

# **City Action Plan For Abatement of Air Pollution in Faridabad City**

**September 2021**



**Municipal Corporation Faridabad**

**Government of Haryana**

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**ABBREVIATIONS AND ACRONYMS**

CPCB	Central Pollution Control Board
HSPCB	Haryana State Pollution Control Board
CEPI	Comprehensive Environmental Pollution Index
MCF	Municipal Corporation Faridabad
HSVP	Haryana Shahari Vikas Pradhikaran
RTA	Regional Transport Authority
NHAI	National Highway Authority of India
DMRC	Delhi Metro Rail Corporation
HSIIDC	Haryana State Industrial Infrastructure Development Corporation
PWD(B&R)	Public Works Department (Building& Roads)
GRAP	Graded Response Action Plan
ETP	Effluent Treatment Plant
STP	Sewerage Treatment Plant
CETP	Common Effluent Treatment Plant
CNG	Compressed Natural Gas
PNG	Pipe Natural Gas
BOD	Biochemical Oxygen Demand
COD	Chemical Oxygen Demand

## 1 Introduction

### City Overview

Faridabad is the largest city in the Indian state of Haryana and a part of the National Capital Region of Delhi. It is one of the major satellite cities of Delhi and is located 284 km south of the state capital Chandigarh. Faridabad adjoins Delhi on its south-eastern side having total area of 742.90 sq. km. and Municipal Area of 208 sq. km. It is located at 28°25' 16" North Latitude and 77°18' 28" East Longitude. It is bounded by the National Capital Territory of Delhi on its North. Delhi-Mathura National Highway No. 2 passes through the Centre of the District. As per census data of 2011, the city has a total population of 1,809,733 and an estimated population of 2,063,096 for the year 2021. Faridabad is famous for Henna Production & on agriculture sector while Tractors, Motorcycles, Textile Dyeing & Printing, Switch Gears, Refrigerators, Shoes and Tyres are other famous industrial products of the District. Badkhal Lake tourist complex, Suraj Kund Tourist Complex, Aravali Golf Club & Raja Nahar Singh Palace are the famous tourist spots. The river Yamuna forms the eastern district boundary with Uttar Pradesh. The Government of India included it in the second list of Smart Cities Mission on 24 May 2016. Faridabad has been described as the eighth fastest growing city in the world and the third in India by the City Mayors Foundation survey. As per the 2001 Delhi Regional Plan, Faridabad is part of the Delhi Metropolitan Area (DMA).

The newly developed residential and industrial part of Faridabad (Sec. 66 to 89) between the Agra Canal and the Yamuna River is commonly referred to as Greater Faridabad. The area is being developed as a self-sustained sub-city with wide roads, tall buildings, malls, educational institutions, and health and commercial centers. Sectors 66 to 74 are Industrial Sectors, while Sectors 75 to 89 are Residential Sectors. Faridabad is a major industrial hub of Haryana. In 2018, Faridabad was considered by the World Health Organization as the world's second most polluted city. In 2020, Faridabad ranked 10th in the Swachh Survekshan Survey's top ten dirtiest cities in India in 2020. Faridabad has been selected as one of the hundred Indian cities to be developed as a smart city under Government of India's flagship Smart Cities Mission by Ministry of Urban Development.



Figure 1-1 Skyline of Faridabad city



## City Connectivity

The city is well connected via following modes:

1. **By Air:** Indira Gandhi International Airport Delhi, which is about 34.5 km from the city, is the nearest airport. There are regular flights going from IGI Airport to all over world.
2. **By Train:** The nearest railway station in Faridabad is just 1 km away from the centre of the city. The New Delhi railways station is 30 KM away from the city centre and is well connected to major cities of India via train.
3. **By Bus:** There are several bus services including Haryana Road Transport Corporation buses as well as private operators connecting Faridabad to the major cities in Neighboring states. The major bus stand is Ballabgarh Bus Stand. ISBT Kashmeri gate is 40.3 km away from the city centre.

## Air Pollution

Air pollutant means any solid, liquid or gaseous substance present in the atmosphere in such concentration as may be or tend to be injurious to human being or other living creatures or plants or property or environment. Air pollution means the presence of air pollutants in the atmosphere. The most common sources of air pollution include particulates, oxides of nitrogen, Sulphur dioxide and ozone. The health effects caused by air pollution may include difficulty in breathing, wheezing, coughing, asthma and worsening of existing respiratory and cardiac conditions.

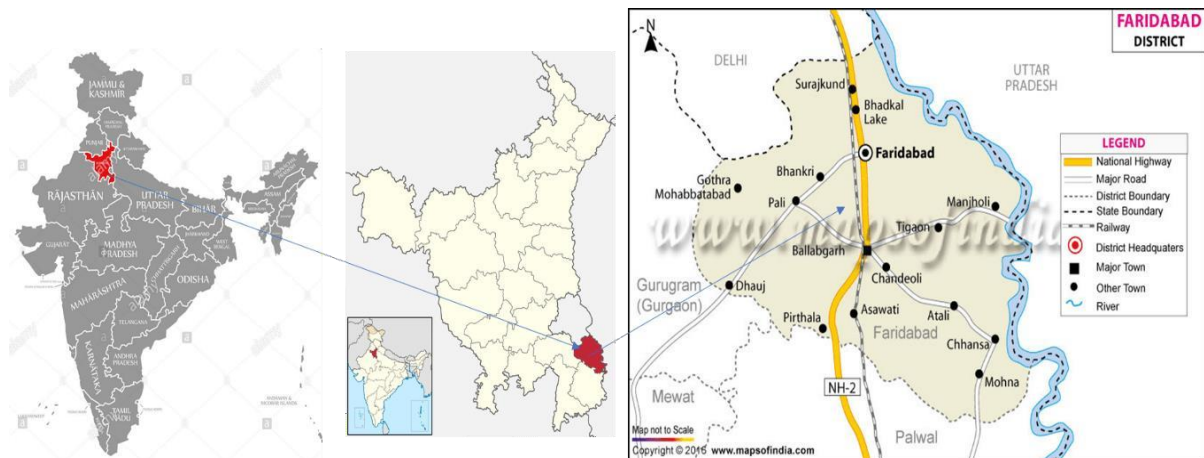


Figure 1-2: Location of the Scope area

## Climatic Conditions

Faridabad has a borderline of hot semi-arid climate just short of a dry-winter humid subtropical climate. The city features the three typical Indian seasons - The "hot" or pre-monsoon season lasts from late March to late June and is typified by sweltering and arid conditions that begin very dry but latterly turn humid. Average annual temperature is 14.2. °C. The warmest month is June with average around 35

°C and January has the lowest average temperature of the year i.e. 12 °C. The variation in temperatures throughout the year is 31 °C.

The annual precipitation is about 1480mm. The difference in precipitation between the driest month and the wettest month is 398mm. The following Table provides details regarding the details regarding the average weather for Faridabad.

Table 1-1-1 Climatic data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
<b>Min. Temperature (°C)</b>	8	10	15	21	26	28	27	26	25	19	13	8
<b>Max. Temperature (°C)</b>	21	23	30	36	39	39	35	34	34	33	28	22
<b>Precipitation / Rainfall (mm)</b>	66	63	70	45	61	163	411	343	172	44	13	29

\*Source: Climate Data.org and Meteorological Centre

## Geology

Faridabad has tropical and brown soils, existing in major parts of the district. In Hathin block the organic content of soils ranging from 0.41 to 0.75 percent which is of medium category. In rest of the area organic contents is 0.2 to 0.4 percent and falls in Low category. The average conductivity of the soil is not more than 0.80 µmhos /cm and the average pH of the soil is between 6.5 and 8.7. The area comprises almost flat plains traversed by one ridge running N-S to NNE-SSW direction, divides the alluvium into two parts. The major river is Yamuna which is a perennial river.

## Economic features

The Faridabad Small Industries Association claims that Faridabad and Gurgaon districts account for almost 56% of the income tax collected in Haryana. Faridabad has been selected as one of the hundred Indian cities to be developed as a smart city under PM Narendra Modi's flagship Smart Cities Mission. It has started growing as another technology hub in Haryana nurturing start-ups and innovation.

