Indian Pollution Control Association (IPCA)

NEWS LETTER

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Way Towards Clean Air in Delhi: Are We on Right Track?

Introduction

Air pollution is one of the major problems faced by many urban centers across the country. Delhi is no exception as it boasts of all the right mix of sources which can create an unacceptable urban air pollution scenario. The latest urban air quality database released by the World Health Organization (WHO) reconfirms that most Indian cities are becoming death traps because of very high air pollution levels. India appears among the group of countries with highest particulate matter (PM) levels. Also, its cities have the highest levels of PM_{10} and $PM_{2.5}$ (particles with diameter of 10 and 2.5 micro-meters, respectively) when compared to other cities in the world. Of the 20 most polluted cities in the world, 13 are from India, says the database. The Global Burden of Disease report (2014) pinned outdoor air pollution as the fifth and indoor air pollution as second largest killers in India with approximately 527,700 deaths every year. Almost 18 million years of healthy lives are lost due to illness burden that enhances the economic cost of pollution. Half of these deaths have been caused by ischemic heart disease triggered by exposure to air pollution and the rest due to stroke, chronic obstructive pulmonary disease (COPD), lower respiratory tract infection (LRTI) and lung cancer.

Delhi has lost all the gains of its CNG programme!

Delhi has been recently declared as the most polluted cities in the world by WHO and as The Asthma Capital of India. Its air is increasingly becoming more polluted and unbreathable, bringing back the pre-CNG days when diesel-driven buses and autos had made it one of the most polluted cities on earth. In 2001, when the CNG programme was on, A slight drop in the annual average level of PM 10 was registered between years 2001-2005 (140-149$\mu g/m^3$). However, the level has risen again in 2008 and concentrations reported in 2010 were ~260 $\mu g/m^3$, which was 2.5 times higher than the levels of 2005; 3-4 times higher than the national standards and 12-13 times higher than the WHO safe limits.

The city has done all, it can do to reduce air pollution in last decade. It has advanced emission norms of vehicles; strengthened its 'pollution under control' system with new equipment; capped the number of its auto rickshaws; converted buses to CNG; made it mandatory for new light commercial vehicles to run on CNG; and restricted commercial vehicles from entering the city. But in spite of all these actions, **pollution levels are on the rise**. Delhi has about 7.5 million vehicles and is adding 1,400 a day. That is almost more than double what was added in the city in the pre-CNG days

The Health Crisis of Delhi's Air!

In recent times, Delhi has been hit by exceptional health crisis due to trapping of poisonous substances (such as particulates and gases like NOx and CO) under the layer of fog and their levels are raising alarmingly. As a matter of fact, **Delhites are all living and breathing in gas chamber, and respiratory emergencies have tripled in last 7-8 years with no relief in sight.** The ENT doctors are observing a lot of nasal allergies and throat congestions in Delhi happening due to smoke exposure. The asthma patients are experiencing aggravation of their symptoms, while those who never had asthma are experiencing asthma like symptoms such as wheezing and breathlessness. The elderly are experiencing cough and breathlessness. There is a sharp rise in viral fever- a direct effect of smoke-causing inflammation of the lining of our wind pipe and making us vulnerable to all kind of viral and bacterial infections. The sickness absenteeism in all offices has touched an all time high. The worst affected are the children (since they have very small airways and any swelling of airways causes a lot of obstruction to the passage of air) and elderly, who have very little reserve to fight infections. Apart from this, 40% of our kids fail in lung capacity tests. The incidences of strokes, heart disease,

cancers, birth defects and pneumonia have raised.

It is much like smoking cigarettes, it's shaving years off our lives. Though some fare worse than others, none are immune: rich or poor, young or old. A high burden of disease erodes quality of life, family finances, and the economy. What will be the cost of this health crisis, in **human lives, in healthcare, in lost productivity?**

The so much media coverage and observed health crisis is forcing public of the city to buy air purifiers for their all build environments, like home, offices, cars etc. and air masks while travelling out of their build structures. All of a sudden, air masks and air

purifiers have become the big business items for most of the electronic industries. Though a number of brands are available in the market today and they claim for 99% of particle removal efficiency but none of them certifies whether they produce ozone or not. No calibration certificate is issued by them. Further, in most of the cases, our building designs do not support them as the buildings should be totally leak proof for effectiveness of these purifiers otherwise they will suck the equal amount of pollutants, which they are cleaning through leakages.

