

CASE STUDY OF AIR POLLUTION IN DELHI

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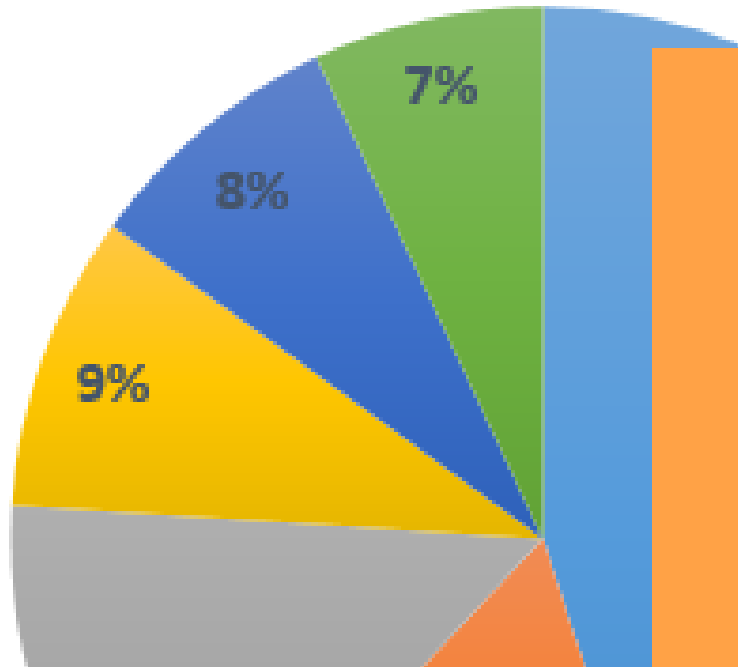
INTRODUCTION

Air pollution is the introduction of particulates, biological molecules, or other harmful materials into Earth's atmosphere, causing diseases, death to humans, damage to other living organisms such as animals and food crops, or the natural or built environment. Air pollution can result from both human and natural actions. Natural events that pollute the air include forest fires, volcanic eruptions, wind erosion, pollen dispersal, evaporation of organic compounds and natural radioactivity. Pollution from natural occurrences are very not often

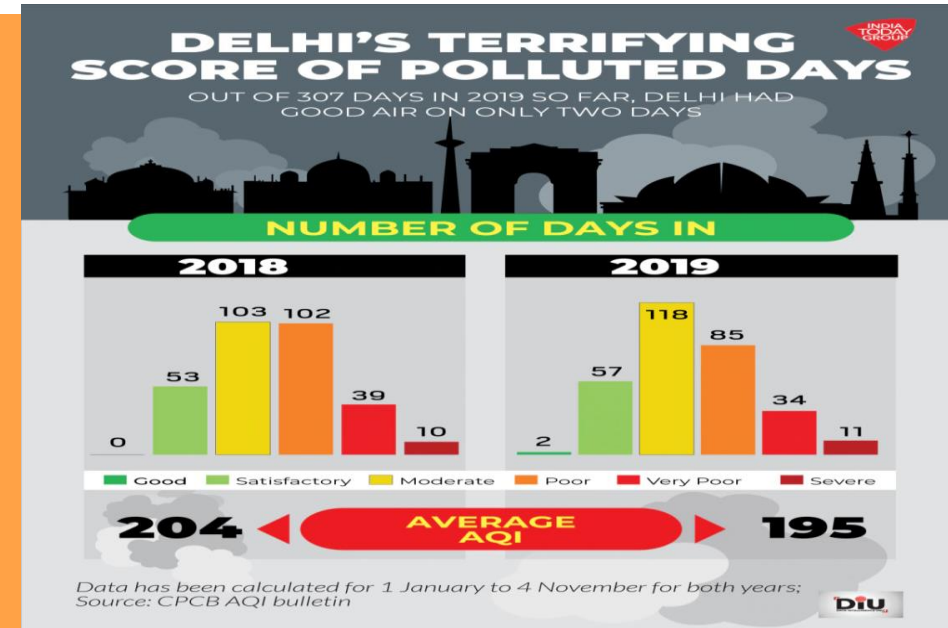


WHAT IS AIR POLLUTION?