Faridabad is the largest exporter of henna (Mehandi) in India. According to the Faridabad Henna Manufacturing Association, the sale of henna from Faridabad is worth an estimated ₹250 crore (US\$35 million)–₹300 crore (US\$42 million) annually. Many directorates of different union government ministries are headquartered in Faridabad including Central Ground Water Board, Department of Plant Quarantine and Central Insecticide Lab, and Union Government Offices from Haryana including the Commissioner of Central Excise within Department of Revenue, Government of India, Department of Explosives, and Department of Labour. Institute such as National Council for Cement and Building

Materials, a research and development institute under the ministry of commerce, and industry has its head office in Faridabad.

The Apex Central Training Institute of the Department of Revenue, Government of India, National Academy of Customs Excise & Narcotics is located at Sector 29. The National Power Training Institute, an autonomous body under Ministry of Power, Government of India has a corporate office in Faridabad. The city also hosts the National Institute of Financial Management, which serves as training academy for accounting and financial services NHPC Corporate Office, Faridabad Also headquartered here is NHPC Limited which is a Central PSU under the Ministry of Power, Government of India, and the largest Hydro-power Company in India.

Faridabad is the industrial capital of Haryana. As of 2013, out of a total of 11,665 registered working factories in Haryana, 2,499 were in Faridabad.

It is home to large-scale companies like Escorts Limited, India Yamaha Motor Pvt. Ltd., Havells India Limited, JCB India Limited, Indian Oil (R&D), Larsen & Toubro (L&T), Whirlpool India Ltd., ABB Group, Goodyear India Ltd., Bata India Ltd and Eicher Tractor Ltd. and Beebay Kidswear Eyewear e-trailer Lens kart and healthcare start-up Lybrate have their headquarters in Faridabad. More than 5,000 units of auto parts producers are based in Faridabad. Lakhani Armaan Group has set up manufacturing facilities at Faridabad (Haryana).

### Government's past efforts for control of Air pollution

Municipal Corporation has made various efforts in the past to curb air pollution. The following efforts have been made in the city area:

1. **5 Continuous Air Quality monitoring systems (CAQMS)** were installed in the city. The first CAQMS was installed prior to 2015 followed by another one in 2019. Due to poor air quality index in 2020, 3 more CAQMS were installed. The locations of all the 5 CAQMS are as given below:

Table 1-2: Location of All CAQMS in Faridabad.

S. No.	Name of Location	2015	2016	2017	2018	2019	2020
1	Police Line Sector 30 Near Bypass Road Faridabad	NA	NA	NA	NA	NA	99.31
2	MCF Auditorium B.K. Chowk Faridabad	NA	NA	NA	NA	NA	151.29
3	HSPCB, Regional Office Building Sector 16, Faridabad	99	128	107	117	100	91

S. No.	Name of Location	2015	2016	2017	2018	2019	2020
4	MCF Pump Number 104 Near Milan Restaurant Sector 11 Faridabad	NA	NA	NA	NA	NA	114.4
5	BDPO Office Ballabhgarh--	NA	NA	NA	NA	NA	79.66

2. The corporation regularly sprinkles water in the MCF area.
3. Smart Traffic management infrastructure has been installed at various junctions under the smart city mission such as Timer systems and CCTV cameras on traffic signals which also contributes in reducing air pollution by limiting the emissions from vehicles on traffic signals. And also, the CCTV camera prohibits the entry of pollution emitting vehicles in the city if monitored effectively.

## 2 Vision, Mission and Strategy – SWAANS

### Vision for SWAANS

Faridabad to restore the quality of air in Faridabad to the prescribed standards to ensure health of the people, ecological balance and socio-economic well-being of the people.

### Mission

The Government of Haryana envisions to make Haryana the healthiest State with healthy people by ensuring the quality of air, water, food and a good living Environment. The prime objective of the mission is to effectively prepare and implement a comprehensive action plan for clean air in Faridabad. A few other objectives of the mission are as given below:

- I. To Create awareness about the adverse impact of air pollution
- II. Identify the sources of Air pollution, their apportionment
- III. Setting up facilities for treating the pollutants
- IV. Ensuring effective operations of the facilities
- V. Ensuring effective monitoring of the quality of air
- VI. Mitigating adverse impact on health of the people due to air pollution

### Strategy for Clean Air, Faridabad

The key elements of strategy for Clean Air campaign for Faridabad will include:

- a. Identification of Stakeholders
- b. Integration of Departmental plans
- c. Citizen Participation
- d. Monitoring

### Identification of Stakeholders

In order to combat the challenges of air pollution, all the Stakeholders will have to make concerted efforts. Municipal Corporation Faridabad is the main stakeholder responsible for maintaining air pollution levels in the district. The corporation continuously conduct meetings with HSPCB to prepare comprehensive action plans for the district and its implementation. List of key stakeholders responsible for curbing air pollution are as given below:

#### **Implementing Agencies**

- MC Faridabad
- Haryana Shehri Vikas Pradhikaran (HSVP)
- Haryana State Industrial & Infrastructure Development Corporation (HSIIDC)
- Public Works Department (PWD) – Building & Roads
- Faridabad Metropolitan Development Authority (FMDA)

- Faridabad Smart City
- Forest department Faridabad

### **Technology Partner**

- NIT Kurukshetra

The main responsibilities of the above given stakeholders are listed below:

- Installation & monitoring of CAAQMS
- Improvement of road infrastructure for smooth traffic movement
- Regular mechanical cleaning and water sprinkling of roads
- Increasing green cover in city
- Awareness creation of controlling air pollution in the city through campaigns
- Suggest advanced emission control methods and techniques
- Monitoring of industrial compliance with HSPCB emission norms
- Monitoring of air pollution control devices installed by industries
- Monitoring of ambient air quality and stack emissions
- Conduct awareness creation programs
- Develop Plans for effective traffic management
- Develop Plans for phasing out old polluting vehicles
- Improve road conditions for smooth movement of traffic

### **Integration of Departmental plans**

The Nodal Department will integrate plans of individual departments for control of pollution from various sources and prepare a comprehensive plan.

### **Citizen participation**

Citizen participation will be key to the success of the plan. Effort will be made to seek citizen participation in various public awareness activities, feedback and support in various enforcement related activities. A strong social media and technology driven platform will be set up to seek citizens particularly youth participation.

### **Monitoring & Governance**

Various measures envisaged under the action plan for control of pollution can be classified in the following categories:

- Effective Enforcement
- Creation of new Infrastructure

- Maintenance related activities
- Policy Awareness & Advocacy
- Technology Support

Monitoring of various activities of the Action Plan will be key to achieve the outcomes envisaged under the Action Plan. Different kind of monitoring systems will be required for different categories of activities:

- I. Design of effective online platform including social media to disseminate air pollution related information and seek citizen feedback and participation in the campaign. It will have a monitoring mechanism to see the level of participation and measures to increase the same.
- II. Design of effective online system to capture various enforcement activities by various agencies to monitor them, evaluate them and provide feedback and enforce accountability.
- III. Design of an effective monitoring system to monitor the progress of various infrastructure related activities as envisaged under the plan.
- IV. Design of an effective monitoring system for policy advocacy within the Government for expediting formulation of various policies.
- V. Design of an effective monitoring system for various technological interventions to reduce the air pollution.

MCF will set up a dedicated team to design advanced real time monitoring system with a centralized cloud-based monitoring dashboard.