So there is a dire need to have a national level calibration and testing facility for such instrumentations for an effective and efficient air quality management in India.

The alarming levels of air pollution in last winter's of Delhi has created a panic among the people and prompted the judiciary to act tough to give citizens right to live in a healthy environment. The judiciary, be it Supreme Court (SC), Delhi High Court(DHC) or National Green tribunal (NGT) dealt with the issue of air pollution with an iron hand and passed a slew of stern actions. Those are as:

- The registration of new diesel run SUVs, high end private cars with engine capacity of 2000CC and above has been banned in Delhi NCR till March 31, 2016 by Apex court on December 16.
- The SC hiked the green cess on commercial vehicles entering Delhi and directed the appointed Environment Pollution Control Authority to install boards notifying the new cess in 125 toll booths across Delhi.
- The SC has asked the government to supply the Delhi traffic police with proper masks so that their health is not compromised.
- The NGT has asked the central and state government not to buy diesel vehicles for its personnel. It also asked public administration departments and municipal bodies to take efforts to gradually phase out diesel vehicles.
- NGT directed the state governments of Delhi, Punjab, Rajasthan, Haryana and Uttar Pradesh to immediately ban the burning of crop residue as it was contributing to the rising air pollution in the NCR.
- NGT also advised the sick people to leave city due to adverse effect on their health. The air pollution has been declared as "Emergency Nature" and the blame goes to authorities who failed to implement the laws and rules to prevent environmental degradation.
- Further, due to hard pressure and concerns built up by judiciaries, Delhi Govt. has to propose the odd-even number vehicle policy for commuting in the capital to reduce the air pollution levels caused by vehicular emissions.
- DPCC carried out a special drive for major construction projects towards the end of November and fined Rs. 50,000 for each uncontrolled and open construction activities to reduce the dust pollution in Delhi.
- The laws were enforced against open burning of leaves, garbage and biomass after a four member committee meeting on 3rd December 2015 (Thursday) including MS of DPCC and CPCB, Secretaries of health and health departments of Delhi Govt. to chalk out the emergency plan to deal with air pollution levels in Delhi. Letters by Secretary Environment has been issues to DCs and Commissioner of MCD and Delhi Police to ensure strict action against violation of laws.
- Random PUC checking drive has also been planned by department of Environment (DOE), Delhi Govt. in most vulnerable places like Anand Vihar, where pollution levels are highest.
- Enforcement of checking of pollution in industrial areas through diesel generator sets.
- Large scale tree plantation in also proposed by Govt. as a long term measure in areas of high traffic volume and lack of vegetation.

Are all the actions taken/ proposed are based on any

scientific study? Are our national government and cities prepared to take urgent action to protect public health?

The major actions by various courts and government were taken after the news published by Times of India covering the two years study of IIT Kanpur for Delhi's air pollution (the study report is not yet in public domain), which apportioned the various sources of air pollution in Delhi during winters and summers as shown in figure1.

