BEFORE THE NATIONAL GREEN TRIBUNAL

PRINCIPAL BENCH NEW DELHI

ORIGINAL APPLICATION NO. 582/2024

In the matter of:

Rakesh Kumar Applicant

Versus

Union of India & Ors Respondents

INDEX

S.NO.	PARTICULARS	PAGE NO.
1.	Copy of Email dated 31.01.2025 of HSPCB to CPCB and copy of letter dated 31.01.2025 along with "Haryana State Action Plan for Clear Air" (In compliance of order dated 06.09.2024)	**1-160**

Place: New Delhi

Dated: 22.04.2025

FILED BY:-

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Submission of revised “Haryana State Action Plan for Clean Air”, approved by State Level Steering and Monitoring Committee as per Hon’ble NGT orders dated 09.05.2024 and 11.12.2024 in the matter of O.A 159 of 2021 (SZ) – reg.

Air Cell <hspcbaircell@gmail.com> Fri, Jan 31, 2025 at 6:13 PM
To: CPCB AQM NCAP <ncap.cpcb@gov.in>, pagarwal.cpcb@gov.in
Cc: PS Environment <psenv2016@gmail.com>, Chairman <pschhspcb@gmail.com>, Member Secretary <hspcbms@gmail.com>, mscb.cpcb@nic.in

Sir,
Please find enclosed here with “Haryana State Action Plan for Clean Air”, duly approved by State Level Steering and Monitoring Committee as per Hon’ble NGT orders dated 09.05.2024 and 11.12.2024 in the matter of O.A 159 of 2021 (SZ) – reg.

Sr. Env. Engineer, (Air Cell)
Haryana State Pollution Control Board
C-11,Sector -6, Panchkula (HQ),
Panchkula

Haryana state action plan for clean air.pdf
4633K

HARYANA STATE POLLUTION CONTROL BOARD
C-11, SECTOR-6, PANCHKULA
E-mail:hspcbaircell@gmail.com

No. HSPCB/Aircell/2025/81 **Dated: 31.01.2025**

To

Sh. Pankaj Agrawal,
Director & Head,
Air Quality Management Division, CPCB.

Sub : **Submission of revised "Haryana State Action Plan for Clean Air", approved by State Level Steering and Monitoring Committee as per Hon'ble NGT orders dated 09.05.2024 and 11.12.2024 in the matter of O.A 159 of 2021 (SZ) – reg.**

Ref: **Your office letter dated 13.06.2024 and 23.12.2024**

With reference to the subject cited above, please find enclosed herewith the copy of revised "Haryana State Action Plan for Clean Air" duly approved by State Level Steering and Monitoring Committee of Haryana as per the Guidelines of CPCB in the compliance of Hon'ble NGT order.

DA/As above

Nirmal 31/1/25

Sr. Env. Engineer (Air cell)
For HSPCB

CC:-

A copy of the above is forwarded to the following for information please.

1. Member Secretary, CPCB
2. PS to ACS, Environment, Forest and Wildlife Department, Haryana.
3. PS to Chairman, HSPCB
4. PA to Member Secretary, HSPCB

Haryana State Action Plan for Clean Air

Environment, Forest & Wild Life Department

Government of Haryana

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Executive Summary

According to the fifth edition of the State of Global Air (SoGA) report, air pollution is having an increasing impact on human health, becoming the second leading global risk factor for death. The report, released by the Health Effects Institute (HEI), an independent U.S.-based nonprofit research organization, found air pollution accounted for 8.1 million deaths globally in 2021. Beyond these deaths, many more millions of people are living with debilitating chronic diseases, putting tremendous strains on health care systems, economies, and societies.

World Health Organization (WHO) report of 2018 reveals that 4.2 million people die prematurely each year from diseases caused by ambient air pollution (WHO 2018). These deaths are due to 38% ischemic heart disease, 20% to stroke, 18% to chronic obstructive pulmonary disease (COPD), 18% to acute lower respiratory infections and 6% to lung cancer.

In order to have a sustainable development, it is imperative to address the air pollution issue duly involving all the stakeholders. The State Action Plan (hereinafter referred as SAP) for improving the Ambient Air Quality is the need of the hour for redressing the issues of the air pollution for a sustainable development. The SAP is prepared with the following objectives:

- To improve the air quality with an objective to meet the national ambient air quality standards.
- To build capacity among the officials, institutions, NGOs and citizens at large for collective responsibility towards a better tomorrow.
- State Action Plan will provide a broad strategy for redressing the emissions and their sources.
- The policy changes that might be required to redress the emissions duly maintaining the business as usual scenario
- Interventions that help in improving the air quality with regards to identified hot spots, identifying the co-benefits, including prioritization and convergence of activities of various ongoing and / or proposed schemes and programs.
- Advancing sector-wise interventions to reduce pollution emanating from key contributing sectors

- Strengthening state capabilities for air quality monitoring, management and planning

The State Action Plan will serve as an indicator for initiating and strengthening existing actions for improvement of air quality. The SAP consists of the following chapters:

1. Background and introduction: Covering the topography of Haryana, physiography, economy, Industry, Agriculture, Energy and Transport scenario in Haryana.
2. Status of Ambient Air Quality, major sources of pollution, studies being carried out for assessing the sources of pollution and Air Quality Index are highlighted with facts and figures in the second chapter.
3. The State Action Plan for air pollution with the following sub topics form the core. The mitigation measures on the ground, existing policies and the new policies that are required were detailed:
    a. Industrial Emissions
    b. Vehicular emissions
    c. Construction & Demolition Waste and Road dust mitigation
    d. Emissions from burning of waste
    e. Emissions due to burning of agro residues
    f. Emissions from house hold and commercial establishments

A template with the action points, responsible stakeholder departments, timelines are detailed at the end.

The National Clean Air Programme is being implemented by MoEF & GoI, with an intention for a targeted reduction of the Particulate Matter of size less than 10 microns (PM10) by 40% before 2025-26. Haryana is having only 01 non-attainment city i.e., Faridabad. The implementation of the action plan has brought down the concentrations of PM10 duly maintaining the business as usual scenario. This action plan envisages a targeted reduction of PM10 over 5 years of period to meet the National Ambient Air Quality Standards.

Further, the State of Haryana parallely working in close association with World bank under a project named as Haryana Clean Air Project for Sustainable Development (HCAPSD), with a vision to reduce air pollution in the State. The state government has partnered with the World Bank for technical and financial support for its clean air project. The detailed project

report (DPR) prepared by the state for improving air quality consists of cross-sectoral initiatives for mitigation of air pollution, supported by strong institutional structures for intra-state as well as inter-state coordination.

The Indo-Gangetic Plain (IGP) encompassing eight Indian states and union territories – Punjab, Haryana, Delhi, Uttar Pradesh, Bihar, Jharkhand, West Bengal and parts of Rajasthan – is the most polluted region in the world. Eighteen of the 20 most polluted cities in India are located in this region. This uniformly severe air pollution across the IGP is attributed to the fact that the entire IGP is part of a single large airshed. An airshed is a region that has a distinct air mass, such that emissions emanating in the region remain within its boundaries. Given the interconnected nature of air pollution, an airshed approach that caters to all IGP states would be ideal for tackling the problem. An airshed approach involves taking on all sources of pollution that fall within the airshed; action is required not merely at state level, but at regional or sub-national levels.

The World Bank has formulated an airshed-based air quality management programme to reduce PM emissions in the region by bringing together the IGP states to take targeted action for reducing air pollution, and driving interstate collaboration for improving air quality. Uttar Pradesh has been the first state to formulate a clean air project for the state as part of World Bank's IGP initiative.

The Government of Haryana is collaborating with the World Bank to design and implement the Haryana Clean Air Project as part of this IGP airshed management approach. The Department of Economic Affairs approved the Preliminary Project Report (PPR) for Haryana Clean Air Project on August 31, 2023. Since then, the state has aligned stakeholder departments, and undertaken multiple problem-solving sessions with senior officers and technical experts in the World Bank, to create the Detailed Project Report (DPR). The DPR has three focus areas:

1. Advancing sector-wise interventions to reduce pollution emanating from key contributing sectors
2. Strengthening state capabilities for air quality monitoring, management and planning

3. Cooperation with other states in the IGP airshed for strengthening joint efforts towards reducing air pollution in the IGP airshed

The Haryana Clean Air Project for Sustainable Development is a comprehensive initiative aimed at enhancing air quality in the state over the next 15 years. With a proposed budget of INR 10,000 crore, the project focuses on reducing emissions from various sectors, strengthening air quality management systems and fostering collaboration among the IGP states.

The Clean Air Project in Haryana will be implemented in a phased manner, targeting the reduction of emissions from the state's most urbanised districts. The first phase, from the year 2025 to 2030, will have a narrow focus on the districts of Gurugram and Faridabad, ensuring the implementation of key interventions to curb air pollution. In subsequent phases, the project will expand to other National Capital Region (NCR) districts, and then finally, to non-NCR urban areas of the state. This rollout format prioritises hotspot areas first, covering the entire state eventually. The first phase of Haryana Clean Air Project for Sustainable Development have budget of 438 Million Dollars, which will be spent over a period of 06 years from 2025 to 2030.

In the first phase of the project, the state will undertake targeted sector interventions. The state intends to reduce vehicular, urban, industrial, household, and agricultural emissions through the following initiatives:

1. Accelerated transition to clean public transport, starting with Gurugram and Faridabad districts
2. Increasing penetration of electric three-wheelers, promoting replacement of older private 3-wheeler vehicles with cleaner ones, and expanding the electric-vehicle charging infrastructure in Gurugram and Faridabad
3. Promoting identification and phasing out of old and unclean vehicles in the state through promotion of use of Automated Testing Stations (ATS)
4. Streamlining Construction and Demolition (C&D) waste management in Gurugram and Faridabad
5. End-to-end paving of road berms, streamlining of mechanised street sweeping in Gurugram and Faridabad, and increasing green cover in the national capital region

6. Creating Standard Operating Procedures, guidelines and model documents, and disseminating these among all dust and waste management agencies through regular training programmes and workshops

7. Accelerating the shift to industrial boilers that run on clean fuels (PNG/CNG/other gaseous fuel) by providing financial incentives for the purchase of such boilers, thus reducing industrial emissions from boilers

8. Promoting the use of cleaner DG sets across industries by incentivising retrofitting of DG sets, conversion of DG sets to dual fuel mode and through the purchase of new generator sets that are compliant with emission standards, thus reducing emissions from DG sets

9. Establishing two common boilers across the identified industrial clusters in the state to reduce emissions from small scale boilers

10. Piloting the establishment of two tunnel kiln-based brick manufacturing units in the Non-NCR districts of the state to reduce emissions from brick kilns

11. Providing financial incentives to identified MSME units for installation of CEMS devices

12. Sustained elimination of stubble-burning instances by 2030 via ex-situ and in-situ management, as well as strengthening the stubble value chain to promote diversified use of paddy straw

13. Setting-up a 'Secondary Emission Monitoring Center', to be housed at the Department of Agriculture, and collaborating with the Department of Rural Development for monitoring livestock emissions

14. Improving livestock waste management through the implementation of clean manure management practices across gaushalas (cattle shelters) and strengthening the operation and maintenance of Compressed Biogas Plants in the state

15. Supporting the operation and maintenance of community biogas plants under the GOBARdhan scheme

16. Designing and implementing mass Information Education and Communication (IEC) campaigns to stimulate the adoption of clean cooking practices in the state

17. strengthen air quality monitoring infrastructure through the use of continuous ambient air quality monitoring stations, mobile supersite vans, expanded utilisation of satellites, command control centres, state-of-the-art air laboratories and through the establishment of real-time source-apportionment supersites.

18. Extensive capacity-building initiatives in order to prepare the human resource requirement for effective implementation of initiatives under the project.

19. Drive collaboration with IGP states through knowledge sharing and capacity building for air quality management and monitoring

CHAPTER – 1

BACKGROUND

1.1. Background

Air pollution remains a significant challenge globally as well as nationally. Air pollution in India is a serious environmental issue. Many of the world's most polluted cities are in India. Within India, the Indo-Gangetic Plains has been one of the severely polluted regions. As per various studies, millions of people in India breathe air that is 10 times or more over the WHO safe limit. Haryana, as an important state in the Indo-Gangetic Plains has been both a contributor and at the receiving end of the air pollution scenario in the country. To effectively tackle the air pollution menace, a holistic action plan is needed at the state level. Over the past few years, there have been several directions by the Hon'ble Supreme Court of India, High Courts, National Green Tribunal, Commission for Air Quality Management in NCR and adjoining areas, Ministry of Environment, Forest and Climate Change and Central Pollution Control Board which have guided the formulation of the State Action Plan by the State Governments.

Hon'ble NGT directions on non-attainment cities

Hon'ble National Green Tribunal, Delhi, in its orders dated 08.10.2018 in O. A. No. 681 of 2018 on non-attainment cities gave a direction to all States and Union Territories with non-attainment cities to prepare appropriate action plans to bring down the air pollution levels to the prescribed norms. As per the directions, the action plan should indicate steps to be taken to check different sources of pollution, having speedy, definite and specific timelines for execution. The directions also mandated the setting up of the Air Quality Monitoring Committee (AQMC) and held the Chief Secretaries of States personally accountable for the failure to formulate action plans.

National Clean Air Programme

The Ministry of Environment, Forest and Climate Change (MoEF&CC) launched the National Clean Air Programme (NCAP) on 10 January 2019 as a time-bound national-level strategy for implementation to tackle the air pollution problem across the country in a comprehensive manner. The crux of the NCAP was to involve relevant Central Ministries, State Governments, Local bodies and other Stakeholders with a focus on all sources of pollution.

15th Finance Commission Requirements

As per the 15th Finance Commission grant to million plus cities, only one city of Haryana (Faridabad) was identified to prepare a city action plan. The city action plan for Faridabad was prepared and submitted to the Central Pollution Control Board (CPCB) in September 2021. Faridabad city's action plan is available at https://cpcb.nic.in/Actionplan/Faridabad.pdf.

According to the guidance document of NCAP, a State Action Plan (SAP) for addressing the air pollution has to be prepared. As per the NCAP guidelines, agencies and timelinesfor State Action Plan for clean air are detailed below:

Table 1.1 NCAP agencies and timelines

S.No	Component/ Activities	Level for funding	Level for implementation	Agencies	Time lines
1	A preliminary state action plan for air pollution to be formulated for the 23 states, which harbor 102 non-attainment cities	Center	State	SPCB, CPCB &MoEF&CC	2020
2	SAP for air pollution to be taken up for implementation by the state government and city administration	State	State	State Govt.	2020
3	The guidelines for the preparation of the SAP to be formulated	Center	Center	CPCB &MoEF&CC	2020

The guidelines are to be formulated by the Centre (MoEF&CC and CPCB) as CPCB communicated the State Action Plan template through mail dated:15.11.2021. HSPCB had submitted the State Action Plan to CPCB through mail dated: 10-08-2022, on which CPCB has provided the comments for updating the SAP. Thereafter, the Environment Department submitted the final plan to CPCB by considering the various observations received from CPCB on 28.4.2023 for approval.

Subsequently, CPCB has communicated a detailed uniform guidelines for preparation of the SAP through the letter dated:13th June, 2024 in compliance to the Hon'ble NGT orders in OA.No.159/2021.

The template covers actions on the following headings:

Industrial Emissions, vehicular emissions, Construction and Demolition waste, Road Dust, Emissions from burning of Wastes, Emissions due to burning of agro residues and household emissions.

Further, the action plan template covers the status of the activity, timeline for completion, Target, Financial implications, Funds allocated and funds utilized as on date. The action plan on the indicative templates as provided by CPCB is made the part of the action plan as chapter 6.

1.2 Topography, Geography and Meteorology

Haryana is a state in the northwestern part of India, situated between latitudes 27°39' to 30°35' N and longitudes 74°28' to 77°36' E. It was carved out of Punjab and gained statehood on November 1, 1966. The land-locked state has neighbouring states, bordered by Punjab to the northwest, Himachal Pradesh to the north, Uttar Pradesh and the National Capital Territory of Delhi to the east, and Rajasthan to the south. Covering a total geographical area of 44,212 sq. km, Haryana constitutes 1.4% of India's total land area, ranking it 21st in the country by size. The capital of Haryana is Chandigarh, which it shares with Punjab, and which also serves as a union territory. The state is administratively divided into 6 divisions, 22 districts, 72 sub-divisions, 93 revenue tehsils, 50 sub-tehsils, 140 community development blocks, 154 cities and towns, 7,356 villages, and 6,222 village panchayats.

Geographical Features

Haryana is an interior, non-coastal state situated at an latitude ranging from 700 to 4,000 feet 213 m – 1,200 m) above sea level. While most of its topography is predominantly flat, characterised by an alluvial plain lying between 700 to 900 feet (210 to 270 m), the highest point in the state is Karoh Peak in Panchkula district, reaching 4,813 feet (1,467 m) above sea level. Geologically, Haryana can be broadly divided into four zones. Most of Haryana covered by the Indo-Gangeic alluvial plains, primarily formed by the rivers Yamuna, Ghaggar, Tangri, Markanda, and the ancient Sarasvati River. Among these, the Yamuna is the only perennial river, playing a significant role in shaping the landscape. Together, these

rivers form the Yamuna-Ghaggar plain, which dominates the majority of the state's geographical terrain.

Fig 1.1: District Boundary Map of Haryana

The Siwalik mountain range in the northeast of the state.

- The Aravalli range, with its northernmost part present in the south.
- Semi-arid sandy plateaus of the Bagar region, in the southwest of the states, present in parts of Bhiwani, Hisar, Sirsa and Fatehabad districts.

Soil Composition

These geological systems play a very important role in determining the types of soil present in the regions of the state. The soils of Haryana are generally deep and fertile. There are

some exceptions, however, including the eroded lands of the hilly northeast and the sandy areas of the southwest that fringe the Thar (Great Indian) Desert of Rajasthan. Most of the state's land is arable, but much requires irrigation. The soils of Haryana have been divided into several district units namely soils of Siwalik hills, soils of Piedmont Plains, pediments of Aravalli hills, soils of old alluvial plains, soils of active flood plains created by rivers such as Yamuna, Chautang, Ghaggar, soils of aeolian plain with sand dunes.

