

## **Action Plan for Clean Air, Mandi Gobindgarh**



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**Directorate of Environment and Climate Change  
Department of Science, Technology and Environment,**

**Government of Punjab**

## Table of Contents

|   |    |
|---|----|
| Chapter 1 - Introduction .....  | 5  |
| 1.1 About Air Pollution .....   | 5  |
| 1.2 About Mandi Gobindgarh.....   | 5  |
| 1.3 Government's past efforts for control of Air pollution .....                              | 6  |
| 1.4 About National Green Tribunal directions .....  | 7  |
| Chapter 2 – Vision, Mission and Strategy .....  | 9  |
| 2.1 Mission Tandrust Punjab .....   | 9  |
| 2.2 Vision for Clean Air, Mandi Gobindgarh.....   | 9  |
| 2.3 Mission Clean Air, Mandi Gobindgarh.....  | 9  |
| 2.4 Strategy for Clean Air, Mandi Gobindgarh .....  | 9  |
| 2.5 Identification of Government Stakeholders.....  | 9  |
| 2.6 Non-Government Stakeholders .....   | 11 |
| 2.7 Nodal Department.....   | 11 |
| 2.8 Integration of Departmental plans.....  | 12 |
| 2.9 Citizen participation .....   | 12 |
| 2.10 Design of Monitoring System .....  | 12 |
| 2.11 Governance .....   | 13 |
| Chapter 3 – Current Status and Trends of Air Quality in Mandi Gobindgarh .....                | 14 |
| 3.1 Monitoring of Air Quality .....   | 14 |
| 3.2 CPCB's norms for Air Quality.....   | 14 |
| 3.3 Air Quality Index (AQI).....  | 15 |
| 3.4 Trends of Quality of Air .....  | 16 |
| 3.5 Major parameters of concern .....   | 16 |
| Chapter 4 – Sources of Air Pollution in Mandi Gobindgarh.....                                 | 17 |
| 4.1 Major Sources.....  | 17 |
| 4.2 Vehicular Emissions.....  | 17 |
| 4.3 Road Dust .....   | 17 |
| 4.4 Burning of Biomass and Garbage .....  | 18 |
| 4.5 Industrial Emissions.....   | 18 |
| 4.6 Mining.....   | 19 |
| 4.7 Construction and Demolition Activities.....   | 19 |
| 4.8 Others.....   | 19 |
| Chapter 5 –Control on Vehicular Emissions.....  | 20 |
| 5.1 Key Activities .....  | 20 |
| 5.2 CVE 1 - Public awareness campaign for control of vehicular emissions .....                | 20 |
| 5.3 CVE 2 - Remote sensor based PUC system.....   | 21 |
| 5.4 CVE 3 - Extensive drive against polluting vehicles.....                                   | 21 |
| 5.5 CVE 4 - Prevent parking of vehicles in non-designated areas .....                         | 21 |
| 5.6 CVE 5 - Check fuel adulteration.....  | 21 |
| 5.7 CVE 6 - Widening of roads and improvement of infrastructure to decongestion of roads..... | 21 |
| 5.8 CVE 7 - Introduce intelligent traffic systems .....                                       | 22 |
| 5.9 CVE 8 - Construction of expressways/ bypasses to avoid congestion.....                    | 22 |
| 5.10 CVE 9 – Phasing out commercial Diesel vehicles more than 15 years old .....              | 22 |

|  |   |    |
|--|---|----|
| 5.11   | CVE 10 - Promotion of E- vehicles .....   | 22 |
| 5.12   | CVE 11 – Introduction of CNG based public transport.....                                    | 22 |
| 5.13   | CVE 12 - Retrofitting of particulate filters in diesel vehicles for BS-IV fuels .....       | 22 |
| Chapter 6–Control of Road Dust.....                                |   | 23 |
| 6.1  | Key Activities .....  | 23 |
| 6.2  | CRD 1 – Maintain potholes free roads for free-flow of traffic .....                         | 23 |
| 6.3  | CRD 2 – Water sprinkling.....   | 23 |
| 6.4  | CRD 3 – Mechanical sweeping.....  | 24 |
| 6.5  | CRD 4 – Creation of green buffers along the road sides .....                                | 24 |
| 6.6  | CRD 5 – Greening of parks, open areas community places, schools and housing societies<br>24 |    |
| 6.7  | CRD 6 – Water fountains at major traffic intersections.....                                 | 24 |
| 6.8  | CRD 7 – Blacktopping of roads including pavement of road sides.....                         | 24 |
| Chapter 7–Control on Burning of Garbage and Biomass.....           |   | 25 |
| 7.1  | Key Activities .....  | 25 |
| 7.2  | CBGB 1 – Control on open burning of bio-mass in City.....                                   | 25 |
| 7.3  | CBGB 2 – Control on burning of municipal solid waste.....                                   | 25 |
| 7.4  | CBGB 3 – Control on burning of agriculture waste and crop residue .....                     | 26 |
| Chapter 8 – Control on Industrial Emissions.....                   |   | 27 |
| 8.1  | Key Activities .....  | 27 |
| 8.2  | CIE 1 – Conversion to side-hood suction in furnaces .....                                   | 27 |
| 8.3  | CIE 2 – Conversion to CNG/ PNG from Coal .....  | 27 |
| 8.4  | CIE 3 - Conversion of natural draft brick kilns to induced draft .....                      | 27 |
| 8.5  | CIE 4 – Action against non-complying industrial units: .....                                | 28 |
| 8.6  | CIE 5 – Shifting of industries from non-designated areas to industrial areas .....          | 28 |
| Chapter 9 – Control on Construction and Demolition activities..... |   | 29 |
| 9.1  | Key Activities .....  | 29 |
| 9.2  | CCDA 1 –Enforcement of Construction& Demolition (C&D) Rules, 2016: .....                    | 29 |
| 9.3  | CCDA 2 – Control measures for fugitive emissions .....                                      | 29 |
| 9.4  | CCDA 3 – Ensure carriage of construction material in closed/covered vessels .....           | 29 |
| Chapter 10 – Control through Other Steps.....                      |   | 30 |
| 10.1   | Key Activities .....  | 30 |
| 10.2   | COS 1 – Dissemination of information on Air Quality Index .....                             | 30 |
| 10.3   | COS 2 – Establish an Air Quality Management Division at SPCB HQ.....                        | 30 |
| 10.4   | COS 3 – Setup helpline in each city/town as well as SPCB HQ.....                            | 30 |
| 10.5   | COS 4 - Monitoring of DG sets and action against violations.....                            | 30 |
| Chapter 11–Graded Response Action Plan for Mandi Gobindgarh.....   |   | 31 |
| 11.1   | Graded Responses.....   | 31 |
| 11.2   | Agency Responsible for Graded Response.....   | 31 |
| 11.3   | Action in case of Severe AQI (Value> 400) .....   | 31 |
| 11.4   | Action in case of Very Poor AQI (Value between 301 to 400).....                             | 32 |
| 11.5   | Action in case of Poor AQI (Value between 201 to 300).....                                  | 32 |
| 11.6   | Action in case of moderately polluted AQI (Value between 101 to 200) .....                  | 33 |
| Chapter 12 –Monitoring Requirements and Formats.....               |   | 34 |

|            |  |    |
|------------|--|----|
| 12.1       | Monitoring Requirements .....  | 34 |
| 12.2       | Development of Environment Protection Monitoring System (EPMS).....              | 34 |
| Chapter 13 | –Governance and Supervision .....  | 35 |
| 13.1       | Three Tier Monitoring .....  | 35 |
| 13.2       | AQMC at District Level .....   | 35 |
| 13.3       | AQMC at State Level.....   | 36 |
| 13.4       | Steering Committee .....   | 37 |
| Chapter 14 | –Risk Mitigation Plan.....   | 38 |
| 14.1       | Identification of Major Risks .....  | 38 |
| 14.2       | Source Apportionment Study.....  | 38 |
| 14.3       | Accuracy and completeness of baseline data, targets and milestones .....         | 38 |
| 14.4       | Lack of formal analysis of implementation barriers.....                          | 38 |
| Chapter 15 | –Action plan for Training and Capacity Building .....                            | 39 |
| 15.1       | Importance.....  | 39 |
| 15.2       | Objectives .....   | 39 |
| 15.3       | Need Assessment.....   | 39 |
| 15.4       | Involvement of Institutions and Experts.....                                     | 39 |
| Annexure A | – Trends in Air Quality of Mandi Gobindgarh .....                                | 40 |
| Annexure B | – AQI data from 2017 to 2018 depicting the air quality in Mandi Gobindgarh ..... | 43 |
| Annexure C | – Action Plan for Control on Vehicular Emissions .....                           | 44 |
| Annexure D | – Action Plan for Control on Road Dust .....                                     | 51 |
| Annexure E | – Action Plan for Control on Burning of Garbage and Biomass .....                | 57 |
| Annexure F | – Action Plan for Control on Industrial Emissions .....                          | 60 |
| Annexure G | – Action Plan for Control on Construction and Demolition Activities .....        | 62 |
| Annexure H | – Action Plan for Control through Other Steps.....                               | 64 |

## **Chapter 1 - Introduction**

### **1.1 About Air Pollution**

- 1.1.1. 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, ozone, oxides of nitrogen, and sulphur dioxide.
- 1.1.2. The health effects caused by air pollution may include difficulty in breathing, wheezing, coughing, asthma and worsening of existing respiratory and cardiac conditions.

### **1.2 About Mandi Gobindgarh**

#### **1.2.1. History**

Mandi Gobindgarh, the Steel Town was blessed by the sixth Guru Shri Guru Hargobind Sahib as "Steel City". In 1902, Maharaja Hira Singh of Nabha ordered the building of industrial units in the town. Maharaja Partap Singh conducted further industrial development. In 1928, Gobindgarh became a free trade zone for steel. As a centre for steel, the town experienced growth. The land was made available to local blacksmiths at nominal rates in early 1940, leading to the establishment of a number of workshops on both sides of the G.T. Road at Gobindgarh.

#### **1.2.2. Area and Population**

Mandi Gobindgarh falls in district Fatehgarh Sahib. The city is located in a stretch of about 10 Km. on National Highway-I, spread over an area of about 27 SqKm and currently accommodates a population of about 90,000.

#### **1.2.3. Industry and Trade**

At present, the city produces 25 percent of the total recycled steel production of India. Industrialization in Mandi Gobindgarh began at the start of the 20th century. Mandi Gobindgarh town is known as 'Steel Town of India' as various categories of steel manufacturing units are operating in this town.

#### **1.2.4. Topography**

The topography of the Mandi Gobindgarh is typical representative of an Alluvial plain, it owes its origin to the aggravation work of the Sutlej River. The alluvium deposited by the river has been worked over by the wind which gave rise to a number of small dunes and sand mounds. Most of these dunes have been levelled by the brave hard-working agriculturists of the district.

#### 1.2.5. **Climate**

The climate of Mandi Gobindgarh is characterized by dryness except a brief spell of monsoon season in a very hot summer and a bracing winter. The winter season is from middle of November to the early part of March. The succeeding period up-to the end of June is the hot season. July, August and half of September constitute the south west of monsoon, the period of mid-September to about the middle of November may be termed as post monsoon or transitional period. June is generally the hottest month. Hot and scorching dust laden winds blow during summer season. December & January are the coldest months. The mean daily temperature varies in the range of 5.8 degree centigrade to 41.2 degree centigrade.

#### 1.2.6. **Rainfall**

The rainfall in the city increases from south west towards the north east. About 70% of the rainfall is received during the period July to September. The rainfall during December to March accounts for 16% of the rainfall and the remaining 14% rainfall is received in other months of the year. The average annual rainfall is 681 mm.

