

**REVISED ACTION PLAN FOR CONTROL OF AIR
POLLUTION IN NON-ATTAINMENT CITIES OF
MAHARASHTRA**

PUNE



Maharashtra pollution control board

**Kalpataru point, 3rd floor,
Sion-Matunga scheme rd. no.8,
Opp. Sion circle, Sion (east)
Mumbai-400022**

Revised Action Plan for Control of Air Pollution in Pune

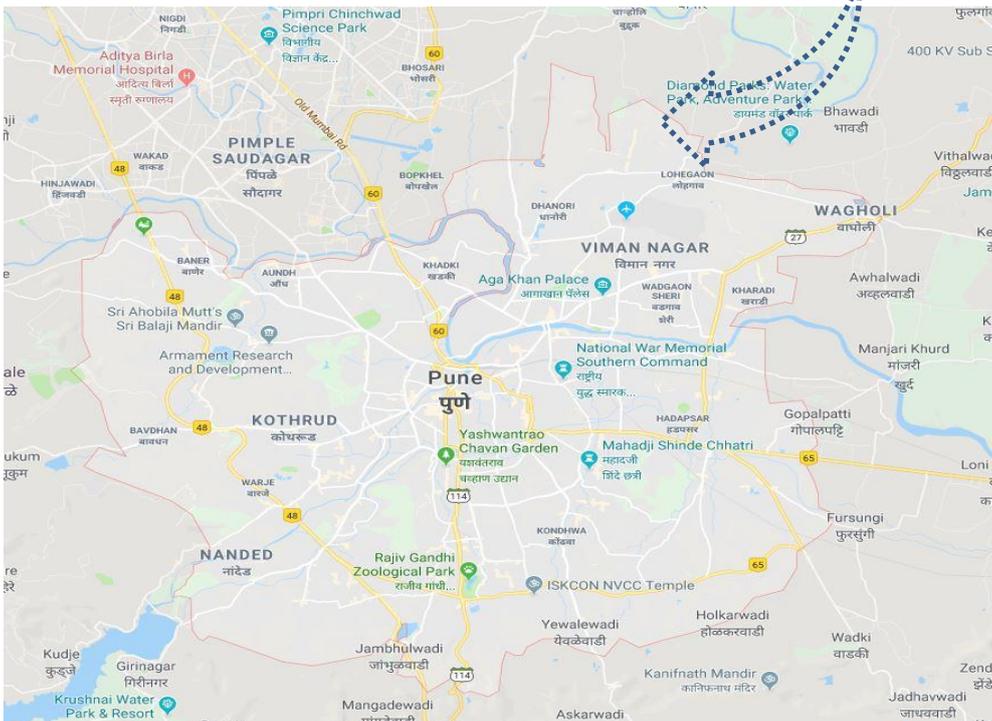
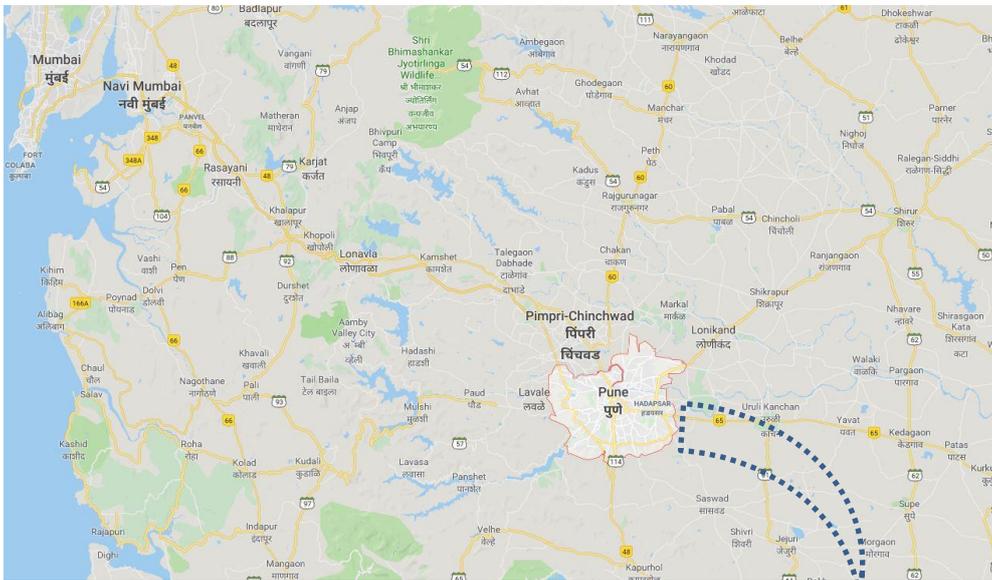
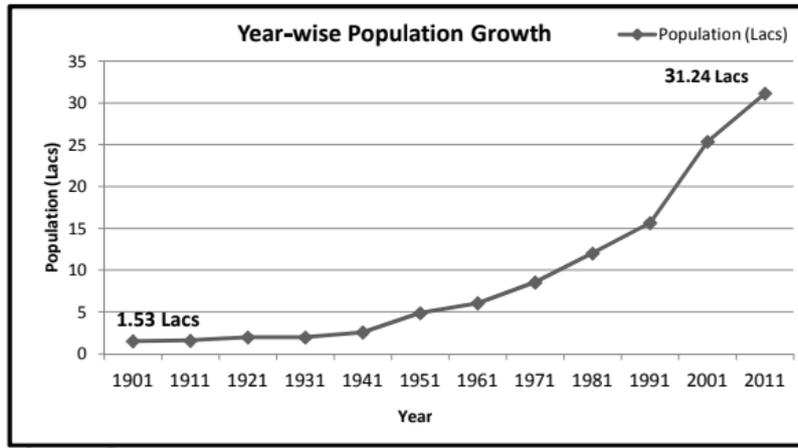
1. Preamble

The eighth largest metropolises in India, Pune is located in the state of Maharashtra. It is the second largest city in the state after Mumbai, and is an important city in terms of its economic and industrial growth. Once the hometown of Marathas and a center of power for the Maratha Empire, the presence of the numerous edifices in Pune links to its rich and glorious past. The city leads as the 'veritable heartland' of cultural Maharashtra. Pune also has made its mark as the educational epicenter winning itself the sobriquet, 'The Oxford of the East'. Not just that, it has a growing industrial hinterland, with information technology, engineering and automotive companies sprouting. The city is known for cultural activities like classical music, spirituality, theatre, sports, and literature. Pune is a pleasant travel getaway destination to spend a quiet holiday. Pune district is located between 17 degrees 54' and 10 degrees 24' North latitude and 73 degrees 19' and 75 degrees 10' East longitude. The district has geographical area of 15.642sq.km. Pune district is bound by Ahmadnagar district on north-east, Solapur district on the south-east, Satara district on south, Raigad district on the west and Thane district on the north-west. It is the second largest district in the state and covers 5.10% of the total geographical area of the state. The landscape of Pune district is distributed triangularly in western Maharashtra at the foothills of the Sahyadri Mountains and is divided into three parts: "Ghatmatha", "Maval" and "Desh". Pune district forms a part of the tropical monsoon land and therefore shows a significant seasonal variation in temperature as well as rainfall conditions. Climate of the western region of Pune is cool whereas the eastern part is hot and dry.

