GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

LOK SABHA
UNSTARRED QUESTION No. 4384
TO BE ANSWERED ON 20.03.2020

Air Pollution

4384. SHRI ADHIKARI DEEPAK (DEV):
SHRI A. RAJA:
SHRI GURJEET SINGH AUJLA:
SHRI MITESH RAMESHBHAI PATEL (BAKABHAI):

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

(a) whether according to the recent World Air Quality Report, Delhi remains world's most polluted capital and if so, the details thereof;
(b) whether according to the report out of the world's top 30 most polluted cities during the year 2019, 21 cities are located in India;
(c) if so, the details thereof indicating the names of the most polluted cities in the country along with the ranking/position in the list of the polluted cities of the world;
(d) the existing level of pollution including the Particulate Matter (PM) present in air in various cities of the country at present along with the limit set for controlling PM in air; and
(e) the steps taken by the Government to check the increasing level of pollution and PM level in the cities?

ANSWER

MINISTER OF STATE IN THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE
(SHRI BABUL SUPRIYO)

(a) to (c) : Delhi and cities in Indo Gangetic Plains face the problem of poor air quality particularly during winter months due to local and regional emissions coupled with its unique geography and adverse meteorological conditions. Central Government has taken a number of measures for abating air pollution as a result of which there is an overall improvement in air quality of Delhi in 2019. As per Continuous Ambient Air Quality Monitoring Stations (CAAQMS) data, the number of 'Good', 'Satisfactory', and 'Moderate' days has increased to 182 in 2019 as compared to 159 in 2018, 152 in 2017 and 108 in 2016. Delhi has witnessed a reduction of PM 2.5 and PM10 levels by 19.3% and 25.1% respectively over a period from 2016 to 2019.

Further, the government is aware that several private institutions, Non-Governmental Organization and universities are ranking cities for their pollution levels adopting different methodologies, data set and weightages to various parameters. There is however, no established mechanism for ranking the cities in terms of pollution as it requires authentic data and a proper peer review. The data used for ranking is extracted mainly from satellite imageries and other secondary data which is not validated by proper ground truthing.

(d) Under National Air Quality Monitoring Programme (NAMP), three pollutants viz. PM_{10} (Particulate Matter having an aerodynamic diameter less than or equal to 10 µm), Sulphur dioxide (SO_2) and Nitrogen dioxide (NO_2) are monitored regularly at 793 locations covering 344 cities/towns in 28 States and 6 Union Territories across the country. Under the NAMP, $PM_{2.5}$ (Particulate Matter having an aerodynamic diameter less than or equal to 2.5µm) is being monitored at 274 locations covering 132 cities. The ambient air quality status of 2018 including particulate matter is given at **Annexure – I**.

As per the revised National Ambient Air Quality Standards (NAAQS) the national standard for $PM_{10}$is 60 µg/m^3(annual average) and 100 µg/m^3 (24-hourly average) in both residential/industrial/rural and ecologically sensitive area. The National Standard for $PM_{2.5}$ is 40 µg/m^3 (annual average) and 60 µg/m^3(24-hourly average) in both residential/industrial/rural and ecologically sensitive area.

(e) Central Government has taken a number of regulatory measures for prevention, control and abatement of air pollution. A **Comprehensive Air Plan (CAP)** for Delhi and NCR has been developed identifying the timelines and implementing agencies for actions delineated. The Central Government has notified a **Graded Response Action Plan (GRAP)** for Delhi and NCR for different levels of pollution. The nature, scope and rigor of measures to be taken are linked to levels of pollution viz. severe + or emergency, severe, very poor, moderate to poor and moderate, after due consideration by authorities concerned. The details of measures taken by the Government are given at **Annexure-II.**

Also, Ministry of Environment, Forest and Climate Change has launched **National Clean Air Programme (NCAP)** in January 2019 to tackle the problem of air pollution in a comprehensive manner with targets to achieve 20 to 30 % reduction in PM10 and PM2.5 concentrations by 2024 keeping 2017 as base year. The plan includes 102 non-attainment cities, across 23 States and Union Territories, on the basis of their ambient air quality data between 2011 and 2015 which includes Delhi, Ghaziabad and Noida of Delhi NCR.