Sources of Air Pollution

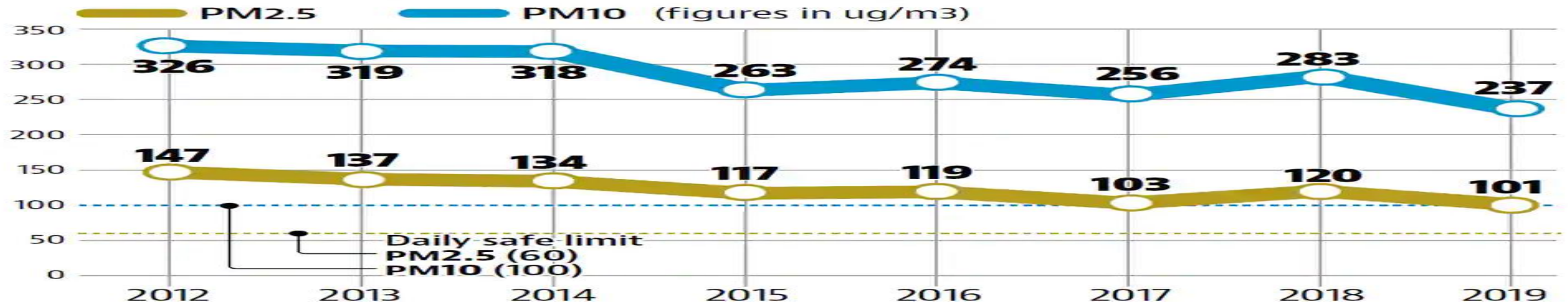


ALL
HAPPENING
IN
DELHI



Average levels of PM2.5 and PM10 (January-July)

The daily prescribed limits of PM10 are 100ug/m³ and PM2.5 100ug/m³



Source: DPCC; 2012-2017: Data from four stations. 2018-19: data from 24 stations

AIR QUALITY INDEX(AQI)

Air quality index (AQI) is the tool to monitor air quality in major urban cities across the country on a real - time basis and to enhance public awareness. The AQI developed Is based on human exposure and health effects and may not be strictly applicable to ecologically sensitive areas. Various pollutants which are considered for AQJ determination are PM10, PM2.5, NO2, O3, CO, SO2, NH3, and Pb

AQI	Associated health impacts
Good (0 – 50)	Minimal impact
Satisfactory (51 – 100)	Minor breathing discomfort to sensitive people
Moderately polluted (101 – 200)	Breathing discomfort to people with lungs, asthma, and heart diseases
Poor (201 – 300)	Breathing discomfort to most people on prolonged exposure
Very poor (301 – 400)	Respiratory illness on prolonged exposure
Severe (401 – 500)	Affects healthy people, and seriously impacts those with existing diseases

POLLUTANTS:-

Earth Day

APRIL 22

PRIMARY POLLUTANTS

Produced from a direct process, such as ash from a volcanic eruption.

- Examples : Carbon monoxide gas from motor vehicle exhaust
Sulphur dioxide released from factories



SECONDARY POLLUTANTS

Not emitted directly, rather form in the air when primary pollutants react or interact.

- Example : Ground level ozone



EFFECT ON HEALTH:-

Short-term effects –

- Irritation to the eyes, nose and throat
- Respiratory infections such as bronchitis
- Pneumonia
- Headaches
- Nausea
- Allergic reactions.
- Short-term air pollution can aggravate the medical conditions of individuals with asthma and emphysema.









LONG-TERM EFFECTS -

- Chronic respiratory diseases
- Lung cancer
- Heart disease
- Damage to the brain, nerves, liver, or kidneys.
- Continual exposure to air pollution affects the lungs of growing children and may aggravate or complicate medical conditions in the elderly.