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

- 1.3.1. The environment of Mandi Gobindgarh has degraded a lot during the last few years due to rapid urbanization, industrialization, increase in population, vehicles and commercialization of land available within the town. The industrial cluster of Mandi Gobindgarh had been identified as one of the critically polluted clusters by the Ministry of Environment & Forests vide office memorandum J-11013/5/2010-IA II (I) dated 13/1/2010. This had resulted in imposition of a temporary restriction of 8 months for establishment of new industrial units, which were covered in Schedule-I appended to the EIA notification dated 14/9/2006.
- 1.3.2. Punjab Pollution Control Board had taken this as a challenge and also as an opportunity in order to achieve significant improvement in environmental quality and pave the way for sustainable development in the area. A comprehensive remedial environmental action plan was prepared in consultation with all the stakeholders, including Industrial Associations. The multi-disciplinary action plan was based on Prevention, Promotion and Mitigation (PPM) principles emphasizing on a time bound implementation of effective measures.
- 1.3.3. The Action Plan was monitored by high level steering committee, to ensure collaborative efforts among various implementing agencies and industries. The first meeting of the said Action plan committee was held on November, 2010. The meetings are conducted every second month to review the progress made by various departments. After fresh monitoring of Mandi Gobindgarh area, the moratorium imposed was lifted by MoEF&CC in year 2011 due to improvement in the environment parameters.

#### 1.4 About National Green Tribunal directions

1.4.1. Nine cities of Punjab namely DeraBassi, Nangal, Patiala, Mandi Gobindgarh, Khanna, Ludhiana, Jalandhar, Pathankot and Amritsar were declared non-attainment cities by Central Pollution Control Board (CPCB) on the basis of Ambient air data for the period of 2011-2015 for not meeting the annual average of 60  $\mu\text{g}/\text{m}^3$  for PM<sub>10</sub>. Directions were issued to the Board by CPCB to prepare action plans for the above stated non-attainment cities of Punjab.

1.4.2. Subsequently, National Green Tribunal has taken cognizance of draft National Clean Air Program and passed directions in the matter of application no. 681 of 2018 dated 8/10/2018. The important points of the said directions are given as under:

- (i) Action plans to be prepared within two months aimed at bringing the standards of air quality within the prescribed norms within six months from date of finalization of the action plans.
- (ii) The action plans may be prepared by six-member committee comprising of Director of Environment, Transport, Industries, Urban Development, Agriculture and Member Secretary, State Pollution Control Board under the overall supervision of Principal Secretary, Environment and further supervised by Chief Secretary.
- (iii) The Action plans may take into account the GRAP, the CAP and the action plan prepared by CPCB as well as all other relevant factors.
- (iv) The Action Plan will include components like identification of source and its apportionment considering sectors like vehicular pollution, industrial pollution, dust pollution, construction activities, garbage burning, agricultural pollution including pollution caused by burning of crop residue, residential and indoor pollution etc.
- (v) The Action plan shall also consider measures for strengthening of Ambient Air Quality (AAQ) monitoring and steps for public awareness include issuing of advisory to public for prevention and control of air pollution and involvement of schools, colleges and other academic institutions and awareness programmes.
- (vi) The Action plan will indicate steps to be taken to check different sources of pollution having speedy, definite and specific timelines for execution.
- (vii) The Action plan should be consistent with the carrying capacity assessment of the non-attainment cities in terms of vehicular pollution, industrial emissions and population density, extent of construction and construction activities etc. The carrying capacity assessment shall also lay emphasis on agricultural and indoor pollution in rural areas. Depending upon assessed carrying capacity and source apportionment, the authorities may consider the need for regulating, number of vehicles and their parking and plying, population density, extent of construction and construction activities etc. Guidelines may accordingly be framed to regulate

vehicles and industries in non-attainment cities in terms of carrying capacity assessment and source apportionment.

- (viii) The CPCB and SPCBs shall develop a public grievance redressal portal for redressal of public complaints on air pollution along with a supervisory mechanism for its disposal in a time bound manner. Any visible air pollution can be reported at such portal by email/SMS.
- (ix) The CPCB and all SPCBs shall collectively workout and design a robust nationwide ambient air quality monitoring programme in a revised format by strengthening the existing monitoring network with respect to coverage of more cities / towns. The scope of monitoring should be expanded to include all twelve (12) notified parameters as per notification no. B-29016/20/90/PCI-L dated 18th November of CPCB. The Continuous Ambient Air Quality Monitoring Stations (AAQMS) should be preferred in comparison to manual monitoring stations. The CPCB and States shall file a composite action plan with timelines for its execution which shall not be more than three months.

1.4.3. Earlier, NGT had also issued various directions in OA No. 21 of 2014 titled as Vardhaman KaushikV/s Union of India and Others for combating air pollution.



## **Chapter 2 – Vision, Mission and Strategy**

### **2.1 Mission Tandrust Punjab**

The Government of Punjab envisions to make Punjab the healthiest State with healthy people by ensuring the quality of air, water, food and a good living Environment.

### **2.2 Vision for Clean Air, Mandi Gobindgarh**

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

### **2.3 Mission Clean Air, Mandi Gobindgarh**

To prepare and implement a comprehensive action plan for clean Mandi Gobindgarh:

- (i) Creating awareness about the adverse impact of air pollution
- (ii) Identifying the sources of air pollution, their apportionment
- (iii) Identifying action steps related to Awareness, Enforcement, Infrastructure or Policy for control of various sources of Air Pollution
- (iv) Designing effective systems for monitoring the progress of the implementation of action steps
- (v) Ensuring effective monitoring of the quality of air
- (vi) Mitigating adverse impact on health of the people due to air pollution

### **2.4 Strategy for Clean Air, Mandi Gobindgarh**

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

- (i) Identification of Government Stakeholders
- (ii) Identification of Non-Government Stakeholders
- (iii) Integration of Departmental plans – Creating synergies
- (iv) Nodal Department
- (v) Citizen Participation
- (vi) Monitoring and Governance

### **2.5 Identification of Government Stakeholders**

In order to combat the challenges of air pollution, all the Stakeholders will have to make concerted efforts. Following Departments and agencies have been identified along with their responsibilities:

- (i) **Punjab Pollution Control Board**
  - (a) Monitoring of air pollution control devices installed by industries
  - (b) Up-gradation of existing air pollution control devices
  - (c) Monitoring of ambient air quality and stack emissions
  - (d) Provision of canopies on the existing D.G sets

- (ii) **Department of Local Government/ MC, Mandi Gobindgarh**
  - (a) Development of engineered municipal solid waste dump site
  - (b) Improvement of road infrastructure for smooth traffic movement
  - (c) Regular and mechanical cleaning of roads
  - (d) Sprinkling of in the parks and maintenance of fountains
  - (e) Increasing green cover in city
  - (f) Upgrading traffic lights for smooth traffic movement
  - (g) Provide canopies on the existing D.G sets
- (iii) **Department of Transport**
  - (a) Plan for effective traffic management
  - (b) Plan for phasing out old polluting vehicles
  - (c) Shift to cleaner fuels viz. CNG etc.
  - (d) Monitoring of vehicles without PUC certificate
  - (e) Banning of pressure horns
- (iv) **Department of Police**
  - (a) Planning and enforcement of traffic management plan
  - (b) Checking of vehicles running without PUC certificate
  - (c) Impounding and challan of vehicles running without permission/ registration.
- (v) **Department of Forests**
  - (a) Preparation of afforestation plan
  - (b) Organizing awareness camps for Greener City
  - (c) Providing green belt around the industrial areas
- (vi) **Department of Industries and Commerce / PSIEC**
  - (a) Shifting of industries from non-designated areas
  - (b) Provision of environment infrastructure in Industrial Areas
- (vii) **PWD (B&R)**
  - (a) Improving road conditions for smooth movement of traffic
  - (b) Increasing green cover on roadside under their jurisdiction
- (viii) **Punjab State Council for Science and Technology**
  - (a) Evolving cost-effective cleaner technologies
- (ix) **Department of Agriculture**
  - (a) Promotion of bio-mechanization and compost facilities for agro waste
  - (b) To provide Machinery for in-situ management
  - (c) To create awareness about ill-effects of stubble burning
  - (d) To create awareness regarding alternative crops to break wheat-rice cycle.

(x) **District Administration**

- (a) Coordination with all the Stakeholders promoting collaboration and resolving local issues
- (b) Public Awareness Campaign

**2.6 Non-Government Stakeholders**

2.6.1. There is need to involve various Industry associations of Mandi Gobindgarh in this plan. Following Industry Associations of Mandi Gobindgarh will be associated with the plan:

- (i) President, Gobindgarh Steel Chamber of Commerce & Industries, Mandi Gobindgarh.
- (ii) President, All India Steel Re-Rollers Association, Mandi Gobindgarh
- (iii) President, Small Scale Steel Re-Rollers Association, Mandi Gobindgarh
- (iv) President, Mandi Gobindgarh Induction Furnace Association, Mandi Gobindgarh

2.6.2. These association will help in the following activities:

**Generic**

- (i) To stabilize the vehicular movement area within premises of the industries
- (ii) To persuade the member industries to comply with emission norms by PPCB
- (iii) To evolve more efficient machinery, boiler furnace and air pollution control devices which may be adopted by all the industries for better environment

**Specific**

- (iv) To shift over the industries from coal / pet coke / furnace oil to CNG
- (v) To upgrade the existing APCD of Induction Furnaces consisting of canopy hood to the new APCD designed by PSCST, Chandigarh with side hood collection system & ensuring the adequacy of APCD for other coal fired industry.

2.6.3. Apart from Industry Associations, the support of various NGOs in the city such as Go Green (NGO), Mandi Gobindgarh will be sought. These NGOs will assist in the following:

- (i) To create awareness among the public regarding ill-effects of air pollution
- (ii) To motivate residents of Mandi Gobindgarh for adopting the practices to minimize the use of fresh water, planting more trees, to promote pooling by minimal use of private vehicles. Parking of vehicles in the designated zones, minimum use of electricity etc
- (iii) To give suggestions to District Level Committee to control or minimize the air pollution
- (iv) To give feedback on enforcement activities

**2.7 Nodal Department**

The clean air plan for Mandi Gobindgarh is part of State-wide campaign to control air pollution in non-attainment cities. In order to bring necessary impetus, support from other stakeholder departments, uniformity and consistency, there is need to have a Nodal

Department. The Department of Science, Technology and Environment will be the nodal department for coordinating and monitoring activities of the plan. The Department has recently set up Directorate of Environment and Climate Change, which will provide necessary support at the headquarter for coordination and oversight and PPCB will provide necessary technical and field support.

## **2.8 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.

## **2.9 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.

## **2.10 Design of Monitoring System**

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

- (i) Public Awareness
- (ii) Effective Enforcement
- (iii) Creation of new Infrastructure
- (iv) Maintenance related activities
- (v) Policy Advocacy
- (vi) Technology Support

2.10.2 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.

2.10.3 Directorate of Environment and Climate Change and PPCB will set up a dedicated team for design of monitoring system and setting up of IT platform for tracking progress of the plan.

## 2.11 **Governance**

The monitoring of progress, coordination of various activities, corrective measures required and fixing of accountability will be done by Air Quality Monitoring Committees at the District level under Deputy Commissioner, State Level under Principal Secretary, Environment and Apex Committee under Chief Secretary.

### Chapter 3 – Current Status and Trends of Air Quality in Mandi Gobindgarh

#### 3.1 Monitoring of Air Quality

Mandi Gobindgarh is the major industrial hub in the Distt. Fatehgarh Sahib and the ambient air quality monitoring is being carried out regularly at 3 no. manually operated stations installed at Mandi Gobindgarh under National Air Monitoring Programme (NAMP). The year wise data of PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub> for the period 2014-18 is placed at **Annexure-A**. Further, the Board has also commissioned one Continuous Ambient Air Quality Monitoring Station (CAAQMS) at Mandi Gobindgarh and the real time data of the same is being displayed at National Highway-I. The AQI data of 2017 and 2018 has been given in **Annexure-B**.