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Annexure – I

Ambient air quality in cities of the country with respect to SO_2, NO_2, PM_{10} during 2018 under NAMP

Sl. No.	State & UTs	Sl. No.	City / town / village	Annual average concentration in µg/m^3		
				SO_2	NO_2	PM_{10}
1.	Andhra Pradesh	1.	Anantapur	4	19	71
		2.	Chitoor	5	24	62
		3.	Eluru	5	22	67
		4.	Guntur	5	22	49
		5.	Kadapa	5	17	61
		6.	Kakinada	9	20	77
		7.	Kurnool	4	18	66
		8.	Nellore	5	22	63
		9.	Ongole	5	21	66
		10.	Rajahmundry	9	20	94
		11.	Srikakulam	9	20	71
		12.	Tirupati	5	16	58
		13.	Vijaywada	5	21	77
		14.	Vishakhapatnam	10	20	77
		15.	Vizianagaram	10	21	65
2.	Arunachal Pradesh	16.	Itnagar	3	11	116
		17.	Naharlagun	3	5	88
3.	Assam	18.	Bongaigaon	5	14	55
		19.	Daranga	7	15	71
		20.	Dibrugarh	6	12	54
		21.	Golaghat	6	12	56
		22.	Guwahati	8	18	112
		23.	Margherita	6	12	54
		24.	Nagaon	7	17	96
		25.	Nalbari	7	17	97
		26.	North Lakhimpur	8	18	61
		27.	Silchar	6	11	49
		28.	Sivasagar	7	14	72
		29.	Tezpur	8	17	115
		30.	Tinsukia	6	13	56
4.	Bihar	31.	Begusarai	12	21	108
		32.	Darbhanga	16	24	118
		33.	Gaya	12	21	89
		34.	Muzaffarpur	14	24	139
		35.	Patna	5	51	207
		36.	Rajgir	12	22	88
		37.	Sasaram	12	21	88
5.	Chandigarh (UT)	38.	Chandigarh	2	17	102
6.	Chattisgarh	39.	Bilaspur	6	12	42
		40.	Durg-Bhillainagar	8	19	84
		41.	Korba	10	19	59
		42.	Raigarh			62
		43.	Raipur	14	20	65
7.	Dadra & Nagar Haveli (UT) Daman & Diu (UT)	44.	Baldevi (Dadra & Nagar Haveli)	18	22	70
		45.	Silvassa	30	33	125
		46.	Daman	27	31	115
		47.	Patlara (Daman)	18	22	74
8.	Delhi (UT)	48.	Delhi	15*	44*	243*
9.	Goa	49.	Amona	8	12	62
		50.	Assanora	8	13	56
		51.	Bicholim	7	13	70
		52.	Codli	8	12	61
		53.	Cuncolim	11	15	77
		54.	Curchorem	9	13	57
		55.	Honda	8	13	62
		56.	Kundaim	8	14	69
		57.	Mapusa	4	7	73
		58.	Margao	7	13	57
		59.	Mormugao	5	11	101