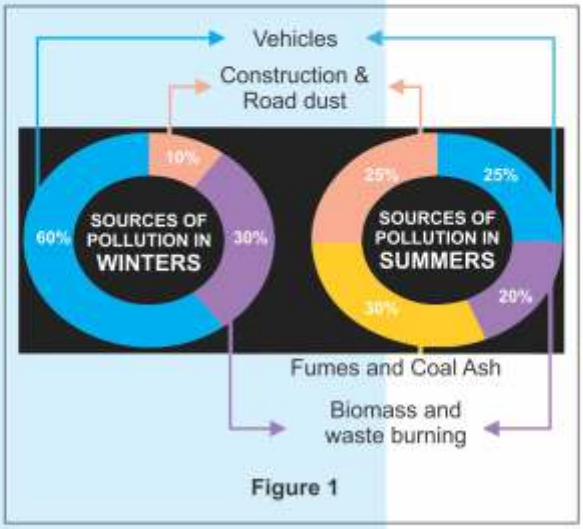


Figure 1

Vehicular emissions are reported as the biggest contributors to air pollution during winters in Delhi followed by biomass burning and construction and road dusts. However, there are many more sources who are contributing to Delhi's air to make it worst, are not apportioned in the study. The boundaries of the city, which is surrounded by many **city clusters**, which are intensely active in many industrial and domestic activities and are having various unaccounted and unregulated sources of air pollution, which do not limits to its boundaries and contribute significantly to Delhi's air quality, are not apportioned in the study.

Is Delhi's unfavorable geographic location and meteorology a culprit to its bad air quality?

The geography of Delhi results in the advection of air into the city from its surrounding areas, which can be sometimes more polluted than the city centre itself. It is a land-locked megacity with very limited avenues for flushing out of its polluted air from the city or its replacement with relatively unpolluted air, which means that atmospheric transport from all directions, is likely to add to inner-city pollution.

The Unaccounted and unregulated sources ?

The source appo rtionment and emission inventory of Delhi's air pollution mainly includes primary emissions from road vehicles, power plants and particulate re-suspension, but devoid of city specific unaccounted and unregulated sources and their characteristics in terms of their location, magnitude, frequency of operation and emission characteristics. For Examples, brick kilns in Delhi NCR, which use raw wood, agricultural waste or poor quality coal as a fuel, the roadside burning of organic and plastic waste and the unintentional burning of municipal solid waste at landfills, and construction activities. The local emission inventories point to about 5,300 and 7,550 tons yr−1 of

PM10 and PM2.5 release from solid waste burning in Delhi, respectively, while the corresponding emissions from construction are 3,250 and 10,750 tons yr−1 (Guttikunda and Goel, 2013). Biomass and crop burning, emissions from diesel generators are again uncontrolled and poorly quantified in the city and its periphery. All these sources are quite significant and to be considered while taking any policy decision to control air pollution in Delhi.

Obstacles to Bring the Clean Air in Delhi?

Delhi is capital of India since independence, which has brought more financial resources to it than any other metro cities and lots of expertise in its elite institutions. But it has also brought the problem of pollution in the city due to over utilization and exploitation of its scarce resources by exploded population migration in search of better lives. Besides, our lack of civic sense and responsibility is legendary and it displays the most notoriously weak ability to implement policies and services on the ground.

Therefore, a need to be raised via concerted public service messages, school education, as well as well-designed incentives and penalties to create the civic sense and responsibility among people of Delhi. Citizens certainly need to do their part to help reduce air pollution through their daily actions. But that won't be enough. What will it take to get our state and central governments to also tackle the big ticket items like emission standards, public transport, waste management, biomass burning, and dust reduction?

The Scientific approach

Traffic Management

No doubt that Delhi city is witnessing a rapid increase in number of road vehicles, which have increased from 4.7 million in 2010 to 7.5 million in 2015 and may goes up to nearly 26 million by 2030. Petrol and diesel consumption have also grown by 400% and 300% respectively in the last two decades, which is a significant contributor to the rising level of air pollution in the city. To overcome the impact of already increased vehicular pollution, A need of urgent action to leapfrog vehicle technology and fuel quality (urgent implementation of Euro VI, where Diesel Particulate Filters are mandatory to use in all vehicles) is required along with **scaling up of public transport** to reduce the dependence on cars. **Walking and cycling** need to be promoted but before that there is a call for strict law and order for **making the Delhi roads safer** for walking and cycling. Implementing odd-even formula alone will not solve the problem of the cities 'air pollution.

Public Awareness to Bring Behavioral Changes

A sense of responsibility among people residing in the city is must to create a healthy and breathable air. Implementation of any policy will be successful only when people will understand that it is for their own benefit. A mass level public awareness campaign needs to be done at all levels of population with special emphasis on children and youth of the country.

