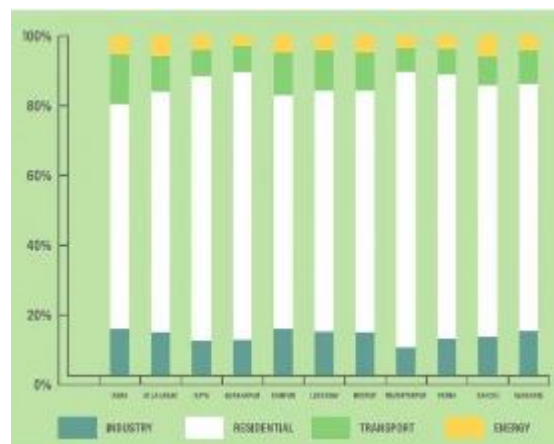
CO, SO₂, NO, NO₂, NO_x, OZONE, PM₁₀, PM_{2.5}, Benzene, Toluene, Xylene, Ethyle Benzene, MP xylene, CH₄, NH₃, HCHO, Hg and more as per CAAQMS guidelines by CPCB

7.	Small businesses pollutants eg – brooms, incense
8.	Crop stubble burning

Sources of air pollution

Centre for Environment and Energy Development (CEED) in collaboration with Indian Institute of Technology, Delhi (IIT-D) conducted a study titled 'Know What You Breathe' in Agra, Allahabad, Kanpur, Lucknow, Meerut, Varanasi, Gorakhpur, Gaya, Patna, Muzaffarpur and Ranchi.

The study said while there are ample sources of PM_{2.5} such as emission from road transport, railway, mining and chemical industrial emission, but the major contributors are residential sources like cooking with biomass and heating of building. "Residential (cooking, heating and lighting) sources have the largest contribution to annual ambient PM_{2.5} concentration in these cities, followed by industry, transport and energy sectors," says the study. The source attribution is presented in this graph -



The research adds that since no city specific emission inventory exists, the researchers have to rely on the regional inventory available at 10 km resolution.

Local administration view:

Uncontrolled construction, brick kilns, crop stubble burning and vehicular pollution are causes.

While admitting air pollution in Gaya and Patna, Bihar State Pollution Control Board (BSPCB) chairman Dr Ashok Kumar Ghosh, however, challenged the WHO report saying, "how can a city be called polluted on the basis of the data related to just one parameter (PM_{2.5})? How can you leave out air pollutants such as carbon monoxide, ozone and petrol emission, among others?"

Stakeholder views:

"The present monitoring station was installed at a point which apparently was the most

polluted part of the city and generalization about the whole town should not be made on the basis of single point data. Non-medical use of plaster of paris should be discouraged. As on date plaster of paris was indiscriminately used for wall smoothing and other decorative purpose.” – Prof Ranjit Verma, V-C of Munger University, former teacher of Chemistry.

“Neither Gaya nor Muzaffarpur — and not even Kanpur or Delhi — produce even half of the pollutants measured in these cities. You have to account for the wind direction. In this region, wind predominantly blows from north-west to east for most of the year, but more so in the winter, carrying along with it pollutants generated elsewhere. Once the pollutants enter the Gangetic region, they get trapped, and remain suspended over the area. Most of the particles measured at Gaya and Muzaffarpur, therefore, are the ones that have been transported from “up-wind” states.” – Prof Sachchidanand Tripathi, an atmospheric sciences expert at IIT Kanpur.

“Instead of clamouring for new laws, focus should be on strict implementation of existing laws to curb pollution. The greatest contributor to air pollution in Gaya are suspended dust particles released by unregulated building construction activities and sand mining. Use of coal by local dhabas and smoke-emitting diesel-driven three-wheelers also make major contribution to city’s pollution.” – Rai Madan Kishore, retired Special Secretary in Bihar state government.

“Water retention in Falgu river bed was a must to prevent upward movement of sand dust that added to Gaya’s air pollution. The business body has already presented a nine-point charter of demands to control air pollution,” – Kaushalendra Pratap, President, Central Bihar Chamber of Commerce.

Residents of Aliganj, Gaya complain that on the directions of the Municipal Corporation, workers burn the waste to make space for new arrivals.

Anand Srivastava, environmental campaigner for Nav Pahchan Welfare Society says: “While campaigning over the years, we figured pollution is not an election issue primarily because of Gaya’s geographical condition. Gaya is a drought-prone area. The drought directly affects agriculture. People want that fixed first. As part of the civil society, we try our best to convince people but our efforts all go vain. The pollution problem becomes almost non-existent in the context of national elections because for this, people don’t vote based on

local issues but rather decide on their MP based on who they want for prime minister.”

Malti Devi, 35, lives in a shanty and prefers coal over the PM Ujjwala Yojana’s gas cylinders, “we are daily wage workers and cannot afford gas cylinders. The government should give it for free or give us regular jobs.”

Impacts of air pollution on health

The research Global Burden of Disease Study 2017 by Lancet says over 33 per cent of deaths in Bihar in 2016 (national figure nearly 27 per cent) occurred because of pollution-related diseases. Air pollution is now the second largest cause of pre-mature deaths in Bihar after cardio-vascular diseases. In the 1990s, air pollution was the third largest cause of such deaths in India.

In the long time in which the authorities have been trying to figure out how to solve this pollution problem, Dr Faizur Ahmed of the Magadh Medical Hospital has seen the people of Gaya suffer successive bouts of whooping cough, sneezing, itching, eye problems, along with several types of allergy. In Gaya, there has been an increase in:

- Tonsillitis
- Allergic pharyngitis
- Bronchitis
- Whooping cough, sneezing, itching, eye problems
- Various allergies

According to Dr Subhash C Jha of the PMCH’s TB and Chest department, “patients suffering from COPD and respiratory infections have a high chance of turning into ICU cases. We often advise COPD patients to move to locations that have lower levels of air pollutants. There had been an increase in the incidence of tonsillitis, allergic pharyngitis and bronchitis. If the pollutants enter the lungs, there is an increase in the incidence of bronchiolitis, pneumonia and lung cancer.”

“In Gaya, PM 2.5 levels inside anganwadis, where solid fuel was used for cooking purposes, were found as high as 2524 $\mu\text{g}/\text{m}^3$, which is more than 42 times higher than the permissible safe standards for ambient air quality! Large scale usage of these fuels in households not only affects the health of women and children, but also influences outdoor air quality negatively.” – Centre for Science and Environment (CSE)

“Till about 30 years back, 90% of cancer patients were smokers. The percentage of smokers among cancer patients has now come down to about 50% and non-smokers

inhaling highly polluted air develop cancer. Children are especially vulnerable to the toxic air. CEED research has estimated that over 27% of premature deaths in children in Bihar are caused by acute lower respiratory infections precipitated or worsened by air pollution." - Dr Arvind Kumar, Lung Care Foundation.

"If National Air Quality Guideline is achieved, the premature mortality burden would reduce by over 20 per cent in Agra, Kanpur, Lucknow and Meerut and it can be further brought down to 10-20 per cent in other cities such as Allahabad, Gaya, Gorakhpur, Muzaffarpur, Patna and Varanasi," said Sagnik Dey, Associate Professor at the Centre for Atmospheric Sciences in Indian Institutes of Technology, Delhi.

When asked about factories like his own making brooms from inside his house adding to the pollution levels of the city& causing allergy to his son, Manoj Verma, 51, said he had made plans to shift the factory to the city outskirts in early 2017. "But the sudden demonetisation in 2016 derailed our plans," he adds.

City stakeholder actions to address air pollution

People complain liberally about pollution, mostly in relation to traffic, but have never considered it an issue pressing enough to warrant mention in the election arena.

By NGOs, Educational & Scientific Institutions

Know What You Breathe

The researchers at CEED and IIT Delhi have conducted research - titled "Know What You Breathe" - that estimated air pollution contributed to about 2,500 premature deaths in Patna, 500 in Gaya and 700 in Muzaffarpur through cardiovascular and respiratory diseases every year between 2000 and 2016. "The largest share of premature death burden in Agra, Gaya, Kanpur, Gorakhpur, Lucknow, Patna, Muzaffarpur and Varanasi is attributed to acute lower respiratory infections, primarily emanating from residential (cooking, heating and lighting) sources, followed by industry, transport and energy sectors. Chronic obstructive pulmonary diseases (COPD) are the cause of the largest share of premature deaths in these cities," says the study. The study recommends to concerned state governments strengthening public awareness and expediting the process to replace solid fuels with cleaner fuels, besides coordinating with each other to prepare an efficient regional clean air action plan.

Urging Gaya to be in NCAP

Centre for Environment and Energy Development (CEED) organised deliberations with stakeholders, domain experts and state government on issue of rising level of air pollution in Patna, Muzaffarpur, and Gaya. CEED urged the state and union government to include these in NCAP non-attainment cities list and has released annual ambient air quality reports that highlighted the high levels of pollution in the year 2017. Nav Pehchan Welfare Society had also been pushing for the inclusion of Gaya in the National Clean Air Programme (NCAP), which aims to cut emission levels by 30 percent by 2024. Here, a hurdle was presented by the lack of sector-wise emission data.

Plantation for proactive youth

Ranjan Mistry, a college dropout, in 2016 founded the organisation Plant Eco Circle that tries to succeed the awareness lectures for school and college students by a plantation drive to achieve the goal of creating proactive youth.

By State Pollution Control Board

Year - 2018

BSPCB has discussed guidelines about good practices of waste disposal with Municipal Corporation, including imposing fine on waste burning. Still waste continues to be dumped and burnt at Aliganj.

BSPCB has written to all the 38 district magistrates in Bihar to take steps (city-specific action plan) in curbing air pollution levels, especially in Patna, Muzaffarpur and Gaya, where air quality has worsened alarmingly of late. The steps specifically include action on burning of waste, tyres and crops; vehicular pollution checks; construction dust.

BSPCB is working with state transport department to ensure stringent vehicle pollution checks through PUC testing centres at petrol pumps. An app is being prepared for citizens to report any kind of violation causing air pollution.

BSPCB has prepared an action plan for Gaya as a non-attainment city that has a range of actions to be implemented from immediate effect to long-term till 2023. The plan recognizes the need for at least 12 air quality monitoring stations against 1 at present that is proving to be insufficient. BSPCB has formulated Graded Response Action Plan (GRAP) for Gaya in consistency with GRAP prepared for Delhi NCR by CPCB that will come into play as emergency response when the air quality drops in the city.

By Local City Administration

Year - 2018

District Magistrate Abhishek Singh chaired meeting of Deputy Mayor, Municipal Commissioner, environmentalists & business bodies to discuss immediate steps to curb air pollution in Gaya. Decisions were to manage construction and stone crushing dust, garbage burning, coal/wood use by restaurants/eateries, and provide electric crematorium (Ganga Action Plan). The DM asked BSPCB for a detailed study to identify the causes of the high air pollution level in the otherwise non-industrial township, and an integrated pollution management strategy.

Year - 2016

Municipal Corporation served notices to factories for shifting away from town, though the process was stalled by demonetization.

Actions & Policies by State Government

Year - 2018

Sushil Kumar Modi, Deputy CM of Bihar, who also holds the forest and environment portfolio, said brick kilns which do not have 'zig-zag technology' will be banned from September 1, 2018. The technology reduces coal consumption by 2 tonne per one lakh bricks made. BSPCB estimates 80% brick kilns have adopted this technology, which has lower levels of emissions.

"Zigzag design for brick kilns has been used since the 1970s and is a well-tested technology. In West Bengal, for instance, 2,500-3,000 brick kiln owners have been using it for years without waiting for any government order," says Sameer Maithel, director of Green-tech Knowledge Solutions, a clean energy research and advisory firm based in Delhi. "Bihar too has been trying to make its kilns shift to zigzag technology since 2016. As per the last order passed by the state government on August 30, 2018, all kilns must shift to the cleaner technology by August 31, 2019. Of about 6,500 brick kilns in the state, 450-500 have converted to zigzag technology so far. But despite the cost and labour issues, most kiln owners are keen to shift to zigzag. According to our survey conducted around Patna, about 65% of those who made the transition found that the zigzag technology was more fuel efficient and produced better bricks," Maithel adds.

The Deputy CM also sought changes in rules and regulations concerned to allow setting up of captive biomedical waste plants by big hospitals and medical colleges, and giving states the power to ban use of motor vehicles older than 15 years.

Bihar government announced that it is coming up with an "electric vehicles policy" to promote manufacturing and use of such automobiles in the state.

Year - 2017

Bihar government announced a new policy for 3400MW power from renewable/non-fossil fuel sources by 2022.

Year - 2015

Bihar government released an action plan for climate change that involves transition in transport and energy systems to reduce emissions that will benefit the air quality also.

Bibliography

City profile, major issues of public concern and people's voices

http://dcmsme.gov.in/dips/gaya_bihar.pdf
http://cpcb.nic.in/upload/Downloads/AQI_Bulletin_20181030.pdf
<http://envfor.nic.in/sites/default/files/press-releases/NCAP%20Report%20Full.pdf>
http://cpcb.nic.in/uploads/Stations_NAMP.pdf
<https://www.jagran.com/bihar/gaya-public-facing-problem-for-water-blocked-and-dirty-place-18126759.html>
<https://timesofindia.indiatimes.com/city/patna/Groundwater-in-Gaya-found-unfit-for-drinking/articleshow/51297571.cms>
<https://www.firstpost.com/india/in-gaya-worlds-fourth-most-polluted-city-political-apathy-keeps-environmental-degradation-from-becoming-an-election-issue-6140441.html>
<https://timesofindia.indiatimes.com/city/patna/Exclusion-from-Smart-City-list-hurts-Gayaites/articleshow/48715879.cms>
<https://www.telegraphindia.com/states/bihar/big-plan-for-twin-cities/cid/1352281>
<https://www.dailypioneer.com/2015/india/26-bihar-cities-to-be-developed-under-amrut.html>

Air quality history of Gaya

<https://www.who.int/airpollution/data/cities/en/>
<https://app.cpcbccc.com/ccr/#/caaqm-dashboard-all/caaqm-landing>
<http://cpcb.nic.in/manual-monitoring/>
[https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)
https://www.who.int/airpollution/data/aap_air_quality_data_base_2018_v14.xlsx?ua=1
<http://cpcb.nic.in/namp-data/>
<http://www.bspcb.bih.nic.in/Gaya.pdf>

Sources of pollution & stakeholder views

<https://timesofindia.indiatimes.com/city/patna/patna-5th-gaya-4th-most-polluted-who/articleshow/64005067.cms>
<https://www.downtoearth.org.in/news/air/poor-air-quality-a-major-cause-of-premature-deaths-60634>
<https://timesofindia.indiatimes.com/city/patna/illegal-sand-mining-causing-air-pollution-in-gaya-say-experts/articleshow/64966442.cms>
<https://indianexpress.com/article/explained/north-india-has-the-foulest-air-in-the-world-says-the-who-this-is-why-5160741/>
<https://www.indiaspend.com/87-of-indian-vehicle-owners-ready-to-buy-electric-vehicles-if-that-reduces-pollution-survey-98547/>
<https://www.firstpost.com/india/in-gaya-worlds-fourth-most-polluted-city-political-apathy-keeps-environmental-degradation-from-becoming-an-election-issue-6140441.html>

Impacts of air pollution on health

<https://timesofindia.indiatimes.com/city/patna/patna-5th-gaya-4th-most-polluted-who/articleshow/64005067.cms>
<https://www.telegraphindia.com/states/bihar/breath-of-toxic-air/cid/1442827>
<https://www.firstpost.com/india/in-gaya-worlds-fourth-most-polluted-city-political-apathy-keeps-environmental-degradation-from-becoming-an-election-issue-6140441.html>
<https://www.downtoearth.org.in/news/air/if-you-are-in-patna-you-are-exposed-to-very-high-levels-of-pm2-5-concentration-56759>

City stakeholder actions – NGOs & Educational Institutions

<https://www.telegraphindia.com/states/bihar/breath-of-toxic-air/cid/1442827>
<http://ceedindia.org/ceed-urges-the-government-to-include-bihar-cities-in-the-national-clean-air-programme/>
<https://www.thebetterindia.com/103710/ranjan-mistry-plant-eco-circle-bihar/>
<https://www.firstpost.com/india/in-gaya-worlds-fourth-most-polluted-city-political-apathy-keeps-environmental-degradation-from-becoming-an-election-issue-6140441.html>

City stakeholder actions – State Pollution Control Board (BSPCB)

<https://www.firstpost.com/india/in-gaya-worlds-fourth-most-polluted-city-political-apathy-keeps-environmental-degradation-from-becoming-an-election-issue-6140441.html>
<https://timesofindia.indiatimes.com/city/patna/rising-pollution-bihar-dms-asked-to-keep-tabs-on-air-quality/articleshow/66797783.cms>
<http://www.bspcb.bih.nic.in/Gaya.pdf>

City stakeholder actions – Local City Administration

https://timesofindia.indiatimes.com/city/patna/gaya-dist-admn-mulls-strategy-to-curb-pollution/articleshow/66887050.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst
<https://www.firstpost.com/india/in-gaya-worlds-fourth-most-polluted-city-political-apathy-keeps-environmental-degradation-from-becoming-an-election-issue-6140441.html>

City stakeholder actions – State Government

https://www.business-standard.com/article/pti-stories/brick-kilns-in-bihar-sans-zig-zag-tech-to-be-banned-from-sept-1-dy-cm-118060400514_1.html
<https://energy.economictimes.indiatimes.com/news/renewable/bihar-announces-mega-renewable-power-policy-to-add-3400-mw-in-five-years/58895992>
<https://www.telegraphindia.com/states/bihar/e-vehicle-policy-to-drive-state-growth/cid/1442983>
<https://www.downtoearth.org.in/news/environment/74-brick-kilns-in-delhi-ncr-have-not-shifted-to-cleaner-technology-61624>
<http://www.moef.gov.in/sites/default/files/Bihar-State%20Action%20Plan%20on%20Climate%20Change%20%282%29.pdf>

Political Leaders Position and Activities on Constituency Air Quality



MP: Hari Manjhi

Member of Parliament since: 2009
Lok Sabha Constituency: Gaya
Party: Bhartiya Janta Party (BJP)
Current Portfolio: Member, Consultative
Committee, Ministry of Coal

MP's statements on air quality

Year – 2019

The MP recently admitted to a reporter that, he remembers "some WHO report" and that right now he doesn't recall the steps taken to curb pollution".

State Government's statements on air quality

Year – 2018

The CM of Bihar and leader of JD(U), Nitish Kumar, expressed concern over the state capital's dirty air, but said that the location of the air quality monitoring station in the city was not suitable for proper assessment of pollution levels. He also suggested that more such monitoring stations were needed in the city to provide a clearer picture.

The chief minister has already issued directions to all district magistrates in the state to check this pernicious practice of crop stubble burning. "Previously, crop stubble was burnt in some parts of the Rohtas area. It has now spread to other districts. Crop residue is now being burnt in agriculture fields near Patna. Nobody knows who publicised this practice here, but its aggravating pollution," said the CM.

Nitish hit out at the practice of families buying several vehicles and questioned the need for having many automobiles in a household. "What is the need to buy four vehicles for one family, apart from flaunting their status? The number of vehicles has shot up so much that it is adding to pollution. But there is freedom to buy vehicles, so how much can we control this trend?" he asked.

The Chief Minister also pointed that people were tinkering with the environment and quoted Mahatma Gandhi to say: "The earth can fulfil every need of human beings, but not their greed."

"The situation is not so bad as it has been mentioned in the WHO report. There is a difference between the data given by WHO and the data furnished by the BSPCB. We have written to CPCB, asking it to share details about the statistics given to WHO. The WHO figures were average of 6 years and not current PM2.5 concentrations," said Sushil Kumar Modi, Deputy Chief Minister and Minister of Environment, Government of Bihar in May 2018.

"Air quality plays a critical role in the health of people. Over the years, there is a growing concern on the deteriorating air quality. Given the pace of urbanization, which is often unplanned, there is an increase in pressure on cities and towns to meet the growing demands of the urban population. This has an adverse effect on the environment, affecting air and water quality. Such adverse effects of unplanned urbanization need to be addressed with robust scientific tenacity." – Sushil Kumar Modi, Deputy Chief Minister, Bihar (in a foreword for assessment study of Patna air quality, February 2018).

"We understand that Bihar is one of the most-affected states in India in terms of mortality because of rising air pollution as per the Lancet Commission report. Our department understands the urgency of the situation and is also willing to take steps to reduce the health impact caused by deteriorating air quality. We have prioritised it for collaborative and real action and are also looking into gaps that need to be addressed urgently," said State Health Minister, Mangal Pandey in his address at the event 'Safeguarding Life from Air Pollution', organised by the Centre for Environment and Energy Development (CEED) in collaboration with All India Institute of Medical Sciences (AIIMS) Patna. While admitting that the government and NGOs had not been able to do the required level of work to curb pollution, he added, "Forests, transport, road construction, education and health department officials as well as representatives

of different NGOs should sit together and hold deliberations on ways to control pollution."

Other parties' statements on air quality

Year – 2015

"I enjoyed horse-riding which I have done after many years...I had been doing it regularly years ago," said Tej Pratap Yadav, former Environment and Health Minister of Bihar from RJD party. He also listed the environmental benefits of horse-riding saying it helps in containing pollution and referred to growing air pollution in Patna and other towns in Bihar due to increasing vehicular traffic.

Parliamentary initiatives by MP

Year – 2016

The MP attended the meeting of the Parliamentary Consultative Committee attached to the Ministry of Coal and as a group made various suggestions including using fly ash as a soil nutrient, setting up of washeries and crushers at same location, etc. to reduce air pollution. On mine closure to protect environment, best practices were encouraged to CIL. NLC was encouraged to diversify to renewable sources of power.

City-focussed actions announced/taken by MP

Year – 2018

The MP sent letters to CM Nitish Kumar and Union Minister for water resources Nitin Gadkari on saving Falgu river from various issues including indiscriminate sand mining that lead to falling of sub-surface water in the river and bring its dust to Gaya town. The MP suggested eco-friendly crematorium to be built that removes issue of wood burning.

Year – 2017

A committee at the local level headed by the MP was announced to be formed to look into the issues faced by Gaya airport including setting up of ground-mounted solar power plant on the airport campus.

Actions & policies by MP's union government

Year – 2019

NCAP with Rs. 300 crore launched as a mid-term, five-year action plan from 2019 to reduce air pollution by 20-30% by 2024 in all 102 non-attainment cities, taking 2017 as the base year.

Year – 2018

Niti Aayog proposed a 15-point action plan, titled Breathe India, to combat air pollution in 10 most polluted cities of India.

National Auto Policy released including EV, CNG, biofuels, and hydrogen vehicles, though without timelines and no link with EV 2030 vision, FAME II or Make in India. Under the FAME II India scheme around Rs. 5,500 crore over a five year period has been set aside to provide grants for all kinds of electric vehicles.

GoI sealed a deal with World Bank, GIZ, ADB, SDC, AFD and Bloomberg Philanthropies, to build capacities of all 102 polluted cities across the country. The initial small budget of 300 crore is meant for expanding air quality monitoring capacities in states, setting up national emission inventories and conducting source apportionment studies in cities to identify nationwide pollution hotspots.

Year – 2017

Railways Ministry announced new reforms and services such as Roll On Roll Off and long-term contracts to enhance freight traffic and reduce dependence on commercial vehicles.

Year – 2016

Government of India announced the advancement of vehicular emissions and fuel quality norms to BS-VI levels by the year 2020 across the country.

All non-attainment cities were given a set of 42 action points to improve air quality and as a follow-up, 94 cities were asked to prepare detailed action plans. The states concerned had been urged to steer implementation of action plans in these cities. The CPCB has also launch a mobile app - SAMEER - for grievance redressal.

Year – 2015

Government of India announced FAME scheme under NEMMP to promote electric vehicles. Instead, EV manufacturers and sellers were expecting a policy and regulatory framework laying out a roadmap for creating an ecosystem comprising, most importantly, charging stations, as well as rolling out incentives for both manufacturing and purchasing EVs.

Bibliography

MP's statements on air quality

https://economictimes.indiatimes.com/news/politics-and-nation/murli-manohar-joshi-meets-akhilesh-discusses-plans-to-develop-kanpur-as-defence-hub/articleshow/45149500.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

Other parties' statements on air quality

<https://www.hindustantimes.com/india/tej-pratap-rides-a-horse-to-his-official-bungalow-to-curb-pollution/story-fKw6GSSPR8VWnn322Vluel.html>

State government's statements on air quality

<https://www.telegraphindia.com/states/bihar/burning-of-crop-stubble-emerging-as-factor-in-patna-air-pollution-says-nitish/cid/1677001>
<http://bsdma.org/images/publication/ASSESSMENT%20OF%20AIR%20QUALITY%20OF%20PATNA%20TOWN%20AT%20DIFFERENT%20MICRO-ENVIRONMENT.pdf>
<https://www.telegraphindia.com/states/bihar/govt-disbelief-at-who-claim/cid/1441751>

Parliamentary initiatives by MP

<http://pib.nic.in/newsite/PrintRelease.aspx?relid=136568>
<http://pib.nic.in/newsite/PrintRelease.aspx?relid=148781>
<http://pib.nic.in/newsite/PrintRelease.aspx?relid=131729>

City-focussed actions announced/taken by MP

<https://timesofindia.indiatimes.com/city/patna/gaya-mp-urges-centre-cm-to-save-falgu-river/articleshow/62974069.cms>
<https://www.telegraphindia.com/states/bihar/foreign-flight-boost-for-gaya-airport/cid/1369376>

Actions & policies by MP's union government

<https://www.iamrenew.com/policy/little-late-govt-earmarks-300-crores-fight-air-pollution-102-cities/>
http://niti.gov.in/writereaddata/files/document_publication/BreatheBooklet11thJuly.pdf
https://dhi.nic.in/writereaddata/UploadFile/DHI-NAB-Auto%20Policy%20Draft%20Document_vDRAFT.pdf
<https://economictimes.indiatimes.com/news/environment/pollution/four-international-agencies-to-join-govts-effort-to-tackle-air-pollution-in-102-cities/articleshow/66548971.cms?from=mdr>
<http://pib.nic.in/newsite/PrintRelease.aspx?relid=158793>
[http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20\(2\).pdf](http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20(2).pdf)
<https://www.thehindu.com/opinion/op-ed/advancing-bs-vi-emission-norms/article25438769.ece>
<https://archive.indiaspend.com/cover-story/0-02-new-cars-are-electric-heres-what-govt-must-do-to-reach-all-electric-goal-78119>
<https://economictimes.indiatimes.com/news/environment/pollution/govt-has-made-serious-efforts-to-curb-air-pollution-govt-after-who-report/articleshow/64003558.cms?from=mdr>

Patna

Most polluted, least liveable in Bihar.



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Although **Patna city (Patna Sahib Lok Sabha constituency)** has ranked 5th fastest growing city in the country in a 2018 survey by City Mayors Foundation, the capital city of the state of Bihar was ranked 109th out of 111 Indian cities surveyed in 2018. While it ranked 109 on Ease of Living index by Union Ministry of Housing & Urban Affairs. A score 18.67 out of 100 indicates it is not easy to live in Patna. In the Annual Survey of India's City Systems (ASICS) by Janaagraha that evaluates urban governance strongly influencing the quality of life in Indian cities ranked Patna 20th out of 23 cities in 2017. The city aspires to perform well on these parameters with the help of schemes such as AMRUT.

Featuring in the non-attainment cities list of the NCAP, Patna clocked AQI of 423 for the dangerous PM2.5 pollutant behind AQI of 445 in Muzaffarpur in November 2018. As per the guidelines of CPCB, the AQI above 400 is categorized 'severe' which can affect healthy people and seriously impact those with existing diseases. In 2018, Patna did not experience a single 'good' air quality day, all days were 'moderate' to 'severe'.

Patna's number of personal transport vehicles had increased 3 times between 2001-2012 running on BS III fuel quality. The city has been agro-based and food processing industries hub, besides leather, fabric, wood & paper, chemicals, plastic, rubber, engineering, lamps, petro- and metal-based industries.

Sustainable development, green issues, health impacts of pollution have not been on election agenda in the past in Bihar.

Vital Statistics of Patna

Census 2011	Estimated 2019	WHO Ranking	AQI Dec 2018*
1,684,222	2,381,715	5	390 (very poor)

*AQI: Air Quality Index by Central Pollution Control Board

Major public issues of Patna

1.	Law and order enforcement
2.	Inadequate healthcare and medical facilities
3.	Poverty, livelihoods, and quality of education
4.	Clean drinking water access & sanitation
5.	Unplanned city growth and congestion
6.	Urban social infrastructure – road condition, public pedestrian spaces condition and congestion, parks quality
7.	Inadequate public transport system and traffic congestion, air pollution

"As far as social infrastructure is concerned, if a tourist enters the city, the first thing he sees is encroached roads, less parking facilities, solid waste dumped in the middle of the city and on top of it he/she will get very few places to hang out," said National Institute of Technology (NIT) professor Abdur Rahman Quaff. "Though new parks have been opened recently and the existing parks have been beautified, they are not on a par with the ones in Bangalore or Calcutta. The city looks congested, especially Patna City. The government hospitals, too, are not equipped and there are very few private hospitals," added Quaff.

"Roads have been constructed but there has been no expansion of public transport system. People still don't have much option of public transport to move from one end of the city to another. People depend on their own vehicles and this adds to traffic woes. Then there is unplanned growth in the city. The new establishments should be opened in areas such as Bihta and Danapur, where there is still vacant land. But the authorities are allowing construction in congested areas. The municipal corporation has to play a bigger role in amending the situation," said Sanjeev Sinha, professor at NIT.

Air quality history of Patna

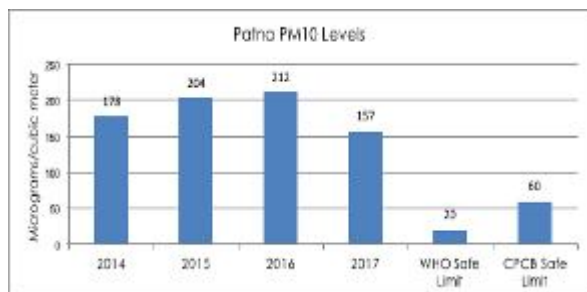
The air quality of Patna has deteriorated rapidly over the past few years. The WHO classified outdoor air pollution as carcinogenic (cancer-causing agents) in October 2013. The city occupied 48th position among 1600 cities in the WHO's database on urban outdoor air pollution released in 2014. In 2016 it reached the 6th position in the world before becoming 5th most polluted city in 2018. In February 2019 a study by IIT-Kanpur and Shakti Foundation placed Patna ahead of Kanpur, Varanasi and Delhi on

PM2.5 levels during October-November 2018. The data available with the Central Pollution Control Board (CPCB) for Patna in 2018 shows that 48% of the total days had either "moderate" or "satisfactory" air quality, while the remaining 52% saw "poor" or "severe" quality of air. There was no day with 'good' air quality. BSPCB projects in business-as-usual scenario by 2030 the PM2.5 to be 276 $\mu\text{g}/\text{m}^3$ against WHO prescribed safe limit at 10 $\mu\text{g}/\text{m}^3$ and CPCB safe limit at 40 $\mu\text{g}/\text{m}^3$.

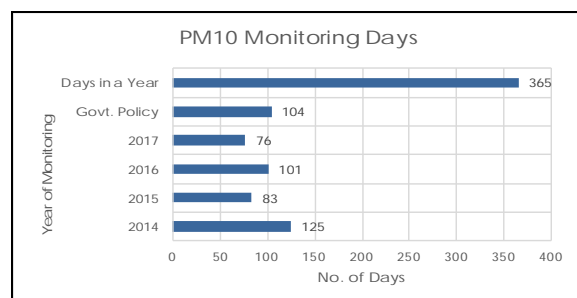
Number of air quality monitoring stations – Patna as an NCAP city has 1 (one) continuous monitoring station (CAMS) reporting data for all types of pollutants⁵ and 2 manual stations reporting data on PM2.5, PM10, SO₂ and NO₂(SO_x & NO_x). The state government has announced to set up 4 more CAMS, while the Bihar State Pollution Control Board (BSPCB) has identified the need for at least 12 CAMS for efficient and comprehensive reporting.

PM10 microgram/m³(as per CPCB)

2014	2015	2016	2017	CPCB safe limit	WHO safe limit
178	204	212	157	60	20



This graph indicates the average of PM10 pollutant recorded by the operating stations in a city in the indicated year, as reported by CPCB. When data is missing it is indicated as zero.



Government policy is to monitor air quality twice a week, that is, 104 days in a year of 365 days. This graph indicates on an average how many days in a year all the stations in a city

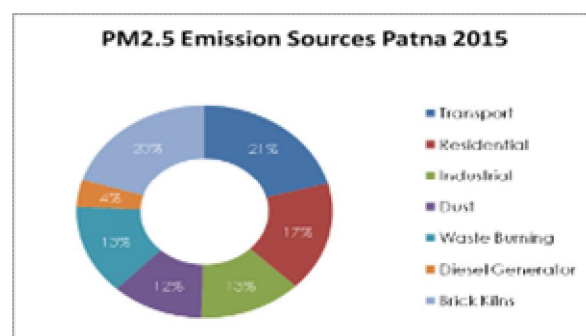
5

CO, SO₂, NO, NO₂, NO_x, OZONE, PM10, PM2.5, Benzene, Toluene, Xylene, Ethyl Benzene, MP xylene, CH₄, NH₃, HCHO, Hg and more as per CAAQMS guidelines by CPCB

have monitored the pollutants PM10, NO₂ and SO₂, as reported by CPCB. That way, data is not available for more than the number of days indicated. When monitoring is not done, it is indicated as zero.

Sources of air pollution & stakeholder views

1.	Vehicles (cars, auto-rickshaws, old trucks & buses)
2.	Construction, stone quarrying and road dust
3.	Brick kilns and diesel generator sets
4.	Wood burning for fuel and domestic needs
5.	Garbage burning by municipal workers & residents
6.	Industries
7.	Crop stubble burning



Emission inventory of various sources of pollution in Patna – 2014 report by UrbanEmissions.Info

Stakeholder views:

BSPCB chairman Dr Ashok Kumar Ghosh during his keynote address at a roundtable on public transport in January 2018 said, "Today the biggest challenge for Patna is the intractable problem of automobile dependence. Over the years Patna has witnessed a steep rise in the total number of vehicles, particularly those by private owners. It is disturbing to know that the transport sector alone amounts to 20% of the particulate matter emission of which a major share is of private vehicles. To cap the emission from this sector, Patna needs an aggressive roadmap to increase the ridership of public transport and sustainable mobility. As the chairman of the Bihar State Pollution Control Board, I shall take all corrective measures to manage air pollution. However, what is more important is the participation of citizens in the battle against air pollution."

While admitting air pollution in Gaya and Patna, BSPCB Chairman Dr Ghosh, however, challenged the WHO report saying, "how can a city be called polluted on the basis of the data related to just one parameter (PM2.5)? How can you leave out air pollutants such as carbon monoxide, ozone and petrol emission, among others?"

"In this region, wind predominantly blows from north-west to east for most of the year, but more so in the winter, carrying along with it

pollutants generated elsewhere. Once the pollutants enter the Gangetic region, they get trapped, and remain suspended over the area.” – Prof Sachchidanand Tripathi, an atmospheric sciences expert at IIT Kanpur.

“Instead of clamouring for new laws, focus should be on strict implementation of existing laws to curb pollution.” – Rai Madan Kishore, retired Special Secretary in Bihar state government.

“Patna also has a large number of brick kilns within its city limits. As per a 2014 study, more than 225 brick kiln units line the approach roads to Patna on the east and on its western sides. More kilns are present on the northern bank of the Ganga River. Together, these contribute around 2350 tonnes of PM 2.5 emissions to Patna’s air annually.” – Centre for Science and Environment (CSE).

Impacts of air pollution on health

As per the findings, based on data from the real-time air quality monitoring station in Patna, the city in the month of December witnessed the worst air when 51% days had air quality in “severe” category. Out of the cities where Air Quality Index (AQI) bulletin is issued by the CPCB, Patna in December 2018 remained the most polluted city of India. According to the health index of the government of India, a prolonged exposure to this level of pollution is hazardous, even for healthy people.

The research by the India State-Level Disease Burden Initiative published in The Lancet Planetary Health estimated that over 96000 deaths in Bihar were attributable to air pollution in 2017.

In Patna, there has been a noticeable increase in:

- Tonsillitis, allergic pharyngitis, bronchitis
- Chronic cough, burning sensation in throat
- breathlessness, asthma, chronic respiratory and cardiovascular issues
- sneezing, itching, eye problems
- Various other allergies

According to Dr Subhash C Jha of the PMCH’s TB and Chest department, “patients suffering from COPD and respiratory infections have a high chance of turning into ICU cases. We often advise COPD patients to move to locations that have lower levels of air pollutants. There had been an increase in the incidence of tonsillitis, allergic pharyngitis and bronchitis. If the pollutants enter the lungs, there is an increase in the incidence of bronchiolitis, pneumonia and lung cancer.”

“The number of patients suffering from chronic cough, breathlessness and asthma have increased,” said AIIMS-P Superintendent Dr CM Singh.

NMCH Superintendent Dr Chandra Shekhar said, “Taking into account high level of air pollution in Patna, we advise senior citizens and people with existing diseases to avoid morning walks. Also, people should use masks while going out as a precautionary measure.”

We have no option but to stay here and breathe this air. The government is also doing nothing to stop this. I am suffering from several health complications because of the construction in the area, said Vijay Singh, farmer living close to construction site of Patna Marine Drive from Digha to Deedarganj.

IIT-D & CEED view: Air pollution has steadily worsened in Bihar and contributes to nearly 4,000 premature deaths in Patna, Gaya and Muzaffarpur every year, researchers said in a report “Know What You Breathe” released that also calls for stronger initiatives to improve air quality. The findings revealed that an estimated 290-300 deaths per one lakh population took place annually in Patna, Muzaffarpur, and Gaya due to pulmonary diseases, heart diseases, stroke, lung cancer and acute lower respiratory infection.

“Till about 30 years back, 90% of cancer patients were smokers. The percentage of smokers among cancer patients has now come down to about 50% and non-smokers inhaling highly polluted air develop cancer. Children are especially vulnerable to the toxic air. CEED research has estimated that over 27% of premature deaths in children in Bihar are caused by acute lower respiratory infections precipitated or worsened by air pollution.” - Dr Arvind Kumar, Lung Care Foundation.

“If National Air Quality Guideline is achieved, the premature mortality burden would reduce by over 20 per cent in Agra, Kanpur, Lucknow and Meerut and it can be further brought down to 10-20 per cent in other cities such as Allahabad, Gaya, Gorakhpur, Muzzafarpur, Patna and Varanasi,” said Sagnik Dey, Associate Professor at the Centre for Atmospheric Sciences in Indian Institutes of Technology, Delhi.

“Those who are exposed to long hours of outdoor activities as part of their daily lives, such as traffic policemen and street-side vendors are further at a risk of developing respiratory and other health complications.” – Centre for Science and Environment (CSE)

City stakeholder actions to address air pollution

By Individuals -

Pranay Priyamvad filed a PIL in 2018 in Patna High Court on the increasing air pollution proving to be harmful to children, pregnant women, and others. The aim of the PIL is to seek implementation of advisory issued by BSPCB to district magistrates.

By NGOs & Educational Institutions -

Centre for Environment & Energy Development

With an objective to explore plausible solutions to develop a clean and sustainable public transport system in Patna, Centre for Environment and Energy Development (CEED) organised a roundtable on 'Roadmap for improving Public Transport in Patna'.

CEED organised deliberations with stakeholders, domain experts and state government on the issue of rising level of air pollution in Patna, Muzaffarpur, and Gaya urging the state and union government to include them in NCAP non-attainment cities list.

The researchers at CEED and IIT Delhi conducted research titled "Know What You Breathe" that estimated air pollution contributed to about 2,500 premature deaths in Patna, 500 in Gaya and 700 in Muzaffarpur through cardiovascular and respiratory diseases every year between 2000 and 2016. "The largest share of premature death burden in Agra, Gaya, Kanpur, Gorakhpur, Lucknow, Patna, Muzaffarpur and Varanasi is attributed to acute lower respiratory infections, primarily emanating from residential (cooking, heating and lighting) sources, followed by industry, transport and energy sectors. Chronic obstructive pulmonary diseases (COPD) are the cause of the largest share of premature deaths in these cities," says the study by (CEED) in collaboration with Indian Institute of Technology, Delhi (IIT-D). The study recommends to concerned state governments strengthening public awareness and expediting the process to replace solid fuels with cleaner fuels, besides coordinating with each other to prepare an efficient regional clean air action plan.

Plant Eco Circle

Ranjan Mistry, a college dropout, in 2016 founded the organisation Plant Eco Circle that tries to succeed the awareness lectures for school and college students by a plantation drive to achieve the goal of creating proactive youth.