Sl. No.	State & UTs	Sl. No.	City / town / village	Annual average concentration in µg/m^3		
				SO_2	NO_2	PM_{10}
		60.	Panaji	6	12	68
		61.	Ponda	8	13	93
		62.	Sanguem	9	13	61
		63.	Tilamol	9	14	81
		64.	Tuem	8	13	54
		65.	Usgao	7	13	59
		66.	Vasco	5	11	83
10.	Gujarat	67.	Ahmedabad	16	29	236
		68.	Anklesvar	16	25	148
		69.	Jamnagar	17	21	137
		70.	Rajkot	19	23	203
		71.	Surat	22	29	176
		72.	Vadodara	20	25	188
		73.	Vapi	17	25	171
11.	Haryana	74.	Hissar	10	9	140
12.	Himachal Pradesh	75.	Baddi	2	31	164
		76.	Damtal	2	10	62
		77.	Dharamshala	2	7	39
		78.	Gulaba	2	5	40
		79.	Kala Amb	3	14	104
		80.	Manali	2	9	68
		81.	Marhi	2	5	24
		82.	Nalagarh	2	24	148
		83.	Paonta Sahib	3	14	88
		84.	Parwanoo	2	5	63
		85.	Shimla	4	26	60
		86.	Sunder Nagar	2	10	84
		87.	Una	2	5	67
		88.	Vashisht	2	5	44
13.	Jammu & Kashmir (UT)	89.	Jammu	4	19	165
		90.	Pulwama			104
		91.	Srinagar			153
14.	Jharkhand	92.	Barajamda	16	23	75
		93.	Dhanbad	14	37	264
		94.	Jamshedpur	37	46	128
		95.	Jharia	14	36	322
		96.	Ranchi	18	36	122
		97.	Saraikela	36	45	128
		98.	Sindri	13	34	136
15.	Karnataka	99.	Bagalkote	2	13	65
		100.	Bangalore	2	30	90
		101.	Belgaum	2	15	89
		102.	Bidar	2	14	82
		103.	Bijapur	2	14	76
		104.	Chitradurga	4	6	53
		105.	Devanagere	4	6	44
		106.	Gulburga	2	14	55
		107.	Hassan	4	19	33
		108.	Hubli-Dharwad	5	23	75
		109.	Kolar	2	30	81
		110.	Mandya	2	12	44
		111.	Mangalore	7	10	57
		112.	Mysore	3	15	53
		113.	Raichur	2	12	90
		114.	Shimaga	8	6	44
		115.	Timukuru	2	32	87
16.	Kerala	116.	Alappuzha	2	5	50
		117.	Kochi	3	16	57
		118.	Kollam	3	5	47
		119.	Kottayam	3	13	44
		120.	Kozhikode	2	10	54
		121.	Malapuram	2	26	31
		122.	Palakkad	2	9	44
		123.	Pathanamthitta	2	15	31
		124.	Thiruvananthapuram	9	24	49

Sl. No.	State & UTs	Sl. No.	City / town / village	Annual average concentration in µg/m^3		
				SO_2	NO_2	PM_{10}
		125.	Thissur	3	9	41
		126.	Wayanad	2	5	34
17.	Lakshwadeep (UT)	127.	Kavaratti	-	-	44
18.	Madhya Pradesh	128.	Amlai	15	20	91
		129.	Bhopal	7	14	135
		130.	Chhindwara	3	14	83
		131.	Dewas	16	20	68
		132.	Gwalior	13	21	134
		133.	Indore	10	19	88
		134.	Jabalpur	7	17	119
		135.	Katni	12	28	90
		136.	Nagda	15	17	62
		137.	Prithampur	11	21	90
		138.	Sagar	3	14	75
		139.	Satna	3	8	105
		140.	Singrauli	23	31	112
		141.	Ujjain	13	15	83
19.	Maharashtra	142.	Akola	12	12	73
		143.	Ambernath	25	65	157
		144.	Amravati	16	17	104
		145.	Aurangabad	13	35	70
		146.	Badlapur	24	67	144
		147.	Bhiwandi	31	42	69
		148.	Chandrapur	4	30	149
		149.	Dombivali	27	67	144
		150.	Jalgaon	13	34	74
		151.	Jalna	11	43	103
		152.	Kolhapur	20	35	90
		153.	Latur	5	22	95
		154.	Mumbai	2	21	166
		155.	Nagpur	10	28	103
		156.	Nashik	12	21	85
		157.	Navi Mumbai	19	47	71
		158.	Pimpri-Chinchwad	39	66	86
		159.	Pune	37	75	106
		160.	Sangli	10	46	84
		161.	Solapur	15	33	71
		162.	Thane	17	44	108
		163.	Ulhasnagar	22	58	122
20.	Manipur	164.	Imphal	10	15	70
21.	Meghalaya	165.	Byrnihat	26	12	166
		166.	Dawki	3	12	23
		167.	Khliehriat	3	9	43
		168.	Nongstoin	2	9	31
		169.	Shillong	3	12	38
		170.	Tura	2	13	35
		171.	Umiam / Umsning	3	12	102
22.	Mizoram	172.	Aizawl	2	8	50
		173.	Champhai	2	5	27
		174.	Kolasib	2	5	24
		175.	Lunglei	2	5	11
23.	Nagaland	176.	Dimapur	2	8	134
		177.	Kohima	2	5	104
24.	Odisha	178.	Angul	9	25	101
		179.	Balasore	4	11	86
		180.	Berhampur	2	19	64
		181.	Bhubneshwar	2	17	99
		182.	Bonaigarh	8	12	99
		183.	Cuttack	4	31	114
		184.	Jharsuguda	8	16	107
		185.	Kalinga Nagar	2	11	118
		186.	Konark	2	12	79
		187.	Paradeep	19	11	121
		188.	Puri	2	15	90
		189.	Rajgangpur	17	20	146