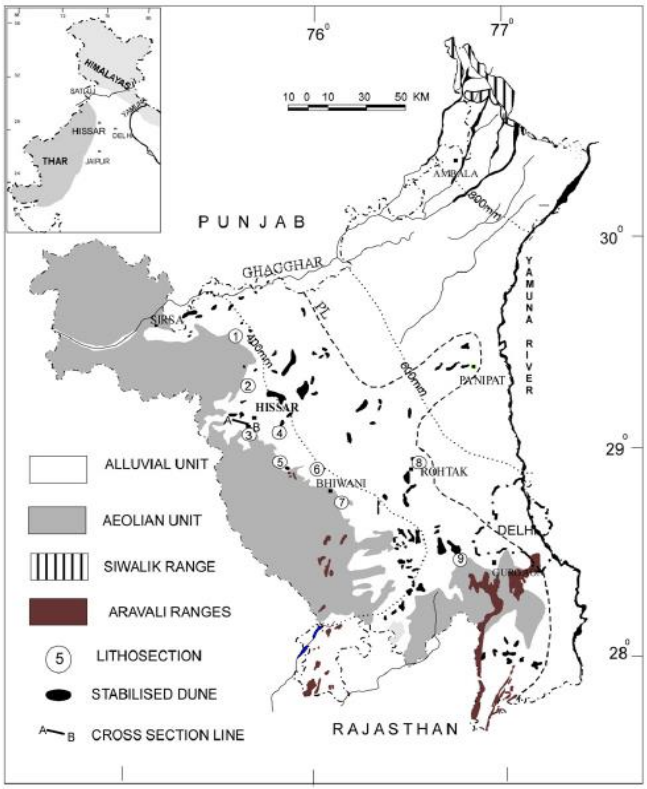

Fig 1.2: Soil Types and their location in Haryana

Hydrography

Several rivers drain the plains of Haryana. The major river is the Yamuna, which flows towards the eastern boundary of Haryana. Northern Haryana has several north east to west flowing rivers originating from the Siwalik Hills of Himalayas, such as Ghaggar, Chautang, Tangri, Kaushalya, Markanda, Sarsuti, Dangri, and Somb rivers. Southern Haryana has several southwest to east flowing seasonal rivulets originating from the Aravalli Range in and around the hills in Mewat region, including Sahibi, Dohan, Krishnavati, and Indori rivers. These rivers are used to build and feed an extensive canal system. Major canals are Western Yamuna Canal, Bhakra Canal, and the Sutlej Yamuna link canal. As per the Economic Survey

of Haryana 2023-24, Haryana has developed an extensive canal network consisting of 1,594 channels having a length of 14,814km. The Bhakra System has total 558 canals with a total length of 6,279.57 km, the Yamuna System has total 473 canals covering 4,295.35 km and the lift system has total 563 canals covering 4,239.07 km. Besides this, 6 Haryana has vast network of drainage of about 894 drains covering 5,424.91 km length.

Forest and Biodiversity

According to the Statistical Abstract of Haryana 2021-22, the forest cover in Haryana is 1781 sq. km., which account for 4.03% of the total land area of Haryana. Thorny, dry, deciduous forest and thorny shrubs can be found all over the state. During the monsoon, a carpet of grass covers the hills. Mulberry, eucalyptus, pine, kikar, shisham, and babul are some of the trees found here. The species of fauna found in the state of Haryana include black buck, nilgai, panther, fox, mongoose, jackal and wild dog. More than 450 species of birds are found here. Haryana has two national parks, eight wildlife sanctuaries, two wildlife conservation areas, four animal and bird breeding centres, one deer park and three zoos, all of which are managed by the Haryana Forest Department of the Government of Haryana. Sultanpur National Park is a notable Park 7 located in Gurugram District. The area of the protected regions is 331.38 sq. km.

Meteorology

Haryana is hot in the summer, with temperatures rising to 45°C, and the winters are cold, with the possibility of the temperature dropping below freezing point. The rainfall is sparse, with the state experiencing arid to semi-arid climate, 8 with an average rainfall of 541.6 mm. Around 29% of rainfall is received during the months from July to September as a result of the monsoon, and the remaining rainfall is received during the period from December to February as a result of the western disturbance. The districts receiving the most rainfall, like Panchkula, are located near the mountains, while the districts receiving the least rainfall, like Bhiwani, are located on the western part of the state. Although the state has a system of canal irrigation and tube wells, there are chronic drought-prone areas, particularly in the southern and southwestern regions. By contrast, the areas surrounding tributaries of the Yamuna and the Ghaggar are subject to occasional floods. Haryana is in a disadvantageous position with regard to rainfall, surface water quantum and groundwater quality.

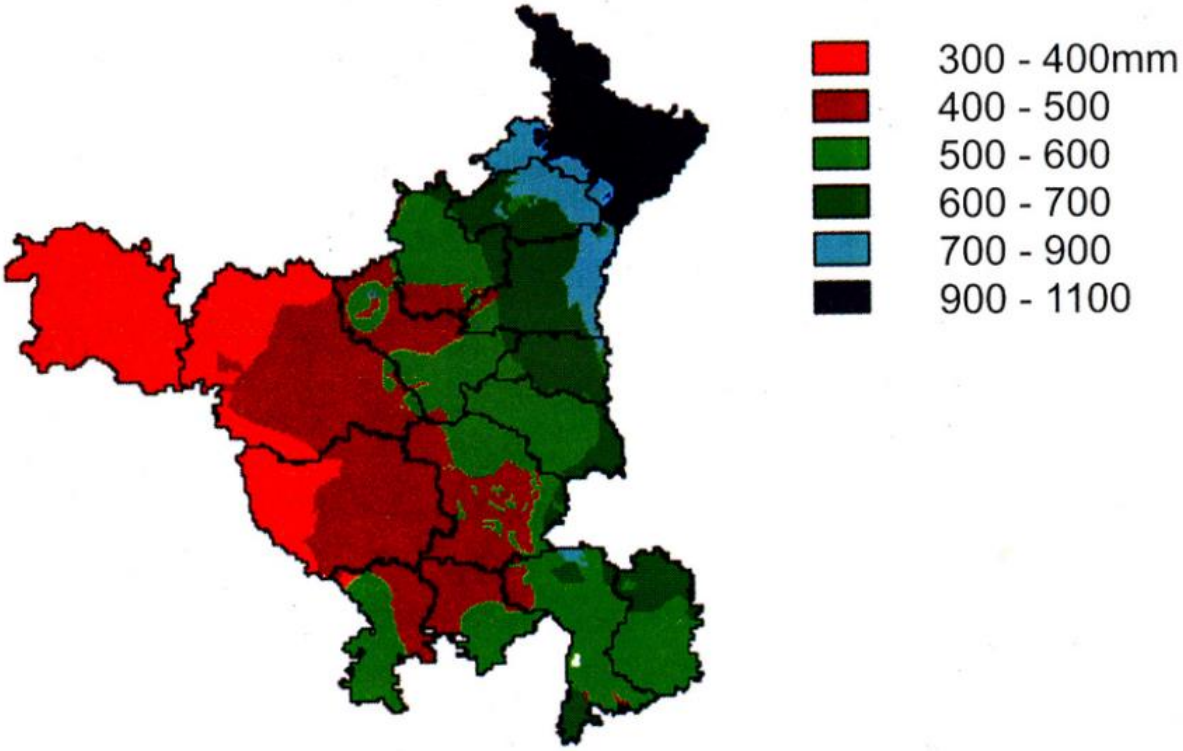

Fig 1.3: Rainfall Distribution in Haryana

Presence in the Indo Gangetic Plain

Haryana is located in the Indo-Gangetic plain, a contiguous airshed home to more than 40% of India's population. This airshed is part of the airshed extending all the way from Pakistan in the West to Bangladesh in the East.13 This means that all the pollution being measured within the state may not originate from within state boundaries but may have reached there due to prevalent meteorological conditions. As part of the World Bank study (2020), nearly 30% of Haryana's PM levels are from outside Haryana, while nearly 15% is from outside India (exclusive of the 30% outside Haryana)

Presence in the National Capital Region

A large area of Haryana state is included in the economically important NCR of India for the purposes of planning and development. 14 districts of Haryana are part of the NCR. This makes the state's air quality significantly dependent on the policies and directions of the Commission for Air Quality Management (CAQM) in Delhi and NCR, and their effective

implementation within Haryana, as well as the neighbouring states of Delhi, Uttar Pradesh and Rajasthan.

1.3 Population and Urbanisation

About 34.88% of Haryana's population resides in urban areas as per 2011 Census which was higher than that of all India's urban population 31.2%. The state has registered remarkable urban growth of about 44.59 percent during 2001–11, and the urban population has grown from 61.15 lakh to 88.42 lakh during this period.

Table 1.2: Urban profile of Haryana

Particulars	**Details**		
Total Population	25351462		
Urban Population	8842103		
Urban Male Population	4720728		
Urban Female Population	4121375		
Urban Pop Growth Rate	44.59%		
Urban Sex Ratio	873		
Urban Literacy Population	6440546		
Urban Literacy Rate	83.14%		
Male Urban Literacy Rate	88.63%		
Female Urban Literacy Rate	65.98%		
Urban Local Bodies	Municipal corporation	Municipal council	Municipal committees
	10	19	58

1.4 Economic & Industrial Development

Historically, Haryana has been an agricultural state, an important one for India, producing a sizeable amount of food for the country. However, with the rapid urbanisation occurring throughout the state, especially the expansion occurring in the cities of Gurugram and Faridabad, and the promotion of development of industries, there has been a shift towards other sectors like the industrial sector and the service sector. Some economic indicators show:

- The Gross State Domestic Product (GSDP) of Haryana for 2023-24 (at current prices) is projected to be about Rs. 11.2 lakh crore, amounting to growth of 13% over 2022-23. This ranks it 13 among Indian states.
- GSDP: In 2022-23 Haryana's GSDP (at constant prices) is estimated to grow at 7.1% over the previous year. In comparison, the national GDP is estimated to growth at 7% in 2022-23.
- The GSDP per capita is projected to be Rs 3.73 lakh, which places it 5 among Indian states.
- Sectors: In 2022-23 (at current prices), agriculture, manufacturing, and services are estimated to contribute 20%, 30%, and 51% of the economy.
- Unemployment: According to the Periodic Labour Force Survey (July 2021- June 2022), unemployment rate (current 11 weekly status) for Haryana was 11.7% as compared to 6.6% at the national level.

Agriculture and Allied Sectors

Haryana is traditionally an agricultural state, owing to its large areas of alluvial plains present in the state, the Green Revolution in Haryana of the 1960s combined with the completion of Bhakra Dam in 1963 and Western Yamuna Command Network canal system in 1970s. About 70% of Haryana's residents are engaged in agriculture, with about 80% of land used for agriculture. As a result, as a food producer, Haryana is self-sufficient, and it is the second greatest provider to India's central pool of grain. The state provides a 14% contribution to the Central Pool and has attained a 12 total of 183.3 lakh metric tonnes (MT) of food grain output in fiscal year 2020-21. In addition, the state produces significant quantities of cotton, rapeseed and mustard seed, pearl millet, chickpeas, sugarcane, sorghum, corn (maize), and potatoes. In 2020-21, Haryana produced the following principal

crops: 1,14,06,000 tonnes of wheat, 56,33,000 tonnes of rice, 8,58,000 tonnes of sugarcane, 18,12,000 tonnes of cotton and 12,58,000 tonnes of oilseeds (mustard seed, sunflower, etc.). Irrigation is provided via tube wells and a comprehensive network of canals for approximately 75% of the land area. The state has assured irrigation on approximately two-thirds of its land area, which is best suited for rice-wheat production systems, whereas rain-fed lands (on approximately one-fifth of its land area) are best suited for rapeseed and mustard, pearl millet, cluster bean cultivation, forestry, and arid horticulture. Up to 33.87 lakh hectare area is irrigated by various 13 sources in Haryana, which is 95.35% of the net area sown. The strategic position of the state abutting the National Capital Region (NCR) provides easy access to a variety of large marketplaces as well as the international airport. Haryana also keeps a large number of livestock, for agricultural, food and dairy needs. Dairy cattle, buffaloes, and bullocks, which are used for ploughing the land and as drawft animals, are prominent in the northeastern region. Haryana is well known for its high-yield Murrah buffalo. Other breeds of cattle native to Haryana are Haryanvi, Mewati, Sahiwal, and Nili-Ravi. The state ranks second in the country in terms of fish yield per hectare, and the Indian Council of Agricultural Research has designated it as a "Fish Disease Free State."

Roughly, 80% of the total demand for water comes from agriculture. Because of increased demand for fresh water for home and industrial purposes, the supply of irrigation water will continue to dwindle in the future. The overexploitation of ground water in Haryana is emerging as a severe danger to the state's water supply. Furthermore, untreated industrial effluents and sewage water are being discharged into the canal system, polluting the fresh water supply. Furthermore, over-cropping and excessive use of fertilisers and other chemicals is leading to the degradation of the soil quality, nutrient deficiency, and a decline in total factor productivity. According to the National Bureau of Soil Survey and Land Use Planning (NBSS&LUP), which classifies soil by its physical and chemical degradation, one-third of the land area of Haryana has degraded soil, of which 23% suffers from medium-level degradation and 5% from high level degradation. Chemical degradation, probably from the excessive use of chemical fertilisers and pesticides, 14 accounts for 6% of soil degradation.
Climate change also poses as a significant threat to the agricultural sector, since shifting climate patterns, reduction of rainfall, presence of extreme climate events, puts additional

stress on crops, resulting in higher resource consumption and increased risk of pest resistance as well as recurrence of pests.

Industrial Sector

In line with the national policy, the industrial sector in Haryana has seen a large growth in the recent decades. Haryana has a large production of cars, motorcycles, tractors, sanitary ware, glass container industry, gas stoves and scientific instruments. Haryana is especially known for the production of automobiles, due to the set-up of manufacturing units of various automobile companies, such as Maruti Suzuki, Hero Honda, and Honda Motors. It contributes to the 15 production 80% of excavators, 52% of cranes, 50% of cars and 60% of two wheelers in the country. In addition, there are more than 80,000 small-scale industrial units in the state which cumulatively bring in a substantial income for the state and its people. Yamunanagar district has a paper mill BILT, ISGEC and India's one of the largest sugar mill, Saraswati Sugar Mills. Gurugram is at the top employing 335,138 in 3,052 registered manufacturing industries. It is followed by Faridabad, having 3,011 registered working factories and employing 259,203 workers followed by Panipat, Sonipat and 16 Jhajjar districts. Haryana contains 32 special economic zones (SEZs), mainly located within the industrial corridor projects connecting the National Capital Region. The rapidly increasing population coupled with industry growth in the state have led to an exponential increase in demand for infrastructure facilities including passenger and freight transport services, power supply, communications and buildings. Right now, Haryana has a total road length of 31,263 km (projected in 2021-22), and 4,463 km of rail infrastructure. Haryana has a road density of 184.08 per 100 square 17 kilometre and 321.03 km per lakh of population.

Services Sector

Services sector comprises of activities like trade, repair services, transportation, hospitality, entertainment, communication, health, education, support, and advisory services. Driven by the growth of Gurugram, Haryana has emerged as a formidable force in the services sector, which is now the largest contributor to the state's GDP. The share of Services Sector in the GSVA at constant (2011-12) prices has seen estimated as 49.4% in 2022-23. During the period of 11th Five Years Plan, the services sector grew at an average annual growth rate of

12.2%. This growth rate of services sector was significantly higher than the average annual growth recorded for combined agriculture & allied and industry sectors during this period.

1.5 Energy and Transport

Energy

At present, Haryana has a total installed capacity of 6,625.16 MW of electricity (state owned and central allocation), out of which coal constitutes 73%, followed by renewable energy which constitutes about 15% of the installed capacity. When electricity procured from Independent Power Producers (IPP) supplying to the state is also considered, the generation capacity comes to 13484.56 MW. Out of a total renewable energy installed capacity of 1214 MW, more than half the capacity comes from solar, followed by biomass, (21%) and small hydroelectricity (15%). At present, the state depends heavily on non-renewable sources as only 6.75% of solar power potential has been tapped in the state due to limitation in land area availability. On the other hand, the state is not well endowed with wind energy resources. Haryana government has published a draft Solar Policy in 2023 which aims to install a cumulative capacity of 6000 MW of solar energy by 2030. To overcome the constraints of land, the policy promotes decentralised solar energy in the form of household solar roof tops, and solarisation of irrigation pumps to the extent of 2800 MW by 2030.

Transport

Haryana's transport sector holds significant importance due to its pivotal role in driving economic activities, facilitating trade, and fostering social connectivity. As a central hub in North India, Haryana's strategic location makes its transport infrastructure vital for regional and national commerce. The state's extensive network of roads, railways, and airports enables the seamless movement of goods and people, supporting industries ranging from agriculture to manufacturing and services.

Haryana Roadways

Haryana Roadways, a State Government Undertaking, is the principal service provider for passenger transport in the 20 state with a bus fleet operated by 24 depots and 13 sub-depots. Haryana Roadways plies on an average 13.00 Lac Km 21 every day. In tune with the

emerging requirements of the traveling public, Haryana Roadways has undertaken a series of new initiatives to provide better services. New Volvo AC bus services 'Saarthi' have been introduced on certain routes. 'Haryana Standard Ordinary' Buses popularly known as 'Haryana Shakti' are now embedded with BI norms. Haryana Roadways Mini Buses are pink coloured buses, symbolising the “Beti Bachao, Beti Padhao” slogan given by the Prime Minister. These buses have been introduced by Haryana Roadways for the safety and security of the state's girls and women traveling from their villages and cities to schools and colleges. In Haryana, emissions from heavy vehicles which includes trucks, buses and tractors accounts for nearly 60% of total vehicular emissions.

Table 1.3: Vehicle type-wise contribution to emissions in Haryana

Sr.no.	Vehicle Type	Contribution to emissions (in %)
1.	Trucks, Buses and Tractors	58
2.	3 Wheelers	15
3.	2 Wheelers	14
4.	4 Wheelers	11
5.	Light Commercial Vehicles	2

Table1.4 : Entity-wise total numbers of buses in the State of Haryana

Sr.no.	Entity	No. of Buses
1.	Haryana State Roadways Transport Ltd.	4189
2.	Haryana City Bus Services Ltd.	375*
3.	Gurugram Metropolitan City Bus Services Ltd.	150
4.	Faridabad City Bus Services Ltd.	50
5.	**Total**	**4764**

* Planned to rollout

Haryana Railways

The rail network in Haryana is covered by 5 rail divisions under 3 rail zones, namely, North Western Railway zone (Bikaner railway division and Jaipur railway division), Northern

Railway zone (Delhi railway division and Ambala railway division) and North Central Railway zone (Agra railway division). The Diamond Quadrilateral High-speed rail network, Eastern Dedicated Freight Corridor and Western Dedicated Freight Corridor pass through Haryana.

In 2023, Indian Railways achieved a significant milestone, by completing 100% electrification of the railway network in Haryana. The existing broad gauge network of Haryana is 1,701 Route kilometre, which is now 100% electrified, resulting in savings on account of reduced line haul cost (about 2.5 times lower), heavier haulage capacity, increased sectional capacity, reduced operating & maintenance cost of electric loco, energy efficient and eco-friendly mode of transportation with reduced dependence on imported crude oil, and saving of foreign exchange. Further, a new Broad Gauge network shall be sanctioned along with electrification, in sync with Railways' policy of 100% electrified network.

Sustainable Transportation in Haryana

The number of vehicles in Haryana has been increasing rapidly over the last decade. However, vehicles which use fossil fuels are a major source of environmental pollution and pose serious health hazards. It is also known that fossil fuel reserves are fast depleting across the globe. The situation demands that alternative clean, eco-friendly technologies be explored for the running of vehicles. The Haryana Government aims to contribute toward improving the environment, reducing carbon footprints and actively motivating the citizens to buy Electric Vehicles through its Haryana EV policy. The Government of India also launched the Faster Adoption and Manufacturing of Electric Vehicles in India (FAME Scheme I and II) schemes in 2015. These have been subsequently extended in 2019 under the National Electric Mobility Mission Plan (NEMMP) with the aim to promote eco-friendly electric vehicles in the country More than 25 million people live in Haryana, which encompasses 44,212 square kilometers. It is 65% rural and 35% urban. The state has set targets for phasing out fossil-fuelled government vehicles, public buses, commercial fleets, and logistics vehicles. It has also set a target for 100% electrification of public transport vehicles in the cities of Gurugram and Faridabad by 2029. The Government of Haryana also aims to reduce the carbon footprint of transportation by motivating its citizens to use EVs. It launched a draft EV policy in 2021, the final version of which was announced in 2022. The policy has been in effect for 5 years, since July 2022. Along with other fiscal and non fiscal strategies, the final policy focuses on developing widespread and accessible public and

private charging infrastructure. These charging initiatives include investments from government departments and private infrastructure developers as well as the modification of city building codes.