PM 2.5 LEVEL IN 2019

PM2.5 Legend ⓘ			WHO target	Good	Moderate	Unhealthy for sensitive groups		Unhealthy	Very unhealthy	Hazardous				
Rank	City	2019 AVG	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	 Ghaziabad, India	110.2	205.7	29.5	89.3	86.9	96.6	62.9	45.3	33	37.7	158.6	235.8	235.9
2	 Hotan, China	110.1	60.1	70.1	189.1	151.8	128.6	57.9	119.7	126	87.8	103.9	114.5	106.1
3	 Gujranwala, Pakistan	105.3	220.4	127.4	86.4	70.9	65.8	53.3	59.2	48.8	67.4	107.6	144.9	217.3
4	 Faisalabad, Pakistan	104.6	223	128.3	82	59.1	56.5	46.3	54.2	58.4	66.5	92	148.5	226.2
5	 Delhi, India	98.6	191.7	84.8	75.3	71.4	76.6	56.7	43.2	31.9	37.2	116.7	200.7	194.8
6	 Noida, India	97.7	151.8	38.1	78.3	81.8	88.6	65.3	47.4	33.1	36.5	134.3	212.4	222.6
7	 Gurugram, India	93.1	234.5	62.3	76.3	83	92.2	84.9	47.3	39.1	41.8	108.2	146.8	102.9
8	 Raiwind, Pakistan	92.2	–	201.3	137.1	119	101.9	66.6	41.3	27.2	34.9	70.1	113.4	93.3
9	 Greater Noida, India	91.3	194.5	65.8	76	70.3	61.2	51.8	39.4	32.1	30.2	130	195.5	191.1
10	 Bandhwari, India	90.5	88.5	82.5	60.5	78.7	90.2	74.1	54.9	35.4	42.6	112.6	187.9	178.6

CAUSES OF AIR POLLUTION IN DELHI

1. National capital shares its border with the states of Haryana and Uttar Pradesh. One of the main reasons of increasing air pollution levels in Delhi is crop burning by the farmers in these states. Farmers burn rice stubbles in Punjab, Haryana and Uttar Pradesh. It is estimated that approximately 35 million tones of crop are set afire by these states. The wind carries all the pollutants and dust particles, which have got locked in the air.



2. Pollution caused by the traffic menace in Delhi is another reason contributing to this air pollution and smog. The air quality index has reached 'severe' levels. Vehicular emission is increasing the hazardous effects of air pollution and smog. The Central Pollution Control Board (CPCB) and the National Environmental Engineering Research Institute (NEERI) have declared vehicular emission as a major contributor to Delhi's increasing air pollution.

3. As the winter season sets in, dust particles and pollutants in the air become unable to move. Due to stagnant winds, these pollutants get locked in the air and affect weather conditions, resulting in smog.



4. Another reason of air-pollution is over-population in the capital. Over-population only adds up to the various types of pollution, whether it is air pollution or noise pollution.

5. Investing less on public infrastructure is another reason of air pollution. In India, investment in public transport and infrastructure is low which leads to congested roads, and hence air pollution.



6. Large scale construction in Delhi-NCR is another culprit that is increasing dust and pollution in the air. Considering the dipping air quality, a number of construction sites have stalled work, as directed by the Delhi Government.

7. Despite the ban on cracker sales, firecrackers were a common sight this Diwali. It may not be the top reason for this smog, but it definitely contributed to its build up.



ARVIND KEJRIWAL SAID:

“Delhi pollution is down by 25%. Delhi is the only city where pollution is going down instead of increasing.”



Reality check says...

The level of one of the most harmful pollutants has come down in recent years. But it's still relatively high and there are concerns about increases in other pollutants in Delhi's air

STEPS TAKEN BY THE GOVERNMENT TO REDUCE AIR POLLUTION

- Identifying pollution hotspots

The Delhi government has identified 13 hotspots — where the level of pollution is higher than other areas — in order to identify the source of pollution. These hotspots include industrial areas, as well as those where waste burning, road dust and traffic congestion are a particularly frequent. They are Okhla Phase-II, Dwarka, Ashok Vihar, Bawana, Narela, Mundka, Punjabi Bagh, Wazirpur, Rohini, Vivek Vihar, Anand Vihar, R.K. Puram and Jahangirpuri.



Coordination with other states

- Farmers in Haryana and Punjab clear out their land for winter sowing by burning the stubble left over from the monsoon paddy harvest. The plumes of smoke rising from the ensuing fires are believed to be among the primary drivers of smog in Delhi.
- This year, Delhi will be spraying crop residue with a solution developed by the Indian Agricultural Research Institute that can reportedly decompose and convert it into manure. “If the technique is found to be useful, we can ask other states to implement it to prevent stubble burning,” the CM said Monday.