Sl. No.	State & UTs	Sl. No.	City / town / village	Annual average concentration in µg/m^3		
				SO_2	NO_2	PM_{10}
		190.	Rayagada	4	18	63
		191.	Rourkela	8	14	108
		192.	Sambalpur	5	21	85
		193.	Talcher	10	29	110
25.	Puducherry (UT)	194.	Karaikal	4	7	40
		195.	Puducherry	4	12	43
26.	Punjab	196.	Aligarh (Jagraon)	6	22	122
		197.	Amritsar	13	34	177
		198.	AspalKhurd (Tapa)	5	15	106
		199.	Bhatinda	5	13	108
		200.	Binjon (Garshankar)	6	16	122
		201.	Bishanpura (Payal)	6	19	135
		202.	Changal (Sangrur)	5	13	102
		203.	Chowkimann (Jagraon)	6	25	141
		204.	Dera Baba Nanak	7	12	81
		205.	DeraBassi	6	13	95
		206.	Fatehpur (Samana)	5	11	96
		207.	Gobindgarh	7	38	121
		208.	Guru Ki Dhab (Kotkapura)	5	12	107
		209.	JaitoSarja (Batala)	7	18	111
		210.	Jalandhar	11	20	153
		211.	Khanna	8	32	135
		212.	Kharaori (Sirhind)	5	11	88
		213.	Kotladoom (Ajnala)	7	17	134
		214.	LakhokeBehram (Ferozpur)	5	15	112
		215.	Ludhiana	9	32	162
		216.	MrarKalan (Muktsar)	5	14	111
		217.	Mukandpur (Nawashahar)	8	17	109
		218.	Mureedke (Batala)	7	16	108
		219.	Naudhrani (Malerkotla)	5	13	110
		220.	NayaNangal	6	12	91
		221.	Patiala	5	11	98
		222.	Peer Mohammad (Jalalabad)	5	14	112
		223.	Poohli (Bhatinda)	5	14	190
		224.	QilaBharian (Sangrur)	5	13	105
		225.	Rakhra (Patiala)	5	12	121
		226.	Rohila (Samrala)	6	18	133
		227.	Tirathpur (Amritsar I)	7	13	89
27.	Rajasthan	228.	Alwar	10	34	182
		229.	Bharatpur	7	25	201
		230.	Bhiwadi	21	81	174
		231.	Chittorgarh	6	23	149
		232.	Jaipur	8	32	165
		233.	Jodhpur	7	24	223
		234.	Kota	7	28	152
		235.	Udaipur	9	30	147
28.	Sikkim	236.	Chungthang	6	5	29
		237.	Gangtok	5	7	52
		238.	Mangan	5	5	28
		239.	Namchi	5	5	27
		240.	Pelling	7	6	34
		241.	Rangpo	10	8	68
		242.	Ravangla	5	5	27
		243.	Singtam	9	6	56
29.	Tamilnadu	244.	Chennai	9	16	78
		245.	Coimbatore	6	23	54
		246.	Cuddalore	12	17	52
		247.	Madurai	12	20	84
		248.	Mettur	7	23	52
		249.	Salem	8	26	57
		250.	Trichy	17	23	110
		251.	Tuticorin	14	11	102
30.	Telangana	252.	Adilabad	6	23	69
		253.	Hyderabad	5	30	105
		254.	Karimnagar	9	39	98