CHAPTER - 2

STATUS OF AMBIENT AIR QUALITY

2.1 Air Quality Levels

Ambient Air Quality Monitoring Program:

Haryana State Pollution Control Board is monitoring the Ambient Air Quality (AAQ) at 75 locations in the state. The monitoring of AAQ is carried out through Continuous and Manual Ambient Air Quality Monitoring Stations. At present, there are 46 nos. of Manual stations and 29 no. of CAAQMS installed in different districts of the State. The details of stations are given in the table and geographical representation of the CAAQMS is provided below.

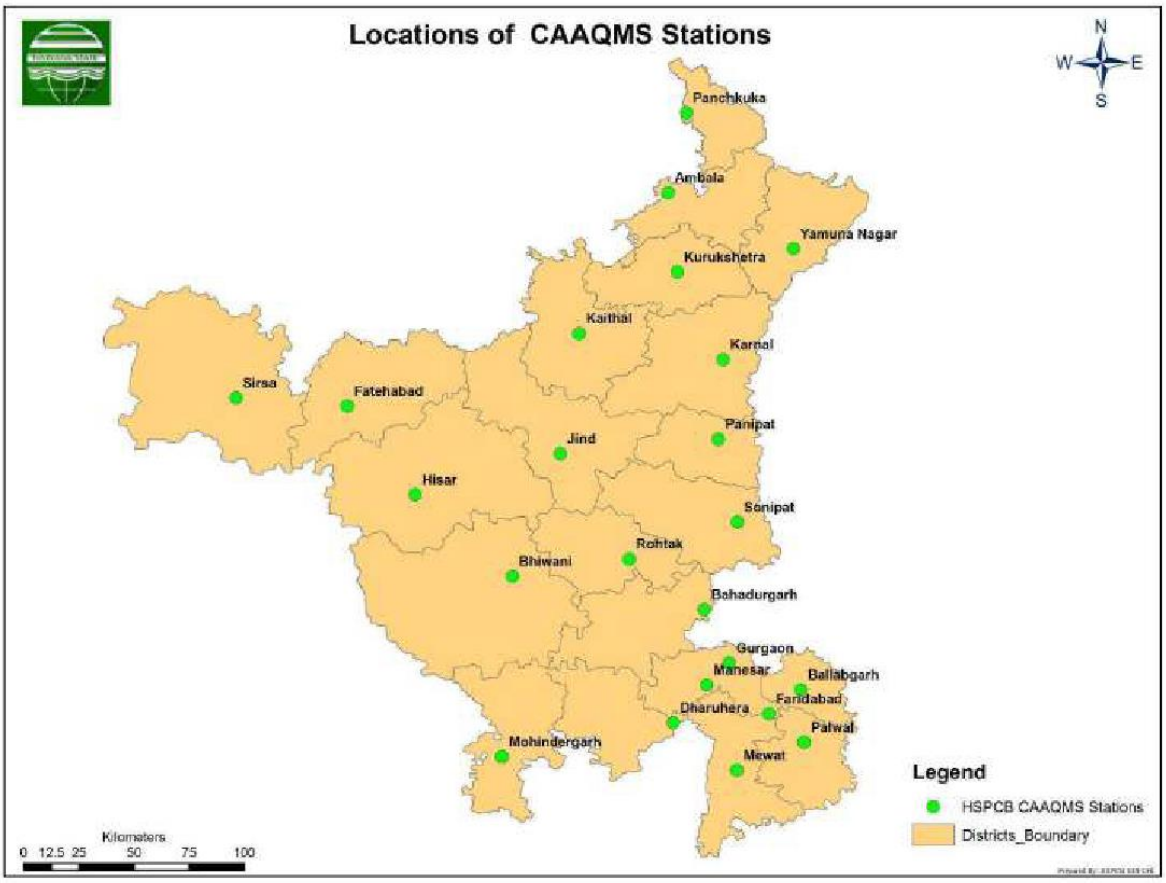

Fig 2.1: Geographical representation of the CAAQMS

The manual stations monitor particulate matter (PM) of sizes less than 10 microns (PM10) and in some cases PM2.5, nitrogen dioxide (NO2), and sulphur dioxide (SO2). The real-time monitoring stations monitor particulate matter (PM10 and PM2.5), gaseous pollutants- SO2, NOx, O3, CO, VOC and NH3 and meteorological parameters such as temperature, relative humidity, wind speed, wind direction, pressure, solar radiation.

Table 2.1: Status of CAAQMS and manual PM2.5 and PM10 stations

Sr.no.	District	No. of manual station	Status of Station	No. of CAAQMS	Status of Station
1	Mahendergarh	7	Operational	1	Operational
2	Rewari	3	Operational	1	Operational
3	Jind	3	Operational	1	Operational
4	NUH	1	Operational	1	Operational
5	Rohtak	3	Operational	1	Operational
6	Jhajjar (Bahadurgarh)	2	Operational	1	Operational
7	Sonepat	2	Operational	1	Operational
8	Panipat	3	Operational	1	Operational
9	Palwal	2	Operational	1	Operational
10	Karnal	2	Operational	1	Operational
11	Charkhi Dadri	8	Operational	1	Operational
12	Yamuna Nagar	2	Operational	1	Operational
13	Hisar	3	Operational	1	Operational
14	Faridabad	1	Operational	4	Operational
15	Ballabgarh	1	Operational	1	Operational
16	Gurugram	3	Operational	4	Operational
17	Ambala	0	NA	1	Operational
18	Panchkula	0	NA	1	Operational
19	Kurukshetra	0	NA	1	Operational
20	Kaithal	0	NA	1	Operational
21	Sirsa	0	NA	1	Operational
22	Fatehabad	0	NA	1	Operational
23	Bhiwani	0	NA	1	Operational
	Total	**46**		**29**	

2.2 Status of Ambient Air Quality and Trend analysis:

Annual average PM10 concentration throughout Haryana remained much higher than the National Ambient Air Quality Standards of 60µg/m3, as depicted by the blue line in the figure below. The highest and lowest monitored concentration was recorded as 190.57 µg/m3 for the year 2021 and 105 µg/m3 for the year 2015.

Fig 2.2: Annual average PM10 concentration in Haryana during 2013-2023

All districts exceed both the NAAQS and international limits for PM2.5 concentration, indicating widespread air quality concerns in the state. In 2023, the districts of Faridabad, Gurugramand Rewari reported PM levels which even exceeded Haryana's average PM10 levels. While Faridabad, which is listed as Haryana's only non-atiainment city, has substantially reduced PM10 levels due to targeted air quality management regulations, it still reports the second highest PM10 concentration in Haryana, only after Gurugram whose PM10 levels have substantially risen in the last five years. Ambala, Panipat, and Yamunanagar have shown a notable decrease in PM10 concentrations in the state.

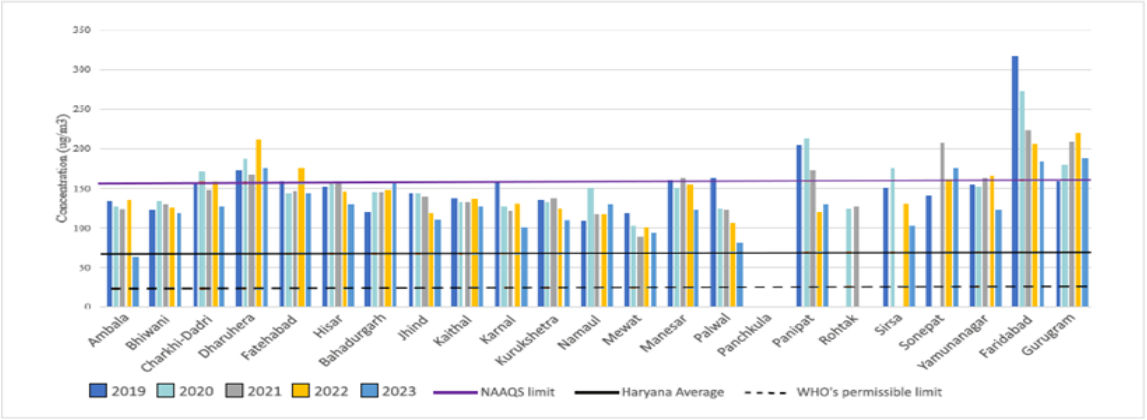

Fig 2.3: Trends in PM_{10} concentration in Haryana | NAAQS Limit – 60 ug/m³

$PM_{2.5}$ can penetrate deeper into the lungs and even enter the bloodstream, posing more serious health risks. As per TERI's Source Apportionment Study for NCR states, PM2.5 concentrations are mostly linked with construction and road dust (35%), industries (20%), transport (20%), biomass (16%), and others (9%). Biomass emission consists of both agricultural and household emissions. Both types of particulate matter were monitored for the last five years in Haryana. While there have been significant reductions in PM2.5 concentration from 2019 to 2023, the concentration of PM2.5 was found to be much higher than the prescribed NAAQS limits of 40 µg/m3 for all districts throughout the period. The highest concentration of PM2.5 was observed to be 80.64 µg/m3 for the year 2019 and the lowest was 64 µg/m3 for the year 2023. The most notable improvement was observed in 2020 when the state was under the COVID-19 lockdown.

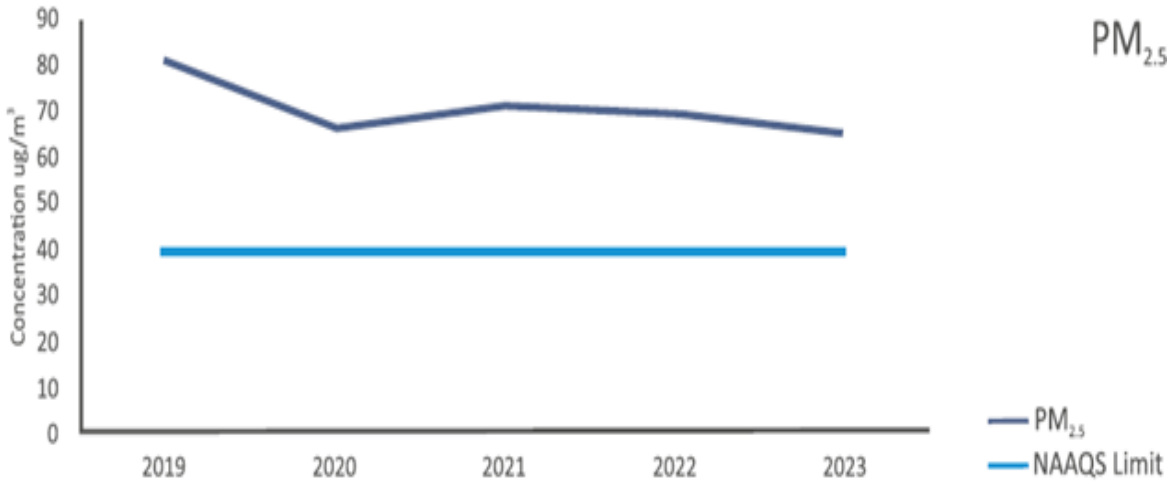

Fig 2.4: Annual Average PM2.5 concentration in Haryana during 2019-2023

Faridabad and Gurugram consistently show high PM2.5 levels across all years, often exceeding 80 µg/m³, mainly attributable to sources like industry, brick kilns, stone crushers, and road dust. Hisar and Sonipat also show high concentrations, particularly in 2019 and 2020. In Hisar and Sonipat, pollutant emissions mainly come from brick kilns, stone crushers, plywood industries, metal recyclers and steel power plants. Nuh, Panchkula, and Sirsa generally have lower PM2.5 concentrations compared to other districts but are still above the NAAQS limit. Ambala, Sirsa, and Mewat districts have shown considerable decline.

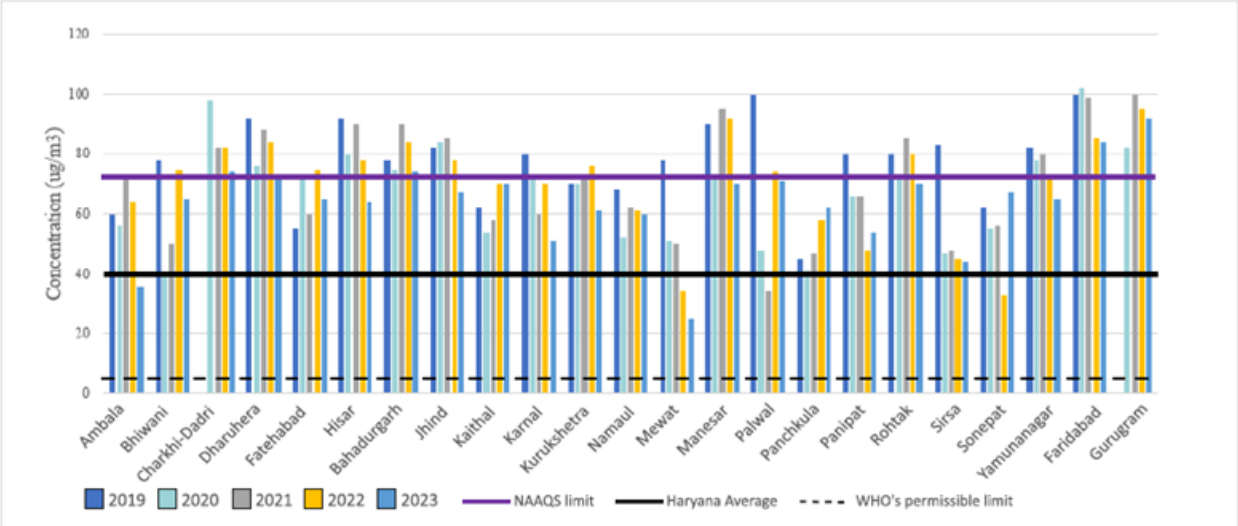

Fig 2.5: Trends in PM2.5 concentration in Haryana | NAAQS Limit – 40 ug/m3

2.3: Air Quality Index

Last year, all districts of Haryana reported moderate annual average air quality barring Faridabad and Gurugram**.** Faridabad is also categorised as Haryana's only 'non-attainment city' for not meeting the National Ambient Air Quality Standards (NAAQS) for PM10 or NO2 for five continuous years from 2011-2015. Known as the industrial capital of Haryana, these high Pollution levels are mainly attributable to rapid industrialisation, vehicular traffic, road dust, and construction in the district. High peak values in winter show vast seasonal variation as annual averages often fail to give a true picture of the current status. As per 2021-2022 data, winter average particulate emissions exceeded the summer average by 74% for $PM_{2.5}$ and by 38% for PM_{10}. Notably, there have been considerable air quality improvements across the state since 2019. While the annual average air quality for both 2019 and 2023 is reported to be moderate, a seasonal comparison showed that the number of districts reporting poor air quality in winter has reduced by 140% as compared to 2019 and the number of districts reporting satisfactory air quality increased by 70% in 2023 summer. Yet, particulate matter emissions still exceed National and inter National permissible limits across all districts of Haryana by over 1.5 times. Other pollutants, such as nitrogen oxides (NO_x), sulphur oxides (SO_2), and ozone, are within prescribed limits. However, rising ozone levels are a cause of concern. Major polluting sectors include agriculture, transport, and industry. Primary data collection at the state level suggests that

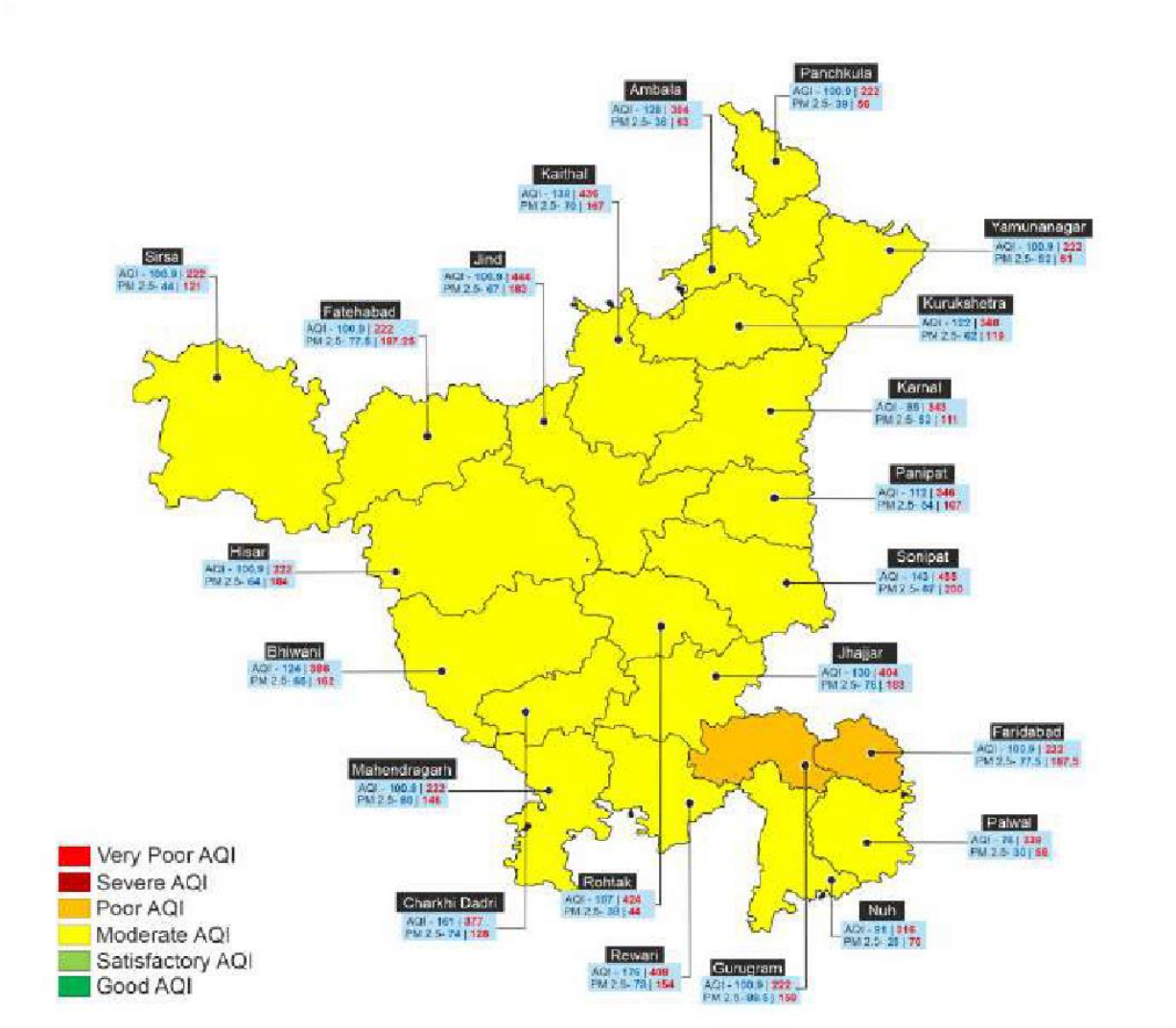

Fig 2.6: Air Quality in Haryana (2023-2024) Air Quality Index and $PM_{2.5}$ values

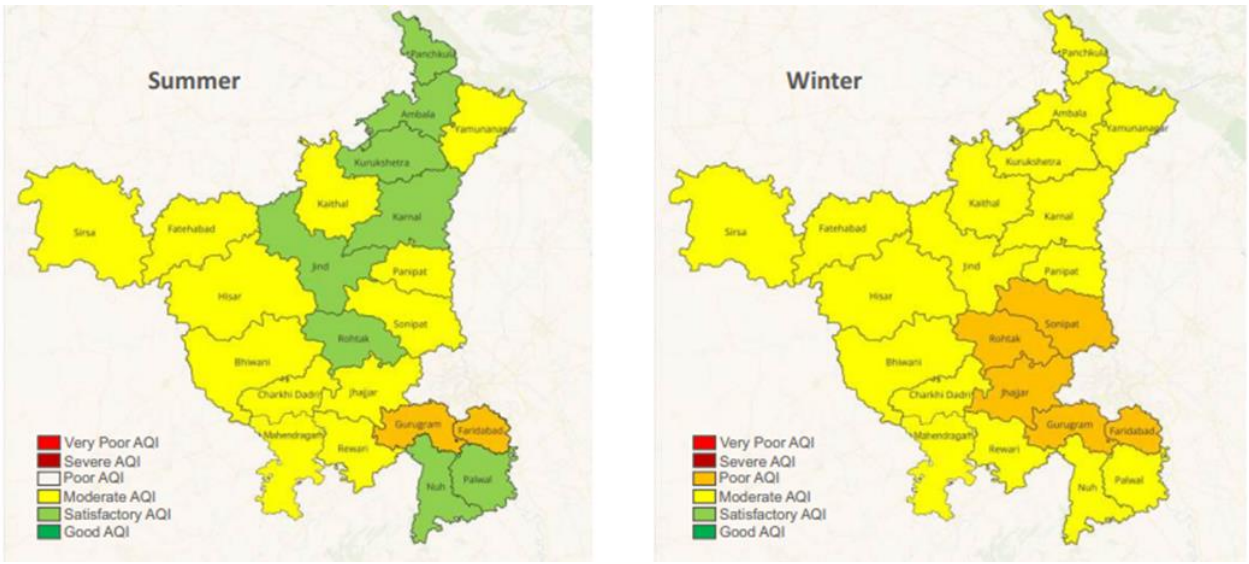

Fig 2.7: Summer and Winter Average Quality Index, Haryana (2023-2024)

SO_2 emissions mainly come from industrial activities and NO_x emissions from the transport sector. Biomass burning, including both stubble burning and household combustion, is a significant contributor to PM levels. However, a significant chunk of these emissions come from transboundary sources, indicating the need for adopting an airshed approach to tackle air quality.