### 3 Current Status and Trends of Air Quality in Faridabad

Faridabad is a major hub in Haryana and in Delhi NCR. The city has an average AQI of 107, which falls under moderate category as per the CPCB norms. Although the AQI falls up to 400 in winters which is unhealthy and causes breathing discomfort in prolonged exposure. Particulate Matter (PM10 & PM2.5) has been identified as main air pollutant as it is found above the prescribed national standards. In 2020, the city's PM10 and PM2.5 average levels 119 mg/m<sup>3</sup> 115 ug/m<sup>3</sup> This is mainly due to re-suspension of road dust, emission from vehicles, D.G. sets, construction activities, burning of domestic fossil fuels, open burning of solid wastes, transportation of construction materials such as sand, soil etc. without covering and emission from brick kilns located around Faridabad. NO<sub>2</sub> also has been observed an alarming level. This is mainly due to vehicular emissions. Plying of old vehicles and traffic congestion causes higher level of NO<sub>2</sub>. It has been observed that air quality of Faridabad during winter season becomes poor & severe due to condensation of fine particulate matter in the lower portions of the atmosphere. As per the current data, the air quality of Faridabad is non-compliant with the air quality standards. According to the 2009 National Ambient Air Quality Standards notified under the Air (Prevention and Control of Pollution) Act, 1981; the daily and hourly standards for pollutants must be met 98% of the time in a year and they should not exceed the standards on two consecutive days. Faridabad will have to strive towards meeting these standards over time. The global practice is to take the average concentration of a pollutant for three years to assess the percentage reduction needed to meet the clean air standards. As per the current data, Faridabad will have to reduce PM10, PM 2.5 and nitrogen dioxide by significant to meet the clean air standards.

#### Sources of Air Pollution in Faridabad

The following are the major identified sources of air pollution:

- Vehicular Emissions
  - Road Dust
  - Burning of Biomass & Garbage
  - Industrial Emissions
  - Mining
  - Construction and Demolition Activities
  - Other Sources
1. Vehicular Emissions - Transport sector is one of the significant contributors to air pollution in Faridabad due to movement of heavy goods vehicles carrying raw materials and products of the industries located in and around the city. At present large number of vehicles (heavy transport vehicles, LMVs, cars & jeeps, two wheelers and three wheelers) are plying on the roads of District Faridabad. Further, National Highway 19 passes through Faridabad also contributes to air pollution.



2. Road Dust - The particles of dust that deposit from the atmosphere and accumulate along roadsides are called road dust particles and originates interaction of solid, liquid and gaseous metals. Two main sources of road dust are deposition of previously suspended particles (atmospheric aerosols) and displaced soil. Some other common factors are enlisted as under:
  - a. Emissions from the vehicular traffic,
  - b. Construction and demolition activities, corrosion of metals structures etc.
  - c. Presence of potholes on the road
  - d. Absence of metaled roads / stabilized roads / un-stabilized movement area within industries
  - e. Presence of un-stabilized berms along the roads
  - f. Movement of overloaded transport vehicles
3. Burning of Biomass & Garbage - There are only small patches of agricultural land within the Faridabad city, however, the city is surrounded by agricultural area and a lot of biomass is generated during post harvesting paddy and wheat seasons. During wheat season biomass burning is lesser than paddy season as the farmers use the wheat crop residue as cattle fodder. The effect of biomass burning in the paddy season is augmented due to the cold climate conditions. At present, Municipal solid waste generation of the city is estimated as 700-750 TPD, which is being dumped unscientifically in the present dumping site at Bhandwari, Faridabad. The garbage burning increases during winter season as the general public tend to burn the waste for heating purposes. The effect of burning of plastic, tyre, paper, MSW, horticulture and agricultural waste significantly deteriorates the air quality of Faridabad.
4. Industrial Emissions - The main stationary sources of air pollution are the industrial units, which are emitting particulate matter, Sulphur di-oxide and oxides of nitrogen etc. All the units are using either wood, coal, briquettes, agro based fuel in their furnace, Klins , boilers etc.
5. Mining - Mining activities also contribute to the AQI, however, in Faridabad area, no mining activity is carried out due to absence of mining sites. As such, it has no contribution in the air quality index of Faridabad.
6. Construction & Demolition Activities- Faridabad area is a large city having population of about 1.4 Million persons. Building construction projects are being set up in the city like Shopping Malls, Hotels etc. The city is generating approx. 300 TPD of C&D waste. Faridabad municipal corporation has recently made the arrangement with involvement of private player for the Collection and transportation of C&D waste to processing plant.
7. Others- Other than above mentioned sources, episodic incidents like Holi, Dussehra, Diwali, Kurupira, New Year etc. are celebrated by bursting crackers, spraying colours etc. which also contribute to the ambient air quality, though very less.

#### Monitoring systems of Air Quality

The ambient air quality monitoring is being carried out regularly at 5 no. CAQMS operated stations installed in Faridabad under National Air Monitoring Programme (NAMP). The data of PM 2.5, PM10, SO2 and NOX for the period 2020 is given in table below.

Table 3-1: PM 2.5, PM10, SO2 and NOX for the period 2020

S. No.	Name of Location	PM10 ( $\mu\text{g}/\text{m}$ )	PM2.5 ( $\mu\text{g}/\text{m}$ )	SO2 ( $\mu\text{g}/\text{m}^3$ )	NOx ( $\mu\text{g}/\text{m}$ )	AQI
1	Police Line Sector 30 Near Bypass Road Faridabad	334.72	145.26	2.19	17.19	99.31
2	MCF Auditorium B.K. Chowk Faridabad	402.70	106.46	6.76	13.83	151.29
3	HSPCB Regional Office Building Sector 16 Faridabad	NA	145.26	7.40	80.16	91
4	MCF Pump Number 104 Near Milan Restaurant Sector 11 Faridabad	289.91	141.56	5.76	33.06	114.4
5	BDPO Office Ballabhgarh	231.61	145.26	2.19	80.30	79.66

Nitrate particles formed from nitrogen oxides and sulphate particles formed from Sulphur dioxides can be 25 per cent of the PM2.5 load in the city. This means the relative contribution of power plants, traffic, industry and open burning to particulate levels becomes even bigger and needs stronger control.

## 4 Action Plan

### Control of Vehicular Emissions

The vehicles are major pollution contributor, producing significant amount of nitrogen oxides, carbon monoxides and other polluting gases and particulate matter. To minimize the pollution generated from the vehicles, various actions must be taken, which have been classified into following categories:

- Public Awareness related
- Enforcement related
- Infrastructure related
- Policy related

Some activities may have more than one category, but they have been kept in the category where it has the major requirement. Following are the key activities for control on vehicular emissions:

#### Public Awareness

#### **CVE 1 - Public awareness campaign for control of vehicular emissions**

Public support is essential for clean air mission to be successful. As part of overarching mission of clean air, Faridabad, the public must be made aware of ill effects of air pollution on health and contribution of vehicular emissions in the same. The public must be motivated to play their role in curbing the air pollution. Following action shall be taken:

- Public awareness campaign in print and electronic media
- Use of Social Media Facebook, twitter, Instagram
- Jingles on air pollution on local radio and tv
- Awareness drives in educational institutions
- Public meetings
- Nukad Natak

#### Enforcement Related

#### **CVE 2 - Consider introducing plan for Flexi/ Staggered timings to minimize peak movements of vehicles on the road.**

The Department of Transport will implement Flexi/ Staggered timings to minimize peak movements of vehicles on the road. One such experiment in India was the odd-even scheme in Delhi during January 1-15, 2016 wherein private cars with odd registration numbers were allowed on the roads on odd days of the month, alternating with even-numbered cars on even days. Reportedly, the odd even scheme resulted in a dip of 2-3 per cent in the pollution level. Although it helped reduce peak period congestion, social acceptability of this measure remained low due to inconvenience faced by people in absence of effective alternatives of public transport.

### **CVE 3 - Prevent parking of vehicles and encroachment in non-designated areas**

- a. Creating parking infrastructure: Presently, vehicles are being parked in a haphazard manner and on the roads as well, which leads to traffic congestion, thus, causing vehicular pollution. Hence, local government shall develop designated parking lots, Multi storey parking facilities, parking area for trucks/ commercial vehicles and ear-mark roadside parking by yellow line.
- b. Enforcement: Revision of Traffic policy is required for the MCF area as the policy was last formulated in 2011. Also, Traffic police shall impound vehicles parked in non-designated areas and shall compile the list of prominent areas of such violations & pay special attention to these areas. CCTV cameras shall be installed in such areas to capture the evidence. Number of challans shall be monitored.
- c. Encroachment on road: MCF shall remove any kind of encroachment on any colony where the footpath or road is found to be encroached upon, strict action should be taken against the owner and the encroachment should be removed from the footpath and roads.