Sl. No.	State & UTs	Sl. No.	City / town / village	Annual average concentration in µg/m^3		
				SO_2	NO_2	PM_{10}
		255.	Khammam	9	39	83
		256.	Kothur	9	44	106
		257.	Nalgonda	6	24	60
		258.	Nizamabad	6	23	60
		259.	Patencheru	6	23	81
		260.	Ramagundam	9	41	104
		261.	Sangareddy	6	38	81
		262.	Warangal	9	38	85
31.	Tripura	263.	Agartala	11	17	76
32.	Uttar Pradesh	264.	Agra	4	22	209
		265.	Allahabad	4	45	231
		266.	Anpara	18	28	191
		267.	Bareily	14	22	233
		268.	Firozabad	8	31	226
		269.	Gajraula	20	33	224
		270.	Ghaziabad	21	43	245
		271.	Gorakpur	28	45	218
		272.	Jhansi	6	18	96
		273.	Kanpur	7	47	218
		274.	Khurja	21	20	214
		275.	Lucknow	7	30	217
		276.	Mathura	12	26	153
		277.	Meerut	7	58	177
		278.	Moradabad	20	34	227
		279.	Noida	20	52	264
		280.	Raebareli	11	17	141
		281.	Saharanpur	18	26	183
		282.	Unnao	9	27	132
		283.	Varanasi	9	34	189
33.	Uttarakhand	284.	Dehradun	25	28	217
		285.	Haldwani	11	23	126
		286.	Haridwar	19	23	125
		287.	Kashipur	14	23	105
		288.	Rishikesh	21	25	133
		289.	Rudrapur	13	22	119
34.	West Bengal	290.	Alipurduar	2	15	65
		291.	Amtala	3	31	94
		292.	Asansol	13	35	146
		293.	Baharampur	11	52	147
		294.	Balurghat	2	16	72
		295.	Bankura	2	17	77
		296.	Barasat	10	49	104
		297.	Bardhaman	2	19	87
		298.	Barrackpore	10	49	108
		299.	Baruipur	3	32	101
		300.	Bolpur	2	18	78
		301.	Chinsura	5	38	109
		302.	Coochbehar	2	15	64
		303.	Dankuni	5	32	100
		304.	Darjeeling	2	14	36
		305.	Durgapur	12	34	141
		306.	Ghatal	12	35	92
		307.	Haldia	14	38	99
		308.	Howrah	11	72	179
		309.	Jalpaiguri	2	16	64
		310.	Jhargram	11	34	80
		311.	Kalimpong	2	14	36
		312.	Kalyani	10	48	89
		313.	Kharagpur	16	40	136
		314.	Kolkata	6	44	148
		315.	Krishnanagar	10	49	160
		316.	Malda	2	17	69
		317.	Medinipur	11	34	82
		318.	Purulia	2	17	74
		319.	Raigunj	2	16	67

Sl. No.	State & UTs	Sl. No.	City / town / village	Annual average concentration in µg/m^3		
				SO_2	NO_2	PM_{10}
		320.	Rampurhat	2	18	84
		321.	Ranaghat	10	51	143
		322.	Raniganj	12	35	147
		323.	Rishra	5	37	114
		324.	Sankrail	5	32	94
		325.	Siliguri	2	17	72
		326.	Suri	2	17	81
		327.	Tamluk	14	38	106
		328.	Tribeni	5	31	97
		329.	Uluberia	5	32	95