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Table 2.2: CPCB classification of air quality index

AQI	Remark	Color Code	Possible Health Impacts
0-50	Good		Minimal impact
51-100	Satisfactory		Minor breathing discomfort to sensitive people
101-200	Moderate		Breathing discomfort to the 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
401-500	Severe		Affects healthy people and seriously impacts those with existing diseases

2.4 Proposals for improving the monitoring network

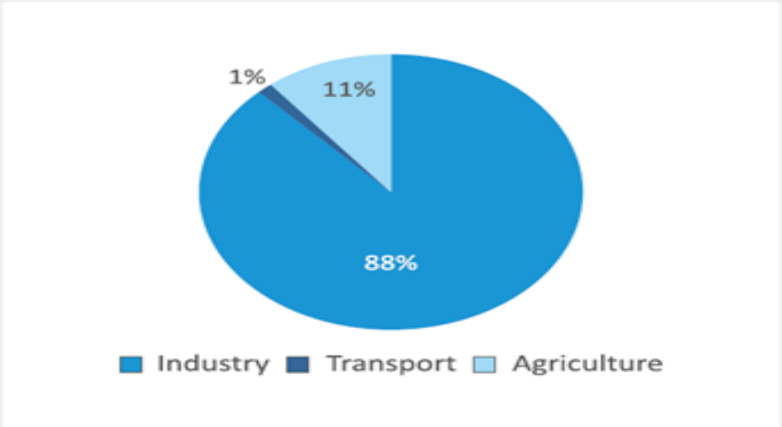
As per the existing need assessment undertaken, State will procure 10 CAAQM stations with real-time source-apportionment capabilities. A further assessment of CAAQMS with source apportionment capabilities requirements will be undertaken at the end of 2026 to ascertain if more stations are required as per the evolving situation. The State will also procure two mobile supersite vans for air quality monitoring and real-time source-apportionment. These vans will cover the entire state on a regular basis to provide granular insights from across the state. The State has also plan to provide the digital stack monitoring kits to 22 regional

offices of the Haryana State Pollution Control Board. The State has also planned to install the 01 no. of air laboratory with state of the art facilities and to upgrade the existing 4 nos laboratories with HSPCB with cutting edge technologies for testing.

2.5 Prominent Pollutant identification

Annual average PM10 concentration throughout Haryana remained much higher than the National Ambient Air Quality Standards of 60µg/m3. All districts exceed both the NAAQS and international limits for PM2.5 concentration, indicating widespread air quality concerns in the state. The other prominent pollutants in the state are:-

Sulphur Dioxide: As per studies carried out by TERI, shows that the industrial sector is the most dominant source of sulphur dioxide (SO2) emissions, contributing 88% of the total SO2 emissions in the state, primarily attributable to the burning of fossil fuels in power plants and other industrial facilities. Agriculture accounts for 11% of the total SO2 emissions, while the transport sector's contribution is minimal, at just 1%. While the sources for SO2 emissions from agriculture typically include manure management, fertilizer application, and stubble burning, emissions from transport come from vehicles that burn fuel with high sulphur content. To tackle SO2 emissions, the state should consider prioritising stringent emission controls and cleaner technologies within the industrial sector. However, in Haryana, thermal power plants face various challenges when considering the installation of Flue gas desulphurisation (FGD) plants to reduce SO2 emissions. The primary concern is the substantial capital investment required for retrofitting existing plants or incorporating FGD systems in new facilities. Additionally, power plant operators raise concerns about the impact on power tariffs, plant efficiency, and operational complexities associated with integrating FGD technology. These factors have contributed to hesitancy in adopting FGD systems across the industry, thus leading to high SO2 emissions in the state. The graph below represents the level of SO2 from 2013 to 2023 of which 2019, 2020, 2022 & 2023 values are of CAAQMS (Fig 2.9). The lowest and highest annual average SO2 concentrations are 9.5 µg/m3 and 14.85 µg/m3. At all the monitoring stations, the annual average SO2 concentration in Haryana remained much below the National Ambient Air Quality Standard of 50 µg/m3, prescribed by CPCB.



Source: Haryana Emissions Report 2024, The Energy & Resources Institute

Fig 2.8: Key contributing sectors for SO2 Emission in Haryana (2019)

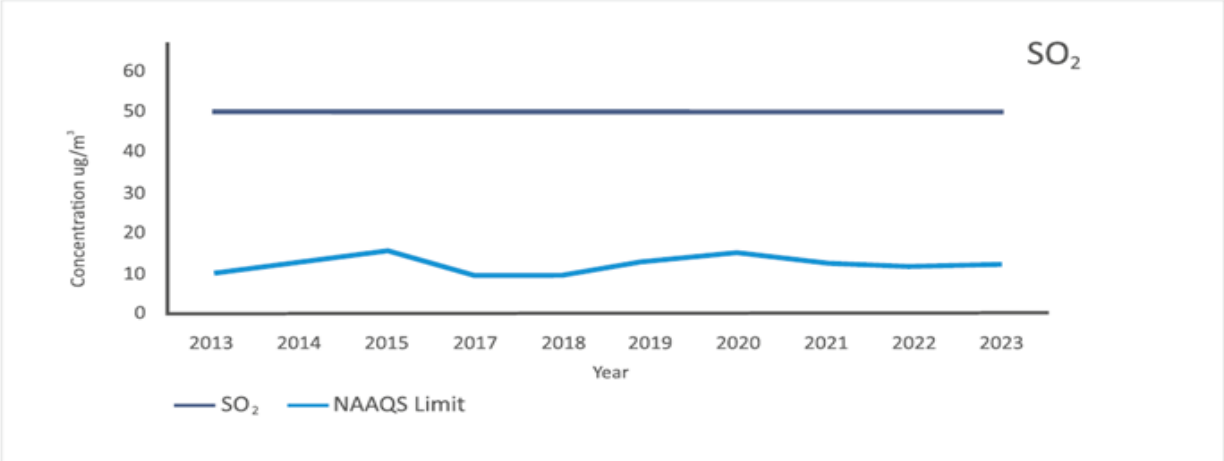


Fig 2.9: Annual Average SO2 concentration(ug/m3) in Haryana during 2013-2023

Nitrogen Oxides: In Haryana, Nitrogen oxide (NOx) emissions are primarily driven by the transport sector which accounts for 75% of the total emissions. The industry sector is another significant contributor with a share of 22%, while agriculture accounts for 3%.

The graph illustrates the trend of NOx concentrations from 2013 to 2023, measured in micrograms per cubic meter (µg/m³). The red line represents the National Ambient Air Quality Standards (NAAQS) limit, set at 40 µg/m³. In 2015, NOx levels peaked dramatically, nearly reaching 70 µg/m³, which significantly exceeded the NAAQS limit. However, this peak was followed by a noticeable decline in subsequent years. By 2017, the NOx concentration dropped well below the NAAQS threshold. The concentration of NOx has been fluctuating

Fig2.10: Key contributing sectors to NOx Emission in Haryana (2019)

over the years due to the increase in vehicular traffic. The decline in NOx levels post-2015 is likely due to the implementation of stricter emission norms and increased adoption of cleaner fuels.

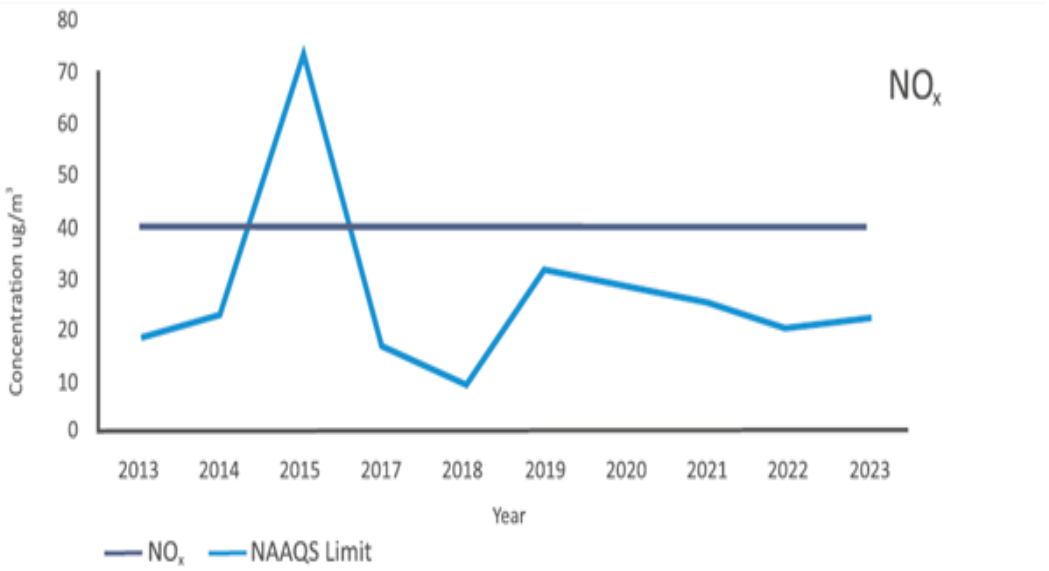


Fig 2.11: Annual Average NOx concentration(ug/m3) in Haryana during 2013-2023

Ozone: The prescribed NAAQS limit for ozone is 100 ug/m³ over an 8-hour period. Ozone monitoring in Haryana began in 2015 for Gurugram and Rohtak, followed by Faridabad in 2017. Monitoring was expanded to Manesar and Sonipat in 2018, and by 2019, ozone levels were being tracked in 16 cities across the state. Figure 2.12 presents the ozone concentration data starting from 2019.

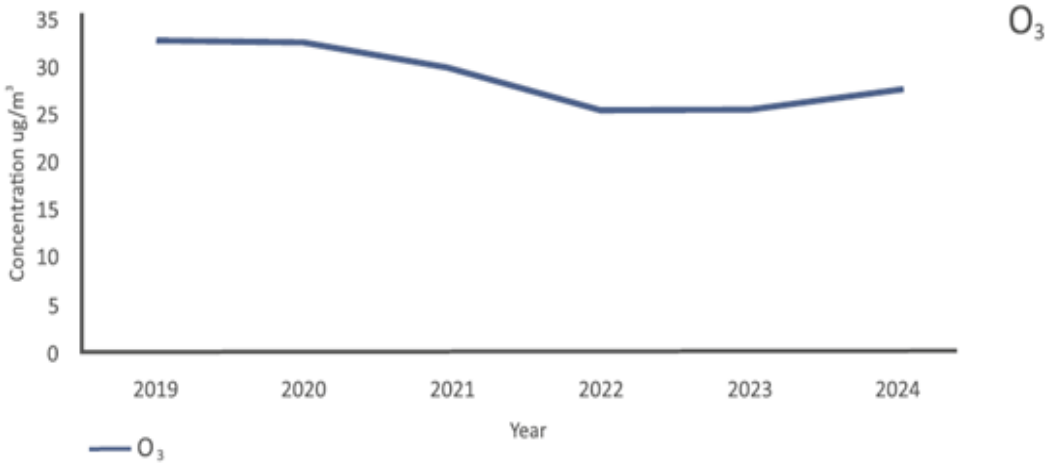


Fig 2.12: Annual Average Ozone concentration(ug/m3) in Haryana during 2013-2023

While no district-level emission inventories were available, the air pollution across districts is predominantly driven by industrial activities, agricultural practices, and vehicular emissions. Common sources include brick kilns, stone crushers, and stubble burning, which are prevalent across multiple districts, contributing significantly to particulate matter and its seasonal Pollution spikes. Industrial emissions from thermal power plants, metal recyclers, and manufacturing units are major pollutants in the state, while road dust from unpaved roads and vehicular emissions further deteriorate overall air quality. Waste burning, including garbage and crop residue, further exacerbates Pollution levels across the state. Gurugram and Faridabad have poor air quality mainly attributable to industrial activities, vehicular emissions, road dust and construction.

Table 2.3: District-wise Sources of Pollution

District	Annual Average AQI	Source of Pollution
Ambala	Moderate 128	Brick kilns, stone crushers, sugar mills, rice mills, feed mills, and stubble
Bhiwani	Moderate 124	Stone crushers, stubble burning during crop harvesting seasons (paddy,wheat)
Charkhi Dadri	Moderate 161	Brick kilns, stone crushers, thermal power plant, sand mining.
Faridabad	Moderate 232	Large and small industries, brick kilns, stone crushers, plywood industries, thermal power plants, steel plants, metal recyclers, road dust, construction and demolition (C&D) waste, and vehicular emissions.

Gurugram	Moderate 225	Industries, brick kilns, stone crushers, unpaved roads, waste/ garbage burning, stubble burning, construction activities, vehicular pol
Hisar	Moderate 145	Brick kilns, stone crushers, plywood industries, thermal power plants, steel plants, metal recyclers.
Jind	Moderate 130	Small industry, brick kiln, stubble burning, waste burning, dust from roads. Number of air polluting industries: Industries = 135; Brick Kilns=141
Jhajjar	Moderate 110	Brick kilns, thermal power plants, dyeing, lead recyclers, hot mix plants, electroplaters, used oil refiners, glass bottle industries, ceramic tiles, plywood, stubble burning.
Kaithal	Moderate 138	Small industries, brick kilns, rice mills, sugar mills, power plants, stubble Burning
Karnal	Moderate 85	Large and small industries, brick kilns, poultry farming, stubble burning
Kurukshetra	Moderate 122	Stubble burning, road dust, road sweeping, open garbage burning, vehicular emissions (especially auto-rickshaws, transport vehicles, DG sets).
Mahendergarh	Moderate 132	Large and small industries, unpaved roads, brick kilns, stone crushers, mineral grinding units.
Nuh	Moderate 81	Industries, brick kilns, stone crushers, small-scale industries, unpaved roads, industrial estate.
Palwal	Moderate 76	Industries, unpaved roads, waste and stubble burning, brick kilns.
Panipat	Moderate 102	Industries (including brick kilns, sugar mills, feed mills, rice mills), stubble burning, road dust, road sweeping, open garbage burning, vehicular emissions (Auto Rickshaws, transport vehicles, DG sets).
Panchkula	Moderate 112	Small industries and brick kilns small industries, brick kilns.
Rewari	Moderate 176	Large and small industries, unpaved roads, brick kilns, stone crushers, metal recyclers.
Rohtak	Moderate 107	Sugar mills, used oil refiners, lead recyclers, hot mix plants, brick kilns, stubble burning.
Sirsa	Moderate 119	Brick kilns, stone crushers, plywood industries, thermal power plants, steel plants, metal recyclers.
Sonipat	Moderate 143	Large and small industries, unpaved roads, waste/stubble burning, brick kilns, industrial estate
Yamunanagar	Moderate 128	Plywood industries, stone crushers, road dust, road sweeping, open garbage burning, vehicular emissions

Source: Haryana District Environment Plans 202, Haryana Pollu tion Control Board

2.6 Exceedance of Pollutant levels from NAAQMS

The PM10 and PM2.5 concentrations in the State are exceeding the annual averages of National Ambient Air Quality Standards specified by CPCB. In 2023, the districts of Faridabad, Gurugram and Rewari reported PM levels which even exceeded Haryana's average PM10 levels. While Faridabad, which is listed as Haryana's only non-attainment city, has substantially reduced PM10 levels due to targeted air quality management regulations, it still reports the second highest PM10 concentration in Haryana, only after Gurugram whose PM10 levels have substantially risen in the last five years. Ambala, Panipat and Yamunanagar have shown a notable decrease in PM10 concentrations in the state.

2.7 Source Apportionment Study, Emission Inventory and Key Pollutants

Source apportionment studies of four cities of Haryana (Faridabad, Gurugram, Sonipat and Panipat) are currently in progress. The source apportionment is being conducted by The Energy and Research Institute (TERI) through Municipal Corporation of Faridabad (MCF) under the 15th Finance Commission grants for Faridabad. The work order was granted in 2022. Further, the work order to conduct source apportionment studies in the cities of Gurugram, Sonipat and Panipat have been awarded by HSPCB to Automotive Research Association of India (ARAI) Pune in January 2023. The final reports are yet to be submitted. State will procure 10 CAAQM stations with real-time source-apportionment capabilities. A further assessment of CAAQMS with source apportionment capabilities requirements will be undertaken at the end of 2026 to ascertain if more stations are required as per the evolving situation. The State will also procure two mobile supersite vans for air quality monitoring and real-time source-apportionment. These vans will cover the entire state on a regular basis to provide granular insights from across the state.

CHAPTER - 3

THEMATIC AREAS OF HARYANA STATE ACTION PLAN FOR CLEAN AIR

3.1 INDUSTRIAL EMISSIONS

3.1.1. Policy for permitting new industries in Critically Polluted Areas (CPAs).

3.1.2. Guidelines for laying gas distribution network for Industries.

3.1.3. Policy for replacement of heavy oil (e.g., furnace oil, diesel etc.) based industries to alternate energy sources (CNG/ PNG/ Electricity).

3.1.4. Policy for restriction on usage of Pet coke for industrial use.

3.1.5. Rules and Regulations on uninterrupted power supply in State/ UT.

3.1.6. Policy for use of DG sets.

3.1.7. Policy regarding installation of CAAQMS based on the emission potential or capacity of air polluting industries.

3.1.8. Mechanism to be devised for expansion of OCEMS to air polluting industries are not covered currently (such as emission from utility stacks in 17 categories, etc.).