Green Delhi app

- CM Kejriwal announced Monday that a mobile app called Green Delhi will be launched in the coming days to encourage public participation in the battle against pollution. Anyone in Delhi who witnesses a source of pollution — vehicular, industrial or otherwise — can click a photograph and post it on the app. The Green War Room, as mentioned before, will track the status of complaints registered under the app, with Kejriwal promising personal oversight.



TREE TRANSPLANTATION



The **tree transplantation** policy of the Delhi government mandates **80%** of the trees affected by construction and development activities must be transplanted

The tree transplantation policy of the Delhi government mandates 80% of the trees affected by construction and development activities must be transplanted, along with 80% out of them surviving after a year. This is in addition to the mandatory requirement of planting 10 saplings in case one tree is cut for construction purposes, which has helped increase the green cover in Delhi.

SMOG TOWER IN CP



DELHI
GOVERNMENT has
established a SMOG
TOWER AT
CANNAUGHT
PLACE which will
distribute clean air in
the city

To reduce pollution in the city, the Delhi government is also setted up a smog tower at Connaught Place which will distribute clean air in the national capital.



FINE ON VIOLATING DUST CONTROL NORM

Fine of **20 Lakh** for Violating dust Control norm, **50 Lakh** for not Following dust pollution control norms as NCRTV construction site, **Rs 1 crore** was also imposed by the Delhi Pollution Control Committee on North MCD

Recently, a fine of Rs 1 crore was also imposed by the Delhi Pollution Control Committee on North MCD for its negligence regarding garbage burning in Kirari area.



BIO-DECOMPOSER TO STOP STUBBLE BURNING

Delhi government has developed the **bio-decomposer solution**. The solution can be sprayed on the fields after harvesting to turn the hard stubble and straw into manure.

The Delhi government has developed a bio-decomposer solution under the guidance of Pusa Agricultural Institute. The liquid solution, which was primarily developed and tested by the Pusa Institute, has been accepted as a viable alternative to stubble burning by the Delhi government. The solution can be sprayed on the fields after harvesting to turn the hard stubble and straw into manure. The solution will be provided to the farmers of Delhi and sprayed on their farmlands by the Delhi government, without the farmers having to bear the cost of the same.



ANTI-SMOG GUNS

Anti-smog guns have been deployed at large construction sites amid rising pollution levels in the national capital. Over **10 anti-smog guns** have been installed for dust control.

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EV POLICY AND INCENTIVES



Delhi government has introduced the new **EV policy**. The government is providing subsidies and incentives on their purchase to promote large scale adoption of EVs.

In an effort to reduce the contribution of vehicular emissions to Delhi's PM2.5 concentrations, the Delhi government has introduced the new EV policy. The government is providing subsidies and incentives on their purchase to promote large scale adoption of EVs.

A photograph of a thermal power plant featuring several large, cylindrical cooling towers and tall smokestacks. Thick white steam is rising from the towers and stacks, partially obscuring the sky. The scene is set against a backdrop of a blue sky with scattered white clouds. The plant itself is a complex of various structures, including pipes and smaller buildings, situated behind a line of green trees.

CLOSURE OF TWO THERMAL POWER PLANT

Delhi
government
has also **shut
down two
thermal plants**
in the city

Since thermal energy is one of the most polluting sources of energy, the Delhi government has also shut down two thermal plants in the city, and has also appealed to the other states to shut down 11 thermal power plants around Delhi which continue to be one of the major causes of pollution.

Increase bus and metro services



Mr. Kejriwal said on 18 March 2020 delivering on another pledge he has made to the Delhi's electorate: putting over 11,000 additional buses on Delhi's roads.

