

Action Plan for Clean Air, Jalandhar



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

Government of Punjab

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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, oxides of nitrogen, sulphur dioxide and ozone.

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 Jalandhar

1.2.1 History

Jalandhar is famous for sports industry and items/goods manufactured in Jalandhar are used in many international sporting games including Olympics, Commonwealth Games, Asian Games. It is a hub for manufacturing of hand tools, leather items, pipe fitting, valves & cocks and print media (specially in Hindi and Punjabi language). Doordarshan, Jalandhar is also an important feature of the City.

1.2.2 Area and Population

Jalandhar is the most centrally located district which falls in the Doaba region of the State of Punjab. The city is located in a stretch of about 20 Km. on National Highway-I, spread over an area of about 148 Sq. Kms. and currently accommodates a population of about 8.62 lacs.

1.2.3 Industry and Trade

City of Jalandhar is famous for sports & Leather industry. Also in Jalandhar the hand tool, pipe fitting, valves & cocks industry has also developed.

1.2.4 Topography

The topography of the Jalandhar is typical representative of an Alluvial plain, it owes its origin to the aggradation 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 the Jalandhar 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°C to 41°C.

1.2.6 Rainfall

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 769 mm.

1.3 Government's past efforts for control of Air pollution:

1.3.1 The environment of Jalandhar 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.

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. Action plan for abatement of pollution in Jalandhar was being reviewed for implementation of effective measures which included water & air pollution. The first meeting was held on 01.02.2015. Meetings were conducted to review progress made by various departments. No moratorium was ever imposed by MoEF. Punjab Pollution Control Board has been regularly keeping check on air polluting industries in Jalandhar town and regularly monitoring to bring down the level of air pollution.

1.4 About National Green Tribunal directions:

1.4.1 Nine cities of Punjab namely DeraBassi, Nangal, Patiala, MandiGobindgarh, 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 µg/m³ for PM₁₀. 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 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 including 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 alongwith 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 VardhamanKaushik V/s Union of India and Others for combating air pollution.

Chapter 2 – Vision, Mission and Strategy

2.1 MissionTandarust 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, Jalandhar

To restore the quality of air in Jalandhar 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, Jalandhar

To prepare and implement a comprehensive action plan for clean Jalandhar :

- (i) Creating awareness about the adverse impact of air pollution
- (ii) Identifying the sources of airpollution, their apportionment
- (iii) Identifying action steps related to Awareness, Enforcement, Infrastruture 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, Jalandhar

The key elements of strategy for Clean Air campaign for Jalandharwill 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 the 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) Upgradation of existing air pollution control devices
 - (c) Monitoring of ambient air quality and stack emissions
 - (d) Provision ofcanopies on the existing D.G sets

- (ii) **Department of Local Government/ MC, Jalandhar**
 - (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) **Deptt. of Industries and Commerce / Punjab Small Industries & Export Corporation**
 - (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 Corporation for Science and Technology**
 - (a) Evolving cost-effective cleaner technologies
- (ix) **Department of Agriculture**
 - (a) Promotion of bio-methanization and compost facilities for agri 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 Jalandhar in this plan. Following Industry Associations of Jalandhar will be associated with the plan:

- i) The President, Industrial Focal Point (Extn) Association, Jalandhar.
- ii) The President, North Chamber of small & medium industries.
- iii) The President, Sports & Surgical Complex, Association (Regd), Sports & Surgical Complex, Jalandhar
- iv) The President, Udyog Nagar Manufactures Association, Udyog Nagar, Jalandhar
- v) The President, Punjab Leather Federation, Leather Complex, Jalandhar
- vi) The President Federation of Jalandhar Industrial & Traders Association, Dada Colony, Industry Area, Jalandhar.

2.6.2 These Associations 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 PAHAL (NGO), Jalandhar 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 Jalandhar 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 Jalandhar is part of Statewide 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, coorrective measures required and fixing of accountability will be done by Air Qulaity 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 Jalandhar

3.1 Monitoring Mechanism

Jalandhar is the major industrial hub in the Doabaregion and the ambient air quality monitoring is being carried out regularly at 4 no. manually operated stations installed at Jalandhar under National Air Monitoring Programme (NAMP). The year wise data of PM₁₀, SO₂ and NO_x 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 Circuit House, Jalandhar and the real time data of the same is being displayed at Circuit House, Skylark Chowk Jalandhar. The AQI data of 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 ₂) µg/m ³	Annual	50	20
		24 hours	80	80
2	Nitrogen Dioxide (NO ₂) µg/m ³	Annual	40	30
		24 hours	80	80
3	Particulate Matter (size<10 µm) or PM ₁₀ µg/m ³	Annual	60	60
		24 hours	100	100
4	Particulate Matter (size<2.5 µm) or PM _{2.5} µg/m ³	Annual	40	40
		24 hours	60	60
5	Ozone (O ₃) µg/m ³	8 hours	100	100
		1 hour	180	180