#### Infrastructure related

### **CVE 4 - Install weight in motion bridges at district borders to prevent overloading and De-Congest Pathways.**

Motion bridges at district borders to prevent overloading and De- Congest Pathways to analyse the weight of the overloaded vehicles as they are the major cause of road deteriorate. This makes the weighing process more efficient, and, in the case of commercial vehicles, allows for trucks under the weight limit to bypass static scales or inspection.

### **CVE 5 – Install Variable Message sign boards at road intersections**

Awareness messages to be displayed at intersections and roundabouts to advocate observe lane discipline and air pollution control have been displayed on 36 VMS boards installed across the City. The following messages shall be displayed on the VMS boards:

- Air quality index on specified road length
- Lane discipline quotes
- Speed limits
- Congestion warning signals

### **CVE 6 - Widening of roads and improvement of infrastructure for decongestion of roads**

- a. Widening of roads: The major air pollution caused by dust emission along roadsides as the condition of roads are not good. Due to the movement of heavy goods vehicles like Trucks, tippers etc. carrying raw materials and final products of the industries, lot of dust / vehicular emissions are generated, which is affecting the ambient air quality of the city. Widening of

Roads and construction of over-bridges, wherever possible, is required for smooth and speedy flow of traffic and the pending construction work should be completed in the time bound manner

- b. Road design improvement: The roads constructed within the city having traffic congestion shall be identified by the MC. The concerned departments like NHAI, PWD (B&R) and Municipal Corporation shall suitably redesign identified roads to decongest the traffic.

#### **CVE 8 - Promotion of E- vehicles**

The state government has decided to formulate a policy to promote eco-friendly electric vehicles instead of diesel-petrol vehicles that cause pollution. The framing of E-Vehicle policy is at an advance stage of finalization. The Department of Transport shall notify the policy to promote battery operated vehicles. Apart from the purchase of new electric vehicles, the existing vehicles will also be replaced with electric ones at the end of their time. This work shall be completed in a phased manner by MCF. In order to ensure that there is no problem in charging such vehicles, charging stations will be set up in city as well as on all the main roads.

#### **Policy Related**

#### **CVE 7 – Phasing out commercial diesel vehicles more than 15 years old**

The Haryana government complies with NGT directions provided on **April 7, 2015**, to ban all diesel vehicles over 10-15 years old from plying on Delhi-NCR roads. Policies are framed at State level to phase out commercial vehicles more than 15 years old is further being effectively implemented. Further, the concerned departments will take necessary action i.e. Traffic Police and RTA.

Further, the details such as baseline, target, timeline, milestones have been given in Annexure-1.

#### **Control on Road Dust**

The particles of dust that deposit from the atmosphere and accumulate along roadsides are called road dust particles. Two main sources of road dust are deposition of previously suspended particles (atmospheric aerosols) and displaced soil. Additionally, the emissions from the vehicular traffic, building construction and renovation, corrosion of metals structures etc. contribute directly to the road dust. To minimize the pollution generated from the dust emissions, following key activities are proposed:

#### **Infrastructure Related**

#### **CRD 1 – Maintain potholes free roads for free-flow of traffic**

All the agencies such as MC/ PWD/HSVP/NHAI / FMDA will put in place a system of regular inspections to identify the potholes and ensure it filled up. It shall be monitored on regular basis. A web based/ mobile app shall be set up for Public to lodge complaint against the pothole and it shall be monitored for repair.

**CRD 2 – Water sprinkling**

- a. Water sprinkling on dust prone roads: Municipal Corporation shall identify the dust prone roads and shall prepare schedule for regular sprinkling of water on these roads to suppress dust emissions. This activity shall be started immediately. In order to save the water, the Municipal Corporation shall utilize the treated wastewater of STPs installed in the city.
- b. Procurement of Water sprinkler: Municipal Corporation need to decide for regular sprinkling of water on dust prone roads for which it may procure suitable number of water sprinklers. Municipal corporation has recently identified requirement of 10 GPS enabled water sprinklers for proper cleaning of road dust.
- c. Presently MCF is maintaining 700 parks across the city. Drinking water is being used for gardening purpose. Micros STP plant can be installed in all of these parks and its water can be utilized both for gardening and sprinkling of road for reducing the dust.

**CRD 3 – Mechanical sweeping**

Municipal Corporation shall procure adequate number of automatic sweeping machines for efficient and fast sweeping of the road / streets. The frequency of the sweeping shall be fixed appropriately by the Municipal Corporation.

**CRD 4 – Creation of green buffers along the roadsides**

Municipal Corporation with the help of Deptt. of Horticulture shall plant trees along the road network to improve the air quality. Trees and hedges shall be planted at on central verge within the MCF area on all 2-way roads Also, Green buffers shall be created on all roads within the Municipal Corporation. The corporation along with the horticulture department has Following trees and plant have been identified under this action point to improve air quality.

<b>Trees</b>	<b>Plants</b>
Neem	Chandni
Peepal	Hamelia
Pilkhan	Jatropha
Sheesham	Bouganvelia
Alstonia	Pilli Kaner
Moulsori	Lal Kaner
Ficus Nuda	-

### **CRD 5 – Increase green cover of parks, open areas, community places, schools and housing societies**

In order to increase greenery in the city, the Municipal Corporation shall identify open areas / lawns / vacant lands including community places and schools in the city and these places be allocated to the NGOs or Industrial Associations for tree plantation and their maintenance. The activity of identification of the suitable sites shall be completed in a time bound manner and shall be allotted to the NGOs or Industrial Associations

### **CRD 6 – Blacktopping of roads including pavement of roadsides**

- a. Kaccha/Brick Paved Roads to be made Pucca road: Some of the city roads are not properly metalled, which are the source of dust and gaseous emissions. These roads shall be converted into metalled road. Municipal Corporation shall undertake this activity in a time bound manner.
- b. Existing roads requiring recarpeting: Roads require regular upkeep & re carpeting. The responsible agencies (MC/PWD/NHAI/HUDA) shall ensure re carpeting of damaged existing roads.
- c. Pavement of roadside using interlocking tiles/ To prevent road dust emissions: Berms along the roads need to be stabilized with interlocking tiles/greening to prevent road dust emissions.

Further, the details such as baseline, target, timeline, milestones have been given in Annexure-2.

### **4.3 Control on Burning of Garbage and Biomass**

There are only small patches of agricultural land within the Faridabad city, however, the city is surrounded by agricultural area and a lot of biomass is generated during post harvesting paddy and wheat seasons. During wheat season biomass burning is lesser than paddy season as the farmers use the wheat crop residue as cattle fodder. The effect of biomass burning in the paddy season is augmented due to the cold climate conditions. To minimize the pollution generated from burning of garbage and biomass, following key activities are proposed:

#### **Enforcement Related**

### **CBGB 1 –Control on open burning of Biomass in City**

1. The burning of biomass like leaves of the trees creates lot of smoke in the area particularly during winter season, as such, the open burning of these biomass must be stopped. Municipal Corporation shall deploy its staff to have a check on various areas so as to forbid the inhabitants and sweepers from open burning of the biomass.
2. Municipal Corporation shall provide education to the educational institutions, government offices, residents welfare associations regarding horticulture waste collection and its benefits by way of disposing the waste in the form of composting and encouraging the organic farming in the gardens and fields A GRM system shall be generated and publicized by Municipal

Corporation along with the setting up of the dedicated control room for receiving complaints of public through this system.