By Medical Institutions -

Year - 2018

AIIMS-Patna organized a dialogue for doctors, health and medical practitioners on the subject of 'Safeguarding Life from Air Pollution' in Bihar. The event was in collaboration with CEED and chief guest was Health Minister of Bihar Mangal Pandey. At the event a network was launched to bring together medical practitioners, CSOs, academicians, and other stakeholders with the aim to increase public awareness on public health impact of air pollution.

By State Pollution Control Board & other state agencies -

Year - 2018

BSPCB has written to all the 38 district magistrates in Bihar to take steps (city-specific action plan) in curbing air pollution levels, especially in Patna, Muzaffarpur and Gaya, where air quality has worsened alarmingly of late. The steps specifically include action on burning of waste, tyres and crops; vehicular pollution checks; construction dust.

BSPCB has prepared an action plan for Patna as a non-attainment city that has a range of actions to be implemented from immediate effect to long-term till 2023. The plan recognizes the need for at least 12 air quality monitoring stations against 3 at present that are proving to be insufficient. BSPCB has formulated Graded Response Action Plan (GRAP) for Patna in consistency with GRAP prepared for Delhi NCR by CPCB that will come into play as emergency response when the air quality drops in the city.

BSPCB announced that 3 more pollution monitoring stations will be installed in few months, and for now, 7 low-cost monitors have been set up.

BSPCB is working with state transport department to ensure stringent vehicle pollution checks through PUC testing centres at petrol pumps. An app is being prepared for citizens to report any kind of violation causing air pollution. The state transport department launched a 'citizen reporting' campaign to seize vehicles that emit excessive smoke in a bid to curb air pollution in Patna. "As part of the campaign, officials will cancel the fitness and permit certificates of the commercial vehicles which exceed the pollution limit," said Sanjay Agarwal, Transport Secretary, Bihar.

State transport department has kept registration fee for e-rickshaws at 50% less as compared to other means of public transport. The District Magistrates are authorized to

decide their routes. As a result, the number of e-rickshaws in Patna increased by almost 100% from 2017 to over 3,500 in 2018 with over 100 agencies selling them. The transport department stopped giving permits to traditional auto rickshaws that have been mixing cheap kerosene in petrol and diesel as a way to curb air pollution in the city, and soon they will be banned across the state.

"We find e-rickshaws more comfortable than the noisy auto rickshaws that run on petrol or diesel and heavily contribute to air pollution. The traffic condition in the city also favours e-rickshaw as it's slow. But there is a need of further technological improvements such as better breaks and more speed," said Prashant Kumar, a resident of Mahendru in Patna.

To curb air pollution in Patna, Bihar Rajya Pul Nirman Nigam Limited (BRPNNL) has decided to equip all the pillars of the city's flyovers with different kinds of air-purifying plants. The vertical garden is also a source of amusement and admiration for commuters and plant lovers. The vertical garden concept has already been tested in Noida, Pune and Bengaluru where it was lauded by the public.

Year – 2017

Indian Institute of Tropical Meteorology (IITM), Pune provided scientific assistance to Bihar State Disaster Management Authority (BSDMA) on "Assessment of Air Quality of Patna in various Micro-environments". This is the first such air quality assessment made by Bihar State Disaster Management Authority (BSDMA) in collaboration with the Centre for Environment, Energy & Climate Change (CEECC) in Patna during 19 October - 28 November 2017. Air quality at 10 different spots in Patna varied from moderate to poor.

"We have carried out air quality tests in most of the 14 cities named in the WHO report. I am not saying Patna's air quality is good. But it is much better than Delhi or Mumbai's," said Gufran Beg of the Indian Institute of Tropical Meteorology, Pune.

By Local City Administration

Year –2018

The meeting chaired by Patna Municipal Commissioner Abhishek Singh decided the final proposal of Patna for smart city contest will focus on river-front development, improvement of amenities around the railway stations and installation of solar panels on government buildings.

Actions & Policies by State Government

Year – 2019

Bihar Deputy Chief Minister and Environment Minister Sushil Kumar Modi informed the state legislative council in reply to question from RJD member Ramchandra Purve and CPI MLC Kedarnath Pandey that a work plan had been prepared for improving air quality in the state capital and make it pollution free by taking into account various sources of pollution. GAIL has been making arrangement for setting up 5 CNG stations in Patna by June 2019, 200 new pollution check centres will be set up, road flanks were being painted to deal with problem of dust particles on roads, and Patna Municipal Corporation is cleaning roads with sweeping machines, he added.

Year - 2018

Sushil Kumar Modi, Deputy CM of Bihar, who also holds the forest and environment portfolio, said brick kilns which do not have 'zig-zag technology' will be banned from September 1, 2018. The technology reduces coal consumption by 2 tonne per one lakh bricks made. BSPCB estimates 80% brick kilns have adopted this technology, which has lower levels of emissions. Patna has 300 kilns in its urban air-shed.

"Bihar too has been trying to make its kilns shift to zigzag technology since 2016. As per the last order passed by the state government on August 30, 2018, all kilns must shift to the cleaner technology by August 31, 2019. Of about 6,500 brick kilns in the state, 450-500 have converted to zigzag technology so far. But despite the cost and labour issues, most kiln owners are keen to shift to zigzag. According to our survey conducted around Patna, about 65% of those who made the transition found that the zigzag technology was more fuel efficient and produced better bricks," - Sameer Maithel, director of Green-tech Knowledge Solutions, a clean energy research and advisory firm based in Delhi.

The Deputy CM announced 4 more monitoring stations to be set up in Patna and also sought changes in rules and regulations concerned to allow setting up of captive biomedical waste plants by big hospitals and medical colleges, and giving states the power to ban use of motor vehicles older than 15 years.

Bihar government announced that it is coming up with an "electric vehicles policy" to promote manufacturing and use of such automobiles in the state.

Year - 2017

Bihar government announced a new policy for 3400MW power from renewable/non-fossil fuel sources by 2022.

Year - 2015

Bihar government released an action plan for climate change that involves transition in transport and energy systems to reduce emissions that will benefit the air quality also.

Bibliography

City profile, major issues of public concern

<https://timesofindia.indiatimes.com/city/patna/patnas-air-3rd-most-polluted-in-country/articleshow/66740168.cms>
<https://www.telegraphindia.com/states/bihar/not-easy-to-live-in-patna-says-survey/cid/1310269>
<https://timesofindia.indiatimes.com/city/patna/urban-governance-survey-city-figures-in-bottom-five/articleshow/63322634.cms>
<http://www.janaagraha.org/asics/report/press/ASICS-2017-Press-Release-Patna.pdf>
<http://envfor.nic.in/sites/default/files/press-releases/NCAP%20Report%20Full.pdf>
http://cpcb.nic.in/uploads/Stations_NAMP.pdf
https://www.business-standard.com/article/news-ians/in-bihar-battle-who-cares-about-environment-115102600590_1.html
<https://www.outlookindia.com/newscroll/no-good-air->

Air quality history of Patna

<https://www.who.int/airpollution/data/cities/en/>
<https://app.cpcbcr.com/ccr/#/caaqm-dashboard-all/caaqm-landing>
<http://cpcb.nic.in/manual-monitoring/>
<https://timesofindia.indiatimes.com/city/patna/patna-5th-gaya-4th-most-polluted-who/articleshow/64005067.cms>
<https://www.outlookindia.com/newscroll/no-good-air-quality-day-for-patna-in-2018/1452206>
<https://www.telegraphindia.com/states/bihar/sushil-s-budget-with-quick-fix-targets/cid/1437563>
<https://www.ndtv.com/india-news/3-cities-beat-delhi-to-indias-most-polluted-list-patna-at-top-spot-1993210>
<https://www.indiatoday.in/india/story/air-quality-turns-poor-in-patna-1379880-2018-10-31>
<http://www.bspcb.bih.nic.in/patna.pdf>
[https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)
https://www.who.int/airpollution/data/aap_air_quality_data_base_2018_v14.xlsx?ua=1
<http://cpcb.nic.in/namp-data/>

Sources of pollution & stakeholder views

<https://timesofindia.indiatimes.com/city/patna/patna-5th-gaya-4th-most-polluted-who/articleshow/64005067.cms>
<https://indianexpress.com/article/explained/north-india-has-the-foulest-air-in-the-world-says-the-who-this-is-why-5160741/>
<https://www.indiaspend.com/87-of-indian-vehicle-owners-ready-to-buy-electric-vehicles-if-that-reduces-pollution-survey-98547/>
<https://www.downtoearth.org.in/news/air/if-you-are-in-patna-you-are-exposed-to-very-high-levels-of-pm2-5-concentration-56759>

Impacts of air pollution on health

<https://www.sciencedirect.com/science/article/pii/S2542519618302614?via%3DiHub>
<https://timesofindia.indiatimes.com/city/patna/patna-5th-gaya-4th-most-polluted-who/articleshow/64005067.cms>
<https://www.outlookindia.com/newscroll/no-good-air-quality-day-for-patna-in-2018/1452206>
<https://www.telegraphindia.com/states/bihar/breath-of-toxic-air/cid/1442827>
<https://www.firstpost.com/india/in-gaya-worlds-fourth-most-polluted-city-political-apathy-keeps-environmental-degradation-from-becoming-an-election-issue-6140441.html>

<https://timesofindia.indiatimes.com/city/patna/respiratory-diseases-on-rise-as-air-quality-still-very-poor/articleshow/66571043.cms>
<http://ceedindia.org/worsening-air-quality-causes-premature-mortality-in-cities-of-bihar-finds-report/>

City stakeholder actions – Individuals

<https://www.bhaskar.com/bihar/patna/news/pil-filed-in-patna-high-court-for-air-pollution-in-patna-01347835.html>

City stakeholder actions – Medical Institutions

<http://ceedindia.org/tag/public-health/>

City Stakeholder actions - NGOs, Educational & Scientific Institutions

<https://www.downtoearth.org.in/news/air/poor-air-quality-a-major-cause-of-premature-deaths-60634>
<https://www.telegraphindia.com/states/bihar/breath-of-include-bihar-cities-in-the-national-clean-air-programme/>
<https://www.thebetterindia.com/103710/ranjan-mistry-plant-eco-circle-bihar/>
<http://ceedindia.org/prioritise-public-transport-to-curb-patnas-air-pollution-crisis-ceed/>

City stakeholder actions – State Pollution Control Board (BSPCB)& other state agencies

<https://timesofindia.indiatimes.com/city/patna/rising-pollution-bihar-dms-asked-to-keep-tabs-on-air-quality/articleshow/66797783.cms>
<http://www.bspcb.bih.nic.in/patna.pdf>
<https://timesofindia.indiatimes.com/city/patna/minister-pleads-for-joint-bid-to-curb-air-pollution/articleshow/66832958.cms>
http://timesofindia.indiatimes.com/articleshow/66799202.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst
<https://www.telegraphindia.com/states/bihar/vertical-gardens-to-fight-air-pollution/cid/1443894>
<https://timesofindia.indiatimes.com/city/patna/e-rickshaws-to-surpass-autorickshaws-in-city/articleshow/66110604.cms>
<https://www.telegraphindia.com/states/bihar/govt-disbelief-at-who-claim/cid/1441751>

City stakeholder actions – Local City Administration

<http://bsdma.org/images/publication/ASSESSMENT%20OF%20AIR%20QUALITY%20OF%20PATNA%20TOWN%20AT%20DIFFERENT%20MICRO-ENVIRONMENT.pdf>
<https://timesofindia.indiatimes.com/city/patna/smart-city-proposal-to-focus-on-riverfront-solar-energy/articleshow/56482415.cms>

City stakeholder actions – State Government

<http://www.uniindia.com/work-plan-for-improving-quality-of-atmospheric-air-in-state-capital-sushil-modi/east/news/1499504.html>
<https://www.telegraphindia.com/states/bihar/sushil-s-budget-with-quick-fix-targets/cid/1437563>
https://www.business-standard.com/article/pti-stories/brick-kilns-in-bihar-sans-zig-zag-tech-to-be-banned-from-sept-1-dy-cm-118060400514_1.html
<https://www.downtoearth.org.in/news/environment/74-brick-kilns-in-delhi-ncr-have-not-shifted-to-cleaner-technology-61624>
<https://energy.economictimes.indiatimes.com/news/renewable/bihar-announces-mega-renewable-power-policy-to-add-3400-mw-in-five-years/58895992>
<https://www.telegraphindia.com/states/bihar/e-vehicle-policy-to-drive-state-growth/cid/1442983>
<https://timesofindia.indiatimes.com/city/patna/5-cng-stations-in-patna-soon-sumo/articleshow/67998435.cms>
<http://www.moef.gov.in/sites/default/files/Bihar-State%20Action%20Plan%20on%20Climate%20Change%202018-2022.pdf>

Political Leaders Position and Activities on Constituency Air Quality



MP: Shatrughan Sinha
Member of Parliament since: 2009
Lok Sabha Constituency: Patna Sahib
Party: Bhartiya Janta Party (BJP)

MP's statements on air quality

Year – 2019



Year – 2017



State Government's statements on air quality

Year – 2019

While replying to questions raised by RJD MLC Ramchandra Purve and CPI MLC Kedarnath Pandey on increasing air pollution in the state capital, on use of diesel- and petrol-run and on vehicles that are 15 years old, Deputy CM and Environment Minister Sushil Kumar Modi said, "a new work plan has been prepared to improve air quality in Patna where dust along roads, burning of solid waste in the open, use of coal and cow dung cake in household were mainly responsible for taking PM2.5 air pollution to 118.16 microgram/m3 in 2018."

Year – 2018

The CM of Bihar and leader of JD(U), Nitish Kumar, expressed concern over the state capital's dirty air, but said that the location of the air quality monitoring station in the city was not suitable for proper assessment of pollution levels. He also suggested that more such monitoring stations were needed in the city to provide a clearer picture.

The Chief Minister issued directions to all district magistrates in the state to check the pernicious practice of crop stubble burning. "Previously, crop stubble was burnt in some parts of the Rohtas area. It has now spread to other districts. Crop residue is now being burnt in agriculture fields near Patna. Nobody knows who publicised this practice here, but its aggravating pollution," said the CM.

Nitish Kumar hit out at the practice of families buying several vehicles and questioned the need for having many automobiles in a household. "What is the need to buy four

vehicles for one family, apart from flaunting their status? The number of vehicles has shot up so much that it is adding to pollution. But there is freedom to buy vehicles, so how much can we control this trend?" he asked.

The Chief Minister also pointed that people were tinkering with the environment and quoted Mahatma Gandhi to say: "The earth can fulfil every need of human beings, but not their greed."

"The situation is not so bad as it has been mentioned in the WHO report. There is a difference between the data given by WHO and the data furnished by the BSPCB. We have written to CPCB, asking it to share details about the statistics given to WHO. The WHO figures were average of 6 years and not current PM2.5 concentrations," said Sushil Kumar Modi, Deputy Chief Minister and Minister of Environment, Government of Bihar in May 2018. "The situation in Patna is challenging though there is no need to panic. The air quality is poor during winter but not alarming. Most of the WHO surveyed cities fall in the Gangetic plain, where sand and dust from the embankments enters the air system and hampers its quality," he added.

"Air quality plays a critical role in the health of people. Over the years, there is a growing concern on the deteriorating air quality. Given the pace of urbanization, which is often unplanned, there is an increase in pressure on cities and towns to meet the growing demands of the urban population. This has an adverse effect on the environment, affecting air and water quality. Such adverse effects of unplanned urbanization need to be addressed with robust scientific tenacity. The assessment of air quality in the city of Patna is a step in this direction and it covers the critical winter season with a festive Diwali period which appends pollution to the existing ambient air, and needs a greater policy level intervention." – Sushil Kumar Modi, Deputy Chief Minister, Bihar (in a foreword for assessment study of Patna air quality, February 2018).

"We understand that Bihar is one of the most-affected states in India in terms of mortality because of rising air pollution as per the Lancet Commission report. Our department understands the urgency of the situation and is also willing to take steps to reduce the health impact caused by deteriorating air quality. We have prioritised it for collaborative and real action and are also looking into gaps that need to be addressed urgently," said State Health Minister, Mangal Pandey in his address at the event 'Safeguarding Life from Air Pollution', organised by the Centre for Environment and

Energy Development (CEED) in collaboration with All India Institute of Medical Sciences (AIIMS) Patna. While admitting that the government and NGOs had not been able to do the required level of work to curb pollution, he added, "Forests, transport, road construction, education and health department officials as well as representatives of different NGOs should sit together and hold deliberations on ways to control pollution."

Other parties' statements on air quality

Year – 2015

"I enjoyed horse-riding which I have done after many years...I had been doing it regularly years ago," said Tej Pratap Yadav, former Environment and Health Minister of Bihar from RJD party. He also listed the environmental benefits of horse-riding saying it helps in containing pollution and referred to growing air pollution in Patna and other towns in Bihar due to increasing vehicular traffic.

Actions & policies by MP's union government

Year – 2019

PM Modi announced in collaboration with Bihar CM Patna Metro Rail project, CNG and LPG supply projects as well electrification of electrification of railway lines.

NCAP with Rs. 300 crore launched as a mid-term, five-year action plan from 2019 to reduce air pollution by 20-30% by 2024 in all 102 non-attainment cities, taking 2017 as the base year.

Year – 2018

Niti Aayog proposed a 15-point action plan, titled Breathe India, to combat air pollution in 10 most polluted cities of India.

National Auto Policy released including EV, CNG, biofuels, and hydrogen vehicles, though without timelines and no link with EV 2030 vision, FAME II or Make in India. Under the FAME II India scheme around Rs. 5,500 crore over a five year period has been set aside to provide grants for all kinds of electric vehicles.

Gol sealed a deal with World Bank, GIZ, ADB, SDC, AFD and Bloomberg Philanthropies, to build capacities of all 102 polluted cities across the country. The initial small budget of 300 crore is meant for expanding air quality monitoring capacities in states, setting up national emission inventories and conducting source apportionment studies in cities to identify nationwide pollution hotspots.

Year – 2017

Railways Ministry announced new reforms and services such as Roll On Roll Off and long-term contracts to enhance freight traffic and reduce dependence on commercial vehicles.

Year – 2016

Government of India announced the advancement of vehicular emissions and fuel quality norms to BS-VI levels by the year 2020 across the country.

All non-attainment cities were given a set of 42 action points to improve air quality and as a follow-up, 94 cities were asked to prepare detailed action plans. The states concerned had been urged to steer implementation of action plans in these cities. The CPCB has also launch a mobile app - SAMEER - for grievance redressal.

Year – 2015

Government of India announced FAME scheme under NEMMP to promote electric vehicles. Instead, EV manufacturers and sellers were expecting a policy and regulatory framework laying out a roadmap for creating an ecosystem comprising, most importantly, charging stations, as well as rolling out incentives for both manufacturing and purchasing EVs.

Bibliography

State government's statements on air quality

<https://timesofindia.indiatimes.com/city/patna/5-cng-stations-in-patna-soon-sumo/articleshow/67998435.cms>
<https://www.telegraphindia.com/states/bihar/burning-of-crop-stubble-emerging-as-factor-in-patna-air-pollution-says-nitish/cid/1677001>
<https://www.telegraphindia.com/states/bihar/govt-disbelief-at-who-claim/cid/1441751>
<http://bsdma.org/images/publication/ASSESSMENT%20OF%20AIR%20QUALITY%20OF%20PATNA%20TOWN%20AT%20DIFFERENT%20MICRO-ENVIRONMENT.pdf>
<https://timesofindia.indiatimes.com/city/patna/minister-pleads-for-joint-bid-to-curb-air-pollution/articleshow/66832958.cms>
<https://www.telegraphindia.com/states/bihar/bihar-govt-wakes-up-to-smell-the-dirty-air/cid/1676755>

Other parties' statements on air quality

<https://www.hindustantimes.com/india/tej-pratap-rides-a-horse-to-his-official-bungalow-to-curb-pollution/story-fKw6GSSPR8VWnn322Vluel.html>

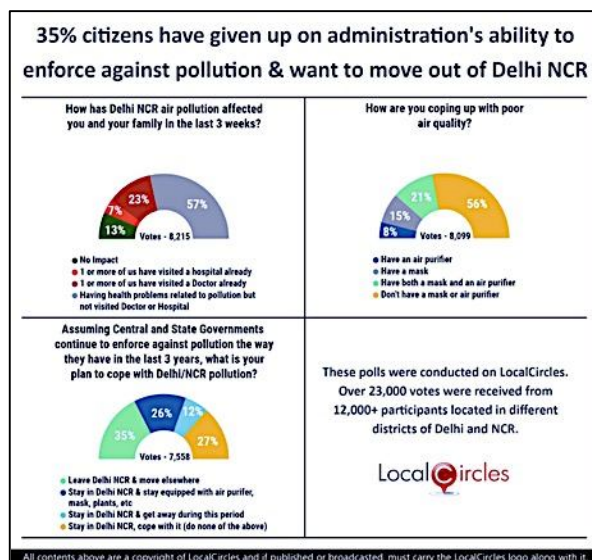
Actions and policies by MP's union government

<https://economictimes.indiatimes.com/news/politics-and-nation/prime-minister-modi-lays-foundation-stone-of-patna-metro-rail/articleshow/68033674.cms>
<https://www.iamrenew.com/policy/little-late-govt-earmarks-300-crores-fight-air-pollution-102-cities/>
http://niti.gov.in/writereaddata/files/document_publication/BreatheBooklet11thJuly.pdf
https://dhi.nic.in/writereaddata/UploadFile/DHI-NAB-Auto%20Policy%20Draft%20Document_vDRAFT.pdf
<https://economictimes.indiatimes.com/news/environment/pollution/four-international-agencies-to-join-govts-effort-to-tackle-air-pollution-in-102-cities/articleshow/66548971.cms?from=mdr>

<http://pib.nic.in/newsite/PrintRelease.aspx?relid=158793>
[http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20\(2\).pdf](http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20(2).pdf)
<https://www.thehindu.com/opinion/op-ed/advancing-bs-vi-emission-norms/article25438769.ece>
<https://archive.indiaspend.com/cover-story/0-02-new-cars-are-electric-heres-what-govt-must-do-to-reach-all-electric-goal-78119>
<https://economictimes.indiatimes.com/news/environment/pollution/govt-has-made-serious-efforts-to-curb-air-pollution-govt-after-who-report/articleshow/64003558.cms?from=mdr>

Delhi

The city with history, no memory.



Delhi's citizens are facing unfathomable problems as a result of the construction works, road casualties, scarcity of water, extremely hot summers, incoming migration, etc.

Delhi was ranked 65th in the Ease of Living index 2018 behind other NCR towns. While Gurugram and Ghaziabad were ranked 7th and 20th respectively in their efforts to reduce pollution, Delhi is at 100th place. For long, the city has given the impression of having history and no memory due to the character of "living with it" or tolerating.

Amongst other things, people in the city want safe and functional walking and cycling infrastructure, along with a good bus transport system for last-mile connectivity. Clean air, assured supply of water and power. As part of Smart City and AMRUT schemes, the city hopes these needs will be met soon.

Vital Statistics of Delhi

Census 2011	Estimated 2019	WHO Ranking	AQI Dec 2018*
1,414,050	1,786,183	6	448 (very poor)

*AQI: Air Quality Index by Central Pollution Control Board

Major public issues of Delhi

1.	Law and order, road safety
2.	Real estate companies - home buyer problems and corruption in local administration
3.	shortage of water & electricity supply, condition of parks and greenery
4.	Traffic congestion and commuting time, water logging on roads
5.	Inadequate public transport & last-mile connectivity
5.	Lack of housing and basic amenities to urban poor and factory workforce
6.	Air pollution, inadequate solid waste & sewage management
7.	Public health issues such as affordable medical facilities & staff

Air quality history of Delhi

Number of air quality monitoring stations – Delhi as a non-attainment city under National Clean Air Programme (NCAP) has 38 monitoring stations.

PM10 microgram/m³ (as per CPCB)

2014	2015	2016	2017	CPCB safe limit	WHO safe limit
217	220	278	240	60	20



This graph indicates the average of PM10 pollutant recorded by the operating stations in a city in the indicated year, as reported by CPCB. When data is missing it is indicated as zero.



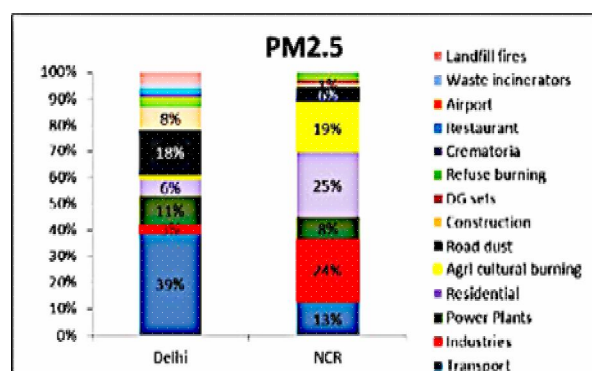
Government policy is to monitor air quality twice a week, that is, 104 days in a year of 365 days. This graph indicates on an average how many days in a year all the stations in a city

have monitored the pollutants PM10, NO₂ and SO₂, as reported by CPCB. That way, data is not available for more than the number of days indicated. When monitoring is not done, it is indicated as zero.

Sources of air pollution & stakeholder views

1.	Vehicles
2.	Construction and road dust
3.	Crop stubble burning
4.	Garbage burning
5.	Industries, brick kilns, restaurants
6.	DG sets

PM2.5 Emission Sources in Delhi-NCR



Source: www.urbanemissions.info

Expert Views:

"Vehicular emissions are responsible for 50% of Delhi's air toxicity," Dr Salvi adds. An IIT, Kanpur report has brought out that only 30 per cent of the pollution in Delhi is from local sources, while a staggering 70 per cent is traced to sources outside the city, including the NCR and beyond including Punjab and Haryana.

A recent study released by science journal *The Lancet's* 'Commission on Pollution and Health' throws up some alarming figures for India. According to the study An effective measure would be curtailing the use of solid fuel in households. Found in abundance in the rural areas surrounding Delhi, it is relevant to point out that emissions from this one source alone account for 25-50 per cent of fine particles, according to an article published in *Environmental Health Perspectives*.

"Heat waves and stronger sunshine increase the frequency of days during summer when ozone begins to cross the standards posing public health risk, especially to those suffering from asthma and respiratory problems. Ground-level ozone is not directly emitted by any source. This is formed when oxides of nitrogen (NO_x) and a range of volatile gases primarily from vehicles and other sources are exposed to each other in sunlight," the CSE said.

Centre for Science and Environment's analysis of Delhi Pollution Control Committee's (DPCC) real-time monitoring data for December shows the capital had 23 severe air quality days although CPCB says there were none. "We have to factor in that many CPCB stations are in background areas or less polluted locations,"

Air-quality data for NCR released recently (in summer of 2018) by CPCB shows only a marginal improvement over winter in the AQI in summer months as they continued to record "very poor" and "poor" air quality even in March, April and May (of 2018) due to sandstorms. Summer pollution may exacerbate in the coming years depending on meteorological trends.

"There has been an increase in frequency, longevity and density of summer sand storms in the NCR over the past decade. All deserts are expanding, and so is the Thar," said Dr Rajendra Kushagra, head of the department at Amity School of Earth and Environmental Sciences, Manesar.

"Not realising that much of the agrarian distress is because of the unnecessary burden of expensive farm machines, both the frontline agricultural states of Punjab and Haryana are working overtime to sell more machines to farmers. As the paddy harvesting time nears, and fearing air pollution clogging New Delhi, both the governments are working overtime to sell more machines in the name of providing a solution for stubble burning."

Healthcare Professionals View:

AIIMS Director Randeep Guleria feared that the situation, if it continues, could cause 30,000 deaths in the NCR due to respiratory-related issues in the winter season. "The current smog situation in the national capital is the same to last year's post Diwali situation," Guleira said, citing the Great Smog of London in 1952 which is estimated to have killed nearly 4,000 people within a week. He said there was a 20 per cent surge in respiratory disease patients at the AIIMS. The most affected were children and the aged.

Government Views:

Taking a note of the deteriorating air quality, Union Environment Minister Harsh Vardhan on Saturday had said that a criminal prosecution would be initiated by the Central Pollution Control Board (CPCB) against those organisations violating polluting norms.

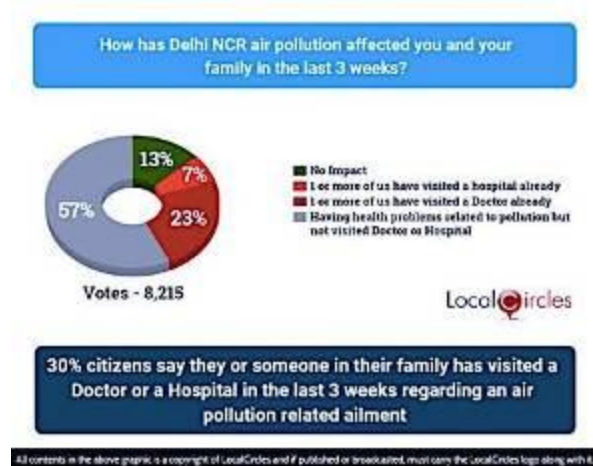
Vehicular pollution is considered to be a major source of air pollution in Delhi. As per Central Pollution Control Board, the vehicular pollution load in Delhi increased by nearly 50 per cent in

1995-96 from 1990-91. Delhi's registered vehicular population has reached to nearly three times to 7.6 million from 2.2 million in 1994, registering a growth rate of 14 per cent per annum. About two-Third of the Motor Vehicles are two-wheelers, states the Delhi government website.

Industry view:

Prianka Sihota, the owner of a tour company called 'The Delhi Way' that takes people on guided tours of Chandni Chowk, Qutub Minar and other markets, said that business has been hit hard. "Many people are calling us and inquiring about the weather and pollution. They are hesitant to book any tours," Ms Sihota said.

Impacts of air pollution on health



There has been an increase in:

- Eye irritations
- Chronic cough, sneezing, respiratory issues
- Aggravation of various allergies

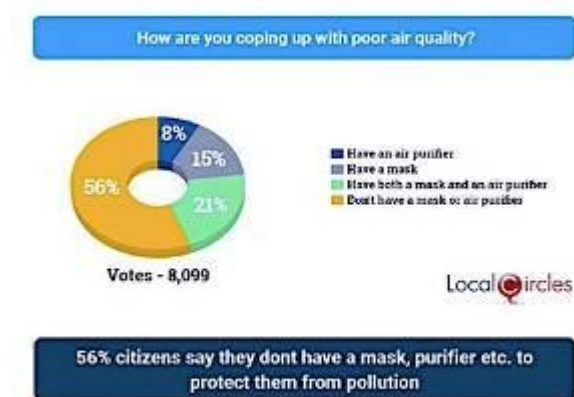
Dr. Sundeep Salvi, a pulmonologist and director of the Chest Research Foundation in Pune, who has been studying lung functions across rural and urban India, blames the heavy increase of vehicular traffic for plunging health levels.

A resident of the city complained of breathlessness and irritation in the eyes while going for a walk in the morning. "From the past few weeks, I am facing breathing issue due to toxic air. The air pollution is causing irritation in my eyes,"

"Even before the health risk from particulate matter could be addressed, ozone has raised its ugly head in Delhi and NCR. The comprehensive action plan will require stringent and time-bound action to avert public health crisis," said Anumita Roy Chowdhury, CSE (June 2018).

"Manganese, lead and nickel are neurotoxins that damage the brain. Children are particularly vulnerable to the effects of lead. Exposures to even low levels of lead early in life have been linked to effects on IQ, learning, memory and behaviour. It is a matter of very serious concern that such high levels of these toxic metals are found in the air (of Delhi & Gurugram) that our children breathe," said Dr Arvind Kumar of Lung Care Foundation. "There is an urgent need for the policy makers to bring the focus back on the people and the health problems they are reporting to understand the impact of air pollution and its severity. People are the best monitors and they have been reporting severe health impacts already," Kumar added.

City stakeholder actions to address air pollution



By Individuals –

A Delhi based citizen's movement to fight air pollution and improve public health, 'My Right To Breathe' had put in a request to Environment Pollution Control Authority (EPCA) for implementing 10 additional measures to curb air pollution, as Delhi got enveloped in thick blanket of haze ahead of Diwali and the air quality has been continuously deteriorating.

Upset with the decision of cutting down more than 16,500 trees in Delhi for the redevelopment of seven colonies, over a hundred protesters on Sunday appealed to the Centre to wrap up its proposal. Anil Sood, who filed the petition in National Green Tribunal (NGT) said "The new saplings cannot compensate the loss of the existing plants. Government is not concerned about the problems being faced by the Delhi due to rising pollution. It was time to take measures and trees are being cut."



By NGOs & Educational/Scientific Institutions -

Air quality tests done in Delhi and Gurugram in the last two months showed presence of alarming levels of toxic heavy metals, according to a new report, titled 'Death in Every Breath', released by NGO Lung Care Foundation.

IIT, Kanpur have submitted a Comprehensive Study on Air Pollution and Green House Gases (GHGs) in Delhi to Department of Environment Government of National Capital Territory of Delhi and Delhi Pollution Control Committee, Delhi

With air pollution reaching 'severe' levels every winter in the national capital, the Delhi government on Monday joined hands with the Washington University to monitor real-time air quality and identify pollution sources in the city for the next 18 months.

The National Environmental Engineering Research Institute (NEERI), Nagpur-based laboratory of the Council of Scientific and Industrial Research (CSIR), developed air cleaning device to address air pollution at high traffic zones like traffic intersections and parking areas. Prototypes of the device, named WAYU, was installed at the ITO Junction in central Delhi and Mukarba Chowk in north Delhi. Minister for Science and Technology Dr. Harsh Vardhan unveiled the prototypes. The government had 54 more units to be installed in other parts of the city, the minister said. The cost of purifier is Rs 60,000 each.

A study in 2018 by Dr Ravindra Kahiwal, Tanbir Singh and Suman Mor at Postgraduate Institute Of Medical Education and Research (PGIMER) Chandigarh called 'Emissions of air pollutants from primary crop residue burning in India and their mitigation strategies for cleaner emissions' talks about how crop residue burning emissions will increase by 45% in 2050, with 2017 as the base year. The study said 488 metric tonnes of the total crop residue was generated in India in 2017 and about 24 per cent of it was burnt in agricultural fields, mainly in Punjab and Haryana. This resulted in emissions of air

pollutants, including greenhouse gases, which play an important role in changing the atmospheric chemistry—locally, regionally and globally. This crop residue can be used for energy production in biomass power plants instead of burning as it has the potential of generating 120 TWh (terawatt hours) of electricity.

A model of the human lungs was mounted on a board and displayed outside Sir Ganga Ram Hospital on November 3 in New Delhi. In the next 48 hours, the white lungs turned grey. By the 10th day, they were black. Dr Arvind Kumar, the chairman of the Centre for Chest Surgery at Sir Ganga Ram Hospital and the founder trustee of the Lung Care Foundation, explained that the installation was put up in a collaboration with Sir Ganga Ram Hospital, the Lung Care Foundation and Help Delhi Breathe to show citizens what is happening inside our lungs.

By Citizens Collectives -

- **GRAP found ineffective in Delhi residents study, 2019**

A report by United Residents Joint Action, a collective of Delhi's resident welfare associations, based on 45 RTIs filed by them with 14 departments at central, state and city government level to assess the effectiveness of Graded Response Action Plan (GRAP), the emergency response measure of the government when air quality drops to unhealthy levels, indicated the plan was failing, as demonstrated by toxic levels during the period of the study. GRAP is implemented through EPCA which relies on inputs from CPCB, DPCC and IMD, though the coordination between agencies was found to be not smooth and awareness levels about GRAP in concerned departments was found to be inadequate. CPCB response on it shows that while Delhi had only 3 out of 17 industries complying with its pollution norms, there are over a 1000 industries in NCR states that were not compliant. Also, NGT has fined Delhi Government for Rs 25 crore for not taking adequate action since 4.5 years.

By Pollution Control Board/Authority -

Year 2018

GRAP (first emergency response plan for a city in India)

In pursuant to the Hon'ble Supreme Court's order dated December 02, 2016 in the matter of M. C. Mehta vs. Union of India regarding air quality in National Capital Region of Delhi, a Graded Response Action Plan has been prepared for implementation under different Air Quality Index (AQI) categories namely,

Moderate & Poor, Very Poor, and Severe as per National Air Quality Index. A new category of "Severe+ or Emergency" has been added. Ministry of Environment, Forests & Climate Change has notified for implementation of Graded Response Action Plan through Environment Pollution (Prevention & Control) Authority vide S.O. 118 (E) dated January 12, 2017. Since then, GRAP have been made for other cities also such as in Bihar.

Delhi's Graded Response Action Plan envisages a series of measures depending on the level of the pollution in the city ranging from information dissemination measures at the lowest level, to curbing construction activity and even closing schools at the highest level. The Central Pollution Control Board has issued a notice to Noida district magistrate over the sale of unauthorised firecrackers despite a Supreme Court ban.

Dr Bhure Lal, chairman of the Environment Pollution (Prevention & Control) Authority (EPCA) set up to control pollution in the National Capital Region on the Supreme Court's orders, didn't agree with the environment minister Mr Dave.

"That may be the minister's view but medical science does not say so... all medical reports are saying that it affects health," he said, stressing that "it is in our interest to bring it under control".

EPCA

EPCA submitted its response to the supreme court endorsing the finding of the Sub-Committee as it recommends that the short and long-term solution to the problem of crop burning is to provide farmers with alternatives and to educate them that stubble burning is not in their best interest. The view that farmers must stop stubble burning as they see benefits to improvement in soil health and crop productivity is important for long-term sustainability as well. Furthermore, it is clear that in-situ management – converting the straw into mulch – is the most environmentally sound option.

EPCA has been working with NCR state governments to move all brick kilns to zig-zag technology, which will reduce PM pollution by 70%. Non-zigzag technology brick kilns were to be allowed to operate in NCR districts till June 30, 2018 for one last season.

According to members of the brick kiln owners federation, labour shortage is the biggest hurdle in shifting to zigzag technology. Ramesh Mittal, who owns a kiln in Faridabad, Haryana, says, "I am struggling to find labourers to carry

out the conversion. Even the ones available are not trained to do the task."

But these reasons do not carry much weight. "Zigzag design for brick kilns has been used since the 1970s and is a well-tested technology. In West Bengal, for instance, 2,500-3,000 brick kiln owners have been using it for years without waiting for any government order," counters Sameer Maithel, director of Green-tech Knowledge Solutions, a clean energy research and advisory firm based in Delhi. "In Bihar, despite the cost and labour issues, most kiln owners are keen to shift to zigzag. According to our survey conducted around Patna, about 65 per cent of those who made the transition found that the zigzag technology was more fuel efficient and produced better bricks," Maithel adds.

EPCA asked Delhi government to shut down Badarpur coal power plant to reduce pollution in the city. After a gas-based sub-station became ready as a replacement, the plant was shut.

Year – 2017

Following Supreme Court order, CPCB issued directions regarding prohibition on use of pet coke and furnace oil in NCR states. EPCA and state pollution boards need to review and monitor progress as per notification issued by MoEF&CC.

By Industry & Business -

Paytm is distributing pollution masks among them and is also offering flexible working hours so that they can avoid the peak pollution in the morning and evening. Information technology company HCL, which has an employee strength of 35,000 in the NCR, is also distributing masks. India's biggest online travel agency MakeMyTrip said it was working on ways to help employees procure the right air masks at discounted prices on the office premises.

By Judiciary -

"We direct that for every incident of burning of any such above stated material, the person who is found actually burning such material and/or responsible for or abating such burning be liable to pay compensation in terms of the Section 15 of the National Green Tribunal Act, 2010, for polluting the environment and be liable to pay a sum Rs.5,000, to be paid instantaneously," ordered the Bench headed by NGT chairperson Swatanter Kumar.

The Supreme Court held the unrestrained mining activities by real estate firms in Rajasthan Aravalli Hills as one of reasons for rising pollution in Delhi.

National Green Tribunal on Wednesday lashed out at the Delhi government and the Central Pollution Control Board for not issuing orders to shut down construction and industrial activities in the capital despite the worsening air quality.

It also ordered Punjab, UP and Haryana governments to spell out the steps have they taken to prevent crop burning in the states adjacent to the national capital.

Taking into account the fundamental right of livelihood of firecracker manufacturers as well as the right to health of over 1.3 billion people in the country, the Supreme Court declined to impose a complete ban on firecrackers across the country and instead allowed only "green crackers" — which have low emission and permissible sound limits — to be sold through licensed traders as it effected a ban on online trade of firecrackers by e-commerce companies who will be held for contempt of court if they failed to adhere to the court order. The court fixed a time duration for bursting crackers: between 8 pm and 10 pm on Diwali, and between 11.45 pm and 12.30 am on Christmas Eve and New Year. The bench also said that the station house officers of police stations concerned will be held liable if banned crackers are sold in their respective areas. The petition was filed by three children who sought a countrywide ban on manufacture, sale and transportation of firecrackers. The Centre had opposed a complete ban on the sale of crackers during festivities across the country. The court also directed the Centre to encourage community cracker bursting during Diwali and other festivals in Delhi-NCR.

Delhi HC orders authorities to hold emergency meeting: The Delhi High Court also directed that an emergency meeting be called by the secretary of the Union Ministry of Environment, Forest & Climate Change with the chief secretaries of NCR states and pollution control agencies within three days.