*NB. * - CAAQMS data. Village names with tehsil in parentheses are rural stations. NAAQS (annual): SO_2=50 µg/m^3, NO_2=40 µg/m^3, PM_{10}=60 µg/m^3 (Residential / industrial / rural / other areas) and SO_2=20 µg/m^3, NO_2=30 µg/m^3, PM_{10}=60 µg/m^3, $PM_{2.5}$ = 40 µg/m^3 (Ecologically sensitive area)*

Ambient air quality with respect to $PM_{2.5}$ in cities during 2018

SL. No.	State	Sl. No.	City	Average of PM2.5 Annual saverage (µg/m3)
1.	Andhra Pradesh	1.	Anantapur	34
		2.	Chitoor	27
		3.	Kadapa	28
		4.	Kakinada	66
		5.	Kurnool	26
		6.	Nellore	34
		7.	Rajahmundry/ Rajamahendravaram	69
		8.	Tirupati	12
		9.	Vijaywada	29
		10.	Vishakhapatnam	49
2.	Assam	11.	Guwahati	66
3.	Bihar	12.	Begusarai	58
		13.	Muzaffarpur	84
4.	Chandigarh (UT)	14.	Chandigarh	50
5.	Chattisgarh	15.	Bilaspur	20
		16.	Korba	19
		17.	Raigarh	29
6.	Dadra & Nagar Haveli (UT) Daman & Diu (UT)	18.	Baldevi (Dadra & Nagar Haveli)	27
		19.	Silvassa	42
		20.	Daman	40
		21.	Patlara (Daman)	26
7.	Delhi (UT)	22.	Delhi	115*
8.	Goa	23.	Amona	20
		24.	Assanora	18
		25.	Bicholim	23
		26.	Codli	20
		27.	Cuncolim	42
		28.	Curchorem	32
		29.	Honda	20
		30.	Kundaim	22
		31.	Margao	18
		32.	Mormugao	38
		33.	Panaji	8
		34.	Ponda	29
		35.	Sanguem	31
		36.	Tilamol	44

SL. No.	State	Sl. No.	City	Average of PM2.5 Annual saverage (µg/m3)
		37.	Tuem	17
		38.	Usgao	19
		39.	Vasco	60
9.	Gujarat	40.	Ahmedabad	73
		41.	Anklesvar	46
		42.	Jamnagar	44
		43.	Rajkot	64
		44.	Surat	57
		45.	Vadodara	60
		46.	Vapi	53
10.	Himachal Pradesh	47.	Damtal	26
		48.	Dharamshala	22
		49.	Kala Amb	53
		50.	Manali	26
		51.	Paonta Sahib	51
		52.	Parwanoo	13
		53.	Shimla	33
		54.	Sunder Nagar	47
11.	Jammu & Kashmir (UT)	55.	Jammu	44
12.	Karnataka	56.	Bagalkote	35
		57.	Bangalore	47
		58.	Belgaum	50
		59.	Bidar	41
		60.	Bijapur	31
		61.	Devanagere	18
		62.	Gulburga	41
		63.	Hassan	27
		64.	Hubli-Dharwad	26
		65.	Kolar	38
		66.	Mysore	29
		67.	Raichur	33
		68.	Shimaga	17
13.	Kerala	69.	Kozhikode	6
14.	Madhya Pradesh	70.	Amlai	29
		71.	Bhopal	59
		72.	Chhindwara	48
		73.	Dewas	49
		74.	Gwalior	62
		75.	Indore	41
		76.	Jabalpur	43
		77.	Katni	37
		78.	Nagda	32
		79.	Prithampur	34
		80.	Sagar	30
		81.	Satna	48
		82.	Singrauli	52
		83.	Ujjain	34
15.	Maharashtra	84.	Mumbai	46
		85.	Nagpur	44
16.	Meghalaya	86.	Shillong	12
17.	Odisha	87.	Angul	49
		88.	Balasore	47
		89.	Berhampur	33
		90.	Bhubneshwar	32
		91.	Bonaigarh	36
		92.	Cuttack	50
		93.	Jharsuguda	57