6	Lead (Pb), $\mu\text{g}/\text{m}^3$	Annual	0.50	0.50
		24 hours	1.0	1.0
7	Carbon Monoxide (CO), mg/m^3	8 hours	02	02
		1 hour	04	04
8	Ammonia (NH_3), $\mu\text{g}/\text{m}^3$	Annual	100	100
		24 hours	400	400
9	Benzene (C_6H_6) $\mu\text{g}/\text{m}^3$	Annual	05	05
10	Benzo (a) Pyrene (BaP)- particulate phase only ng/m^3	Annual	01	01
11	Arsenic (As) ng/m^3	Annual	06	06
12	Nickel (Ni) ng/m^3	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 subindices 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 (PM₁₀, PM_{2.5}, NO₂, SO₂, CO, O₃, NH₃ 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	Moderately polluted	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 Jalandhar and the real time data of the same is being displayed at Circuit House Skylark Chowk Jalandhar. Annual average of the various parameters is given as under:

Year	PM₁₀ (µg/m³)	PM_{2.5} (µg/m³)	SO₂ (µg/m³)	NO_x (µg/m³)	AQI
2018	101	56.06	9.84	34.22	117

3.4.2 The trend of AQI in the ambient air shows that the quality of air remained moderately polluting & conc. of SO₂ & NO_x are within the limit notified by CPCB.

3.5 Major parameters of concern

The major concern of the air quality is PM₁₀ and PM_{2.5}. All other parameters are within the prescribed limits. The perusal of data in **Annexure-B** clearly indicates that air quality index of Jalandhar generally remains moderate (101-200) and sometimes satisfactory (51-100). The sources of pollution and their apportionment is given in the next chapter.

Chapter 4 – Sources of Air Pollution in Jalandhar

4.1 Major Sources

4.1.1 The following are the major identified sources of air pollution:

- (i) Vehicular Emissions
- (ii) Road Dust
- (iii) Burning of Bio-mass & Garbage
- (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 carried out, however, the Board has made some projections w.r.t the PM₁₀ based on its in house projections for Jalandhar

1.	Industrial Emissions	15%
2.	Road Dust	40%
3.	Vehicular Pollution	25%
4.	Burning of Garbage and Biomass	8%
5.	Construction and Demolition Activities	9%
6.	Other Sources	3%

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 Jalandhar due to movement of heavy goods vehicles carrying raw materials and products of the industries located in and around the city. At present about 10lacs vehicles (heavy transport vehicles, LMVs, cars & jeeps, two wheelers and three wheelers) are plying on the roads of Jalandhar. National Highway NH-1 passes through Jalandhar, which is connecting tourist destination like Amritsar, Pathankot, Kapurthala, Hoshiarpur and other industrial hubs like Ludhiana.

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 metalled 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 Jalandhar 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 385 TPD, which is being dumped unscientifically in the present dumping site at Wariana, Kapurthala road, Jalandhar. 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. The electric fired induction furnaces, coal fired cupola furnaces, lead smelting units & Boilers are emitting the aforesaid pollutants, besides the process / fugitive emissions.

4.5.2 The category wise detail of air polluting industries situated in Jalandhar within 5 KM of outskirts of MC limit of Jalandhar are given as under:

Sr. No.	Category	Number of Units
1.	Industries with boilers	20

Sr. No.	Category	Number of Units
2.	Induction Furnaces	
	(a) capacity upto 1 T/heat	132
	(b) capacity more than 1 T/heat	3
3.	Cupola/ Foundry Units	20
4.	Forging Industry	32
5.	Brick Kiln	6
6.	Lead smelting Units	20
Total		233

4.5.3 It is pertinent to mention here that emission standards for most of the above said industries are the most stringent i.e. 150 mg/Nm³. However, due to high concentration of industries in a small area, it is estimated that industrial source is contributing 10-15% in the Air Quality.

4.6 Mining

Mining activities also contribute to the AQI, however, in Jalandhar city, no mining activity is carried out due to absence of mining sites. As such, it has no contribution in the air quality index of Jalandhar.

4.7 Construction and Demolition Activities

Jalandhar is a big city having population about 8.62 lacs. The residential colonies & commercial complexes are being setup in the city alongwith work being carried out by National Highway Authority. Further, small construction activities are also 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

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

Chapter 5 –Control of 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:

- (i). Public Awareness related,
- (ii). Enforcement related,
- (iii). Infrastructure related,
- (iv). 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

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

Infrastructure Related

- (i) CVE 6 - Widening of roads and infrastructure for decongestion of roads
- (ii) CVE 7 - Introduce intelligent traffic systems
- (iii) CVE 8 - Construction of expressways/ bypasses to avoid congestion

Policy Related

- (i) CVE 9 – Phasing out commercial diesel vehicles more than 15 years old
- (ii) CVE 10 – Promotion of E- vehicles
- (iii) CVE 11 – Introduction of CNG based public transport
- (iv) 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, Jalandhar, 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

To check the health of the engine, PUC has been made mandatory. The PUC is being issued to the vehicles by pollution check centres manually, which may be forged and cannot be verified. Therefore, there is need to install centralized online system for issuing of online PUCs to the vehicles avoid malpractices.