The NGT also directed the authorities and the civic bodies to sprinkle water where PM 10 is found to be in excess of 600 micrograms per cubic metre. It further directed the authorities to implement EPCA's directions to improve ambient air quality while asking the civic bodies to constitute teams to ensure there is no burning of waste in Delhi-NCR.

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The NGT issued a slew of directions to deal with the situation, including banning construction and industrial activities and entry of trucks, while lambasting the Delhi government and civic bodies over the worsening air quality in Delhi and neighbouring states.

Year – 2017

The Supreme Court banned the use of Petroleum Coke (pet coke) and Furnace Oil (FO) for combustion in the states of Delhi, Haryana, Rajasthan and Uttar Pradesh on October 24, 2017. Furthermore, certain industry sectors, namely cement, limekiln and calcium carbide have been allowed the use of pet coke in their manufacturing process though under regulation. The court also directed MoEF&CC and CPCB to fix and implement SOx and NOx emission standards for 34 industries by December 31, 2017. The MoEF&CC issued standards for 23 industries by March 2018.

• Year 2016

Each year 10,500 people living in Delhi die of chronic respiratory related diseases, the Delhi High Court said today, describing the government's inaction against air pollution as amounting to "genocide". Bursting of fire crackers during Diwali is a small part of the problem. The satellite image from NASA submitted by DPCC (Delhi Pollution Control Committee) clearly indicates that crop burning in Punjab is the main culprit for spike in pollution level. Unfortunately, Punjab is in denial mode and contest any allegation that it is responsible for any pollution Delhi. But the facts are clear. Punjab (stubble burning) is killing us," The inaction of government is the culprit for shortening of life,".

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Actions & policies by state government

Year - 2018

• Delhi Metro & Rail

Delhi Metro extension linking Faridabad, Gurugram and Ballabhgarh with Badarpur between 2015-18; all stations and depot to be powered by solar panels, LED lighting, and CO2 sensors installed for good quality air. Faridabad-Gurugram link will be ready by 2021 while Greater Noida and Greater Faridabad will also be linked.

A high-speed rail network connecting Delhi to Rajasthan via South Haryana/Gurugram will begin in March 2019 to provide a convenient mode of travel for daily commuters from southern Haryana to Delhi.

Earlier this month, the Delhi government began a pre-Diwali crackdown on polluting vehicles. As part of this exercise, visibly polluting vehicles, those without PUC certificates, overloaded trucks and commercial vehicles would be stopped, with penalties ranging from fines to impounding of the concerned vehicle.

• Draft Electric Vehicles Policy

Delhi government released the draft "Electric Vehicle Policy 2018" to make 25% of new vehicle registrations electric by 2023. The policy approach is adoption rather than manufacturing focusing on two key vehicle segments - two-wheelers and public/shared transport - that make for nearly 60-65 per cent of the total passenger kilometers in Delhi and together contribute to about 55% of PM and 50% of NOx emissions. These vehicles have achieved parity in terms of life cycle, total cost of ownership with ICE (Internal Combustion Engine – diesel and petrol operated) vehicles. Through the policy, the AAP government has planned to create a significant corpus of funds through a cross-subsidisation concept called 'feebate' i.e. by adopting measures by which inefficient or polluting vehicles incur a surcharge (fee-) while efficient ones receive a rebate (-bate). The proposed incentives in the policy top-up the incentives of FAME scheme from central government, thereby further reducing EV prices. Additionally, a "pollution cess" will be levied from April 2019, the funds from which will also go towards subsidising the

purchase of electric vehicles. The policy focus is on enabling the development of an electric mobility ecosystem within the state, it focuses on the state's role as a regulator of important components of the ecosystem such as a network for private and public charging infrastructure. Though, the lack of restrictions on the purchase of petrol- or diesel-run vehicles could prove an obstacle in implementing the policy, said the experts.

Expert views:

"Electricity supply is not a problem. "This is a new market for electricity distributors because the northern grid is producing more electricity. But these distributors will have to give an assessment of how they will be able to support this infrastructure." - Anumita Roy Chowdhury of the Centre for Science and Environment.

"The draft policy is the finest ever policy for electric vehicles I have seen. I would like to congratulate the Delhi government that they are thinking in such a direction." - Ashok Jhunjhunwala, Professor at IIT Madras and former advisor to the government of India on electric vehicle policy.

If you are not limiting sales, then it is very difficult to see real change. In Singapore, there is a quota on the number of petrol or diesel-run vehicles that can be bought. The policy needs to focus more on tightening this aspect rather than leaving it loose." - Vikas Mishra, Shakti Sustainable Energy Foundation.

China shifted to 16,000 electric buses within three years but they also put restrictions on the number of fuel-run vehicles each family can own," he said. "We are not putting any restrictions on residents in Delhi.. drastic measure would be draconian." - Jasmine Shah, vice-chairperson of the Dialogue and Development Commission of Delhi.

The experts said that to make up for the lack of restrictions, the policy must have a detailed infrastructural plan. "It is very difficult to get residents to agree to lifestyle changes," said Anumita RoyChowdhury. "But to shift the market, the charging plans need to be rolled out immediately. The devil is in the detail of exactly how measures will be put in place. Getting this done would save us from sizeable emissions and exposure on the streets."

• Green Budget & consent to fell trees

The AAP government today presented its Rs 53,000 crore budget for 2018-19 in the Assembly, which laid emphasis on environment, health, education and water. This is the first "Green budget" of the government for effective containment of pollution in the city,

the Deputy CM said in the budget session of the Assembly. "We are going to thread 26 programmes and schemes of Transport, Power, Environment and PWD for devising a unified system of pollution control, bringing down levels of different pollutants," he said.

National Buildings Construction Corporation (NBCC), tasked with redeveloping colonies and felling 16500 trees in Delhi informed the Delhi HC that the ECs given by the Centre were in accordance with the earlier orders of the NGT and it had deposited ₹8 crore November last year with the tree authority of the Delhi government for permission to fell trees.

• Anti-smog machines



• Odd-Even Traffic Rule

In January and April 2016, the government of Delhi piloted an "odd-even" traffic rule which mandated that only cars with odd (even) numbered license plates could play on odd (even) dates. Analysis indicates even if the program resulted in reductions in traffic congestion and air pollution in the city, the odd-even program may not be a good long-term measure to reduce air pollution in New Delhi.

Actions & policies by other NCR stakeholders -

A team of researchers from Manav Rachna Educational Institutions based in Faridabad devised an air pollution mitigation system titled "Pariyayantra" which is an air filter unit that can be mounted on the roof of any vehicle — buses, cars, auto-rickshaws and even two-wheelers. As the vehicle moves, air passes through the holes in front of the device. The filters fitted inside the unit trap the pollutants

releasing clean air. Pariyayantra does not require any power to operate and is equivalent to the filtration provided by 6 room air filters. CPCB approved the pilot project for 30 buses in Delhi, flagged off by Minister of Environment Dr Harsh Vardhan, in the winter of 2018.

Noida-based start-up EV Motors India, provider of infrastructure solutions for E-mobility, plans to set up 20 electric vehicles (EV) charging outlets in Delhi-NCR and opened first such outlet under the name "PlugNgo" in DLF Cyber City, Gurgaon.

Bibliography

City profile, major issues of public concern and people's voices

<https://www.hindustantimes.com/gurugram/gurugram-will-be-super-smart-says-haryana-chief-minister-manohar-lal-khattar/story-XpzbMpcm6kjORLqc4RYvYO.html>
<https://www.localcircles.com/a/press/page/delhi-ncr-residents-want-to-leave-the-city-due-to-air-pollution#.XJkPKM8zb-Z>
<http://population.city/india/delhi/>
<http://megacitydelhitask.weebly.com/urban-problems.html>
<http://www.mernews.com/article/delhi-a-city-of-problems-needs-immediate-solutions/15811112.shtml>
https://www.business-standard.com/article/current-affairs/ease-of-living-index-delhi-ranks-65th-falls-behind-ncr-towns-like-gurgaon-118081401451_1.html

Air quality history of Delhi

<http://cpcb.nic.in/non-attainment-cities/>
[https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)
https://www.who.int/airpollution/data/aap_air_quality_data_base_2018_v14.xlsx?ua=1
<http://cpcb.nic.in/namp-data/>
<https://www.localcircles.com/a/press/page/delhi-ncr-residents-want-to-leave-the-city-due-to-air-pollution#.XJkPKM8zb-Z>
<https://www.ndtv.com/delhi-news/delhi-faces-major-ozone-spike-shows-sings-of-dangerous-trend-study-1864055>

Sources of pollution

<https://www.indiaspend.com/87-of-indian-vehicle-owners-ready-to-buy-electric-vehicles-if-that-reduces-pollution-survey-98547/>
<https://www.orfonline.org/research/the-herculean-task-of-improving-air-quality-the-case-of-delhi-and-ncr-45459/>
<https://www.ndtv.com/delhi-news/delhi-faces-major-ozone-spike-shows-sings-of-dangerous-trend-study-1864055>
<https://www.downtoearth.org.in/news/air/delhi-air-pollution-identifying-perpetrators-and-fixing-responsibility-56240>
<https://www.thehindubusinessline.com/opinion/air-pollution-a-public-health-emergency/article9957177.ece>
<https://weather.com/en-IN/india/pollution/news/2018-10-10-air-quality-drops-delhi-gasps-for-breath>
http://delhi.gov.in/wps/wcm/connect/doit_transport/Transport/Home/Pollution+Control/
<https://devinder-sharma.blogspot.com/2018/10/burning-paddy-stubble.html>

Health professionals view

https://www.business-standard.com/article/current-affairs/living-in-gas-chamber-delhi-here-are-top-10-developments-on-air-quality-117110900172_1.html

Impacts of air pollution on health

<https://www.livemint.com/Politics/nJLLRZXBdWKM7gsBIF7WzL/Pollution-restrains-elderlys-movement-worsens-health-condi.html>
<https://www.localcircles.com/a/press/page/delhi-ncr-residents-want-to-leave-the-city-due-to-air-pollution#.XJkPKM8zb-Z>
<https://www.ndtv.com/delhi-news/delhi-faces-major-ozone-spike-shows-signs-of-dangerous-trend-study-1864055>
<https://www.livemint.com/Home-Page/Ewq7SdIPeQDWxHnJRRUvK/Delhi-Gurgaon-air-show-presence-of-alarming-levels-of-heavy.html>
<https://www.ndtv.com/delhi-news/residents-face-breathing-issues-eye-infections-due-to-toxic-delhi-air-1940033>
<http://naradanews.com/2016/09/air-pollution-hits-lung-power-of-indians/>

City stakeholder actions – Individuals

<https://swachhindia.ndtv.com/air-pollution-delhi-citizen-groups-myrighttobreathe-demands-for-actions-27982/>
<https://www.indiatoday.in/india/story/citizens-take-to-the-streets-to-protest-against-cutting-of-trees-in-delhi-1268789-2018-06-24>

City stakeholder actions – NGOs & Educational/ Scientific Institutions

http://delhi.gov.in/DotI/Environment/PDFs/Final_Report.pdf
<https://www.indiatoday.in/education-today/news/story/foreign-university-delhi-govt-tackle-air-pollution-divd-1426100-2019-01-08>
<https://www.downtoearth.org.in/news/air/new-device-developed-to-tackle-pollution-in-high-traffic-zones-61726>
<https://www.telegraphindia.com/health/infographic-your-lungs-sucking-delhi-s-air-with-filters-on/cid/1675193>
<https://weather.com/en-IN/india/pollution/news/2018-10-26-biomass-burning-spike-2050>

Citizens collectives

<https://www.indiaspend.com/wp-content/uploads/2019/01/RTI-Survey-Report-on-Delhis-GRAP-URJA.pdf> <https://www.bloomberquint.com/politics/as-delhi-air-quality-soars-beyond-hazardous-government-emergency-plan-failed-this-winter>

City stakeholder actions – Industry & Business

<https://india.mongabay.com/2018/11/commentary-will-there-be-political-will-to-deal-with-air-pollution-in-an-election-year/>
https://www.business-standard.com/article/current-affairs/living-in-gas-chamber-delhi-here-are-top-10-developments-on-air-quality-117110900172_1.html

City stakeholder actions – Local city administration

<http://www.janaagraha.org/files/publications/GMDA.pdf>

City stakeholder actions – Judiciary

https://www.sci.gov.in/supremecourt/1985/63998/63998_1985_Order_24-Oct-2017.pdf
<http://epca.org.in/state-air-winter-2017-18.pdf>
<http://www.indiaenvironmentportal.org.in/content/459690/order-of-the-national-green-tribunal-regarding-closure-of-brick-kilns-operating-in-haryana-19112018/>
<https://www.thehindu.com/news/national/other-states/now-rs-5000-fine-for-burning-trash/article7156022.ece>
<https://www.businessinsider.in/heres-how-vanishing-aravalli-hills-in-rajasthan-is-affecting-air-quality-in-delhi/articleshow/66365033.cms>
<https://economictimes.indiatimes.com/industry/auto/ministries-to-push-for-electric-vehicles-to-be-included-in-govt-owned-car-fleets/articleshow/53124229.cms>
<https://www.india.com/news/india/delhi-pollution-man-of-substance-arvind-kejriwal-being-ignored-by-centre-shatrughan-sinha-targets-modi-government-again-2616054/>

https://www.business-standard.com/article/current-affairs/living-in-gas-chamber-delhi-here-are-top-10-developments-on-air-quality-117110900172_1.html
<https://indianexpress.com/article/india/supreme-court-firecracker-ban-pollution-diwali-5413938/>
<https://www.ndtv.com/delhi-news/government-inaction-against-air-pollution-genocide-high-court-1623945>

<https://www.india.com/news/india/delhi-pollution-man-of-substance-arvind-kejriwal-being-ignored-by-centre-shatrughan-sinha-targets-modi-government-again-2616054/>
https://www.business-standard.com/article/current-affairs/living-in-gas-chamber-delhi-here-are-top-10-developments-on-air-quality-117110900172_1.html

City stakeholder actions – Pollution Control Board/Authority

<http://www.epca.org.in/EPCA-Reports1999-1917/Report-draft-no.66.pdf>
<https://indianexpress.com/article/cities/delhi/action-taken-on-pollution-remains-dismal-open-storage-of-construction-material-biggest-culprit-5420585/>
<http://cpcb.nic.in/openpdf.php?id=UHVibGjYXRpb25GaWxkLzNf8xNTEyMDY2X21lZGhlcGhvdG8xNDI1Mi4xMQ==>
<http://epca.org.in/state-air-winter-2017-18.pdf>
<https://www.downtoearth.org.in/news/environment/74-brick-kilns-in-delhi-ncr-have-not-shifted-to-cleaner-technology-61624>
<https://www.hindustantimes.com/delhi-news/shifting-polluting-brick-kilns-to-clean-tech-a-major-challenge-green-panel/story-vMNHvfxB1n9qYC7Y0gtffO.html>
http://www.epca.org.in/EPCA-Report_77.pdf
<https://indianexpress.com/article/cities/delhi/central-pollution-control-board-writes-to-noida-district-magistrate-over-unauthorised-firecracker-sale-5440446/>
<http://www.epca.org.in/EPCA-Reports1999-1917/EPCA-note-supreme-cCourt-prevention-crop-residue-burning.pdf>
<https://www.ndtv.com/india-news/environment-minister-says-pollution-doesnt-kill-the-doctor-disagrees-1660944>
<https://timesofindia.indiatimes.com/city/delhi/badarpur-thermal-plant-shut-for-good/articleshow/66228551.cms>
http://cpcb.nic.in/uploads/final_graded_table.pdf

City stakeholder actions – state government

http://www.delhimetrorail.com/press_reldetails.aspx?id=63aQSC8zmhslld
<https://www.hindustantimes.com/gurugram/faridabad-gurugram-metro-link-to-be-operational-by-april-2021/story-UwoKebUngiUnutMW23b7M.html>
<https://economictimes.indiatimes.com/news/politics-and-nation/haryana-gives-go-ahead-for-high-speed-rail-project/articleshow/64606212.cms>
<https://www.businesstoday.in/opinion/columns/accelerating-electric-mobility-could-delhi-ev-policy-be-a-game-changer/story/303822.html>
<https://auto.economictimes.indiatimes.com/news/policy/industry-experts-hail-delhis-draft-electric-vehicle-policy/67150078>
<https://www.downtoearth.org.in/blog/urbanisation/how-delhi-s-draft-e-vehicle-policy-stands-out-62708>
<https://scroll.in/article/905914/delhis-electric-vehicle-policy-promises-cleaner-air-but-no-brakes-on-fuel-run-cars-is-a-worry>
<https://scroll.in/latest/862078/delhi-government-to-test-anti-smog-gun-in-anand-vihar-area-today>
<https://www.thehindubusinessline.com/news/national/aap-govt-presents-its-first-green-budget/article23319804.ece>
<https://www.thehindubusinessline.com/news/national/aap-govt-presents-its-first-green-budget/article23319804.ece>
<https://epic.uchicago.in/wp-content/uploads/2017/07/Odd-Even-EPW-draft-02072017.pdf>
<https://www.cseindia.org/delhi-ncr-facing-major-ozone-spike-warns-cse-8746>

City stakeholder actions – Other NCR stakeholders

<https://manavrachna.edu.in/latest/manav-rachnas-revolutionary-air-filtration-project-flagged-off-by-cpcb/>
<https://www.w3livenews.com/News/ReadArticle>

Political Leaders Position and Activities on Constituency Air Quality



Dr Harsh Vardhan

Chandni Chowk

Member of Parliament since: 2014

Party: BhartiyaJanta Party

Current Portfolio: Minister of Environment,
Forests & Climate Change



Maheish Giri

East Delhi

Member of Parliament since: 2014

Party: BhartiyaJanta Party

Current Portfolio: Member, Standing
Committee on Urban Development



Meenakshi Lekhi

New Delhi

Member of Parliament since: 2014

Party: BhartiyaJanta Party



Manoj Kumar Tiwari

North East Delhi

Member of Parliament since: 2014

Party: BhartiyaJanta Party



Dr Udit Raj

North West Delhi

Member of Parliament since: 2014

Party: BhartiyaJanta Party



Ramesh Bidhuri

South Delhi

Member of Parliament since: 2014

Party: BhartiyaJanta Party



Parvesh Sahib Singh Verma

South Delhi

Member of Parliament since: 2014

Party: BhartiyaJanta Party

MP's statements on air quality

Year 2018

Dr. Harsh Vardhan has said that along with the initiatives taken by the Government, the participation of the society is an imperative. Launching the air quality early warning system for Delhi, here today, Dr. Harsh Vardhan pointed out that with an outlay of Rs. 1151.80 crore under the new Central Sector Scheme, the Centre has already released Rs. 591.65 crore to Punjab, Haryana, Uttar Pradesh and NCT of Delhi for the promotion of agricultural mechanization for in-situ management of crop residue.

"Ultimately these studies have to be India centric. To attribute any death to a cause like pollution, that may be too much. Certainly if you have a diseased lung and if the pollution is continuously damaging your alveoli (air sacks) then one day when you die, you can attribute the cause of death, to some proportion, to maybe pollution. But I don't think we can generalise and say that millions of people are dying only due to pollution. - Dr Harsh Vardhan, Union Minister of Environment, Forest & Climate Change.

"It can be a killer also. It can be like a slow poison. Which keeps destroying your alveoli in the lungs at a slow pace. Even if the report had not come out I would be worried," - Dr Harsh Vardhan, Union Minister of Science & Technology.

"Pollution has become a very dangerous issue...Toxic air is causing health hazards for both adults and children...In view of the falling standard of air quality, the CPCB has issued an

advisory...it is very shameful that despite being the capital of the country, Delhi is the most polluted State" - Manoj Tiwari, MP & State President BJP.

"Pollution is killing the people of Delhi. The air has become toxic but the CM is not concerned. The Kejriwal-led government collected crores of rupees by levying green cess on commercial vehicles entering Delhi but did not utilise this money to control pollution... The people want to know what has Mr. Kejriwal done with the money collected" - Manoj Tiwari, MP & State President BJP.



"For the solution of air pollution, Chief Ministers of nearby states should sit together and talk. The government should buy the stubble from farmers." - Manoj Tiwari

The Delhi unit of BJP will be coming out with a separate manifesto for the Lok Sabha polls with special focus on local issues, Delhi BJP chief Manoj Tiwari said. The manifesto's content is yet to be worked upon but it will promise making Delhi pollution-free and cleaning Yamuna among others.

"Odd-even formula can be a formula for traffic maintenance and management but not a formula to stop pollution," Meenakshi Lekhi.

MP's Parliamentary statements on air quality

Year - 2019

The Union minister of environment, forest and climate change, Dr Harsh Vardhan, said in Parliament on Friday that there is no conclusive data available in the country to establish direct correlation of death/disease exclusively to air pollution.

Meenakshi Lekhi asked questions about air pollution in parliament at different times on Odd-Even, level of pollution, impact of pollution on monuments, pollution measuring devices and monitoring of polluting industries from the relevant Ministries.

Maheish Girri asked questions about air pollution in parliament at different times on air pollution due to crop residue burning, Odd-Even, Impact of pollution on Tourism and Pollution from Brick kiln.

Parvesh Verma asked questions about air pollution in parliament at different times on Comprehensive Action Plan to control air pollution and pollution by NTPC plants,

State Government's statements on air quality

Delhi's Deputy Chief Minister Manish Sisodia presented the Budget for 2018-'19 in the state Assembly on Thursday, calling it "India's first green Budget" with an aim to reduce nearly 21 lakh tonnes of carbon dioxide this year. The government will also consult a team from World Bank to be able to forecast pollution levels, Sisodia said. The government has proposed 905 electric vehicles to ensure last-mile connectivity from metro stations, and 1,000 electric buses to encourage public transport. Delhi will also monitor real-time data on pollution in the city this year.

"Once again this Government has announced schemes without the constitutional approval due to which ultimately the people of Delhi will be disappointed. From working on pollution control to ration distribution, this budget seems concentrating on privatising the services and it seems that Arvind Kejriwal Government now wishes to play kick backs game in connivance with the private companies,' Mr Manoj Tiwari said.





Other Party Statements on air pollution

Year 2018

In a meeting chaired by Delhi Congress president Ajay Maken, a resolution was passed that sought attention of the chief ministers who visited Delhi and extended support to their Delhi counterpart Arvind Kejriwal.

"The resolution condemns the air-conditioned dharna politics of the Kejriwal government and the BJP leaders at a time when the city is facing acute water and power shortage, severe air pollution and sanitation crisis," Maken said.

Year 2017

"It is complete negligence on the part of (chief minister) Kejriwal's government. It has not been able to utilise Rs 787 crore which is lying idle. The public transport system in Delhi is in shambles." – Ajay Maken. Former Delhi Congress Chief.

State Government's action on air quality

The Outcome Budget was tabled by Deputy Chief Minister Manish Sisodia in the Assembly on Monday said that 26 monitoring stations and 12 hotspots in Delhi have been identified to specifically monitor parameter-wise pollutants and with constant monitoring and enforcement, there has been a steady decrease in PM 10 (fine particulate matters in the air with a diameter of less than 10 micrometers) and PM 2.5 (fine particulate

matters in the air with a diameter of less than 10 micrometers) concentrations.

Environment Minister Imran Hussain informed that the Delhi government has initiated the testing of Anti-Pollution Towers at Indraprastha Marg Flyover, ITO on pilot/experimental basis for demonstrating its effectiveness in the reduction of particulate matter i.e. PM 2.5, PM 10 and other suspended particulate matter in the air. Anti-Pollution Towers absorb particulate matter from surroundings and release fresh air back into the atmosphere.

City-focussed actions announced/taken by MP

The government today said a Comprehensive Action Plan (CAP) for management of air pollution "specifically" for Delhi-NCR has been finalised by the Environment Ministry. The plan has a number of measures including actions to reduce vehicular emissions and control dust from constructions.

Manoj Tiwari distributed free anti-pollution air masks to public at the Pallika Bazaar in New Delhi. He reportedly handed over more than 1,000 masks.

Delhi BJP president Manoj Tiwari today asked the party-ruled municipal corporations to step in to tackle the rising air pollution in the city as the AAP government has "failed" to take effective measures.

In his letter to mayors and commissioners of the South, North and the East Delhi Municipal Corporations, which are ruled by the Bharatiya Janata Party, Manoj Tiwari requested them to ban all construction activities in Delhi with immediate effect.

State BJP chief Manoj Tiwari on Thursday took questions from Delhiites, on issues ranging from air pollution to the Aam Aadmi Party's (AAP) statehood pitch, at a social media outreach initiative dubbed 'Manoj Tiwari Ki Chaupal'. The people of Delhi raised about 1,700 questions and suggestions through their tweets on #ManojTiwariKiChaupal to their MP and Pradesh president.

Meenakshi Lekhi released a theme paper on the impact of air pollution, water and sanitation challenges, and climate change on human health.

Meenakshi Lekhi launched Automatic Organic Waste Decomposer at Jhandewalan Devi Temple. The fully automatic organic waste decomposer with a waste capacity of 100 Kgs. per day, donated by Angelique Foundation,

converts flowers to compost, reducing city waste pollution without emitting a foul smell. The compost will be used to fertilize the green areas around the temple. This is an initiative in the direction of Swachh Bharat Abhiyan.

Policies & activities by MP's union government

Year – 2019

NCAP with Rs. 300 crore launched as a mid-term, five-year action plan from 2019 to reduce air pollution by 20-30% by 2024 in all 102 non-attainment cities, taking 2017 as the base year.

The MoEF&CC has planned to replicate the 'Clean Air for Delhi' campaign in the non-attainment NCAP cities in due course. The Campaign was launched in the Capital on February 10 jointly by the central and Delhi governments to address all sources of pollution. As part of the Campaign, 70 teams had been deployed across the city to monitor sources of air pollution and also to take on-the-spot action against violators.

Year – 2018

The EPCA was reconstituted under the provisions of the Environment (Protection) Act, 1986 on October 3, 2018, by including new members, with the mandate of 'improving the quality of environment', in Delhi. The reason why EPCA is an authority, and not just an advisory committee, is because it has powers similar to those enjoyed by the Centre. Specifically, it can issue directions in writing to any person, officer or authority, including for – but not limited to – stoppage of electricity, water and other services. If its directions are not followed, it has powers to file criminal complaints (under section 19 of the Act) before courts. In a recent RTI response, the EPCA specifically stated that "it never needed to invoke the powers under Section 19 of the Environment (Protection) Act, 1986". The EPCA has not initiated even a single criminal complaint before a magistrate till date, though the authority is to thank for the Supreme Court's recent decisions about pet coke and BS VI compliance for vehicles. The EPCA is headed by Bhure Lal, a former secretary to the Government of India, since 1998. Civil society representation is through two members based in Delhi: Narain, director general of the Centre for Science and Environment (CSE), who said "EPCA's main work has been to assist the Supreme Court in preparing Reports and also in monitoring the implementation of the Courts Orders", and Vishnu Mathur, director general of the Society for Indian Automobile Manufacturers (SIAM), members have stated in public that they are opposed to any restriction on the use of diesel cars. The official members

include all the Municipal Corporations of Delhi, the Delhi Police and the Delhi Jal Board. There is no representative from any other state other than Delhi.

MoEF&CC notified the Comprehensive Action Plan (CAP) to combat air pollution in the long-run for Delhi-NCR. The plan will work in collaboration with Graded Response Action Plan (GRAP) which comes into effect when air quality degrades.

The PMO set up a sub-committee on solutions for crop burning. Budget 2018 allocated Rs 1200 crore for the strategy recommended by the sub-committee, endorsed by EPCA and to be implemented by MoEF&CC.

Niti Aayog proposed a 15-point action plan, titled Breathe India, to combat air pollution in the most polluted cities of India.

National Auto Policy released including EV, CNG, biofuels, and hydrogen vehicles, though without timelines and no link with EV 2030 vision, FAME II or Make in India. Under the FAME II India scheme around Rs. 5,500 crore over a five year period has been set aside to provide grants for all kinds of electric vehicles.

Gol sealed a deal with World Bank, GIZ, ADB, SDC, AFD and Bloomberg Philanthropies, to build capacities of all 102 polluted cities across the country. The initial small budget of 300 crore is meant for expanding air quality monitoring capacities in states, setting up national emission inventories and conducting source apportionment studies in cities to identify nationwide pollution hotspots.

Economic Survey 2017-18 took note of the alarming air pollution situation in Delhi NCR and suggested that each of the source problems must be addressed systematically, through coordination between agencies and Central and State Governments and sustained civic engagement. The Economic Survey also emphasizes technological means, implemented through agricultural cooperatives, local bodies etc, to tackle pollution arising out of the burning of agricultural waste. One such potential solution identified is the Happy Seeder machine that sows seeds without the need to remove paddy straw, and works well when the straw is spread evenly on the field through the straw management system. It encourages development and implementation of business models with private sector and communities and incentives to shift to non-paddy crops.

The road transport and highways ministry along with the heavy industries ministry will write to the

finance ministry to make procurement of electric cars mandatory for government departments in staff car rules to promote use of alternative fuel vehicles in cities. The transport ministry has also proposed to rope in taxi aggregator firms such as Ola and Uber to promote electric vehicles as city taxis by including them as part of their fleet.

Year – 2017

The central government launched the "City Liveability Index" - a first of its kind initiative introduced by the Urban Development Ministry - to measure the quality of life in 116 major cities including capital cities and those with population over one million. The cities will be assessed on a comprehensive set of 79 parameters to capture the extent and quality of infrastructure including availability of roads, education and health care, mobility, employment opportunities, emergency response, grievance redressal, pollution, availability of open, green spaces, and culture. Railways Ministry announced new reforms and services such as Roll On Roll Off and long-term contracts to enhance freight traffic and reduce dependence on commercial vehicles. NITI Aayog formed task forces in collaboration with CII on clean fuel, clean transport, clean industries and biomass management to submit roadmap with recommendations for managing the air-quality of the Indo-Gangetic plain as a whole.

"Air pollution could be one of the triggering factors for respiratory ailments and associated diseases. However, there are no conclusive data available in the country to establish direct correlation between diseases and air pollution." - Late Madhav Dave, former Union Minister of Environment, in a statement to Parliament.

Year – 2016

National Capital Region Planning Board (NCRPB), an urban planning body for the NCR, asked the NCR states to submit action plans for air pollution, increase forest cover to 20% of total geographical area, and to speed up 14 inter-state connectivity links for seamless travel in the region.

Government of India announced the advancement of vehicular emissions and fuel quality norms to BS-VI levels by the year 2020 across the country.

All non-attainment cities were given a set of 42 action points to improve air quality and as a follow-up, 94 cities were asked to prepare detailed action plans. The states concerned had been urged to steer implementation of action plans in these cities. The CPCB has also

launch a mobile app - SAMEER - for grievance redressal.

Year – 2015

Government of India announced FAME scheme under NEMMP to promote electric vehicles. Instead, EV manufacturers and sellers were expecting a policy and regulatory framework laying out a roadmap for creating an ecosystem comprising, most importantly, charging stations, as well as rolling out incentives for both manufacturing and purchasing EVs.

Bibliography

MP's statements on air quality

<http://pib.nic.in/newsite/PrintRelease.aspx?relid=184199>
<https://www.thehindu.com/news/cities/Delhi/manoj-tiwari-asks-kejriwal-to-call-meeting-on-pollution/article25823170.ece>
<https://www.thehindu.com/news/cities/Delhi/aap-govt-has-made-city-no-1-in-pollution-bjp/article26451284.ece>
<https://twitter.com/manojtiwarimp/status/1056955917281955842>
<https://www.devdiscourse.com/article/national/464149-delhi-bjp-unit-to-come-out-with-separate-manifesto-for-lok-sabha-polls-manoj-tiwari>
<https://economictimes.indiatimes.com/news/politics-and-nation/odd-even-for-traffic-management-not-to-contain-pollution-meenakshi-lekhi/articleshow/61578704.cms>
<http://delhiassembly.nic.in/DelhiMPs/DelhiMPs.htm>
<https://www.localcircles.com/a/press/page/delhi-ncr-residents-want-to-leave-the-city-due-to-air-pollution#.XJkPKM8zb-Z>

MP's Parliamentary statements on air quality

<https://www.downtoearth.org.in/news/environment/minister-claims-no-data-for-pollution-related-deaths-in-india-studies-say-otherwise-62706>
<https://www.prsindia.org/mptrack/meenakashilekhi>

State government's statements on air quality

<https://twitter.com/arvindkejriwal/status/927785134803136512?lang=en>
<https://scroll.in/latest/872905/delhi-presents-first-green-budget-aims-at-better-pollution-control-this-year>
<http://www.uniindia.com/delhi-budget-jugglery-of-statistics-says-manoj-tiwari/india/news/1176267.html>
https://www.business-standard.com/article/current-affairs/living-in-gas-chamber-delhi-here-are-top-10-developments-on-air-quality-117110900172_1.html

Other Party's Statements on air quality

<https://www.hindustantimes.com/delhi-news/delhi-pollution-kejriwal-govt-draws-criticism-as-rti-files-rs-787-cr-of-green-cess-lying-idle/story-DfKczUvP17b6SIY17ZWXN.html>
<http://www.newindianexpress.com/cities/delhi/2018/jun/19/delhi-congress-slams-aap-bjp-for-air-conditioned-dharna-politics-1830071.html>

State government's Action on air quality

<https://aamaadmparty.org/delhi-govt-begins-trials-on-effectiveness-of-anti-pollution-towers-in-tackling-air-pollution/>
<https://www.downtoearth.org.in/news/delhi-budget-aims-to-address-air-pollution-with-transport-reforms-50345>

City-focussed actions announced/taken by MP

<https://www.ndtv.com/delhi-news/to-tackle-delhi-air-pollution-centre-okays-a-comprehensive-action-plan-1822922>

<https://www.indiatoday.in/india/story/manoj-tiwari-steps-out-wearing-mask-as-delhi-air-becomes-toxic-see-pics-1378467-2018-10-30>
<https://www.ndtv.com/delhi-news/delhi-air-pollution-manoj-tiwari-asks-bjp-ruled-municipal-bodies-to-ban-construction-work-1939461>
<https://www.thehindu.com/news/cities/Delhi/tiwari-launches-social-media-campaign/article26668580.ece>
http://www.ptinews.com/news/8754230_Need-eco-friendly-approach-for-healthy-living--Lekhi.html
<https://www.prsindia.org/mptrack/meenakashilekhi>
<http://indiaeducationdiary.in/meenakshi-lekhi-launched-automatic-organic-waste-decomposer-jhandewalan-devi-temple/>

Policies & activities by MP's union government

<https://www.iamrenew.com/policy/little-late-govt-earmarks-300-crores-fight-air-pollution-102-cities/>
<https://economictimes.indiatimes.com/news/environment/pollution/dedicated-plan-for-100-cities-to-reduce-air-pollution-levels/articleshow/62905770.cms>
http://niti.gov.in/writereaddata/files/document_publication/BreatheBooklet11thJuly.pdf
https://dhi.nic.in/writereaddata/UploadFile/DHI-NAB-Auto%20Policy%20Draft%20Document_vDRAFT.pdf
<https://economictimes.indiatimes.com/news/environment/pollution/four-international-agencies-to-join-govts-effort-to-tackle-air-pollution-in-102-cities/articleshow/66548971.cms?from=mdr>
<http://pib.nic.in/newsite/PrintRelease.aspx?relid=158793>
[http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20\(2\).pdf](http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20(2).pdf)
<https://www.thehindu.com/opinion/op-ed/advancing-bs-vi-emission-norms/article25438769.ece>
<https://archive.indiaspend.com/cover-story/0-02-new-cars-are-electric-heres-what-govt-must-do-to-reach-all-electric-goal-78119>
<https://economictimes.indiatimes.com/news/environment/pollution/govt-has-made-serious-efforts-to-curb-air-pollution-govt-after-who-report/articleshow/64003558.cms?from=mdr>
<https://www.downtoearth.org.in/news/air/niti-aayog-releases-reports-on-biomass-management-clean-fuel-and-clean-transport-59790>
<http://www.epca.org.in/EPCA-Reports1999-1917/EPCA-note-supreme-cCourt-prevention-crop-residue-burning.pdf>
<https://economictimes.indiatimes.com/news/politics-and-nation/ncprb-directs-delhi-adjoining-states-to-submit-plans-to-control-air-pollution/articleshow/56089518.cms>
<https://www.hindustantimes.com/india-news/no-data-to-links-air-pollution-with-diseases-in-india-environment-ministry/story-mJB0m86MeMe8V3QDIct2uO.html>
<https://www.ndtv.com/india-news/air-pollution-harmful-but-it-isnt-a-killer-says-environment-minister-harsh-wardhan-1773985>
<https://thewire.in/government/epca-was-specially-empowered-to-deal-with-air-pollution-crises-is-it-working>

Lucknow

Pollution not on anyone's agenda.



Picture Courtesy: TOI

Lucknow as the capital of a large state of Uttar Pradesh is a key economic base in north India and a prominent trading city. Lucknow is a fast-growing and industrializing Tier-II city selected in the Smart City mission to meet the investment demand and livelihood needs. This is leading to construction and infrastructure development activity on a fast-track basis that has brought the city in the top polluted cities list consistently over the past few years.

The Ease of Living index by Ministry of Housing & Urban Affairs places Lucknow at the 73rd place out of 111 cities in India. The index gives lowest weightage to economy of a place and provides more emphasis to institutional, social and physical aspects of a city's experience. Lucknow had just 2 marks for waste water management, 2.5 for solid waste management and 2.15 out of 5 for reduced pollution.

Vital Statistics of Lucknow

Census 2011	Estimated 2019	WHO Ranking	AQI Dec 2018
1,033,756	1,423,420	7	334 (very poor)

*AQI: Air Quality Index by Central Pollution Control Board

Major public issues of Lucknow & voices

1.	Air & Noise pollution
2.	Inadequate clean drinking water access
3.	Public spaces cleanliness & sanitation, poor drainage, water logging
4.	Rapid urbanization at the expense of greenery
5.	Urban infrastructure – road condition, traffic congestion, old buildings, electricity supply
6.	Law and order

Air quality history of Lucknow

WHO listed Lucknow as the 3rd most polluted in their 2018 database while in February 2019, a study by IIT-Kanpur and Shakti Foundation showed Lucknow suffered poor air quality for 70% of the days between October-November 2018 with PM2.5 levels crossing 170 microgram/m³.

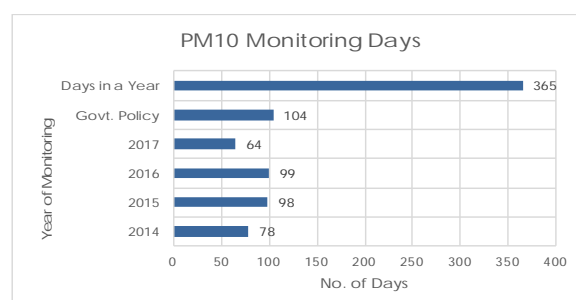
Number of air quality monitoring stations – Lucknow as an NCAP non-attainment city has 4 continuous monitoring station (CAMS) reporting data for all types of pollutants and 4 manual stations reporting data on PM10, SO₂ and NO₂.

PM10 microgram/m³(as per CPCB)

2014	2015	2016	2017	CPCB safe limit	WHO safe limit
174	169	214	246	60	20



This graph indicates the average of PM10 pollutant recorded by the operating stations in a city in the indicated year, as reported by CPCB. When data is missing it is indicated as zero.



Government policy is to monitor air quality twice a week, that is, 104 days in a year of 365 days. This graph indicates on an average how many days in a year all the stations in a city have monitored the pollutants PM10, NO₂ and SO₂, as reported by CPCB. That way, data is not available for more than the number of days indicated. When monitoring is not done, it is indicated as zero.

Sources of pollution

1.	Vehicles
2.	Construction of Metro Rail & other construction
3.	Industries
4.	Wood burning for fuel and other domestic needs
5.	Garbage burning

"The weather plays the most important role in pollution levels. The wind velocity in the first 2 weeks of October has been really low which is not allowing the dust particles to disperse and remain suspended in air. Fall in day and night temperatures is also contributing to increased pollution level by not allowing the dust to rise up with warm air." – Professor Dhruv Sen Singh, Director, Climate Monitoring Station, Lucknow University.

"Multiple factors are responsible for air quality going down, and they include mainly the addition of more vehicles on road, long traffic jams, bad roads, and dust from construction sites." – Alok Dhawan, Director, CSIR-Indian Institute of Toxicology and Research.

According to Sumit Sharma at The Energy and Resources Institute, "While Delhi has 35% of air pollution due to inhouse sources like garbage burning, road dust and transport, UP generates 50% of the pollution inhouse."

Impacts of air pollution on health

The research Global Burden of Disease Study 2017 by *Lancet* says air pollution is now the second largest cause of pre-mature deaths in India after cardio-vascular diseases. In the 1990s, air pollution was the third largest cause of such deaths in India. In an article for the British medical journal *The Lancet*, experts from more than 100 institutions including the Indian Council of Medical Research and the Institute for Health Metrics and Evaluation at the University of Washington, said that Uttar Pradesh had the second-highest disease burden linked directly to air pollution among all states as of 2016, after Rajasthan.