SL. No.	State	Sl. No.	City	Average of PM2.5 Annual saverage (µg/m3)
		94.	Kalinga Nagar	58
		95.	Paradeep	48
		96.	Rajgangpur	49
		97.	Rayagada	39
		98.	Rourkela	46
		99.	Sambalpur	53
		100.	Talcher	50
18.	Tamilnadu	101.	Chennai	34
		102.	Coimbatore	32
		103.	Cuddalore	32
		104.	Madurai	34
		105.	Mettur	27
		106.	Salem	21
		107.	Trichy	53
		108.	Tuticorin	25
19.	Telangana	109.	Adilabad	33
		110.	Hyderabad	55
		111.	Karimnagar	49
		112.	Khammam	36
		113.	Nalgonda	49
		114.	Nizamabad	27
		115.	Patencheru	37
		116.	Ramagundam	49
		117.	Sangareddy	39
		118.	Warangal	41
20.	Tripura	119.	Agartala	42
21.	Uttar Pradesh	120.	Agra	106
		121.	Ghaziabad	103
		122.	Lucknow	108
		123.	Noida	182
22.	West Bengal	124.	Asansol	58
		125.	Barrackpore	44
		126.	Darjeeling	20
		127.	Durgapur	71
		128.	Haldia	33
		129.	Howrah	97
		130.	Kalyani	40
		131.	Kolkata	86
		132.	Siliguri	35

*NB. * - CAAQMS data. Village names with tehsil in parentheses are rural stations.*

Annexure-II

Initiatives taken by the Government for the abatement and control of air pollution are as follows.

Vehicular Emissions

- BS-IV standards adopted from 1st April, 2017. Leapfrogging from BS-IV to BS-VI fuel standards since 1st April, 2018 in NCT of Delhi, in NCR since October 2019 and by 1st April, 2020 in the rest of the country for both fuel as well as vehicles. About Rs 60000 crore was spent on switching over to BS VI fuels.
- 80% reduction in particulate matter emissions in BS IV heavy duty diesel vehicles with respect to BS III and further 50 % reduction in PM due to BS VI standards with respect to BS IV.
- Operationalization of Eastern Peripheral Expressway & Western Peripheral Expressway in 2018 at a cost of about Rs 17000 crore to divert non-destined traffic from Delhi. About 60000 vehicles are diverted on these roads daily.
- Introduction of cleaner / alternate fuels like gaseous fuel (CNG, LPG etc.), ethanol blending in petrol.
- In Delhi, about 500 new CNG stations have been opened during the last 5 years.
- Use of RFID tags have been made mandatory for commercial vehicles entering Delhi. This has resulted in decrease in traffic congestion at Toll collection/Environmental Compensation Charge collection centres.
- Network of metro has expanded in Delhi NCR with total length of 377 km and 274 stations at a cost of about Rs 70000 crore. It is used by over 30 lakh people every day and due to this about 4 lakh vehicles are avoided on roads, thereby reducing pollution considerably.
- To promote electric vehicles, Faster Adoption and Manufacturing of Electric Vehicles (FAME -2) scheme has been rolled out with an outlay of Rs 10000 crore for 3 years. DHI has sanctioned 300 buses for Delhi and 100 buses for DMRC under this scheme so far.
- Permit requirement for electric vehicles has been exempted.
- Promotion of public transport and improvements in roads and building of more bridges to ease congestion on roads.