Pune Weather:

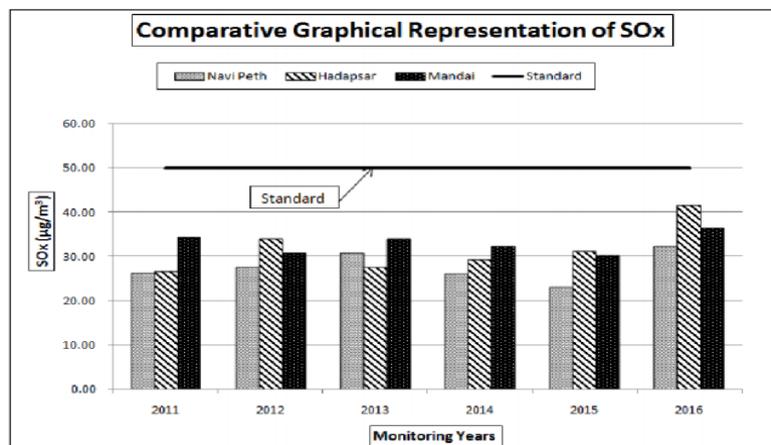
Owing to the geographical conditions within the district, the rainfall is unevenly distributed. The Western part of the district adjacent to the West coast is hilly area having forest cover, due to which the rainfall intensity is more in

this area as compared to the eastern parts. Most of this rain is brought by the southwest monsoon winds during the summer and about 87% of rainfalls during the monsoon months. The monsoon arrives in the month of June, with the maximum intensity of rainfall during the month of July and August. Talukas falling in the highest rainfall intensity zone are Velha, Mulshi and Maval. Talukas falling in the moderate rainfall intensity zone are Bhor, Ambegaon, Junnar, Khed, haveli, Pune city and Purandar. Talukas with lowest rainfall intensity, the dry and semi-arid zone are Shirur, Daund, Indapur and Baramati. April and May are the hottest months in the district. Maximum temperature during these months often rises above 38°C. The western region of Pune district i.e. talukas Junnar, Ambegaon, Khed, Maval, Mulshi and Velha are cool whereas the eastern part i.e. talukas Shirur, Daund, Baramati and Indapur are hot and dry. December and January are the coolest months, when average temperature falls as low as 11°C. Often known as Oxford of East, Pune is also one of the fastest growing cities in terms of infrastructure and technology. Situated on the right bank of the Mutha River, Pune city is 560 meters above sea level on the Deccan plateau with a hot semi-arid climate with average temperatures ranging between 19 to 33 °C. The city receives most of the 722 mm (28.43 in) of annual rainfall in the time period of June and September. With the addition of 23 villages in 2001; the total area of Pune is now around 243.84 sq.km. The presence of a number of industries and various array of economic activity has made Pune a prosperous town over years. Linking with this fast urban growth and increasing population from 4.8 Lakhs in 1951 to 3.1 million in 2011, there is an issue of grave concern of environmental degradation in which the growth of the city is linked with increasing urban activities thereby; a substantial need for improvements in urban infrastructure is expected. Based on the statistical methods of population projection, the projected population for Pune City for the year 2041 is 8.59 million. The Pune Municipal Corporation is responsible for administration and managing planned development in Pune city. The PMC, however, has been unable to meet forecasted demands for housing, commercial and industrial space, resulting in large scale unauthorized development, and areas with non-conforming land uses.

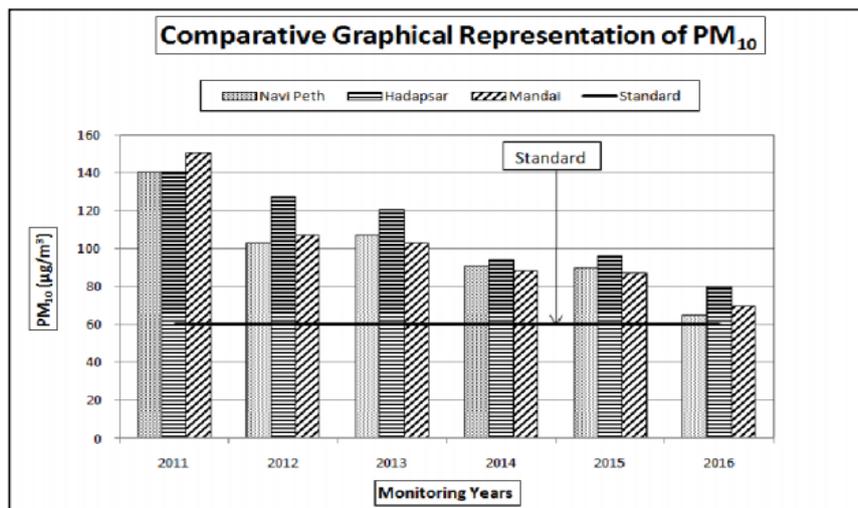
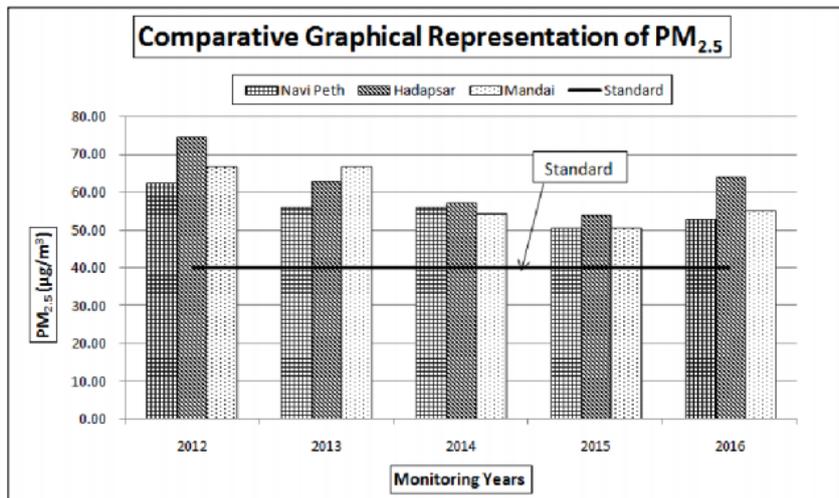
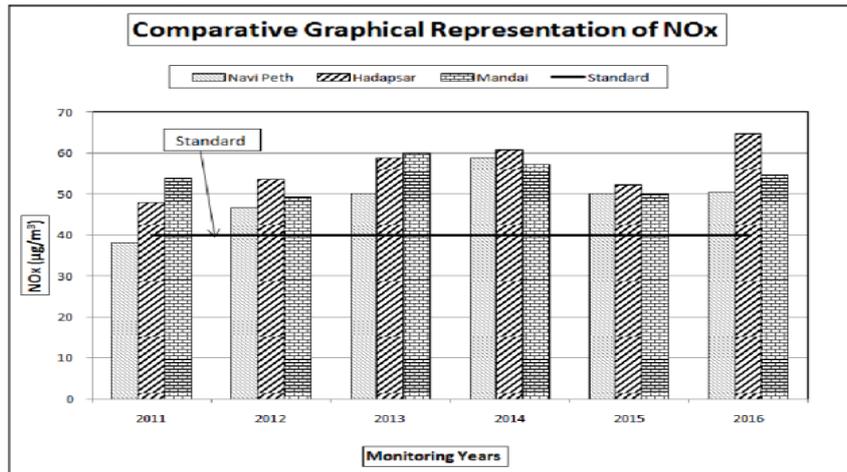