3.1.9. Mechanisms to control fugitive emissions sources.

3.1.10. Regulations for conversion of brick kilns to clean technologies.

3.1.11. Policy to set up e-waste recycling unit in industrial areas in compliance with e-Waste Management Rules.

3.1.12. Number of industries in the State/UT complying emission standards.

3.1.13. Inventory of fuel consumed in the industries (type and quantity).

3.1.14. Shifting of industries/ commercial units to gaseous fuels (CNG/ PNG/ CBG)

3.1.15. Any other Policy / Rules/ Standards/ Guidelines pertaining to industrial emissions.

3.1 Industrial Emissions

At the time of its creation in 1996, Haryana was a predominantly agricultural state but has taken strides in developing its industrial sector. The ensure state falls under the expanse of major industrial corridors, namely, the Delhi-Mumbai Industrial Corridor (DMIC), Amritsar-Kolkata Industrial Corridor (AKIC), and Kundli-Manesar-Palwal Expressway (KMP). Its proximity to the country's capital has been an important factor in the growth of industries. The share of industry sector increased from 17.6% in 1969-70 to 33.1% in 2023-24.3 As of 2023, Haryana has 8 lakh industries with the landscape dominated by MSMEs. Figure 3.1 gives a brief District wise information on industries in dominance in Haryana.

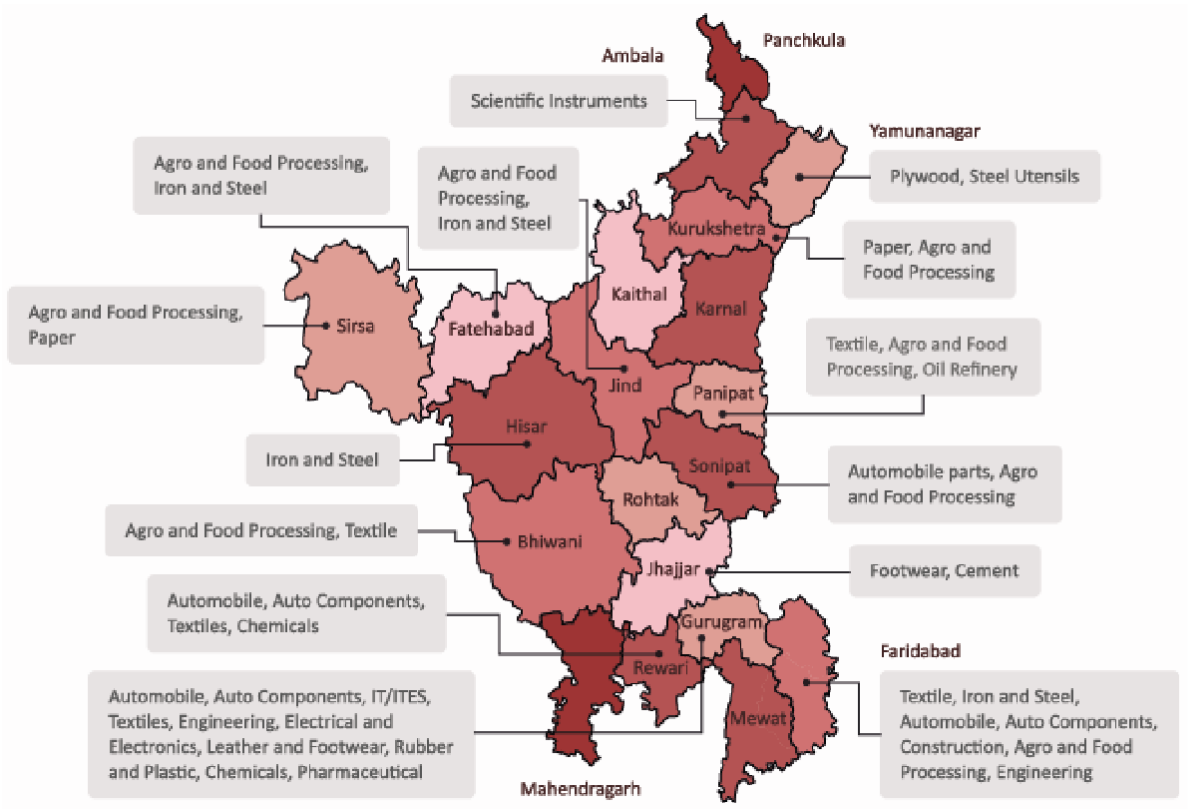


Fig 3.1: District-wise breakdown of Prevalent Industries in Haryana

On the basis of pollution index, the industries in the State have been categorized in red, orange, green and white category, wherein red is most polluting and white are least polluting industries. The red, orange and green industries are mandatorily need to take the consent to establish and consent to operate from Haryana State Pollution Control Board, whereas white category industries are exempted from taking such permissions from Haryana State Pollution Control Board. As per record of Haryana State Pollution Control

Table 3.1: Total number of Air Polluting industries

Sr.no.	District	Total number of Air Polluting industries			
		Red	Orange	Green	Total
1	Ambala	26	193	6	225
2	Bhiwani	7	260	9	276
3	Charkhi Dadri	12	267	3	282
4	Ballabhgarh	83	206	24	313
5	Faridabad	63	51	7	121
6	Fatehabad	11	180	0	191
7	Gurugram	48	119	0	157
8	Hisar	64	263	0	327
9	Jhajjar	44	299	2	345
10	Jind	26	188	0	214
11	Kaithal	21	279	89	389
12	Karnal	106	444	11	561
13	Kurukshetra	24	141	2	167
14	Mahendragarh	3	1	0	4
15	Nuh	29	100	3	132
16	Panchkula	31	196	8	235
17	Palwal	21	91	0	112
18	Panipat	344	68	11	423
19	Rewari	45	130	8	183
20	Rohtak	40	98	2	140
21	Sirsa	32	299	68	399
22	Sonipat	236	722	120	1078
23	Yamunanagar	98	593	11	702

Board in the State, 1414 of Red category, 5188 of Orange category and 390 of Green category of industries are operational. The district wise details of these industries are as per Table-3.1.

3.1.1 Policy for permitting new industries in Critically Polluted Areas(CPAs)

Central Pollution Control Board during the year 2009-10 has carried out comprehensive environmental assessment of 88 industrial clusters across the country and rated them on the concept of Comprehensive Environment Pollution Index (hereinafter referred to as CEPI). Out of 88 Industrial clusters, 43 industrial clusters in 16 States having CEPI score of 70 and above were identified as Critically Polluted Areas (CPAs). Further 32 industrial clusters with CEPI scores between 60 & 70 were categorized as severely polluted areas (hereinafter referred to as SPAs). It was suggested that areas having CEPI score between 60 to 70 i.e., severely polluted industrial cluster shall be kept under surveillance and pollution control measures should be effectively implemented. Whereas the Critically Polluted Industrial Areas need further detailed investigations in terms of extent of damage and formulation of appropriate remedial action plan. Three Polluted Industrial Areas were monitored in the Haryana State and the CEPI scores were assessed as below:

Table 3.2: Polluted Industrial Areas with CEPI Score

S.No	Name of Polluted Industrial Areas (PIAs)	CEPI Score
1	Gurugram	85.15 (Critically Polluted Area)
2	Panipat	83.54 (Critically Polluted Area)
3	Faridabad	62.17 (Severely Polluted Area)

Action Plan for restoration of environmental qualities in respect of identified three Polluted Industrial Clusters (PIA) taking into account the critical parameters pertaining to these areas and submitted final Action Plans to the CPCB on 25.06.2021.

State has issued following orders for reducing emissions from industries

- Approved fuel list for use in NCR and Non-NCR part of the State has been issued by the State.

- The State has banned furnace oil and pet coke in the State.

Further, the Government of Haryana is issuing NOCs to those units which are proposing and using cleaner fuels.

The CPCB has developed a CEPI portal for uploading the information pertaining to the implementation of the action points. HSPCB is uploading the information as per the portal requirement.

3.1.2 Guidelines for laying gas distribution network for Industries

There is provision of PNG pipelines to all urban industrial clusters for fuel switching. In the state of Haryana, PNGRB has authorized 18 Geographical Areas (GAs) for development of CGD Network with Minimum Work Programme (MWP) target of 327 CNG Stations, 22,94,709 PNG Domestic Connections. As on 30.11.2024, the entities have established 498 CNG stations, 4,43,466 PNG Domestic connections, 2,724 PNG Industrial connections in the state of Haryana. The following eight suppliers have been given exclusive territorial distribution in the Haryana state.

1. GAIL India Limited
2. Green Gas Limited (GGL)
3. Haryana City Gas
4. Haryana City Gas (Kapil Chopra Enterprise)
5. Hindustan Petroleum Corporation Limited
6. HPOIL Gas Private Limited
7. Indraprastha Gas Limited
8. Indian Oil-Adani Gas Private Limited

As per the data received from Petroleum and Natural Gas Regulatory Board (PNGRB), details of the network laid till Nov. 2024 are as follows:

Table 3.3: City Gas Distribution in Haryana

Sr.no.	Name of District	Name of Distributor	No. of Domestic household with PNG	No. of industries with PNG	No. of automobile stations with CNG
1	Ambala	HPOIL Gas Pvt. Ltd	6307	3	15
2	Bhiwani	Adani Total Gas Ltd.	0	0	13
3	Charkhi Dadri	Adani Total Gas Ltd.	0	0	10
4	Faridabad	Adani Total Gas Ltd.	135221	875	32
5	Fatehabad	Gujrat Gas Limited	0	0	9
6	Gurugram-1	Haryana City Gas Distribution Ltd.	54600	708	43
7	Gurugram-2	Indrarastha gas Ltd.	27881	72	25
8	Hisar	HCG (KCE) Pvt. Ltd.	161	10	20
9	Jhajjar	Haryana City Gas (KCE) Pvt. Ltd.	209	210	19
10	Jind	Hindustan Petroleum Corporation Ltd.	0	0	18
11	Kaithal	Indrarastha gas Ltd.	35854	2	15
12	Karnal	Indrarastha gas Ltd.	27334	71	29
13	Kurkshetra	HPOIL Gas Pvt. Ltd.	10637	4	12
14	Mahendragarh	Adani Total Gas Ltd.	2723	0	25
15	Nuh	Adani Total Gas Ltd.	0	0	8
16	Palwal	Adani Total Gas Ltd.	26982	121	32
17	Panchkula	Indian Oil Adani Gas Pvt. Ltd.	0	0	6
18	Panchkula (EAAA)	Indian Oil Adani Gas Pvt. Ltd.	56	0	9
19	Panipat	Indian Oil Adani Gas Pvt. Ltd.	17562	75	17
20	Rewari	Indrarastha gas	25462	234	42

		Ltd.			
21	Rohtak	Bharat Petroleum Corporation Ltd.	11623	25	23
22	Sirsa	Gujrat Gas Ltd.	2163	0	11
23	Sonipat	GAIL Gas Ltd.	35544	289	28
24	Sonipat (EAAA)	Hindustan Petroleum Corporation Ltd.	11375	20	22
25	Yamunanagar	Bharat Petroleum Corporation Ltd.	11772	5	15

LPG Coverage in Haryana: As per the report of Food, Civil Supplies and Consumer Affairs Department (Government of Haryana), the No. of Active LPG Consumers as on 31.12.2024 in the state is 8211738.

Table 3.4:LPG Coverage in Haryana

District	IOC	BPC	HPC	Total Connection
Ambala	112755	167890	53735	334380
Bhiwani	54495	184484	106144	345123
CharkiDadri	82030	40068	4850	126948
Faridabad	276066	346518	105967	728551
Fatehabad	69396	186354	25836	281586
Gurugram	558856	240708	143848	943412
Hisar	197166	192634	117025	506825
Jhajjar	155622	50267	136927	342816
Jind	147104	39191	132132	318427
Kaithal	223896	3200	42924	270020
Karnal	319143	41563	85485	446191
Kurukshetra	91428	129189	107424	328041
Mahendragarh	115766	26931	92814	235511
Mewat	155582	9232	56781	221595
Palwal	23657	85780	142063	251500
Panchkula	74018	55488	49625	179131
Panipat	234177	76115	107534	417826
Rewari	166074	151849	0	317923
Rohtak	141229	109966	124994	376189
Sirsa	81375	162458	156164	399997
Sonipat	184023	195801	69788	449612
Yamunanagar	125074	168657	96403	390134
	3588932	2664343	1958463	8211738

In the state approx. 44% LPG connection is provided by IOC, 32% by BPC and 26% by HPC. The State Government is in the process of preparation of the policy for uptake of Natural Gas in transportation, industries and commercial /household kitchens to reduce the impact of the air pollution.

3.1.3: Policy for replacement of Heavy Oil (e.g., Furnace oil, diesel etc.,) based industries to alternate energy sources (CNG/PNG/electricity)

The industries in the NCR part of state are being pursued for taking up the Piped natural Gas instead of the conventional fuels. At present 2724 industries shifted to PNG. Meetings were conducted with the representatives of different sector industries for facilitating the uptake of gas by the industries.

As per the Supreme Court of India in WPC no. 13029/1985 M.C. Mehta Vs Union of India & Ors. Order dated 24.10.2017, the furnace oil had been banned in the state of Haryana. HSPCB has issued the order dated 21.07.2022 has issued the approved fuel list for NCR that shall come in force w.e.f. 01.10.2022 (for areas where PNG infrastructure and supply is already available) and w.e.f. 01.01.2023 (for other areas where the PNG supply is still not available). As on date such directions have been complied with in NCR part of the State and non complying industrial units have been closed/sealed. The CAQM has approved the standard fuel list for uniform adoption of clean fuels across the entire NCR as per direction no. 65.

To reduce PM emissions from the industrial sector, the state will do adaptation of clean technologies in industries for emission reduction by accelerating the shift of industrial boilers to gaseous fuels. Pilot innovative solutions to promote new technologies for mitigation and monitoring of industrial emissions – set-up 02 common boilers across industrial clusters, set-uptunnel-kiln technology in non-NCR and enable AI-led monitoring of data emitted from Continuous Emissions Monitoring Systems (CEMS). Following is a table depicting the distribution of boilers across the state.

The state has a total of 2,634 factories that operate boilers across NCR and non-NCR districts. Out of 2634, 1709 units (65%) fall in the NCR districts of the state. The Commission for Air Quality Management (CAQM) had issued a directive in June 2022 that all industries

operating in NCR must shift to a list of approved fuels; cleaner fuels like biomass and PNG were included, and polluting fuels like coal were absent from this list. The order set an initial deadline of 30.09.2022 for industries to shift to PNG (wherever PNG supply is available) or biomass-based fuels. The Commission set a further final deadline for all industries in NCR

Table 3.5: Distribution of boilers across the state

Sl.No.	District	No. of boilers
1	Ambala	64
2	Bhiwani	25
3	Fatehabad	74
4	Faridabad	172
5	Gurugram	138
6	Hisar	74
7	Jhajjar	64
8	Jind	37
9	Kaithal	147
10	Karnal	442
11	Kurukshetra	115
12	Mewat	23
13	Mahendragarh	5
14	Panchkula	24
15	Panipat	352
16	Palwal	44
17	Rewari	59
18	Rohtak	81
19	Sirsa	49
20	Sonipat	267
21	Yamuna Nagar	378
22	Total	2634

(where PNG supply is not available) to shift to one of the fuels on the approved fuel list. In view of the CAQM directive, the state launched a scheme to provide financial assistance to MSMEs in NCR districts to transition to clean fuels at the earliest.

Table 3.6: Details of biomass Boiler and PNG-based boilers

Sl. No.	District	No. of biomass-based boilers	No. of PNG-based boilers
1	Ambala	12	-
2	Bhiwani	14	-
3	Fatehabad	32	-
4	Faridabad	119	51
5	Gurugram	29	90
6	Hisar	1	-
7	Jhajjar	27	7
8	Jind	27	-
9	Kaithal	53	-
10	Karnal	104	7
11	Kurukshetra	7	-
12	Mewat	9	1
13	Mahendragarh	2	-
14	Panchkula	3	-
15	Panipat	243	-
16	Palwal	36	6
17	Rewari	23	26
18	Rohtak	14	8
19	Sirsa	35	-
20	Sonipat	214	26
21	Yamuna Nagar	-	-
	Total	**1004**	**222**

Biomass and PNG are the prominent clean fuels used by industries in the state. Burning biomass in controlled conditions is believed to reduce PM emissions significantly. CAQM had issued a directive dated March 17, 2022 regarding permissible standards for emissions through use of biomass fuels in industrial processes. The maximum permissible emissions limit for particulate matter for biomass-fuelled boilers in NCR is 80 mg/Nm3. However, such industrial units are required to target an emission level of 50 mg/Nm3 by installing emissions control systems through technology upgrades and installation of air pollution control devices such as bag filters, cyclonic filters and wet scrubbers based on on-site technical parameters. In natural gas combustion, PM emissions are virtually zero apart from "background" PM that is already present in the combustion air flow, or that which is swept from the boiler.

Switching a boiler to operate on biomass from any solid fuel requires minor changes and involves an initial capital expenditure of less than INR 5 lakh. However, the cost for shifting to PNG can go as high as INR 1 crore. Given that biomass is the cheaper alternative and is easily available, it has been the clean fuel of choice for a majority of industrial units. Rising PNG prices, and the need for pipeline infrastructure in industrial clusters, too are deterrents for industries in adopting gaseous fuels. The operating cost for a PNG-boiler is also higher compared to other fuels.

Under HCAPSD, a total budget of INR 200 crore is allocated to assist the purchase of the first 1000 boilers designed to operate on PNG/CNG/gaseous fuel. The budget for this initiative will be provided under the existing scheme of *'Assistance in the conversion of boilers to run on cleaner fuels*'.

3.1.4 Policy for restriction on usage of pet coke for industrial use

Consequent upon Hon'ble Supreme Court Orders dated 24.10.2017, the usage of pet coke has been banned in the NCR cities of the State.

3.1.5 Rules and regulations on uninterrupted power supply in State / UT

Haryana's power supply is managed by the Haryana Power Generation Corporation and the Dakshin Haryana Bijli Vitran Nigam (DHBVNL) and Uttar Haryana Bijli Vitran Nigam (UHBVNL). The state's power supply is also regulated by the Haryana Electricity Regulatory

Commission. Haryana is a state with continuous power supply and meeting the power supply demands. There is a continuous power supply to all cities, thus rendering the usage of the DG sets to a minimum period in the state. The details of power supply in the state are depicted in the table 3.7.

Table 3.7: Details of power supply in the state

Sr. No.	Name of Circle	Total No. of villages in Circle	No. of villages with 24x7 power supply in Circle	% age of villages covered for 24x7 power supply	Total No. of cities in Circle	No. of cities with 24x7 power supply in Circle
UHBVNL						
1	Panchkula	342	342	100	All cities are running on 24 hrs. supply	
2	Ambala	273	273	100	All cities are running on 24 hrs. supply	
3	Kurukshetra	412	412	100	1	1
4	Karnal	435	435	100	7	7
5	Yamunanagar	920	920	100	6	6
6	Panipat	191	189	98.95	2	2
7	Rohtak	**172**	**107**	62.21	4	4
8	Jhajjar	226	158	69.91	3	3
9	Sonipat	326	238	73.01	5	5
10	Kaithal	293	284	96.93	4	4
	UHBVN	**3590**	**3358**	93.54		
DHBVN						
1	Faridabad	135	135	100	2	2
2	Gurugram-I	172	172	100	3	3
3	Gurugram -II	191	191	100	2	2
4	Narnaul	379	370	98	5	5
5	Palwal	633	75	12	8	8
6	Rewari	420	420	100	3	3
	Delhi Zone	1930	1363	71	23	23
7	Sirsa	354	354	100	5	5
8	Bhiwani	468	359	77	7	7
9	Hisar	298	121	41	4	4
10	Fatehabad	321	282	88	5	5
11	Jind	295	27	9	4	4
12	Hisar Zone	1736	1143	66	25	25
	DHBVN	**3666**	**2506**	**68**	**48**	**48**

The state already providing24x7 power supply to all the urban areas while planning to provide 24x7 power supply to all the rural areas by Dec. 2026. The fund utilized for the same is 576.16 Cr. out of 817.78 Cr. of allocated fund by DHBVN.