In Lucknow, increase in respiratory and other diseases has been reported:

- Bronchitis
- Asthma
- COPD
- Tuberculosis
- Lung cancer
- Eye infection
- High blood pressure
- Heart congestion
- Pneumonia

Table 4: Incidence of Air-borne Diseases Among the Respondents, Lucknow City		
Air-borne Disease	Respondents	
	Number	%
Asthma	159	19.9
Bronchitis	24	3
Pneumonia	108	13.5
Tuberculosis	139	17.4
Lung Cancer	31	3.9
Eye Infection	245	30.6
High BP	377	47.1
Congestion Heart	152	19

Source: A Study of Air Quality and its Effect on Health: A Geographical Perspective of Lucknow/Researchgate.

Vehicle owner's view: About 87% of drivers and vehicle owners surveyed by Climate Trends across India would buy an electric vehicle, if that helped reduce air pollution. About 76% said that they, their friends, family and neighbours, were suffering the effects of poor air quality.

"With metro construction, increasing number of vehicles and mismanagement of traffic, residents of Hazratganj have been facing severe respiratory problems. I hardly go out, but pollution is such that breathing within the house is difficult too." – Rekha Chhabra, a resident of Park Road.

"Cancer has also a link to high level of nitrous oxide and other pollutants in the air as many cases told they live in areas with high air pollution. The cancer cervix is linked to poor hygiene," said Dr. Shailandra Kumar of the general surgery department at the King George's Medical University.

"Lucknow is one of the most polluted cities in the world as per WHO and we can witness this right in front of our eyes. People are exposed to high levels of toxic air. There has been an increase in the number of patients visiting hospitals with complaints of respiratory problems in the last three months. Other cities of Uttar Pradesh are also facing the same situation, especially Agra, Varanasi and Kanpur. We at Doctors for Clean Air are trying to reach out to as many people as possible to make them aware of the harmful impacts of air pollution." – Dr. Suryakant, Head of the Department of Respiratory Medicine and Pulmonary, King George's Medical University and Lucknow Convenor of Doctors for Clean Air.

City stakeholder actions to address air pollution

By NGOs, Medical Groups

- **Doctors for Clean Air & Climate Agenda**
The state of the poor air quality in India's most populous state was highlighted

when environment activists, Doctors For Clean Air, and Climate Agenda installed artificial lungs in the state's capital Lucknow at Lalbagh area near the Municipal Corporation office. The installation was aimed at highlighting the impact of air pollution on healthy lungs. The installed lungs started getting black within 24 hours and turned completely black in five days' time, raising serious concerns about the quality of air people breathe in the city.

- **Know what you breathe**

"The largest share of premature death burden in Agra, Gaya, Kanpur, Gorakhpur, Lucknow, Patna, Muzaffarpur and Varanasi is attributed to acute lower respiratory infections, primarily emanating from residential (cooking, heating and lighting) sources, followed by industry, transport and energy sectors. Chronic obstructive pulmonary diseases (COPD) are the cause of the largest share of premature deaths in these cities," says the study by (CEED) in collaboration with Indian Institute of Technology, Delhi (IIT-D). The study recommends to concerned state governments strengthening public awareness and expediting the process to replace solid fuels with cleaner fuels, besides coordinating with each other to prepare an efficient regional clean air action plan.

By Scientists & Educational Institutions

Year – 2019

Scientists at IIT-Kanpur funded by Department of Science & Technology have developed a low-cost air pollution sensor capable of measuring the level of harmful gases such as ozone and nitrogen oxides. The sensor is priced at Rs 50,000 as compared to commercial instruments that cost Rs 1-2 crore in the international market.

Year – 2018

IIT-Kanpur organized courses on "Impact of RE and EVs" for FIs, manufacturers and consultants.

By Industry/Businesses

Year - 2018

Mahindra Electric launched its all-electric cars, commercial vehicle for both passenger and goods carrier and rickshaw for passenger movement in Lucknow, Kanpur and Agra.

EIL will invest Rs 1,750 crore in phased manner with the launch of 250 charging stations, 1,000 battery swapping stations in 20 cities of Uttar Pradesh.

By Judiciary

Year -2019

High court shout on secretary, state pollution control board for disobey its order to personally appear in the court.

लखनऊ. इलाहाबाद हाईकोर्ट की लखनऊ खंडपीठ ने राजधानी और प्रदेश की जहरीली होती जा रही हवा पर गम्भीर रुख अपनाते हुए केंद्रीय प्रदूषण नियंत्रण बोर्ड के सदस्य सचिव को 6 मार्च को व्यक्तिगत रूप से तलब किया है। कोर्ट ने पूर्व आदेश के अनुपालन में सदस्य सचिव के शुक्रवार को हाजिर न होने पर कड़ी नाराजगी जताई है।

Actions & policies by state government

2018 November

State government asked the civil aviation ministry for its approval regarding artificial rains in Kanpur through cloud-seeding.

UP government identified 10 cities including Lucknow for 100% Multi-Modal Electric Public Transport (passenger and goods) by 2030. The state government released EV Manufacturing Policy 2018 to incentivize EV battery and charging infrastructure development in the state through public and private interventions. The policy also includes incentives to buyers for creating demand.

UP chief secretary Rahul Bhatnagar issued directions to senior officials to take "effective measures regularly" to control air pollution in different cities in UP. Asking the government departments to ensure stringent action through a drive against polluting vehicles, Bhatnagar has banned the burning of garbage inside city limits.

Bibliography

City profile, major issues of public concern and people's voices

<https://www.hindustantimes.com/india-news/pm-modi-s-constituency-varanasi-is-the-most-liveable-city-in-uttar-pradesh/story-Ov8LfStZnIUojcZjAEaTdJ.html>
<https://timesofindia.indiatimes.com/city/lucknow/lucknow-getting-drinking-water-is-a-daily-struggle-here/articleshow/57105982.cms>
<https://www.dnaindia.com/india/report-lucknow-the-most-polluted-city-in-the-world-three-other-indian-cities-feature-on-25-most-polluted-cities-survey-1893523>
<https://scroll.in/article/824796/the-pollution-problem-in-varanasi-lucknow-and-allahabad-could-be-worse-than-even-delhi>
<https://timesofindia.indiatimes.com/city/lucknow/Disease-dwells-with-humans-in-Lucknow-slums/articleshow/32814039.cms>
<https://timesofindia.indiatimes.com/city/lucknow/Lucknow-battles-power-problems-but-two-sub-stations-leave-idle/articleshow/20143057.cms>
<https://www.jagran.com/uttar-pradesh/lucknow-city-major-challenges-in-uttar-pradesh-18357303.html>
<https://timesofindia.indiatimes.com/city/lucknow/pollution-kills-4000-every-year-in-lucknow/articleshow/64281992.cms>

<http://population.city/india/lucknow/>
http://cpcb.nic.in/upload/Downloads/AQI_Bulletin_20181224.pdf

Air quality history of Lucknow

<https://www.ndtv.com/india-news/3-cities-beat-delhi-to-indias-most-polluted-list-patna-at-top-spot-1993210>
[https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)
https://www.who.int/airpollution/data/aap_air_quality_data_base_2018_v14.xlsx?ua=1
<http://cpcb.nic.in/namp-data/>

Sources of pollution

<https://www.indiaspend.com/87-of-indian-vehicle-owners-ready-to-buy-electric-vehicles-if-that-reduces-pollution-survey-98547/>
<http://greenubuntu.com/how-lucknow-became-one-of-indias-dirtiest-cities-air-pollution-case-study/>
<https://timesofindia.indiatimes.com/city/lucknow/air-pollution-level-in-lucknow-already-higher-than-last-year/articleshow/66230508.cms>
<https://swachhindia.ndtv.com/demonstrating-the-impact-of-air-pollution-on-health-lungs-installed-in-lucknow-turn-jet-black-in-five-days-30185/>
<https://timesofindia.indiatimes.com/city/lucknow/air-pollution-level-in-lucknow-already-higher-than-last-year/articleshow/66230508.cms>

Impacts of air pollution on health

<https://www.hindustantimes.com/lucknow/world-cancer-day-high-level-of-nitrous-oxide-other-pollutants-in-air-lead-to-cancer/story-T5eprpbUs5RAGdxmgoJol.html>
<https://www.hindustantimes.com/lucknow/lucknow-s-air-quality-worsens-goes-beyond-safe-limits/story-mTjR3X4kCHjwcv6uuSiyK.html>
<https://swachhindia.ndtv.com/demonstrating-the-impact-of-air-pollution-on-health-lungs-installed-in-lucknow-turn-jet-black-in-five-days-30185/>
https://www.researchgate.net/publication/304144242_A_Study_of_Air_Quality_and_its_Effect_on_Health_A_Geographical_Perspective_of_Lucknow_city

City stakeholder actions - NGOs

<https://swachhindia.ndtv.com/demonstrating-the-impact-of-air-pollution-on-health-lungs-installed-in-lucknow-turn-jet-black-in-five-days-30185/>
<https://www.downtoearth.org.in/news/air/poor-air-quality-a-major-cause-of-premature-deaths-60634>

City stakeholder actions – Industry/Businesses

<https://www.mahindra.com/news-room/press-release/mahindra-drives-its-electric-range-of-vehicles-to-uttar-pradesh>
<https://economictimes.indiatimes.com/industry/auto/auto-news/esset-plans-to-invest-rs-1750-cr-to-set-up-electric-vehicle-charging-infrastructure/articleshow/65186147.cms?from=mdr>

City stakeholder actions – Judiciary

<https://www.bhaskar.com/uttar-pradesh/lucknow/news/high-court-directions-on-air-pollution-in-state-01494713.html>

City stakeholder actions – state government

https://niveshmitra.up.nic.in/Documents/DraftPolicies/Uttar_Pradesh_Electric_Vehicles.pdf
<https://timesofindia.indiatimes.com/city/lucknow/UP-calls-for-effective-measures-to-curb-air-pollution/articleshow/55314683.cms>
<https://www.businesstoday.in/current/economy-politics/lucknow-artificial-rain-air-pollution-cloud-seeding/story/264414.html>

Political Leaders Position and Activities on Constituency Air Quality



MP: Rajnath Singh

Member of Parliament since 2009
Lok Sabha Constituency: Lucknow
Party: Bhartiya Janta Party (BJP)
Portfolio: Union Minister for Home Affairs

MP's statements on air quality

Year – 2015

"To decongest the city, a 100-km long ring road is to be constructed in Lucknow. Ministry of road transport and highways has given clearance for it and the project will cost more than Rs 3,000 crore."

"इस समय प्रदूषण से सिर्फ दिल्ली और देश नहीं बल्कि ग्लोबल समस्या है। इस समस्या पर समय समय पर अंतरराष्ट्रीय स्तर पर बैठकें भी होती रहती हैं। उन्होंने कहा कि प्रदूषण की समस्या केन्द्र सरकार के लिए चैलेंज है और वह इस चैलेंज को स्वीकार करते हैं। राजनाथ सिंह ने आशा व्यक्त की इस समस्या पर विजय हासिल होगी।"

Opposition parties' statements on air quality

Year – 2018

"'The Great Smog of India' is squarely responsible for this health hazard. Prime Minister Narendra Modi, who creates much hype and hoopla over Swachh Bharat Mission- is absolutely silent on the fact that Varanasi, his constituency, along with Lucknow and Kanpur are now among the most polluted cities in the world."- a Congress spokesperson.

City-focussed actions announced/taken by MP

Year – 2017

Home Minister Rajnath Singh and Uttar Pradesh Chief Minister Yogi Adityanath jointly flagged off 8.5 km stretch of the first phase of metro train in Lucknow.

Actions & policies by MP's union government

Year – 2019

NCAP with Rs. 300 crore launched as a mid-term, five-year action plan from 2019 to reduce air pollution by 20-30% by 2024 in all 102 non-attainment cities, taking 2017 as the base year.

Year – 2018

Niti Aayog proposed a 15-point action plan to combat air pollution, titled, Breathe India.

National Auto Policy released including EV, CNG, biofuels, and hydrogen vehicles, though without timelines and no link with EV 2030 vision, FAME II or Make in India. Under the FAME II India scheme around Rs. 5,500 crore over a five year period has been set aside to provide grants for all kinds of electric vehicles.

Gol sealed a deal with World Bank, GIZ, ADB, SDC, AFD and Bloomberg Philanthropies, to build capacities of all 102 polluted cities across the country. The initial small budget of 300 crore is meant for expanding air quality monitoring capacities in states, setting up national emission inventories and conducting source apportionment studies in cities to identify nationwide pollution hotspots. Studies in Delhi and Kanpur have been initiated already.

Year – 2017

Railways Ministry announced new reforms and services such as Roll On Roll Off and long-term contracts to enhance freight traffic and reduce dependence on commercial vehicles.

Year – 2016

Government of India announced the advancement of vehicular emissions and fuel quality norms to BS-VI levels by the year 2020 across the country.

All non-attainment cities were given a set of 42 action points to improve air quality and as a follow-up, 94 cities were asked to prepare detailed action plans. The states concerned had been urged to steer implementation of action plans in these cities. The CPCB has also launch a mobile app - SAMEER - for grievance redressal.

Year – 2015

Government of India announced FAME scheme under NEMMP to promote electric vehicles. Instead, EV manufacturers and sellers were expecting a policy and regulatory framework laying out a roadmap for creating an ecosystem comprising, most importantly, charging stations, as well as rolling out incentives for both manufacturing and purchasing EVs.

Bibliography

MP's statements on air quality

<https://www.thehindu.com/news/national/other-states/rajnath-announces-100km-ring-road-to-decongest-lucknow/article7298195.ece>
<https://www.livehindustan.com/national/story-we-are-ready-to-make-delhi-pollution-free-says-rajnath-singh-1639210.html>

Opposition parties' statements on air quality

<https://www.nationalheraldindia.com/india/congress-delhi-north-india-suffers-from-death-by-breath-modi-govt-and-aap-govt-clueless>

City-focussed actions announced/taken by MP

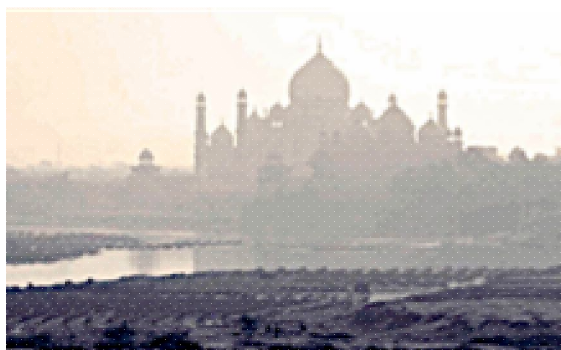
<http://www.sify.com/news/up-cm-yogi-adityanath-rajnath-singh-jointly-flag-off-lucknow-metro-news-national-rifokDchbeqbg.html>

Actions & policies by MP's union government

<https://www.iamrenew.com/policy/little-late-govt-earmarks-300-crores-fight-air-pollution-102-cities/>
http://niti.gov.in/writereaddata/files/document_publication/BreatheBooklet11thJuly.pdf
https://dhi.nic.in/writereaddata/UploadFile/DHI-NAB-Auto%20Policy%20Draft%20Document_vDRAFT.pdf
<https://economictimes.indiatimes.com/news/environment/pollution/four-international-agencies-to-join-govts-effort-to-tackle-air-pollution-in-102-cities/articleshow/66548971.cms?from=mdr>
<http://pib.nic.in/newsite/PrintRelease.aspx?relid=158793>
[http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20\(2\).pdf](http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20(2).pdf)
<https://www.thehindu.com/opinion/op-ed/advancing-bs-vi-emission-norms/article25438769.ece>
<https://archive.indiaspend.com/cover-story/0-02-new-cars-are-electric-heres-what-govt-must-do-to-reach-all-electric-goal-78119>
<https://economictimes.indiatimes.com/news/environment/pollution/govt-has-made-serious-efforts-to-curb-air-pollution-govt-after-who-report/articleshow/64003558.cms?from=mdr>

Agra

Long history of pollution.



Picture Courtesy: Kamir/IndiaToday

Agra first benefitted from Taj Mahal as it brought tourism. Now the same monument is driving the government and other institutional machinery for reducing pollution generated from within and outside of Agra. The city is under supervision of a permanent committee of the Honorable Supreme Court of India for monitoring the pollution level. An area known as the Taj Trapezium Zone was carved out to be placed under check by the committee.

Agra as a city is still evolving and there is always a flurry of activity. Construction and transport has been adding to the air pollution at times making it toxic.

The Ease of Living index by Ministry of Housing & Urban Affairs places Agra at the 55th place out of 111 cities in India. The index gives lowest weight age to economy of a place and provides more emphasis to institutional, social and physical aspects of a city's experience. Agra had just 0.78 marks out of 5 for transportation and mobility.

Vital Statistics of Agra

Census 2011	Estimated 2019	WHO Ranking	AQI Dec 2018*
1,585,704	2,200,992	8	421 (very poor)

*AQI: Air Quality Index by Central Pollution Control Board

Major public issues of Agra & voices

1.	Air & river pollution
2.	Inadequate clean drinking water access
3.	Public spaces cleanliness & sanitation, poor drainage, water logging
4.	Rapid urbanization at the expense of greenery
5.	Urban infrastructure – road condition, traffic congestion, electricity supply
6.	Law and order

"The top officials of various departments have collectively played a crude joke on Agra. We neither have water, nor power; the sewage system does not work, community ponds have disappeared; trees have been chopped up; and the Yamuna river continues to wail and scream. Nothing has changed, conditions have worsened." – D.K. Joshi, a member of the Supreme Court monitoring committee.

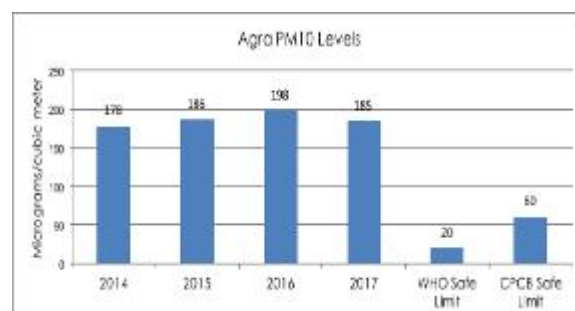
Air quality history of Agra

Agra remains in the top most polluted cities in India despite letting go of its polluting industries in the interest of Taj Mahal about 23 years ago. WHO listed Lucknow as the 8th most polluted in 2018.

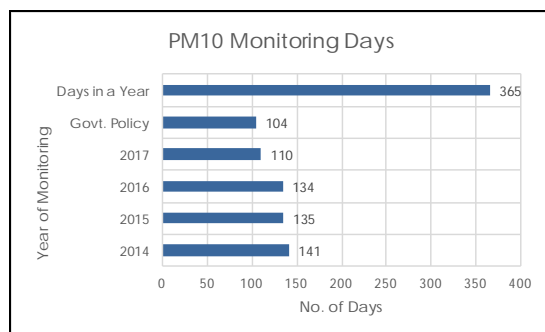
Number of air quality monitoring stations – Agra as an NCAP non-attainment city has 6 stations out of which 1 is continuous (CAMS) reporting data for all types of pollutants⁷.

PM10 microgram/m³ (as per CPCB)

2014	2015	2016	2017	CPCB safe limit	WHO safe limit
178	186	198	185	60	20



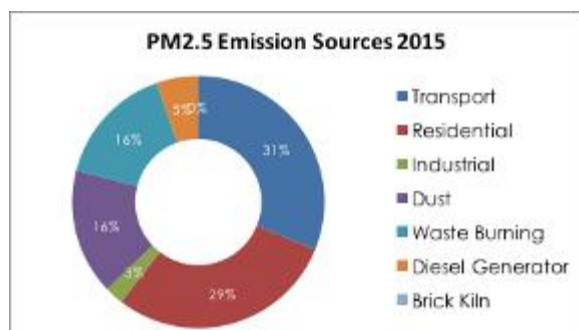
This graph indicates the average of PM10 pollutant recorded by the operating stations in a city in the indicated year, as reported by CPCB. When data is missing it is indicated as zero.



Government policy is to monitor air quality twice a week, that is, 104 days in a year of 365 days. This graph indicates on an average how many days in a year all the stations in a city have monitored the pollutants PM10, NO₂ and SO₂, as reported by CPCB. That way, data is not available for more than the number of days indicated. When monitoring is not done, it is indicated as zero.

Sources of pollution

1.	Vehicles (cars, auto-rickshaws, old trucks& buses)
2.	Construction, stone quarrying and road dust
3.	Coal use by dhabas, brick kilns and diesel generator sets
4.	Garbage burning by municipal workers & residents
5.	Small medium industry pollutants



Source - <http://www.urbanemissions.info/india-apna/agra-india/>

The city has an estimated 36% of the ambient annual PM_{2.5} pollution (in 2015) originating outside its urban air-shed, which strongly suggests that air pollution control policies in the Indo-Gangetic plain need a regional outlook.

Stakeholder views:

"With the IIT Kanpur's study on the composition of pollutants in the air of Agra and its causes still incomplete, local residents and civic organizations are demanding to know what is the hurry to present a flawed and lop-sided document before the Supreme Court. It is hard to understand how only the industries of Agra are being seen as responsible for all the pollution in the air when the factors causing pollution in the city are still being ascertained." – Agra Development Foundation Secretary KC Jain.

Rajiv Saxena, Secretary, Tourists Guild of Agra, says, "I have got at least seven cancellations of tours from foreign tourists in the last two weeks." "We are using anti-pollution masks while stepping out. My friend has breathing problems and we are worried about our Agra trip. Because of the pollution, we had cut short our Delhi trip earlier and had headed to Orchha near Jhansi instead. But now we hear that the air quality in Agra is also poor and that has left us sceptical about the tour." – A group of Canadian tourists at the Jhansi railway station who were on their way to Agra.

Impacts of air pollution on health

The research Global Burden of Disease Study 2017 by Lancet says air pollution is now the second largest cause of pre-mature deaths in India after cardio-vascular diseases. In the 1990s, air pollution was the third largest cause of such deaths in India. In an article for the British medical journal The Lancet, experts from more than 100 institutions including the Indian Council of Medical Research and the Institute for Health Metrics and Evaluation at the University of Washington, said that Uttar Pradesh had the second-highest disease burden linked directly to air pollution among all states as of 2016, after Rajasthan.

In Agra, increase in respiratory and other diseases has been reported:

- Asthma
- COPD
- Skin diseases
- Eye irritation
- High blood pressure
- Heart congestion
- Respiratory diseases

Vehicle owner's view: About 87% of drivers and vehicle owners surveyed by Climate Trends across India would buy an electric vehicle, if that helped reduce air pollution. About 76% said that they, their friends, family and neighbours, were suffering the effects of poor air quality.

The number of complaints from people with breathing troubles and watery eyes has spiked since the weekend with children and the elderly being the worst affected. The SN Medical College and other hospitals have also reported an increase in the number of asthmatic attacks over the past weekend as the air has become too polluted to breathe.

City stakeholder actions to address air pollution

NGOs, Educational & Scientific Institutions

- **CEED in collaboration with Indian Institute of Technology, Delhi (IIT-D)**

"The largest share of premature death burden in Agra, Gaya, Kanpur, Gorakhpur, Lucknow, Patna, Muzaffarpur and Varanasi is attributed to acute lower respiratory infections, primarily emanating from residential (cooking, heating and lighting) sources, followed by industry, transport and energy sectors. Chronic obstructive pulmonary diseases (COPD) are the cause of the largest share of premature deaths in these cities," says the study by (CEED) in collaboration with Indian Institute of Technology, Delhi (IIT-D). The study recommends to concerned state governments strengthening public awareness and expediting the process to replace solid fuels with cleaner fuels, besides coordinating with each other to prepare an efficient regional clean air action plan.

By Industry –

Year - 2018

Mahindra Electric launched its all-electric cars, commercial vehicle for both passenger and goods carrier and rickshaw for passenger movement in Lucknow, Kanpur and Agra.

EIL will invest Rs 1,750 crore in phased manner with the launch of 250 charging stations, 1,000 battery swapping stations in 20 cities of Uttar Pradesh.

By Pollution Control Board –

UPPCB officials placed strict restrictions on open burning of biomass, plastic, horticulture waste and crop residue, besides municipal waste. Other measures included shifting of 'petha' units, restrictions on plying and phasing out of commercial diesel vehicles over 15 years old and switching to use of CNG/LPG by commercial vehicles.

By Local Administration –

The district administration decided ban on firecrackers in the city after 10 pm on Diwali.

The District Magistrate regularly monitors the progress of the implementation of air action plan. A web portal (www.upecp.in) is also functional wherein regular progress and action taken reports by 20 departments are updated. Directions have been issued by Chief Secretary, State of Uttar Pradesh vide letter dated 25.01.2018 for strict enforcement of Action Points as elaborated in the Comprehensive Action Plan for Reducing Air

Pollution. Directions under Section-31A of Air (Prevention and Control of Pollution) Act, 1981 have been issued to RTO, Vice Chairman Agra Development Authority, Superintendent of Police and Municipal Commissioner of Agra for prevention and control of air pollution in Agra City by U.P. Pollution Control Board.

Around 22,000 pollution-causing vehicles taken off the roads in Agra. The regional transport office (RTO) in the district sent notices to owners of 22,000 vehicles, which comprise those older than 10 years (run by diesel) and those older than 15 years (run by petrol).

A week after the Supreme Court reprimanded the UP government for the damage caused to the Taj Mahal due to high levels of pollution, the Agra administration on Wednesday sealed nine furnaces and dismantled another 33. The action came 24 hours after the Taj Trapezium Zone Authority passed an order to impose a hefty fine of Rs1 lakh, along with five years of imprisonment, to industries causing pollution and violating the Environment Protection Act, 1986.

Actions & policies by state government

2018 November

UP government identified 10 cities including Agra for 100% Multi-Modal Electric Public Transport (passenger and goods) by 2030. The state government released EV Manufacturing Policy 2018 to incentivize EV battery and charging infrastructure development in the state through public and private interventions. The policy also includes incentives to buyers for creating demand.

UP Chief Secretary Rahul Bhatnagar issued directions to senior officials to take "effective measures regularly" to control air pollution in different cities in the state. Asking the government departments to ensure stringent action through a drive against polluting vehicles, Bhatnagar has banned the burning of garbage inside city limits.

In order to make rooftop solar power plants more affordable to the people of Uttar Pradesh, the state government announced an additional subsidy of Rs 15,000 per kilowatt (KW) or a maximum of Rs 30,000 for installation of solar plants after the Centre announced 30% subsidy on the same.

The Archaeological Survey of India's (ASI) has initiated a fresh study to find out the effects of air pollution on the Taj Mahal. The focus of the study will be on the movement of the wind and on the concentration of particulate matter (PM) on the 17th century monument.

For protection of the Taj Mahal, a six-member high-level committee constituted by MoEF&CC for identifying air and non-air polluting industries in ITZ area.

Bibliography

City profile, major issues of public concern and people's voices

<https://www.hindustantimes.com/india-news/pm-modi-s-constituency-varanasi-is-the-most-liveable-city-in-uttar-pradesh/story-Ov8LfStZnUoicZJAEaTdJ.html>
<http://www.agraonline.in/city-guide/about-agra>
<https://www.indiatoday.in/india/story/with-causes-of-air-pollution-in-agra-still-unknown-vision-document-finds-fresh-opposition-1354397-2018-10-03>
<https://www.amarujala.com/photo-gallery/uttar-pradesh/agra/dussehra-ten-major-problems-of-agra-city?pageId=11>
<https://www.ndtv.com/agra-news/world-environment-day-has-agra-lost-the-battle-to-pollution-524361>
<http://population.city/india/agra/>
http://cpcb.nic.in/upload/Downloads/AQI_Bulletin_20181224.pdf

Air quality history of Agra

[https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)
https://www.who.int/airpollution/data/aap_air_quality_data_base_2018_v14.xlsx?ua=1
<http://cpcb.nic.in/namp-data/>

Sources of pollution

<https://www.indiaspend.com/87-of-indian-vehicle-owners-ready-to-buy-electric-vehicles-if-that-reduces-pollution-survey-98547/>
<https://www.indiatoday.in/india/story/with-causes-of-air-pollution-in-agra-still-unknown-vision-document-finds-fresh-opposition-1354397-2018-10-03>
<https://www.indiatoday.in/india/story/with-causes-of-air-pollution-in-agra-still-unknown-vision-document-finds-fresh-opposition-1354397-2018-10-03>
<http://agraleaks.com/associations-of-agra-oppose-vision-document-ttz/>
<http://www.urbanemissions.info/india-apna/agra-india/>

Impacts of air pollution on health

<https://www.amarujala.com/uttar-pradesh/agra/agra-was-the-poisonous-air>

City stakeholder actions - NGO & Educational Institutes

<https://www.downtoearth.org.in/news/air/poor-air-quality-a-major-cause-of-premature-deaths-60634>

City stakeholder actions – Industry/Businesses

<https://www.mahindra.com/news-room/press-release/mahindra-drives-its-electric-range-of-vehicles-to-uttar-pradesh>
<https://economictimes.indiatimes.com/industry/auto/auto-news/essel-plans-to-invest-rs-1750-cr-to-set-up-electric-vehicle-charging-infrastructure/articleshow/65186147.cms?from=mdr>

City stakeholder actions – Pollution Control Board

<https://timesofindia.indiatimes.com/city/agra/pollution-board-prepares-draft-plan-for-tackling-agras-pollution/articleshow/63492911.cms>

City stakeholder actions – Local City Administration

<https://timesofindia.indiatimes.com/city/agra/admin-cracks-down-on-polluting-industries/articleshow/65044153.cms>
<https://timesofindia.indiatimes.com/city/agra/22k-pollution-causing-vehicles-to-be-taken-off-agra-roads/articleshow/64469427.cms>

City stakeholder actions – state government

https://niveshmitra.up.nic.in/Documents/DraftPolicies/Uttar_Pradesh_Electric_Vehicles.pdf
<https://timesofindia.indiatimes.com/city/lucknow/UP-calls-for-effective-measures-to-curb-air-pollution/articleshow/55314683.cms>
<https://www.businesstoday.in/current/economy-politics/lucknow-artificial-rain-air-pollution-cloud-seeding/story/264414.html>
<https://timesofindia.indiatimes.com/city/agra/swachh-survekshan-2019-fifth-in-up-agra-makes-it-to-top-100-clean-cities-of-the-country/articleshow/68293618.cms>
<https://timesofindia.indiatimes.com/city/agra/up-govt-subsidises-rooftop-solar-plants/articleshow/65044158.cms>
<https://timesofindia.indiatimes.com/city/agra/ASI-initiates-study-to-find-effects-of-air-pollutants-on-the-Taj/articleshow/54924124.cms>
<https://timesofindia.indiatimes.com/city/agra/govt-constitutes-committee-to-identify-air-polluting-industries-for-protection-of-taj/articleshow/66018096.cms>
<https://timesofindia.indiatimes.com/city/agra/up-govt-scheme-of-zero-tolerance-to-plastic-at-taj-yet-to-take-off/articleshow/64653616.cms>

Political Leaders Position and Activities on Constituency Air Quality



MP: Ram Shankar Katheria

Member of Parliament since 2014

Lok Sabha Constituency: Agra

Party: Bhartiya Janta Party (BJP)

MP's statements on air quality

Year – 2019



Agra MP Ram Shankar Katheria extended his support and requested the state environment minister to lift the ban on setting up of "orange" and "green" category of industries in Agra. He said such step would lead to discontent among businessmen as well as youths who are looking for jobs.

Opposition parties' statements on air quality

"During our regime we planted 50 million trees in a day to increase forest cover, built cycle tracks to promote eco-friendly transport, but the BJP has failed to take strong steps to curb the pollution both at the Centre and state level." - Akhilesh Yadav, Samajwadi party.

Parliamentary initiatives by MP

Year – 2017

MP raised the question in parliament - whether the Government has got any study conducted by Foundation for Public Economics and Policy Research for combating pollution; (b) if so, the details thereof; (c) whether the said study group has given suggestions to impose environment tax on vehicles at per kilometer rate and if so, the details thereof; (d) whether the Government proposes to enforce the said tax, if so, the manner in which the said tax is likely to be imposed; and (e) whether any scheme has been formulated to utilise the amount collected through the said tax for environmental protection and if so, the details thereof?

Dr. Mahesh Sharma, Minister of State in the Ministry of Environment, Forest and Climate Change replied "study was conducted by Foundation for Public Economics and Policy Research which according to available reports was supported by the erstwhile Planning Commission. The report had suggested imposition of presumptive tax on vehicles to control the growth in number of vehicles and to generate additional revenue. There is no proposal to impose any environmental tax currently under consideration, However in compliance of Hon'ble Supreme Court of India Environment Compensation Charges were imposed on Light as well heavy duty commercial vehicles entering Delhi from November 1, 2015 and the amount so collected is exclusively used for augmenting public transport and improving roads, particularly for most vulnerable users, that is, cyclists and pedestrians in Delhi. Further, Hon'ble Supreme Court imposed 1% EPC (Environment Protection Charge) on diesel cars with engine capacity of 2000 cc & more and the amount is deposited with CPCB and is to be used for prevention and control of pollution in Delhi NCR."

Year – 2016

MP raised the question in parliament - whether the Railways has conducted the trial run of solar powered trains in the country; (b) if so, the outcome of the trials; (c) the number of railway routes on which solar powered trains are likely to be run in the first phase; and (d) whether the Integral Coach Factory has taken steps in this regard and if so, the details thereof?

Rajen Gohain Minister of State in the Ministry of Railways, denied the trial run and replied "Indian Railways (IR) have already provided Solar panels on roof top of 18 Narrow Gauge coaches and 2 Broad Gauge on trial basis. Further, IR have decided to provide solar panels on roof top for extended trials for one year in all weather conditions. So Question of number of solar powered trains does not arise. The Integral Coach Factory (ICF), in association with Indian Institute of Science, Bengaluru has also provided two Photo Voltaic solar modules in one coach for train lighting purpose for data collection in different weather conditions.

Year – 2014

MP raised the question in parliament - whether the Government has any policy with regard to planting of trees in place of trees cut due to widening of national highways; (b) if so, the details thereof along with the number of trees cut and planted as a result of widening of national highways; and (c) the action taken by the Government against those road construction companies which do not plant trees in place of trees cut for construction of roads as per the Government policy, along with the details thereof?

Shri Krishanpal Gurjar, The Minister of State in the Ministry of Road Transport and Highways replied "As per the extant policy, while upgrading/widening of National Highways, existing trees are generally preserved and no indiscriminate felling of trees are resorted to. The existing roadside trees, which are serious threat to safety, are removed immediately and trees within 10m of the centreline of extreme traffic lane are removed gradually after planting alternative trees. This is also a part of fulfilment of clearance conditions, and the amount for plantation is deposited with the concerned forest department. Planting in such cases is done by the forest department. However, under different contracts, the work of tree planting is assigned to construction companies in some cases; which are governed under the relevant contract/concession agreement.

City-focussed actions announced/taken by MP

Year – 2018

The Uttar Pradesh horticulture department, in collaboration with the Archaeological Survey of India, has started greening the vast wasteland sandwiched between two world heritage monuments, the Taj Mahal and the Agra Fort, after the local MP and the chairman of the SC/ST Commission Ram Shankar Katheria laid the foundation stone of the new Taj View Garden.

Actions & policies by MP's union government

Year – 2019

NCAP with Rs. 300 crore launched as a mid-term, five-year action plan from 2019 to reduce air pollution by 20-30% by 2024 in all 102 non-attainment cities, taking 2017 as the base year.

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Bibliography

MP's statements on air quality

<https://twitter.com/DrRamShankarMP/status/1104373805454147584>

Opposition parties' statements on air quality

<https://timesofindia.indiatimes.com/city/agra/akhilesh-yadav-blames-bjp-for-air-pollution-in-national-capital-region/articleshow/61646296.cms>

Parliamentary initiatives by MP

<http://164.100.47.190/loksabhaquestions/annex/13/AU198.pdf>
<http://164.100.47.190/loksabhaquestions/annex/9/AU4138.pdf>
<http://164.100.47.194/Loksabha/Questions/QResult15.aspx?query=1089&lsno=16>

City-focussed actions announced/taken by MP

https://www.business-standard.com/article/news-ians/taj-heritage-corridor-being-resurrected-in-new-avatar-but-questions-remain-118051400340_1.html

Actions & policies by MP's union government

<https://www.iamrenew.com/policy/little-late-govt-earmarks-300-crores-fight-air-pollution-102-cities/>
http://niti.gov.in/writereaddata/files/document_publication/BreatheBooklet11thJuly.pdf
https://dhi.nic.in/writereaddata/UploadFile/DHI-NAB-Auto%20Policy%20Draft%20Document_vDRAFT.pdf
<https://economictimes.indiatimes.com/news/environment/pollution/four-international-agencies-to-join-govts-effort-to-tackle-air-pollution-in-102-cities/articleshow/66548971.cms?from=mdr>
<http://piib.nic.in/newsite/PrintRelease.aspx?relid=158793>
[http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20\(2\).pdf](http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20(2).pdf)
<https://www.thehindu.com/opinion/op-ed/advancing-bs-vi-emission-norms/article25438769.ece>
<https://archive.indiaspend.com/cover-story/0-02-new-cars-are-electric-heres-what-govt-must-do-to-reach-all-electric-goal-78119>
<https://economictimes.indiatimes.com/news/environment/pollution/govt-has-made-serious-efforts-to-curb-air-pollution-govt-after-who-report/articleshow/64003558.cms?from=mdr>

Muzaffarpur

The land of leechi trapped in pollution valley



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Muzaffarpur city is the largest town in northern Bihar and 4th most populous in the state. The district is a major producer of agriculture and horticulture products such as leech, mangoes, roses, marigold, jasmine, et al as well as calf skins. Other industries include tobacco, railway engineering, leather, dairy, wholesale cloth trade and agro-based.

The city hopes to benefit from Smart City and AMRUT schemes launched by the central government. So far, Muzaffarpur featured at 79th position out of 100 smart cities evaluated on the implementation status of the scheme, it was ranked 387 out of 425 cities in the national cleanliness survey Swachh Sarvekshan 2019 while it was ranked 25th in the MukhyaMantriSaarNischay (Chief Minister 7 Resolves) Scheme for 38 districts in Bihar.

The city also ranked 9th in the top 15 most polluted cities report of WHO in 2018. Featuring in the NCAP list of non-attainment cities on air pollution, Muzaffarpur had more than 50% days in the year of 2017 as bad quality air, and reached the category of 'severe' in CPCB AQI multiple times in 2018. More recently in 2018, it ranked 63th out of 111 Indian cities in Ease of Living Index. State Pollution Control Board has an action plan for identified causes of pollution.

Preventive solutions to issues that affect health are not yet on the election agenda for people in the city or their leaders.

Vital Statistics of Muzaffarpur

Census 2011	Estimated 2019	WHO Ranking	AQI Dec 2018*
354,462	488,627	9	363 (very poor)

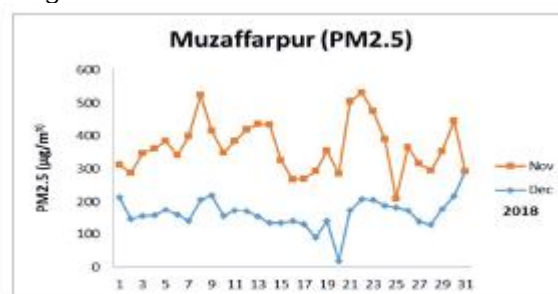
*AQI: Air Quality Index by Central Pollution Control Board

Major public issues of Muzaffarpur

1.	Toxins in agriculture and horticulture products
2.	Lack of cleanliness due to garbage, drain overflow, water bodies pollution and other causes in public spaces
3.	Traffic congestion and lack of parking due to encroachment, water logging, lack of pedestrian pathways, roads condition, and traffic mismanagement
4.	Heat waves and heat strokes
5.	Social harmony, law and order
6.	Lack of medical facilities and staff
7.	Electricity supply shortage for residential and commercial uses
8.	Livelihood opportunities
9.	Civic amenities, education and housing for urban poor

Air quality history of Muzaffarpur

PM_{2.5} and PM₁₀ which come from multiple sources have been identified as the main air pollutant. Sometimes, NO₂ has also been observed at an alarming level linked to vehicular emissions from old vehicles and traffic congestion.



Number of air quality monitoring stations – Muzaffarpur as an NCAP city has 1 (one) continuous monitoring station (CAMS) reporting data for all types of pollutants⁸ and 1 manual station reporting data on PM_{2.5}, PM₁₀, SO₂ and NO₂. The Bihar State Pollution Control Board (BSPCB) has identified the need for at least 12 CAMS for efficient and comprehensive reporting.