2. Ambient Air Quality Monitoring:

Sulphur Dioxide (SO₂), Oxides of Nitrogen as NO₂, Respirable Particulate Matter (PM₁₀) were identified for regular monitoring at selected locations of Pune. It also included other important meteorological parameters such as wind speed and wind direction, relative humidity and temperature. Every year, the monitoring is carried out by Central Pollution Control Board, State Pollution Control Boards, Pollution Control Committees and National Environmental Engineering Research Institute (NEERI). The monitoring of pollutants is carried out for 48 hours (4-hourly sampling for gaseous pollutants and 8-hourly sampling for particulate matter) with a frequency of twice a week, to have 104 observations in a year. In the year 2017-18, under NAMP, there were around 703 operating stations for generating air quality database covering 307 cities in 29 States and 6 union territories. Further, CPCB under the Air (Prevention and Control) Act has set the NAAQS (National Ambient Air Quality Standards), revised on 18 November 2009 (Appendix A), with objectives of (1) To indicate the levels of air quality necessary with an adequate margin of safety to protect public health, vegetation and property, (2) To assist in establishing priorities for abatement and control of pollutant level, (3) To provide a uniform yardstick for assessing air quality at national level and (4) To indicate the need and extent of the monitoring programme. The quality of air was monitored at 4 location spread across city to assess the air polluting parameters. It was observed that the concentration of SO_x was always below standard concentration of CPCB norms.

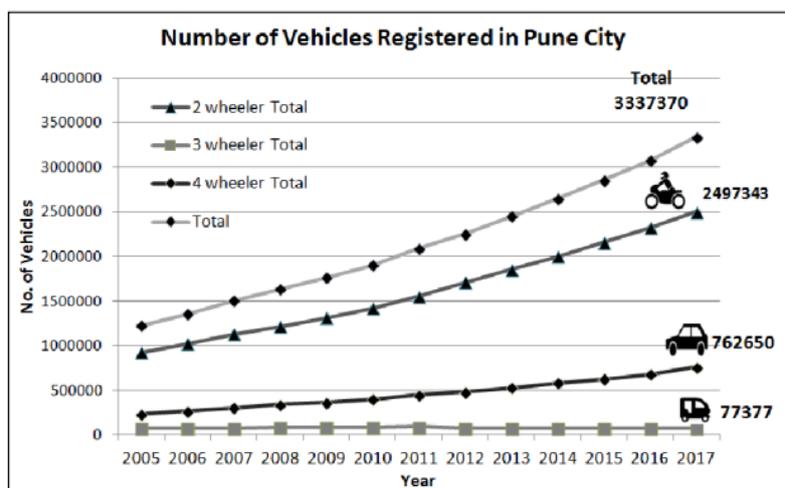


Whereas those of NOx, PM were found to be above standard values at all the location.



Line Source:

Out of the total 1,922 km road network spread across city limits, 1,872 km road are municipal roads and 50 km roads come under national highway, state highway and PWD roads. Pune is connected to Mumbai by NH-4 as well by a new expressway, railways and airways. NH-50 connects Pune to Nashik, NH-9 to Solapur and NH-4 to Kolhapur. Over the years, the growth of the city has been on a ring and radial pattern, with reliance on road based transport. The high concentration of radial roads towards the city core makes the city congested along all the major corridors. As per Comprehensive Mobility Plan for Pune city, 42% of the roads in Pune city are four lanes divided and 35% roads constituted with two lanes. In addition to four lanes and two lanes 10% roads are six lanes, 1% road intermediate lane and 12% roads are four lanes undivided. Over the years, the total number of vehicles on Pune roads has increased with almost 10% annual growth in vehicular traffic. In Pune city around 2 lakh vehicles are added to the traffic every year. Two-wheelers are the major mode of transport in the city with 73% of motorized vehicles contributed by Motor Cycle, Scooter and Mopeds. Likewise, the number of vehicle registration has also increased considerably over the years. Such large number of vehicles within a city limits contribute to emission levels on large extents.