3.1.6 Policy for use of DG sets

The Commission the Air Quality Management (CAQM) has issued statutory direction No. 76, dated 29.09.2023 (as amended) fix regulating operation of DGs across all sectors namely industrial, commercial, residential, office etc. in the entire NCR by adopting appropriate measures such as retrofitting Emission Control Devices (ECD)/ dual fuel systems shifting to emission complaint as per GSR 804(E) for DG sets.

Table 3.8: DG Sets regulations in NCR area

Sl.no.	Capacity Range of DG sets	System to be adopted for control of emissions	Regulations for use
1	800 kW and above	Any emission control mechanism, strictly subject to compliance of emission standards as indicated below. *	No restrictions (Even during periods under GRAP)
2	41 kW to less than 800 kw	Dual fuel mode OR Retro-fitted ECDs through certified vendors / agencies	No restrictions (Even during periods under GRAP)
3	19 kW to less than 41 kW	Dual fuel mode	No restrictions (Even during periods under GRAP) DG Sets not working in a dual fuel mode, only owing to non availability of gas infrastructure and supply, shall be permitted only for emergency services as stipulate
4	Portable DG (below 19 kW)	Presently no specific means of emission control are available in this category I capacity range of DG sets.	No restrictions during the periods, other than restrictions under GRAP. Not to be generally permitted during periods of restriction under GRAP. These shall, however, be permitted even during periods under GRAP only for emergency services as stipulated in this direction.

Further CPCB through letter dated 22nd March 2024 has informed the SPCB to control emissions from DG sets by installing retrofitted emission control devices are shifting to gas based generators for control of ambient air pollution from DG emissions in non-attainment cities. Further, it was informed that the overall contribution of DG sets to the ambient air pollution in non attainment cities is 7-18% and so it was informed to consider taking such measures for control of ambient air pollution from DG set emissions in non-attainment cities.

The CAQM vide direction no. 76 and amended till date, issued the regulations regarding DG sets operations in the NCR area, those are shown in the table no. 3.8. For DG sets of more than 800 kW are directed to adopt any suitable air pollution control device, strictly subject to compliance of emission standards, notified vide GSR 489(E) dated 9-7-2002. Under HCAPSD 1000 DG sets will be incentivized to switch to RECD /dual fuel mode and another incentives for purchase of 1400 new DG sets compliant with the CPCB emission norms and for the same an allocation of Rs. 330 Cr has been made under HCAPSD.

3.1.7 Policy regarding installation of CAAQMS based on the emission potential or capacity of air polluting industries

The Continuous Emission Monitoring (CEM) System comprises of all the equipment necessary to determine the concentration of gaseous emission and/or particulate matter and/or emission rate using analytical measurements and a computer program to provide results in units of the applicable emission limits or standards. The data generated is gathered either through analog outputs to a recording system or send directly to a DAS (Data Acquisition System) for storage and onward transmission. Data Acquisition System includes special modules for data validation and further transmission to central servers located at SPCB/ CPCB through a cloud server compatible to specific types of analyzers. It is important to have properly engineered CEM systems.

3.1.8 Mechanism to be devised for expansion of OCEMS to air polluting industries are not covered currently (such as emission from utility stacks in 17 categories, etc.)

To strengthen the monitoring mechanism and ensure the compliance of environmental standards, the CPCB has directed 17 categories of highly polluting industries to install and provide connectivity to the Pollution Control Board server for Online Continuous Emission/Effluent Monitoring System (OCEMS). In line with the CPCB directions, HSPCB has made it mandatory for all 17 categories of highly polluting industries, large and medium scale water-polluting industries, established in catchment areas of Yamuna & Ghaggar river and all red category air emitting units established in NCR to install OCEMS. HSPCB has devised a software and dashboard for receiving the data and monitoring it centrally from its headquarters. The dashboard (which is also accessible to the public) is available onhttp://www.hspcbcems.nic.in/public.There are 118 units of 17 categories of highly polluting industries which are covered under OCEMS installation in the whole of Haryana.

Table 3.9: List of 17 categories of highly polluting industries

S.No.	Sector	No. of industries
1.	Cement	6
2.	Distillery	16
3.	Dye & Dye Intermediates	12
4.	Pesticide	5
5.	Pharmaceuticals	12
6.	Thermal Power Plants	7
7.	Pulp & Paper	7
8.	Sugar	14
9.	Tannery	25
10.	Fertilizers	2
11.	Bulk Drugs	1
12.	Gas Power Plant	1
13.	Petrochemical	3
14.	Refinery	4
15.	Zinc Smelter	3
	Total	**= 118**

Under Haryana Clean Air Project for Sustainable Development, the Haryana Pollution Control Board will undertake a baseline survey of MSME industries to identify industrial clusters with non-installation or non-compliance of CEMS. Based on this data, the state will partner with 300 industries and provide them financial incentives of up to INR 10 lakhs for installation of CEMS devices. The technology certified by CPCB will only be promoted for the purpose of this pilot. In addition, the state will design and develop an AI-based model fed with calibrated data from CEMS from across these 300 industries. This data would then help set-up a baseline of accurate CEMS readings during peak and lean hours of different types of industries. The Board will then use the developed AI model to detect data manipulations across CEMS within highly polluting industries. The state will partner with leading academic institutions to design and develop the AI model and strengthen monitoring and enforcement. Allocation of Rs. 30 Cr. to 300 MSMEs for installation of CEMS devices (10 lakhs/unit) will be provided under HCAPSD by 2030.

3.1.9 Mechanisms to control fugitive emissions sources

The Haryana government's 2016 notification requires stone crushers to adopt dust suppressant measures and establish crusher zones in Faridabad, Panchkula, Yamuna Nagar, Gurugram, Mewat and Bhiwani and those outside need to meet the sitting guidelines for proper monitoring.

Sitting guidelines for certain air polluting industries like stone crushers, hot mix plants, Screening Plants, Mineral Grinding and brick kilns are notified and the same are being implemented.

The monitoring of fugitive emissions from industries is an ongoing activity. All such industries have installed the Air Pollution Control Devices such as Multi Cyclone, dust collector/ Cyclone Separator/Wet Scrubbers/ESP/Water Sprinklers/ Zig-Zag Induced Draft Technology etc. as applicable. The Haryana State Pollution Control Board and Urban Local Bodies in the State are taking stringent action against the fugitive emissions such as MSW / HW / other solid waste burning in the State. There is a mechanism of penalizing such offenses. However a more deterrent and effective mechanism is desired to control the fugitive emissions.

3.1.10 Regulations for conversion of brick kilns to clean technologies

HSPCB has prepared & circulated guidelines for Abatement & Control of Pollution in Brick Kiln Industry. Brick kilns have been directed for compliance of NGT orders (Utkarsh Panwar Vs CPCB & Ors. dated 17.02.2021 and MoEF & CC notification dated 22.02.2022). Brick Kilns based on Zig-Zag technology using agro-residues are located only in NCR districts. As per GRAP, Brick kilns in NCR are required to be shut under severe conditions i.e. when PM2.5 and/or PM10 concentration goes beyond 250 µg/m3 and/or 430 µg /m3 respectively.

All brick kilns will have to use approved fuel that includes piped natural gas or agricultural residues. Use of pet coke, tyre, plastic, hazardous waste etc are banned. Kilns will construct a permanent facility as per the prescribed design guidelines. They need to follow process emissions/ fugitive dust emissions control guidelines. The ash needs to be fully re-utilised in brick making. Approach roads will have to be paved and transport vehicles covered. Also, minimum sitting criteria have been established. Specific provisions for NCR districts closure action has already been taken against brick kilns not converted to zig-zag technology. Brick kilns have been directed for compliance NGT orders (Utkarsh Panwar Vs CPCB & Ors. dated 17.02.2021 and MoEF&CC notification dated 22.02.2022).

Now under Haryana Clean Air Project for sustainable development (HCAPSD), tunnel technology will be experimented in 02 nos. of brick kilns in the state and after establishing the financial viability, the same may be promoted to other brick kilns. The estimated budget for this pilot set-up of tunnel-kiln technology is approx. 4 Cr and likely to be completed by Dec. 2026.

3.1.11 Policy to set up e-waste recycling unit in industrial areas in compliance with e-Waste Management Rules

As per the annual report under Solid Waste Management Rules, 2016, for the year 2020, Haryana State Pollution Control Board (HSPCB), quantity of E- Waste Generated in Haryana is as follows:

1. Category-I: 100,322.9 MT/ month
2. Category-II: 8,942.9 MT/ month
3. Others: 80.3 MT/ month

In the state, there are total 26 numbers of E-waste recycler and 26 dismantler. Out of that 25 recycler with capacity 217532.11 MTA and 23 dismantler with capacity 114003 MTA are in NCR part of the State and 01 recycler with capacity 547.663 MTA and 3 dismantler with capacity 1571.25 MTA falls in non – NCR part of the State.

Table 3.10: Distribution of E-waste Recycler

Sl. no.	Name of District	Number of Authorized E-waste Recycler	Capacity of Recycler (MTA)	Number of Authorized Dismantler of E-waste	Capacity of Dismantler unit (MTA)
NCR					
1	Bahadurgarh	1	13870	1	13870
2	Rohtak	1	29565	2	1095
3	Ballabgarh	5	27531	4	1131
4	Bhiwani	0	NA	0	NA
5	Charkhi Dadri	0	NA	0	NA
6	Rewari	1	4882.5	0	0
7	Faridabad	1	5110	0	0
8	Gurugram North	0	0	2	2
9	Gurugram (South)	3	17928	7	6840
10	Jind	0	NA	0	0
11	Karnal	2	30000	2	30000
12	Nuh	2	15.72	0	0
13	Palwal	2	15400	1	19080
14	Panipat	2	24000	2	41975
15	Sonipat	5	162.1	2	10
16	Mahendergarh	0	NA	0	NA

17	Jind	0	NA	0	0
Non-NCR					
18	Yamuna Nagar	0	NA	1	600
19	Ambala	1	547.663	1	821.25
20	Hisar	0	NA	1	150
21	Fatehabad	0	NA	0	0
22	Sirsa	0	NA	0	0
23	Kurukshetra	0	NA	0	0
24	Kaithal	0	NA	0	0
25	Panchkula	0	NA	0	0

Haryana Electronics Waste Recycling Policy, 2024 is under draft and tentatively it will be released by March 2025 by Department of Industries & Commerce, Government of Haryana.

Extended Producer Responsibility

- Every producer of Electrical and Electronic Equipments (EEEs) listed in Schedule-I have to obtain EPR (Extended Producer Responsibility) Registration Certificate from the Central Pollution Control Board (CPCB).
- The producers shall have arrangements with authorised recyclers either individually or collectively or through a Producer Responsibility Organisation (PRO) or E-Waste Exchange system as per EPR Plan which is approved/ authorised by CPCB.

3.1.12 Number of industries in the State / UT complying emission standards

HSPCB is monitoring the ambient air and point source emissions regularly. 17 category industries are monitored through the Online Continuous Emission Monitoring System (OCEMS) and are connected to the HSPCB and CPCB servers.

The industries that are not complying with the standards were issued directions with show cause notices and penalized with closure and environmental compensation.

3.1.13 Inventory of fuel consumed in the industries (type and quantity)

As per the Petroleum and Natural Gas Regulatory Board data, total 2724 no. (till Nov 2024) of industries are provided with PNG connection. The details for distributors are as follows.

Table 3.11: Details of PNG connections by city gas distributors

CGD Name	Industries
Adani Total Gas Ltd.	996
Bharat Petroleum Corporation Ltd.	30
GAIL Gas Ltd.	289
Haryana City Gas Distribution Ltd.	708
Haryana City Gas (KCE) Pvt. Ltd.	220
Hindustan Petroleum Corporation Ltd.	20
HPOIL Gas Pvt. Ltd	7
Indian Oil Adani Gas Pvt. Ltd.	75
Indraprastha gas Ltd.	379
Total	**2724**

Table 3.12: Details of the coal consumption in Thermal Power Plant in the state in the last 4 years

Thermal Power Plant	2020-21	2021-22	2022-23	2023-24
RGTPP Hisar	1153640	1850552	4892087	3205056
DCRTPP Yamunanagar	1801666	1840518	2914489	2595923
PTPS Panipat	826515	1881974	3395690	2702014
Indira Gandhi Super Thermal power project distt. Jhajjar	2450239	4668908	5341625	5691178
Jhajjar Power Limited, Matamhail, Khanpur distt Jhajjar	2863123	4738330	5040563	5083028

3.1.14 Shifting of industries / commercial units to gaseous fuels (CNG / PNG / CBG)

The state has a total of 2,634 factories that operate boilers across NCR and non-NCR districts. Out of 2634, 1709 units (65%) fall in the NCR districts of the state. The Commission for Air Quality Management (CAQM) had issued a directive in June 2022 that all industries operating in NCR must shift to a list of approved fuels, cleaner fuels like biomass and PNG were included, and polluting fuels like coal were absent from this list. The order set an initial deadline of 30.09.2022 for industries to shift to PNG (wherever PNG supply is available) or biomass-based fuels. The Commission set a further final deadline for all industries in NCR (where PNG supply is not available) to shift to one of the fuels on the approved fuel list. In view of the CAQM directive, the state launched a scheme to provide financial assistance to MSMEs in NCR districts to transition to clean fuels at the earliest.

Total 958 nos. of industries have shifted to CNG/LPG/CBG and network expansion is under progress. In HCAPSD, a total budget of INR 200 crore will be allocated to assist the purchase of the first 1000 boilers designed to operate on PNG/CNG/gaseous fuel. The budget for this initiative will be provided under the existing scheme of *'Assistance in the conversion of boilers to run on cleaner fuels*'.

3.1.15 Any other policy / Rules / Standards / Guidelines pertaining to industrial emissions

Institutional strengthening

- Under HCAPSD an allocation of Rs. 24 Cr has been made for driving citizen engagement in all meta's related to air quality through awareness initiatives and governance mechanism.
- Under HCAPSD an allocation of Rs. 16 Cr has been made for training and capacity building of officers.
- Under HCAPSD an allocation of Rs. 114 Cr has been made for Strategy and implementation of various air pollution related actions and measures.

- Under HCAPSD an allocation of Rs. 50 Cr has been made to setup a command control centre for integration of old data sources which will help and foster the decisions making in various actions and measures for air pollution mitigation.

- Under HCAPSD an allocation of Rs. 107 Cr has been made for establishment of one number state of the art air pollution monitoring laboratory and upgrading the existing 04 number laboratories with state of the art air monitoring facilities. Apart from this 22 mini air labs will be established in the regional offices and 22 digital stack monitoring kits will be procured.

Status of compliance of New Emission norms by Thermal power plants

MoEF&CC vide notification dated 07.12.2015 has issued norms for SPM, Specific Water Consumption, Mercury, NOx and SOx. All plants of HPGCL are meeting the norms related to SPM. Thermal power plants of NTPC and Jhajjar Power Plant have installed the NOx burner and FGD. The tendering process for plant except Deen Bundhu Choturam TPS Yamuna Nagar, wherein only one unit of the plant running with low NOx burner and other 2 units will be installed by March, 2025.installation of NOx burner and FGD in the HPGCL thermal power plant is under way. NOx burner is installed in all the thermal power

Indira Gandhi Super Thermal power project Jhajjar is running with NOx burner in all units and FGD in 1 unit and other 2 units expected to equipped in March 2025 and M/s Jhajjar power limited, Jhajjar all the units are equipped with NOx burner and FGD.

Common guidelines /Action points for implementation in industrial estates and areas to reduce the air pollution:

- Extensive Plantation to be taken up within the industries and also in the industrial areas by the concerned industries, industrial associations, HSIIDC and others.
- The roads in the industrial estates / areas are to be maintained regularly without potholes, end to end pavement and sweeping to remove the silt- HSIIDC and ULB
- The loading and unloading operations are to be taken up in covered areas to prevent any lofting of dust – HSPCB & Industries Department.
- Industries shall be mandated with suitable air pollution control equipment to meet the environmental standards-HSPCB

- The monitoring of all the industrial estates and areas to be carried out at regular intervals for compliance verification and to take corrective measures required if any.- HSPCB
- All the air polluting industries with boilers, furnaces and any other should be monitored for compliance verification at regular intervals. The online Continuous Emission Monitoring and Ambient Air Quality Systems shall be made mandatory based on the category of the industry-HSPCB.
- All concerted efforts are to be made for switching over to cleaner fuels like CNG, LPG and wherever new industries are coming up they should be mandated to use cleaner fuels wherever available- HSIIDC, HSPCB& industries dept
- All measures to be taken to prevent any sort of open burning and all such incidents shall be stopped and punitive action to be initiated.-HSPCB.
- To address air pollution in winter season, the Haryana State Pollution Control Board (HSPCB) has developed a comprehensive Winter Action Plan aimed at mitigating air pollution through targeted interventions across multiple sectors for 2023-24 and 2024-25.

3.2 VEHICULAR EMISSIONS

3.2.1 Notification for phasing out old vehicles (Commercial: 10 years; Private: 15 years).

3.2.2 Policy for scrapping old vehicles.

3.2.3 Policy/ Plan for Li-battery waste management from scrapped vehicles.

3.2.4 Policy / Scheme for Eco- Friendly Mass Rapid Transport Systems.

3.2.5 Policy for augmenting e-vehicles and Incentive for setting up R&D facilities related to EVs

3.2.6 Notification and enforcement of PUC norms

3.2.7 Mechanism for centralized record maintenance of PUC checks, certification and cross check by the concerned transport authorities to be incorporated.