The Department of Transport will implement remote sensor-based PUC system to eliminate the malpractices in the existing system of issuing PUCs. All PUC centers 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 ear –mark 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 road and improvement of infrastructure to decongest roads**

6(a) Widening of road: The major air pollution 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

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

5.8 **CVE 7 - Construction of expressways/ bypasses to avoid congestion**

PWD (B&R) shall examine the need for any expressways/byepassestoavoid congestions

5.9 **CVE 8 - 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 atleast 2 Kms. The traffic lights shall be placed at various intersection, so as to avoid traffic jams and smooth operation of the vehicles. Municipal Corporation in consultation with Traffic Police shall identify such places and provide traffic lights.

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 diesel 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) CRD 4 -Creation of green buffers along the road sides
- (ii) CRD 5 - Greening of parks, open areas community places, schools and housing societies
- (iii) CRD 6 - Water fountains at major traffic intersections
- (iv) CRD 7 - Blacktopping of road including pavement of road sides

- 6.1.2 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 Corporation shall identify the dust prone roads and shall prepare schedule for regular sprinkling of water on these roads to suppress dust emissions. This activity shall be started immediately. In order to save the water, the Municipal Corporation shall utilize the treated wastewater of STPs installed in the city.

2(b) Procurement of Water sprinkler: Municipal Corporation 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 Corporation shall procure adequate number of automatic sweeping machines for efficient and fast sweeping of the road / streets. The frequency of the sweeping shall be fixed appropriately by the Municipal Corporation.

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

Municipal Corporation/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 Corporation.

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

6.7 CRD 6 – Water fountains at major traffic intersections

Municipal Corporation 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 road 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 Corporation shall undertake this activity in a time bound manner.

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

7 (c) Pavement of road side 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 Jalandhar 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 of open burning of bio-mass in City
 - (ii) CBGB 2 – Control of burning of municipal solid wastes
 - (iii) CBGB 3 –Control of 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 Corporation 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.

Municipal Corporation shall provide education to the educational institutions, government offices, residents welfare associations regarding horticulture waste collection and its benefits by way of disposing the waste in the form of composting and encouraging the organic farming in the gardens and fields

A whatsapp number shall be provided to the public along with the setting up of the dedicated control room for receiving complaints of public through this system.

7.3 CBGB 2 – Control on burning of municipal solid waste

Presently, Municipal Corporation has one municipal waste dumping site at Wariana, 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 contributes 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 Corporation 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 of 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. The electric fired induction furnaces, coal fired cupola furnaces, lead smelting units & Boilers are 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 sidehood suction in furnaces
- (ii) CIE 2 – Conversion to CNG/PNG from coal

Enforcement Related

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

Infrastructure Related

- (i) 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 sidehood suction in furnaces

PPCB with the technical support from Council for Science and Technology has improvised technology to provide for sidehood suction in furnaces to reduce the emissions. The sidehood 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 very few number of units in Jalandhar 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 are 6 no. brick kilns falls within the radius of 5 KM beyond Municipal limit which have conventional technology. 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/ Deptt. of Industries.

Chapter 9 – Control on Construction and Demolition activities

9.1 Key Activities

9.1.1 Jalandhar is a big city having population about 8.62 lacs. The residential colonies & commercial complexes are being setup in the city alongwith work being carried out by National Highway Authority. Further, small construction activities are also 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 (C & D) Rules, 2016
- (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 Corporation 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 Corporation 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 Corporation shall ensure that

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

(iv). 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 Jalandhar

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 Khanna 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 > 400)

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, induction furnaces, boilers etc.	PPCB
2	Stop construction activity	MC, Jalandhar
3	Alert in newspapers / local cable TV to advise people with respiratory and cardiac patients to avoid polluted areas and restrict outdoor movement.	MC, Distt. Administration & PPCB
4	Sprinkling of water at the various dust emission points	MC, Jalandhar
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, Jalandhar
7	To increase the frequency of mechanized sweeping on roads with heavy traffic and water sprinkling also on unpaved roads.	MC, Jalandhar
8	Stop entry of heavy good vehicles except essential commodities into Jalandhar	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)

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, boilers etc. for 8 hours/day	PPCB
2	Banning of construction activities	MC, Jalandhar
3	Stop of garbage burning in the landfill areas or in the open fields	MC, Jalandhar
4	Water sprinklings at the dust emission points etc.	MC, Jalandhar
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, Jalandhar and Distt. Administration
8	Strictly enforce all pollution control regulations in the air polluting industries like induction furnaces, brick kilns and boilers etc.	PPCB

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

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, Jalandhar
2	Increase frequency of mechanized cleaning of road and sprinkling of water on roads. Identify road stretches with high dust generation.	MC, Jalandhar
3	Stop use of coal / firewood in open eateries	MC, Jalandhar
4	Strictly enforce rules for dust control in construction activities and close non-complaint sites.	MC, Jalandhar
5	Close / Strictly enforce all pollution control regulations in the air polluting industries like induction furnaces, brick kilns and boilers etc.	PPCB
6	Restricting air polluting industries i.e. induction furnaces and boilers etc. for 12 hours/day	PPCB

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

Following action shall be taken:

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

- (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, Jalandhar 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, Jalandhar	Chairman
2.	The Commissioner of Police, Jalandhar	Member
3.	The Commissioner, Municipal Corporation, Jalandhar	Member
4.	The Environmental Engineer, Punjab Pollution Control Board, Regional Office, Jalandhar.	Convener
5.	The Regional Transport Authority, Jalandhar	Member
6.	The Divisional Forest Officer, Jalandhar	Member
7.	Sub Divisional Magistrate- 1, Jalandhar	Member
8.	Sub Divisional Magistrate- 2, Jalandhar	Member
9.	The Civil Surgeon, Jalandhar	Member
10.	The Superintendent Engineer, Punjab Water Supply & Sewerage Board, Jalandhar	Member
11.	The Superintendent Engineer, PWD (B & R), Jalandhar.	Member
12.	The Superintendent Engineer, (Drainage), Deptt. of Irrigation, Drainage Division, Jalandhar	Member
13.	The District Town Planner, Jalandhar	Member
14.	The Superintendent Engineer, Punjab Small Industries & Export Corporation, Focal Point, Jalandhar	Member
15.	The General Manager, District Industries Centre, Jalandhar.	Member

16.	The Superintendent Engineer, Punjab Water Supply & Sewerage Board, Jalandhar	Member
17.	The District Agriculture Officer, Deptt. of Agriculture, Jalandhar	Member
18.	The General Manager-cum- Project Director, NHAI, Kalia Colony, Jalandhar	Member
19.	The General Manager, GAIL, Jalandhar	Manager
20.	The President, North Chamber of small & medium industries, Jalandhar	Member
21.	The President, Industrial Focal Point Extn Association, Jalandhar	Member
22.	The President, Sports & Surgical complex Association, Jalandhar	Member
23.	The President, Udyog Nagar Manufactures Association, Jalandhar	Member
24.	The President, Punjab Leather Federation, Jalandhar	Member
25.	The President, Federation of Jalandhar Industrial & Traders Association Dada colony, Industrial Area, Jalandhar	Member

13.3 AQMC at State Level

13.1.3 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

13.1.4 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 Jalandhar

1. Station at R.O, PPCB, Guru Teg Bahadur Nagar shifted to PWSSB Guest House near Manbro Chowk in 2015, Jalandhar.

Month	RSPM ($\mu\text{g}/\text{m}^3$)					NO _x ($\mu\text{g}/\text{m}^3$)					SO ₂ ($\mu\text{g}/\text{m}^3$)				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
January	158	142	205	-	179	26	25	25	-	22	14	14	13	-	13
February	139	142	165	98	159	25	28	26	20	22	13	13	14	11	12
March	124	-	-	111	118	24	-	-	20	20	12	-	-	11	11
April	140	142	-	142	159	25	26	-	24	22	13	14	-	13	11
May	152	153	-	174	183	26	26	-	24	21	13	13	-	13	12
June	147	138	-	159	206	24	24	-	24	19	13	13	-	13	11
July	130	121	-	102	106	23	23	-	19	16	13	12	-	9	9
August	124	128	137	125	119	23	24	19	20	15	13	12	11	10	9
September	119	-	106	120	103	23	-	19	20	18	12	-	10	11	10
October	129	129	92	227	156	24	24	20	25	22	13	12	12	11	11
November	124	144	206	300	195	24	26	25	24	25	13	15	14	13	11
December	137	-	-	248	183	25	-	-	25	23	14	-	-	14	11
Annual Avg	135	138	152	164	155.5	24	25	22	22	20.4	13	13	12	12	10.9

2. Station at H.R International C-107-108 Focal Point, shifted to PPCB Office Building near water tank, Focal Point in year 2015, Jalandhar.															
Month		RSPM ($\mu\text{g}/\text{m}^3$)					NO _x ($\mu\text{g}/\text{m}^3$)						SO ₂ ($\mu\text{g}/\text{m}^3$)		
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
January	172	151	247	302	288	29	28	27	28	26	14	14	15	17	15
February	153	142	203	179	220	29	28	29	23	23	13	13	15	13	14
March	143	135	171	207	167	28	28	25	23	21	13	13	14	11	12
April	155	152	192	198	204	29	29	25	24	22	13	14	14	13	12
May	168	162	-	194	245	30	30	-	25	22	14	14	-	14	11
June	162	151	-	220	290	29	29	-	25	21	13	13	-	14	12
July	143	134	125	131	147	28	28	20	19	19	13	13	11	11	11
August	131	158	97	120	153	27	26	18	19	18	13	13	9	11	11
September	126	156	180	111	140	26	26	20	20	22	13	13	11	11	14
October	145	164	181	246	173	27	27	82	26	24	14	14	12	12	11
November	139	180	270	354	167	26	28	25	25	19	14	16	14	13	10
December	156	261	302	293	245	28	28	28	26	24	15	14	17	15	12
Annual Avg	149	162	197	213	203.2	28	28	30	24	21.75	14	14	13	13	12.1

3. Station at Zonal Office, PPCB, Furniture market shifted to Municipal Corporation office premises at Nehru Garden in year 2015, Jalandhar.