AGENCIES RESPONSIBLE:-

- Principal Secretary
- Department of Transport of NCT of Delhi
Delhi Transport Corporation (DTC)
- Delhi Integrated Multi-modal Transit System Ltd (DIMTS)
- Delhi Metro Rail Corporation (DMRC)
State Transport Corporations in NCR towns



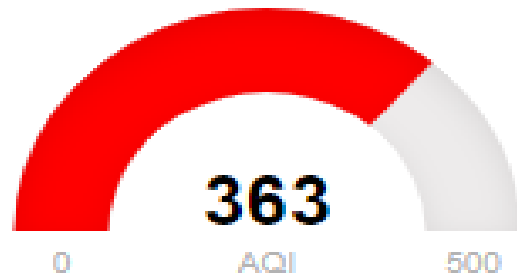
DELHI BANS FIRECRACKERS

BAN ON FIRECRACKERS AHEAD OF DIWALI



- "In the wake of the rising pollution in Delhi due to the festival season, the Delhi government has decided to put a complete ban on the sale, purchase, and use of firecrackers in the city from November 7 to November 30, 2020"
- Use of green crackers will not remedy the situation. The smoke will choke and may create a gas chamber like situation. It will lead to poor visibility, hazy conditions and asphyxia

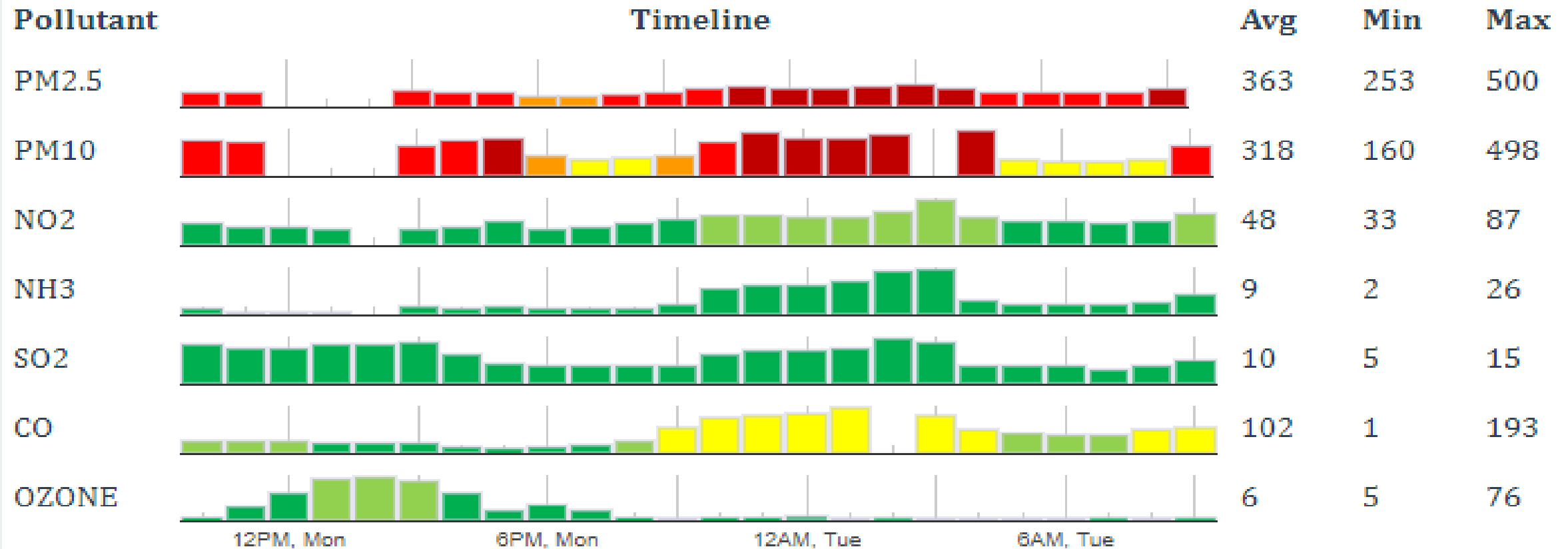
Very Poor



DTU, Delhi - CPCB

Prominent Pollutant is **PM2.5**

On **Tuesday, 03 Nov 2020 09:00 AM**



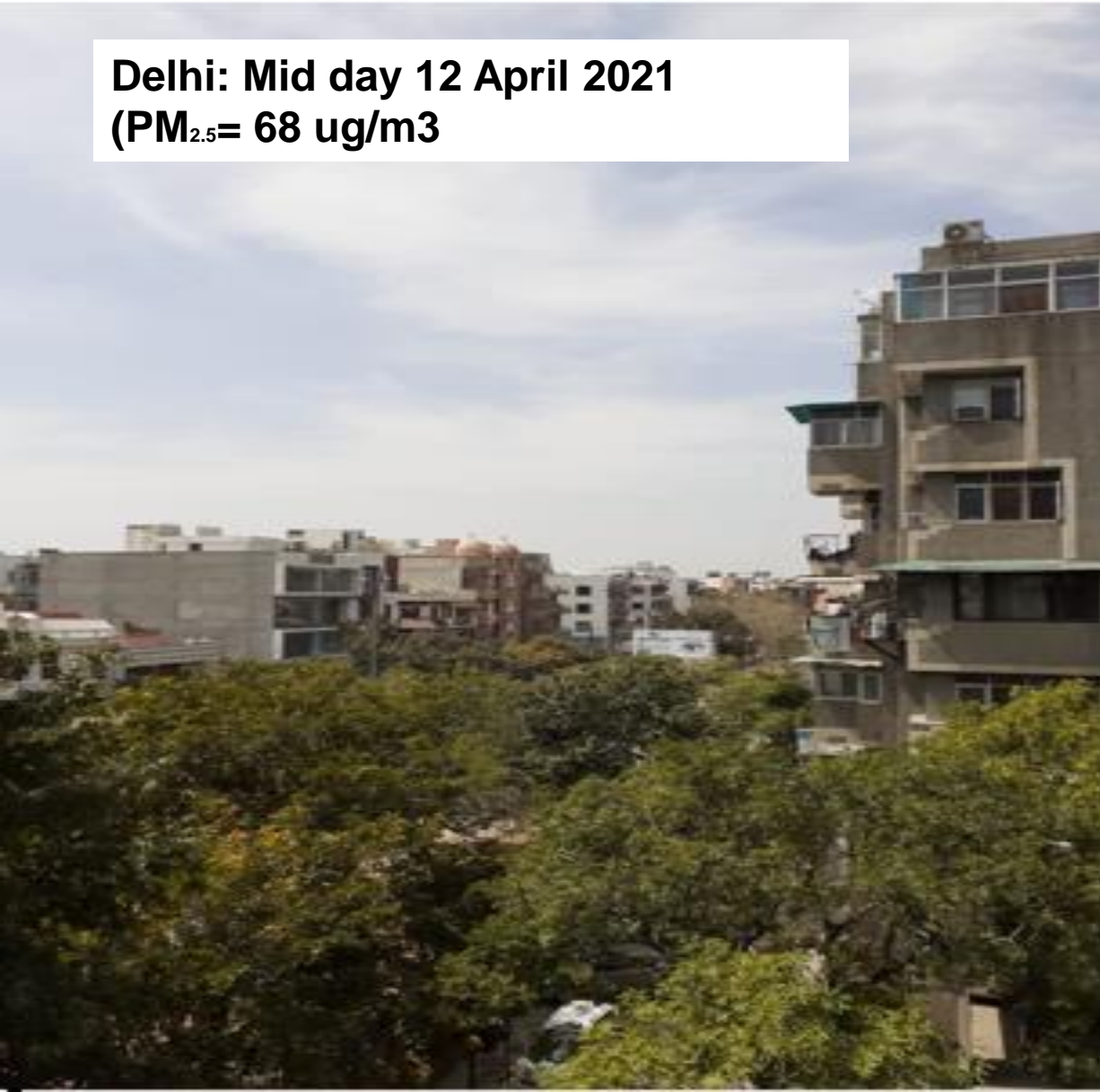
AIR QUALITY INDEX - NEW DELHI



	19-Mar	20-Mar	21-Mar	22-Mar	23-Mar	24-Mar	25-Mar	26-Mar
AQI 2019	190	147	182	147	135	170	166	176
AQI 2020	119	136	138	153	76	90	61	71