Voluntary Initiatives

As with the switch to CNG 15 years ago, much of the recent activism on air pollution has emerged from our courts. Behind this lies the sad reality of disempowered pollution control boards, unmotivated bureaucracies, and politicians unwilling to prioritize measures unless they seem electorally important. But while Public Interest Litigation may be a useful tactic, it's neither enough, nor a sustainable strategy. In a democracy, there's no substitute for a critical mass of informed citizens. Clean air will not become the government's priority unless citizens make it their priority. Citizen and media pressure is central to this change. We need to mobilize and have our voices heard through various citizen-led initiatives, such as "Help Delhi Breathe". Let's rise, agitate, and reclaim our right to clean air.

Raise and enforcement of emission standards

India is still on Bharat stage III and IV due to certain industrial lobbies. However, the westerns have already implemented EURO VI to reduce their traffic emissions. Considering the air pollution as an emergency and priority above all, EURO VI must be enforced in whole Delhi NCR at its earliest possible, i.e. 2017.

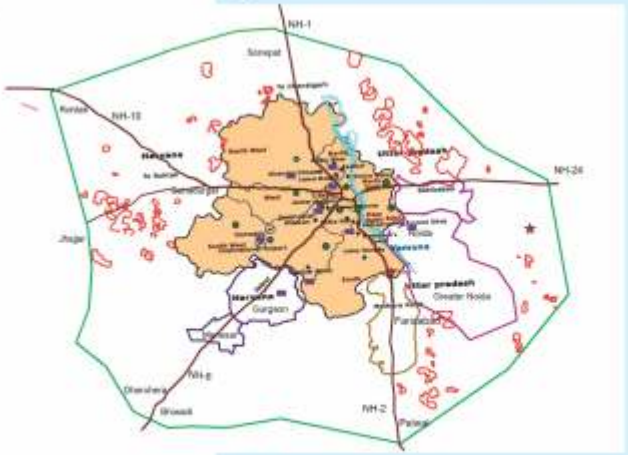
Penalize big and non-compliant polluters

A comprehensive auditing/inspection of all polluting industries, no matter how big or small it is, needs to be done in Delhi NCR for tighten and enforcement of emission norms and for penalizing them in case they are the culprits.

City cluster approach for emission inventory and source apportionment

Following the city cluster approach is essential in case Delhi is looking for a long term solution for its air pollution problem. Delhi NCR is comprising of urban city clusters, e.g. (i) Delhi city; (ii) Sonepat; (iii) Bahadurgarh, Rohtak, Jhajjar; (iv) Gurgaon, Manesar, Dharuhera, Bhiwadi; (v) Faridabad and Palwal and (vi) Noida, Greater Noida and Ghaziabad. There is a need to identify all possible sources of problematic air pollutants in the clusters and a detailed emission inventory needs to be developed for the study regions which can quantify emission coming from Delhi city and NCR cities clusters separately for proposing and implementing the right policies, such as creating a green buffer zone on eastern and western periphery of the city, alteration of fuels used in brick kilns in Jhajjar, Haryana etc. All interventional analysis studies should be done if we are looking for a long term solution to Delhi's air pollution problem.

Web-based monitoring systems and decision theatres



As an immediate and short term solutions to reduce the air pollution exposure and health implications to the residents of Delhi, sensor based smart web- monitoring network should be created in the city and the decision theaters should be created at regulatory bodies like Central pollution Control Boards (CPCB) or Delhi Pollution Control Committee (DPCC) to take immediate decisions on area specific air quality indices (AQI) to protect the health of the public.

Creating a consortium: Much needed approach!

A consortium of regulator, academia, national laboratories and NGOs is essential to work together for viable solution to current air pollution problems of Delhi and make Delhi as a role model for saving the other 104 upcoming cities of India from air pollution.

Last but not the least, it is imperative for all of us to stand up right now and act together to save ourselves and our future generation. If we do not act now, we will all choke to death – of course slowly but definitely – in the world's most polluted city of Delhi. The only way to have "clean air for us" is to have the "clean air around us".

iPCA
SUSTAINABILITY IS OUR GOAL

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