### **CBGB 2 – Control on burning of municipal solid wastes**

Presently, Municipal Corporation has one municipal waste dumping site at Bandhwari, Faridabad, which has not been developed scientifically for the disposal of the municipal solid waste and consequently it has become the source of burning of waste on this dump. One of the Bandhwari landfill site in Faridabad is in very critical phase. Due to the continued dumping of waste at the site, the stream of black water or leachate accumulating in the neighboring Aravalli forests as result the ground water of South Delhi, Gurugram and Faridabad is getting polluted. The foul smell attracts rats and flies around the dumping site. Similarly, at the collection point and after sweeping the streets, the garbage collected may be burnt, instead of transporting to the dumping site. Municipal Corporation shall identify the dumping site and will take necessary actions as per the provisions of Municipal Solid Waste Rules, 2016 and CPCB guidelines.

### **CBGB 3 – Control on burning of agriculture waste and crop residue**

The city is surrounded by agricultural area and a lot of agricultural waste is generated during post harvesting paddy and wheat season. During wheat season stubble burning is lesser than paddy season as the farmers use the wheat crop residue as cattle fodder. The District Administration shall constitute District Level Committees to verify the reported sites and issue challans to the violators besides filing of proceedings u/s 133 Carps. Necessary directions / instructions shall be issued by the District Administration u/s 144 IPC to restrict harvesting of crops between 6.00 pm to 6.00 am during crop harvesting seasons and attaching of the super SMS with the combine harvesters. MCF to promote mechanical reincorporation of paddy straw to prevent its burning.

Further, the details such as baseline, target, timeline, milestones have been given in Annexure-3.

### **4.4 Control on Industrial Emissions**

The main stationary sources of air pollution are the industrial units, which are emitting particulate matter, Sulphur di-oxide and oxides of nitrogen etc. All the units are using either wood, coal, briquettes, agro based fuel in their furnace, Kilns, boilers etc. There are total of 136 air polluting industries in Faridabad under Red Category while 210 are in orange category.

To minimize the pollution generated from the industries, following key activities are proposed:



## Technology Intervention

### **CIE 1 – Installation of Proper & Structurally adequate air pollution control devices**

Proper & Structurally adequate air pollution control devices remove fine particles like smoke and fine dust from the flowing gas. It will eminently reduce the air pollution. Appropriate air pollution control devices shall be installed in factories and industrial units to have a check on air quality.

## Enforcement Related

### **CIE 2 – Action against non-complying industrial units**

The regular monitoring of industries is being carried out as per the policy of the Board. In case, any industry is found violating the provisions of the Air (Prevention and Control of Pollution) Act, 1981, action under the provisions of the said Act is initiated against the violating industries. The number of inspections carried out and action taken will be monitored regularly by the District Level Committee.

## Infrastructure Related

### **CIE 3 – Online continuous Emission monitoring system**

Monitoring of industrial emission including real time online monitoring OCEMS (Online Continuous Emission Monitoring System) and live camera feed to take action against non-complying industrial units. Mobile facility van for continuous ambient air quality monitoring for different locations.

Further, the details such as baseline, target, timeline, milestones have been given in Annexure-4.

### **Control on Construction and Demolition activities**

Faridabad area is a large city having population of about 20 lacs. Building construction projects are being set up in the city like Shopping Malls, Hotels etc. Also, small construction activities are being carried out by the individual house holders/industrial units/ commercial units and paving of streets by the MC on routine basis. To minimize the pollution generated from the construction and demolition activities, following key activities are proposed:

## Enforcement Related

### **CCDA 1 –Enforcement of Construction & Demolition (C& D) Rules,2016**

- a. Enforcement: The necessary provisions of the C&D Rules, 2016 shall be implemented in the city to ensure proper management of these wastes. Municipal Corporation shall frame mechanism for challenging the violators found dumping the C&D waste on non-designated areas. The enforcement will be monitored through the use of technology (real time based GRM systems) and regular review.

## Infrastructure Related

### **CCDA 2 – Control measures for fugitive emissions**

Municipal Corporation shall ensure that

- (i) The builders provide proper curtains / sheets on the construction sites to avoid spreading of dust emissions into the environment.
- (ii) No dust should be emitted during demolition.
- (iii) No construction materials should be kept on the roads. The construction material inside the plots should also be kept in covered conditions and labor should be provided with required personal protective equipment's during construction to safeguard from ill effects of fugitive emissions.

### **CCDA 3 – Ensure carriage of construction material in closed/covered vessels**

The relevant enforcement authorities will ensure that the construction material to be transported through trucks / vehicles shall be covered with tarpaulin to avoid the dust emissions.

### **CCDA 4 – Ensure processing of construction and Demolition material**

MCF will ensure that the construction material to be processed and disposed as per the agreement to be signed with the selected party.

Further, the details such as baseline, target, timeline, milestones have been given in Annexure-5.

### **Control through Other Steps**

Apart from various measures being taken to control various sources of pollution, following activities will also be undertaken to control the pollution:

#### Public Awareness

### **COS 1–Dissemination of information on Air Quality Index**

Haryana Pollution Control Board shall display the air quality index of the city at its prominent places for the awareness of the public including website, social media and print media.

#### Enforcement related

### **COS 2 - Green belt provision at Dump Site**

The Municipal Corporation shall provide complete green belt along the Dump site in the available land to provide a barrier for dust emission from Dump Site.

Further, the details such as baseline, target, timeline, milestones have been given in Annexure-6.

Infrastructure related

### **COS 3 – Installation of Smog Towers**

The smog tower works in such a way that it helps in reducing approx. 94% of airborne particulate matter. It transforms the fine and ultrafine dust particles into coarse dust. This device is designed in the form of a tower in such a manner that like a vacuum, it sucks up the smog present in the atmosphere from the top and then releases the filtered air through its vents. Six Smog tower will be installed at following locations in Faridabad.

1. Ballabgarh Sohna Chowk
2. Neelam Chowk
3. Badkhal/Old Faridabad
4. Hardware Chowk
5. Sector 29 Chowk bypass road
6. Sector-37, Faridabad.

## 5 Graded Response Action Plan for Faridabad

### Graded Responses

In order to mitigate the impact of higher level of pollution when AQI crosses satisfactory level, Graded Response Action Plan has been prepared for Faridabad for implementation under different Air Quality Index (AQI) categories namely, Moderate & Poor, Very Poor and Severe.

### Agency Responsible for Graded Response

The concerned authorities responsible for acting when AQI reaches various levels have been indicated against the proposed action. The authorities will work in coordination with and under the overall supervision of the District Level Committee.

### Directions provided under GRAP

EPCA provides directions to the city under Graded Response Action Plan whenever the city reaches to severe + levels of air pollution. The city follows the following directions provided by the board under GRAP:

- Levy intermediate bans on construction, hot mix plants and on stone crushers
- Ban shall be imposed on fuel-based industries that fail to shift to natural gas or bio residue.
- Enforce complete ban on cracker burning for any religious or ceremonial purposes within the city limits.
- Increased Vigilance & enforcement in the city to abate open waste burning, full compliance with approved notifications and control of air pollution caused by stack emissions.
- Ban on use of Diesel Generator sets
- Mechanized sweeping machines to be used for road cleaning
- Controlling road dust through water sprinkling or by using dust suppressants
- Zero tolerance to operation of illegal industries and also use of unauthorized fuel
- Only those brick kilns which have converted to zigzag technology will be allowed to operate in Delhi NCR
- Issue Public advisory such as schools shall be advised to curtail all outdoor activities and sports to minimize exposure of children. Also, minimized exposure shall be advocated during severe pollution levels
- Spreading public awareness of directions under GRAP through newspapers

## 6 Monitoring Requirements and Formats

### Monitoring Requirements

Following are the key components of monitoring requirements of the Plan:

- Monitoring of activities for control on Vehicular Emissions
- Monitoring of activities for control on Road Dust
- Monitoring of activities for control on Burning of Garbage and Biomass

- Monitoring of activities for control on Industrial Emissions
- Monitoring of activities for control on Construction and Demolition activities
- Monitoring of activities for control on other sources

Further, various activities can be classified into one of the following categories:

- i. Public Awareness
- ii. Enforcement
- iii. New Infrastructure
- iv. Maintenance activities
- v. Policy Advocacy
- vi. Technology Support

### **Development of Environment Protection Monitoring System (EPMS)**

In order to keep track of the progress made by concerned stakeholder departments on various projects, activities and initiatives, it is proposed to develop a dedicated IT platform namely Environment Protection Monitoring System (EPMS).