Number of vehicles registered in Pune City

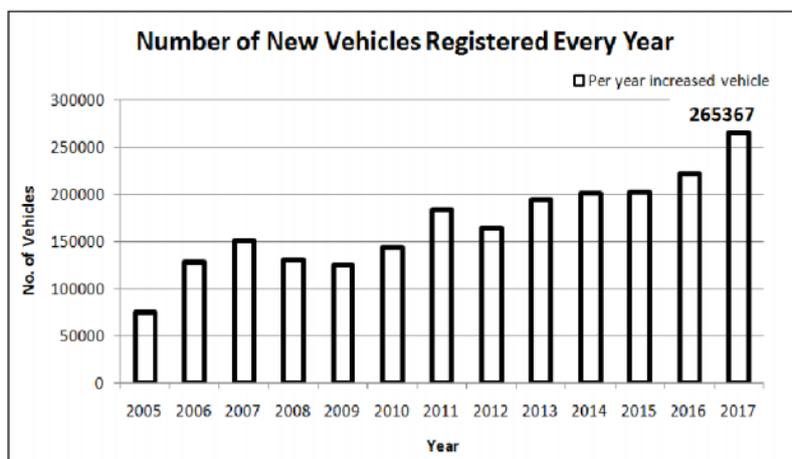


Fig : Number of new vehicles registered every year in Pune City

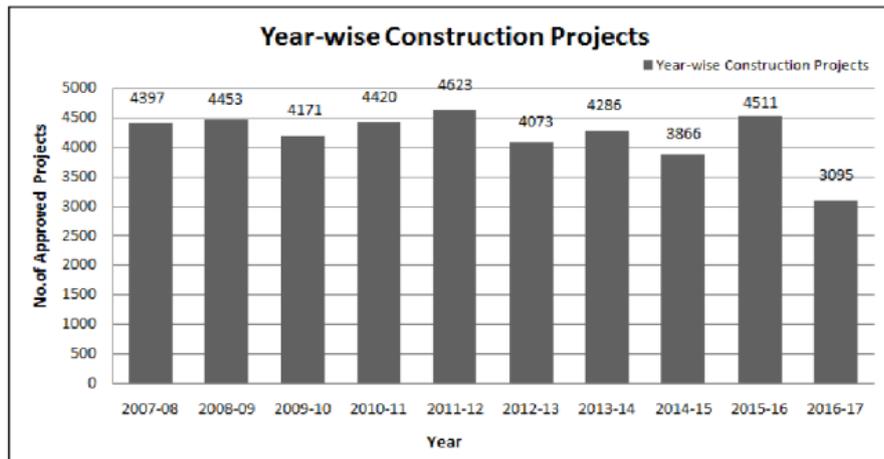
Name of the Office / Region	2012-13	2013-14	Growth %	2014-15	Growth %	2015-16	Growth %	2016-17	Growth %
Pune	202556	197028	-2.73	233596	18.56	249478	6.80	268775	7.73
Solapur	47727	54807	14.83	59168	7.96	58266	-1.52	64145	10.09
Pimpri Chinchwad	118070	120420	1.99	133743	11.06	142835	6.80	137410	-3.80
Baramati	23099	30008	29.91	28279	-5.76	23781	-15.91	23665	-0.49
Akluj	17595	15640	-11.11	19981	27.76	25006	25.15	25668	2.65
Pune Region Total	409047	417903	2.17	474767	13.61	499366	5.18	519663	4.06

Sr.	Category	Pune	Pune Region
1	Motor Cycles	109269	251446
2	Scooters	68794	119223
3	Moped	406	655
	Total --Two Wheelers	178469	371324
4	Cars	49543	82201
5	Jeeps	10	3534
6	Station Wagons	0	0
7 a)	Taxis meter fitted	0	21
7 b)	Luxury /Tourist Cabs/	12617	16634
8	Auto-rickshaws	4937	6365
9	Stage carriages	0	7
10	Contract carriages /Mini Bus	4921	5578
11	School Buses	113	334
12	Private Service Vehicles	10	73
13	Ambulances	28	143
14	Articulated/Multi.	3038	3151
15	Trucks & Lorries	7188	8519
16	Tanker	37	188
17	Delivery Van (4wheelers)	4074	9842
18	Delivery Van (3wheelers)	1869	3842
19	Tractors	1249	5814
20	Trailors	190	1238
21	Others	482	855
	Total ...	268775	519663

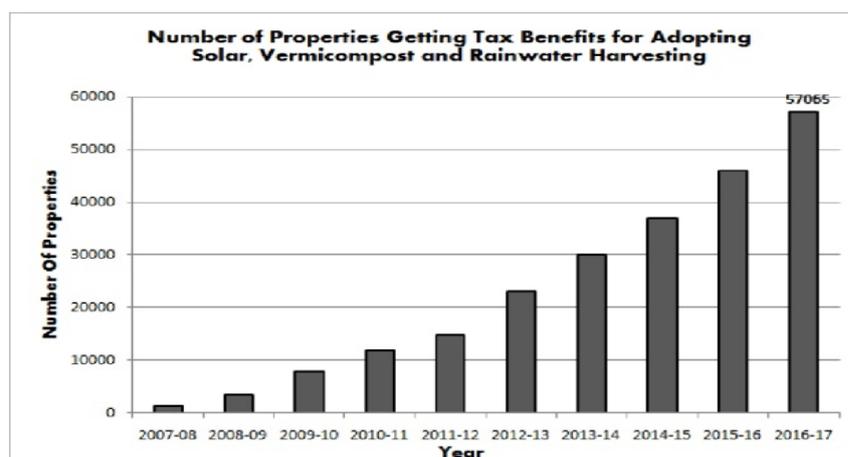
Fig: Total Vehicles in Pune city and Pune Region.

Area sources

- The numbers of construction projects within the city are increasing year on year due to rapid urbanization as shown in fig.



Building construction / demolition codes need to be formulated with specific reference to PM control. Operational measures to be made compulsory and building permissions should be revoked if the norms are not met by the organization. PMC gives tax benefit upto 10% on property tax to those who adopt to Green methods. Till 2017, total 57000 properties have taken benefit of this scheme. In addition to this, environmental conditions are made compulsory to the new building construction projects. Due to such initiatives, considerable increase in public participations can be observed.



Point Source:

Industry Statistics for the year 2008 – 2009, the category wise number of industry in Pune region are as follows:

Region	LSI	MSI	SSI	LSI	MSI	SSI	LSI	MSI	SSI	Total
Pune	294	160	1275	50	118	1791	51	106	5282	9127

In the industrial area, the re-suspended dust is the major contributor of PM10 followed by construction/ Brick Kilns. The Pune city is surrounded by 7 Nos. of Talukas including Pimpri-Chinchwad Municipal Corporation (PCMC) area. There are no thermal power plants within Pune city limits and therefore the pollution load contribution from this source is nil. However, the industries in Pune and Pimpri-Chinchwad have set up D.G. sets to meet the power requirements of the respective industries particularly during the load shedding and weekly power holidays. There are total 56 no. of air polluting industries in Pune corporation area, contributing majorly to NO_x concentration. However, within city area polluting industries are limited and dominated by forging and automotive engines industry. The contribution of point sources is limited due to confined industrial areas.