Month		RSPM ($\mu\text{g}/\text{m}^3$)					NO _x ($\mu\text{g}/\text{m}^3$)						SO ₂ ($\mu\text{g}/\text{m}^3$)			
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018	
January	161	138	70	-	193	27	25	22	-	23	14	13	11	-	13	
February	146	131	71	123	206	26	25	20	20	22	13	13	12	12	13	
March	135	-	-	88	152	25	-	-	20	21	12	-	-	12	11	
April	148	-	-	144	161	26	-	-	23	21	13	-	-	13	12	
May	167	158	-	155	203	27	27	-	24	21	14	14	-	13	11	
June	155	143	-	112	244	25	25	-	22	20	12	12	-	13	11	
July	134	-	-	113	75	24	-	-	20	17	12	-	-	11	9	
August	124	-	98	92	100	22	-	19	18	16	12	-	10	10	10	
September	115	-	103	-	112	23	-	19	-	18	13	-	10	-	11	
October	133	109	138	258	102	24	26	19	28	21	13	13	11	14	9	
November	128	125	166	289	72	24	26	24	24	18	13	16	13	13	9	
December	142	-	-	278	192	26	-	-	25	22	14	-	-	15	10	
AnnualAvg.	141	134	108	165	151	25	26	21	22	20	13	14	11	13	10.7	

4. Station at M/s G.K. International SSGC, shifted to ESI Hospital building in the year 2015, Jalandhar.

Month		RSPM ($\mu\text{g}/\text{m}^3$)					NO _x ($\mu\text{g}/\text{m}^3$)						SO ₂ ($\mu\text{g}/\text{m}^3$)			
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018	
January	177	165	274	167	173	29	28	27	23	23	15	14	14	13	13	
February	154	146	151	102	110	28	27	25	21	20	14	14	14	12	11	
March	140	138	133	91	172	27	27	22	19	20	13	13	12	11	12	
April	152	153	227	134	146	28	28	25	23	20	14	14	7	12	11	
May	175	165	-	182	162	29	29	-	25	20	14	15	-	14	11	
June	165	154	-	124	77	28	28	-	23	17	13	13	-	13	10	
July	147	139	141	107	55	28	28	21	20	16	13	13	11	11	9	
August	136	163	219	73	54	27	27	21	17	15	13	13	11	9	9	
September	130	142	160	85	43	27	27	20	18	14	13	14	10	9	9	
October	145	157	139	190	81	27	27	19	23	17	14	14	10	12	10	
November	147	191	182	286	125	26	29	24	24	23	14	17	13	13	11	
December	162	280	167	191	163	28	29	23	24	22	14	14	13	14	12	
Annual Avg.	153	166	179	144	113.4	28	28	23	22	18.9	14	14	12	12	10.6	

Annexure-B AQI data for the year 2018 depicting the air quality in Jalandhar

Month	AQI	Category
Jan-18	242	Poor
Feb-18	138	Moderate
Mar-18	99	Satisfactory
Apr-18	114	Moderate
May-18	117	Moderate
Jun-18	124	Moderate
Jul-18	50	Good
Aug-18	64	Satisfactory
Sep-18	56	Satisfactory
Oct-18	119	Moderate
Nov-18	160	Moderate
Dec-18	118	Moderate
2018 Annual avg.	117	Moderate

Annexure C – Action Plan for Control on Vehicular 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	CVE 1 - Public awareness campaign for control of vehicular emissions	Short Term	Department of Transport	Presently, awareness is being done in the Educational Institutes under Sadak/Surakhya Abhiyan	The public to be sensitized about the impact of vehicular emissions on human health and environment.	Regular Activity	1. Public awareness campaign in print and electronic media-Twice a month 2. Use of Social Media Facebook, twitter, Instagram-Regular 3. Jingles on air pollution on local radio and TV-Local FM Radio 4. Awareness drives in 5 no. educational institutions-Monthly 5. Public meetings-Monthly 6. Nukarnataks-Quarterly	Nil

		Short Term	Traffic Police	Organised 531 Awareness/ Educational program conducted during year 2018 in the educational institutes etc.by traffic education cell. Through these awareness programs total 90,678 students, 8,864 drivers and 3,580 individuals were educated .	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 Check Centre (PCC) exists	All PCC centres will be linked with VAHAN 4.0 software of the Transport deptt.	31.01.2020	1. Preparation of RFP for selection of vendors - Under Process 2. Allotment of work after selection of vendors – 2 Months 3. Development of software solution to link all PUC centres – 9 months 4. Linking of software to VAHAN 4.0 software of the transport Deptt.- 1 Month	Nil

3	CVE 3 - Extensive drive against polluting vehicles	Short Term	Traffic Police	7300 no.of vehicles inspected & 1825 no. of challans issued during year 2018	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 Corporation	- Designated Parking lot : 3 No. - Identified 2 multi-level car parking sites: - Near Kapurthala chowk, - Near Model town market - Parking for trucks / Commercial vehicles : NIL	- Additional Designated Parking lots not required. - Identified multi level parking sites to be developed - No new parking for trucks / Commercial vehicles proposed.	-	-	-
		Medium Term	Municipal Corporation	- Roadside parking earmarked by yellow line : 6 No. "No Parking" sign Boards installed - 200	4 no. Additional Roadside parking to be earmarked. 150 No. Additional "No	31.03.2021	- DPR for development of parking sites (2 Nos.) - Tendering- After estimation - Work allotment - Completion of work - 2 years with subject to administrative approval	Rs. 141 Crore
						31.12.2019	Tendering and work allotment under process.	Rs. 17.98 Crore