#### 3.2 CPCB's norms for Air Quality

The CPCB on 18/10/2009 has revised National Ambient Air Quality Standards (NAAQS) which are reproduced as under:

| S.N. | Pollutants   | Time weighted average | Concentration of Ambient Air                   |                                      |
|------|--|-----------------------|--|--------------------------------------|
|      |  |                       | Industrial, Residential, Rural and other areas | Notified Ecologically sensitive area |
| 1    | Sulphur Dioxide (SO <sub>2</sub> )<br>µg/m <sup>3</sup>                    | Annual                | 50   | 20                                   |
|      |  | 24 hours              | 80   | 80                                   |
| 2    | Nitrogen Dioxide (NO <sub>2</sub> )<br>µg/m <sup>3</sup>                   | Annual                | 40   | 30                                   |
|      |  | 24 hours              | 80   | 80                                   |
| 3    | Particulate Matter (size<10 µm) or PM <sub>10</sub><br>µg/m <sup>3</sup>   | Annual                | 60   | 60                                   |
|      |  | 24 hours              | 100  | 100                                  |
| 4    | Particulate Matter (size<2.5 µm) or PM <sub>2.5</sub><br>µg/m <sup>3</sup> | Annual                | 40   | 40                                   |
|      |  | 24 hours              | 60   | 60                                   |
| 5    | Ozone (O <sub>3</sub> ) µg/m <sup>3</sup>                                  | 8 hours               | 100  | 100                                  |
|      |  | 1 hour                | 180  | 180                                  |
| 6    | Lead (Pb), µg/m <sup>3</sup>   | Annual                | 0.50   | 0.50                                 |
|      |  | 24 hours              | 1.0  | 1.0                                  |
| 7    | Carbon Monoxide (CO), mg/m <sup>3</sup>                                    | 8 hours               | 02   | 02                                   |
|      |  | 1 hour                | 04   | 04                                   |
| 8    | Ammonia (NH <sub>3</sub> ), µg/m <sup>3</sup>                              | Annual                | 100  | 100                                  |
|      |  | 24 hours              | 400  | 400                                  |
| 9    | Benzene (C <sub>6</sub> H <sub>6</sub> ) µg/m <sup>3</sup>                 | Annual                | 05   | 05                                   |

|    |  |        |    |    |
|----|--|--------|----|----|
| 10 | Benzo (a) Pyrene (BaP)-<br>particulate phase only<br>ng/m <sup>3</sup> | Annual | 01 | 01 |
| 11 | Arsenic (As) ng/m <sup>3</sup>   | Annual | 06 | 06 |
| 12 | Nickel (Ni) ng/m <sup>3</sup>  | Annual | 20 | 20 |

### 3.3 Air Quality Index (AQI)

3.3.1. Awareness of daily levels of air pollution is important to the citizens, especially for those who suffer from illnesses caused by exposure to air pollution. Further, success of a nation to improve air quality depends on the support of its citizens who are well-informed about local and national air pollution problems and about the progress of mitigation efforts. Thus, a simple yet effective communication of air quality is important. The concept of an air quality index (AQI) that transforms weighted values of individual air pollution related parameters into a single number is widely used for air quality communication and decision making.

3.3.2. The AQI system is based on maximum operator of a function (i.e. selecting the maximum of sub-indices of individual pollutants as an overall AQI). The objective of an AQI is to quickly disseminate air quality information (almost in real-time) that entails the system to account for pollutants which have short-term impacts. Eight parameters (PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub>, SO<sub>2</sub>, CO, O<sub>3</sub>, NH<sub>3</sub>, and Pb) having short-term standards have been considered for near real-time dissemination of AQI.

3.3.3. The AQI has further been classified in six categories as shown below:

| AQI     | Quality      | Impact on health   |
|---------|--------------|--|
| 0-50    | Good         | Minimal impact   |
| 51-100  | Satisfactory | Minor breathing discomfort to sensitive people                             |
| 101-200 | Moderate     | Breathing discomfort to people with lungs, asthma and heart diseases       |
| 201-300 | Poor         | Breathing discomfort to most people on prolonged exposure                  |
| 301-400 | Very poor    | Respiratory illness on prolonged exposure                                  |
| >401    | Severe       | Affects healthy people and seriously impacts those with existing diseases. |

3.3.4. Based on this, the CPCB evolved a Graded Response Action plan (GRAP) which is implemented in the NCR, Delhi when the air quality deteriorates and various steps have

been mentioned in GRAP to be taken to immediately control the deterioration of the air quality.

### 3.4 Trends of Quality of Air

- 3.4.1. The Board has commissioned one no. Continuous Ambient Air Quality Monitoring Station (CAAQMS) at Mandi Gobindgarh and the real time data of the same is being displayed at National Highway-I. Annual average of AQI for the last 2 years is given as under:

| Year | PM <sub>10</sub><br>(µg/m <sup>3</sup> ) | PM <sub>2.5</sub><br>(µg/m <sup>3</sup> ) | SO <sub>2</sub><br>(µg/m <sup>3</sup> ) | NO <sub>x</sub><br>(µg/m <sup>3</sup> ) | AQI |
|------|--|---|---|---|-----|
| 2017 | 174.16                                   | 77.40                                     | 12.41                                   | 69.59                                   | 196 |
| 2018 | 113.0                                    | 62.40                                     | 9.66                                    | 36.45                                   | 121 |

- 3.4.2. The trend of AQI in the ambient air quality shows that the concentration of SO<sub>2</sub>, NO<sub>x</sub> and SPM in the ambient air has decreased in 2018 as compared to 2017.

### 3.5 Major parameters of concern

The major concern of the air quality is PM<sub>10</sub>. All other parameters are within the prescribed limits. The perusal of data in **Annexure-B** clearly indicates that air quality index of Mandi Gobindgarh generally remains moderate (101-200) and sometimes satisfactory (51-100). The sources of pollution and their apportionment are given in the next chapter.



## Chapter 4 – Sources of Air Pollution in Mandi Gobindgarh

### 4.1 Major Sources

4.1.1 The following are the major sources of air pollution:

- (i) Vehicular Emissions
- (ii) Road Dust
- (iii) Burning of Garbage and Biomass
- (iv) Industrial Emissions
- (v) Mining
- (vi) Construction and Demolition Activities
- (vii) Other Sources

4.1.2 Due to paucity of time, detailed studies regarding source apportionment and carrying capacity could not be done, however, the Board has made some projections based on its in-house projections for Mandi Gobindgarh. The estimated contribution of various sources in air pollution is given as under:

|    |  |     |
|----|--|-----|
| 1. | Industrial Emissions                   | 50% |
| 2. | Road Dust                              | 25% |
| 3. | Vehicular Pollution                    | 15% |
| 4. | Burning of Garbage and Biomass         | 5%  |
| 5. | Construction and Demolition Activities | 4%  |
| 6. | Other Sources                          | 1%  |

4.1.3 PPCB shall carry out source apportionment for the city involving Expert Agency. The estimated cost to be incurred on the Source Apportionment study is Rs. 5.00 lacs.

### 4.2 Vehicular Emissions

4.2.1 Transport sector is one of the significant contributors to air pollution in Mandi Gobindgarh due to movement of heavy goods vehicles carrying raw materials and products of the industries located in and around the city. At present about 15000 vehicles (heavy transport vehicles, LMVs, cars & jeeps, two wheelers and three wheelers) are plying on the roads of Mandi Gobindgarh. National Highway NH-1 passes through Mandi Gobindgarh, which is connecting tourist destination like Amritsar and industrial hubs like Ludhiana and Jalandhar.

### 4.3 Road Dust

4.3.1 The particles of dust that deposit from the atmosphere and accumulate along road sides are called road dust particles. Two main sources of road dust are deposition of previously suspended particles (atmospheric aerosols) and displaced soil. Some of the factors contributing to road dust are:

- (i) Emissions from the vehicular traffic,
- (ii) Construction and demolition activities, corrosion of metals structures etc.
- (iii) Presence of potholes on the road
- (iv) Absence of metaled roads / stabilized roads / un-stabilized movement area within industries
- (v) Presence of un-stabilized berms along the roads
- (vi) Movement of overloaded transport vehicles

#### 4.4 Burning of Biomass and Garbage

- 4.4.1 There are only small patches of agricultural land within the Mandi Gobindgarh 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.
- 4.4.2 At present, Municipal solid waste generation of the city is estimated as 45 TPD, which is being dumped unscientifically in the present dumping site along G.T. Road. The garbage burning increases during winter season as the general public tend to burn the waste for heating purposes.

#### 4.5 Industrial Emissions

- 4.5.1 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 rolling mills, cupola furnaces and ceramic units are using coal / furnace oil as fuel in their furnaces emitting the aforesaid pollutants, besides the process / fugitive emissions.
- 4.5.2 The category wise detail of air polluting industries situated within 5 km of outskirts of MC limits of Mandi Gobindgarh are given as under:

| Sr. No. | Category                  | Number of Units |
|---------|---------------------------|-----------------|
| 1.      | Cattle Feed/Poultry Feeds | 4               |
| 2.      | Ceramics/Refractory       | 18              |
| 3.      | Cupola Furnaces           | 28              |
| 4.      | Forging units             | 14              |
| 5.      | Induction furnaces        | 79              |
| 6.      | Kothali units             | 4               |
| 7.      | Lead Smelting units       | 4               |
| 8.      | Milk Plant/Dairy          | 1               |
| 9.      | Ply Board units           | 2               |

| Sr. No. | Category        | Number of Units |
|---------|-----------------|-----------------|
| 10.     | Pyrolysis Plant | 2               |
| 11.     | Rolling Mills   | 212             |
| Total   |                 | 378             |

4.5.3 It is pertinent to mention here that emission standards for most of the above industries are the most stringent for such type of industries i.e. 150 mg/Nm<sup>3</sup>.

#### 4.6 Mining

Mining activities also contribute to the AQI, however, in Mandi Gobindgarh 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 Mandi Gobindgarh.

#### 4.7 Construction and Demolition Activities

4.7.1 Mandi Gobindgarh is a small city having population of about 90,000. No major construction projects are being set up in the city. However, 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.

#### 4.8 Others

4.8.1 Other than above mentioned sources, episodic incidents like Holi, Dusshera, Diwali, Gurupurab and New Year etc. are celebrated by bursting crackers, spraying colours etc. which also contribute to the ambient air quality.

## Chapter 5 –Control on Vehicular Emissions

### 5.1 Key Activities

5.1.1 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 have to be taken, which have been classified into following categories:

- (a) Public Awareness related,
- (b) Enforcement related,
- (c) Infrastructure related,
- (d) Policy related

5.1.2 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**

- (i) CVE 1 - Public awareness campaign for control of vehicular emissions

#### **Enforcement Related**

- (ii) CVE 2 -Remote sensor based PUC system
- (iii) CVE 3 - Extensive drive against polluting vehicles
- (iv) CVE 4 - Prevent parking of vehicles in non-designated areas
- (v) CVE 5 - Check fuel adulteration

#### **Infrastructure Related**

- (vi) CVE 6 - Widening of roads and improvement of infrastructure for decongestion of roads
- (vii) CVE 7 - Introduce intelligent traffic systems
- (viii) CVE 8 - Construction of expressways/ bypasses to avoid congestion

#### **Policy Related**

- (ix) CVE 9 – Phasing out of commercial Diesel vehicles more than 15 years old
- (x) CVE 10 – Promotion of E- vehicles
- (xi) CVE 11 – Introduction of CNG based public transport
- (xii) CVE 12 – Retrofitting of particulate filters in diesel vehicles for BS-IV fuels

5.1.3 Various actions to be taken for the above activities are given below. Further, the details such as baseline, target, timeline, milestones have been given in **Annexure – C**.

### 5.2 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, Mandi Gobindgarh, the public must be made aware of ill effects of air pollution on health and contribution of vehicular emissions in the same. The public has to be motivated to play their role in curbing the air pollution. Following action shall be taken:

- (i) Public awareness campaign in print and electronic media
- (ii) Use of Social Media Facebook, twitter, Instagram
- (iii) Jingles on air pollution on local radio and TV
- (iv) Awareness drives in educational institutions
- (v) Public meetings
- (vi) Nukarnataks

### 5.3 **CVE 2 - Remote sensor based PUC system**

The Department of Transport will implement remote sensor based PUC system to eliminate the malpractices in the existing system of issuing PUCs. All PUC centres will be made online.

### 5.4 **CVE 3 - Extensive drive against polluting vehicles**

There is need to strictly enforce checking of PUC certificates so that unauthorized vehicles could be penalized. The traffic police shall place check points (Nakas) at differed locations and the performance of such check points shall be monitored. A Whatsapp number shall be dedicated and publicized among general public so that complaints of public regarding polluting vehicles may be received and action taken.

Traffic Police and Department of Transport will be responsible for the activity.