PM₁₀ microgram/m³ (as per CPCB)

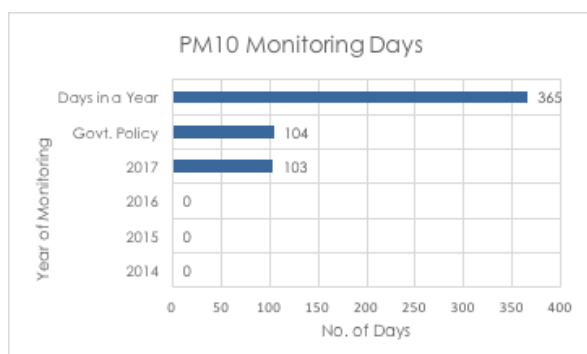
2014	2015	2016	2017	CPCB safe limit	WHO safe limit
NA	NA	NA	167	60	20

8

CO, SO₂, NO, NO₂, NOX, OZONE, PM₁₀, PM_{2.5}, Benzene, Toluene, Xylene, Ethylene, Benzene, MP xylene, CH₄, NH₃, HCHO, Hg and more as per CAAQMS guidelines by CPCB



This graph indicates the average of PM10 pollutant recorded by the operating stations in a city in the indicated year, as reported by CPCB. When data is missing it is indicated as zero.



Government policy is to monitor air quality twice a week, that is, 104 days in a year of 365 days. This graph indicates on an average how many days in a year all the stations in a city have monitored the pollutants PM10, NO₂ and SO₂, as reported by CPCB. That way, data is not available for more than the number of days indicated. When monitoring is not done, it is indicated as zero.

Sources of air pollution & stakeholder views

1.	Road dust and construction activities
2.	Burning of domestic fuel, household and medical waste in open
3.	Industrial activities, diesel generators
4.	Crop stubble burning
5.	Vehicular emissions
6.	Brick kilns

Local administration view:

"Preventive measures are being taken to improve the air quality. We are highly concerned over the poor air quality in the town. We will leave no stone unturned to keep the air cleaner and healthier for every human being. A positive result of our endeavour will be visible within a fortnight. We are working on the issue with officials from Bihar State Pollution Control Board (BSPCB) and Muzaffarpur Municipal Corporation. Some of the reasons have been identified." - Md Sohail, DM of Muzaffarpur, on the AQI of Muzaffarpur consistently remaining 'severe' crossing 430 mark in November 2018.

An official of local pollution control office at Muzaffarpur said, "road dust (14-19%), generator sets (5-6%), open waste burning (9-11%), manufacturing industries (5-10%), brick kilns (11-29%), and construction activities (8-13%) contribute significantly to air pollution."

Stakeholder views:

"Vehicular emission and dust emanating from damaged roads and construction activities are responsible for the high level of air pollution in Patna and some other cities in Bihar." – S.N. Jaiswal, a senior scientist at the Bihar State Pollution Control Board.

"Neither Gaya nor Muzaffarpur — and not even Kanpur or Delhi — produce even half of the pollutants measured in these cities. You have to account for the wind direction. In this region, wind predominantly blows from north-west to east for most of the year, but more so in the winter, carrying along with it pollutants generated elsewhere. Once the pollutants enter the Gangetic region, they get trapped, and remain suspended over the area. Most of the particles measured at Gaya and Muzaffarpur, therefore, are the ones that have been transported from 'up-wind' states. As they move from west to east, these particles gain in size and mass. Gases released from industries or vehicles, too, condense and are converted into particles. The high levels of humidity in this region is very conducive to the formation of secondary aerosols. Water facilitates the reaction between the emitted gases whose molecules form clusters and slowly nucleate into particles." – Prof Sachchidanand Tripathi, an atmospheric sciences expert at IIT Kanpur.

"The policymaker's mistaken belief that air pollution is only a problem in big cities needs to be changed," said Ankita, a senior programme officer with CEED. "Or Gaya, Patna and Muzaffarpur wouldn't be among the most polluted."

Impacts of air pollution on health

The research Global Burden of Disease Study 2017 by Lancet says over 33 per cent of deaths in Bihar in 2016 (national figure nearly 27 per cent) occurred because of pollution-related diseases. Air pollution is now the second largest cause of pre-mature deaths in Bihar after cardio-vascular diseases. In the 1990s, air pollution was the third largest cause of such deaths in India.

In Muzaffarpur, there has been a noticeable increase in:

- Asthma
- Lung Cancer
- Cardiovascular risks, hypertension and stroke
- Respiratory issues such as bronchitis, viral cough, pneumonia
- Diarrhoea
- Various allergies, headache, fever, eye issues, skin problems, stomach issues

"Besides respiratory diseases such as asthma and lung cancer, cardiovascular risks such as hypertension and stroke are most common among pollution-related diseases causing deaths in the state.. No government policy can resolve the problem unless there is people's participation. We appeal to people to take small steps, like using public transport instead of private vehicles to minimise the problem substantially." – Dr. Arvind Kumar, chairman of the Centre for Chest Surgery at Sir Ganga Ram Hospital in New Delhi.

उड़ते धूल से लोगों में सरदर्द, बुखार, नेत्ररोग, चर्मरोग जैसी शिकायत बढ़ती जा रही है। इससे बचाव के लिए लोगों को धूल प्रभावित क्षेत्रों से गुजरने के समय मास्क का प्रयोग आवश्यक हो गया है। मास्क नहीं होने के अभाव में रुमाल के होना जरूरी होता है। ताकि उड़ते धूल से नाक, आंख, मुंह को बचाव किया जा सके। सड़क किनारे संचालित नाश्ता, चाय व अन्य खाद्य वस्तुओं के दुकानों पर खुले में रखे सामग्री पर धूल पड़ने से इसका सेवन करने वाले में पेट संबंधी बीमारियों का प्रकोप काफी बढ़ जाता है। 'लोगों में डस्ट एलर्जी की शिकायत काफी बढ़ती जा रही है। इससे कई रोगों का प्रकोप बढ़ता जा रहा है। धूल के कारण हो रही शिकायत को नजरअंदाज नहीं किया जाना चाहिए। डस्ट एलर्जी संबंधी लक्षण पाए जाने पर शीघ्र ही समुचित इलाज के लिए चिकित्सकों का सलाह लेना जरूरी होगा।' - डॉ. आलोकानंद झा.

Senior Physician Dr. Shailendra Kumar at the Sri Krishna Medical College and Hospital (SKMCH) blames the bad air quality for recent incidents of a respiratory disease which includes acute bronchitis, chronic bronchitis and emphysema, a pair of commonly co-existing lung diseases. Both these diseases block the flow of air to and from the lung, causing breathing problem. If the patient reaches an advanced stage of ailment, he can also die.

A senior doctor of the Paediatrics department, SKMCH, Dr. J.P. Mandal says, "Generally during this season chances of having bacterial infection increases with a viral cough, diarrhoea, pneumonia, etc. and nowadays incidences of a dry cough in patients is frequent which is a dangerous sign with respect to air they inhale."

"Till about 30 years back, 90% of cancer patients were smokers. The percentage of smokers among cancer patients has now come down to about 50% and non-smokers inhaling highly polluted air develop cancer. Children are especially vulnerable to the toxic air. CEED research has estimated that over 27% of premature deaths in children in Bihar are caused by acute lower respiratory infections precipitated or worsened by air pollution." - Dr Arvind Kumar, Lung Care Foundation.

"If National Air Quality Guideline is achieved, the premature mortality burden would reduce

by over 20 per cent in Agra, Kanpur, Lucknow and Meerut and it can be further brought down to 10-20 per cent in other cities such as Allahabad, Gaya, Gorakhpur, Muzaffarpur, Patna and Varanasi," said Sagnik Dey, Associate Professor at the Centre for Atmospheric Sciences in Indian Institutes of Technology, Delhi.

City stakeholder actions to address air pollution

By NGOs & Educational Institutions -

- **Urging for Muzaffarpur to be in NCAP**

Centre for Environment and Energy Development (CEED) organised deliberations with stakeholders, domain experts and state government on the issue of rising level of air pollution in Patna, Muzaffarpur, and Gaya. CEED urged the state and union government to include these in NCAP non-attainment cities list and has released annual ambient air quality reports that highlighted the high levels of pollution in the year 2017.

- **Know What You Breathe**

The researchers at CEED and IIT Delhi have conducted research - titled "Know What You Breathe" - that estimated air pollution contributed to about 2,500 premature deaths in Patna, 500 in Gaya and 700 in Muzaffarpur through cardiovascular and respiratory diseases every year between 2000 and 2016. CEED experts have made recommendations to Bihar state government. The largest share of premature death burden in Agra, Gaya, Kanpur, Gorakhpur, Lucknow, Patna, Muzaffarpur and Varanasi is attributed to acute lower respiratory infections, primarily emanating from residential (cooking, heating and lighting) sources, followed by industry, transport and energy sectors. Chronic obstructive pulmonary diseases (COPD) are the cause of the largest share of premature deaths in these cities," says the study by (CEED) in collaboration with Indian Institute of Technology, Delhi (IIT-D). The study recommends to concerned state governments strengthening public awareness and expediting the process to replace solid fuels with cleaner fuels, besides coordinating with each other to prepare an efficient regional clean air action plan.

By State Pollution Control Board -

Year - 2018

BSPCB has written to all the 38 district magistrates in Bihar to take steps (city-specific action plan) in curbing air pollution levels, especially in Patna, Muzaffarpur and Gaya, where air quality has worsened alarmingly of late. The steps specifically include action on

burning of waste, tyres and crops; vehicular pollution checks; construction dust.

BSPCB is working with state transport department to ensure stringent vehicle pollution checks through PUC testing centres at petrol pumps. An app is being prepared for citizens to report any kind of violation causing air pollution.

BSPCB prepared an action plan for Muzaffarpur as a non-attainment city with a range of actions to be implemented from immediate effect to long-term till 2023. The plan recognizes the need for at least 12 air quality monitoring stations against 1 at present that is proving to be insufficient. BSPCB has formulated Graded Response Action Plan (GRAP) for Muzaffarpur in consistency with GRAP prepared for Delhi-NCR by CPCB that will come into play as emergency response when the air quality drops.

By Local City Administration

Year - 2018

District Magistrate of Muzaffarpur, Mohammad Sohail said, "Despite being a holiday, the reason for such high pollution may have different factors. To confront this challenge a plan has been charted out which will provide positive results after the month of February and March (in 2019). Figures are being collected. The BSPCB and the Central government are working together to get the solution. Prior to Diwali we will urge people not to use firecrackers, which emit highly polluting substances in the air."

As part of citizen engagement & consultation process (for preparation of Smart City Proposal) Muzaffarpur Municipal Corporation organized a wide range of activities - e.g. Field Visits, Stakeholders Consultation, essay, submission of suggestion forms, vision statements, social media (Facebook, Google+ and Twitter) based activities, citizen awareness campaigns, smart city mobility van, etc. to ensure that every citizen (encompassing all age groups and sections of society) must participate in Smart City Proposal making exercise.

Actions & Policies by State Government

Year - 2018

Sushil Kumar Modi, Deputy CM of Bihar, who also holds the forest and environment portfolio, said brick kilns which do not have 'zig-zag technology' will be banned from September 1, 2018. The technology reduces coal consumption by 2 tonne per one lakh bricks made. BSPCB estimates 80% brick kilns have adopted this technology, which has lower levels of emissions.

"Zigzag design for brick kilns has been used since the 1970s and is a well-tested technology. In West Bengal, for instance, 2,500-3,000 brick kiln owners have been using it for years without waiting for any government order," says Sameer Maithel, director of Green-tech Knowledge Solutions, a clean energy research and advisory firm based in Delhi. "Bihar too has been trying to make its kilns shift to zigzag technology since 2016. As per the last order passed by the state government on August 30, 2018, all kilns must shift to the cleaner technology by August 31, 2019. Of about 6,500 brick kilns in the state, 450-500 have converted to zigzag technology so far. But despite the cost and labour issues, most kiln owners are keen to shift to zigzag. According to our survey conducted around Patna, about 65% of those who made the transition found that the zigzag technology was more fuel efficient and produced better bricks," Maithel adds.

The Deputy CM also sought changes in rules and regulations concerned to allow setting up of captive biomedical waste plants by big hospitals and medical colleges, and giving states the power to ban use of motor vehicles older than 15 years.

Bihar government announced that it is coming up with an "electric vehicles policy" to promote manufacturing and use of such automobiles in the state.

Year - 2017

Bihar government announced a new policy for 3400MW power from renewable/non-fossil fuel sources by 2022.

Year - 2015

Bihar government released an action plan for climate change that involves transition in transport and energy systems to reduce emissions that will benefit the air quality also.

Bibliography

City profile, major issues of public concern

<https://www.thehindu.com/sci-tech/health/Toxins-in-litchi-fruit-kill-children-in-Bihars-Muzaffarpur/article17128731.ece>
<https://www.irjet.net/archives/V3/I2/IRJET-V3I244.pdf>
<https://www.jagran.com/bihar/muzaffarpur-very-bad-position-of-waterlodging-problem-in-muzaffarpur-18953444.html>
<https://www.cseindia.org/muzaffarpur-makes-substantial-gains-in-the-swachh-survekshan-2017-barely-six-months-into-the-implementation-of-swachhtha-swasthya-samidhi-programme-6934>
<http://www.atmph.org/article.asp?issn=1755-6783;year=2013;volume=6;issue=1;page=89;epage=95;aulas1=Sahni>
<https://www.mygov.in/group-issue/upgradation-muzaffarpur-smart-city-proposal-round-iii/>
https://www.pria.org/event_details.php?id=&etid=266
<http://www.bspcb.bih.nic.in/MUZAFFARPUR.pdf>
<https://www.jagran.com/bihar/muzaffarpur-muzaffarpur-town-is-very-bad-position-in-smart-city-ranking-18937899.html>

<http://ceedindia.org/muzaffarpur-air-quality-bulletin-factsheet-2017/>

Air quality history of Muzaffarpur

<https://www.who.int/airpollution/data/cities/en/>
[https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)
https://www.who.int/airpollution/data/aap_air_quality_data_base_2018_v14.xlsx?ua=1
<http://cpcb.nic.in/namp-data/>
<http://www.bspcb.bih.nic.in/muzaffarpur.pdf>

Sources of pollution & stakeholder views

<http://www.bspcb.bih.nic.in/MUZAFFARPUR.pdf>
<https://timesofindia.indiatimes.com/city/patna/pollution-preventive-measures-being-taken-by-muz-admin/articleshow/66776365.cms>
<https://www.jagran.com/bihar/muzaffarpur-the-rapidly-growing-pollution-in-the-city-17874129.html>
<https://indianexpress.com/article/explained/north-india-has-the-foulest-air-in-the-world-says-the-who-this-is-why-5160741/>
<https://www.indiaspend.com/87-of-indian-vehicle-owners-ready-to-buy-electric-vehicles-if-that-reduces-pollution-survey-98547/>
<https://www.telegraphindia.com/states/bihar/experts-decode-air-pollution-scare/cid/1444871>

Impacts of air pollution on health

<https://www.telegraphindia.com/states/bihar/experts-decode-air-pollution-scare/cid/1444871>
<https://www.dnaindia.com/india/report-air-pollution-causes-over-4k-deaths-in-bihar-every-year-2619807>
<https://newsd.in/bihar-worsening-air-quality-in-muzaffarpur-leads-to-rise-in-cases-of-bronchitis/>
<https://timesofindia.indiatimes.com/city/patna/patna-5th-gaya-4th-most-polluted-who/articleshow/64005067.cms>

City stakeholder actions – NGOs& Educational Institutions

<https://www.telegraphindia.com/states/bihar/breath-of-toxic-air/cid/1442827>
<http://ceedindia.org/ceed-urges-the-government-to-include-bihar-cities-in-the-national-clean-air-programme/>
<https://www.downtoearth.org.in/news/air/poor-air-quality-a-major-cause-of-premature-deaths-60634>

City stakeholder actions – State Pollution Control Board (BSPCB)

<https://timesofindia.indiatimes.com/city/patna/rising-pollution-bihar-dms-asked-to-keep-tabs-on-air-quality/articleshow/66797783.cms>
<https://timesofindia.indiatimes.com/city/patna/patna-5th-gaya-4th-most-polluted-who/articleshow/64005067.cms>
<http://www.bspcb.bih.nic.in/MUZAFFARPUR.pdf>

City stakeholder actions – Local City Administration

<https://newsd.in/air-pollution-bihars-muzaffarpur-and-patna-among-the-most-polluted-cities-in-india/>
<https://timesofindia.indiatimes.com/city/patna/moderate-air-quality-in-muzaffarpur/articleshow/66466263.cms>
<https://www.mygov.in/group-issue/smart-city-muzaffarpur-mission/>

City stakeholder actions – State Government

https://www.business-standard.com/article/pti-stories/brick-kilns-in-bihar-sans-zig-zag-tech-to-be-banned-from-sept-1-dy-cm-118060400514_1.html
<https://energy.economictimes.indiatimes.com/news/renewable/bihar-announces-mega-renewable-power-policy-to-add-3400-mw-in-five-years/58895992>
<https://www.telegraphindia.com/states/bihar/e-vehicle-policy-to-drive-state-growth/cid/1442983>

<https://www.downtoearth.org.in/news/environment/74-brick-kilns-in-delhi-ncr-have-not-shifted-to-cleaner-technology-61624>
<http://www.moef.gov.in/sites/default/files/Bihar-State%20Action%20Plan%20on%20Climate%20Change%20%282%29.pdf>

Political Leaders Position and Activities on Constituency Air Quality



MP: Ajay Nishad

Member of Parliament since: 2014
Lok Sabha Constituency: Muzaffarpur
Party: Bhartiya Janta Party (BJP)
Current Portfolio: Member, Standing
Committee on Coal and Steel
Previous Portfolio: Member, Consultative
Committee, MoEF&CC

MP's statements on air quality

Year – 2019

मल्लखपर के लिए यह समय की मांग है। यहां बढ़ रहे पदार्थों को रोकने के लिए आम लोगों को भी जागरूक करना होगा। अगर ऐसा नहीं हुआ तो लोगों को आने वाले समय में सांस लेने भी परेशानी होगी। - अजय निषाद, सांसद मुजफ्फरपुर

State government's statements on air quality

Year – 2018

The CM of Bihar and leader of JD(U), Nitish Kumar, expressed concern over the state capital's dirty air, but said that the location of the air quality monitoring station in the city was not suitable for proper assessment of pollution levels. He also suggested that more such monitoring stations were needed in the city to provide a clearer picture.

The Chief Minister has already issued directions to all district magistrates in the state to check this pernicious practice of crop stubble burning. "Previously, crop stubble was burnt in some parts of the Rohtas area. It has now spread to other districts. Crop residue is now being burnt in agriculture fields near Patna. Nobody knows who publicised this practice here, but its aggravating pollution," said the CM.

Nitish Kumar hit out at the practice of families buying several vehicles and questioned the need for having many automobiles in a household. "What is the need to buy four vehicles for one family, apart from flaunting their status? The number of vehicles has shot up so much that it is adding to pollution. But there is freedom to buy vehicles, so how much can we control this trend?" he asked.

The chief minister also pointed that people were tinkering with the environment and quoted Mahatma Gandhi to say: "The earth can fulfil every need of human beings, but not their greed."

"The situation is not so bad as it has been mentioned in the WHO report. There is a difference between the data given by WHO and the data furnished by the BSPCB. We have written to CPCB, asking it to share details about the statistics given to WHO. The WHO figures were average of 6 years and not current PM2.5 concentrations," said Sushil Kumar Modi, Deputy Chief Minister and Minister of Environment, Government of Bihar in May 2018.

"Air quality plays a critical role in the health of people. Over the years, there is a growing concern on the deteriorating air quality. Given the pace of urbanization, which is often unplanned, there is an increase in pressure on cities and towns to meet the growing demands of the urban population. This has an adverse effect on the environment, affecting air and water quality. Such adverse effects of unplanned urbanization need to be addressed with robust scientific tenacity." – Sushil Kumar Modi, Deputy Chief Minister, Bihar (in a foreword for assessment study of Patna air quality, February 2018).

"We understand that Bihar is one of the most-affected states in India in terms of mortality because of rising air pollution as per the Lancet Commission report. Our department understands the urgency of the situation and is also willing to take steps to reduce the health impact caused by deteriorating air quality. We have prioritised it for collaborative and real action and are also looking into gaps that need to be addressed urgently," said State Health Minister, Mangal Pandey in his address at the event 'Safeguarding Life from Air Pollution', organised by the Centre for Environment and Energy Development (CEED) in collaboration with All India Institute of Medical Sciences (AIIMS) Patna. While admitting that the government and NGOs had not been able to do the required level of work to curb pollution, he added, "Forests, transport, road construction, education and health department officials as well as representatives

of different NGOs should sit together and hold deliberations on ways to control pollution."

Other parties' statements on air quality

Year – 2015

"I enjoyed horse-riding which I have done after many years...I had been doing it regularly years ago," said Tej Pratap Yadav, former Environment and Health Minister of Bihar from RJD party. He also listed the environmental benefits of horse-riding saying it helps in containing pollution and referred to growing air pollution in Patna and other towns in Bihar due to increasing vehicular traffic.

Parliamentary initiatives by MP

Year - 2016

Raised question in parliament about the effect of pollution on heritage buildings, its conservation and efforts made by government in prevention of pollution.

Year - 2015

Raised question in parliament whether the historical monuments are being adversely affected due to increase in pollution level in the country; (b) if so, the details thereof; and (c) the steps taken by the government to check the adverse effect of pollution on historical monuments and in the surroundings of historical sites?

Year - 2014

Raised question in parliament whether the Forest Survey of India (FSI) conducts regular inventory of trees in forests and outside forests in the country; (b) if so, the details thereof; (c) whether the reports of the FSI has shown any decline in the number of trees gradually; and (d) if so, the details thereof along with the steps taken to plant more trees in the country?

Actions & policies by MP's union government

Year – 2019

NCAP with Rs. 300 crore launched as a mid-term, five-year action plan from 2019 to reduce air pollution by 20-30% by 2024 in all 102 non-attainment cities, taking 2017 as the base year.

Year – 2018

NitiAayog proposed a 15-point action plan, titled Breathe India, to combat air pollution in 10 most polluted cities of India.

National Auto Policy released including EV, CNG, biofuels, and hydrogen vehicles, though without timelines and no link with EV 2030 vision, FAME II or Make in India. Under the FAME II India scheme around Rs. 5,500 crore over a five

year period has been set aside to provide grants for all kinds of electric vehicles.

GoI sealed a deal with World Bank, GIZ, ADB, SDC, AFD and Bloomberg Philanthropies, to build capacities of all 102 polluted cities across the country. The initial small budget of 300 crore is meant for expanding air quality monitoring capacities in states, setting up national emission inventories and conducting source apportionment studies in cities to identify nationwide pollution hotspots.

Year – 2016

Government of India announced the advancement of vehicular emissions and fuel quality norms to BS-VI levels by the year 2020 across the country.

All non-attainment cities were given a set of 42 action points to improve air quality and as a follow-up, 94 cities were asked to prepare detailed action plans. The states concerned had been urged to steer implementation of action plans in these cities. The CPCB has also launch a mobile app - SAMEER - for grievance redressal.

Year – 2015

Government of India announced FAME scheme under NEMMP to promote electric vehicles. Instead, EV manufacturers and sellers were expecting a policy and regulatory framework laying out a roadmap for creating an ecosystem comprising, most importantly, charging stations, as well as rolling out incentives for both manufacturing and purchasing EVs.

Bibliography

MP's statements on air quality

<https://twitter.com/NishadSri/status/1016180868891570176>

Other parties' statements on air quality

<https://www.hindustantimes.com/india/tej-pratap-rides-a-horse-to-his-official-bungalow-to-curb-pollution/story-fKw6GSSPR8VWnn322Vluel.html>

State government's statements on air quality

<https://www.telegraphindia.com/states/bihar/burning-of-crop-stubble-emerging-as-factor-in-patna-air-pollution-says-nitish/cid/1677001>
<http://bsdma.org/images/publication/ASSESSMENT%20OF%20AIR%20QUALITY%20OF%20PATNA%20TOWN%20AT%20DIFFERENT%20MICRO-ENVIRONMENT.pdf>
<https://www.telegraphindia.com/states/bihar/qovt-disbelief-at-who-claim/cid/1441751>

Parliamentary initiatives by MP

<http://164.100.47.190/loksabhaquestions/qhindi/8/AU2601.pdf>
<http://164.100.47.190/loksabhaquestions/annex/6/AU3785.pdf>
<http://164.100.47.194/Loksabha/Questions/OREsult15.aspx?qref=10162&lno=16>

Actions & policies by MP's union government

<https://www.iamrenew.com/policy/little-late-govt-earmarks-300-crores-fight-air-pollution-102-cities/>
http://niti.gov.in/writereaddata/files/document_publication/BreatheBooklet11thJuly.pdf
https://dhi.nic.in/writereaddata/UploadFile/DHI-NAB-Auto%20Policy%20Draft%20Document_vDRAFT.pdf
<https://economictimes.indiatimes.com/news/environment/pollution/four-international-agencies-to-join-govts-effort-to-tackle-air-pollution-in-102-cities/articleshow/66548971.cms?from=mdr>
<http://pib.nic.in/newsite/PrintRelease.aspx?relid=158793>
[http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20\(2\).pdf](http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20(2).pdf)
<https://www.thehindu.com/opinion/op-ed/advancing-bs-vi-emission-norms/article25438769.ece>
<https://archive.indiaspend.com/cover-story/0-02-new-cars-are-electric-heres-what-govt-must-do-to-reach-all-electric-goal-78119>
<https://economictimes.indiatimes.com/news/environment/pollution/govt-has-made-serious-efforts-to-curb-air-pollution-govt-after-who-report/articleshow/64003558.cms?from=mdr>

Srinagar

Tenth most polluted city in world: WHO



Photo: KashmirObserver

In recent times, the Kashmir Valley has become the largest urban centre across the whole Himalayan region and is undergoing a real expansion facing high rates of population growth. Change in life style, increase in income, availability of easy bank loans and increase in population are among the main reasons. Vehicular emissions are reported to be on a rising trend. The geographical location of the region plays an important role, which may result in long-range transport of pollutants to the city. Kashmiris, especially those living in Srinagar, are annoyed about their unmanaged urbanization of the city. More recently in 2018, it ranked 100th out of 111 Indian cities in Ease of Living Index.

The Jammu and Kashmir State Pollution Control Board (SPCB) said that Jammu and Kashmir had not provided any data to WHO for it to reach this conclusion.

Vital Statistics of Srinagar

Census 2011	Estimated 2019	WHO Ranking	AQI Dec 2018
1,206,419	1,539,537	10	NA

*AQI: Air Quality Index by Central Pollution Control Board

Major public issues & People's voice

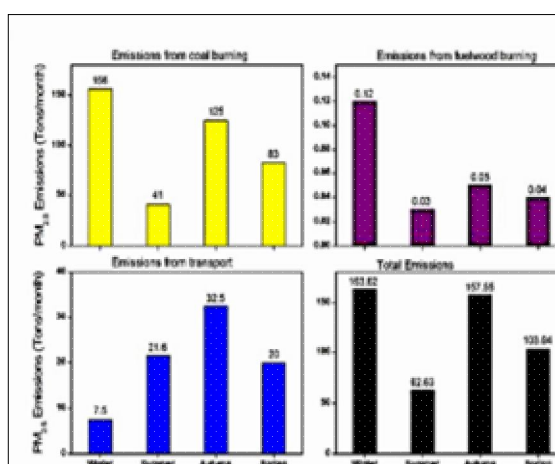
1.	Law & order
2.	Vehicles
3.	Drinking water shortage
4.	Unplanned urbanization and growth of slums
5.	Garbage burning
6.	Construction and road dust

"Kashmir shouldn't be seen as a conflict state or a political problem, but as a society with social issues" - Haseeb Drabu, former J&K Finance Minister.

"Srinagar is like a big garbage dump," says activist Raja Muzaffar Bhat. "The only landfill site is filled up to 95 per cent and there is no alternate site." Work on a 'waste to energy' plant, for which National Green Tribunal set a deadline of June 2019, is yet to begin.

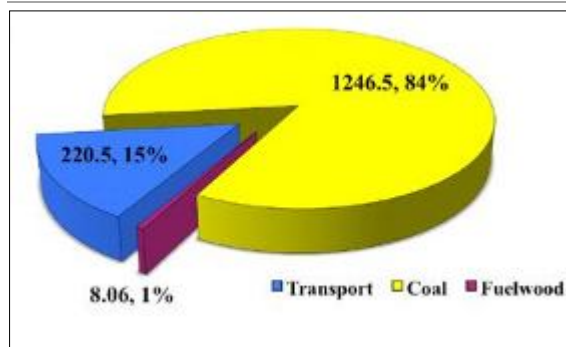
In the outcome of the research conducted by Department of Geography and Regional Development, University of Kashmir, J&K India it is observed that the quality of life of the people living in slums has further deteriorated and the various initiatives taken by the government have not achieved much in improving their living conditions.

Air quality history of Srinagar



Source: Seasonal distribution of PM_{2.5} emissions from various sources as part of project MAPAN undertaken in 2013-14 by IITM, Pune in collaboration with the University of Kashmir.

Sources of air pollution & stakeholder views



Source: PM_{2.5} emissions from various sources as part of project MAPAN undertaken in 2013-14 by IITM, Pune in collaboration with the University of Kashmir.

	Sources of Pollution
1.	Transport
2	Burning coal
3.	Fuel wood

While the overall pollution in Srinagar (in winter) is as bad as in Kolkata, on some days, it is as bad or worse than Delhi," Shakil Ahmad Romshoo, Head Department of Earth Sciences at Kashmir University.

Sources in the State Pollution Control Board (SPCB) revealed to KNS that there has been a rising trend in the air pollution of the summer capital, mainly because of the vehicular emission. The Srinagar city's air quality from vehicular emission has increased manifold as compared to that from other sources.

Pollution in Srinagar, the summer capital of Jammu and Kashmir, hit a dangerous level during winter when tiny particulate matter was recorded five times more than the permissible limit mainly due to the use of coal for domestic purpose, a new study has said.

Tourist views:

"I did not find any pollution in Srinagar, the weather is good here during summers and winters and there isn't pollution", said Chandan Kumar, a tourist in Srinagar.

Government views:

"It sends wrong signals because Srinagar is called the paradise on earth and attracts large number of tourists especially during this season, these wrong reports which are not based on facts and figures sends wrong signals to people of country and world, we strongly deny it is not a correct report", said Sidharth Kumar, Chairman J&K State Pollution Control Board.

Expert views:

Prof Shakee Ramshoo, Professor and Head at the Department of Earth Sciences, University of Kashmir, Srinagar (India), said the study's findings are accurate. The scientist said it was the data compiled at his department that WHO used for finding the world's 15 most polluted cities in terms of the PM 2.5 level in outdoor ambient air.

"The government should harness the vast hydro-power potential which would reduce the dependability on conventional sources especially in the winters. The number of cars on the roads needs to be decreased to check emission of fossil fuels. According to the government data, the state adds up to 1.5 lakh vehicles every year. People are forced to use their own vehicles because of the lack of efficient transport system. While the overall

pollution in Srinagar (in winter) is as bad as in Kolkata, on some days, it is as bad or worse than Delhi," Mr. Romshoo further added.

Syed Nadeem Hussain, the director of the J&K SPCB, said the primary data on which the WHO had based its report had been sourced from the "respective (state) governments". However, he continued, "no data was forwarded to WHO by the PCB, which is the sole body responsible for monitoring pollution."

In an email response to *The Wire*, Maria Neira, the director at WHO of the department of public health, and the environmental and social determinants of health, said the data for Srinagar had not come from the J&K SPCB but from the System of Air Quality and Weather Forecasting and Research (SAFAR), an initiative of the Indian Institute of Tropical Meteorology (IITM) in Pune.

Impacts of air pollution on health

In J&K, over 4750 people per lakh population suffer from COPD. The number is much higher given the socio-demographic index (SDI) of the state, reveals the report titled "Burden of Chronic Respiratory Diseases and their Heterogeneity across the States of India: the Global Burden of Disease Study 1990-2016". The report was published in *Lancet*, a reputed international medical research journal.

Dr Parvaiz A Koul, head of internal and pulmonary medicine at Sher-e-Kashmir Institute of Medical Sciences (SKIMS) and only contributor from J&K to the *Lancet* study, said "the state government needs to work rigorously towards bringing the pollution rate down and better management of those affected. While we have no definite etiology (COPD), smoking, use of biomass fuels, ambient air pollution and possibly Kangri use are playing a role."

City stakeholder actions to address air pollution

By NGOs & Educational Institutions -

'Travelling Film Festival' by Center for Environment Education (CEE) at Srinagar, Kashmir to increase awareness amongst more than 500 students, youth and general public on the environmental issues and to sensitize them for conservation.

On World Environment Day today, Hattrick Public School organized an awareness campaign on forestation and protection of environment at various places including Foreshore road, Nishat Garden and at Dargah Hazratbal.

By Local City Administration -

Following the directions from the National Green Tribunal (NGT), the Governor administration in Jammu and Kashmir constituted the first-ever Air Quality Monitoring Committee in the state. The Committee will function under the overall supervision and coordination of the Administrative Secretary, Forests, Environment & Ecology Department. Its members include the Transport Commissioner; Director, Environment & Ecology; Director, Industries & Commerce; Director, Agriculture Production; Director, Urban Local Bodies; Member Secretary State Pollution Control Board. The committee has been authorized to prepare an action plan for control of air pollution in non-attainment cities in twin capitals of Jammu and Srinagar.

The authorities are planning to introduce electric buses in Srinagar, under the Srinagar Smart City project, in an apparent bid to rein in pollution levels. Authorities held a meeting with representatives of Tata Motors on procurement of electric buses and discussed the requirements and specifications of electric busses to be introduced for public transport in Srinagar. The company will be supplying 60 electric buses to the state government under the central scheme 'Faster Adoption and Manufacturing of Hybrid and Electric Vehicles' (FAME) in 2019. It is expected that 20 electric buses may play in Srinagar this year. Officials said these buses would need to be customized as per local needs.

By Pollution Control Board/Authority -

J&K SPCB had suggested a number of measures to deal with the problem, including the installation of Air Quality Monitoring Stations. To control pollution, diesel vehicles older than 25 years have already been phased out following HC order and the ones older than 10 years have to get a six monthly fitness certificate to ply on the roads.

The Continuous Ambient Air Quality Monitoring Stations (CAAQMS) installed at five locations in Srinagar by the State Pollution Control Board (SPCB) have recorded decreasing air pollution levels in the past four months, though they still remain above normal levels.

By Judiciary -

In April 2017, High Court of Jammu & Kashmir had sought the government's response on the measures suggested by the Pollution Control Board to tackle air pollution in city.

Actions & policies by state government -

Decision to establish 19 pollution checking centres in the Srinagar.

Two laboratories, one each at Jammu and Srinagar, established by J&K state pollution control board (SPCB) for analyzing the level of pollutants in the state.

Commissioner Secretary Forest, Environment & Ecology, Saurabh Bhagat chaired a meeting to review the implementation of State Action Plan on Climate Change (SAPCC).

Bibliography

City profile, major issues of public concern and people's voices

<https://www.dailyo.in/variety/10th-most-polluted-srinagar-city-world-health-organisation-who-jammu-and-kashmir/story/1/23943.html>
<http://population.city/india/srinagar/>
<http://www.knskashmir.com/Drinking-water-shortage-in-parts-of-Srinagar-city--24760>
https://www.greaterkashmir.com/article/news.aspx?story_id=278733&catid=12&mid=53&AspxAutoDetectCookieSupport=1
<https://indianexpress.com/article/india/jk-local-body-polls-waste-roads-major-issues-as-srinagar-gears-up-to-vote-5391012/>
https://www.researchgate.net/publication/298196552_URBANISATION_PROBLEMS_AND_GROWTH_OF_SLUMS_IN_SRINAGAR_URBAN_CENTRE_OF_KASHMIR_VALLEY_J_K

Air quality history of Srinagar

[https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)
https://www.who.int/airpollution/data/aap_air_quality_data_base_2018_v14.xlsx?ua=1
<http://cpcb.nic.in/namp-data/>

Sources of pollution

<https://timesofindia.indiatimes.com/india/pollution-hits-dangerous-levels-in-srinagar-during-winters-study/articleshow/63256555.cms>
<http://www.knskashmir.com/In-Srinagar-city-vehicles-contribute-most-to-air-pollution-20593>
<https://www.hindustantimes.com/environment/srinagar-air-quality-worse-than-delhi-s-on-some-days-use-of-coal-to-blame-study/story-6OnYlGW1GAMvHjMwfaOCN.html>
<https://www.ndtv.com/srinagar-news/srinagar-not-among-most-polluted-says-jammu-and-kashmir-on-who-report-1865108>
<https://www.ndtv.com/srinagar-news/srinagar-not-among-most-polluted-says-jammu-and-kashmir-on-who-report-1865108>
<https://www.dailyo.in/variety/10th-most-polluted-srinagar-city-world-health-organisation-who-jammu-and-kashmir/story/1/23943.html>
<https://swachhindia.ndtv.com/air-pollution-in-srinagar-hits-hazardous-levels-during-winters-worst-among-all-himalayan-states-says-study-18137/>
<http://kashmirdispatch.com/2018/05/02/srinagar-among-worlds-top-20-most-polluted-cities-who/152472/>
<https://thewire.in/environment/one-reason-srinagar-is-so-polluted-state-governments-denial-that-it-is>

Impacts of air pollution on health

<https://kashmirreader.com/2018/05/03/srinagar-tenth-most-polluted-city-in-world-who/>
<https://www.greaterkashmir.com/news/kashmir/j-k-among-4-states-in-india-with-alarming-prevalence-of-respiratory-diseases-study/296219.html>

City stakeholder actions – NGOs & Educational Institutions

<https://www.ceeindia.org/jammu.html>

<http://www.knskashmir.com/Hattrick-Public-School-organizes-rally-on-World-Environment-Day-27076>

City stakeholder actions – Local City Administration

<http://www.newindianexpress.com/nation/2019/jan/10/srinagar-diary-1923060.html>

City stakeholder actions – Scientists

https://www.greaterkashmir.com/article/news.aspx?story_id=307360&catid=12&mid=53&AspxAutoDetectCookieSupport=1

City stakeholder actions – Pollution control board

<https://kashmirreader.com/2018/01/08/air-quality-improving-in-srinagar-but-pollution-still-excessive/>

City stakeholder actions – Judiciary

<https://kashmirreader.com/2018/01/08/air-quality-improving-in-srinagar-but-pollution-still-excessive/>

City stakeholder actions – state government

<http://jaktrans.nic.in/pollutioncontrol.htm>

<http://www.risingkashmir.com/news/govt-constitutes-air-quality-monitoring-committee->

<https://economictimes.indiatimes.com/news/environment/pollution/jk-govt-has-set-up-two-2-labs-to-check-pollution/articleshow/12458562.cms>

Political Leaders Position and Activities on Constituency Air Quality



MP: Farooq Abdullah

Member of Parliament since 2014

Constituency: Srinagar

Party: Jammu & Kashmir National Conference

MP's statements on air quality

"Over the years, forest have been cut very drastically by people. This is our green wealth. When militancy came in, it further added to massive damage to our forests. Some people didn't realise this is what would save us. Some people thought freedom has come and they thought they could do whatever they want to."

State Government Official's statements on air quality

"Being an eco-fragile zone, J&K is confronted with environmental challenges due to global warming, unplanned urbanisation, deforestation and encroachment of water bodies. We have put the policy in public domain today for receiving suggestions. The policy is aimed at providing framework for guiding state's efforts to deal with its environmental issues." - Commissioner Secretary, Forest, Ecology and Environment, Saurabh Bhagat. He further said due to unplanned development, many fragile areas in the state have lost carrying capacity. "There is dire need for an environment policy in Jammu and Kashmir due to its vulnerability to natural disasters and increased pressure on natural resources due to haphazard development," he added.

Majid Farooq, Scientist Coordinator, Environment Information System (ENVIS), said in contrast to the National Environment Policy 2006, the SEP provides an all-encompassing framework for addressing the environmental issues confronting J&K, particularly pollution of water bodies, deforestation and climate change.

Bibliography

MP's statements on air quality

<http://www.ziraattimes.com/spurious-agro-chemicals-destroying-kashmirs-fruit-industry-farooq-abdullah/>

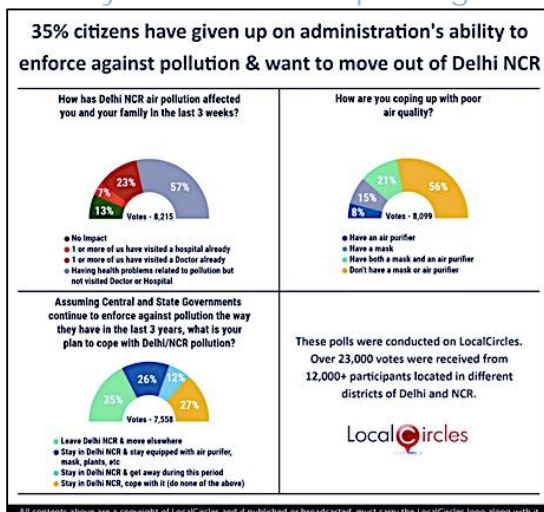
State government's statements on air quality

<https://kashmirreader.com/2018/08/14/implementation-of-state-action-plan-on-climate-change-reviewed/>

<https://www.greaterkashmir.com/news/kashmir/j-k-s-first-environment-policy-in-public-domain/293239.html>

Gurugram

The city could still be Copenhagen



Although **Gurugram (erstwhile Gurgaon)** has the 3rd highest per capita income in the country on grounds of rapid industrialisation, the 2nd largest city in the state of Haryana was ranked 88th out of 111 Indian cities surveyed in 2018. While it ranked 88 on Ease of Living index by Union Ministry of Housing & Urban Affairs. It also scored the lowest amongst the Delhi-NCR cities. The Millennium City is struggling to be the guiding light for other cities in the Smart Cities project of the Government of India.