				No.	Parking” sign Boards to be installed .			
	CVE 4b – Enforcement	Short Term	Traffic Police.	24,273 challans issued in 2018.	Regular inspection to be continued and violators to be challaned.	Regular Activity	-	Nil
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. - 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	Regular activity	-	Nil

					Coordinator of Oil Company.			
6	CVE 6 - Widening of roads and improvement of infrastructure for decongestion of roads	Medium Term	Municipal Corporation	1.5 Km road length identified for widening (BM Shri Ram Chowk towards Patel Chowk)	Identified roads to be widened	31.03.2020	1. Estimation -Completed 2. Tendering including Work allotment -Under process 3. Completion - 2 Years with subject to administrative approval	Rs.0.50 Crore
		Medium Term	Municipal Corporation	i) 2.1 Km Road length identified for widening (PAP Chowk to Bhagat Namdev chowk) and , ii) 3.5 Km road length identified for widening (DAV Flyover to Maqsudan)	Identified roads to be widened	31.03.2020	1. Estimation -Completed 2. Tendering including Work allotment -Under process 3. Completion - 1 Year with subject to administrative approval	Rs. 6.92 Crore
		Short Term	PUDA	2.4 Km of road length identified (66 Feet wide road backside UE Ph-2 Jalandhar)	Identified roads to be widened	30.06.2019	1. Estimation-Completed 2. Tendering including Work allotment - completed 3. Completion- within 3 months	Rs. 2.96 Crore

		Medium Term	PWD	6.50 Km of road length identified (Urban Estate Phase-II Jalandhar to Jalandhar Nakoder Road)	Identified roads to be widened	31.03.2020	1. proposal - Underprocess 2. Tendering including Work allotment - 3. Completion - 1 Year with subject to administrative approval	Rs. 6.40 Crore
7	CVE 7 - Introduce intelligent traffic systems	Medium Term	Traffic Police & Municipal Corporation	11 No. sites identified	11 no. intelligent traffic system to be installed	31.03.2020	1. DPR-Completed 2. Tendering including Work allotment - Under process 3. Completion- 12 months	Rs. 3 Crore
8	CVE 8 - Construction of expressways/ bypasses to avoid congestion	Short Term	NHAI	- Road stretch identified (between PAP Chowk & Rama Mandichowk on NH1) - Six Lane Highway already exists from Amritsar-Jalandhar-Delhi-NH 1 and Four Lane from Jalandhar to Panthakot-NH 1(A)	Construction of road stretch between PAP Chowk & Rama Mandichowk on NH1.	30.09.2019	1. Identification- Completed 2. DPR- Completed 3. Tendering- Completed 4. Work allotment- Completed 5. Execution & Completion- Six months	Nil
9	CVE 9 –	Long	Department of	New commercial diesel	Matter of fixing	-	-	Nil

	Phasing out of commercial diesel vehicles more than 15 years old	Term	Transport.	vehicles are registered for 2 years and thereafter, fitness certificate is being issued every year.	the age of commercial diesel vehicle is being examined legally.			
10	CVE 10 – Promotion of E- vehicles	Medium Term	Deptt. of Transport	Presently, most of the vehicles are running on diesel and petrol. -Framing of the E-vehicle policy is in the final stages.	After approval from Competent Authority E-Vehicle policy will be notified.	30.12.2019	1. Framing & Notification of E-vehicle policy – 9 months 2. Providing public charging points for battery operated 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 Ludhiana	2 nos. of CNG filling Stations exists - Survey by M/s Jay Madhok co.	To upgrade 01 no. conventional filling stations to CNG filling stations.	31.03.2020	Facilitating laying of pipeline and commissioning of CNG filling stations	Nil
	CVE 11 (b) – Introduction of CNG based city bus service	Long Term	Municipal Corporation	At present no CNG based city bus service exists.	To take measures to introduce CNG based city bus service.	-	-	Nil
	CVE 11 (c) – Introduction	Long Term	Deptt. of Transport	At present, no CNG based auto/ taxis exists.	To take measures to introduce CNG	-	Implementation of PPCB orders dated	Nil

	of CNG based autos / taxis			PPCB has issued direction vide letter no 05 dated 03.01.2019 under section 31-A of Air Act 1981 to stop registration of new diesel / petrol driven auto rickshaw (s), in 5 districts including Jalandhar, w.e.f 01.02.2019.	based auto/ taxis.		03.01.2019.	
12	CVE 12 – Retrofitting of particulate filters in diesel vehicles, when for BS-Vfuels are available	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	Medium Term	Municipal Corporation	14.9 Km road length identified I. (PAP to BSF and upto Sh. Ram chowk- 1.0 Km II. Nakodar road to B.R.Ambedkar Chowk to MC limit – 5.0 Km III. DAV Flyover to Maqsudan chowk – 1.5 Km, IV. Patel chowk to Mai Heera Gate – 1.5 Km, V. Guru Ravidass chowk to Manbro	14.9 Km of road length to be repaired	31.03.2021	1. Identification- Completed 2. Estimation-Completed 3. Tendering and Work allotment and Completion – within 2 years	Rs. 2.53 Crore