Ambient Air Quality Monitoring:

As per 'Air Quality Status of Maharashtra 2017-18' prepared by TERI in juncture with Maharashtra Pollution control Board, following are air quality data for various Pune location

Pune - Bhosari

Table No. 1: Data for Monthly average reading recorded at Bhosari

Station Name	year	Month	Average of SO ₂	Average of NOx	Average of RSPM
			50	40	60
Bhosari	2017	Apr	19	53	112
		May	26	41	82
		Jun	20	30	50
		Jul	14	42	33
		Aug	17	38	26
		Sep	18	43	39
		Oct	17	53	101
		Nov	25	75	139
	Dec	29	58	195	
	2018	Jan	38	82	191
		Feb	27	89	187
Mar		30	89	169	
Nal Stop	2017	Apr	21	51	117
		May	25	57	91
		Jun	20	51	55
		Jul	13	46	60
		Aug	18	59	45
		Sep	21	46	65
		Oct	15	59	107
		Nov	21	72	122
	Dec	21	74	157	
	2018	Jan	28	79	148
		Feb	22	147	175
		Mar	35	94	146

Swargate, Pune	2017	Apr	22	64	90
		May	24	61	83
		Jun	21	59	67
		Jul	16	43	34
		Aug	19	36	24
		Sep	21	47	41
		Oct	21	61	94
		Nov	21	126	111
		Dec	22	77	109
		2018	Jan	26	93
Feb	23		126	125	
Mar	32		91	98	
Pimpri-Chinchwad - BOB Building	2017	Apr	25	38	82
		May	26	55	74
		Jun	19	30	57
		Jul	17	32	35
		Aug	17	37	29
		Sep	20	41	29
		Oct	16	54	104
		Nov	21	77	116
		Dec	31	79	121
		2018	Jan	29	72
Feb	26		99	141	
Mar	44		80	114	
Karve Road - CAAQMS	2017	Apr	20	50	77
		May	37	31	57
		Jun	10	37	23
		Jul	12	40	33
		Aug	33	49	39
		Sep	29	48	45
		Oct	27	49	76
		Nov	27	51	107
		Dec	27	48	109
		2018	Jan	23	43
Feb	21		44	110	
Mar	25		62	121	

Table No. 2: Data for Annual average trend of SO₂, NO_x, and RSPM at various location in Pune

Station Name	year	Average of SO ₂	Average of NO _x	Average of RSPM
		50	40	60
Bhosari	05-06	27	42	144
	06-07	24	42	126
	07-08	20	42	111
	08-09	24	37	109
	09-10	42	36	88
	10-11	30	38	84
	11-12	37	49	130
	12-13	25	39	101
	13-14	23	35	93
	14-15	26	47	101
	15-16	31	50	97
	16-17	28	67	115
	17-18	24	58	112
Nal Stop	05-06	27	43	152
	06-07	23	42	129
	07-08	19	42	108
	08-09	21	41	91
	09-10	23	39	82
	10-11	21	43	88
	11-12	30	62	100
	12-13	19	45	82
	13-14	20	39	82
	14-15	22	48	92
	15-16	21	64	88
	16-17	23	78	107
	17-18	21	63	101

Station Name	year	Average of SO ₂	Average of NO _x	Average of RSPM
Swargate, Pune	05-06	27	43	152
	06-07	25	43	138
	07-08	20	46	101
	08-09	23	44	100
	09-10	24	39	81
	10-11	23	50	80
	11-12	28	63	95
	12-13	19	53	75
	13-14	21	42	75
	14-15	22	50	87
	15-16	21	66	106
	16-17	22	84	95
	17-18	22	73	86
	Pimpri-Chinchwad - BOB Building	05-06	21	35
06-07		24	42	127
07-08		19	41	105
08-09		23	39	96
09-10		31	43	89
10-11		26	49	86
11-12		33	57	117
12-13		20	49	84
13-14		22	39	82
14-15		22	44	94
15-16		27	52	101
16-17		27	72	87
17-18		24	57	87

Station Name	year	Average of SO ₂	Average of NO _x	Average of RSPM
Karve Road – CAAQMS	07-08	13	43	71
	08-09	25	39	121
	09-10	11	35	109
	10-11	12	39	128
	11-12	11	49	131
	12-13	22	66	124
	13-14	27	70	121
	14-15	15	36	123
	15-16	25	57	138
	16-17	18	77	79
	17-18	24	46	73

State:- Maharashtra City :- Pune
Compliance as per CPCB letter dated 16.04.2019

Key Components	Observations	Remarks	Compliance
Air Quality Monitoring Network	Expansion Plan Not Provided	Include monitoring Network	<p>There are 10nos. of monitoring stations located at various places in city such as 1.Pashan, 2.Shivajinagar, 3.Pune Airport, 4.Katraj, 5.Hadapsar, 6.Bhosari, 7.Nigdi, 8.Manjri, 9.Girinagar, 10. Alandi</p> <p>LED display boards are installed at 12 places in & around the Pune city. Website: safar.tropmet.res.in</p> <p>MobileApp: SAFAR-Air</p> <p>MPCB MPC Board has installed one CAAQMS at Karve Road and Ambient air Quality is being monitored at 4 location. Further, it is proposed to install 2 new CAAQMS, and 6 manual air quality monitoring stations under NAMP in Nashik city area. The AQI generated from Existing Monitoring Stations is displayed online on MPCB web-site</p>

Action Points	All Major sources not addressed	City Specific actions to be addressed both for PM and NOx	<p>The city specific action points for addressing PM & NOx are as follows;</p> <ol style="list-style-type: none"> 1. Use of CNG for as Green fuel for Public transport buses, 3wheeler Auto-rickshaws & private vehicles. 2. Increasing CNG distribution pumps in city 3. Giving subsidy to 3wheeler Auto rickshaws for conversion from Petrol to CNG 4. Phasing out public transport buses more than 12 years old 5. Use of Electric buses for Public transport 6. Promoting non-motorised transport by encouraging Public bicycle sharing system & better street design for pedestrian facilitation including plantation along footpaths as per design of Pune Smart City plan. 7. Construction of Metro-the high density corridors 8. Promoting use of Ready mix concrete instead of in-situ concrete mixing. 9. Wall to wall paving of streets as per Urban Street Design Guidelines 10. Giving tax rebate for properties using Solar, Vermi-compost 11. Construction of bio-methanisation plants in a de-centralised way to
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			<p>reduce the transport emission from the garbage trucks</p> <p>12. Providing service for door-to-door waste collection with the help of rag picker's association</p> <p>13. Pollution control systems using water scrubbers at crematoriums</p> <p>14. Providing electric based cremation free of cost & promoting gas based crematoriums instead of conventional wood.</p> <p>15. Pune is having a special 'Pune Model' implemented for the supply of electricity, wherein 100% electricity is ensured to whole of the city. This was possible with understanding with CII, wherein deficit in electricity demand was fulfilled by industry sector through CII. This has reduced the dependency on usage of non-industrial generators.</p>
Source Apportionment (SA) and Emission Inventory (EI)	EI & SA not Quantified	Carry out EI & SA estimate	<p>The report on Source Apportionment & Emission Inventory was prepared by ARAI, & submitted to CPCB. The report is available online on:</p> <p>http://mpcb.gov.in/ereports/pdf/pune_report_cpcb.pdf</p> <p>As per the report, the total PM10 emission is 32.27TPD; out of which Dust from Paved Roads is 15.4TPD (47.8%), Dust from Un-paved</p>