To work out detailed formats and setting up online system to track progress of various activities, a dedicated team of HSPCB and NIC to be setup.

The system will ensure that information is captured at source and transmitted to the System and the system will be able to analyze and report it in the prescribed format. The system will generate different reports for use at different levels. The System will also have dashboard to present the key indicators and metrics.

## **7 Risk Mitigation Plan**

### **Identification of Major Risks**

Following are the major risks

- (i) Lack of formal source apportionment study
- (ii) Accuracy and completeness of baseline data, targets and milestones
- (iii) Lack of formal analysis of implementation barriers

### **Source Apportionment Study**

It is important to have the assessment of various sources and their contribution to the air pollution and accordingly focus on controlling those sources. Currently no such study has been done. In order to mitigate the risk, Municipal Corporation Faridabad shall get source apportionment study of the city conducted to adjudge various sources contributing air pollution in the area and mitigation thereof. The same will be incorporated in the Action Plan.

**Accuracy and completeness of baseline data, targets and milestones**

The baseline data, targets and milestones are not very accurate or complete. During implementation detailed surveys and analysis will be carried out and the baseline data, targets and milestones will be suitably updated.

**Lack of formal analysis of implementation barriers**

Various activities included in the action plan need to be carefully analysed with respect to implementation challenges so that suitable remedial measures could be envisaged. Efforts will be made to study various barriers and improving the efficacy and effectiveness of the proposed activities by overcoming the shortcomings in the present system.

## 8 Action plan for Training and Capacity Building

### Importance

It is important to enhance the capability and skills of the officers of stakeholder departments for effective implementation of Air Action Plans. Therefore, training and capacity building programmes related to various technical aspects are required to be conducted for different functionaries of relevant departments & organizations at various levels of hierarchies.

### Objectives

- I. Raising awareness and changing the mindset.
- II. Building trust and appreciation for the purpose of various Environment Protection Plans, environmental concerns, issues, roles and responsibilities of different stakeholders.
- III. Improving skills regarding existing practices, procedures and methodologies.
- IV. Promoting an integrated and holistic approach for addressing the concerns.
- V. Enhancing core competencies of concerned stakeholders in relevant areas of environment improvement.
- VI. Strengthening institutional arrangements
- VII. Reinforcing accountabilities and identifying aspects that require improvement
- VIII. Understanding new challenges and requirements

### Need Assessment

Specific modules for training of nodal and other responsible officers of various line departments involved in implementation of Air Action Plan are required to be developed for which need assessment would be carried out.

### Involvement of Institutions and Experts

Organizations of national & international repute having expertise in the area of environment in general, and air pollution shall be involved for conducting need specific trainings & capacity building programmes for various target groups and officials of stakeholder departments. Experts would also be involved in developing knowledge products and information material on various issues & technologies for creating mass awareness to build a responsible society with an aim to reduce air pollution in cities.

## Annexure 1 – Action Plan for Control on Vehicular Emissions

S.No.	Activity	Current Status	Actions to be taken	Responsible Agencies	Target to be achieved	Target Date	Implementation Period (Short/Medium/ Long term)
1.	Prevent parking of vehicles and encroachment in non-designated areas.	<ul style="list-style-type: none"> <li>Continuous monitoring of conjunction points is being carried out by Traffic Police Officer's to check unusual dust emission due to traffic/parking.</li> <li>MCF is constructing the parking in Sector-12 Mini Secretariat.</li> <li>42 Nos. parking places have been identified in Sectors markets, detail as under: -  Sector- 53,55,56,56A,54, 57,58, 22&amp;23, 50, 48, Sector-21A, B, C, D, Sec-20,  Sector- 42,43,44,45, 46,47, Sector- 27A,27B,27C,27D, Sector-32, 36, 37, 38, 39, 41, 19, 18, 18A,</li> </ul>	<ul style="list-style-type: none"> <li>Revision of Parking policy</li> <li>Identify locations for construction of parking</li> <li>Maintenance of existing parking at identified locations.</li> <li>Identify encroachment areas.</li> <li>Imply strict enforcement on identified encroachment areas.</li> <li>Explore one way solutions in congested areas.</li> </ul>	Traffic Police, MCF, HSVP	Roads to be free from parked vehicles and encroachments.	31.12.2022	Medium Term



S.No.	Activity	Current Status	Actions to be taken	Responsible Agencies	Target to be achieved	Target Date	Implementation Period (Short/Medium/ Long term)
		16, 16A, 17, 14, 15, 15A, 9, 10, 11, 7, 8					
2.	To provide diversion of route at heavy intersection point of congestion.	<p>Following congestion points have been identified:</p> <ul style="list-style-type: none"> <li>• Badarpur Border</li> <li>• Badkhal Flyover to sector 29 bye pass road.</li> <li>• Bata Flyover</li> <li>• Old Faridabad Red Light</li> <li>• Near Ballabgarh Red Light</li> <li>• BPTP Red Light at Bypass Road</li> <li>• Near Palla Pul to village Palla and Sehatpur.</li> <li>• Near Chandawali Chowk bypass road.</li> <li>• Neelam Flyover</li> <li>• Ballabgarh Flyover</li> <li>• National Highway-19 (Construction of Flyover on Gurugram Canal)</li> <li>• Railway Road old Faridabad.</li> <li>• Kheri pull to village Kheri.</li> <li>• BK chowk to Hardware chowk</li> <li>• Agrasen chowk Ballabgarh.</li> <li>• Village Sikri main Mathura Road.</li> <li>• Village jharsetly main Mathura Road.</li> <li>• Main market NIT-1,2,3,4,5</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare alternate solutions for decongesting the identified routes.</li> <li>• Identification of diversion route during execution of works.</li> <li>• Prepare cost estimates.</li> <li>• Tendering and execution of works.</li> </ul>	Traffic Police Department and MCF	Reduce the traffic at congestion points.	31.12.2023	Long Term

S.No.	Activity	Current Status	Actions to be taken	Responsible Agencies	Target to be achieved	Target Date	Implementation Period (Short/Medium/ Long term)
		<ul style="list-style-type: none"> <li>Main market Ballabgarh.</li> </ul>					
3.	Maintain potholes free roads for free flow of traffic	<ul style="list-style-type: none"> <li>Roads with potholes are being identified.</li> </ul>	<ul style="list-style-type: none"> <li>Prepare of roads with potholes</li> <li>Prepare cost estimates.</li> <li>Tendering and execution of works.</li> </ul>	MCF, HSVP, HSIIDC, PWD (B&R), NHAI, FMDA, Smart City Ltd.	Roads to be free from potholes to ensure smooth flow of traffic.	31.08.2022	Medium Term
4.	Public awareness campaign for control of vehicular emissions.	Presently, awareness is being created in Educational Institutes under Sadak Surakhya Abhiyan.	<ul style="list-style-type: none"> <li>Public awareness campaign in print and electronic media-Twice a month</li> <li>Use of Social Media Facebook, twitter, Instagram-Regular</li> <li>Jingles on air pollution on local radio and TV-Local FM Radio will be hired-Fortnightly</li> <li>Awareness drives in 5 no. educational institutions-Monthly</li> </ul>	Department of Transport	To educate & motivated public to actively play their role in curbing the vehicular pollution.	Regular Activity	Long Term