				Chowk – 0.9 Km, VI. Footwall Chowk to Kapurthala chowk canal to BabuJagjeeva n Ram chowk – 3.5 Km, VII. Road from GPO to Madan Flour chowk – 1.5 Km)				
		Medium Term	PWD	4.30 Km road length identified (Dhaliwal to Jalandhar Nakoder road - 0.70 Km, Jalandhar Nakoder road to KhambraDhina- 2.15 Km, Mithapur to Lohar Nangal - 1.46 Km)	Repair of 4.30 Km of road length	31.03.2021	1. Identification- Completed 2. Tendering and Work allotment – underprocess 3. Completion – 6 months after administaritive approval.	Rs.12.50 Lacs

2	CRD 2 (a) – Water sprinkling	Short Term	Municipal Corporation	19 Roads identified for water sprinkling with in MC limit	Regular Water sprinkling on identified road	Regular Activity	-	Nil
	CRD 2 (b) – Procurement of Water sprinkler	NA	Municipal Corporation	2 Nos water sprinklers- exists.	No new water sprinkler required .	-	-	NA
3	CRD 3 – Mechanical sweeping	Medium Term	Municipal Corporation	No mechanical sweeping machine exists.	2 no. mechanical sweeping to procured under smart city project.	31.03.2020	1. Identification- Completed 2. Tendering, purchase order, procurement - after administaritive approval.	Rs.4.08 Crore
4	CRD 4 - Creation of green buffers along the road sides	Short Term	Municipal Corporation	60 km of road length identified for creating green buffer along road sides as under :- (Mahavir Marg, Ladowali road, cool road,PAP to shri Ram chowk. -No. of parks under MC	4000 plants to be planted along the identified road sides.	Regular activity	1. Identification of roads- Completed 2. Plantation-To be started in rainy season	Rs. 8 lacs

				-No. being maintained.				
5	CRD 5 - Greening of parks, open areas community places, schools and housing societies	Medium Term	Municipal Corporation	475 No. Of parks are being maintained by MC. Out of 475 parks about 100 parks need fresh plantation. 25 Govt. Schools, community places & open MC areas have been identified for plantation.	-12700 plants to be planted.	Regular activity	1. Identification of area- Completed 2. Plantation-To be started in rainy season	Rs.8 lacs
6	CRD 6 - Water fountains at major traffic intersections	Short Term	Municipal Corporation	Water fountains already provided at 10 no. traffic intersections (each at Guru Amar Das Chowk, Bhagwan Ram Dass Chowk, Masand Chowk, Skylark Chowk, Namdev Chowk & inside Company	No immediate proposal to install any fountain.	NA	-	NIL

				Bagh)					
7	CRD 7 (a) Kaccha/Brick Paved Roads to be made Pucca road	Medium Term	MC	Identified 41.0 Km of Kaccha roads for making pucca roads in Jalandhar Cantt. Constituency, Jalandhar North, Jalandhar West and Jalandhar Central Constituency	Blacktopping of identified Kaccha roads to be made Pucca for control of road dust emissions.	31.03.2021	1. Estimation- process 2. Tendering, allotment- necessary administrative approvals.	Under Work after	Rs 9.88 Crore
		Short Term	PUDA	2.4 Km of Katcha/ Brick road length identified for for making pucca road at backside UE Ph-2, Jalandhar	2.4 Km Identified road made to be Pucca road.	31.07.2019	1. Proposal- completed 2. Tendering - completed, 3. Work allotment- completed 4. Completion- within 3 Months		Rs. 2.96 Crore
	CRD 7 (b) Existing roads requiring recarpeting	Medium Term	MC	45 km of existing road within MC limit requiring re- carpeting identified	179.75 km of existing road to be re- carpeted	31.03.2021	Tendering - and Work allotment- completed		Rs. 30.48 Crore
		Medium Term	PWD	5.06 Km of existing road length identified	5.06 km of existing road to be re-	31.03.2020	1. Proposal- process 2. Tendering,	Under Work	Rs. 2.17 Crore

				(Jalandhar to Jandu Singha road)	carpeted		allotment-administrative approvals	After	
		Medium Term	PSIEC	7 km. of existing road length identified.	7 km. road to be re-carpeted.	31.03.2020	Tendering & allotment-administrative approvals	Work After	Rs. 2.56 Crore
	CRD 7 (c) Pavement of road side using interlocking tiles to prevent road dust emissions	Medium Term	PWD	1.60 Km of road length of berm identified along roads on both sides (Jalandhar Nalkodar road to Khambra Dina road)	1.60 Km of road length of berm identified along roads on both sides to be paved by using interlocking tiles.	31.03.2020	1. Proposal-process 2. Tendering & allotment-necessary administrative approvals	Under Work After	Rs. 25.50 Lacss