			<p>Road 4.30TPD (13.3%), Mobile Sources 5.9TPD (18.3%), Construction 1.4TPD (4.4%), Slums 1.8 TPD(5.7%), Agricultural 0.5TPD (1.8%), Hotels/Bakeries/Street Vendors 1TPD (3.14%), Industry 0.4TPD (1.25%), Residential 0.4 TPD (1.43%), Others 0.8 TPD (2.58%).</p> <p>The total NOx emission is 41.42TPD; out of which Mobile Sources is 39.19 (94.62%), Slums 0.39TPD (0.94%), Hotels/Bakeries/Street Vendors 0.24TPD (0.58%), Industry 0.89TPD (2.16%), Residential 0.39TPD (0.96%), Others 0.3TPD (0.74%)</p> <p>MPCB has outsourced the Source Apportionment (SA) and Emission Inventory (EI) study is in progress through IIT (Bombay) and NEERI</p>
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Public Awareness and Complaint Redressal Mechanism	Public Awareness and Complaint Redressal Mechanism not outlined	Detailed proposal to be work out	<p>Dissemination of data obtained from Ambient Air Quality Monitoring is being hosted on MPC Boards web site.</p> <p>LED display boards are installed at 12 prominent locations in & around the Pune city. The display boards shows real time, AQI status including PM10, PM2.5, NO2, CO, O3, UV-index, Temperature, Rainfall, Wind Speed</p> <p>1. Pashan, 2.Shivajinagar, 3.Pune Airport, 4. Alandi, 5.Katraj Zoo, 6.Camp, 7.Pimpri, 8.Chinchwad, 9.PMC, 10.Swargate, 11.Tilak Chowk, 12.Mandai</p>
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**REVISED TEMPLATE
FOR
PUNE CITY OF MAHARSHTRA**

PUNE CITY ACTION PLAN - TEMPLATE

Sr.No	Action	Expected Reduction & Impacts	Technical Feasibility	Requirement of Financial Resources	Implementation Period (Short/Mid/Long term)	Time target for implementation	Responsible Agency(ies)	Information
I. Monitoring Stations								
1	Air quality monitoring stations for Pune City	--	Yes	Ongoing monitoring activity	Mid Term	2020	PMC, IITM & MPCB	There are 10nos. of monitoring stations located at various places in city such as 1.Pashan, 2.Shivajinagar, 3.Pune Airport, 4.Katraj, 5.Hadapsar, 6.Bhosari, 7.Nigdi, 8.Manjri, 9.Girinagar, 10. Alandi LED display boards are installed at 12 places in & around the Pune city. Website: safar.tropmet.res.in MobileApp: SAFAR-Air MPCB MPC Board has installed one CAAQMS at Karve Road and Ambient air Quality is being monitored at 4 location. Further, it is proposed to install 2 new CAAQMS, and 6 manual air quality monitoring stations under NAMP in Nashik city area. The AQI generated from Existing Monitoring Stations is displayed online on MPCB web-site

II. Source Apportionment (SA) & Emission Inventory (EI)

1	Air Quality Monitoring and Emission Source Apportionment Study for Pune	--	Yes	Completed	Completed	Completed	CPCB, MPCB, ARAI Pune	<p>The report on Source Apportionment & Emission Inventory was prepared by ARAI, & submitted to CPCB. The report is available online on: http://mpcb.gov.in/ereports/pdf/pune_report_cpcb.pdf</p> <p>As per the report, the total PM10 emission is 32.27TPD; out of which Dust from Paved Roads is 15.4TPD (47.8%), Dust from Un-paved Road 4.30TPD (13.3%), Mobile Sources 5.9TPD (18.3%), Construction 1.4TPD (4.4%), Slums 1.8 TPD(5.7%), Agricultural 0.5TPD (1.8%), Hotels /Bakeries/Street Vendors 1TPD (3.14%), Industry 0.4TPD (1.25%), Residential 0.4 TPD (1.43%), Others 0.8 TPD (2.58%).</p> <p>The total NOx emission is 41.42TPD; out of which Mobile Sources is 39.19 (94.62%), Slums 0.39TPD (0.94%), Hotels/Bakeries/Street Vendors 0.24TPD (0.58%), Industry 0.89TPD (2.16%), Residential 0.39TPD (0.96%), Others 0.3TPD (0.74%)</p> <p>MPCB has outsourced the Source Apportionment (SA) and Emission Inventory (EI) study is in progress through IIT (Bombay) and NEERI</p>
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III. Vehicle emission/Transport/ Industries

1	Sulphur reduction in diesel	High	Yes	--	Long	BS IV fuel implemented	Petroleum Companies	City is being supplied with BS IV stage Diesel which has low Sulphur content. As per GoI regulations, when new norms will be suggested, the new type of fuels will be introduced in the city, in consultation with Oil companies.
2	Promotion of CNG fuel: Subsidy to three wheeler Auto-rickshaws running on CNG	High	Yes	Rs. 1Cr	Medium	2020	PMC	Since 2012, PMC has given subsidy to Auto-rickshaws fitted with CNG kit. Till 2019, total 16,534 Auto-rickshaws have taken benefit of this subsidy. Subsidy of Rs.12,000 per Auto-rickshaws has been given. The budget of Rs.1Cr has been allotted for the Year 2020.
3	Encouraging more CNG stations within city	High	Yes	Rs. 10 Cr.	Long	2020	Maharashtra Natural Gas Limited	The total CNG consumption has gone up to 80,000 MT per year in 2017. The CNG consumption was 20,000 MT in 2012. There are 31 CNG stations operational in city. Proposed are 23 new daughter booster stations and 17 new online stations.
4	Encouraging registration of CNG based vehicles	High	Yes	--	Short	Ongoing / Continuous	RTO	As on March 2018, the CNG based registered vehicles are: 30670 three wheelers, 36,888 four wheelers and 1226 Public Transport buses. Also CNG two wheelers are on trial basis.