S.No.	Activity	Current Status	Actions to be taken	Responsible Agencies	Target to be achieved	Target Date	Implementation Period (Short/Medium/ Long term)
			<ul style="list-style-type: none"> <li>• Road Shows</li> <li>• Public Meetings- Monthly</li> <li>• Nukad nataks- Quarterly</li> </ul>				
5.	Consider plan for Flexi/ Staggered timings to minimize peak movements of vehicles on the road.	Planning to enforce during the period of the year when the AQI is at greater than 200.	Policy to be prepared for execution of flexi/staggered timings	MCF	Reduce air pollution by controlling the traffic	Intermittent Activity	Shot Term
6.	Install weight in motion bridges at district borders to prevent overloading and De- Congest Pathways.	Planning to install weight bridges at district borders	<ul style="list-style-type: none"> <li>• Identify areas where weight bridges to be installed.</li> <li>• Prepare cost estimates.</li> <li>• Tendering and Execution of works.</li> </ul>	MCF	Decongest roads with overloading will result in smooth flow of traffic	31.12.2023	Long Term
7.	Widening of roads and improvement of infrastructure for decongestion of roads.	Outer circular road of stretch 10 Km identified for widening.	<ul style="list-style-type: none"> <li>• Prepare cost estimates.</li> <li>• Tendering and execution of works.</li> </ul>	MCF	Smooth flow of traffic will reduce emissions and	31.08.2022	Medium Term

S.No.	Activity	Current Status	Actions to be taken	Responsible Agencies	Target to be achieved	Target Date	Implementation Period (Short/Medium/ Long term)
					subsequently reduce air pollution.		
8.	Phasing out petrol/diesel vehicles more than 15/10 years old	It is being implemented in phased manner. MCF has decided to purchase the CNG vehicles instead of diesel/petrol vehicle.	<ul style="list-style-type: none"> <li>• Identification of diesel vehicles more than 10 years old on quarterly basis.</li> <li>• Develop methodology to phase out diesel vehicles.</li> <li>• Development of scrap vehicle policy.</li> <li>• Promotion of CNG vehicles</li> </ul>	Police Department/ Transport Department	Removal of older vehicles to ensure less emission and reduce air pollution.	Regular Activity	Long Term
9.	Promotion of E- vehicles	Presently most of the vehicles are running on CNG, diesel and petrol.	<ul style="list-style-type: none"> <li>• Identification of rickshaw hot spots</li> <li>• Purchase of E vehicles for public transport</li> <li>• Promoting E-Rickshaw and</li> </ul>	Department of Transport	Increase in use of E-Vehicles will result in reduce of air pollution.	Regular Activity	Long Term

S.No.	Activity	Current Status	Actions to be taken	Responsible Agencies	Target to be achieved	Target Date	Implementation Period (Short/Medium/ Long term)
			battery-operated vehicles. <ul style="list-style-type: none"> <li>• Providing public charging points for E-vehicles as per Govt. policy.</li> </ul>				
10.	Install Variable Message sign boards at road intersections.	Presently no Variable Message Sign (VMS) boards at road intersections exists.	Take measures to introduce VMS Service at all the congestion roads that are prone to traffic jam.	Department of Transport	Install VMS to decongest roads and improve air quality.	31.08.2022	Medium Term
11.	Blacktopping of roads.	Roads are being identified where recarpeting work needs to be done.	<ul style="list-style-type: none"> <li>• Identification of Road lengths for blacktopping</li> <li>• Prepare cost estimates.</li> <li>• Tendering and Execution of works.</li> </ul>	MCF	Smooth flow of traffic will reduce emissions and subsequently reduce air pollution.	31.08.2022	Medium Term

## Annexure 2 – Action Plan for Control on Road Dust

S.No.	Activity	Current Status	Actions to be taken	Responsible Agencies	Target to be achieved	Target Date	Implementation Period (Short/Medium/ Long term)
1.	Control unusual dust emission due to dust on roads and traffic.	<ul style="list-style-type: none"> <li>MCF is preparing a plan for removal of surplus earth from the road berm and central verge as per HSR including providing and lying of grass paving tiles.</li> </ul>	<ul style="list-style-type: none"> <li>Formulate the strategy for removal of surplus earth.</li> <li>Prepare Green belt design framework on identified road.</li> <li>Prepare feasibility for installation of micro STPs.</li> <li>Prepare cost estimates.</li> <li>Tendering and execution of works.</li> </ul>	MCF	Reduce air pollution by controlling the dust on road.	31.12.2023	Long Term
2.	Water sprinkling on road berms.	<ul style="list-style-type: none"> <li>MCF has identified following road stretches with high dust generation:  1.Saran chowk to Gandhi Chowk 2.Sector-15-16</li> </ul>	<ul style="list-style-type: none"> <li>10 No. of dedicated water tankers will be purchased for the sprinkling of water on</li> </ul>	MCF, HSVP, HSIIDC, PWD(B&R), NHAI, FMDA, Smart City Ltd.	Water sprinkling will keep the dust particles settled which	31.08.2022	Medium Term

		<p>dividing road 3.Sector-10-11 dividing road 4.YMCA road 5.Sector-7-8 dividing road 6. Sector-9-10 dividing road 7.ORG Road (DM Road to Bye Pass) 8.Internal roads of Sector-24 &amp; 25 9.Road near Gaunchi drain 10. Powerhouse Road</p> <ul style="list-style-type: none"> <li>MCF to install micro STPs for providing the raw water to the grass/plants/fountains /antismog guns/ sprinkling of water on the road berms.</li> </ul>	<p>the road berms.</p> <ul style="list-style-type: none"> <li>Micro STPs to be setup to fill recycled water in these tankers.</li> <li>Preparation of plan for water sprinkling.</li> </ul>		will reduce the air pollution.		
3.	Mechanical Sweeping of Roads	Sweeping is being done manually and with 8 nos. of mechanized sweeping machines.	<ul style="list-style-type: none"> <li>Prepare road wise strategy to cover the complete area with mechanical sweeping.</li> <li>Calculate requirement for sweeping machines.</li> <li>Tendering for purchase and O&amp;M</li> </ul>	NHAI, HSVP, MCF	Roads to be of dust free to reduce air pollution.	Regular Activity	Long Term

4.	Creation of green buffers along the roadsides	<ul style="list-style-type: none"> <li>• Proposal for plantation of 30,000 trees/shrubs in MCF area to increase the greenery is being created.</li> <li>• In the current year Faridabad Forest Division has achieved 15 KM work of city plantation. In this work District Forest Office has planted 3750 Plants.</li> <li>• In MCF area total 684 No. of parks and green belts are in existence and 384 parks have been handed over to RWAs to increase the green cover and balance parks are maintained by MCF.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare framework for plantation to control air pollution</li> <li>• 10000 anti-pollution trees near the traffic congestion points such as Traffic light, Crossings etc. to be planted.</li> <li>• Roadside areas to be identified to increase the green cover.</li> </ul>	MCF/Forest/Horticulture Department	Increase green area to reduce air pollution	31.08.2022	Medium Term
5.	Greening of parks, open areas, community places, schools and housing societies along with installation of Micro STP.	<ul style="list-style-type: none"> <li>• Areas are being identified where green cover can be increased.</li> <li>• 7 Open spaces has been identified where micro STPs can be installed.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare plan to increase green cover.</li> <li>• Plant plants to reduce air pollution</li> <li>• Prepare feasibility report.</li> <li>• Prepare cost estimates.</li> <li>• Tendering and</li> </ul>	MCF/Forest/Horticulture Department	Increase green area to reduce air pollution	31.12.2022	Long Term



			Execution of works.				
6.	Installation of anti-smog guns for suppression of road dust	<p>Proposal for purchasing the antismog guns to spray the water up to a distance of 70-80 m with horizontal rotating angle 360 degree as a pilot project is initiated.</p> <p>If these antismog guns found working satisfactorily by decreasing the air pollution, more antismog guns will be installed. Tenders for 5 No. anti-smog guns have been invited.</p>	<ul style="list-style-type: none"> <li>Execution of works</li> </ul>	MCF	Suppression of road dust	31.08.2022	Medium Term