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	Short Term	Municipal Corporation	- Presently no compost pits exists	- 100 no. compost pits to be constructed.	30.09.2019	1. Identification Completed 2. Construction of compost pits - Within 6 months	- Rs.4.8 Crore
2	CBGB 2 – Control on burning of municipal solid wastes	Short Term	Municipal Corporation	Burning of municipal solid wastes stands prohibited. 6 No. Challans issued and 4 No. Awareness camps held in 2018.	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 crop	Short Term	District Administration, Department of	- Identification of sites by PRSC (PAU) -Regular monitoring under supervision of DC	Enforcement by Team	During wheat/rice harvesting season	1. To create awareness among farmers regarding health effects of residue burning 2. Deptt. of Agriculture to	Nil

	residue		Agriculture, Police, Revenue department, PPCB & PSPCL - 122 challan issued in which total amount of Rs 3,80,000/- imposed as Environmental compensation in year 2018 by PPCB - Rs.30,000/- Environmental compensation recovered upto Dec 2018.			provide subsidy for equipment/ machinery as per Govt. policy 3. Teams will be constituted one month prior to start of each harvesting season. 4. Identification of no. of fire incidents by PRSC. 5. Visit to identified sites 6. Imposing Environmental compensation on defaulters 7. PSPCL shall ensure electricity for in-situ management 8. Progress review in District Level Air Quality Monitoring Committee meeting 9. Recovery of Environmental compensation	
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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 furnace	Short Term	Punjab Pollution Control Board	Total 132 no. induction furnaces are of capacity upto 1 ton/heat. However, 3 no. induction furnaces are of capacity more than 1 T/heat which require to up grade the suction system.	Adequacy of 132 furnaces be checked and 3 no. induction furnaces are required to be upgraded to side hood suction system.	31.05.2019	-	NIL
2	CIE 2 – Conversion to CNG from pet coke / coal	Short Term	Punjab Pollution Control Board /M/s Madhok Energy Pvt. Ltd.	5 industries are using coal as fuel in boilers. Conversion to CNG/PNG not feasible since these units are scatteraly located.	Regular monitoring of these industries shall be carried out.	Regular activity	Monthly review meetings.	NIL
3	CIE 3 – Conversion of natural draft brick kilns to	Short Term	Punjab Pollution Control Board	6 no. brick kiln exists within 5 Km radius of M.C limit operating on conventional technology.	To convert 6 no. brick kilns to induced draft technology	30.09.2019	-	NIL

	induced draft							
4	CIE 4 – Action against non-complying industrial units	Short Term	Punjab Pollution Control Board	Regular inspection as per policy of the Board	- Action against defaulting industries. - Checking the adequacy of APCD installed by the industries	Regular activity	-	NIL
5	CIE 5 – Shifting of industries from non-designated areas to industrial areas	Long Term	Deptt. of Industries, Department of Town & Country Planning and Deptt. of Local Government	Industries located in non designation areas need to be identified for shifting.	Identified industries are required to be shifted to designated industrial area	Upto 2025	As per the provisions 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 Corporation	Inspection of bigger/commercial & road projects is being carried out as per needs.	-Regular inspection will be made for Control of Construction & Demolition waste. -Counter verification to be done by ATP/EO.	Regular Activity	--	Nil
	CCDA 1 (b) – Infrastructure of Construction & Demolition waste	Long Term	Municipal Corporation	4 no. sites notified by M.C. Jalandhar for disposal of construction debris at 1. Vill. Ladhewali 2. Vill. Satampur Musalmana 3. Vill. Birring 4. Basti BewaKhel,	Setting up of processing/recycling plant as per C&D Rules, 2016.	Three years	1. Identification- Completed 2. Land acquisition-One year 3. DPR-Three months 4. Tendering-Six months 5. Development & Commissioning-One year	Rs. 4.00 Crore

2	CCDA 2 – Control measures for fugitive emissions	Short Term	Municipal Corporation	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 Regular inspections to be made and challan will be issued to violators	Regular activity	Regular inspections	Nil
3	CCDA 3 – Ensure carriage of construction material in closed/covered vessels.	Short Term	Municipal Corporation	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	Long Term	Punjab Pollution Control Board	One No. CAAQMS installed.	Three additional CAAQM to be installed.	31.03.2020	1. Expected Allotment of Station by CPCB on 50:50 sharing basis. 2. Finalization of specifications by CPCB 31.05.2019. 3. Tendering- 31.07.2019 4. Identification of site and its approval from CPCB (Simultaneously with tendering- 31.07.2019). 5. Procurement& installation of CAAQMS- 31.01.2020 6. Calibration,	Rs. 30 lacs

							Commissioning & data procurement – 31.03.2020.	
2	COS 2 – Establish an Air Quality Management Division at SPCB HQ	Medium Term	Punjab Pollution Control Board	No such division exists	One required	31.03.2020	1. Development Methodology- Three months 2. Providing Infrastructure- Six months 3. Implementation- Three months	Rs. 2 lacs
3	COS 3 – Setup helpline in each city / town as well as SPCB HQ Policy	Medium Term	Punjab Pollution Control Board	No such helpline exists	One required	31.03.2020	1. Development Methodology- Three months 2. Providing Infrastructure- Six months 3. Implementation- Three months	Rs. 0.50 lacs
4	COS 4 - Monitoring of DG sets and action against violations	Short Term	PPCB	Regular monitoring exists	Non-complying DG set should not be allowed	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 Develop scope of work Allotment of work	Rs.5.00 lacs
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Annexure I – Action Plan for Training & Capacity Building Programmes

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	TCB1 – Training & Capacity Building Programmes	Short Term	PPCB	Officers get trainings under various programmes organized by the concerned departments	• District/City level training programmes – 1 Nos. • State level training programmes – 1 Nos.	31.03.2020	Selecting agencies/ experts for organizing theme specific trainings. 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.