### 5.5 **CVE 4 - Prevent parking of vehicles in non-designated areas**

**4(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 earmark roadside parking by yellow line.

**4(b) Enforcement:** 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.

### 5.6 **CVE 5 - Check fuel adulteration**

Online Automated System has been adopted by the State Level Coordinator, Oil industry, Punjab for transportation & checking the density of Petrol/Diesel. In case of complaint, Department of Food and Civil Supplies in coordination with local oil company officials shall check fuel adulteration & if any discrepancy is noticed then action against the violator shall be taken by State Level Coordinator, Oil industry, Punjab.

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

The roads constructed within the city having traffic congestion shall be identified by the MC. The major air pollution is caused by dust emission along road sides as the condition of roads is very pathetic. 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. The concerned department like PWD (B&R), PSIEC, Mandi Board and Municipal Council shall widen these roads suitably to decongest the traffic.

**5.8 CVE 7 - Introduce intelligent traffic systems**

The traffic lights installed in the area shall be synchronized in such a way so as to achieve minimal stoppage of vehicles for a stretch of at least 2 Km. The traffic lights shall be placed at various intersection, so as to avoid traffic jams and smooth operation of the vehicles. Municipal Council in consultation with Traffic Police shall identify such places and provide traffic lights.

**5.9 CVE 8 - Construction of expressways/ bypasses to avoid congestion**

PWD (B&R) shall examine the need for any expressways/by-passes to avoid congestions.

**5.10 CVE 9 – Phasing out commercial Diesel vehicles more than 15 years old**

The Department of Transport will frame policy at State level to phase out commercial vehicles more than 15 years old.

**5.11 CVE 10 - Promotion of E- vehicles**

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.

**5.12 CVE 11 – Introduction of CNG based public transport**

**11 (a) Infrastructure development:** The Department of Food & Civil Supplies shall facilitate and expedite development of requisite infrastructure such as laying of pipe line and setting up of CNG filling station to promote CNG based public transport.

**11 (b) CNG based City Bus Service:** Local Government shall take necessary measures to promote CNG based City Bus service.

**11 (c) CNG based Auto Rickshaws/Taxis:** The Department of Transport shall take necessary steps to promote CNG based Auto Rickshaws/Taxis.

**5.13 CVE 12 - Retrofitting of particulate filters in diesel vehicles for BS-IV fuels**

State Level Coordinator (Oil Industry) has informed that as per Government of India guidelines, India is going to skip adopting BS-5 norms and progress directly to adopting BS-6 norms by 2020. The steps for retrofitting of particulate filters in diesel vehicles is to be undertaken by Automotive industry under directions from Government of India as and when BS-VI fuels are available.

## Chapter 6—Control of Road Dust

### 6.1 Key Activities

- 6.1.1 The particles of dust that deposit from the atmosphere and accumulate along road sides 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:

#### Maintenance Related

- (i) CRD1– Maintain potholes free roads for free-flow of traffic
- (ii) CRD 2 – Water sprinkling
- (iii) CRD 3 – Mechanical sweeping

#### Infrastructure Related

- (i) CRD4 -Creation of green buffers along the road sides
- (ii) CRD 5 - Greening of parks open areas community places, schools and housing societies
- (iii) CRD6 - Water fountains at major traffic intersections
- (iv) CRD 7 - Blacktopping of metaled road including pavement of road sides

- 1.1.2 Various actions to be taken for the above activities are given below. Further, the details such as baseline, target, timeline, milestones have been given in **Annexure-D**.

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

All the agencies such as MC/ PWD/PUDA/PSIEC/ NHAI will put in place a system of regular inspections to identify the potholes and ensure its 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.

### 6.3 CRD 2 – Water sprinkling

**2(a) Water sprinkling on dust prone roads:** Municipal Council 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 Council shall utilize the treated wastewater of STPs installed in the city.

**2(b) Procurement of Water sprinkler:** Municipal Council need to make arrangements for regular sprinkling of water on dust prone roads for which it may procure suitable number of water sprinklers.

**6.4 CRD 3 – Mechanical sweeping**

Municipal Council 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 Council.

**6.5 CRD 4 – Creation of green buffers along the road sides**

Municipal Council/PSIEC shall identify the trees with the help of Deptt. of Horticulture which may be grown along the roads without any obstruction to the traffic. These trees shall be planted at the suitable places. The maintenance of these trees shall be done by the Municipal Council.

**6.6 CRD 5 – Greening of parks, open areas community places, schools and housing societies**

In order to increase greenery in the city, the Municipal Council 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.

**6.7 CRD 6 – Water fountains at major traffic intersections**

Municipal Council shall explore the possibility of setting up of the water fountains at important traffic junctions to reduce the emission level including dust at these points.

**6.8 CRD 7 – Blacktopping of roads including pavement of road sides**

**7 (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 Council shall undertake this activity in a time bound manner.

**7 (b) Existing roads requiring re carpeting:** Roads require regular upkeep & recarpeting. The responsible agencies (MC/PWD/NHAI/PSIEC) shall ensure re carpeting of damaged existing roads.

**7 (c) Pavement of road sides using interlocking tiles to prevent road dust emissions:** Berms along the roads need to be stabilized with interlocking tiles to prevent road dust emissions.



## **Chapter 7—Control on Burning of Garbage and Biomass**

### **7.1 Key Activities**

- 7.1.1 There are only small patches of agricultural land within the Mandi Gobindgarh 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**

- (i). CBGB 1 –Control on open burning of bio-mass in City
  - (ii). CBGB 2 – Control on burning of municipal solid waste
  - (iii). CBGB 3 –Control on burning of agriculture waste and crop residue
- 7.1.2 Various actions to be taken for the above activities are given below. Further, the details such as baseline, target, timeline, milestones have been given in **Annexure-E**.

### **7.2 CBGB 1 – Control on open burning of bio-mass in City**

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 Council shall deploy its staff to have a check on various areas so as to forbid the inhabitants and sweepers for open burning of the biomass. A Whatsapp number shall provide to the public along with the setting up of the dedicated control room for receiving complaints of public through this system. Municipal Council 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.

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.

### **7.3 CBGB 2 – Control on burning of municipal solid waste**

Presently, Municipal Council has one municipal waste dumping site along the GT Road, 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. Lot of smoke is generated which contribute to the air pollution index. Similarly at the collection point and after sweeping the streets, the garbage collected may be burnt, instead of transporting to the dumping site.

Municipal Council shall identify and develop municipal waste dumping site as per the provisions of Municipal Solid Waste Rules, 2016 and the construction work of the said site shall be completed.

**7.4 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. Punjab Pollution Control Board shall engage Punjab Remote Sensing Centre, Ludhiana for real time monitoring and reporting of stubble burning incidents. 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 CrPc. Necessary directions / instructions shall be issued by the District Administration u/s 144 IPC to restrict harvesting of crops between 6.00 p.m to 6.00 a.m during crop harvesting seasons and attaching of the super SMS with the combine harvesters. Department of Agriculture to promote mechanical reincorporation of paddy straw to prevent its burning.

## Chapter 8 – Control on Industrial Emissions

### 8.1 Key Activities

- 8.1.1 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 rolling mills, cupola furnaces and ceramic units are using coal / furnace oil as fuel in their furnaces emitting the aforesaid pollutants, besides the process / fugitive emissions. To minimize the pollution generated from the industries, following key activities are proposed:

#### Technology Intervention

- (i). CIE 1 – Conversion to side-hood suction in furnaces
- (ii). CIE 2 – Conversion to CNG/PNG from coal

#### Enforcement Related

- (iii). CIE 3–Conversion of natural draft brick kilns to induced draft
- (iv). CIE 4 – Action against non-complying industrial units

#### Infrastructure Related

- (v). CIE 5 – Shifting of industries from non-designated areas to industrial areas

- 8.1.2 CIE 6 - Various actions to be taken for the above activities are given below. Further, the details such as baseline, target, timeline, milestones have been given in **Annexure-F**.

### 8.2 CIE 1 – Conversion to side-hood suction in furnaces

PPCB with the technical support from Council for Science and Technology has improvised technology to provide for side-hood suction in furnaces to reduce the emissions. The side-hood suction shall be implemented in a time bound manner and shall be monitored by the Board monthly.

### 8.3 CIE 2 – Conversion to CNG/ PNG from Coal

A large number of units in Gobindgarh are using coal as source of energy. With the availability of CNG in the city, PPCB will motivate the industry to convert from Coal to CNG. The State government will be approached to reduce VAT to make it viable alternative.

### 8.4 CIE 3 - Conversion of natural draft brick kilns to induced draft

There is no brick kiln in the city. However, Punjab Pollution Control Board has issued directions to the existing brick kilns of the State to convert their conventional brick kilns to induced draft technology. The Brick kilns located in the district will be monitored for conversion to the new technology in a time bound manner.

**8.5 CIE 4 – 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.

**8.6 CIE 5 – Shifting of industries from non-designated areas to industrial areas**

There are certain industries, which are located in non-designated areas and the PSIEC/ Department of Industries and Commerce shall develop new areas to shift the industries from non-designated areas in coordination with Local Govt./Deptt. of Town & Country Planning.

## Chapter 9 – Control on Construction and Demolition activities

### 9.1 Key Activities

9.1.1 Mandi Gobindgarh area is a small city having population about 90,000. No major construction projects are being set up in the city. However, 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:

- (i). CCDA 1 –Enforcement of Construction & Demolition Rules.
- (ii). CCDA 2 – Control measures for fugitive emissions
- (iii). CCDA 3 – Ensure carriage of construction material in closed/covered vessels.

9.1.2 Various actions to be taken for the above activities are given below. Further, the details such as baseline, target, timeline, milestones have been given in **Annexure-G**.

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

**1(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 Council shall frame mechanism for challaning the violators found dumping the C&D waste on non-designated areas. The enforcement will be monitored through the use of technology and regular review.

**1 (b) – Infrastructure Development:** Municipal Co shall identify suitable land and set up the processing plant for effective disposal of C&D waste.

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

Municipal Council 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 labour should be provided with required personal protective equipment's during the course of construction to safeguard from ill effects of fugitive emissions.

### 9.4 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.

## **Chapter 10 – Control through Other Steps**

### **10.1 Key Activities**

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

#### **Public Awareness**

- (i). COS 1–Dissemination of information on Air Quality Index

#### **Infrastructure**

- (ii). COS 2 – Establish an Air Quality Management Division at SPCB HQ  
(iii). COS 3 – Setup helpline in each city/town as well as SPCB HQ

#### **Enforcement**

- (i). COS 4 - Monitoring of DG sets and action against violations

- 10.1.2 Various actions to be taken for the above activities are given below. Further, the details such as baseline, target, timeline, milestones have been given in **Annexure-H**.

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

Punjab 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.

### **10.3 COS 2 – Establish an Air Quality Management Division at SPCB HQ**

There is need to strengthen technical capability pertaining to air pollution. The Board will identify the requisite skill sets and number of technical staff required along with future roadmap for the Board's activities.

### **10.4 COS 3 – Setup helpline in each city/town as well as SPCB HQ**

The Board shall set up a helpline system at headquarter and each city to receive the complaints from public and have effective feedback system.

### **10.5 COS 4 - Monitoring of DG sets and action against violations**

The concerned agency shall identify the commercial activities where the DG sets have been set up without fulfilling the norms for control of emissions and noise. Punjab Pollution Control Board shall identify the illegal DG sets manufacturers and necessary directions for their non-operation / closure shall be issued. Punjab Pollution Control Board shall identify the industries where the DG sets have been set up without fulfilling the norms for control of emissions and noise.

## Chapter 11–Graded Response Action Plan for Mandi Gobindgarh

### 11.1 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 Mandi Gobindgarh for implementation under different Air Quality Index (AQI) categories namely, Moderate & Poor, Very Poor and Severe.

### 11.2 Agency Responsible for Graded Response

The concerned authorities responsible for taking action 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.