3.2.8 Online monitoring of PUC implementation

3.2.9 Construction of bypass / ring roads.

3.2.10 Re-filling Stations retrofitted with Vapor Recovery System.

3.2.11 Any other Policy / Rules/ Standards/ Guidelines pertaining to vehicular emissions.

3.2 Vehicular emissions

In Haryana, emissions from heavy vehicles which includes trucks, buses and tractors accounts for nearly 60% of total vehicular emissions. The contribution of different types of vehicles to emission is given in the table below:

Table 3.13: Contribution of different types of vehicles to emission

Sl.No.	Vehicle type	Contribution to emissions (%)
1	Heavy Duty Vehicles	52
2	Buses	18
3	Tractors	13
4	4W	13
5	Light Duty Vehicles	4

As on 1st July 2022, the total number of registered vehicles (excluding those older than 15 and 10 years of Petrol and Diesel respectively) in the NCR districts of Haryana was 44.73 lakhs. A brief break-down of the type of vehicles is given below –

Table 3.14: Type of registered vehicles

Sl.No.	Vehicle type	No. of registered vehicles	% of total
1	Petrol	35,72,164	80%
2	Diesel	7,95,861	18%
3	CNG	78,269	2%
4	Electric/Battery/ZeroEmission	26,695	1%
	Total	44,72,989	100%

3.2.1 Notification of Phasing out old vehicles (Commercial:10 years and private: 15 years)

From time to time, a series of directives from the Hon'ble Supreme Court and the NGT have regulated the age of vehicles in NCR districts of Haryana. The NGT order of April 2015 has banned diesel vehicles older than 10 years and petrol vehicles older than 15 years in NCR districts. Additionally, the Ministry of Road Transport and Highways has issued:

- G.S.R. 653 (E) regarding the Motor Vehicles (Registration and Functions of Vehicle Scrapping Facility) Rules, 2021, dated 23-09-2021
- G.S.R 220 (E) regarding Concession in Motor Vehicle Taxes against submission of Certificate of Vehicle Scrapping, dated 26-03-2021
- Section 59 of the CMV (A) Act, 2019 that provides for fixing age and restricting plying of unfit vehicles
- AIS 129 that defines the standards for manufacturers on reuse, recycling and material recovery from vehicles

For implementation of the orders of Hon'ble Supreme Court and NGT regarding prohibiting the operation of Diesel / Petrol vehicles which have attained the age of 10/15 years in NCR area of the State, the following steps are being taken by the Government:

1. De-registration:

Even before a vehicle reaches the prescribed age, notices are systematised to be sent to the vehicle owner through NIC portal. Three notices to sensitise the owners coming close to this age while one notice is being sent to the vehicle owners which have already surpassed this age. The vehicle owners are being asked to get their vehicles de-registered from NCR registering authorities by taking NOC for non-NCR regions. Those vehicle owners which do not comply with the notices will face automatic deregistration on the e-parivahan portal thereby leaving no scope for them to ply their vehicles anywhere in the country. In a nutshell, the vehicles will become scrap.

2. Enforcement:

Vehicles having a valid registration but older than the limit prescribed by the Hon'ble NGT are being challaned under section 179(1) of the Motor Vehicles Act, 1988, if found plying in NCR area and impounded. Additionally, any vehicles plying without registration after deregistration are being challaned and impounded.

The Transport Department, Haryana submitted that total number of 10 year old diesel vehicles in NCR are 611097, out of which 4160 vehicles have been deregistered till Jan, 2025. On the other hand a total number of 15 year old petrol vehicles in NCR are 1145645, out of which 2377 have been deregistered till date in NCR.

Table 3.15: Details of deregistered Diesel and Petrol vehicles in NCR

Sl. no.	Name of District	10 year old diesel vehicles in NCR		15 year old Petrol vehicles in NCR	
		No. of Vehicles	No. of vehicles deregistered	No. of Vehicles	No. of vehicles deregistered
1	Jhajjar	39866	230	50832	65
2	Rohtak	31630	308	17903	40
3	Faridabad	96820	833	423609	686
4	Bhiwani	40281	310	56677	67
5	Charkhi Dadri	3790	34	2324	7
6	Rewari	35600	163	60363	111
7	Gurugram	146945	779	226099	1088
8	Jind	30597	155	39536	14
9	Karnal	43228	354	92178	63
10	Nuh	24873	110	3974	2
11	Palwal	19020	43	14764	49
12	Panipat	37903	427	104358	81
13	Sonipat	33117	296	19970	91
14	Mahendergarh	27427	118	33058	13
	Total	611097	4160	1145645	2377

The Traffic Department, Haryana has submitted that total 5400 No. of over aged vehicles have been issued with the challans in the last06 years (i.e., 2019-24) by Traffic Police.

The Traffic Police Department of Haryana has issued 1358 number of challans on visible polluting vehicles in NCR from 2019 to 2024. Most of the challans were issued in Gurugram and Faridabad district. Over the next five years, the Government of Haryana will continue to focus on deregistering older vehicles in the NCR districts.

Table 3.16: Challan Imposed to over aged vehicles

Sl.no	Name of District	Challan Issued					
		2019	2020	2021	2022	2023	2024
1.	Karnal	2	15	106	26	47	59
2.	Panipat	0	0	72	30	68	53
3.	Sonepat	0	0	227	3	0	6
4.	Rohtak	0	0	145	21	17	40
5.	Jhajjar	0	0	47	10	5	2
6.	Bhiwani	0	0	65	35	33	26
7.	Jind	0	0	17	3	7	12
8.	Gurugram	219	42	1381	168	119	333
9.	Faridabad	13	06	728	74	352	44
10.	Palwal	0	0	14	1	2	26
11.	Rewari	0	0	129	16	23	45
12.	Narnaul	0	0	129	106	34	104
13.	Mewat	0	0	0	5	33	15
14.	Charkhi Dadri	0	3	53	8	4	5

3.2.2 Policy of Scrapping the old vehicles

Ministry of Road Transport and Highways has issued draft notification E.S.R.190(E) dated 15th March, 2021 on Motor Vehicles (registration and Functions of vehicle scrapping facility) Rules,2021 as per the section 59(4) of the Motor Vehicles Act, 1988(59 of 1988). Transport department, GoT released the GO.MS.No.28 dated:30-09-24 notifying the RVSF policy and administrative sanction for establishment of the Automatic Testing Stations.

The state government notified the Haryana Vehicle Scrappage Policy in 2022 and now issued Haryana Registered Vehicle Scrappage & Recycling Facility Incentive Policy 2024 under which subsidy passed for establishment of RVSF, rebate on SGST, park development and skill development. Presently, 18 no. of RVSF are operational in the state.

Automatic Testing Stations

One inspection and certification centre is operational in Rohtak and is in the process of being upgraded to Authorized Testing Station. Further, the State Transport Department has agreed in principle to setup ATSs in PPP mode. Now, the process of signing of MoU between Transport Department and International Centre for Automotive Technology (ICAT), Manesar is under the process at State Govt. level.

Table 3.17: Distribution of RVSF in the state

Sl.No.	Name of District	No. of RVSF
1	Sonipat	7
2	Jhajjar	6
3	Nuh	1
4	Gurugram	2
5	Rewari	1
6	Palwal	1
	Total	18

(Source: Transport Department, Jan 2025)

3.2.3 Policy/ Plan for Li-battery waste management from scrapped vehicles

Recycling of lithium battery is given under schedule-II of Battery Waste Management Rules, 2020 (amended in 2022). As per existing / previous practices the unserviceable Li-Batteries are disposed-off through licensed scrapped dealers by way of either selling through E-auction or exchange/replacement of such unserviceable old Batteries with new batteries. Exigo Recycling Pvt Ltd Karnal is the only recycler in the state for Li batteries with an annual capacity of 7000 TPA.

3.2.4 Policy / Scheme for Eco- Friendly Mass Rapid Transport System

A) Mass Rapid Transit System:

The Regional Rapid Transit System (RRTS) in Haryana includes the Delhi-Panipat and Delhi-Karnal corridors. The RRTS is a high-speed rail system that connects cities in the National Capital Region (NCR). The Government has future plan of further expansion of Delhi Metro in Faridabad, Gurugram and Sonipat. Following metro projects are running in the state.

I- Gurugram Metro Project (executed by DMRC)

- Total Length -14.47 km – 7.05 km falls in Haryana, 7.42 km falls in Delhi C
- Stations – Haryana Segment-5 Nos. i.e Guru Dronacharya, Sikanderpur, MG Road, IFFCO Chowk, HUDA City Centre
- Stations - Delhi Segment- 5 Nos. (all elevated) i.e. Qutub Minar, Chhatarpur, Sultanpur, Ghitorni, Arjangarh

II - Faridabad Metro Project (executed by DMRC)

• Total Length - 13.875 Km

• Stations – 9 (all elevated) i.e. Sarai, NHPC Chowk, Mewala Maharajpur, Sector 28A, Badkal Mor, Old Faridabad, Neelam Chowk (Ajronda), Bata Chowk, Escorts Mujesar

III-Development of Metro Link from Sikanderpur Station to NH-8, Gurugram (PPP Mode)

• Total Length – 5.1 Km

• Stations – 6 (all elevated)- Sikanderpur, Phase-II, Vodafone, Belvedere Towers, IndusInd Bank Cyber City, Micromax Moulsari Avenue, Phase-III.

IV-Ballabhgarh Metro (Being executed by DMRC)

• Total Length- 3.205 Km

• Stations – 2 (all elevated) i.e. Sant Surdas (Sihi) Metro Station and Raja Nahar Singh Metro Station.

V- Bahadurgarh Metro project (Being executed by DMRC)

- Total Length -11.182 km - 4.875 km falls in Haryana, 6.307 km falls in Delhi
- Stations –Delhi Segment-4 Nos., Haryana Segment-3 Nos. (all elevated) Mundka, MIA, Ghevra, Tikri Border, Pandit Shree Ram Sharma Metro Station, Bahadurgarh City Metro Station, Brig. Hoshiar Singh Metro Station.

VI-Development of Metro Link from Sikanderpur Station to Sector 56, Gurugram (PPPMode)

- Total Length -6.5 km
- Stations- DLF Phase-I, Sushant Lok, Sector 53-54, AIT Chowk, Sector 55-56

Following projects are in pipeline

- Gurugram-Bawal MRTS Project under DMICDC
- HUDA City Centre - Railway Station - Sector-22 - Cyber City
- Extension of Delhi Metro to Kundli
- Metro Connectivity Between Faridabad and Gurugram

- Badsa (AIIMS & NCI Connection) to Dwarka (via NPR)
- Bahadurgarh to Sampla
- Metro Connectivity on Southern Periphery Road (SPR)-5.4 Km

B) City Bus Service

To reduce vehicular emissions, the frequency of use of private vehicles will need to be decreased, and availability and accessibility to clean modes of public transportation will have to be enhanced. Currently, Haryana's bus fleet has 4,767 vehicles. Out of these, 88% are running on diesel engines that adhere to BS-III, BS-IV, and BS-VI emission standards. A diesel bus emits around 822g/km of CO2 on an average; an electric bus emits 62% less pollutants than the diesel bus.

Based on population projections and actualized need for public transport, the Government of Haryana plans to expand the current bus fleet under the Department of State Transport (Haryana Roadways) to 5,400 by 2030. Similarly, GMCBL aims to expand their current fleet to 900 and FMCBL to 500 by 2030. In addition, in January 2024, Haryana launched its city bus service operations across nine cities including Panipat, Yamuna Nagar, Panchkula, Sonipat, Rohtak, Rewari, Karnal, Hisar and Ambala, with an aim to encourage the use of cleaner fuels and strengthening the public transport network in the state. Gurugram Metropolitan City Bus limited (GMCBL) currently operates a fleet of 150 CNG buses, while Faridabad City Transport Services Limited (FMCBL) owns 50 of these.

Under HCAPSD, deployment of 250 e-buses each in Gurugram and Faridabad’s anticipated. Out of the total number of 500 e-buses proposed to be deployed in Gurugram and Faridabad, flexibility is kept to allocate some of the buses to the neighbouring regions of Jhajjar and Sonepat in case of identified need during the course of the project.

3.2.5 Policy for augmenting e-vehicles and initiative for setting up R&D facilities related to EVs

Haryana introduced its Electric Vehicle (EV) Policy in 2022 with an aim to promote clean transport, make the state a global hub for manufacturing of EVs and their components and make EVs affordable for citizens. In January 2024, the state launched city bus service across 9 cities (Panipat, Yamunanagar, Panchkula, Ambala, Karnal, Sonipat, Rewari, Rohtak, and

Hisar) of Haryana with the addition of 375 electric buses to the total fleet. Under HCAPSD, 500 EV buses will be deployed in Gurugram and Faridabad. 145 Cr earmark under HCAPSD as incentives for purchase of new EV three wheelers.

In Haryana, two- and 3-wheelers constitute ~70% of the total vehicle fleet. The Government of India launched the 'Faster Adoption and Manufacturing of Electric Vehicles (FAME)' scheme in 2015 to curb emissions from the vehicular segment and to accelerate the adoption of electric vehicles in India. Haryana introduced its Electric Vehicle (EV) Policy in 2022 with an aim to promote clean transport, make the state a global hub for manufacturing of EVs and their components and make EVs affordable for citizens. In the year 2023, 7,430 electric 2-wheelers and 20,318 electric 3-wheeler vehicles were registered in the state

Under HCAPSD to accelerate scale-up of electrification of 3-wheelers, the state will implement the following interventions:

1. Provide purchase incentives on purchase of new 3-wheelers to promote adoption of clean modes of intermediate public transport. An incentive of up to INR 50,000 is proposed to be provided for the first 20,000 electric 3-wheelers that are registered during the course of the project starting from the date of EV policy revision.
2. Promote transition from older 3-wheeler vehicles to EVs by providing a higher incentive on purchase of electric vehicles after scrapping of old vehicles. The government will provide up to INR 15,000 on the purchase of the first 30,000 3-wheelers replaced with older diesel or CNG fleet via scrapping.
3. Incentivise setting up of 100 charging stations in NCR, providing 20% of fixed capital investment up to INR 10 lakh for setting up 200 charging stations in the national capital region.

The incentives proposed under the above schemes will be in addition to the incentives available under FAME II.

For R&D in the field of e-mobility in co-ordination with State/National or International level Organizations will be promoted by the State Government. The following incentives shall be provided for Research & Development:

- Educational or Research Institutes setting up R&D centers shall be provided subsidy @50% of project cost up to INR 1 crore for developing new electric charging

technology for first 5 units and up to INR 5 crore for developing new electric vehicle technology for first 5 units as per selection of best proposals by the state government in the policy period.

- First 10 Research Institutes / research centers conducting dedicated research on non-fossil-fuel based mobility solution will be provided with INR 5 crore incentive for developing new technology as per selection of best proposals by the state government in the policy period. Additional one-time subsidy of INR 25 lakh will be extended to first 20 college / ITI/ Polytechnic for setting up of infrastructure related to R&D under EV segment.

3.2.6 Notification and enforcement of PUC norms

The PUC norms were notified and all the vehicles are to undergo the PUC certification which is mandatory.

- Validity: A PUC certificate is valid for one year for new vehicles, and then needs to be renewed every six months.
- Penalty: If a vehicle is driven without a PUC certificate, a penalty will be imposed automatically.
- Seizure: If a vehicle continues to be driven without a PUC certificate for a long time, it may be seized as per policy.
- Testing: For diesel vehicles, the pollution levels should be noted with the accelerator fully pressed. The average of five readings is considered as the final reading.
- Emission limits: The PUC certificate states that the vehicle does not exceed the emission limits prescribed by the Motor Laws.

3.2.7 Mechanism for centralized record maintenance of PUC checks, certification and cross check by the concerned transport authorities to be incorporated

The online system for the grant of licenses to set up Pollution under Control Check Centres (PUCC) is in place. The details of the pollution under control certificate issued by the Centres to the motor vehicle owners can be checked on Parivahan Portal.

3.2.8 Online monitoring of PUC implementation

All the PUC centers in the state are being made online. At present there are 2639 numbers of PUC centres in Haryana. Out of these 1756 are situated in the NCR area. For a perspective, 6,81,49,33 numbers of PUCC were issued from 01.01.2021 to 31.05.2022 in the State. These PUCs centres are being monitoring by the DTOs and the district level road safety committees. Regular report of these PUCs centre are being issued on the Vahan portal. From this, it is evident that the State of Haryana has a robust system of pollution checking.

The present PUC regime is not very effective and easily manipulative, so the state is working to find out the technological solutions or new technology to fill the lacunas in the existing regime.

3.2.9 Construction of bypass / ring roads

All the major towns are provided with by-pass roads to divert and decongest the traffic. Further, larger by-passes are also under construction in different cities to further divide and decongest the traffic. There are currently 16 bypasses under construction. Construction of 96.619 Km of bypass / ring road is under the process in the state at different locations. Out of that 4.725 Km of Tohana bypass has been completed and inaugurated on 23 Jan, 2023. The total budget allocated for construction of bypass and ring road is 1030.89 Crore.

3.2.10 Refilling stations retrofitted with vapor recovery system

All the refilling stations in NCR part of State have provided Vapor Recovery System. IOCL, BPCL, HPCL RIL and NAYARA re-filling stations are available in state. The district wise details of no. of refilling stations retrofitted with vapor recovery system are as follows

Table 3.18: District wise details of VRS

Sr. no	Name of District	No. of Re filling stations retrofitted with Vapor recovery System
1.	Bhiwani	214
2.	Faridabad	108
3.	Gurugram	227
4.	Jhajjar	172
5.	Jind	158

6.	Karnal	229
7.	Mahendergarh	185
8.	Mewat	151
9.	Panipat	148
10.	Rewari	244
11.	Rohtak	163
12.	Sonepat	190
13.	Palwal	152
14.	CharkhiDadri	79
	Total	2420

Source: Department of Food & Civil Supplies

3.2.11 Any other Policy / Rules/ Standards/ Guidelines pertaining to vehicular emissions.

Intelligent Traffic Management System (ITMS)

Intelligent Traffic Management System (ITMS) refers to a technology-driven system that uses advanced tools like sensors, cameras, data analytics, communication networks to monitor, manage and optimize traffic flow in real-time. Its primary objective is to reduce congestion, enhance road safety, improve travel efficiency and minimize environmental impact. The detail of ITMS is as under:-

Intelligent Traffic Management System has been implemented in various Districts of Haryana, whereas CCTV Cameras have been installed to monitoring the traffic system in 12 Districts i.e. Panchkula, Yamunanagar, Kurukshetra, Ambala, Karnal, Panipat, Sonepat, Rohtak, Kaithal, Mewat, Gurugram Faridabad and National Highway No. 152-D, Delhi-Mumbai Expressway and NH-44 of Haryana are using these. ANPR Cameras have been installed in Smart Cities i.e. Gurugram, Faridabad & Karnal and rest of Districts are Pushing manually data on ITMS. ANPR Cameras have also been installed on NH-44, 152D and Delhi-Mumbai Express. Details of ITMS are mentioned below:

1. NH-44 (Ambala to Kundli Border) – 80 ANPR (Automatic Number Plate Recognition) cameras installed by Haryana Police. The control room is in Karnal, ADG Traffic Police office.
2. NH-152D (Ismailbad to Narnaul)- 176 ANPR Cameras installed by NHAI. The control room is in Jamni, Jind and Jat Guwana, Mahendragarh.

3. NH-Delhi-Mumbai Expressway (Sohna to Firozpur Jhirka)- 80 ANPR cameras installed by NHAI. The control room is in Sohna, Gurugram.

Firstly, all data are received on the Control Room of CCTV Cameras. After detection of violators i.e. over-speedy, red light jump, w/o helmet, triple rider, zebra crossing, without seat belt etc. data of violators pushed on ITMS. ITMS application are issuing Postal Challans to the violators and after Postal challans, e-challan are generated. An app of Violation on Cameras has also been provided to all Districts of Haryana, which will be connected with ITMS to issuing the Postal Challans and e-challan. This application has been developed by the MoRTH to issuing the Postal Challans also.

3.3 CONSTRUCTION & DEMOLITION WASTE AND ROAD DUST MANAGEMENT

3.3.1 Policy for development of projects/ plants for C&D waste management.

3.3.2 Policy for use of C&D waste in laying and construction of State highways.

3.3.3 Demand creation for C& D waste and alternative use of C& D waste materials.

3.3.4 Penalty provisions for non-compliance of C&D waste management rules at construction sites.

3.3.5 C&D waste processing plants.

3.3.6 Schemes for development of green belt/ open spaces and street sides greening on State highways.

3.3.7 Maintenance, repair and paving of State highways.

3.3.8 Monitoring of road dust especially in and around hotspot areas and in the vicinity of State highways.

3.3.9 Mechanism for development and maintenance of road infrastructures for industrial estates and clusters.

3.3.10 Any other Policy / Rules/ Standards/ Guidelines pertaining to C&D waste and Road dust management.

3.3 Construction & Demolition waste and road dust management

With its rapid urbanisation, Haryana has witnessed massive infrastructural development, particularly in its NCR districts. Cities such as Gurugram and Faridabad contribute to 93% of the construction and demolition (C&D) waste generated in the state. Haryana generated an average of 1,300 tonnes per day (TPD) of C&D waste in 2022. The state faces significant challenges in managing this waste.