## Annexure 3 – Action Plan for Control on Burning of Garbage and Biomass

S.No.	Activity	Current Status	Actions to be taken	Responsible Agencies	Target to be achieved	Target Date	Implementation Period (Short/Medium/ Long term)
1.	Control on open burning of Biomass in City	Presently, no major composite pit exists at community level.	<ul style="list-style-type: none"> <li>Places to be identified where composite pit can be provided.</li> <li>Pucca compost pits are to be constructed in parks and green belts for proper collection of horticulture waste and its disposal.</li> </ul>	MCF	Provide composite pits to control open burning	31.08.2022	Medium Term
2.	Control on burning of municipal solid wastes.	Burning of municipal solid wastes stands prohibited. Regular inspection and Challan are being issued.	<ul style="list-style-type: none"> <li>Identification of old garbage piles/ garbage burning points in the city.</li> <li>Chalking out the strategy to remove open</li> </ul>	MCF	Control on burning of municipal solid wastes.	Regular Activity	Long Term

			<p>burning points in the city.</p> <ul style="list-style-type: none"> <li>Phase wise removal plan and implementation of Garbage points</li> </ul>				
3.	Control on burning of agriculture waste and crop residue	Burning of agriculture waste stands prohibited. Regular inspection and Challan are being issued.	<ul style="list-style-type: none"> <li>Create awareness among farmers regarding health effects of residue burning.</li> <li>Regular inspection and Challenging to continue.</li> <li>Strict enforcement during wheat/rice harvesting season</li> </ul>	District Administration, Department of Agriculture, Police, HSVP, Revenue Department & HSPCB			
4.	Stoppage of garbage burning/biomass burning and appointment of Nodal officer/Zonal Officer.	Eighty teams (forty from amongst the sanitation staff and forty teams from the Engineering staff) i.e. two teams for each of the 40 municipal wards of this Corporation were constituted for this purpose.	<p>The MCF has constituted the teams for the said purpose and a WhatsApp No. 9599780888 has also issued to general public for registering the complaints.</p> <p>Continuous monitoring and challaning will be done</p>	MCF	Control on burning	Regular Activity	Long Term
5.	Reporting of garbage / municipal solid waste burning through mobile-based applications and	WhatsApp no. 9599780982 has been issued where complaint can be filed by general public.	<ul style="list-style-type: none"> <li>An app is working in MCF namely FMDA Challan app</li> <li>Challan will be issued to violators and complaints received on above platform</li> </ul>	MCF	Control on municipal waste	Regular Activity	Long Term

	other social media platforms linked with Central and state-level control rooms for accountability.		will be attended and resolved within time period.				
6.	Municipal Solid Waste should be removed from the points and taken to the facility for proper scientific disposal	5 Hotspots has been identified by Pollution department i.e. DLF Industrial Area and sector 34, Air Force Station, Sector 24 & 25 Industrial Area, Sector-50. 90% waste has been removed and sent to Landfill site at Bandhwari.	100% legacy waste to be removed and regular monitoring of the same will be done.	MCF	Control on municipal waste	30.04.2021	Short Term

## Annexure 4 – Action Plan for Control on Industrial Emissions

S.No.	Activity	Current Status	Actions to be taken	Responsible Agencies	Target to be achieved	Target Date	Implementation Period (Short/Medium/Long term)
1.	Installation of Electrostatic precipitators and air pollution control devices.	Air pollution control devices have been installed in all industries.	<ul style="list-style-type: none"> <li>• Identification of industries where electrostatic precipitators and air pollution control devices to be installed.</li> <li>• Prepare cost estimates.</li> <li>• Tendering and Execution of works.</li> </ul>	HSPCB and HSIIDC	Installation of Electrostatic precipitators and air pollution control devices to monitor the air quality.	31.08.2021	Medium Term
2.	Action against non-complying industrial units	Regular inspection as per policy of the Board.	Action against defaulting industries.	HSPCB	Reduce air pollution by enforcement	Regular Activity	Long Term
3.	Online continuous Emission monitoring system	<ul style="list-style-type: none"> <li>• Presently online continuous emission monitoring is not done.</li> </ul>	<ul style="list-style-type: none"> <li>• Mobile facility van for continuous ambient air quality monitoring to be purchased.</li> </ul>	HSPCB	Continuous monitoring of Air Quality	31.08.2021	Medium Term

			<ul style="list-style-type: none"><li>• Prepare road wise plan for van movement.</li><li>• Prepare cost estimates.</li><li>• Tendering and Execution of works.</li></ul>				
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## Annexure 5 – Action Plan for Control on Construction and Demolition Activities

S.No.	Activity	Current Status	Actions to be taken	Responsible Agencies	Target to be achieved	Target Date	Implementation Period (Short/Medium/ Long term)
1.	Enforcement of Construction & Demolition (C& D) Rules, 2016	<ul style="list-style-type: none"> <li>Regular inspection is done.</li> <li>230 Nos. challans issued against violators and Rs. 4,02,000/- recovered.</li> </ul>	<p>300 TPD C&amp;D Plant to be setup. The collection and transportation of C&amp;D waste to Processing plant will be undertaken. The plan has been identified; administrative approval accorded by the State Govt. LOA has been issued in April 2021.</p> <p>Concession Agreement will be signed in September 2021 to under C&amp;D activities mentioned in the rules</p>	MCF	Control C&D waste	31.05.2021	Medium Term
2.	Ensure carriage of construction material in closed/covered vessels	MC has already directed all contractors to carry building materials and malba in enclosed/ covered vessels.	Regular inspection is to be done.	MCF	Control C&D waste	Regular Activity	Long Term

3.	Ensure processing of construction and Demolition material	Presently, C&D waste is not being processed.	Under the same tender mentioned above, the selected Concessionaire will start processing the waste from 30 days of collection of C&D within the project Area.	MCF	Processing of C&D waste	31.08.2021	Medium Term
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## Annexure 6 – Action Plan for control through other Steps

S.No.	Activity	Current Status	Actions to be taken	Responsible Agencies	Target to be achieved	Target Date	Implementation Period (Short/Medium/ Long term)
1.	Dissemination of information on Air Quality Index	Presently, 5 number CAQMMS has been installed.	Continuous Ambient monitoring system will be installed in Faridabad area as per criteria of HSPCB at following three locations <ul style="list-style-type: none"> <li>• Near world street sector 79</li> <li>• Near green Field</li> <li>• IMT, Faridabad</li> </ul>	HSPCB	Monitoring of Air Quality Index	31.12.2022	Medium Term
2.	Source apportionment study	Source appointment study has not been done.  Expression of interest was invited only 1 organization participated.	Work Order to be issued.	MCF	Identify and curb the source of pollution	31.12.2023	Long Term
3.	Enforce Graded Response Action Plan	GRAP has been prepared	All stake holder/ departments are directing as per directions/instructions of GRAP	MCF, PWD (B&R), HSPCB, HSVP, FMDA, RTA, Forest Department, HSIIDC	Implementation of GRAP	Regular Activity	Long Term

4.	Awareness campaign	<ul style="list-style-type: none"> <li>Awareness programme were organized from time to time on various environmental days/ Diwali.</li> <li>IEC material was also installed in market areas, residential areas etc.</li> </ul>	<ul style="list-style-type: none"> <li>Awareness programme will be organized regarding no use of firecracker, use of CNG vehicle, not burn Coal/ MSW/ leaves etc.</li> </ul>	MCF, HSCP and Transport Department	Increase awareness among general public	Regular Activity	Long Term
5.	Installation of Smog towers	<p>Six Smog tower to be installed at following locations in Faridabad.</p> <ol style="list-style-type: none"> <li>Balabgarh Sohna chowk</li> <li>B.K. chowk</li> <li>Hardware Chowk</li> <li>Near Badarpur border</li> <li>DPS Chowk</li> <li>Sector-10</li> </ol>	<ul style="list-style-type: none"> <li>Prepare Feasibility.</li> <li>Prepare cost estimates.</li> <li>Tendering and execution of works.</li> </ul>	MCF and HSPCB	Reduce air pollution by installing Smog Towers	31.12.2022	Long Term

Note: 'Short Term' refers to activities to be carried out during next 6 months, 'Medium Term' refers to activities to be carried out during next 2 years and 'Long Term' refers to activities to be carried out in more than 2 years' time period.