### 11.3 Action in case of Severe AQI (Value $\geq$ 400)

11.3.1 Following action shall be taken by the concerned authorities:

| S.N. | Severe (AQI value becomes 401-500)   | Agency responsible / Implementing Agency           |
|------|--|--|
| 1    | Temporary closure of brick kilns, hot mix plant, induction furnaces, rolling mills etc.  | PPCB   |
| 2    | Stop construction activity   | MC, Mandi Gobindgarh                               |
| 3    | Alert in newspapers / local cable TV to advice people with respiratory and cardiac patients to avoid polluted areas and restrict outdoor movement. | MC, Mandi Gobindgarh, Distt. Administration & PPCB |
| 4    | Sprinkling of water at the various dust emission points  | MC, Mandi Gobindgarh                               |
| 5    | Deploy Traffic police for smooth traffic flow at the identified vulnerable areas   | Traffic Police                                     |
| 6    | Stringently enforce / stop garbage burning in landfills and other places and impose heavy fines on person responsible.                             | MC, Mandi Gobindgarh                               |
| 7    | To increase the frequency of mechanized sweeping on roads with heavy traffic and water sprinkling also on unpaved roads.                           | MC, Mandi Gobindgarh                               |
| 8    | Stop entry of heavy good vehicles except essential commodities into Mandi Gobindgarh   | Traffic Police                                     |
| 9    | To take decision regarding closing of schools  | District Administration                            |

**11.4 Action in case of Very Poor AQI (Value between 301 to 400)**

11.4.1 Following action shall be taken by the concerned authorities:

| S.N. | Very Poor (AQI value becomes 301-400)   | Agency responsible / Implementing Agency     |
|------|---|--|
| 1    | Restraining the operation of air polluting industries i.e. induction furnaces, rolling mills, brick kilns etc. for 8 hours/day              | PPCB   |
| 2    | Banning of construction activities  | MC, Mandi Gobindgarh                         |
| 3    | Stop of garbage burning in the landfill areas or in the open fields   | MC, Mandi Gobindgarh                         |
| 4    | Water sprinklings at the dust emission points etc.  | MC, Mandi Gobindgarh                         |
| 5    | Strict vigil and enforcement of PUC norms   | Traffic Police                               |
| 6    | Strict vigil and no tolerance for visible emissions from the vehicles and industries  | PPCB and Traffic Police.                     |
| 7.   | Strictly enforce Supreme Court ban on fire crackers   | MC, Mandi Gobindgarh & Distt. Administration |
| 8    | Strictly enforce all pollution control regulations in the air polluting industries like induction furnaces, rolling mills, brick kilns etc. | PPCB   |

**11.5 Action in case of Poor AQI (Value between 201 to 300)**

11.5.1 Following action shall be taken by the concerned authorities:

| S.N. | Poor (AQI value becomes 201-300)  | Agency responsible / Implementing Agency |
|------|---|--|
| 1    | Strictly enforce garbage burning in landfill and other places and impose heavy fines on person responsible  | MC, Mandi Gobindgarh                     |
| 2    | Increase frequency of mechanized cleaning of road and sprinkling of water on roads. Identify road stretches with high dust generation.              | MC, Mandi Gobindgarh                     |
| 3    | Stop use of coal / firewood in open eateries  | MC, Mandi Gobindgarh                     |
| 4    | Strictly enforce rules for dust control in construction activities and close non-complaint sites.   | MC, Mandi Gobindgarh                     |
| 5    | Close / Strictly enforce all pollution control regulations in the air polluting industries like induction furnaces, rolling mills, brick kilns etc. | PPCB                                     |
| 6    | Restricting air polluting industries i.e. induction furnaces, rolling mills, brick kilns etc. for 12 hours/day                                      | PPCB                                     |



**11.6 Action in case of moderately polluted AQI (Value between 101 to 200)**

11.6.1 Following action shall be taken:

| <b>S.N.</b> | <b>Moderately polluted (AQI value becomes 101-200)</b>  | <b>Agency responsible / Implementing Agency</b> |
|-------------|---|---|
| 1           | Increasing the frequency of mechanized cleaning the roads etc.  | MC, Mandi Gobindgarh                            |
| 2           | Sprinkling of water at the dust emitting points   | MC, Mandi Gobindgarh                            |
| 3           | To stop open burning of garbage and municipal solid waste   | MC, Mandi Gobindgarh                            |
| 4           | Close / strictly enforce all pollution control regulations in the air polluting industries like induction furnaces, rolling mills, brick kilns etc. | PPCB  |

## **Chapter 12 –Monitoring Requirements and Formats**

### **12.1 Monitoring Requirements**

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

- (i) Monitoring of activities for control on Vehicular Emissions
- (ii) Monitoring of activities for control on Road Dust
- (iii) Monitoring of activities for control on Burning of Garbage and Biomass
- (iv) Monitoring of activities for control on Industrial Emissions
- (v) Monitoring of activities for control on Construction and Demolition activities
- (vi) Monitoring of activities for control on other sources

12.1.2. 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

### **12.2 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).

12.2.1. To work out detailed formats and setting up online system to track progress of various activities, a dedicated team of PPCB and NIC is working on it.

12.2.2. The system will ensure that information is captured at source and transmitted to the System and the system will be able to analyse 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.

## Chapter 13 –Governance and Supervision

### 13.1 Three Tier Monitoring

**13.1.1.** Monitoring will be done by the Departments concerned, which are executing or responsible for particular activities. In addition, there will be three level of Air Quality Monitoring Committees (AQMC) to review and monitor the status:

- (i) AQMC at District Level under Deputy Commissioner
- (ii) AQMC at State level under Principal Secretary, Environment
- (iii) Steering Committee under Chief Secretary

**13.1.2.** PPCB will set up a dedicated team for supporting coordination and monitoring of the Action Plan. It will also develop suitable IT platform for monitoring purposes.

### 13.2 AQMC at District Level

District Level Committee will be constituted under the chairmanship of Deputy Commissioner, Fatehgarh Sahib and the monthly meeting of the District Level Committee will be conducted to discuss / monitor the progress of the activities to be performed under the Action plan. The committee shall involve civil society organization and their participation will be ensured for achieving various targets mentioned in the Action plan. The district level committee shall constitute the followings:

|    |   |          |
|----|---|----------|
| 1  | The Deputy Commissioner, Fatehgarh Sahib  | Chairman |
| 2  | The Senior Superintendent of Police, Fatehgarh Sahib  | Member   |
| 3  | The Environmental Engineer, Punjab Pollution Control Board, Regional Office, Fatehgarh Sahib                                  | Convener |
| 4  | The Executive Officer, Municipal Council, Mandi Gobindgarh  | Member   |
| 5  | The Regional Transport Authority, Patiala   | Member   |
| 6  | The Divisional Forest Officer, Patiala  | Member   |
| 7  | Sub Divisional Magistrate, Amloh  | Member   |
| 8  | The Executive Engineer, PWD (B & R), Sirhind, Distt. Fatehgarh Sahib  | Member   |
| 9  | The District Town Planner, Fatehgarh Sahib  | Member   |
| 10 | The Executive Engineer, Punjab Small Industries & Export Corporation, 18, Himalya Marg, Udyog Bhawan, Sector-17-A, Chandigarh | Member   |
| 11 | The General Manager, District Industries Centre, Fatehgarh Sahib  | Member   |

|    |  |        |
|----|--|--------|
| 12 | The Asstt. Executive Engineer, Punjab Small Industries & Export Corporation, Mandi Gobindgarh        | Member |
| 13 | The District Agriculture Officer, Deptt. of Agriculture, Fatehgarh Sahib                             | Member |
| 14 | The General Manager-cum- Project Director, NHAI, 17-L, Model Town, Ambala City.                      | Member |
| 15 | The Vertical Head – Projects, IRM Energy Pvt. Ltd., C.G. Road, Navrangpura, Ahmedabad 380009, Gujrat | Member |
| 16 | The President, Gobindgarh Steel Chamber of Commerce & Industries, Mandi Gobindgarh                   | Member |
| 17 | The President, All India Steel Re-Rollers Association, Mandi Gobindgarh                              | Member |
| 18 | The President, Small Scale Steel Re-Rollers Association, Mandi Gobindgarh                            | Member |
| 19 | The President, Mandi Gobindgarh Induction Furnace Association, Mandi Gobindgarh                      | Member |

### 13.3 AQMC at State Level

**13.3.1.** State Level Air Quality Monitoring Committee (AQMC) will comprise of the following:

|    |   |          |
|----|---|----------|
| 1  | Administrative Secretary, Department of Environment         | Chairman |
| 2  | Director, Local Government                                  | Member   |
| 3  | Director, Transport   | Member   |
| 4  | Director, Industries and Commerce                           | Member   |
| 5  | ADGP, Traffic   | Member   |
| 6  | Director, Directorate of Environment & Climate Change       | Member   |
| 7  | Chairman, PPCB  | Member   |
| 8  | Representatives of NGO/ Expert Members                      | Member   |
| 9  | Representatives of NGO/ Expert Members                      | Member   |
| 10 | Joint Director, Directorate of Environment & Climate Change | Convener |

**13.3.2.** The State level Committee would meet every month to review the progress of the action plan and take corrective measures and also escalate issued to the Steering committee for intervention.

#### 13.4 Steering Committee

**13.4.1.** There will be a Steering Committee under Chief Secretary and comprising of Administrative Secretaries of relevant administrative departments for monitoring the progress, resolving issues and enforcing accountability.

**13.4.2.** The Committee will comprise of the following:

|    |   |          |
|----|---|----------|
| 1  | Chief Secretary                                       | Chairman |
| 2  | Administrative Secretary, Environment                 | Member   |
| 3  | Administrative Secretary, Local Government            | Member   |
| 4  | Administrative Secretary, Industries and Commerce     | Member   |
| 5  | Administrative Secretary, Transport                   | Member   |
| 6  | Administrative Secretary, PWD                         | Member   |
| 7  | ADGP, Traffic   | Member   |
| 8  | Director, Directorate of Environment & Climate Change | Member   |
| 9  | Chairman, PPCB  | Member   |
| 10 | Additional Secretary, Environment                     | Convener |

## **Chapter 14 –Risk Mitigation Plan**

### **14.1 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

### **14.2 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, Punjab Pollution Control Board 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.

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

The baseline data, targets and milestones are not very accurate or complete. During the course of implementation detailed surveys and analysis will be carried out and the baseline data, targets and milestones will be suitably updated and same will be reviewed in the AQMC meeting at District Level.

### **14.4 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.

## **Chapter 15 –Action plan for Training and Capacity Building**

### **15.1 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.

### **15.2 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

### **15.3 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.

### **15.4 Involvement of Institutions and Experts**

Organizations of national & international repute having expertise in the area of environment in general and air pollution in particular 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. Further, the details such as baseline, target, timeline, milestones have been given in **Annexure-I**

**Annexure A – Trends in Air Quality of Mandi Gobindgarh****1. Station at M/s United Steel, Mandi Gobindgarh**

| Month              | PM <sub>10</sub> (µg/m <sup>3</sup> ) |            |            |            |            | NO <sub>x</sub> (µg/m <sup>3</sup> ) |           |           |           |           | SO <sub>2</sub> (µg/m <sup>3</sup> ) |          |          |          |          |
|--------------------|---------------------------------------|------------|------------|------------|------------|--------------------------------------|-----------|-----------|-----------|-----------|--------------------------------------|----------|----------|----------|----------|
|                    | 2014                                  | 2015       | 2016       | 2017       | 2018       | 2014                                 | 2015      | 2016      | 2017      | 2018      | 2014                                 | 2015     | 2016     | 2017     | 2018     |
| January            | 171                                   | 153        | 118        | 101        | 173        | 37                                   | 35        | 28        | 33        | 40        | 8                                    | 7        | 7        | 6        | 7        |
| February           | 160                                   | 166        | 122        | 108        | 123        | 37                                   | 38        | 27        | 30        | 40        | 6                                    | 8        | 7        | 6        | 7        |
| March              | 168                                   | 150        | 138        | 111        | 149        | 39                                   | 39        | 30        | 28        | 41        | 7                                    | 7        | 7        | 6        | 6        |
| April              | 192                                   | 152        | 132        | 98         | 137        | 40                                   | 40        | 38        | 38        | 36        | 8                                    | 7        | 7        | 6        | 7        |
| May                | 162                                   | 131        | 117        | 104        | 140        | 38                                   | 36        | 37        | 29        | 38        | 7                                    | 6        | 7        | 6        | 7        |
| June               | 169                                   | 119        | 112        | 101        | 142        | 38                                   | 36        | 39        | 28        | 38        | 8                                    | 7        | 6        | 6        | 7        |
| July               | 150                                   | 115        | 118        | 118        | 134        | 40                                   | 34        | 37        | 30        | 37        | 8                                    | 6        | 7        | 6        | 7        |
| August             | 111                                   | 117        | 117        | 114        | 131        | 35                                   | 34        | 36        | 36        | 37        | 7                                    | 6        | 7        | 7        | 8        |
| September          | 119                                   | 108        | 122        | 120        | 117        | 36                                   | 34        | 35        | 37        | 36        | 7                                    | 6        | 6        | 7        | 7        |
| October            | 121                                   | 114        | 146        | 201        | 117        | 38                                   | 38        | 37        | 45        | 37        | 7                                    | 6        | 7        | 8        | 7        |
| November           | 99                                    | 162        | 154        | 277        | 136        | 32                                   | 42        | 36        | 41        | 41        | 7                                    | 7        | 7        | 9        | 8        |
| December           | 109                                   | 138        | 113        | 174        | 138        | 35                                   | 32        | 32        | 40        | 40        | 7                                    | 7        | 6        | 13       | 8        |
| <b>Annual Avg.</b> | <b>144</b>                            | <b>135</b> | <b>126</b> | <b>136</b> | <b>136</b> | <b>37</b>                            | <b>37</b> | <b>34</b> | <b>35</b> | <b>38</b> | <b>7</b>                             | <b>7</b> | <b>7</b> | <b>7</b> | <b>7</b> |