People in the city want safe and functional walking and cycling infrastructure, along with a good bus transport system for last-mile connectivity. Citizens in Gurugram are aware of how cycling can save time and money, reduce pollution, and improve fitness. Like Copenhagen and Amsterdam.

"It's said that Gurugram has not been able to become a Smart City. I say that Gurugram will become a Super Smart City. Gurugram is progressing faster than all those Smart Cities." – ML Khattar, Chief Minister, Haryana.

Vital Statistics of Gurugram

Census 2011	Estimated 2019	WHO Ranking	AQI Dec 2018*
876,969	2,703,172	11	303 (very poor)

*AQI: Air Quality Index by Central Pollution Control Board

Major public issues of Gurugram

1.	Law and order
2.	Real estate companies - home buyer problems and corruption in local administration
3.	shortage of water & electricity supply, condition of parks and greenery
4.	Traffic congestion and commuting time, water logging on roads
5.	Inadequate public transport & last-mile connectivity
5.	Unplanned development of sectors without civic amenities; lack of housing and basic amenities to urban poor and factory workforce
6.	Air pollution, inadequate solid waste & sewage management
7.	Public health issues such as affordable medical facilities & staff
8.	Social and religious harmony

There is also a sense among the poor here that there is no provision for housing, medical care or schooling for their children. "Gurgaon is for the rich and there is nothing for those who do not have deep pockets. You should see the condition of the workers' colonies on the outskirts. There is not even a regular supply of water.. Half the money I make is handed over to police and transport department by bribes. This is the reason why auto rickshaw fares are much higher in Gurgaon than in Delhi. We cannot run on meter as there are too many additional costs that we need to bear," says 27-year-old Ashok Kumar, who belongs to Sohna and has been working as auto-rickshaw driver in Gurgaon since 2008.

"Gurgaon has been a mess for too many years. Apart from law and order, there are problems of water scarcity, traffic congestion and the unavailability of housing projects for the poor. But a visible and service-oriented police department is the greatest need out here," says 61-year-old K C Lahotia who used to be trader before selling his shop to avoid run-ins with lumpen elements. For his part, Lahotia cannot see a visible change in the transition from a Congress-led government to one led by the BJP. "Everything is the same as it was a year ago. Extortion rackets are thriving here and the people demanding money claim they are connected to the political establishment. This is a lawless land and no one appears to be in control."

Air quality history of Gurugram

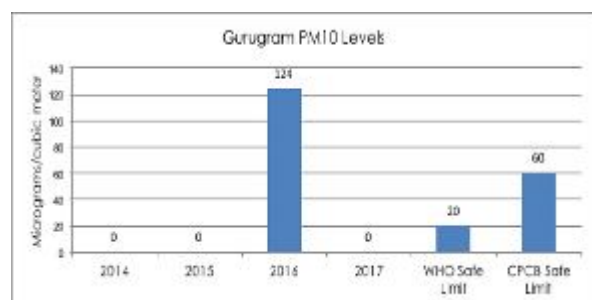
Number of air quality monitoring stations – Gurugram does not feature in the non-attainment cities list under National Clean Air Programme (NCAP) although it has been reeling under pollution pressure. The city has 2

continuous monitoring station (CAMS)⁹ though the area is vast with mixed land use bringing residential, commercial and industrial spaces together.

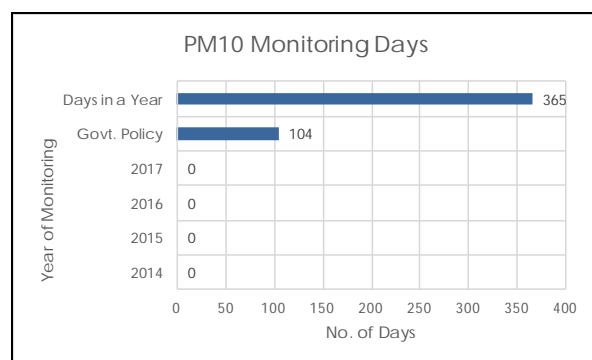
PM10 microgram/m³ (as per CPCB)

2014	2015	2016	2017	CPCB safe limit	WHO safe limit
0	0	124*	0	60	20

* provided by WHO



This graph indicates the average of PM10 pollutant recorded by the operating stations in a city in the indicated year, as reported by CPCB. When data is missing it is indicated as zero.

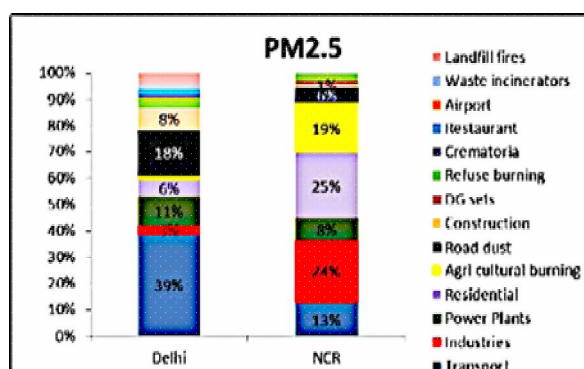


Government policy is to monitor air quality twice a week, that is, 104 days in a year of 365 days. This graph indicates on an average how many days in a year all the stations in a city have monitored the pollutants PM10, NO₂ and SO₂, as reported by CPCB. That way, data is not available for more than the number of days indicated. When monitoring is not done, it is indicated as zero.

Delhi and its neighbouring cities - Faridabad and Gurugram - have witnessed "substantial ozone build-up" from February to May (2018), Anumita Roy Chowdhury of CSE claimed, cautioning that it was early signs of a "dangerous trend". Gurgaon and Faridabad, in the National Capital Region (NCR), have recorded "highest number" of days with levels exceeding the standards.

Sources of air pollution & stakeholder views

1.	Vehicles
2.	Construction and road dust
3.	Crop stubble burning
4.	Garbage burning
5.	Industries, brick kilns
6.	DG sets



Source: www.urbanemissions.info

According to a CSE analysis, the density of cars in Gurugram is far higher than in Delhi. In 2014, Gurugram had 323 cars per 1,000 people compared with 88 cars per 1,000 people in Delhi. The city, which has grown vertically, has more people per km² than Delhi does. And to top that, over 1.3 lakh cars and SUVs from Delhi come to Gurugram every day, clearly indicating the reason for Gurugram's clogged roads.

Government views:

"To resolve the issue of traffic snarls in Gurugram, junctions of the city will be identified where people are still facing this problem. There is a plan to identify 14-15 such points and conduct a survey." - PWD minister in Government of Haryana Rao Narbir Singh.

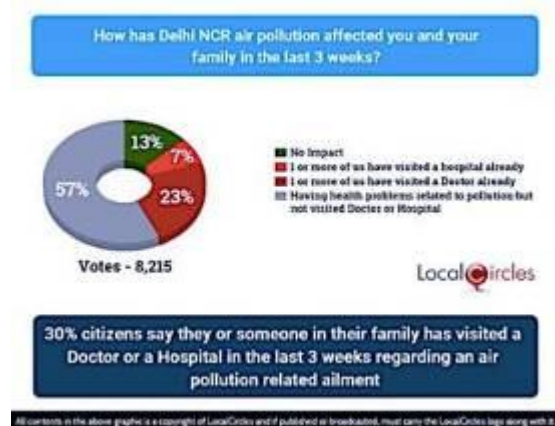
Expert views:

"Heat waves and stronger sunshine increase the frequency of days during summer when ozone begins to cross the standards posing public health risk, especially to those suffering from asthma and respiratory problems. Ground-level ozone is not directly emitted by any source. This is formed when oxides of nitrogen (NO_x) and a range of volatile gases primarily from vehicles and other sources are exposed to each other in sunlight," Anumita Roychowdhury, executive director, research and advocacy and head of CSE's air pollution programme, who have analysed ozone data from February to May 2018, obtained from 31 automatic monitoring stations of Delhi Pollution Control Committee, Central Pollution Control Board and India Meteorological Department.

Air-quality data for NCR released recently (in summer of 2018) by CPCB shows only a marginal improvement over winter in the AQI in summer months as they continued to record “very poor” and “poor” air quality even in March, April and May (of 2018) due to sandstorms. Summer pollution may exacerbate in the coming years depending on meteorological trends.

“There has been an increase in frequency, longevity and density of summer sand storms in the NCR over the past decade. All deserts are expanding, and so is the Thar,” said Dr Rajendra Kushagra, head of the department at Amity School of Earth and Environmental Sciences, Manesar.

Impacts of air pollution on health



There has been an increase in:

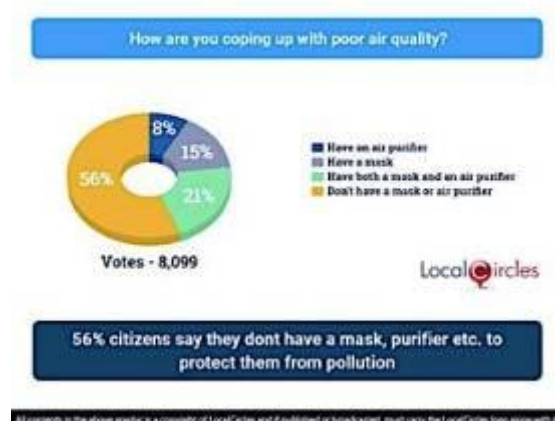
- Eye irritations
- Chronic cough, sneezing, respiratory issues
- Aggravation of various allergies

“Even before the health risk from particulate matter could be addressed, ozone has raised its ugly head in Delhi and NCR. The comprehensive action plan will require stringent and time-bound action to avert public health crisis,” said Anumita Roy Chowdhury, CSE (June 2018).

“Manganese, lead and nickel are neurotoxins that damage the brain. Children are particularly vulnerable to the effects of lead. Exposures to even low levels of lead early in life have been linked to effects on IQ, learning, memory and behaviour. It is a matter of very serious concern that such high levels of these toxic metals are found in the air (of Delhi & Gurugram) that our children breathe,” said Dr Arvind Kumar of Lung Care Foundation. “There is an urgent need for the policy makers to bring the focus back on the people and the health problems they are reporting to understand the impact of air pollution and its severity. People

are the best monitors and they have been reporting severe health impacts already,” Kumar added.

City stakeholder actions to address air pollution



By Individuals –

A group of concerned families and residents of Gurugram have got together to create a cohort which pledges to fight for the right to protect their health and draw attention of concerned authorities to find solutions to this problem. Citizens for Clean Air is a Gurugram based movement which is promoting the right to clean air. They have submitted an 8-point agenda to the local city administration/civic authorities which highlights ways in which measurable action can be taken. The group page - <https://www.facebook.com/groups/CitizensforCleanAir/>

Initiatives such as #TheCarFreeChallenge organised by citizens to combat air pollution.

Online petitions to protect trees from felling by the government when NCR planning board had asked the governments of NCR states to increase forest cover to 20% of the area - <https://www.change.org/p/hon-ble-chief-minister-government-of-haryana-protect-the-haryana-aravalli-hills-and-forests-permanently-for-future-generations-make-gurgaon-and-faridabad-ecologically-smart-cities> <https://www.change.org/p/manohar-lal-no-construction-at-the-cost-of-1300-trees-stop-deforestation-in-gurgaon>

Online petition to top political parties to include “Creating a 5-state policy to tackle air pollution” as a top priority in their election manifestos - https://www.change.org/p/arvindkejriwal-capt-amarinder-mkhatar-ashokgehlots1-mयोगीadityanath-commit-to-a-5-state-policy-to-give-us-clean-air?source_location=search_index&algorithm=curated_trendi&q&original_footer_petition_id=&qrid_position=2&pt

Environmental activist Jitender Bhadana said that a group of several organisations, activists and concerned citizens are already running a

daily campaign 'No Aravallis No Vote' in Faridabad and Gurugram to sensitise citizens and ensure that politicians who seek votes for Haryana assembly elections and Lok Sabha elections, first "listen" to their concerns. A group of social activists has launched a signature campaign against the recent amendment brought by the Haryana Government to reduce the area falling under preserved forest in Faridabad and Gurugram districts.

By NGOs & Educational Institutions -

Air quality tests done in Delhi and Gurugram in the last two months showed presence of alarming levels of toxic heavy metals, according to a new report, titled 'Death in Every Breath', released by NGO Lung Care Foundation.

Greenpeace using AirVisual data¹⁰ came out with the media briefing that said "AirVisual brings together the most recent data on PM2.5 pollution from public monitoring sources to report the world air quality status in 2018, into an unprecedentedly detailed and timely global dataset, with a focus on data which has been published to citizens in real-time. These sources include government monitoring networks, as well as measurements from IQAir AirVisual air quality monitors operated by individuals, researchers and NGOs".

In a move to ensure good air quality for students and minimize the adverse effects of air pollution, Gurugram-based Suncity School introduced air purifiers in all classrooms.

By Pollution Control Board/Authority -

Year – 2018

The NHAI, HUDA and Public Works Departments directed by the HSPCB to contain dust during their construction activities. Teams have been constituted by HUDA, Urban Local Bodies, HSPCB and District Administration to monitor the violations and impose penalties on violations in construction projects, pollution control norms for vehicles, burning of garbage. Mechanical sweeping machines and vacuum machines are being used in Gurugram and Faridabad for cleaning purposes to reduce road dust. Vehicles not destined for these cities are diverted through another route. 3 more CAAQMS ordered to be installed in Faridabad and Gurugram. Pollution sources attribution study is being planned.

¹⁰ While the global health impacts of air pollution are dominated by PM2.5, there are other air pollutants like ultrafine particles, nitrogen dioxide and ozone that pose severe health risks. Looking at PM2.5 only does not give a complete picture of air quality and health risks in some regions with relatively low PM2.5 levels.

HSPCB tasked to coordinate a state level committee chaired by Chief Secretary to review progress of 2010 air action plan.

EPCA has been working with NCR state governments to move all brick kilns to zig-zag technology, which will reduce PM pollution by 70%. Non-zigzag technology brick kilns were to be allowed to operate in NCR districts till June 30, 2018 for one last season. There were 75 brick kilns in Faridabad which gave affidavits to EPCA that they will convert to zig-zag technology by June 30, 2018.

According to members of the brick kiln owners federation, labour shortage is the biggest hurdle in shifting to zigzag technology. Ramesh Mittal, who owns a kiln in Faridabad, Haryana, says, "I am struggling to find labourers to carry out the conversion. Even the ones available are not trained to do the task."

But these reasons do not carry much weight. "Zigzag design for brick kilns has been used since the 1970s and is a well-tested technology. In West Bengal, for instance, 2,500-3,000 brick kiln owners have been using it for years without waiting for any government order," counters Sameer Maithel, director of Green-tech Knowledge Solutions, a clean energy research and advisory firm based in Delhi. "In Bihar, despite the cost and labour issues, most kiln owners are keen to shift to zigzag. According to our survey conducted around Patna, about 65 per cent of those who made the transition found that the zigzag technology was more fuel efficient and produced better bricks," Maithel adds.

Year – 2017

Following Supreme Court order, CPCB issued directions regarding prohibition on use of pet coke and furnace oil in NCR states. EPCA and state pollution boards need to review and monitor progress as per notification issued by MoEF&CC.

Year – 2015

Annual report of HSPCB lists number of orders issued for closure of polluting industries.

By Judiciary -

Year – 2019

Haryana government got the Punjab Land Preservation (Haryana Amendment) Bill of 2019 passed in the state's legislative assembly that will open up much of the formerly protected land, especially the Aravalli hills, for mining, construction and urbanisation. The hills are instrumental in checking the spread of dust and sand from Rajasthan towards the Indo-Gangetic plains. "We are concerned with

Aravalli. If you are doing anything with Aravalli or Kant Enclave (where the top court had ordered demolition of buildings due to illegal constructions in forest area) you will be in trouble. If you are doing anything with forest, you will be in trouble. We are telling you," the bench told Solicitor General representing Haryana government.

Year – 2018

As of October 25, 2018 35% brick kilns in NCR states had converted to less polluting zig-zag technology, with 1601 units still remaining in Haryana. The association of brick kiln owners sought direction from National Green Tribunal to HSPCB to allow them to operate from February 2019 after temporary closure in the till January 2019 when pollution remains high. NGT disposed -off the application saying HSPCB orders are clear and no further orders are necessary.

Year – 2017

The Supreme Court banned the use of Petroleum Coke (pet coke) and Furnace Oil (FO) for combustion in the states of Delhi, Haryana, Rajasthan and Uttar Pradesh on October 24, 2017. Furthermore, certain industry sectors, namely cement, limekiln and calcium carbide have been allowed the use of pet coke in their manufacturing process though under regulation. The court also directed MoEF&CC and CPCB to fix and implement SOx and NOx emission standards for 34 industries by December 31, 2017. The MoEF&CC issued standards for 23 industries by March 2018.

By Local City Administration -

Year - 2018

The Gurugram Metropolitan Development Authority (GMDA) released a proposal on creating a liveability index for the city and has identified 10 parameters for the index, including mobility & environment. The draft proposal is in the public domain and a citizens' interaction was held to get inputs.

The citizens in the consultation discussed the inadequacy of the current set of indicators as a barometer of environmental health in Gurugram and proposed several new indicators to better capture relevant data and implement reforms. The group expressed grave concern over the poor air quality in Gurugram and the lack of infrastructure to monitor and prevent incidents that contribute towards it. The group was vociferous about creating accountability in terms of approval of infrastructure projects without opening up for public discourse.

"Building adequate indicators for each of the parameters of the index will be crucial as well

as the methodology for measuring them. For example, while creating indicators for improving the environment, there will have to be targets for air pollution as well as green spaces and level of emissions in the city." – Kalpana Vishwanath, CEO of Safetipin.

Actions & policies by state government -

Year - 2018

"Diesel vehicles of more than 10 years age have been banned from registration in Faridabad, Gurugram and Jhajjar districts.," said Vipul Goel, Minister of Environment & Industries, Government of Haryana.

Delhi Metro extension linking Faridabad, Gurugram and Ballabhgarh with Badarpur between 2015-18; all stations and depot to be powered by solar panels, LED lighting, and CO2 sensors installed for good quality air. Faridabad-Gurugram link will be ready by 2021 while Greater Noida and Greater Faridabad will also be linked.

After years of wait Gurugram finally got a city bus service. With a fleet of 25 low-floor buses, Chief Minister Manohar Lal Khattar, in presence of Gurugram MP Rao Inderjit Singh, flagged off Gurugaman - the official name given to the bus service. This is part of the 500 CNG buses roll-out plan, with 200 buses in the first phase.

A high-speed rail network connecting Delhi to Rajasthan via South Haryana/Gurugram will begin in March 2019 to provide a convenient mode of travel for daily commuters from southern Haryana to Delhi.

Actions & policies by other NCR Stakeholders -

A team of researchers from Manav Rachna Educational Institutions based in Faridabad devised an air pollution mitigation system titled "Pariyantra" which is an air filter unit that can be mounted on the roof of any vehicle — buses, cars, auto-rickshaws and even two-wheelers. As the vehicle moves, air passes through the holes in front of the device. The filters fitted inside the unit trap the pollutants releasing clean air. Pariyantra does not require any power to operate and is equivalent to the filtration provided by 6 room air filters. CPCB approved the pilot project for 30 buses in Delhi, flagged off by Minister of Environment Dr Harsh Vardhan, in the winter of 2018.

With the aim of resolving last-mile connectivity problems in Gurugram, aggregated cabs major Uber launched its bike-sharing service, UberMOTO. Shweta Rajpalkohli, Former Head, Public Policy, Uber India & South Asia,

highlighted that one in every four UberMOTO trips originates at the metro station, indicating that people lack last-mile connectivity. "The minute we provide them that, they are encouraged to use the metro," she said.

Noida-based start-up EV Motors India, provider of infrastructure solutions for E-mobility, plans to set up 20 electric vehicles (EV) charging outlets in Delhi-NCR and opened first such outlet under the name "PlugNgo" in DLF Cyber City, Gurgaon.

Bibliography

City profile, major issues of public concern and people's voices

<https://www.hindustantimes.com/gurugram/gurugram-will-be-super-smart-says-haryana-chief-minister-manohar-lal-khattar/story-XpzbMpcm6kjORLqc4RYvYO.html>
<https://www.localcircles.com/a/press/page/delhi-ncr-residents-want-to-leave-the-city-due-to-air-pollution#XJkPKM8zb-Z>
<http://www.janaagraha.org/files/publications/GMDA.pdf>
<https://economictimes.indiatimes.com/news/politics-and-nation/lawlessness-persists-in-gurgaon-even-as-bjps-rao-inderjit-singh-focuses-on-infrastructure-creation/articleshow/46808845.cms>
<http://population.city/india/gurgaon/>

Air quality history of Gurugram

<http://cpcb.nic.in/non-attainment-cities/>
[https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)
https://www.who.int/airpollution/data/aap_air_quality_data_base_2018_v14.xlsx?ua=1
<http://cpcb.nic.in/namp-data/>
<https://timesofindia.indiatimes.com/city/chandigarh/haryana-a-questions-who-report-which-put-faridabad-among-worlds-polluted-cities/articleshow/64032229.cms>
<https://www.localcircles.com/a/press/page/delhi-ncr-residents-want-to-leave-the-city-due-to-air-pollution#XJkPKM8zb-Z>
<https://www.ndtv.com/delhi-news/delhi-faces-major-ozone-spike-shows-sings-of-dangerous-trend-study-1864055>

Sources of pollution

<https://www.indiaspend.com/87-of-indian-vehicle-owners-ready-to-buy-electric-vehicles-if-that-reduces-pollution-survey-98547/>
<https://www.orfonline.org/research/the-herculean-task-of-improving-air-quality-the-case-of-delhi-and-ncr-45459/>
<https://www.ndtv.com/delhi-news/delhi-faces-major-ozone-spike-shows-sings-of-dangerous-trend-study-1864055>
<https://yourstory.com/2017/07/thegurugramstory-spotlight-sustainable-mobility-green-homes>
<https://indianexpress.com/article/cities/delhi/survey-to-identify-roads-plagued-by-congestion-across-gurgaon->
<https://www.cseindia.org/delhi-ncr-facing-major-ozone-spike-warns-cse-8746>

Impacts of air pollution on health

<https://www.livemint.com/Politics/nJLLR7XBdWKM7gsBIF7WZL/Pollution-restrains-elderlys-movement-worsens-health-conditions.html>
<https://www.localcircles.com/a/press/page/delhi-ncr-residents-want-to-leave-the-city-due-to-air-pollution#XJkPKM8zb-Z>
<https://www.ndtv.com/delhi-news/delhi-faces-major-ozone-spike-shows-sings-of-dangerous-trend-study-1864055>
<https://www.livemint.com/Home-Page/Ewq7SdIPeQDWxHniJRRUvK/Delhi-Gurgaon-air-show-presence-of-alarming-levels-of-heavy.html>

City stakeholder actions – Individuals

<http://newsmobile.in/articles/2017/11/03/799409/>
<https://www.thehindu.com/news/national/other-states/supreme-court-warns-haryana-on-damage-to-aravalli-range/article26476637.ece>
<https://india.mongabay.com/2019/02/no-aravallis-no-vote-people-want-haryana-government-to-spare-the-hills/>
<https://www.tribuneindia.com/news/haryana/saving-aravallis-may-become-poll-issue-signature-drive-launched/745358.html>

City stakeholder actions – NGOs & Educational Institutions

<https://www.thehansindia.com/posts/index/Education-and-Careers/2017-08-02/Gurgaons-Suncity-School-become-the-first-in-Delhi-NCR-to-introduce-air-purifiers-in-all-classrooms/316288>
<https://www.livemint.com/Home-Page/Ewq7SdIPeQDWxHniJRRUvK/Delhi-Gurgaon-air-show-presence-of-alarming-levels-of-heavy.html>

City stakeholder actions – Local city administration

<https://www.hindustantimes.com/gurugram/citizen-participation-key-to-success-of-gmda-s-liveability-index/story-ifXngwoDpASnCwsQgMqgvL.html>
<http://www.janaagraha.org/files/publications/GMDA.pdf>

City stakeholder actions – Judiciary

https://www.sci.gov.in/supremecourt/1985/63998/63998_1985_Order_24-Oct-2017.pdf
<http://epca.org.in/state-air-winter-2017-18.pdf>
<http://www.indiaenvironmentportal.org.in/content/459690/order-of-the-national-green-tribunal-regarding-closure-of-brick-kilns-operating-in-haryana-19112018/>

City stakeholder actions – Pollution Control Board/Authority

<http://www.epca.org.in/EPCA-Reports1999-1917/Report-draft-no.66.pdf>
<https://www.tribuneindia.com/news/haryana/air-monitoring-stations-set-up-at-19-sites/707732.html>
<http://hspcb.gov.in/14-15.pdf>
<https://indianexpress.com/article/cities/delhi/action-taken-on-pollution-remains-dismal-open-storage-of-construction-material-biggest-culprit-5420585/>
<http://cpcb.nic.in/openpdf.php?file=UHVibGlyYXp25GaWxLzk3NF8xNTEyMDMyNDY2X2I1ZGhlcGhvdG8xNDI1Mi4xMQ>
<http://epca.org.in/state-air-winter-2017-18.pdf>
<https://www.downtoearth.org.in/news/environment/74-brick-kilns-in-delhi-ncr-have-not-shifted-to-cleaner-technology->
<https://www.hindustantimes.com/delhi-news/shifting-polluting-brick-kilns-to-clean-tech-a-major-challenge-green->

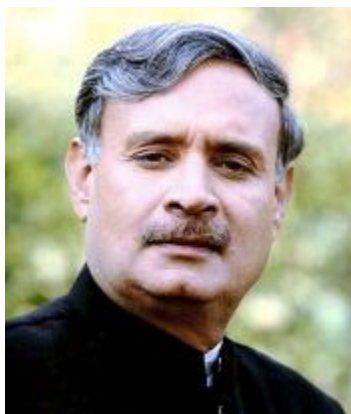
City stakeholder actions – state government

http://www.delhimetrorail.com/press_reldetails.aspx?id=63aQSC8zmhslld
<https://www.hindustantimes.com/gurugram/faridabad-gurugram-metro-link-to-be-operational-by-april-2021/story-UwoKebUnqjUlnutMW23b7M.html>
<https://economictimes.indiatimes.com/news/politics-and-nation/gurugram-finally-gets-city-bus-service-here-are-the-areas-that-it-will-cover/articleshow/65652576.cms>
<https://economictimes.indiatimes.com/news/politics-and-nation/haryana-gives-go-ahead-for-high-speed-rail-project/articleshow/64606212.cms>

City stakeholder actions – Other NCR stakeholders

<https://manavrachna.edu.in/latest/manav-rachnas-revolutionary-air-filtration-project-flagged-off-by-cpcb/>
<https://yourstory.com/2017/07/thegurugramstory-spotlight-sustainable-mobility-green-homes>
<https://www.w3livenews.com/News/ReadArticle>

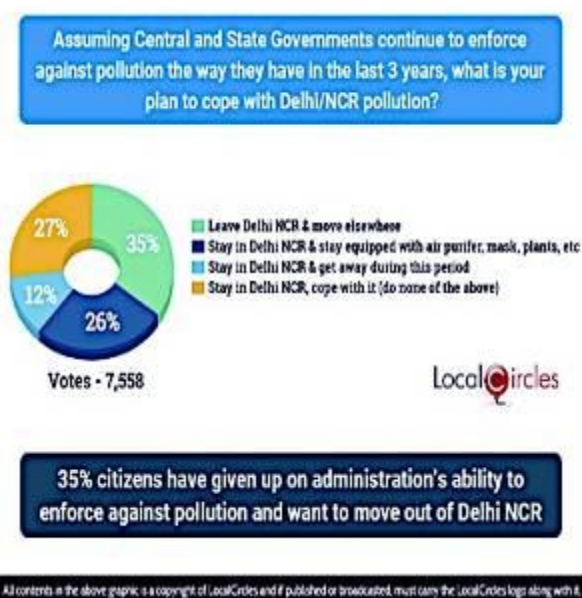
Political Leaders Position and Activities on Constituency Air Quality



MP: Rao Inderjit Singh

Member of Parliament since: 1998
Lok Sabha Constituency: Gurugram (since 2009)

2014 Elections Party: Bhartiya Janta Party
Current Portfolio: Minister of State (Independent Charge) for Planning, and for Chemicals & Fertilisers



MP's statements on air quality

Year - 2017

"Unfortunately today some of the problems that Gurgaon faces is probably because decisions about Gurgaon were not taken here but in Chandigarh. Even though we contribute 65-70 percent of revenue that Haryana gains still Gurugram lacks basic amenities market can provide as a price has not been bridged in the city. Our focus both on the part of GMDA (Gurugram Municipal Development Authority) and MCG is to bridge this gap in a way that we deliver affordable but quality services like infrastructure, housing, policing. These are issues that are now being addressed slowly but surely and I have good team of officers with me now." - Rao Inderjit Singh, Minister of State (MoS) for Planning and Urban Development, and Member of Parliament (MP) from Gurugram, speaking at The Gurugram Story, a platform for influencers and leaders to come together and determine the direction Gurugram should take in order to be reinvented as India's Millennium City.

Year - 2016

"Delhi (smog) should be taken as a serious warning to the future of urban India and all concerned should wake up in time so as not to meet the same fate," said Union Minister for Urban Development Rao Inderjit Singh while addressing the valedictory session of the four day 'Urban Mobility India (UMI) Conference and Expo' in Gandhi nagar where he presented 20 major conclusions and recommendations of the conference which included speedy promotion of infrastructure for non-motorised transport like footpaths, walkways and cycle ways.

MP's Parliamentary statements on air quality

Year - 2018

In a written reply to the Lok Sabha, Minister of State for Planning Rao Inderjit Singh said that in order to promote electric vehicles, NITI Aayog in its role as government think tank has proposed the formation of six committees. He said that each committee, to be headed by the respective secretaries, will decide issues pertaining to finalisation of non-fiscal incentive; promotion of last mile connectivity; electric

mobility in public transport; technology development of R&D electric mobility, and demand and supply side incentives.

State Government's statements on air quality

Year – 2018

"The source data of WHO report is not clear. Haryana State Pollution Control Board (HSPCB) has been monitoring air quality since 2010 in Faridabad and Gurugram. As per details available with the Board, the PM2.5 value of both the cities are being monitored regularly since 2013. These (PM2.5) values increase above 170 only during a brief season, that is during a few days around Diwali, crop harvesting season during which residue burning is reported and peak winter, when the temperature is low and wind velocity is minimum," said Vipul Goel, Minister of Environment, Climate Change & Industries, Government of Haryana.

"KMP and KGP (Kundli-Ghaziabad-Palwal) road will benefit Gurugram, Faridabad and Delhi. Our CNG-based city bus service will start soon. That will cut vehicular pollution. Once the Dwarka Expressway is in use, concentration of vehicles will spread out. Pollution happens when the vehicles are not moving." – Haryana Chief Minister ML Khattar.

Year – 2014

Haryana Chief Minister ML Khattar said, "it is easy to plant trees, more challenging is to maintain them. In this polluted environment, one should plant more trees".

City-focussed actions announced/taken by MP

"Our government in the centre and the state have played important role in transforming Gurugram in what it was 5 years back," asserts the MP while stating that decades of neglect the area faced can't be undone in five years and this is why he wants people to vote him back to power.

The MP claims to have played an important role in the setting up of the Gurugram Metropolitan Development Authority (GMDA), an over-arching development body for the district. After its inception, the GMDA initiated infrastructure projects such as the much-needed city wide bus service, CCTV surveillance system, optical fibre cables to turn Gurugram into a smart city and ensuring water and power supply in developing sectors. Additional claims include using leverage to resume Dwarka expressway, completion of underpasses on Delhi-Gurugram expressway,

approval of Delhi-Alwar rapid rail project, extension of Gurugram Metro towards railway station and other areas.

Policies & activities by MP's union government

Year – 2018

MoEF&CC notified the Comprehensive Action Plan (CAP) to combat air pollution in the long-run for Delhi-NCR. The plan will work in collaboration with Graded Response Action Plan (GRAP) which comes into effect when air quality degrades.

The PMO set up a sub-committee on solutions for crop burning. Budget 2018 allocated Rs 1200 crore for the strategy recommended by the sub-committee, endorsed by EPCA and to be implemented by MoEF&CC.

Faridabad and Gurugram will be connected by a Metro and the project will be ready by March 2021. Both the government of India and the Haryana government have given in-principle approval to the project. Currently 1.5 lakh people ply daily on the chosen route.

NitiAayog proposed a 15-point action plan, titled Breathe India, to combat air pollution in the most polluted cities of India.

National Auto Policy released including EV, CNG, biofuels, and hydrogen vehicles, though without timelines and no link with EV 2030 vision, FAME II or Make in India. Under the FAME II India scheme around Rs. 5,500 crore over a five year period has been set aside to provide grants for all kinds of electric vehicles.

Gol sealed a deal with World Bank, GIZ, ADB, SDC, AFD and Bloomberg Philanthropies, to build capacities of all 102 polluted cities across the country. The initial small budget of 300 crore is meant for expanding air quality monitoring capacities in states, setting up national emission inventories and conducting source apportionment studies in cities to identify nationwide pollution hotspots.

Year – 2017

The central government launched the "City Liveability Index" - a first of its kind initiative introduced by the Urban Development Ministry - to measure the quality of life in 116 major cities including capital cities and those with population over one million. The cities will be assessed on a comprehensive set of 79 parameters to capture the extent and quality of infrastructure including availability of roads, education and health care, mobility, employment opportunities, emergency

response, grievance redressal, pollution, availability of open, green spaces, and culture.

Railways Ministry announced new reforms and services such as Roll On Roll Off and long-term contracts to enhance freight traffic and reduce dependence on commercial vehicles.

NITI Aayog formed task forces in collaboration with CII on clean fuel, clean transport, clean industries and biomass management to submit roadmap with recommendations for managing the air-quality of the Indo-Gangetic plain as a whole.

Year – 2016

National Capital Region Planning Board (NCRPB), an urban planning body for the NCR, asked the NCR states to submit action plans for air pollution, increase forest cover to 20% of total geographical area, and to speed up 14 inter-state connectivity links for seamless travel in the region. The Board meeting was attended by Union Minister of State for Urban Development Rao Inderjit Singh, CM ML Khattar.

Government of India announced the advancement of vehicular emissions and fuel quality norms to BS-VI levels by the year 2020 across the country.

All non-attainment cities were given a set of 42 action points to improve air quality and as a follow-up, 94 cities were asked to prepare detailed action plans. The states concerned had been urged to steer implementation of action plans in these cities. The CPCB has also launch a mobile app - SAMEER - for grievance redressal.

Year – 2015

Government of India announced FAME scheme under NEMMP to promote electric vehicles. Instead, EV manufacturers and sellers were expecting a policy and regulatory framework laying out a roadmap for creating an ecosystem comprising, most importantly, charging stations, as well as rolling out incentives for both manufacturing and purchasing EVs.

Bibliography

MP's statements on air quality

<https://yourstory.com/2017/07/thegurugramstory-spotlight-sustainable-mobility-green-homes>
<https://navbharattimes.indiatimes.com/state/punjab-and-haryana/faridabad/mp-krishan-pal-gujjar-plantation-by/articleshow/36120038.cms>
<https://www.localcircles.com/a/press/page/delhi-ncr-residents-want-to-leave-the-city-due-to-air-pollution#.XJkPKM8zb-Z>

<https://economictimes.indiatimes.com/news/politics-and-nation/delhi-smog-should-be-seen-as-serious-warning-says-union-minister-rao-inderjit/articleshow/55370997.cms>

MP's Parliamentary statements on air quality

<https://economictimes.indiatimes.com/news/economy/policy/niti-submits-draft-cabinet-note-on-zero-emission-vehicles/articleshow/63614200.cms>

State government's statements on air quality

<https://www.prharyana.gov.in/hi/node/24438>
<https://www.hindustantimes.com/gurugram/gurugram-will-be-super-smart-says-haryana-chief-minister-manohar-lal-khattar/story-XpzbMpc6kORLqc4RYvYO.html>
<https://timesofindia.indiatimes.com/city/chandigarh/haryana-a-questions-who-report-which-put-faridabad-among-worlds-polluted-cities/articleshow/64032229.cms>
<https://navbharattimes.indiatimes.com/state/punjab-and-haryana/faridabad/mp-krishan-pal-gujjar-plantation-by/articleshow/36120038.cms>
<https://economictimes.indiatimes.com/news/et-explains/why-delhites-must-learn-to-love-the-pollution-mask/articleshow/64599120.cms?from=mdr>

City-focussed actions announced/taken by MP

<https://www.hindustantimes.com/people/lok-sabha-elections-2019-switching-sides-connections-helped-gurugram-mp-rao-inderjit-singh/story-3102ICayBiM7BbxUeDO0oN.html>
<https://www.hindustantimes.com/gurugram/faridabad-gurugram-metro-link-to-be-operational-by-april-2021/story-UwoKebUngjUlnutMW23b7M.html>
<https://www.jagran.com/delhi/new-delhi-city-ncr-metro-rail-run-between-faridabad-and-gurugram-soon-common-man-issues-18785540.html>

Policies & activities by MP's union government

<https://www.iamrenew.com/policy/little-late-govt-earmarks-300-crores-fight-air-pollution-102-cities/>
<https://economictimes.indiatimes.com/news/environment/pollution/dedicated-plan-for-100-cities-to-reduce-air-pollution-levels/articleshow/62905770.cms>
http://niti.gov.in/writereaddata/files/document_publication/BreatheBooklet11thJuly.pdf
https://dhi.nic.in/writereaddata/UploadFile/DHI-NAB-Auto%20Policy%20Draft%20Document_vDRAFT.pdf
<https://economictimes.indiatimes.com/news/environment/pollution/four-international-agencies-to-join-govts-effort-to-tackle-air-pollution-in-102-cities/articleshow/66548971.cms?from=mdr>
<http://pib.nic.in/newsite/PrintRelease.aspx?relid=158793>
[http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20\(2\).pdf](http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20(2).pdf)
<https://www.thehindu.com/opinion/op-ed/advancing-bs-vi-emission-norms/article25438769.ece>
<https://archive.indiaspend.com/cover-story/0-02-new-cars-are-electric-heres-what-govt-must-do-to-reach-all-electric-goal-78119>
<https://economictimes.indiatimes.com/news/environment/pollution/govt-has-made-serious-efforts-to-curb-air-pollution-govt-after-who-report/articleshow/64003558.cms?from=mdr>
<https://www.downtoearth.org.in/news/air/niti-aayog-releases-reports-on-biomass-management-clean-fuel-and-clean-transport-59790>
<http://www.epca.org.in/EPCA-Reports1999-1917/EPCA-note-supreme-cCourt-prevention-crop-residue-burning.pdf>
<https://economictimes.indiatimes.com/news/politics-and-nation/ncprb-directs-delhi-adjoining-states-to-submit-plans-to-control-air-pollution/articleshow/56089518.cms>

Jaipur

Aspiring to be in the pink of its health.



©Himanshu Vyas/HT Photo

Jaipur has been a gateway to other locations in the state of Rajasthan and itself a major hub of commercial, crafts and tourism activities. Lately construction and IT have also been growing exponentially. City's population of over 40lakhs has over 20 lakh vehicles at a density higher than Delhi and using majority space of the roads as parking. More recently in 2018, it ranked 30th out of 111 Indian cities in Ease of Living Index.

While people of Jaipur recognize and complain about the various pollution and cleanliness issues, even then environmental degradation has not become a political issue or election agenda – this is because other issues have taken primacy. Jaipur has been included in various prestigious national schemes such as Smart Cities, NCAP, and AMRUT that will enhance urban quality of life.

Featuring in the non-attainment cities list of the NCAP, Jaipur has PM10 and PM2.5 pollutants above the nationally approved safe limits in 2018 as reported by Rajasthan State Pollution Control Board (RSPCB) – the air quality has degraded to critical in the city.

Comptroller and Auditor General of India (CAG) audit in 2018 observed that RSPCB failed to initiate any effective program to address air pollution in the state. The Lancet report found Rajasthan having the highest death rate in the country due to air pollution reducing life expectancy by 2.5 years.