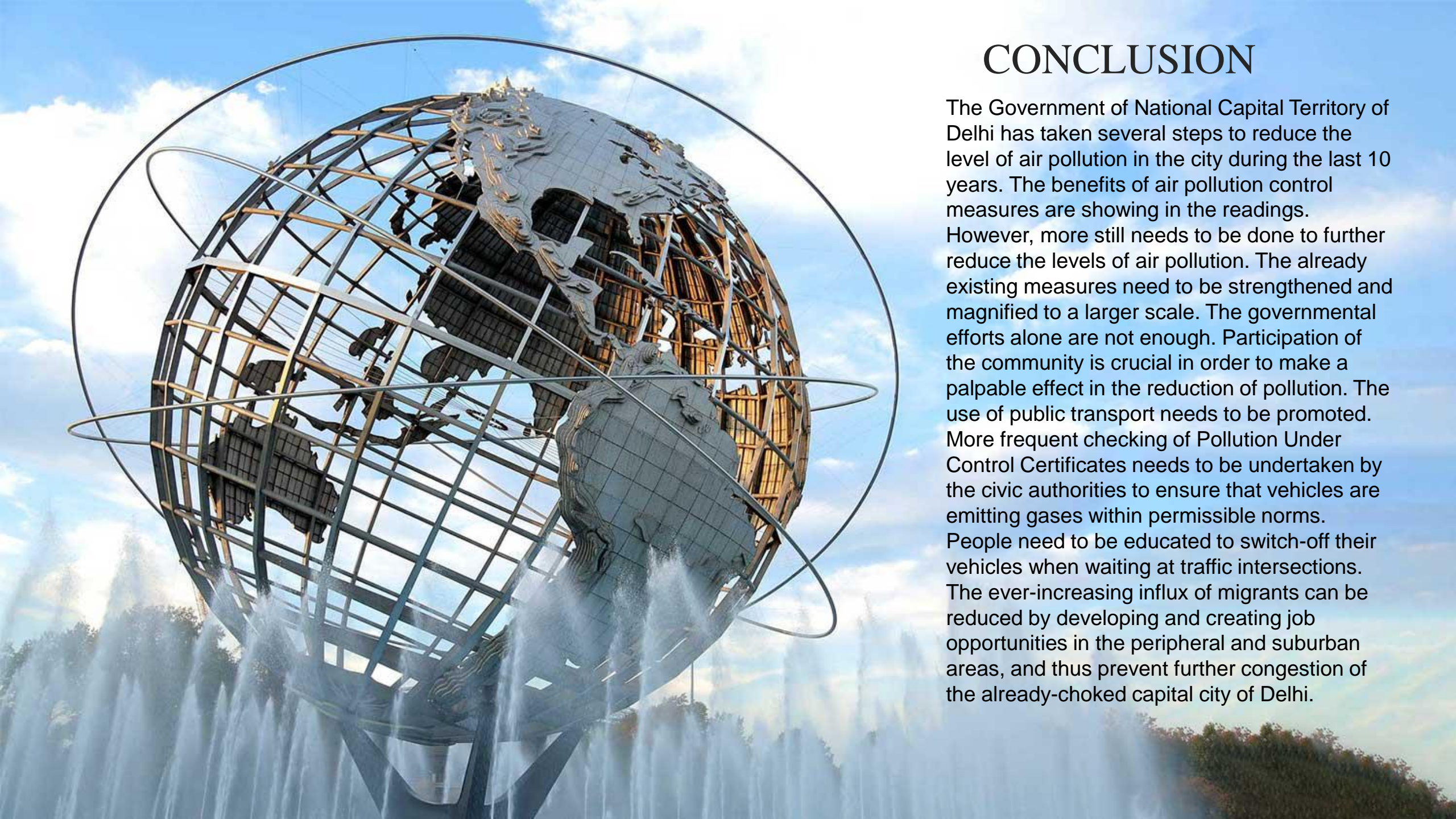
PHOTO OF

Delhi: Mid day 12 April 2021
(PM_{2.5} = 68 ug/m³)