**2. Station at M/s Modi Oil Mills, Shifted to Modern Automotive in Nov. 2009, Mandi Gobindgarh**

| Month              | PM <sub>10</sub> (µg/m <sup>3</sup> ) |            |            |            |            | NO <sub>x</sub> (µg/m <sup>3</sup> ) |           |           |           |           | SO <sub>2</sub> (µg/m <sup>3</sup> ) |          |          |          |          |
|--------------------|---------------------------------------|------------|------------|------------|------------|--------------------------------------|-----------|-----------|-----------|-----------|--------------------------------------|----------|----------|----------|----------|
|                    | 2014                                  | 2015       | 2016       | 2017       | 2018       | 2014                                 | 2015      | 2016      | 2017      | 2018      | 2014                                 | 2015     | 2016     | 2017     | 2018     |
| January            | 166                                   | 146        | 131        | 123        | 161        | 36                                   | 35        | 27        | 33        | 41        | 8                                    | 8        | 6        | 6        | 7        |
| February           | 143                                   | 159        | 134        | 110        | 110        | 36                                   | 37        | 26        | 32        | 42        | 7                                    | 7        | 7        | 6        | 7        |
| March              | 173                                   | 155        | 126        | 103        | 119        | 37                                   | 38        | 30        | 29        | 38        | 7                                    | 8        | 7        | 6        | 7        |
| April              | 155                                   | 158        | 138        | 104        | 183        | 38                                   | 39        | 37        | 32        | 35        | 7                                    | 7        | 7        | 6        | 7        |
| May                | 154                                   | 125        | 121        | 102        | 135        | 39                                   | 37        | 37        | 28        | 39        | 7                                    | 7        | 7        | 6        | 7        |
| June               | 155                                   | 132        | 120        | 103        | 143        | 37                                   | 36        | 38        | 28        | 37        | 8                                    | 7        | 6        | 6        | 7        |
| July               | 139                                   | 123        | 122        | 122        | 147        | 39                                   | 34        | 37        | 31        | 39        | 8                                    | 6        | 6        | 6        | 7        |
| August             | 106                                   | 127        | 111        | 106        | 116        | 38                                   | 35        | 34        | 36        | 38        | 7                                    | 7        | 6        | 7        | 7        |
| September          | 121                                   | 111        | 107        | 112        | 111        | 38                                   | 33        | 35        | 39        | 38        | 8                                    | 7        | 6        | 7        | 7        |
| October            | 113                                   | 115        | 137        | 205        | 133        | 35                                   | 36        | 36        | 45        | 38        | 8                                    | 7        | 7        | 9        | 8        |
| November           | 99                                    | 142        | 162        | 277        | 156        | 32                                   | 40        | 36        | 42        | 38        | 7                                    | 7        | 7        | 9        | 8        |
| December           | 110                                   | 140        | 114        | 195        | 138        | 35                                   | 34        | 33        | 38        | 41        | 8                                    | 7        | 6        | 8        | 7        |
| <b>Annual Avg.</b> | <b>136</b>                            | <b>136</b> | <b>127</b> | <b>139</b> | <b>138</b> | <b>37</b>                            | <b>36</b> | <b>34</b> | <b>34</b> | <b>39</b> | <b>8</b>                             | <b>7</b> | <b>7</b> | <b>7</b> | <b>7</b> |

**3. Station at M/s Raj Steels, Mandi Gobindgarh**

| Month              | PM <sub>10</sub> (µg/m <sup>3</sup> ) |            |            |            |            | NO <sub>x</sub> (µg/m <sup>3</sup> ) |           |           |           |           | SO <sub>2</sub> (µg/m <sup>3</sup> ) |          |          |          |          |
|--------------------|---------------------------------------|------------|------------|------------|------------|--------------------------------------|-----------|-----------|-----------|-----------|--------------------------------------|----------|----------|----------|----------|
|                    | 2014                                  | 2015       | 2016       | 2017       | 2018       | 2014                                 | 2015      | 2016      | 2017      | 2018      | 2014                                 | 2015     | 2016     | 2017     | 2018     |
| January            | 129                                   | 141        | 129        | 110        | 162        | 35                                   | 34        | 30        | 32        | 41        | 7                                    | 6        | 6        | 6        | 7        |
| February           | 104                                   | 144        | 115        | 108        | 102        | 17                                   | 35        | 26        | 32        | 41        | 7                                    | 6        | 6        | 6        | 7        |
| March              | 110                                   | 125        | 120        | 101        | 119        | 33                                   | 35        | 31        | 27        | 38        | 6                                    | 6        | 6        | 6        | 7        |
| April              | 149                                   | 132        | 129        | 106        | 171        | 37                                   | 36        | 37        | 31        | 33        | 6                                    | 6        | 7        | 6        | 7        |
| May                | 141                                   | 117        | 116        | 108        | 116        | 35                                   | 35        | 38        | 29        | 37        | 6                                    | 6        | 6        | 6        | 7        |
| June               | 164                                   | 109        | 126        | 97         | 145        | 37                                   | 35        | 37        | 28        | 36        | 8                                    | 6        | 6        | 6        | 7        |
| July               | 134                                   | 98         | 133        | 122        | 129        | 37                                   | 37        | 37        | 31        | 36        | 7                                    | 6        | 7        | 6        | 7        |
| August             | 120                                   | 97         | 99         | 109        | 123        | 35                                   | 31        | 38        | 35        | 38        | 7                                    | 6        | 6        | 7        | 7        |
| September          | 110                                   | 106        | 107        | 117        | 116        | 36                                   | 33        | 34        | 38        | 38        | 6                                    | 5        | 6        | 7        | 7        |
| October            | 125                                   | 112        | 134        | 194        | 123        | 38                                   | 36        | 38        | 43        | 37        | 8                                    | 6        | 7        | 8        | 7        |
| November           | 100                                   | 119        | 163        | 265        | 146        | 33                                   | 38        | 36        | 43        | 38        | 7                                    | 6        | 7        | 8        | 8        |
| December           | 106                                   | 127        | 117        | 186        | 139        | 33                                   | 31        | 26        | 42        | 37        | 6                                    | 7        | 6        | 8        | 8        |
| <b>Annual Avg.</b> | <b>124</b>                            | <b>119</b> | <b>124</b> | <b>135</b> | <b>133</b> | <b>34</b>                            | <b>35</b> | <b>34</b> | <b>34</b> | <b>38</b> | <b>7</b>                             | <b>6</b> | <b>6</b> | <b>7</b> | <b>7</b> |

**Annexure B – AQI data from 2017 to 2018 depicting the air quality in Mandi Gobindgarh**

| AQI Data for year 2017  |            |                 | AQI Data for year 2018  |            |                 |
|-------------------------|------------|-----------------|-------------------------|------------|-----------------|
| Month                   | AQI        | Category        | Month                   | AQI        | Category        |
| Jan-17                  | 164        | Moderate        | Jan-18                  | 166        | Moderate        |
| Feb-17                  | 166        | Moderate        | Feb-18                  | 130        | Moderate        |
| Mar-17                  | 152        | Moderate        | Mar-18                  | 117        | Moderate        |
| Apr-17                  | 194        | Moderate        | Apr-18                  | 114        | Moderate        |
| May-17                  | 195        | Moderate        | May-18                  | 146        | Moderate        |
| Jun-17                  | 219        | Poor            | Jun-18                  | 163        | Moderate        |
| Jul-17                  | 203        | Poor            | Jul-18                  | 78         | Satisfactory    |
| Aug-17                  | 123        | Moderate        | Aug-18                  | 62         | Satisfactory    |
| Sep-17                  | 173        | Moderate        | Sep-18                  | 56         | Satisfactory    |
| Oct-17                  | 270        | Poor            | Oct-18                  | 108        | Moderate        |
| Nov-17                  | 281        | Poor            | Nov-18                  | 159        | Moderate        |
| Dec-17                  | 209        | Poor            | Dec-18                  | 154        | Moderate        |
| <b>2017 annual Avg.</b> | <b>196</b> | <b>Moderate</b> | <b>2018 Annual avg.</b> | <b>121</b> | <b>Moderate</b> |

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

| Sr No. | Activity   | Implementation period (short/mid/long term) | Responsible Agencies | Base Line  | Target to be achieved  | Target Date      | Milestones (Monthly / Quarterly)   | Financial Implications, if any (Estimated Cost) |
|--------|--|---|----------------------|--|--|------------------|--|---|
| 1      | CVE 1 - Public awareness campaign for control of vehicular emissions | Short term                                  | Deptt. of Transport  | Presently, awareness is being done in the Educational Institutes under SadakSurakhya Abhiyan | The public has to be motivated to play their role in curbing the air pollution | Regular Activity | <ol style="list-style-type: none"> <li>1. Public awareness campaign in print and electronic media-Twice a month</li> <li>2. Use of Social Media Facebook, twitter, Instagram-Regular</li> <li>3. Jingles on air pollution on local radio and TV-Local FM Radio will be hired</li> <li>4. Awareness drives in educational institutions-Monthly</li> <li>5. Public meetings-Monthly</li> <li>6. Nukarnataks-Quarterly</li> </ol> | NIL   |

|   |  |             |                         |   |  |                  |   |     |
|---|--|-------------|-------------------------|---|--|------------------|---|-----|
|   |  | Short Term  | Traffic Police.         | Organised 17 no. awareness camps during Jan & Feb 2019 through Traffic Education Cell | Public awareness campaigns to be continued   | Regular activity | --  | Nil |
| 2 | CVE 2 - Remote sensor based PUC system | Medium Term | Department of Transport | Manual checking at Pollution Checking Centre (PCC) exists                             | All Pollution CheckingCentres will be linked with VAHAN 4.0 software of the Transport deptt. | 31.01.2020       | <ol style="list-style-type: none"> <li>1. Preparation of RFP for selection of vendors - Under Process</li> <li>2. Allotment of work after selection of vendors – 2 Months</li> <li>3. Development of software solution to link all PUC centres – 9 months</li> <li>4. Linking of software to VAHAN 4.0 software of the transport Deptt.- 1 Month</li> </ol> | Nil |