Vital Statistics of Jaipur

Census 2011	Estimated 2019	WHO Ranking	AQI Dec 2018*
3,046,163	3,784,250	148	359 (very poor)

*AQI: Air Quality Index by Central Pollution Control Board

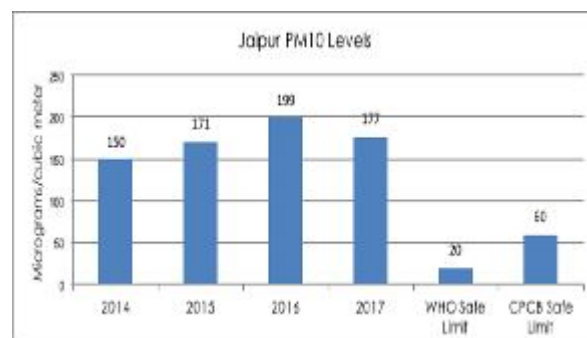
Major public issues of Jaipur

Citizens have registered online complaints, concerns and campaigns against open garbage and dry leaves burning, traffic amongst other issues.

1.	Law and order enforcement
2.	Inadequate healthcare and medical facilities
3.	Poverty, livelihoods/jobs, and education
4.	Lack of cleanliness in public spaces and waste management; garbage/dry leaves burning
5.	High electricity bills&erratic power supply
6.	City roads and traffic – road condition, traffic congestion, parking space, encroachment
7.	Gap in policy/schemes implementation and delivery to people
8.	Worsening air quality

Air quality history of Jaipur

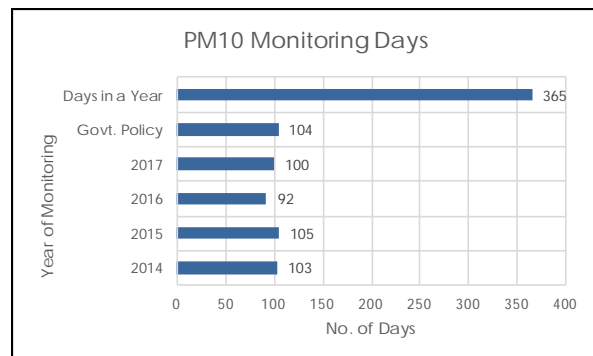
Number of air quality monitoring stations – Jaipur as an NCAP city has 3 continuous monitoring stations (CAMS) reporting data for all types of pollutants¹¹ and 6 manual stations reporting data on PM10, SO₂ and NO₂.



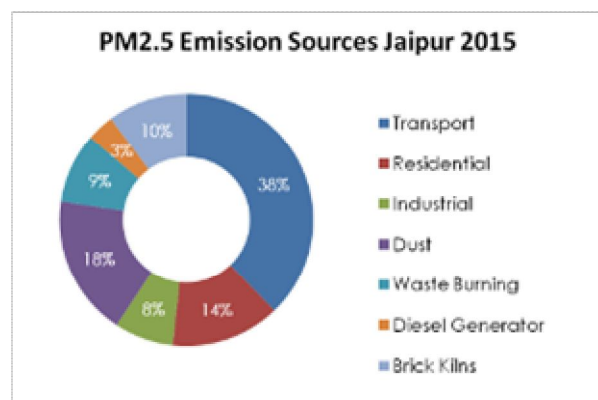
This graph indicates the average of PM10 pollutant recorded by the operating stations in a city in the indicated year, as reported by CPCB. When data is missing it is indicated as zero.

PM10 microgram/m3 (as per CPCB)

2014	2015	2016	2017	CPCB safe limit	WHO safe limit
178	204	212	157	60	20



Government policy is to monitor air quality twice a week, that is, 104 days in a year of 365 days. This graph indicates on an average how many days in a year all the stations in a city have monitored the pollutants PM10, NO₂ and SO₂, as reported by CPCB. That way, data is not available for more than the number of days indicated. When monitoring is not done, it is indicated as zero.

Sources of air pollution & stakeholder views

1.	Vehicles (cars, auto-rickshaws, old trucks& buses)
2.	Construction, road dust, rampant mining, sand storms
3.	Brick kilns
4.	Industrial emissions & diesel generator sets
5.	Garbage (household, street & biomedical) and leaves burning
6.	Burning of wood as fuel& deforestation, crop stubble burning
7.	Lack of green spaces

Rajasthan pollution control board's chief environment engineer and officer in-charge (planning) AK Puri said, "The main reasons of pollution in Jaipur was emission from vehicles, burning of solid waste in open, climatic conditions (dust in air), use of unclean domestic fuel and lack of adequate green spaces."

"I have objected to sanitation workers several times not to burn leaves and waste in open as pollution is not only posing health hazards to the residents living around, but also the deer and birds in the park. The matter has been reported to JMC officials and local councillor several times however, no action has been taken." –Sadhna Garg, resident of Azad Marg, C-scheme, Jaipur, amongst many other fellow residents of the area to have noticed the practice.

"The bins are removed from the area and if collecting vehicles do not pick up the entire garbage, the sanitation workers burn it on site," said Indrajeet Singh, another resident of C-scheme.

MoEF&CC's solid waste rules say waste cannot be burnt, and officials at Jaipur Municipal Corporation (JMC) recognise that. "Garbage burning increases pollution manifold. But the unfazed JMC employees, instead of stopping people from burning garbage, are doing it themselves," said Suman Mishra, resident of Sodala area.

Vijay Sharma, resident of Ajmer road said, "Hundreds of people go for a walk in the parks while thousands of children go to schools in morning. They are getting affected by the pollution created by the burning of garbage (by sanitation workers)."

Department of Civil Engineering, Poornima Group of Institutions, Jaipur organized a study that disclosed lack of proper mechanism in the city for treatment of solid waste generated, leading to dumping of waste in open areas causing further problems. Since the workers cleaning the streets do not have an arrangement for garbage collection, as the private agency only collects door-to-door from homes, they end up burning them, for various reasons including the pressure of cleanliness survey rankings under annual SwachhSurvekshan. Biomedical waste is also burnt by hospitals, including government's district hospital, near residential areas.

"There was a lack of coordination between the RSPCB and other relevant departments which led to non-identification of sources of air pollution along with their quantification through source apportionment studies.. In the absence of which, the RSPCB was not in a position to prepare comprehensive programmes for prevention, control or abatement of air pollution," the CAG report on the last fiscal tabled in the assembly February 2018 said.

Impacts of air pollution on health

The research Global Burden of Disease Study 2017 by Lancet says air pollution is now the second largest cause of pre-mature deaths in India after cardio-vascular diseases. In the 1990s, air pollution was the third largest cause of such deaths in India. Rajasthan is leading the country with burden of COPD and asthma induced deaths which in turn is linked to air pollution in more than half the cases followed by smoking for a quarter of the cases. According to Annual Health Survey 2012-13, Jaipur had 32.99% children suffering from acute respiratory infection (ARI) and has been on an increasing trend.

Overall, in Jaipur, there has been an increase in:

- Rhinitis, asthma, bronchitis, pneumonia, COPD
- Chronic cough, sneezing, itching, eye problems
- ARI and other respiratory issues
- Various other allergies

"Increased air pollution is associated with higher incidence of respiratory, cardiac and skin disorders. Children have a higher breathing rate compared to adults. Hence, they are more prone to air pollution-related disorders. Among respiratory diseases, children have increased chances of having allergic rhinitis, asthma, pneumonia and chronic cough. These are more often seen in children doing physical exercise in highly polluted environment." - Dr Ashok Gupta, medical superintendent, JK Lon Hospital.

"The figures by WHO indicate that a one-point programme should be launched by the government to ensure that the next generation gets clean air to breathe. We do not want our cities to turn into gas chambers. Rajasthan is at the top in the country for losing years of healthy life to premature death and suffering due to air pollution. There is an immediate need to introduce eco-friendly vehicles running on renewable energy sources." - Former professor (pulmonary medicine) of Sawai Man Singh Hospital and Director, Asthma Bhawan, Dr Virendra Singh.

Pulmonologists claim that the situation has become grave. "Now we frequently see patients with refractory asthma (which remains uncontrolled despite taking medicines) and allergy due to the increase in air irritants. In recent years, there is an increase in patients with respiratory allergy due to urbanisation and increased air pollution." - Dr KK Sharma, pulmonologist in a private hospital.

"There have been so many cases of patients telling us that they get better as soon as they leave Jaipur and can live without medicines. Dust (in Jaipur) and air pollution are a very lethal combination for people suffering from respiratory problems. However, in Jaipur, due to air pollution, respiratory diseases are on the rise." - Dr Adil Aziz, consultant medical practitioner at a private hospital.

"Air pollutants cause an irreversible respiratory disease called COPD." - Dr Sheetu Singh, assistant professor, Institute of Respiratory Disease, SMS Medical College.

City stakeholder actions to address air pollution

By Medical Professionals -

City-based doctors appealed to the state government to come out with a one-point agenda to ensure clean air to breathe for future generations.

Experts gathered at 'Air-O-Thon', the Jaipur edition of the second series of an international summit organised on the Malaviya National Institute of Technology (MNIT) campus, to discuss the growing issue of indoor air pollution and air quality management. Eminent speakers, researchers, academicians, not only gathered to discuss the poor indoor air quality in India and health implications of exposure to such pollution, but also to share knowledge, experience, technologies and solutions to set up a momentum to fight air pollution.

"The workshop is an effort to bring together the technical acumen of engineers and the expertise of eminent pulmonologists to put before society the concrete manner in which the growing challenge of indoor and air pollution can be addressed." - Dr Nivedita Kaul, Assistant Professor, Department of Civil Engineering at MNIT.

By Businesses & Professionals -

• **Pink City Women Driven E-rickshaws**

"A public limited company - Pink City Rickshaw Co - has been formed with equity participation from about 40 women e-rickshaw drivers and the number will be eventually increased to 200. The project focuses on training women, ideally in the age group of 18-35, selected from weaker sections of society. It has opened a new channel of income for these women after their training in rickshaw driving and soft skills. They have smart uniforms and are groomed to interact with tourists. A tourist circuit has been designed keeping in mind the tourists who want to visit the historical sites in the city, but are

hesitant to manoeuvre the congested streets on their own," said founder Radhika Kumari.

The e-rickshaws have been modified by Jaipur-based NID graduate AyushKasliwal. The modified vehicle has a collapsible canopy and ergonomically designed seats, mechanical improvement for greater safety and also a locker for safekeeping of belongings of the clients, a mobile charger, water bottle holder, city maps and so on. The e-rickshaws also have an IVRS app installed with the pre-marked routes, which prove to be helpful for both tourists and add a secured system for operations for women drivers.

- **#CityKaTreeBank**



- **Juniors Cyclothon & Cycle Tours**

Pink Pedals company organized cyclothon for over 200 kids between 2.5-18 yearsage with the purpose of introducing children in Jaipur to the joys and responsible aspects of cycling for the benefits of fitness, nature and atmosphere (air).

Cyclin' Jaipur provides cycle tours to visitors in Jaipur as a way of responsible tourism.

- **Jaipur Metro becomes rider-friendly**

The Jaipur Metro Rail Corporation (JMRC) has increased ridership following various measures adopted including withdrawing peak hour charges and increasing frequency of trains. In the sequence for making metro more passenger friendly, the JMRC has commenced E-rickshaw services to provide last mile connectivity. It was, however, not an easy task for the JMRC to find partners for e-Rickshaw. There was a legal hurdle in outsourcing the project to a single firm as the current law's provisions only one e-rickshaw to be owned by an individual. Thus, special permission was

secured from the government for the purpose of Jaipur Metro.

- **EV Charging Stations on Delhi-Jaipur route**

Rajasthan Electronics and Instruments Limited, a public-sector enterprise operating in the electronics, information technology, and renewable energy segment, issued a tender to set up electric vehicles (EVs) charging equipment across various locations in the country, including Delhi-Jaipur-Agra highway.

- **Jaipur Smart City Limited (JSCL)**

Projects to reduce traffic congestion by integrating multiple modes of transportation and waste management are planned.

By Judiciary -

The NGT ordered Rajasthan government to furnish details of the two most polluted cities in the state under the case Vardhaman Kaushik vs Union of India. In response in 2016 the state government acknowledged the data from existing monitoring stations is not sufficient to provide a ranking of cities and that the PM10 pollution levels have been above the prescribed safe limits. IIT Kanpur has been asked to do a source apportionment study for Jaipur, and no such previous study exists.

By Rajasthan State Pollution Control Board -

Year - 2018

With it (Rajasthan) sharing its boundaries with Delhi, air pollution in the state has a direct impact on the capital's air quality. This had become apparent in June this year, when the air quality remained 'severe' for five days in peak summer due to a dust storm originating in Rajasthan and spreading all the way to western Uttar Pradesh. Five cities in the state are on the list (of WHO): Alwar, Jaipur, Jodhpur, Kota, Udaipur. "So far, Rajasthan has been the worst performer. We have not received any plan from them. The idea was that we tell the state pollution control boards that there is a need for a time-based action plan to mitigate air pollution in their cities, and for that, they need to start sensitising the citizens and start taking action immediately." - A CPCB official.

CPCB maintained that it had provided a "template" to the different cities, on the basis of an analysis it conducted of source apportionment studies that had been conducted in different India cities, including Delhi. On the basis of this template, it had asked other cities to submit their plans. An official said, "We largely know what causes pollution in different cities. The sources remain the same, whether they are road dust or vehicular pollution. We asked them, that if they have in the past conducted any study, then

they should take those findings into consideration."

In response, Aparna Arora, RSPCB chairperson said, "We have not submitted the plan because we are conducting a source apportionment study for the different cities."

Dr. Vijai Singhal, Chief Environmental Engineer, RSPCB added, "One has to figure out what is causing the air pollution. It is different for each city. The source apportionment study allows you to know exactly what the different pollutants are and the extent to which they contribute to the dip in air quality. For this, we are presently getting the study done for Jaipur by IIT Kanpur. This will be finished by the end of this year. After this, we will also get it done for Bhiwadi and the other cities."

"Air pollution can vary from city to city, from state to state and from season to season. In a state like Rajasthan, where you've arid, dusty areas and dense forested areas - how can you've a one-size-fits-all template for air pollution? The other states appear to not have bothered." – another official from RSPCB.

Former CPCB member-secretary B. Sengupta explained, "A source apportionment study is a very important item that has to be undertaken before creating any air action plan. What the Rajasthan government is saying is correct. They need to conduct the study in order to identify specific pollutants before coming up with a rigorous long-term plan."

Rajasthan went into state assembly elections in December 2018 that resulted in change of government.

Year – 2017

"We have formulated an action plan to ensure better coordination with all these (waste, municipal corporation, etc) departments. A study on the air pollution in Jaipur is also being done by IIT Kanpur, which will help improve the air quality in the city." - Vijay Singhal, chief environmental engineer, RSPCB.

RSPCB has issued fresh guidelines for pollution in stone crusher industry.

By Local City Administration-

Year - 2018

"We were issued directions to curb noise and air pollution during the Diwali festival. For this, licences were issued to only those sellers having approval from Petroleum and Explosives Safety Organisation," Assistant District Magistrate Jaipur Dhara Singh Meena said, adding that no complaint was made on this issue.

A senior police official said the police received no clear-cut directions from the Supreme Court or the state government to take action against those bursting crackers beyond permissible limit.

"The sale has dropped by almost 20 percent this year due to the rising awareness among kids and their families. Court directives have also dampened the business," said Suresh Hassani, president of Jaipur Fireworks Dealers Association, adding that people should be equally aware about the pollution caused by rising vehicles, air-conditioners rather than focusing on a one-day festival.

Actions & Policies by State Government

Year – 2018

The government of Rajasthan banned the registration of all kinds of e-rickshaws due to a large number of them (4000) already running without training and diving license, leading to accidents. The department of transport has also ordered that the e-rickshaw dealers will have to submit an affidavit with a declaration to conduct a 10-day drivers training programme for the e-rickshaw drivers.

"These e-rickshaws have become very popular in various parts of the city since they are slow moving, cost effective and are non-polluting with ease of availability," said Gajanan Sharma, a regular commuter.

Year – 2016

Rajasthan former Chief Minister Vasundhara Raje launched RajVayu, a mobile app, on the occasion of World Environment Day to provide air pollution-related details such as level of pollutants to citizens. CM Raje also launched Drishti, another mobile app that would monitor air quality in industrial areas.

16000 saplings announced to be planted under the Dravyawati river rejuvenation project.

Year – 2015

The government of Rajasthan released a new solar policy, aimed at developing 25,000 MW of solar energy to attain self-sufficiency. Rajasthan Solar Policy 2014 would act as an extension to Jawaharlal Nehru National Solar Mission (JNNSM) and Rajasthan Solar Energy Policy, 2011 and will remain in force until dismantled.

Bibliography

[City profile, major issues of public concern and people's voices](#)

<https://www.quora.com/What-are-some-major-or-minor-problems-from-which-the-people-of-Jaipur-city-are-suffering>
<http://environment.rajasthan.gov.in/content/environment/en/rajasthan-state-pollution-control->

board/EnvironmentalReport/continuous-ambient-air-quality-data.html
<https://act.airalert.in/petitions/jaipur-end-the-open-garbage-plastic-burning>
<https://twitter.com/hashtag/jaipurdevelopmentauthority?src=hash>
<http://envfor.nic.in/sites/default/files/press-releases/NCAP%20Report%20Full.pdf>
<https://www.hindustantimes.com/jaipur/jaipur-s-dirty-air-taking-the-wind-out-of-health/story-o1slqlcR7NF2mnOC6YUbcM.html>
<https://timesofindia.indiatimes.com/city/jaipur/raj-has-highest-death-rate-per-lakh-due-to-air-pollution/articleshow/67017397.cms>
<https://www.indiatoday.in/pti-feed/story/raj-pollution-board-failed-to-initiate-effective-programme-cag-report-1179093-2018-02-27>
<https://www.consumercomplaints.in/municipal-corporation-of-jaipur-waste-burning-in-neighborhood-c1318963>
<https://www.jaipurmagazine.com/useful-tips/5-things-people-hate-about-jaipur/>

Air quality history of Jaipur

[https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)
https://www.who.int/airpollution/data/aap_air_quality_data_base_2018_v14.xlsx?ua=1
<http://cpcb.nic.in/namp-data/>

Sources of pollution & stakeholder views

<https://www.hindustantimes.com/jaipur/jaipur-s-dirty-air-taking-the-wind-out-of-health/story-o1slqlcR7NF2mnOC6YUbcM.html>
<https://timesofindia.indiatimes.com/city/jaipur/jmc-continues-burning-garbage-in-open/articleshow/64056104.cms>
<https://www.indiaspend.com/87-of-indian-vehicle-owners-ready-to-buy-electric-vehicles-if-that-reduces-pollution-survey-98547/>
<https://www.ijert.org/research/solid-waste-management-a-case-study-of-jaipur-city-IJERTCONV4IS23003.pdf>
<https://www.dnaindia.com/jaipur/report-foul-play-civic-body-burns-garbage-for-a-clean-jaipur-2577747>
<https://www.patrika.com/jaipur-news/smoke-increase-from-bio-waste-burning-1514613/>
<https://www.indiatoday.in/pti-feed/story/raj-pollution-board-failed-to-initiate-effective-programme-cag-report-1179093-2018-02-27>

Impacts of air pollution on health

<https://timesofindia.indiatimes.com/city/jaipur/doctors-raise-concern-over-air-pollution/articleshow/64006567.cms>
<https://timesofindia.indiatimes.com/city/jaipur/raj-tops-in-lung-disease-deaths-in-india/articleshow/65789566.cms>

<https://www.sciencedirect.com/science/article/pii/S2542519618302614?via%3Dihub#bib35>
<https://timesofindia.indiatimes.com/city/jaipur/rajasthan-youths-fast-losing-battle-against-pollution/articleshow/64463744.cms>
<https://www.hindustantimes.com/jaipur/jaipur-s-dirty-air-taking-the-wind-out-of-health/story-o1slqlcR7NF2mnOC6YUbcM.html>

City stakeholder actions – Medical Professionals

<https://timesofindia.indiatimes.com/city/jaipur/doctors-raise-concern-over-air-pollution/articleshow/64006567.cms>
<https://swachhindia.ndtv.com/airpollution-still-a-matter-of-concern-rajasthan-doctors-sounds-warning-at-air-o-thon-16916/>

City stakeholder actions – Businesses & Professionals

<https://www.hindustantimes.com/jaipur/women-e-rickshaw-drivers-to-take-tourists-around-the-pink-city-to-double-up-as-guides/story-5j0TUgHTSOMoHCOD0uZGvN.html>
<http://www.thepinkpedals.com/juniorscyclothon/>

<https://www.cyclinjaipur.com/about--c2414>
<https://www.dnaindia.com/jaipur/report-e-rickshaw-to-provide-last-mile-connectivity-for-mansarovar-locals-2668495>
<https://mercomindia.com/reil-tender-270-ev-charging-stations/>
<https://www.jscljaipur.com/>

City stakeholder actions – Judiciary

http://environment.rajasthan.gov.in/content/dam/environment/Env/Notification/NGT_OA_21_2014.pdf

City stakeholder actions – State Pollution Control Board (RSPCB)

<https://www.hindustantimes.com/jaipur/pink-city-ranks-9th-on-toxicity-chart/story-M69PMH8ZGQwPKHjSnENFP.html>
<https://www.news18.com/news/india/rajasthan-yet-to-submit-polluted-cities-action-plan-says-following-scientific-process-unlike-other-states-1859043.html>
[http://environment.rajasthan.gov.in/content/dam/environment/RPCB/Guidelines/Stone%20Crusher%20Guideline%2005.06.2018%20\(1\).pdf](http://environment.rajasthan.gov.in/content/dam/environment/RPCB/Guidelines/Stone%20Crusher%20Guideline%2005.06.2018%20(1).pdf)

City stakeholder actions – Local City Administration

<https://www.firstpost.com/india/rajasthan-records-poor-air-quality-post-diwali-residents-flout-sc-verdict-on-firecrackers-say-cant-compromise-on-celebration-5520201.html>

City stakeholder actions – State Government

<https://www.dnaindia.com/jaipur/report-e-shock-for-e-rickshaws-rajasthan-government-bans-fresh-registrations-2595232>
<https://www.downtoearth.org.in/news/rajsthans-new-solar-energy-policy-simplifies-regulations-for-investors-46880>
<https://www.indiatoday.in/education-today/gk-current-affairs/story/rajvayu-air-quality-app-13010-2016-06-08>
https://www.business-standard.com/article/economy-policy/vasundhara-raje-lays-foundation-of-14-projects-in-jaipur-116080400006_1.html

Political Leaders Position and Activities on Constituency Air Quality



MP: Ramcharan Bohra

Member of Parliament since: 2014

Lok Sabha Constituency: Jaipur

Party: Bhartiya Janta Party (BJP)

Portfolios Managed: Member, Standing Committees on Urban Development and Transport

MP's statements on air quality

Year – 2018



On the occasion of World Environment Day, the MP highlighted the importance of discouraging plastic and other polluting materials in favour of natural/sustainable materials –



"जयपुर मांमट रामचरण बोहरा ने कहा कि धरती पर जल जंगल जमीन जलाने व मानव को मरझित रखने के लिये प्लास्टिक व अन्य पदार्थों के उपयोग को दतोत्साहित कर प्राकृतिक विकल्पों को अपनाना होगा।"

State Government's statements on air quality

Year – 2018

On the occasion of World Environment Day, the former Minister for Environment & Forests of Rajasthan Gajendra Singh Khimsar flagged off a marathon and emphasized need for tree plantation for good quality urban life –

"इस अवसर पर श्रीखीवसर ने कहा कि अगर हम भावी पीढ़ियों को स्वस्थ देखना चाहते हैं एवं धरती पर जीवन को खुशहाल रखना चाहते हैं तो हम सब को पर्यावरण संरक्षण हेतु आगे आना होगा और प्रत्येक वर्षा ऋतु के दौरान ज्यादा से ज्यादा पेड़ लगाने होंगे। श्रीखीवसर ने कहा कि विकास, रोजगार, प्रतिव्यक्ति आय व खुशहाली का इण्डेक्स बढ़ाने के लिये औद्योगिकरण जरूरी है। औद्योगिकरण के साथ-साथ सघन वृक्षारोपण भी जरूरी है, इसमें प्रत्येक व्यक्ति की भागीदारी आवश्यक है। उन्होंने कहा कि वर्षा ऋतु के दौरान बड़ी संख्या में वृक्षारोपण के लिये लक्ष्य वनविभाग को दिये गये हैं। इसके साथ-साथ राज्य सरकार, पंचायती राज संस्थाओं, थानों, नगरीय विकास संस्थाओं सहित के सहयोग से इस अभियान को गति दी जायेगी।"

"It is the responsibility of all departments to work for environmental awareness. It is not only the duty of the forest department and environment ministry. It is also the responsibility of departments such as health and urban development and housing to save the environment from destruction. Cumulative efforts can help in saving our environment." - former environmental minister Gajendra Singh Khimsar, defending the spending of the department mostly on salaries and departmental works against no spending on environmental awareness programs since 2013-14.

Year – 2015

"I am confident that the new state policy shall usher in an environment that is congenial to investors and also be an engine to draw in the much required investment in the state. The idea

for the state is long term energy security, ecological security by reducing emissions, generating employment and investing in a solar centre for research and development.” - Vasundhara Raje, former Chief Minister of Rajasthan, on the occasion of releasing new solar policy in the state.

Other parties' statements on air quality

Year – 2018

"It (CAG report) clearly shows that no monitoring exists in the BJP rule and the government has silently given its consent to acts which led to corruption. In the same manner, the negligence on the part of the government in controlling pollution levels has brought Jaipur among top 5 polluted cities across the globe. Due to the lackadaisical attitude of the government one third population of 7 crore in Rajasthan is affected by air pollution. The Raje government had claimed to set up Mine and Mineral Development Fund for development in mining affected areas and people suffering of silicosis. But, the fund was used for other heads in the last budget instead for mining areas." - Sachin Pilot, former state chief of opposition party Congress, citing CAG report on illegal mining.

Parliamentary initiatives by MP

Year – 2018

Raised questions regarding government plans for promotion of electric and solar vehicles to reduce dependence on petrol and diesel and status. The Ministers of State for Heavy Industries and Public Enterprises as well as Road Transport & Highways both informed about FAME India scheme giving various incentives as part of National Electric Mobility Mission 2020. The Ministry has amended the Motor Vehicles Act, 1988 to include specifications regarding e-rickshaws.

Year – 2016

Raised question regarding India leading on pneumonia deaths of children and steps taken by the Health and Family Welfare ministry. The causes cited by the concerned ministry were undernutrition, low birth weight and air pollution.

Raised question regarding progress of solar plants and solar cities in the country, status of proposals received from states including Rajasthan. The reply received indicated an increasing trend of installed capacity as well as funds released from 2013. Jaipur was in the list of approved cities along with Ajmer and Jodhpur.

Year – 2016

Raised question regarding government plans to promote alternatives to petroleum products such as Bio-fuels in order to check foreign exchange outflow and environmental pollution. The Ministry of Petroleum & Natural Gas informed regarding a working group for impetus through a program under the National Policy on Bio-fuels 2009. Incentives are being offered, awareness activities are being conducted, and events for networking and knowledge exchange are being organized.

City-focussed actions announced/taken by MP

Year – 2019

Inaugurating Ajmer-Tonk ring road in the presence of Jaipur MP Ramcharan Bohra, who flagged off the vehicles, Union Minister Nitin Gadkari said –

“जयपुर के लिए ये प्रोजेक्ट इसलिए भी खास हैं क्योंकि अब शहर के बीच से निकले वाले भारी वाहनों के प्रदूषण से निजात मिल सकेगा. शहर में बढ़ते प्रदूषण को कम करने में रिंगरोड मील का पत्थर साबित होगी. एनएच 11 से एनएच 8 को जोड़ने वाले इस कॉरिडोर के बनने से शहरवासियों को ही नहीं जयपुर से गुजरने वाले लोगों को भी भारी जाम से निजात मिल सकेगा. अजमेर रोड महापुरा से टोंक रोड सीतापुरा के बीच बन कर तैयार हुए 6 लेनहाईवे से हर रोज हजारों वाहन गुजर सकेंगे.”

Year – 2016

Over 9000 LPG connections in Jaipur were facilitated under Ujjwala scheme for domestic fuel.

Actions & policies by MP's union government

Year – 2019

NCAP with Rs. 300 crore launched as a mid-term, five-year action plan from 2019 to reduce air pollution by 20-30% by 2024 in all 102 non-attainment cities, taking 2017 as the base year.

Year – 2018

Niti Aayog proposed a 15-point action plan, titled Breathe India, to combat air pollution in 10 most polluted cities of India.

National Auto Policy released including EV, CNG, biofuels, and hydrogen vehicles, though without timelines and no link with EV 2030 vision, FAME II or Make in India. Under the FAME II India scheme around Rs. 5,500 crore over a five year period has been set aside to provide grants for all kinds of electric vehicles.

Gol sealed a deal with World Bank, GIZ, ADB, SDC, AFD and Bloomberg Philanthropies, to build capacities of all 102 polluted cities across the country. The initial small budget of 300 crore is meant for expanding air quality monitoring capacities in states, setting up

national emission inventories and conducting source apportionment studies in cities to identify nationwide pollution hotspots.

Year – 2017

Railways Ministry announced new reforms and services such as Roll On Roll Off and long-term contracts to enhance freight traffic and reduce dependence on commercial vehicles.

Year – 2016

Jaipur, Jodhpur and Ajmer to be solar cities - राजस्थान के अजमेर, जयपुर और जोधपुर शहरों को सोलर सिटी बनाने के प्रस्ताव को केन्द्र सरकार द्वारा मंजूरी प्रदान कर अजमेर के लिए 50 लाख और जोधपुर के लिए 43.50 लाख रुपये स्वीकृति प्रदान की है। उक्त जानकारी जयपुर सांसद श्रीरामचरण बोहरा द्वारा लोकसभा में पूछे सवाल के जवाब में केन्द्रीय उर्जा राज्य मंत्री (स्वतंत्राभार) श्रीपीयूष गोयल ने दी।

Government of India announced the advancement of vehicular emissions and fuel quality norms to BS-VI levels by the year 2020 across the country.

All non-attainment cities were given a set of 42 action points to improve air quality and as a follow-up, 94 cities were asked to prepare detailed action plans. The states concerned had been urged to steer implementation of action plans in these cities. The CPCB has also launch a mobile app - SAMEER - for grievance redressal.

Bibliography

MP's statements on air quality

<https://hellorajasthan.com/world-environment-day-world-environment-day-celebrate-in-rajasthan/>

Other parties' statements on air quality

<https://www.dnaindia.com/jaipur/report-cag-report-on-illegal-mining-gives-congress-new-ammo-2591153>

State government's statements on air quality

<https://www.downtoearth.org.in/news/rajasthans-new-solar-energy-policy-simplifies-regulations-for-investors-46880>
<https://hellorajasthan.com/world-environment-day-world-environment-day-celebrate-in-rajasthan/>
<https://www.hindustantimes.com/jaipur/rajasthan-didn-t-spend-a-penny-on-environmental-awareness-in-last-3-years/story-GwX0df3tlym21YwWPGMSK.html>

Parliamentary initiatives by MP

<http://164.100.47.190/loksabhaquestions/annex/8/AU957.pdf>
<http://164.100.47.194/Loksabha/Questions/QResult15.aspx?qr ef=60413&lsno=16>
<http://164.100.47.194/Loksabha/Questions/QResult15.aspx?qr ef=68365&lsno=16>
<http://164.100.47.190/loksabhaquestions/annex/10/AU373.pdf>
<http://164.100.47.194/Loksabha/Questions/QResult15.aspx?qr ef=21421&lsno=16>

City-focussed actions taken by the MP

<https://m.dailyhunt.in/news/nepal/hindi/diler+samachar-epaper-dilsam/nitin+gadakar+ne+jayapur+ring+rod+ka+kiya+udghatan-newsid-110695743>

<https://emagazinecatalog.in/bookdetail/ramcharan-bohra-mp-3-year-development-book/?pn=25>

Actions & policies by MP's union government

<https://www.iamrenew.com/policy/little-late-govt-earmarks-300-crores-fight-air-pollution-102-cities/>
http://niti.gov.in/writereaddata/files/document_publication/BreatheBooklet11thJuly.pdf
https://dhi.nic.in/writereaddata/UploadFile/DHI-NAB-Auto%20Policy%20Draft%20Document_vDRAFT.pdf
<https://economictimes.indiatimes.com/news/environment/pollution/four-international-agencies-to-join-govts-effort-to-tackle-air-pollution-in-102-cities/articleshow/66548971.cms?from=mdr>
<http://pib.nic.in/newsite/PrintRelease.aspx?relid=158793>
[http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20\(2\).pdf](http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20(2).pdf)
<https://www.thehindu.com/opinion/op-ed/advancing-bs-vi-emission-norms/article25438769.ece>
<https://archive.indiaspend.com/cover-story/0-02-new-cars-are-electric-heres-what-govt-must-do-to-reach-all-electric-goal-78119>
https://www.pressnote.in/Rajasthan-News_330142.html
<https://economictimes.indiatimes.com/news/environment/pollution/govt-has-made-serious-efforts-to-curb-air-pollution-govt-after-who-report/articleshow/64003558.cms?from=mdr>

Patiala

The cleanest polluted city



© AFP/File Photo

The royal city of Patiala, which was once known for its grandeur and considered to be amongst the most peaceful and less congested places in the state due to the absence of any major industrial sector, is growing at a fast pace as far as the vehicular traffic is concerned. Patiala, among 74 cities assessed by the Central Pollution Control Board, met the national safe air standards as on February 4, 2019, said the Board's daily bulletin.

Vital Statistics of Patiala

Census 2011	Estimated 2019	WHO Ranking	AQI Nov 2018 ¹²
406,192	576,663	13	264

Major Public Issues and Voices

1.	Traffic Congestion
2.	Crisis of ground water
3.	Poor road conditions
4.	Cleanliness & heaps of garbage

Saurabh Goyal, who runs a shop in Dharampura Bazaar, says the increasing number of vehicles has made it difficult to even enter the market, forget about parking space for four-wheelers. "Even though the administration has stopped the entry of four-wheelers, many continue to bring their cars in the market, causing traffic congestion," he added.

"The areas like Model town, Sanjay Colony, Vikas Colony, Dashmesh Nagar, Sirhindi Gate, Tyagi Mandir, Mathura Colony, Sular Road, Bishan Nagar and others are facing extreme depletion of groundwater."- Suresh Kumar, executive engineer, water supply department.

Kanwar Singh Banger, a resident who commutes on these roads on daily basis, said, "Commuters are a hassled lot as poor roads not only make driving difficult but also increase the wear and tear of vehicles, and also cause accidents."

"Road maintenance is the primary responsibility of the civic administration. The authorities should act against officers for ignoring their duties. The civic body should put updates on road repairs on its website and at the ward offices," Ram Singh, an autorickshaw driver said.

Patiala Municipal Corporation (PMC) officials also face the challenge of sanitary workers' shortage, besides the lack of funds for collection and disposal of waste. In the past few months, the civic body had made attempts to cope up with the issue as it usually faces the strikes of 'safaisewaks' (sanitation workers) to lift the garbage from various sites of the city but in vain.

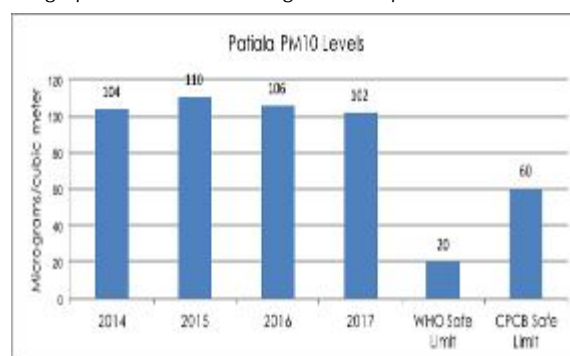
Air Quality Profile of Patiala

Number of air quality monitoring stations – Patiala as a non-attainment city under National Clean Air Programme (NCAP) has 1 continuous monitoring station out of 4 stations in place and it can provide report on all pollutants.

PM10 microgram/m³ (as per CPCB)

2014	2015	2016	2017	CPCB safe limit	WHO safe limit
104	110	106	102	60	20

This graph indicates the average of PM10 pollutant recorded



by the operating stations in a city in the indicated year, as reported by CPCB. When data is missing it is indicated as zero.

¹² AS PER AQI REPORT OF CPCB DATED 8 NOV 2018
http://cpcb.nic.in/upload/Downloads/AQI_Bulletin_20181108.pdf



Government policy is to monitor air quality twice a week, that is, 104 days in a year of 365 days. This graph indicates on an average how many days in a year all the stations in a city have monitored the pollutants PM10, NO2 and SO2, as reported by CPCB. That way, data is not available for more than the number of days indicated. When monitoring is not done, it is indicated as zero.

Main sources of air pollution

1.	Vehicular Pollution
2.	Agricultural Pollution
3.	Domestic Processes
4.	Industrial Pollution

Citizen Views

"Heaps of garbage are likely stand out in the PMC elections as the local body has so far failed to come up with a permanent solution. The problem persists in almost every ward of the city." - Bharat Khanna, a resident.

"Fog is in God's hand but stubble burning is an invited problem," said Gurmail Singh, a resident.

Industrialists' Views

Mohinder Gupta, president of the Induction Furnace Association, Mandi Gobindgarh, had assured PPCB that all industries would upgrade to new technology at the earliest to achieve better air quality standards in the area.

Farmers Views

Farmers in Patiala burning stubble, say, "We have no alternative. The government has not even waived off our loans. Does only stubble burning cause pollution and not crackers and celebrations during Dushhera and Diwali? "

Local administration views

State Pollution Control Board cited sources of pollution - 15,021 units in 2015-16 red category industries (highly polluting) using coal or rice husk as fuel and contributing high levels of suspended particulate, oxide nitrogen and sulphur, organic compounds and other pollutants in the air. High level of RSPM recorded from industrial zones of the state. Massive growth of vehicles (3,60,154 in 1981 to 90,64,476 in 2015-16) contributing to carbon monoxide, nitrogen oxide, particulate matter,

etc. Air pollution due to burning of paddy straw in the agricultural fields and generation of Fly Ash.

A day after the World Health Organization (WHO) released its report on 20 most-polluted cities globally with Patiala figuring at 13th spot in the list, the Punjab Pollution Control Board (PPCB) on Wednesday termed the figures as "fudged and unscientific". PPCB claimed that the two reports had been based on PM 2.5 readings collected between 2010 and 2016. But till January 2018 there was no sophisticated equipment to record the PM 2.5 levels in Patiala.

We have written a letter to the CPCB asking for the details regarding the data which has been used to prepare the report" - K.S. Pannu, former PPCB Chairman. K S Pannu had challenged both CPCB and WHO reports, claiming that the latest NCAP data vindicates the stance taken by Punjab. According to him, after the CAAQMS came up in the city in January 2018, the readings of air quality never went up to a level where the city could have been placed in the list of most polluted cities of the world.

Defending its report, WHO had claimed that the database on which the report was compiled was based on ground measurements of annual mean concentrations of particulate matter and that it aimed at representing an average for the city or town as a whole, rather than for individual stations. It said the report was based on years of measurement-range, mostly from 2010 to 2016.

Experts' Views

"Not realising that much of the agrarian distress is because of the unnecessary burden of expensive farm machines, both the frontline agricultural states of Punjab and Haryana are working overtime to sell more machines to farmers. As the paddy harvesting time nears, and fearing air pollution clogging New Delhi, both the governments are working overtime to sell more machines in the name of providing a solution for stubble burning. I wonder whether the underlying aim in reality is to help the farm manufacturing units in the name of farmers. But nevertheless, what Punjab, Haryana, western Uttar Pradesh required was the Punjab Chief Minister Amarinder Singh had earlier suggested. He had sought an investment of Rs 2,000-crore from the Centre to ensure that farmers remove paddy straw without burning it. The State has not been able to use over Rs 4,000-crore of the funds available under MNREGA. By seeking approval for including paddy straw management under MNREGA activities, Punjab could have not only created jobs for the idle labour force but also mitigated

the environmental fallout from crop residue burning” - Devinder Sharma, Agriculture expert.

Impacts of air pollution on health

Just like Delhi, Patiala too seems to be suffering from the effects of smog. The patients of asthma and allergies have already increased by 20%.

Dr Bharat Bhushan, associate professor, TB & Chest Diseases Hospital said, “Increased level of air pollution causes respiratory diseases and at the same time worsens already existing bronchial asthma, bronchitis, naso-bronchial allergies. It also causes cardiac attacks and headaches. The mixture of smoke and fog is dangerous for respiratory and cardiac systems and thus for whole body, as it interferes oxygenation in lungs. Government should take corrective measures and farmers should be educated against stubble burning and for causing less vehicular smoke pollution. We suggested the people not to go for morning and evening walk in this polluted environment. We are dying in this environment and government is silent. I failed to understand the role of our governments and experts.”

City atakeholder actions to address air pollution

By Individuals

Two farmers from Punjab’s Samrala city, Sukhbir Dhaliwal, and Kamaljeet Singh, who have been farming for over 30 years, have come up with their start-up, a crop residue management company, which makes biocoal with crop residue. In 2016 and 2017, the two partners collected crop residue and sold it to biomass and cement manufacturing plants to be used as biofuel, earning Rs 30-35 lakh. Last year, they cleared 12,000 acres in Ludhiana, Patiala and adjoining places. This year’s target is 20,000 acres, of which 10,000 acres will be paddy farms alone.