5	Purchasing of new CNG buses for public transport.	High	Yes	Rs. 273 Cr (Purchase of new CNG Buses, E-Buses, Diesel Buses, Renting of Buses, Maintenance, etc.)	Medium	2020	PMPML a joint venture of PMC & PCMC	Out of 1974 public transport fleet, there are 1140 CNG buses. 200 midi buses are in operation, work order for 400 new buses has already been given.
6	Phasing out old bus fleet of more than 12 years	Medium	Yes	Rs. 123 Cr.	Medium	2020	PMPML	Out of 1974 bus fleet, there are 123 buses more than 12 years old. These buses are to be phased out from service.
7	Promoting Electric buses	High	Yes	Rs. 750 Cr.	Medium	2020	PMPML	25 Electric buses made operational since Feb2019. Considering the successful running of Electric buses, work order is placed for 125 new Electric Buses. Planning for buying 350 more E-buses to reach the target of 500 E-buses for Pune City.

8	Promoting Bicycles in Pune	High	Yes	Rs. 5 Cr	Medium	2022	PMC	<p>Pune Cycle Plan was prepared by PMC in 2017 through a project supported by the Ministry of Urban Development, Govt. of India. It consists of : - Identification of a city-wide cycle track network and cycle-safe streets. - A detailed project report for a city-wide Public Bicycle Scheme. - Bicycle Parking Facilities and integration with Public Transit. - Design Guidelines for planning and implementing cycle-friendly infrastructure. - Recommendations for Institutional Mechanisms, Capacity-building and Financial Planning for implementing the plan. As on Dec.2018, there are 8000 bicycles deployed in Pune City & registered users are 400000.Strategy for Cycling Promotion and Awareness and Education Campaigns.</p> <p>https://punecycleplan.wordpress.com</p>
9	Synchronize Traffic movements /Introduce Intelligent Traffic systems for Lane Driving	High	Yes	Rs. 10 Cr.	Medium	2020	Smart City, PMPML, Traffic Police	<p>Camera Surveillance is done by Traffic Police. ITMS, Passenger Information system, GPS tracking of buses is done by PMPML. Smart City is providing Command Control Centre.</p>

10	Metro Rail transport	High	Yes	Rs. 11420 Cr	Long	2021	Maharashtra Metro Rail Corporation Limited (MAHA-METRO)	A total 31.25kms of Metro in 1st Phase; Construction work already in progress Corridor 1: PCMC to Swargate: 16.6km & with 14 stations Corridor 2: Vanaz to Ramwadi: 14.7km & with 16 stations; launch expected by Dec19. www.punemetrorail.org
11	Industries located within the city jurisdiction	Low	Yes	...	Medium	ongoing	MPCB	The industries located within PMC area are mostly food processing units, assembling plants and majorly software IT parks. These are not contributing to air pollution since electrical energy is used by these industries. MPCB has not permitted coal burning for industrial use within the city.

IV. Road Design

1	Wall to wall paving & Road design improvement	High	Yes	Rs. 15 Cr.	Ongoing	Ongoing	PMC Road Department	The new roads are constructed as per the Urban Street design guidelines in which wall to wall paving is provided which includes, cycle tracks, footpaths, service ducts, storm water drain etc. These design guidelines which takes into consideration the latest technologies used in road development as well as the specifications given under Indian Road Congress guidelines and National Urban Transport Policy.
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2	Prepare action plan for widening of road and improvement of Infrastructure for de-congestion of Roads.	High	Yes	Rs. 50 Cr.	Ongoing	Ongoing	PMC Road Department	Total length of roads in city is 2065 km. PMC has been widening roads as per the prescribed road widths in the Development Plan. Flyovers are constructed as per the recommendations in Comprehensive Mobility Plan of Pune city.
3	Maintain Pothole Free Roads for Free Flow Traffic	Medium	Yes	Rs. 5 Cr.	Ongoing	Ongoing	PMC Road Department	4 special built Road Maintenance vans in operation and connected by mobile app. After success of the 4 RMVs, more 8 RMVs are now in stage of being introduced bringing the total number of RMVs to 12
4	Black topping of metaled Roads including pavement of Road shoulders	High	Yes	Rs. 100 Cr.	Ongoing	Ongoing	PMC Road Department	PMC has been providing UTWT- Ultra Thin White Topping treatment for internal roads in the city. Urban Street Design Guidelines for Pune. Aim to design guidelines for streets in Pune which prioritize streets for people and not for vehicles, thereby reinstating the position of streets of Pune as dominant and most vibrant urban public realm. (Ref : http://itdp.in/wp-content/uploads/2016/07/Urban-street-design-guidelines.pdf)

V. Creation of Green Spaces

1	Prepare plan for creation of green buffers along the Traffic corridors	Medium	Yes	On PPP basis	Short	2020	PMC Garden Department	There are 36 road medians and traffic islands which are maintained by Private agencies on PPP basis.
2	Greening of open areas, garden, community places, schools and housing societies	High	Yes	Rs. 10 Cr.	Ongoing	Ongoing	PMC Garden Department	Pune city has total 189 gardens developed and maintained by PMC. Along with Forest Department, PMC has Joint Forest Management Committee in which 550 Ha of land on hills is maintained green.
3	GIS based Tree Census	Medium	Yes	Rs. 2 Cr.	Short	2019	PMC Garden Department	Tree Census is carried out by PMC. As per the census total 41,94,623 trees are Geo-tagged along with attributes like Girth, Canopy Dia., Height, etc. Website: treecensus.punecorporation.org . A separate Tree Authority looks after permission for tree cuttings in the city. New Tree plantation is done with a ratio of 1: 3. Under the Joint forest management, the hills within the city are protected and the plantation drives are taken.

VI. Biomass/Trash Burning

1	Ban on open burning	Medium	Yes	Rs. 100 Cr.	Ongoing	Ongoing	PMC, Solid Waste Department	Open dumping of solid waste is stopped since 2012. Various methodologies include, door to door waste collection, biomethanisation plants, separate E waste collection, Bio Medical Waste collection, recycling of materials, Waste to energy plants, incineration, capping of old landfill site. The garden waste is collected in separate trucks & special shredder machines are installed in gardens to shred the biomass to use it as compost. The solid waste generated is completely processed using various methodologies.
2	Ensure carriage of municipal solid waste in closed / covered vehicles	Medium	Yes	Rs. 20 Cr.	Ongoing	Ongoing	PMC, Solid Waste Department	There are total 693 vehicles for SWM management. The different types of vehicles include Dumper placer, Bulk Refuse Carriers, Hotel Truck, compactor, Garden Cutting, Tractor, Small tempos which pick up garbage. these vehicles are tracked by GPS. Garbage transfer stations are constructed to transfer garbage from small trucks to big compactor trucks. This has reduced the number of vehicle required for transportation of waste,