|   |  |            |                   |  |  |                  |  |             |
|---|--|------------|-------------------|--|--|------------------|--|-------------|
| 3 | CVE 3 - Extensive drive against polluting vehicles   | Short term | Traffic Police    | 450 Challans were issued against polluting vehicles in 2018 and 161 challans issued upto Feb, 2019.  | Regular inspection to be continued and violators to be challaned.  | Regular Activity | --   | Nil         |
| 4 | CVE 4 (a) – Prevent parking of vehicles in non-designated areas by creating parking infrastructure | Long Term  | Municipal Council | <ul style="list-style-type: none"> <li>• 1 No. designated parking lot site identified for development - Bus stand (for commercial vehicles)</li> <li>• No Multi storey parking lots exists</li> <li>• Parking for trucks/ commercial: 1 no. transport nagar exists.</li> </ul> | <ul style="list-style-type: none"> <li>• Identified site to be developed.</li> <li>• No requirement of Multi storey parking lot.</li> <li>• Existing Parking areas for trucks/ commercial vehicles to be renovated.</li> </ul> | 31.01.2020       | <ol style="list-style-type: none"> <li>1. Estimation- Under process</li> <li>2. Tendering- After estimation</li> <li>3. Work allotment- After tendering</li> <li>4. Completion- Within 1 year</li> </ol> | Rs. 2 crore |
|   | CVE (4b) – Enforcement   | Short Term | Traffic Police.   | 176 no. of challans issued in the month of Jan & Feb, 2019   | Regular inspection to be continued and violators to be challaned.  | 31.12.2019       | -  | Nil         |
|   |  | Med. Term  | Municipal Council | <ul style="list-style-type: none"> <li>• Roadside parking earmarked by yellow line : 4</li> </ul>  | <ul style="list-style-type: none"> <li>• Identified additional 1 km of Roadside parking for</li> </ul>   |                  |  | Rs. 7 lacs  |

|   |                                 |            |  |   |   |                  |   |     |
|---|---------------------------------|------------|--|---|---|------------------|---|-----|
|   |                                 |            |  | no. (3 km existing)<br><br>• "No Parking" sign Boards installed - Nil.  | earmarking are- Main Bazar, HDFC bank, Motia Khan, MC office road<br><br>• "No Parking" sign Boards being installed in non designated areas – 50 no.  |                  |   |     |
| 5 | CVE 5 - Check fuel adulteration | Short Term | Department of Food and Civil Supplies/Oil Industry | As informed by Deptt.of Food & Civil Supplies, the Oil Companies have adopted Online Automated System for transportation & checking the density of Petrol/Diesel. | State Level Coordinator, Oil Companies will conduct inspections on annual, quarterly & random basis.<br>- In case of complaint, Department of Food & Civil Supplies in coordination with local oil company officials shall check fuel adulteration & if any discrepancy is noticed then action against the violator shall be taken by State Level Coordinator of Oil Company. | Regular activity | - | Nil |

|   |   |            |                   |   |  |            |  |                |
|---|---|------------|-------------------|---|--|------------|--|----------------|
| 6 | CVE 6 -<br>Widening of road and infrastructure for decongestion of road | Short term | Municipal Council | 1.5 Kms of Amloh road identified                          | Identified road to be widened.           | 30.10.2019 | 1. Estimation-Completed<br>2. Tendering and Work allotment-Under process<br>4. Completion-Within 6 months                  | Rs. 1.80 Crore |
|   |   | Long term  | PWD (B&R)         | 1.87 km road length to be widened (GT road to Ambe Majra) | Identified road to be widened.           | 30.03.2021 | 1. Identification-Complete<br>2. Preparation of DPR, Tendering and Work allotment after receiving administrative approval. | Rs. 3.85 Crore |
| 7 | CVE 7 -<br>Introduce intelligent traffic systems                        | NA         | Municipal Council | 1 no. conventional traffic light exists                   | Intelligent traffic system not required. | NA         | NA   | NIL            |
| 8 | CVE 8 -<br>Construction of expressways/ bypasses to avoid congestion    | NA         | PWD (B&R)         | Presently, six lane National Highway exists               | Not required                             | NA         | NA   | NIL            |



|    |  |             |                                 |   |  |            |   |     |
|----|--|-------------|---------------------------------|---|--|------------|---|-----|
| 9  | CVE 9 – Phasing out commercial diesel vehicles more than 15 years old                | Long Term   | Department of Transport         | New commercial diesel vehicles is registered for 2 years and thereafter, fitness certificate is being issued every year.      | Matter of fixing the age of commercial diesel vehicle is being examined legally.   | -          | -   | Nil |
| 10 | CVE 10 – Promotion of E- vehicles  | Medium term | Deptt. of Transport             | Presently, most of the vehicles are running on diesel and petrol.<br>-Framing of the E-vehicle policy is in the final stages. | After approval from Competent Authority E-Vehicle policy will be notified.   | 31.01.2020 | 1. Framing & Notification of E-vehicle policy – 9 months<br>2. Providing public charging points for E-vehicles as per Govt. policy. | NIL |
| 11 | CVE 11 (a) – Introduction of CNG based public transport (Infrastructure development) | Medium Term | Deptt. of food & civil supplies | <ul style="list-style-type: none"> <li>01 nos. of CNG Station exists</li> <li>Work being executed M/s IRM</li> </ul>          | <ul style="list-style-type: none"> <li>To upgrade 2 No conventional filling stations to CNG filling stations.</li> <li>Deptt to follow up &amp; facilitate Up gradation and commissioning of CNG filling stations &amp; laying of pipeline.</li> </ul> | 31.03.2020 | Upgradation & commissioning of CNG filling stations   | Nil |
|    | CVE 11 (b) – Introduction  | NA          | Municipal Council               | At present no CNG based city bus  | CNG based city bus service not required.   | -          | -   | Nil |

|    |  |           |                         |  |  |   |   |     |
|----|--|-----------|-------------------------|--|--|---|---|-----|
|    | of CNG based city bus service  |           |                         | service exits.   |  |   |   |     |
|    | CVE 11 (c) – Introduction of CNG based autos / taxis                           | Long Term | Deptt. of Transport     | At present, no CNG based auto/ taxis exits. PPCB has issued direction under section 31-A of Air Act 1981 to stop registration of new diesel / petrol driven auto rickshaw (s), in 5 districts including Fatehgarh Sahib, w.e.f 01.02.2019. | To take measures to introduce CNG based auto/ taxis.   | - | Implementation of PPCB orders dated 03.01.2019.   | Nil |
| 12 | CVE 12 – Retrofitting of particulate filters in diesel vehicles for BS-V fuels | Long Term | Department of Transport | Presently, India is implementing BS-IV standards for diesel vehicles.  | India is going to skip adopting BS-5 norms and shift directly to adopting BS-6 norms by 2020 | - | The steps for retrofitting of particulate filters in diesel vehicles is to be undertaken by Automotive industry under directions from Government of India as and when BS-VI fuels will be available | NIL |

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

| Sr No. | Activity  | Implementation period (short/Medium/long term) | Responsible Agencies | Base Line  | Target to be achieved                       | Target Date      | Milestones (Monthly / Quarterly)  | Financial Implications, if any (Estimated Cost) |
|--------|---|--|----------------------|--|---|------------------|---|---|
| 1      | CRD 1 – Maintain potholes free roads for free-flow of traffic | Short term                                     | Municipal Council    | 5 Km road length has been identified as follows:<br>(Arrey Mill Road- 1.5 Km, Backside MC office, Mandi Gobindgarh-500 mtr., Under bridge road-1 Km, Road near ESI Hospital- 1 Km&Radha Swami Satsang Bhawan Road- 1 Km) | Repair of 5 km of identified road length    | 30.10.2019       | 1. Identification- Completed<br>2. Estimation- Completed<br>3. Tendering- Completed<br>4. Work allotment- Allotted<br>5. To be completed- Within 6 months | Rs. 1.50 Crore                                  |
|        |   | Medium Term                                    | PWD (B&R)            | 9 Km of major road length has been identified (Nabha Gobindgarh road (SH-12A))   | Toll road already made pothole free         |                  | 1. Tendering & Work allotment – completed   | Rs. 25 lacs                                     |
| 2      | CRD 2 (a) – Water sprinkling                                  | Short Term                                     | Municipal Council    | 5.6 km of Road length Identified for water sprinkling (Amloh   | Regular Water sprinkling on identified road | Regular Activity | -   | Nil   |

|   |   |             |                      |  |   |            |  |             |
|---|---|-------------|----------------------|--|---|------------|--|-------------|
|   |   |             |                      | Road-4 Kms,<br>Service Roads and<br>under bridge road<br>around NH-1- 6<br>Kms)  |   |            |  |             |
|   | CRD 2 (b) –<br>Procurement<br>of Water<br>sprinkler | Medium Term | Municipal<br>Council | 1 No. water<br>sprinklers- exists.   | 2 more<br>sprinklers each<br>of 5KL capacity<br>to be procured  | 30.10.2019 | 1. Estimation-<br>Completed<br>2. Tendering -Under<br>process. | Rs.46 lacs  |
| 3 | CRD 3 –<br>Mechanical<br>sweeping                   | Medium Term | Municipal<br>Council | -Presently manual<br>sweeping being<br>done.<br>-Identification of<br>7.5 Km roads has<br>been done as<br>below :<br>(Arrey Mill Road-<br>1.5 Km, Jassran<br>Road- 1 Km,<br>Partap Mill Road-<br>300 mtr, Bank of<br>India Road- 400<br>mtr, MC office<br>Road- 300 mtr,<br>Dharam Mill Road-<br>500 mtr, Talwara<br>Road-1 Km,<br>KotlaRoad- 500<br>mtr, Ram Nagar<br>Mill Road- 500<br>mtr&Amlah Road- | Procurement of<br>1 no.<br>mechanical<br>sweeping<br>machines for<br>regular<br>sweeping of<br>identified<br>roads. | 31.03.2020 | 1. Estimation-<br>Completed<br>2. Tendering -Under<br>process  | Rs. 55 Lacs |

|   |  |            |                      |  |   |                     |   |                   |
|---|--|------------|----------------------|--|---|---------------------|---|-------------------|
|   |  |            |                      | 1.5 Km)  |   |                     |   |                   |
| 4 | CRD 4 -<br>Creation of<br>green buffers<br>along the<br>road sides | Short term | Municipal<br>Council | Identified 12 Kms<br>of road sides for<br>plantation as<br>below :<br>[Dharam Mill<br>Road- 500 mtr,<br>Master Colony<br>Road- 500 mtr,<br>Ram Nagar Mill<br>Road- 1 Km,<br>Talwara Road-1<br>Km, Bank of India<br>Road- 500 mtr,<br>Model Town area<br>Road- 500 mtr,<br>AmbeyMajra<br>Road- 4 Km, Ajnali<br>Road- 2 Km and<br>Slip Road along<br>(NH-1)- 2 Km] | -3000 trees to<br>be planted in<br>industrial,<br>residential<br>areas and along<br>road sides. | Regular<br>Activity | 1. Identification of<br>roads-Completed<br>2. Plantation to be<br>started in<br>Monsoon | Rs. 18.33<br>Lacs |
|   |  | Short term | PSIEC                | 800 no. of plants<br>already planted   | 550 no. plants<br>to be planted in<br>industrial areas<br>along road<br>sides.                  | Regular<br>Activity | 1. Plantation to be<br>started in<br>Monsoon  | Rs. 10 Lacs       |
| 5 | CRD 5 -<br>Greening of<br>parks, open<br>areas                     | Short Term | Municipal<br>Council | -Identified 5 no.<br>sites / open areas<br>for plantation of<br>trees:   | -3000 trees to<br>be planted in<br>the identified<br>areas.                                     | Regular<br>activity | 1. Identification of<br>open areas-<br>Completed<br>2. Plantation-To be                 | Rs. 4 Lacs        |

|   |  |             |                   |   |  |            |   |               |
|---|--|-------------|-------------------|---|--|------------|---|---------------|
|   | community places, schools and housing societies        |             |                   | (Govt. Senior Secondary School for Boys, Govt. Senior Secondary School for Girls, Govt. Primary School, Ajnali, Govt. Primary School, AmbeyMajra and Primary School, Tarlokपुरi)<br>-11 nos of parks are being maintained by MC and Park Management Committees. | -To ensure all public parks have adequate green cover/ plantation. |            | started in rainy season   |               |
| 6 | CRD 6 - Water fountains at major traffic intersections | Medium Term | Municipal Council | 1 no. traffic intersection point identified near Railway Station (Balu Ram Dharamshala)   | To install water fountain at identified traffic intersection       | 30.11.2019 | 1. Identification- Completed<br>2. Estimate- Under process<br>3. Tendering and Work allotment will be done within 6 months after administrative approval. | Rs. 15 Lacs   |
| 7 | CRD 7 (a) Kaccha/Brick                                 | Medium Term | Municipal Council | Identified 25 Km of Kaccha roads for making pucca   | Blacktopping of identified   | 31.03.2021 | 1. Estimation- Under process<br>2. Tendering, Work  | Rs 8.20 Crore |