Although there is no assistance from the government this year, about 70% of KalarMajra has decided not to burn paddy stubble, with good reason. Ploughing it back into the soil is good not only for Delhi’s air but also the farmers’ bottom line.

By Educational Institutions & NGOs

PPCB engineer Charanjeet Singh said, “Over the past two-three years, pollution has seen a dip. Most of the credit for this goes to efforts by the schools in spreading awareness against crackers. We expect the trend to continue this year”.

An anti-cracker rally was organised by NSS volunteers of Pandit Mohan Lal S D Public School, Sector 32. They made placards and posters to make people aware about the ill-effects of crackers and urged them to celebrate a green and cracker-free Diwali.

By healthcare agencies

Medical Council and Institute conducted a study on Traffic Policemen - Traffic policemen recorded a significant decline in various parameters, such as forced vital capacity (FVC), forced expiratory volume in one second (FEV1), and peak expiratory flow rate (PEFR) when compared with controls, and is probably due to exposure to vehicular pollution. The findings of this study show that the adverse health impacts of automobile pollution can be significant. The observed result is probably due to the prolonged exposure to vehicular pollution, which causes airway obstruction by inducing chronic airway irritation and increased mucus production. Thus we strongly vouch for the adoption of various strategies for the protection of traffic policemen from vehicular pollution.

By Local City Administration

PMC health officer Dr Sudesh Partap Singh said, “We have recruited new motivators and community development officers to create awareness among the people. We have made garbage pits in Yadvindra Enclave while ‘smart bins’ project has also been launched. We have involved 50 NGOs, which are willing to spend on their own to improve the health of the city. We are also reviewing the check points and taking suggestions from various prominent people and NGOs.”

By State Government

- **Happy Seeder**

The Union Ministry of Agriculture earmarked Rs 591 crore for disbursal to Punjab, Haryana and Uttar Pradesh, with the idea being to help farmers access the machines to avoid stubble burning. Individual farmers could buy them at half their retail price; if bought through self-help groups, they got an 80% discount. In Bibipur, Singh and nine other farmers got together and formed such a group. The cost price of the equipment in the Bibipur council office yard is Rs 10 lakh, but thanks to the government scheme, Singh and his associates bought it for Rs 2 lakh.

- **Fire cracker ban**

“Sale of crackers will not be allowed anywhere in the city as authorities are not going to issue any temporary licence to traders for this,” - Deputy Commissioner Kumar Amit.

• City action plan

With the National Green Tribunal asking six states, including Punjab, to submit an action plan for keeping air quality standards within the prescribed norms in all 102 cities included in the National Clean Air Programme (NCAP), the state government has chalked out a detailed strategy to keep the ambient air quality (AQI) in nine cities listed in the programme under check. The cities that have been included in the programme include Dera Bassi, Mandi Gobindgarh, Jalandhar, Khanna, Ludhiana, Naya Nangal, Pathankot (Dera Baba Nanak) and Patiala. The plan which has been drafted by the Department of Science, Technology and Environment has suggested that all industries in the state should be shifted from non-designated areas to the designated areas besides making it certain that these industries install high-tech chimneys and other equipment to cut down emissions. The targets also include converting of coal-based rolling mills to PNG, upgrading chimneys at brick kilns and common effluent treatment plants, getting dust collectors for poultry farms and grain markets, installing additional e-waste and bio-medical waste facilities, retrofitting of existing autos with gas kits and promoting crop residue management machinery.

• Ghar Ghar Hariyali

To curb air pollution, the state government has taken up a number of initiatives since past one year, from imposing a ban on stubble burning to setting up plants to utilise paddy straw to produce bio-gas, to endorsing harvest machines for effective paddy straw management. Now to provide clean and fresh air, the state government has launched a novel initiative – ‘Ghar Ghar Hariyali’ (Green Cover Everywhere) campaign, under which the government will provide free plant saplings through a mobile application ‘i-Hariyali’. The aim of this campaign is to provide clean and fresh air to the people of Punjab as well as contribute towards improving the green cover in the state.

• Brick kiln temporary ban

पटियाला | वायु प्रदूषण रोकने के लिए पंजाब प्रदूषण कंट्रोल बोर्ड ने जिले में ईंट-भट्ठे 1 अक्टूबर से 31 जनवरी 2019 तक बंद रखने के आदेश दिए हैं। इसके पीछे पीपीसीबी का तर्क है कि इन 4 महीनों के दौरान धान की पराली बड़े पैमाने पर जलाई जाती है। इसलिए भट्टे बंद किए जाएंगे। चूंकि किसान एक बड़ा वांछित बैंक हैं इसलिए इनपर शिक्षा करने के बजाय सरकार ने ईंट भट्टों को बंद करना सही समझा।

By Central Government

The central government's think-tank, Niti Aayog, in its strategy paper ‘New India at 75’, has set ambitious targets to curb air pollution and recommended introduction of “stringent

civil penalties to strengthen enforcement” of all environment-related acts to keep water, soil and forests safe. Though the government has already been working on these fronts, bringing down PM2.5 levels in Indian cities to less than 50 micrograms per cubic meter (µg/m³) - as specified in the strategy document - means over 100 cities will have to undertake stringent measures. All these are non-attainment cities whose air quality is worse than the National Ambient Air Quality Standards. These cities include Delhi, Mumbai, Pune, Varanasi, Kanpur, Lucknow, Allahabad, Patna, Gaya, Kolkata, Bengaluru, Chandigarh, Jaipur, Patiala, Jalandhar, Ludhiana and Hyderabad among others.

Bibliography

Major Public Issues and People Voices

<https://www.quora.com/What-are-the-civic-issues-in-Patiala>
<http://population.city/india/patiala/>

Air Quality History

[https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)
https://www.who.int/airpollution/data/aap_air_quality_data_base_2018_v14.xlsx?ua=1
<http://cpcb.nic.in/namp-data/>

Sources of air pollution

[http://www.csio.res.in:8080/cemi/Presentation/Invited%20Talk%20RA-Thapar\(Invited%20Talk\).pdf](http://www.csio.res.in:8080/cemi/Presentation/Invited%20Talk%20RA-Thapar(Invited%20Talk).pdf)
<http://punenvs.nic.in/index1.aspx?lid=6917&mid=1&langid=1&linkid=1604>
<https://www.skymetweather.com/content/weather-news-and-analysis/one-month-into-air-pollution-programme-patiala-only-city-with-breathable-air/>
<https://www.hindustantimes.com/punjab/patiala-one-of-most-polluted-cities-globally-ppcb-trashes-who-report/story-zk0mbkuzs3WVfmDLwz4AsJ.html>
<https://www.tribuneindia.com/news/chandigarh/new-pollution-control-device-for-furnace-units/528733.html>
<https://m.dailyhunt.in/news/nepal/english/news24online-epaper-newsonline/stubble+burning+crackers+and+celebrations+du+ring+dushhera+and+diwali+also+create+pollution+say+farmers-newsid-99030896>
<https://devinder-sharma.blogspot.com/2018/10/burning-paddy-stubble.html>
<https://devinder-sharma.blogspot.com/2018/10/burning-paddy-stubble.html>

Impacts of air pollution on health

<https://www.hindustantimes.com/punjab/smog-effect-asthmatic-allergies-rise-by-20-in-patiala/story-oqqkZy8whMdYMiXk15e2RP.html>
https://www.researchgate.net/publication/51799349_Respiratory_effects_of_air_pollutants_among_nonsmoking_traffic_police_of_Patiala_India
<https://navbharattimes.indiatimes.com/lifestyle/health/polluted-air-can-cause-breast-cancer-in-women/articleshow/61127274.cms>

City stakeholder actions to address air pollution

<https://www.thebetterindia.com/163076/farm2energy-biocoal-stubble-burning-news/>
<https://timesofindia.indiatimes.com/india/eco-friendly-farmers-in-model-punjab-village-dont-burn-crop-stubble-plough-it-back-to-soil/articleshow/66278880.cms>

By NGOs

<https://www.jagran.com/punjab/patiala-patiala-seminar-held-on-air-pollution-in-patiala-19035690.html>

By Punjab PCB

<https://www.hindustantimes.com/punjab/patiala-needs-to-hold-pole-position-for-least-pollution-ppcb/story-BOG39EijGFcLPMbsHJrquO.html>

By Educational Institutions

<https://www.tribuneindia.com/news/chandigarh/education/anti-cracker-rally/314470.html>

By State/Local Government

<https://www.thehindu.com/news/national/other-states/punjab-burning-problem/article25339426.ece>
<https://www.hindustantimes.com/punjab/no-sale-of-crackers-in-patiala-this-diwali/story-N3WolpIA9zo7J8J7Xz36bO.html>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3213710/>
<https://economictimes.indiatimes.com/news/environment/pollution/greenpeace-calls-out-govt-for-omitting-139-highly-polluted-towns-and-cities-from-its-ncap/articleshow/67758755.cms>
<https://timesofindia.indiatimes.com/city/amritsar/pollution-punjab-govt-readies-action-plan-for-9-cities/articleshow/68500676.cms>
<https://www.bhaskar.com/punjab/patiala/news/ppcb-ordered-2700-brick-kilns-closed-till-31-january-023554-2863601.html>

By Central Government

<https://timesofindia.indiatimes.com/india/niti-aayog-sets-stiff-targets-to-curb-air-pollution-pitches-for-stringent-civil-penalties/articleshow/67184197.cms>

Political Leaders Position and Activities on Constituency Air Quality



MP: Dharamvir Gandhi

Member of Parliament since 2014

Constituency: Patiala

Party: Aam Aadmi Party

MP statements on air pollution/quality

Patiala Member of Parliament Dharamvir Gandhi appealed the city residents to celebrate a pollution-free Diwali. There are cases where people especially in old age has suffered heart problems during excess smoke. "Diwali is a festival of lights, not of crackers. People, therefore, should resist bursting crackers," he added.

Other party leaders' statements on air quality

The opposition Shiromani Akali Dal (SAD) on Thursday accused the Punjab government of 'failing' to provide incentives to farmers to dissuade them from burning in the state. "Why his (Captain Amarinder Singh's) government failed to incentivise a single farmer to prevent stubble burning?" SAD chief Sukhbir Singh Badal asked.

State Government's statements on air pollution/quality

"Pollution problem is not because of the state of Punjab. We have received about 260 crore but more is needed. The farmers have no choice. The problem is bigger than what we see," CM Amarinder Singh told CNN-News18.

Policies & activities by union government

A special scheme will be implemented to support the efforts of the governments of

Haryana, Punjab, Uttar Pradesh and the NCT of Delhi to address air pollution and to subsidise machinery required for in-situ management of crop residue – Arun Jetly, Finance Minister, India, while presenting the Budget.

Bibliography

MP statements on air pollution/quality

<https://www.oneindia.com/politicians/dr-dharam-vira-gandhi-35092.html>

Other party leaders' statements on air quality

<https://www.news18.com/news/india/amarinder-singh-says-punjab-not-responsible-for-delhi-pollution-asks-centre-to-help-farmers-1913435.html>

State Government's statements on air pollution/quality

<https://swachhindia.ndtv.com/punjab-combat-air-pollution-offers-free-plant-saplings-mobile-app-i-hariyali-21742/>
<https://www.news18.com/news/india/amarinder-singh-says-punjab-not-responsible-for-delhi-pollution-asks-centre-to-help-farmers-1913435.html>

Policies & activities by union government

<https://www.thehindubusinessline.com/economy/budget/budget-2018-special-scheme-to-tackle-air-pollution-in-delhi/article22621567.ece>

Jodhpur

Blue city of Rajasthan turning grey.



©Harshwardhan Singh Bhati

The strategic location of Jodhpur has benefitted the city in becoming a hub of commercial and tourism activities from the time it was established. Today, the handicrafts industry has eclipsed all the other industries in the city. Various Indian defence forces have their base in the city. A new 9 MMTPA refinery and petro-chemical complex is expected to go live by 2022 100 km from Jodhpur and the mega Delhi-Mumbai Industrial Corridor Project (DMIC) covering Pali-Jodhpur industrial areas is underway. Together these projects are going to bring change in the landscape, allied and supporting industries, and lifestyles of the region. The result will be additional pressure on air, water, land through pollution.

Traffic composition is over 70% private ownership of vehicles which indicates public transport is not adequate and road space is congested in addition due to encroachments and lack of off-street parking spaces. Even though non-motorised trips make up for about 45% of all trips, road infrastructure does not cater to the needs of pedestrians and cyclists. Growth of the city is oriented to tourism, industrial and education sectors all which bring a lot of additional and fluid footfalls in the area, so it is essential to prepare the road, transport and public spaces accordingly. Jodhpur has been included in NCAP and AMRUT that will enhance urban quality of life though repeated demands for Smart City inclusion have not been met. More recently in 2018, it ranked 53th out of 111 Indian cities in Ease of Living Index.

Stone quarrying, crushing and mining is a major employer though also adds to the particulate matter along with sandstorms. There have not been air pollution source apportionment studies for the city yet. Comptroller and Auditor General of India (CAG) audit in 2018 observed that RSPCB failed to initiate any effective program to address air pollution in the state.

The Lancet Global Burden of Disease 2017 report found Rajasthan having the highest death rate in the country due to air pollution reducing life expectancy by 2.5 years.

Vital Statistics of Jodhpur

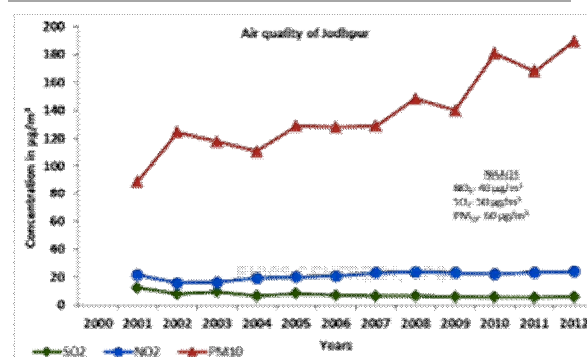
Census 2011	Estimated 2019	WHO Ranking	AQI Dec 2018*
1,033,756	1,423,420	14	250 (very poor)

*AQI: Air Quality Index by Central Pollution Control Board

Major public issues of Jodhpur

1.	Law and order enforcement - crimes against women amongst other crimes
2.	Public health issues such as lack of affordable medicines, reliable & sufficient medical facilities & staff; poor healthcare indicators; disease outbreaks; reduced life expectancy of stone mine workers
3.	Erratic power supply
4.	Air pollution, inadequate solid waste & sewage management; garbage/dry leaves burning
5.	City roads and traffic – road condition, traffic congestion, parking space, encroachment
6.	Groundwater flooding in some areas; river and canal water pollution
7.	Lack of civic amenities in certain parts

Air quality history of Jodhpur



Source: CPCB ENVIS

Number of air quality monitoring stations –

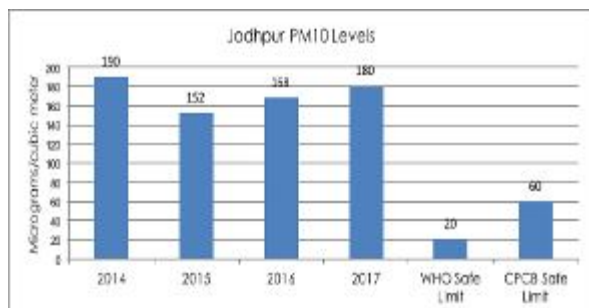
Jodhpur as an NCAP city has 1 continuous monitoring stations (CAMS) reporting data for all types of pollutants¹³ and 8 manual stations reporting data on PM2.5, PM10, SO₂ and NO₂.

PM10 microgram/m³ (as per CPCB)

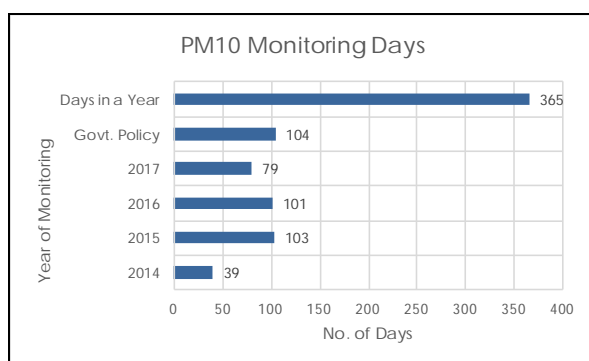
2014	2015	2016	2017	CPCB safe limit	WHO safe limit
190	152	168	180	60	20

13

CO, SO₂, NO, NO₂, NOX, OZONE, PM10, PM2.5, Benzene, Toluene, Xylene, Ethyl Benzene, Methyl xylene, CH₄, NH₃, HCHO, Hg and more as per CAAQMS guidelines by CPCB



This graph indicates the average of PM10 pollutant recorded by the operating stations in a city in the indicated year, as reported by CPCB. When data is missing it is indicated as zero.



Government policy is to monitor air quality twice a week, that is, 104 days in a year of 365 days. This graph indicates on an average how many days in a year all the stations in a city have monitored the pollutants PM10, NO2 and SO2, as reported by CPCB. That way, data is not available for more than the number of days indicated. When monitoring is not done, it is indicated as zero.

Sources of air pollution & stakeholder views

1.	Vehicles
2.	Construction, road dust, rampant mining, sand storms
3.	Brick kilns
4.	Industrial emissions & diesel generator sets
5.	Garbage (household, street & biomedical) and leaves burning
6.	Burning of wood/coal as domestic fuel
7.	Crop burning in neighbouring states

"Jodhpur is generally very dry. As a result, the dust particles break into smaller particles due to sunlight and remain suspended in air for longer duration of time. Secondly, city pollution is computed as the data gathered from several sensors installed in the city, which are generally in most crowded areas." - Devesh Singhal, B.E., M.E. Pulp and Paper Technology, Indian Institute of Technology, Roorkee.

"There was a lack of coordination between the RSPCB and other relevant departments which led to non-identification of sources of air pollution along with their quantification through source apportionment studies.. In the absence

of which, the RSPCB was not in a position to prepare comprehensive programmes for prevention, control or abatement of air pollution," the CAG report on the last fiscal tabled in the assembly February 2018 said.

Dustbins in the city have been burnt while burning the garbage ahead of the visit of inspection team for Swachh Bharat Abhiyan.

Impacts of air pollution on health

The research Global Burden of Disease Study 2017 by Lancet says air pollution is now the second largest cause of pre-mature deaths in India after cardio-vascular diseases. In the 1990s, air pollution was the third largest cause of such deaths in India. Rajasthan is leading the country with burden of COPD and asthma induced deaths which in turn is linked to air pollution in more than half the cases followed by smoking for a quarter of the cases.

Rajasthan has seen a significant rise in respiratory illnesses among children – the group most susceptible to pollution-related problems. The number of kids suffering from acute respiratory infection (ARI) has more than doubled in the three-year period between 2010-11 and 2012-13. According to the Annual Health Survey (AHS), 15.9% children suffered from ARI in 2012-13, as compared to 11.3% in 2011-12 and 6.5% in 2010-11. According to AHS 2012-13 report, urban areas had higher number of children suffering from ARI compared to rural areas. In urban, the figure was 18.7%, while in rural areas it was 15.1%.

"Increased air pollution is associated with higher incidence of respiratory, cardiac and skin disorders. Children have a higher breathing rate compared to adults. Hence, they are more prone to air pollution-related disorders. Among respiratory diseases, children have increased chances of having allergic rhinitis, asthma, pneumonia and chronic cough. These are more often seen in children doing physical exercise in highly polluted environment." - Dr Ashok Gupta, medical superintendent, JK Lon Hospital, Jaipur.

According to a study by researchers from JNV Jodhpur University, there is clear implication of increase in AQI and duration of exposure with increase in blood pressure that further leads to other issues. Another research by the university indicates the reduction in lung capacity as exposure duration and pollutants concentration increases.

Studies have identified the irreversible lung disease silicosis amongst mine workers inhaling silica dust. The Rajasthan government had

conducted a health survey of miners from 2008 to 2010. The survey identified 19 districts as affected areas and examination of workers for silicosis was conducted in 9 districts including Jodhpur. Numbers of affected miners were estimated to be under-reported.

The mine owners in Rajasthan, especially the small mine owners, do not send any information to DGMS and start production. "If DGMS is not informed about mines, then how can they regulate mining industry on aspects of health and safety?" asked Rana Sengupta of non-profit Mine Labour Protection Campaign. "This is the reason Rajasthan has a high number of silicosis patients among mine workers. It is surprising that the state has turned a blind eye to such violation of the Mines Act which has resulted in the degradation of the health conditions of almost 2.5 million mine workers in the state."

The Rajasthan State Pneumoconiosis Board meant to conduct medical examination, submit medical reports, and grant medical certificates to workmen employed in mines has been lying defunct since its inception in 2004. Health department doctors who do not have any formal training in ILO protocol required for silicosis diagnosis, are examining patients. The laxity on part of doctors has led to mine workers being misdiagnosed as suffering from tuberculosis (TB).

"The figures by WHO indicate that a one-point programme should be launched by the government to ensure that the next generation gets clean air to breathe. We do not want our cities to turn into gas chambers. Rajasthan is at the top in the country for losing years of healthy life to premature death and suffering due to air pollution. There is an immediate need to introduce eco-friendly vehicles running on renewable energy sources." – Former Professor (pulmonary medicine) of Sawai Man Singh Hospital and Director of Asthma Bhawan, Dr Virendra Singh, Jaipur.

"Air pollutants cause an irreversible respiratory disease called COPD." – Dr Sheetu Singh, assistant professor, Institute of Respiratory Disease, SMS Medical College.

City stakeholder actions to address air pollution

By Scientists & Engineers -

Despite concerns, major automobile giants like BMW and Honda are already manufacturing cars which run on hydrogen, although they failed to attract too much demand because of the high price of fuel. Responding to this, IIT-Jodhpur has now even applied a patent for this

seemingly cheaper process of obtaining hydrogen fuel, which could help India reduce its import dependence by 30%.

JIET Jodhpur research team proposed internet of things (IOT) to be used to manage garbage collection on time and present current status of dustbins using website updated live through sensors.

A team of 25 engineering students at IIT Jodhpur advised by faculty have developed a lightweight solar car for a competition by Imperial Society of Innovation Engineers (ISIE). Developed with support from funding and technical advisory organisations, the Solar Car will cost approximately INR 3-5 lakhs in the current market scenario, with no further costs. It features the latest technology in modern vehicles, including a fingerprint scanner and password protection. It also has GPS and NVS systems, along with solar tracker technology.

By Judiciary -

The NGT ordered Rajasthan government to furnish details of the two most polluted cities in the state under the case Vardhaman Kaushik vs Union of India. In response in 2016 the state government acknowledged the data from existing monitoring stations is not sufficient to provide a ranking of cities and that the PM10 pollution levels have been above the prescribed safe limits. IIT Kanpur has been asked by RSPCB to do a source apportionment study for Jaipur, and no such previous study exists for Jaipur and Jodhpur.

By Rajasthan State Pollution Control Board – Year – 2018

With it (Rajasthan) sharing its boundaries with Delhi, air pollution in the state has a direct impact on the capital's air quality. This had become apparent in June this year, when the air quality remained 'severe' for five days in peak summer due to a dust storm originating in Rajasthan and spreading all the way to western Uttar Pradesh. Five cities in the state are on the list (of WHO): Alwar, Jaipur, Jodhpur, Kota, Udaipur.

"So far, Rajasthan has been the worst performer. We have not received any plan from them. The idea was that we tell the state pollution control boards that there is a need for a time-based action plan to mitigate air pollution in their cities, and for that, they need to start sensitising the citizens and start taking action immediately." - A CPCB official.

CPCB maintained that it had provided a "template" to the different cities, on the basis of an analysis it conducted of source

apportionment studies that had been conducted in different India cities, including Delhi. On the basis of this template, it had asked other cities to submit their plans. An official said, "We largely know what causes pollution in different cities. The sources remain the same, whether they are road dust or vehicular pollution. We asked them, that if they have in the past conducted any study, then they should take those findings into consideration."

In response, Aparna Arora, RSPCB chairperson said, "We have not submitted the plan because we are conducting a source apportionment study for the different cities."

Dr. Vijai Singhal, Chief Environmental Engineer, RSPCB added, "One has to figure out what is causing the air pollution. It is different for each city. The source apportionment study allows you to know exactly what the different pollutants are and the extent to which they contribute to the dip in air quality. For this, we are presently getting the study done for Jaipur by IIT Kanpur. This will be finished by the end of this year. After this, we will also get it done for Bhiwadi and the other cities."

"Air pollution can vary from city to city, from state to state and from season to season. In a state like Rajasthan, where you've arid, dusty areas and dense forested areas - how can you've a one-size-fits-all template for air pollution? The other states appear to not have bothered." – another official from RSPCB.

Former CPCB member-secretary B. Sengupta explained, "A source apportionment study is a very important item that has to be undertaken before creating any air action plan. What the Rajasthan government is saying is correct. They need to conduct the study in order to identify specific pollutants before coming up with a rigorous long-term plan."

Rajasthan went into state assembly elections in December 2018 that resulted in change of government.

RSPCB has issued fresh guidelines for pollution in stone crusher industry.

Actions & Policies by State Government

Year – 2016

Rajasthan former Chief Minister Vasundhara Raje launched RajVayu, a mobile app, on the occasion of World Environment Day to provide air pollution-related details such as level of pollutants to citizens. CM Raje also launched Drishti, another mobile app that would monitor air quality in industrial areas.

Year – 2015

The government of Rajasthan released a new solar policy, aimed at developing 25,000 MW of solar energy to attain self-sufficiency. Rajasthan Solar Policy 2014 would act as an extension to Jawaharlal Nehru National Solar Mission (JNNSM) and Rajasthan Solar Energy Policy, 2011 and will remain in force until dismantled.

Bibliography

City profile, major issues of public concern and people's voices

<https://wricitieshub.org/sites/default/files/Comprehensive%20Mobility%20Plan%20for%20Jodhpur.pdf>
<https://en.wikipedia.org/wiki/Jodhpur>
<https://www.deccanherald.com/content/461260/rajasthan-nagging-problems-remain.html>
<https://www.downtoearth.org.in/coverage/curse-of-excess-36861>
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4213918/>
<https://timesofindia.indiatimes.com/city/jodhpur/hc-notice-to-board-on-pollution-in-canal/articleshow/65345452.cms>
<https://www.numbeo.com/pollution/in/Jodhpur>
<http://environment.rajasthan.gov.in/content/environment/en/rajasthan-state-pollution-control-board/EnvironmentalReport/continuous-ambient-air-quality-data.html>
<http://envfor.nic.in/sites/default/files/press-releases/NCAP%20Report%20Full.pdf>
<https://timesofindia.indiatimes.com/city/jaipur/raj-has-highest-death-rate-per-lakh-due-to-air-pollution/articleshow/67017397.cms>
<https://www.indiatoday.in/pti-feed/story/raj-pollution-board-failed-to-initiate-effective-programme-caq-report-1179093-2018-02-27>

Air quality history of Jodhpur

[https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)
https://www.who.int/airpollution/data/aap_air_quality_data_base_2018_v14.xlsx?ua=1
<http://cpcb.nic.in/namp-data/>

Sources of pollution & stakeholder views

https://www.researchgate.net/figure/Air-pollution-of-different-sources-in-the-entire-Jodhpur-city_tbl1_259650599
<https://www.quora.com/Why-is-Jodhpur-declared-as-the-14th-most-air-polluted-city-in-the-world-by-WHO-though-it-has-less-population-and-vehicles-Is-it-the-dust-particles>
<https://www.indiatoday.in/pti-feed/story/raj-pollution-board-failed-to-initiate-effective-programme-caq-report-1179093-2018-02-27>
<https://www.bhaskar.com/news/RAJ-JOD-HMU-garbage-dustbin-burned-in-jodhpur-5583575-NOR.html>

Impacts of air pollution on health

<https://timesofindia.indiatimes.com/city/jaipur/doctors-raise-concern-over-air-pollution/articleshow/64006567.cms>
<https://timesofindia.indiatimes.com/city/jaipur/raj-tops-in-lung-disease-deaths-in-india/articleshow/65789566.cms>
<https://www.sciencedirect.com/science/article/pii/S2542519618302614?via%3Dihub#bib35>
<https://timesofindia.indiatimes.com/city/jaipur/rajasthan-youths-fast-losing-battle-against-pollution/articleshow/64463744.cms>
<https://www.hindustantimes.com/jaipur/jaipur-s-dirty-air-taking-the-wind-out-of-health/story-o1slqlcR7NF2mnOC6YUbcM.html>
https://www.ripublication.com/jaes17/jaesv12n7_08.pdf
[http://www.ajer.org/papers/v4\(04\)/H044050054.pdf](http://www.ajer.org/papers/v4(04)/H044050054.pdf)
<https://www.downtoearth.org.in/news/rajasthan-belatedly-wakes-up-to-health-crisis-among-mine-workers-40587>

City stakeholder actions – Scientists & Engineers

<https://www.thebetterindia.com/164082/hydrogen-fuel-cost-iiit-jodhpur-innovation-india-news/>
https://www.iosrjen.org/Papers/vol8_issue5/Version-1/0805017884.pdf
<https://www.thebetterindia.com/82643/meet-team-behind-india-first-lightweight-solar-car/>

City stakeholder actions – Judiciary

http://environment.rajasthan.gov.in/content/dam/environm ent/Env/Notification/NGI_OA_21_2014.pdf

City stakeholder actions – State Pollution Control Board (RSPCB)

[https://www.hindustantimes.com/jaipur/pink-city-ranks-9th-on-toxicity-chart/story-M69PMH8ZGQwPkHj\\$nkENFP.html](https://www.hindustantimes.com/jaipur/pink-city-ranks-9th-on-toxicity-chart/story-M69PMH8ZGQwPkHj$nkENFP.html)
<https://www.news18.com/news/india/rajasthan-yet-to-submit-polluted-cities-action-plan-says-following-scientific-process-unlike-other-states-1859043.html>
[http://environment.rajasthan.gov.in/content/dam/environm ent/RPCB/Guidelines/Stone%20Crusher%20Guideline%2005.06.2018%20\(1\).pdf](http://environment.rajasthan.gov.in/content/dam/environm ent/RPCB/Guidelines/Stone%20Crusher%20Guideline%2005.06.2018%20(1).pdf)

City stakeholder actions – State Government

<https://www.dnaindia.com/jaipur/report-e-shock-for-e-rickshaws-rajasthan-government-bans-fresh-registrations-2595232>
<https://www.downtoearth.org.in/news/rajasthans-new-solar-energy-policy-simplifies-regulations-for-investors-46880>
<https://www.indiatoday.in/education-today/gk-current-affairs/story/rajvayu-air-quality-app-13010-2016-06-08>

Political Leaders Position and Activities on Constituency Air Quality



MP: Gajendra Singh Shekhawat

Member of Parliament since: 2014

Lok Sabha Constituency: Jodhpur

Party: Bhartiya Janta Party (BJP)

Current Portfolio: Minister of State, Ministry of
Agriculture and Farmers Welfare

State Government's statements on air quality

Year – 2018

On the occasion of World Environment Day, the former Minister for Environment & Forests of Rajasthan Gajendra Singh Khimsar flagged off a marathon and emphasized need for tree plantation for good quality urban life –

“इस अवसर पर श्रीखींवसर ने कहा कि अगर हम भावी पीढ़ियों को स्वस्थ देखना चाहते हैं एवं धरती पर जीवन को खुशहाल रखना चाहते हैं तो हम सब को पर्यावरण संरक्षण हेतु आगे आना होगा और प्रत्येक वर्षा ऋतु के दौरान ज्यादा से ज्यादा पेड़ लगाने होंगे। श्रीखींवसर ने कहा कि विकास, रोजगार, प्रतिव्यक्ति आय व खुशहाली का इण्डेक्स बढ़ाने के लिये औद्योगिकरण जरूरी है। औद्योगिकरण के साथ-साथ सघन वृक्षारोपण भी जरूरी है, इसमें प्रत्येक व्यक्ति की भागीदारी आवश्यक है। उन्होंने कहा कि वर्षा ऋतु के दौरान बड़ी संख्या में वृक्षारोपण के लिये लक्ष्य वनविभाग को दिये गये हैं। इसके साथ-साथ राज्य सरकार, पंचायती राज संस्थाओं, थानों, नगरीय विकास संस्थाओं सहित के सहयोग से इस अभियान को गति दी जायेगी।”

“It is the responsibility of all departments to work for environmental awareness. It is not only the duty of the forest department and environment

ministry. It is also the responsibility of departments such as health and urban development and housing to save the environment from destruction. Cumulative efforts can help in saving our environment.” - former environmental minister Gajendra Singh Khimsar, defending the spending of the department mostly on salaries and departmental works against no spending on environmental awareness programs since 2013-14.

Year – 2015

“I am confident that the new state policy shall usher in an environment that is congenial to investors and also be an engine to draw in the much required investment in the state. The idea for the state is long term energy security, ecological security by reducing emissions, generating employment and investing in a solar centre for research and development.” - Vasundhara Raje, former Chief Minister of Rajasthan, on the occasion of releasing new solar policy in the state.

Other parties' statements on air quality

Year – 2018

“It (CAG report) clearly shows that no monitoring exists in the BJP rule and the government has silently given its consent to acts which led to corruption. In the same manner, the negligence on the part of the government in controlling pollution levels has brought Jaipur among top 5 polluted cities across the globe. Due to the lackadaisical attitude of the government one third population of 7 crore in Rajasthan is affected by air pollution. The Raje government had claimed to set up Mine and Mineral Development Fund for development in mining affected areas and people suffering of silicosis. But, the fund was used for other heads in the last budget instead for mining areas.” – Sachin Pilot, former state chief of opposition party Congress, citing CAG report on illegal mining.

Parliamentary initiatives by MP

Year – 2015

Raised question to Ministry of Environment, Forests & Climate Change (MoEF&CC) if the government has conducted a study to measure outcomes of steps taken to curb air pollution in the country; what are the WHO air quality norms, and government plans to meet them and timelines for that plan. The Ministry responded saying air quality is monitored in 244 cities of India and levels of lead and SO₂ are found to be within NAAQS 2009 norms across the country while NO₂ & particulate matter PM₁₀ levels are higher in most cities. NAAQS have taken WHO norms into account. Steps have been taken such as cleaner auto fuels, pollution checks and stringent standards for

emissions, use of beneficiated coal in thermal power plants, promotion of public transport such as Metro rail, et al. The timelines for meeting the NAAQS 2009 norms cannot be predicted since the activities needed are spread over various Ministries, government entities and urban local bodies.

Raised question to MoEF&CC whether recent findings/ reports by various agencies/ organisations have indicated that the air pollution levels in urban areas and metro cities of the country including Delhi and Mumbai have remained very high, and what has been the reaction of the government. The concerned ministry responded saying the air quality data being reported in press and other reports are without proper interpretation or peer review. The levels for NO₂ and PM₁₀ pollutants in Delhi and Mumbai have been reported to be exceeding the norms over the last 3 years.

Raised question if cases of respiratory ailments and other diseases due to air pollution have been reported. The ministry responded that Indian Council of Medical Research (ICMR) recognizes air pollution as a cause for various ailments and that no study has been undertaken by any national or sub-national ministry or agency regarding patients being reported.

Raised question regarding the existing policy to curb air pollution across the country, the achievements and steps taken for an action oriented programme including emergency response measures in collaboration the state governments. The Ministry mentioned the measures taken such as clean fuels, Metro Rail, stringent standards, national AQI index etc. and CPCB directive to 17 industries for online monitoring systems.

Raised questions to Ministry of New & Renewable Energy regarding initiatives take to increase solar energy production and plans to boost both generation and demand from consumers. The concerned Ministry responded with list of incentives provided including payment security for project developers and future plans including 175GW target and increasing Renewable Purchase Obligations as per National Action Plan on Climate Change.

Actions & policies by MP's union government

Year – 2019

NCAP with Rs. 300 crore launched as a mid-term, five-year action plan from 2019 to reduce air pollution by 20-30% by 2024 in all 102 non-attainment cities, taking 2017 as the base year.

Union Surface Transport Minister Nitin Gadkari, on occasion of laying foundation for road projects in Jodhpur, appealed to MoSGajendra Singh Shekhawat to turn Rajasthan into an automobile hub by promoting production of Jetropha. He also appaled to farmers to produce bio-fuel from Jetropha using bio-technology.

Year – 2018

Niti Aayog proposed a 15-point action plan, titled Breathe India, to combat air pollution in 10 most polluted ciites of India.

National Auto Policy released including EV, CNG, biofuels, and hydrogen vehicles, though without timelines and no link with EV 2030 vision, FAME II or Make in India. Under the FAME II India scheme around Rs. 5,500 crore over a five year period has been set aside to provide grants for all kinds of electric vehicles.

Gol sealed a deal with World Bank, GIZ, ADB, SDC, AFD and Bloomberg Philanthropies, to build capacities of all 102 polluted cities across the country. The initial small budget of 300 crore is meant for expanding air quality monitoring capacities in states, setting up national emission inventories and conducting source apportionment studies in cities to identify nationwide pollution hotspots.

Year – 2017

Railways Ministry announced new reforms and services such as Roll On Roll Off and long-term contracts to enhance freight traffic and reduce dependence on commercial vehicles.

Year – 2016

Jaipur, Jodhpur and Ajmer to be solar cities - राजस्थान के अजमेर, जयपुर और जोधपुर शहरों को सोलर सिटी बनाने के प्रस्ताव को केन्द्र सरकार द्वारा मंजूरी प्रदान कर अजमेर के लिए 50 लाख और जोधपुर के लिए 43.50 लाख रुपये स्वीकृति प्रदान की है।

Government of India announced the advancement of vehicular emissions and fuel quality norms to BS-VI levels by the year 2020 across the country.

All non-attainment cities were given a set of 42 action points to improve air quality and as a follow-up, 94 cities were asked to prepare detailed action plans. The states concerned had been urged to steer implementation of action plans in these cities. The CPCB has also launch a mobile app - SAMEER - for grievance redressal.

Year – 2015

Government of India announced FAME scheme under NEMMP to promote electric vehicles. Instead, EV manufacturers and sellers

were expecting a policy and regulatory framework laying out a roadmap for creating an ecosystem comprising, most importantly, charging stations, as well as rolling out incentives for both manufacturing and purchasing EVs.

Bibliography

State government's statements on air quality

<https://www.downtoearth.org.in/news/rajasthans-new-solar-energy-policy-simplifies-regulations-for-investors-46880>
<https://hellorajasthan.com/world-environment-day-world-environment-day-celebrate-in-rajasthan/>
<https://www.hindustantimes.com/jaipur/rajasthan-didn-t-spend-a-penny-on-environmental-awareness-in-last-3-years/story-GwX0df3tYm21YwWPGMSK.html>

Other parties' statements on air quality

<https://www.dnaindia.com/jaipur/report-cag-report-on-illegal-mining-gives-congress-new-ammo-2591153>

Parliamentary initiatives by MP

<http://164.100.47.194/Loksabha/Questions/QResult15.aspx?qref=14317&lsno=16>
<http://164.100.47.194/Loksabha/Questions/QResult15.aspx?qref=8375&lsno=16>
<http://164.100.47.194/Loksabha/Questions/QResult15.aspx?qref=12770&lsno=16>
<http://164.100.47.194/Loksabha/Questions/QResult15.aspx?qref=24944&lsno=16>
<http://164.100.47.194/Loksabha/Questions/QResult15.aspx?qref=15644&lsno=16>

Actions & policies by MP's union government

<https://www.iamrenew.com/policy/lttle-late-govt-earmarks-300-crores-fight-air-pollution-102-cities/>
<https://timesofindia.indiatimes.com/city/jodhpur/gadkari-inaugurates-road-projects-worth-rs-6k-crore/articleshow/67401835.cms>
http://niti.gov.in/writereaddata/files/document_publication/BreatheBooklet11thJuly.pdf
https://dhi.nic.in/writereaddata/UploadFile/DHI-NAB-Auto%20Policy%20Draft%20Document_vDRAFT.pdf

<https://economictimes.indiatimes.com/news/environment/pollution/four-international-agencies-to-join-govts-effort-to-tackle-air-pollution-in-102-cities/articleshow/66548971.cms?from=mdr>
<http://piib.nic.in/newsite/PrintRelease.aspx?relid=158793>
[http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20\(2\).pdf](http://www.indianrailways.gov.in/Reform-Perform-Transform%202022_v10%20(2).pdf)
<https://www.thehindu.com/opinion/op-ed/advancing-bs-vi-emission-norms/article25438769.ece>
<https://archive.indiaspend.com/cover-story/0-02-new-cars-are-electric-heres-what-govt-must-do-to-reach-all-electric-goal-78119>
https://www.pressnote.in/Rajasthan-News_330142.html
<https://economictimes.indiatimes.com/news/environment/pollution/govt-has-made-serious-efforts-to-curb-air-pollution-govt-after-who-report/articleshow/64003558.cms?from=mdr>