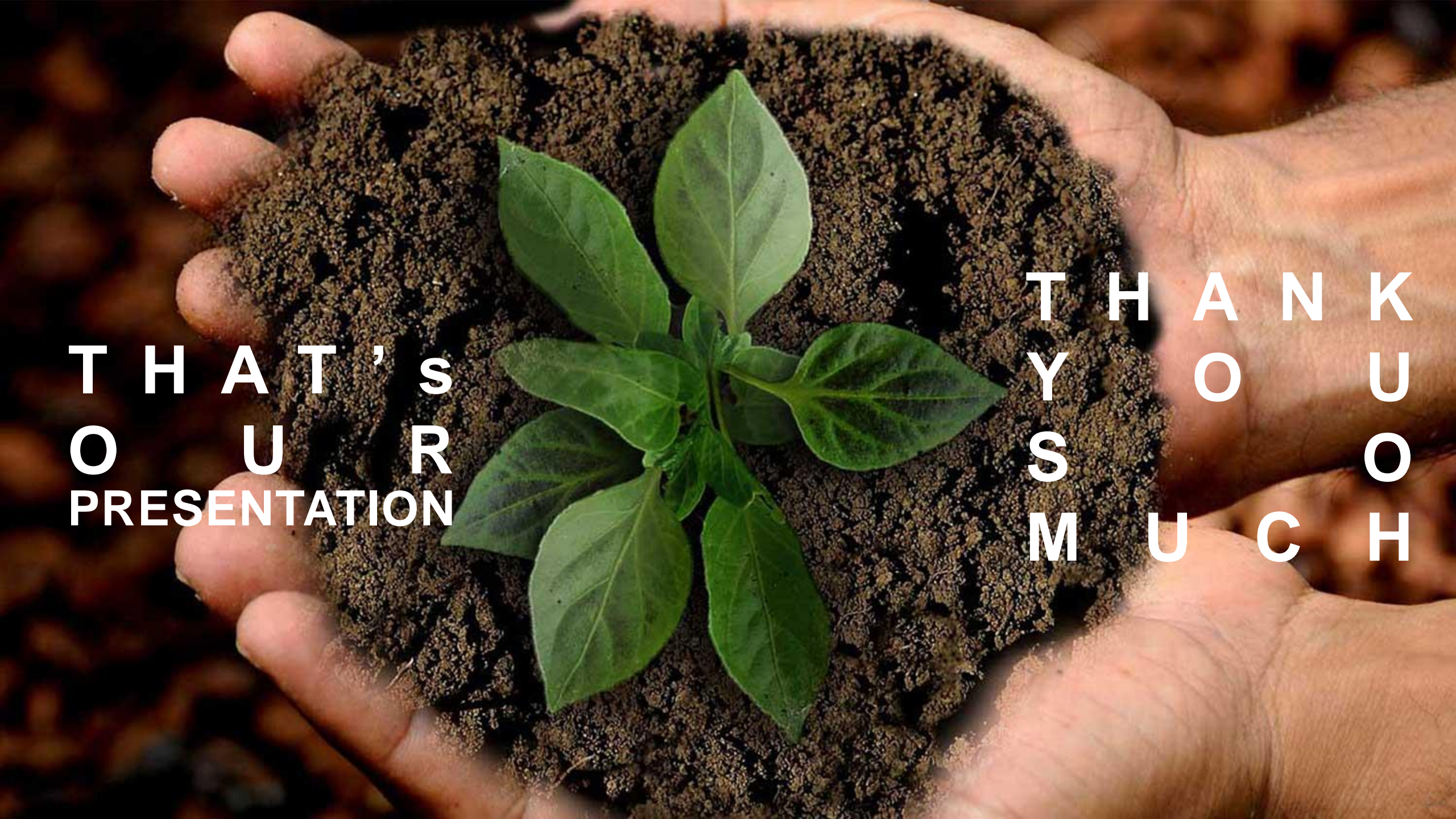
Delhi: Mid day 16 Sep 2016
(PM_{2.5} = 97 µg/m³)





CONCLUSION

The Government of National Capital Territory of Delhi has taken several steps to reduce the level of air pollution in the city during the last 10 years. The benefits of air pollution control measures are showing in the readings. However, more still needs to be done to further reduce the levels of air pollution. The already existing measures need to be strengthened and magnified to a larger scale. The governmental efforts alone are not enough. Participation of the community is crucial in order to make a palpable effect in the reduction of pollution. The use of public transport needs to be promoted. More frequent checking of Pollution Under Control Certificates needs to be undertaken by the civic authorities to ensure that vehicles are emitting gases within permissible norms. People need to be educated to switch-off their vehicles when waiting at traffic intersections. The ever-increasing influx of migrants can be reduced by developing and creating job opportunities in the peripheral and suburban areas, and thus prevent further congestion of the already-choked capital city of Delhi.



THAT'S
OUR
PRESENTATION

THANK
YOU
SO
MUCH