|   |             |                   |  |   |            |   |                |
|---|-------------|-------------------|--|---|------------|---|----------------|
| Paved Roads to be made Pucca roads  |             |                   | roads. (AmbeyMajra Road- 3 Km, Ajnali Road- 3 Km, Jassran Road-3 Km, Kuchha shanti Nagar-7 Km, Iqbal Nagar- 3 Km, Sant Nagar- 2 Km, Sukha Singh Colony-3 Km and Talwara Road-1 Km) | Kaccha roads to be done for control of road dust emissions.                                     |            | allotment- After estimation and necessary approvals from the house.<br>3. Completion-One year after laying of sewerage system which is to be completed by PWSSB.        |                |
| CRD 7 (b) Existing roads requiring recarpeting  | Short Term  | Municipal Council | Nil  | -   | --         | -   |                |
|   | Short term  | PSIEC             | Identified 9 kms of existing roads for re-carpeting  | Identified roads to be re carpeted.   | 30.06.2019 | Recarpeting to be completed under IID scheme of GOI.  | Rs. 1.35 Crore |
| CRD 7 (c) Pavement of road side using interlocking tiles to prevent road dust emissions | Medium Term | Municipal Council | Identified 10 Kms of road length from Amloh Chowk to Canal Bridge requiring Pavement of road side  | Pavement of road side using interlocking tiles to prevent road dust emissionsof identified road | 31.03.2020 | 1. Estimation- Completed<br>2. Tendering- Under process.<br>3. Work allotment- After tendering<br>4. Completion- 6 months after receiving the administrative approvals. | Rs. 1.31 Crore |

|  |  |             |     |  |  |            |   |               |
|--|--|-------------|-----|--|--|------------|---|---------------|
|  |  | Medium Term | PWD | Identified 53.84 Km of 11 existing roads and 31 new proposed roads | Pavement of road side using interlocking tiles of identified roads | 31.03.2021 | <ol style="list-style-type: none"> <li>1. Identification- Completed</li> <li>2. DPR, Tendering, Work allotment and project will be completed after one year of Administrative approval</li> </ol> | Rs.4.23 Crore |
|--|--|-------------|-----|--|--|------------|---|---------------|



**Annexure E – Action Plan for Control on Burning of Garbage and Biomass**

| Sr No. | Activity  | Implementation period (short/Medium/long term) | Responsible Agencies  | Base Line  | Target to be achieved  | Target Date      | Milestones (Monthly / Quarterly)                      | Financial Implications, if any (Estimated Cost) |
|--------|---|--|-----------------------|--|--|------------------|---|---|
| 1      | CBGB 1 – Control on open burning of bio-mass in City  | Medium Term                                    | Municipal Council     | - 27 Kaccha pits have been made in different parks for collection of horticulture waste to avoid burning of Bio Mass.<br>- 11 No. Parks under Mc   | 48 nos. of Pucca compost pits are to be constructed in parks and green belts   | 30.10.2019       | i) Estimate : Completed<br>ii) Tender : Under process | Rs. 4.80 Lacs                                   |
| 2      | CBGB 2 – Control on burning of municipal solid wastes | Medium Term                                    | Municipal Corporation | -No. of inspections – 11<br>-No. of Challans issued - NIL<br>-No. of awareness camps – 10<br>-Burning of municipal solid wastes stands prohibited. | Regular inspections to be continued for Control on burning of municipal solid wastes and Challans to be issued to the violators. | Regular Activity | -   | Nil   |

|   |   |            |  |   |                     |                                     |   |     |
|---|---|------------|--|---|---------------------|-------------------------------------|---|-----|
| 3 | CBGB 3 – Control on burning of agriculture waste and crop residue | Short term | District Administration, Department of Agriculture, Police, PSPCL, Revenue Department & PPCB | <ul style="list-style-type: none"> <li>• Identification of sites by PRSC (PAU)</li> <li>• Regular monitoring under supervision of DC</li> <li>• 182 challans issued in which total amount of Rs 5,87,500/- imposed as Environmental compensation in year 2018 by PPCB</li> <li>• Rs.37,500/- Environmental compensation recovered upto Dec 2018.</li> </ul> | Enforcement by Team | During wheat/rice harvesting season | <ol style="list-style-type: none"> <li>1. To create awareness among farmers regarding health effects of residue burning</li> <li>2. Deptt. of Agriculture to provide subsidy for equipment/ machinery as per Govt. policy</li> <li>3. Teams will be constituted one month prior to start of each harvesting season.</li> <li>4. Identification of no. of fire incidents by PRSC.</li> <li>5. Visit to identified sites</li> <li>6. Imposing Environmental compensation on defaulters</li> </ol> | NIL |
|---|---|------------|--|---|---------------------|-------------------------------------|---|-----|

|  |  |  |  |  |  |  |   |  |
|--|--|--|--|--|--|--|---|--|
|  |  |  |  |  |  |  | <p>7. PSPCL shall ensure electricity for in-situ management</p> <p>8. Progress review in District Level Air Quality Monitoring Committee meeting</p> <p>9. Recovery of Environmental compensation</p> |  |
|--|--|--|--|--|--|--|---|--|

**Annexure F – Action Plan for Control on Industrial Emissions**

| Sr No. | Activity  | Implementation period (short/Medium/long term) | Responsible Agencies | Base Line   | Target to be achieved                               | Target Date | Milestones (Monthly / Quarterly)  | Financial Implications, if any (Estimated Cost) |
|--------|---|--|----------------------|---|---|-------------|---|---|
| 1      | CIE 1 – Conversion to Side Hood suction in furnaces | Short Term                                     | PPCB                 | Total 69 induction furnace to be converted. 19 nos. Induction furnace have already converted. | 50 Induction furnaces are required to be converted. | 30.9.2019   | -   | NIL   |
| 2      | CIE 2 – Conversion to CNG from coal                 | Long term                                      | PPCB                 | 6 nos. industries have converted their furnace from coal to CNG fuel                          | 220units will shift to cleaner fuel                 | 31.03.2021  | <ol style="list-style-type: none"> <li>1. The matter to be taken with State Government.</li> <li>2. Providing pipeline for transportation of CNG-One year.</li> <li>3. Procurement of instruments</li> <li>4. Installation</li> <li>5. Commissioning</li> </ol> | NIL   |

|   |  |            |   |  |   |                  |   |     |
|---|--|------------|---|--|---|------------------|---|-----|
| 3 | CIE 3 - Conversion of natural draft brick kilns to induced draft.            | Short Term | PPCB  | No brick kiln  | NIL   | NIL              | NIL   | NIL |
| 4 | CIE 4 – Action against non-complying industrial units                        | Short term | PPCB  | Regular inspection as per policy of the Board                                  | <ul style="list-style-type: none"> <li>• Action against defaulting industries</li> <li>• Checking the adequacy of APCD installed by the industries</li> </ul> | Regular activity | -Identification of industries in which APCD is installed.<br>- Checking the adequacy of APCD already installed.<br>- Issuing show cause notice to the industries violating norms.<br>-Facilitating industry to get set right the inadequate APCD. | Nil |
| 5 | CIE 5 – Shifting of industries from non-designated areas to industrial areas | Long Term  | Local Govt. / Deptt of Town & CountryPlanning/ Deptt of Industries. | Industries located in non designated areas need to be identified for shifting. | Identified Industries required to be shifted to the designated industrial   | Upto 2031        | - Timeline for shifting the industry as per provision of notified Master Plan   | Nil |

**Annexure G– Action Plan for Control on Construction and Demolition Activities**

| Sr No. | Activity   | Implementation period (short/Medium/long term) | Responsible Agencies | Base Line  | Target to be achieved   | Target Date      | Milestones (Monthly / Quarterly)  | Financial Implications, if any (Estimated Cost) |
|--------|--|--|----------------------|--|---|------------------|---|---|
| 1      | CCDA 1 (a) – Enforcement of Construction & Demolition Rules.   | Short Term                                     | Municipal Council    | Inspection is being carried out as per need for bigger/commercial & road projects. | -Regular inspection will be made for Control of Construction & Demolition waste.<br><br>-Counter verification to be done by ATP/EO.                     | Regular Activity | --  | Nil   |
|        | CCDA 1 (b) – Infrastructure of Construction & Demolition waste | Long Term                                      | Municipal Council    | Presently no site for C&D waste disposal exists                                    | Identification of site & setting up of processing plant for C& D Waste  | 31.03.2022       | DPR – Under Process<br>Tendering – After estimation<br>Work Allotment-<br>After Tendering | NIL   |
| 2      | CCDA 2 – Control measure for fugitive measures                 | Short Term                                     | Municipal Council    | At present, minimal measures being taken by the building contractors.              | -Proper curtains / sheets on the construction sites to be provided & the construction material be kept in covered conditions<br><br>-Regular inspection | Regular activity | Regular inspections   | Nil   |

|   |  |            |                   |   |   |                  |   |     |
|---|--|------------|-------------------|---|---|------------------|---|-----|
|   |  |            |                   |   | to be made and challan issued to violators  |                  |   |     |
| 3 | CCDA 3 – Ensure carriage of construction material in closed/covered vessels. | Short Term | Municipal Council | MC has already directed all contractors to carry building materials and malba in enclosed/ covered vessels. | Regular inspection will be made to ensure implementation of directions given to contractors to carry the building materials and malba in enclosed/ covered vessels. | Regular Activity | - | Nil |

**Annexure H – Action Plan for Control through Other Steps**

| Sr No.. | Activity  | Implementation period (short/Medium/long term) | Responsible Agencies | Base Line               | Target to be achieved         | Target Date | Milestones (Monthly / Quarterly)  | Financial Implications, if any (Estimated Cost) |
|---------|---|--|----------------------|-------------------------|-------------------------------|-------------|---|---|
| 1       | COS 1 – Dissemination of Air Quality Index                      | NA   | PPCB                 | 1 no. CAAQMS installed. |                               | --          | Public awareness  | NA  |
| 2       | COS 2 – Establish an Air Quality Management Division at SPCB HQ | Medium Term                                    | PPCB                 | No such division exists | One required                  | 31.03.2020  | 1. Develop methodology-Three months<br>2. Providing infrastructure-Six months<br>3. Implementation-Three months | Rs. 2 lacs                                      |
| 3       | COS 3 – Setup helpline in each city/town as well as SPCB HQ     | Medium Term                                    | PPCB                 | No helpline exists      | One help line number required | 31.03.2020  | 1. Develop methodology-Three months<br>2. Providing infrastructure-Six months<br>3. Implementation-Three months | Rs 0.5 Lacs                                     |



|   |   |            |      |  |   |  |   |              |
|---|---|------------|------|--|---|--|---|--------------|
| 4 | COS 4 - Monitoring of DG sets and action against violations | Short term | PPCB | Punjab Pollution Control Board             | Manual monitoring exists  | No non-complying DG set to be operated | Regular Activity  | NIL          |
| 6 | COS 5 – Source Apportionment Study                          | Short Term | PPCB | Source Apportionment Study not carried out | Source Apportionment Study to be carried out through selected Agency. | 31.03.2020                             | Selection of Agency<br>Develop scope of work<br>Allotment of work | Rs.5.00 lacs |

**Annexure I – Action Plan for Training & Capacity Building Programmes**

| <b>Sr. No.</b> | <b>Activity</b>                                | <b>Implementation period (Short/ Medium/ Long term)</b> | <b>Responsible Agencies</b> | <b>Base Line</b>   | <b>Target to be achieved</b>   | <b>Target Date</b> | <b>Milestones (Monthly / Quarterly)</b>  | <b>Financial Implications, if any (Estimated Cost)</b> |
|----------------|--|---|-----------------------------|--|--|--------------------|--|--|
| 1              | TCB1 – Training & Capacity Building Programmes | Short Term  | PPCB                        | Officers get trainings under various programmes organized by the concerned departments | <ul style="list-style-type: none"> <li>• District/City level training programmes – 1 Nos.</li> <li>• State level training programmes – 1 Nos.</li> </ul> | 31.03.2020         | Selecting agencies/ experts for organizing theme specific trainings.<br>Organization of programmes at City/District and level. | Rs.2.00 lacs   |

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.

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