Industrial Emissions

- Stringent emission norms for Coal based Thermal Power Plants(TPPs).
- Badarpur thermal power plant has been closed from 15th October, 2018.
- Pet coke and furnace oil have been banned as fuel in Delhi and NCR States. Import of pet coke to be done by industries using it as a feedstock/in process across the country.
- Out of about 4700 industrial units in Delhi – NCR, about 2600 units have shifted to PNG.
- Installation of on-line continuous (24x7) monitoring devices in all red category industries in Delhi and NCR. 512 industrial units in Delhi- NCR have installed it out of about 603 units.
- Revision of emission standards for industrial sectors from time to time. SOx and NOx standards for boilers have been introduced.
- About 2800 brick kilns have been shifted to zig-zag technology in Delhi and NCR.Only brick kilns with zigzag technology can operate in Delhi and NCR.

Crop Residue Management

- In order to prevent stubble burning, a new Central Sector Scheme on 'Promotion of Agricultural Mechanization for In-Situ Management of Crop Residue in the States of Punjab, Haryana, Uttar Pradesh and NCT of Delhi' for the period from 2018-19 to 2019-20 is being implemented by Ministry of Agriculture and Farmers' Welfare with the total outgo from the Central funds of Rs. 1178.47 crore.
- The State Governments during 2018-19 have supplied more than 1,00,000 machines to the individual farmers and Custom Hiring Centres on subsidy for in-situ management of crop residue.
- A reduction of about 18.8% and 31% in active fire incidents in Punjab, Haryana and Uttar Pradesh has been recorded in 2019 over the figures for 2018 and 2017, respectively.

Solid Waste

- Notifications of 6 waste management rules covering solid waste, plastic waste, e-waste, bio-medical waste, C&D waste and hazardous wastes issued in 2016.
- Ban on burning of biomass/garbage.
- 3 Waste-to-Energy (W-t-E) plants are currently operational in Delhi with a total capacity of 5250 Ton Per Day (TPD) generating 59 MW.
- A 200 TPD waste to compost plant is also operational in Delhi.
- Bioremediation and biomining of landfill sites have also been undertaken in Delhi.
- Number of mechanised road sweeping machines has been increased significantly and presently 58 machines are deployed for cleaning of roads in Delhi.

Construction and Demolition (C&D) Activities

- SoPs and notification regarding dust mitigation measures for construction and demolition activities have been issued.
- Three C&D waste processing plants with 2650 TPD capacity are operational in Delhi. About 3.4 lakh ton of end products have been used till 15th Feb 2020.

Monitoring

- Notification of National Ambient Air Quality Standards in 2009 and launch of National Air Quality Index in 2015.
- Ambient air quality is monitored at 793 locations covering 344 cities in 28 States & 7 Union Territories (UTs) across the country under National Air Quality Monitoring Programme (NAMP). Under NAMP, PM2.5 is monitored at 274 locations covering 132 cities.
- Implementation of Air Quality Early Warning System for Delhi in October, 2018 in association with Ministry of Earth Sciences (MoES). The system provides timely alerts to implementing agencies for facilitating proactive actions.

Technical Interventions

- Pilot projects were deployed in Delhi for evaluation of air pollution mitigation technologies:

✓ Ambient air purification through Wind Augmentation and Purification Units (WAYUs) for pollution abatement at traffic intersections and Pariyayantra filtration units on 30 buses was evaluated. Though minimal improvement in ambient air quality was

observed, however, WAYU may be explored for providing improved air quality at localised levels.

- ✓ Application of dust suppressant -The effectiveness of the dust suppressant lasted up to 6 hours after which it had to be reapplied. About 30% reduction in dust concentrations was observed up to 6 hours. Advisory has been issued to State Boards to use dust suppressant.
- ✓ The Project Appraisal and Approval Committee at CPCB constituted for utilization of Environment Protection Charge (EPC) Fund has in-principle approved the proposal for installation of one smog tower at Anand Vihar in Delhi.

- Research projects are being carried out by CPCB in collaboration with premier institutions like IIT, NEERI, etc. under Environment Protection Charge (EPC) funds.
- Lack of certification system of ambient air quality monitoring instruments in India was identified. A certification scheme has been established in collaboration with National Physical Laboratory (NPL).
- Regular engagements with technical bodies and experts have been undertaken for knowledge sharing.

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