3	Hotel waste management through decentralised Bio methanization plants	Medium	Yes	Rs. 50 Cr.	Ongoing	Ongoing	PMC, Solid Waste Department	Hotel waste is collected separately and processed at 21 biomethanisation plants located at different wards in city. 5 more plants of 5 MTD are proposed. Additionally 300 MTD of wet waste is processed using Biogas and the gas generated will be utilized by industries. Noble exchange project under progress.
4	Door to Door Collection of Waste	Medium	Yes	Rs. 5 Cr	Ongoing	Ongoing	PMC, Solid Waste Department	Out of total 10 lakh households, approx. 52% households are served by SWACH association (Rag pickers association), who segregate the dry and wet waste at the doorstep of houses. They also recycle the recyclable material from household waste. This reduces the burden on transport of waste to a large extent.
5	Incentivising use of Solar Water Heating, Vermicom post and Rain Water Harvesting for existing properties	Low	Yes	Provision from Corporation budget	Ongoing	Ongoing	PMC Tax Dept	PMC gives tax benefit upto 10% on property tax to those who adopt to Green methods. Till 2018, total 74360 properties have taken benefit of this scheme. In addition to this, environmental conditions are made compulsory to the new building construction projects.

6	Banning use of plastic and thermacol	Medium	Yes	Ongoing	Ongoing	PMC, Solid Waste Department	Uses of plastic bags less than 50 micron thickness are banned as per resolution of General Body Res. No. 803 dated 21-2-2014.
7	Public Awareness of Waste management	Medium	Yes	Rs. 2 cr.	Ongoing	Ongoing	PMC, Solid Waste Department	Regular IEC programs are conducted at ward levels, slum areas. Cleanliness drives are conducted under Swach Bharat Mission.

VII. Enforcement of Construction & Demolition Waste

1	Better construction practices with PM reduction of 50%	Medium	Yes	Practices by Project Proponents	Ongoing	Ongoing	PMC	The building construction projects are directed to take measures for dust suppression like sprinkling of water. Also use of Ready Mix Concrete is encouraged so that the mixing of aggregates, sand and cement at site is totally avoided.
2	Ensure carriage of construction material in closed /covered Vessels	Medium	Yes	Practices by Project Proponents	Ongoing	Ongoing	PMC building permission dept.	The transport of building materials is done in closed containers. However, new building construction technologies are encouraged in which Ready Mix concrete is widely used in Pune city. The RMC is transported in closed containers only.

VIII. Crematorium

1	Gas based Crematoriums	Medium	Yes	Rs. 5 Cr	Mid term	2020	PMC, Electrical Department	To discourage use of conventional wood, 12 Gas based crematoriums are in operation.5 Crematoriums proposed.
2	Encouraging use of Electric crematoriums	Low	Yes	Rs. 2 Cr.	Short Term	2020	PMC, Electrical Department	Electric cremation is made available free of cost to those who opt for it. Total 7 crematoriums are having this facility. Two more Electric cremators are proposed.
3	Installation of pollution control equipment at existing wood based crematoriums	Medium	Yes	Rs. 10 Cr.	Medium	2021	PMC, Electrical Department	Air pollution control systems using water scrubbers are installed at 7 crematoriums.5 More crematoriums proposed for installing Air pollution control systems

IX. Public Awareness

1	Public display on LED boards	--	--	Real time display boards active	Implemented	Implemented	PMC, IITM	LED display boards are installed at 12 prominent locations in & around the Pune city. The display boards shows real time, AQI status including PM10, PM2.5, NO2, CO, O3, UV-index, Temperature, Rainfall, Wind Speed 1.Pashan, 2.Shivajinagar, 3.Pune Airport, 4. Alandi, 5.Katraj Zoo, 6.Camp, 7.Pimpri, 8.Chinchwad, 9.PMC, 10.Swargate, 11.Tilak Chowk, 12.Mandai
2	Public Awareness of Waste management	Medium	Yes	Rs. 2 cr.	Ongoing	Ongoing	PMC, Solid Waste Department	Regular IEC programs are conducted at ward levels, slum areas. Cleanliness drives are conducted under Swachh Bharat Mission.
3	Website & Mobile App	--	--	Ongoing	Implemented	Implemented	PMC, IITM & MPCB	For public dissemination of information related to air pollution, online data is made available on Website: safar.tropmet.res.in. Also MobileApp: "SAFAR-Air" is made available on mobile platform. Also, the Data generated from MPCB installed air quality monitoring stations are being displayed on MPCB web-site for public awareness.

X. Action Points

1	City specific actions for PM & NOx	High	Yes	--	Long Term	2021	PMC & RTO	<p>The city specific action points for addressing PM & NOx are as follows;</p> <ol style="list-style-type: none">1. Use of CNG for as Green fuel for Public transport buses, 3wheeler Auto-rickshaws & private vehicles.2. Increasing CNG distribution pumps in city3. Giving subsidy to 3wheeler Auto rickshaws for conversion from Petrol to CNG4. Phasing out public transport buses more than 12 years old5. Use of Electric buses for Public transport6. Promoting non-motorised transport by encouraging Public bicycle sharing system & better street design for pedestrian facilitation including plantation along footpaths as per design of Pune Smart City plan.7. Construction of Metro-the high density corridors8. Promoting use of Ready mix concrete instead of in-situ concrete mixing.9. Wall to wall paving of streets as per Urban Street Design Guidelines10. Giving tax rebate for properties using Solar, Vermi-compost11. Construction of bio-methanisation plants in a de-centralised way to reduce the transport emission from the garbage trucks
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								<p>12. Providing service for door-to-door waste collection with the help of rag picker's association</p> <p>13. Pollution control systems using water scrubbers at crematoriums</p> <p>14. Providing electric based cremation free of cost & promoting gas based crematoriums instead of conventional wood.</p> <p>15. Pune is having a special 'Pune Model' implemented for the supply of electricity, wherein 100% electricity is ensured to whole of the city. This was possible with understanding with CII, wherein deficit in electricity demand was fulfilled by industry sector through CII. This has reduced the dependency on usage of non-industrial generators.</p>
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3. Monitoring Mechanism

The aforesaid action plan shall be implemented by Maharashtra Pollution Control Board with co-ordination with various concerned departments. Maharashtra Pollution Control Board shall regularly review the implementation of aforesaid action plan.

4. Implementation status

The Chief Secretary, Govt. of Maharashtra to convene the meetings with different concerned departments and direct for compliance of directions for implementation of air quality of Pune. The Principal Secretary, Environment, Govt. of Maharashtra to also convene the meeting for follow up of the aforesaid directions. The Maharashtra Pollution control Board continuously conducted the meetings with all stakeholders for preparation of comprehensive action plan for city and its implementation.