3.3.1 Policy for development of projects/ plants for C&D waste management

Government of Haryana has notified the Construction and Demolition (C&D) Waste Management Policy, 2019 in municipal areas on 23.11.2020. There are total 88 Urban local government bodies in 22 districts of Haryana.

In addition, the CAQM has directed a series of actions for dust control in hotspot areas and for monitoring in the NCR districts. This will require stringent surveillance to ensure proper and effective implementation and adoption of appropriate technologies and strategies for dust control. The CAQM, through direction no. 11, has mandated setting up of a web portal for C&D sites of 500 sq m and above plot areas for uploading of self-audits of dust pollution control.

Use of anti-smog guns

The CAQM, in its direction no. 69, has also mandated all construction projects in NCR to adopt effective dust control measures (windbreakers, dust screens, water sprinkling, dust suppressing and soil stabilisation measures etc.). As part of this, the deployment of adequate numbers of anti-smog guns, in proportion to area of construction sites has been mandated:

1. At least 1 for a total construction area between 5,000 - 10,000 sqm
2. At least 2 for a total construction area between 10,001 - 15,000 sqm
3. At least 3 for a total construction area between 15,001 - 20,000 sqm
4. At least 4 for a total construction Area > 20,000 sqm

HSPCB has launched Dust Pollution Control Self Assessment, HSPCB Web portal as per directions no. 11 of CAQM. The portal can be accessed at https://dustapphspcb.com/. Till

Jan 2025, a total of 1550 project sites were registered on the portal. The live report can be downloaded from the Dust Pollution Control Self Assessment website https://dustapphspcb.com/misReportPublic. Following are the enforcement procedure to drive compliance of sites –

- Registration on dust portal
- Availability of functional CCTV camera links
- Submission of fortnightly audit reports
- Adoption of dust mitigation practices

Table 3.19: Violations and rate of environmental compensation during non – GRAP period

Sl.No.	Violation	EC (in INR)
1	Non-registration on dust portal	1,00,000 plot size <20,000sqm. 2,00,000 plot size >20,000sqm.
2	Self-audit report not uploaded / video fencing of project boundary is not done	20,000 plot size <20,000sqm. 40,000 plot size >20,000sqm.
3	Non-deployment of prescribed number of anti-smog guns	7,500/ anti-smog gun not deployed/ day
4	Ineffective dust mitigation measures	15,000 per day
5	Transportation of C&D materials/ waste in uncovered vehicles	7,500 per incident

During GRAP, if violations are observed during inspection, EC will be levied at the first instance at double the rate of non-GRAP period specified above, and closure orders may be issued.

3.3.2 Policy for use of C&D waste in laying and construction of State highways

Indian Standards: The Bureau of Indian Standards (BIS) in 2014 set up the Panel for Aggregates from other than Natural Sources to fast track inclusion of recycled C&D waste as legal substitute of natural aggregate in concrete mix. This was done in the third revision of IS 383: Coarse and Fine Aggregate for Concrete Specification, which was notified in 2016. IS 383 categorizes recycled C&D waste into two types:

i. Recycled Aggregate (RA)—It is made from C&D waste, which may comprise concrete, brick, tiles, stone, etc.

ii. Recycled Concrete Aggregate (RCA)—It is derived from concrete after requisite processing.

The revised standard IS 383 permits use of recycled aggregates up to 25 per cent in plain concrete, 20 per cent in reinforced concrete of M-25 or lower grade and up to 100 per cent in lean concretes of grade less than M-15.

National Building Code of India: 'Approach to Sustainability' was added as the 11th chapter to NBC in 2015. It states that: i. Recycled coarse aggregate may be used in concrete for bulk fills, bank protection, base/fill of drainage structures, pavements, sidewalks, kerbs and gutters etc. ii. Up to 30 percent of natural crushed coarse aggregate can be replaced by the recycled concrete aggregate.

iii. This percentage can be increased up to 50 per cent for pavements and other areas under pure compression specific to the standards and practices pertaining to construction of roads.

Indian Road Congress published IRC 121-2017 "Guidelines for Use of Construction and Demolition Waste in Road Sector".

- These guidelines deal with the use of processed C&D waste (RA-Recycled Aggregates and RCA-Recycled Concrete Aggregates) for road works such as embankment, sub-base and base course, for manufacturing kerb stones, paving blocks and for replacing a part of aggregates in different types of cement concrete pavement (PQC, DLC, Roller compacted concrete pavement, etc). C&D wastes can be used in all types of roads including NH provided relevant specification requirements as given in these guidelines are met with.

- Processed C&D waste (RA or RCA) should not be used for constructing reinforced soil walls or for making concrete to be used in structural/load bearing elements

(Structures like bridges, culverts, flyovers, etc), pre-stressed concrete and also for bituminous pavement layers.

Government of Haryana has notified the Construction and Demolition (C&D) Waste Management Policy, 2019 in municipal areas on 23.11.2020.

3.3.3 Demand creation for C&D waste and alternative use of C&D waste materials

As per C&D Waste Management Policy, 80% of recycled C&D waste products shall be put into effective use though municipal and government construction or related activities.

It was understood from the deliberations by the MoEF&CC, GoI and MoHUA on circular economy that the developing guidelines for usage of the C&D waste are under consideration. The same will be followed and implemented by the GoH.

Haryana Government's policy for C&D Waste Management in municipal areas notified on 23.11.2020 already includes the provision for use of C&D waste in laying and construction of state highways. Policy for C&D Waste Management in municipal areas includes a provision for use of 80% of recycled C&D waste products into effective use though municipal and government construction or related activities. The policy also empowers an Urban Local Body to incentivize the use of C&D waste products in construction activities like non-structural concrete, paving blocks, lower layers of road pavements, colony and rural roads.

Gurugram has experienced exponential growth in the last three decades. Between 2011 and 2021, the city's population has risen from 8.8 lakh to 18.9 lakh. Such rapid growth has created a significant demand for new infrastructure, leading to an increase in construction and demolition (C&D) waste. The management of this waste has been a challenge. It is estimated that the areas governed by the Municipal Corporation Gurugram (MCG) alone generate approximately 1,200 tons per day (TPD) of C&D waste. Additionally, the areas governed by the Haryana Urban Development Authority (HUDA) also generate a substantial quantity of C&D waste.

C&D waste management system in Gurugram is divided into two stages:

1. Primary collection: In February 2019, to strengthen primary collection, MCG appointed a concessionaire to handle the collection and transportation to designated collection centres.

This includes managing these collection centres, assessing the waste, maintaining a database, and operating an Internet of Things (IoT)-based customer interface solution.

2. Secondary collection: C&D waste stored at designated locations is collected by IEISL using tipper trucks. Waste received at the processing facility undergoes inspection at the entrance to ensure it is not mixed with other solid wastes. A 40-ton bridge has been installed at the processing facility, equipped with a computerized system for recording weights, billing, and tracking vehicle movement. After weighing, trucks are brought to the unloading area. Once the waste is unloaded, a JCB is used to level the incoming material to facilitate segregation. Wood, steel, plastic and bituminous materials are manually segregated and sold to authorised recyclers. The remaining waste is segregated into three parts and the output of the crusher is deposited on the main conveyor belt through feeders.

Inert materials recovered from the C&D waste management plants of Municipalities have been proposed to be utilised in the embankment construction, Expressway being constructed by NHAI in Faridabad District.

The state will take active measures to promote reuse of the C&D processed materials. For this, the state will introduce a buy-back policy to mandate all government departments involved in construction work to use a minimum percentage of C&D processed aggregates in their construction projects. In addition, the state will undertake at least two demonstration projects constructed with at least 20% C&D processed materials used in their construction.

Under HCAPSD, the DULB will identify two such projects and undertake construction through buying the C&D waste material from the existing plant facilities in Haryana. Further, the state will also undertake extensive citizen awareness activities to drive reuse of C&D processed aggregates.

The estimated total budget required for streamlining C&D waste management is INR 289 crore. These initiatives will be funded under the budget head of “C&D waste management” allocated to the municipal corporations of Gurugram and Faridabad.

Recycling of C&D waste starts with segregation of unwanted residual material such as plastic, wood, metal fragments, etc (constituting 10% of the total waste as per the TIFAC composition). The remaining bulky waste is fed into crushers and reduced to smaller and smaller sizes, with size fractions separated depending on end use. Fines are typically best recovered with a “wet process”. These coarse and fine aggregates of various sizes can be used directly as recycled aggregates in construction or used to manufacture a range of pre-cast products.

The major applications of C&D waste are listed below:

- Granular Sub-Base (GSB)—Crushed C&D waste can be used as GSB layer for road construction, regardless of the type of construction. The granular sub-base layer is formed by piling and compacting C&D aggregates of different sizes one over the other directly below the pavement surface. This acts as the load bearing and strengthening component of the pavement structure; in addition, it provides drainage for the pavement structure and protects the structure from frost.

- Recycled Concrete Aggregates (RCA)—Pure concrete waste can be recycled to make aggregates of different standard sizes to replace natural aggregates in construction processes.

- Recycled Aggregates (RA)—Crushed aggregates of standard size made from a mix of C&D waste materials is termed as Recycled Aggregates (RA). RA can be used for partial replacement of natural aggregates for construction of non-load bearing structures.

- Manufactured Sand (M-Sand)—Manufactured sand is also produced by crushing of C&D waste, and the finer particle fraction can be used to replace natural sand in construction of non-load bearing structures.

- Smelting—Scrap metal recovered from C&D waste is melted through smelting process and recycled to make new products

The guidelines prepared will be implemented towards the demand side management of the processed products from C&D waste.

3.3.4 Penalty provisions for non-compliance of C&D waste management rules at construction sites

Haryana Government (through Department of Urban Local Bodies) has already notified the Policy for C&D Waste Management in municipal areas on 23.11.2020. The policy is in line with the C&D Waste Management Rules and Regulations of 2016 notified by CPCB. As per the policy, setting up a C&D waste processing unit has been made mandatory for Urban Local Bodies above a population of 5 lakhs. For those ULBs with paucity of available land creating hindrances, the policy allows for setting up of a mobile or semi-mobile C&D waste processing plant.

Penalty provisions for non-compliance of C&D waste management rules at construction sites. Penalty provisions have already been notified vide policy dated 23.11.2020 for C&D Waste Management. For NHAI projects, penalty provisions are imposed as per standard EPC/HAM Contract Agreement of NHAI/MoRT&H as per O.A. no. 21/2014.

3.3.5 C&D waste processing plants

It was understood from the deliberations had by the MoEF&CC, GoI and MoHUA on circular economy that the developing guidelines for usage of the C&D waste are under consideration. The same will be followed and implemented by the GoH.

Table 3.20: Details of C&D processing plants

Sl.No	District	TPD
1	Gurugram	300
2	Faridabad	300
3	Rewari	400

The total C&D Waste generation is approx. 1500 TPD (for year 2020). In the state, there are 03 nos. of C&D waste processing plants. The details of the plants are given in the following table no. 3.20.

Under HCAPSD an allocation of 289 Cr has been made to Streamline Construction and Demolition (C&D) waste management in Gurugram and Faridabad

Processed Construction and Demolition (C&D) waste can be utilized in a variety of applications which replace mined aggregate. Some of these are:

- Precast Products with cement as the binder : Such as bricks, blocks, tiles, paver blocks, kerb stones, and prefab walls.
- Concrete: As recycled concrete aggregate (RCA) in concrete mixes. RA can be used up to 25% in plain concrete of compressive strength of upto 20MPa and up to 100% in lean concrete.
- Base Material: in construction of road and platforms as a sub base pavement layer
- Drainage material: RCA can be used as a drainage material in septic systems and pervious concrete.
- Earth friendly blocks : The loam which is a leftover of the recovered aggregate can be used for compressed earth blocks without using cement as binder,using just lime and GGBS.

3.3.6 Schemes for development of green belt/ open spaces and street sides greening on State highways

Dust and pollution mitigation through forest sinks is important to control pollution. This green walling is needed against desertification and ingress of dust and cleansing of toxic gases. High level protection will have to be accorded to the entire stretch of Aravalli range in Haryana and Delhi and its different categories of forest areas.

The Van Mitra scheme is an initiative by the government to encourage community participation in tree plantation activities on non-forest lands. Recognizing the critical role of green cover for a healthy environment and the shortfall in forest areas in Haryana, this scheme aims to involve local communities directly in enhancing tree cover across the state. By leveraging the support of local volunteers spread all over the State, the scheme envisions fostering a culture of environmental guardianship and personal commitment towards tree plantation and care. The maintenance of tree planted under “Ek Ped Maa Ke Naam” campaign launched by Hon'ble Prime Minister of India in June, 2024 shall be integrated with Van Mitra Scheme.

All registered applicants on the Van Mitra portal shall be given opportunity to plant minimum of 10 and upto 1000 saplings on non-forest land identified by them within a designated time frame, which will be communicated via SMS. The applicants shall identify non-forest land and dig pits, geo-tag and upload pit photo on the Van Mitra App. After successfully digging pits and uploading information on Van Mitra Portal, the applicants can collect saplings from designated nurseries operated by the Forest Department. The Van Mitra portal/App (http://164.100.137.122/vanmitra) and the Forest Department's website (https://haryanaforest.gov.in/) will provide a comprehensive list of these nurseries, including their locations and the names of the nursery incharges. The digging of pits and plantation by the applicants shall be carried out according to the specified pit size and plantation techniques detailed in the training material. Additionally, all applicants who successfully dig pits, geo-tag and upload photographs on Van Mitra portal will be given incentive of Rs.20 per pit. After collection of plants from forest nurseries and planting them on the dug up pits, geo-tagging and uploading photographs on the portal on Van Mitra Mobile app, The Van Mitras shall receive incentive of Rs. 30 per plant, directly credited to their account. The state has developed about 609 acre area for Herbal garden, 172.125 acre area for oxy Van and 232.5 acre area under Nagar Van scheme.

In view of importance of protection and proper maintenance of open spaces, parks, green belts the conversion of part or whole of open spaces, parks, green belts in the entire State of Haryana has been done and the details of Green parks/belt is shows in the table no. 3.21.

Plantation in Industrial state

18,345 trees and 14,050 shrubs have been planted in IEs& IMTs of HSIIDC in the financial year 2021-2022. Oxygen Park in Phase-IV IMT Bawal is being developed by Miyawaki Technique. This park is being developed in association with Hitachi Astemo FIE Pvt. Ltd. About 5100 plants (Fruit plants, shady trees & flowering plants etc.) have been planted.

Further, 19,650 trees and 21,000 shrubs were planted in IEs & IMTs HSIIDC in the financial year 2022-23.

Table 3.21: Details of Green parks/belt in Haryana

Sr. No.	District Name	No. of Parks	Developed/ plantation	Agency not deputed for maintenance	Area of parks (sq.mtr)
1	Jind	22	18	0	171717
2	Sonepat	630	569	68	1688081
3	Rewari	65	65	0	285261
4	Palwal	41	41	0	107203
5	Panchkula	306	306	0	1934351
6	Nuh	9	9	0	29222
7	Kurukshetra	205	204	0	1108367
8	Hisar	151	150	2	547281
9	Charkhi Dadri	18	7	11	52641
10	Karnal	232	232	0	1464464
11	Fatehabad	150	150	0	290563
12	Ambala	220	220	0	442215
13	Sirsa	107	100	78	329015
14	Panipat	155	155	0	1078145
15	Jajjhar	124	124	0	580092
16	Rohtak	162	162	0	960778
17	Bhiwani	121	121	0	497438
18	Kaithal	97	97	0	904758
19	Yamuna Nagar	96	96	0	309695
20	Faridabad	802	800	2	4067087
21	Mahendergarh	51	51	0	278848
23	Gurugram	261	258	11	4661948
	Total	**4025**	**3935**	**172**	**21789173**

Plant4Mother Campaign

On the occasion of World Environment Day, Prime Minister Shri Narendra Modi launched #Ek Ped Maa Ke Naam # Plant4Mother campaign by planting a sapling of Peepal Tree at Buddha Jayanti Park, New Delhi. In Haryana, 45795 saplings were planted in different industrial state of the district from June 05 to Aug. 07, 2024.

Table 3.22: Status of Greening Plantation 2024-25 (September,2024)

Department	Target 2024-25	Achievement	%achieved	Survival
Forest	10847557	10488982	96.7	3294764
ULB	1000000	620460	62.0	498849
HSIIDC	200000	91300	45.7	82170
HSVP	50000	37188	74.4	37188
PWD	500000	167735	33.5	164380
GMDA	1500000	1353712	90.2	1150655
FMDA	1000000	260000	26.0	187200
NHAI	1000000	1002754	100.3	962646
School Education Department	1000000	884999	88.5	693750
Panchayat Department	1000000	589503	59.0	471602
Industrial Association	500000	206345	41.3	185676
TOTAL	**18597557**	**15702978**	**84.4**	**7728880**

3.3.7 Maintenance, repair and paving of State highways

Maintenance of the State Highways is being practiced by PWD (B&R). The repair/improvement work of various State Highways with total length of 707 km and amount of Rs. 616.83 Cr. has been approved by the Govt. Out of 707 km, 361 km length of State Highways has been repaired/improved with the cost of Rs. 235.49 Cr during the year 2024. Further, 346 km length of State Highways will be improved/repaired during the year 2025.

The maintenance work fall in three categories of maintenance as under:

i) **Routine Maintenance**: These are routine activities to be performed on a regular basis throughout the year. It consists of both off-carriageway and on-carriageway activities. Most common routine maintenance activities are as under:

- Filling potholes, patching surface and repair edges of pavement
- Repair shoulders and side slopes
- Clear drains, allowing free passage of water
- Remove debris from roadway and drains

- Maintain road signages and pavement markings

ii) **Periodic Maintenance**: Periodic maintenance covers renewal of road surface depending upon the initial construction standards and quality, traffic and weathering effect.

iii) **Others:** During emergencies on account of natural phenomenon or any other situations like accidents.

The plantation activity is being taken up regularly on the kerb side and central verge. The plantation on 690 km central verge has been done by Horticulture wing of PWD(B&R) during the year 2024. Kundli-Manesar-Palwal green field bypass highway of approximate 93 Km constructed for decongestion of traffic in Delhi.

3.3.8 Monitoring of road dust especially in and around hotspot areas and in the vicinity of State highways

Haryana State Pollution Control Board is monitoring the ambient air at 75 locations which include the hotspot area managements and in the vicinity of the State and National Highways. Regular water sprinkling and deployment of anti-smog guns near hotspot areas is being taken care by Urban Local Body Department. 111 water sprinkler, 69 MRSM, 24 anti smog guns have been deployed near hotspot areas while additional requirement of 55 water sprinkler, 69 MRSM, 82 anti smog guns to cover all the area under ULB. End to end paving of roads is desired to mitigate the dust emission from the roads. Under HCAPSD project, an allocation of 699 Cr has been done for creating “dust-free” roads through end-to-end paving, strengthening effectiveness of use of mechanised sweeping and increasing green cover along central and side verges in the NCR. Under this 500 Km roads, berms will be paid.

3.3.9 Mechanism for development and maintenance of road infrastructures for industrial estates and clusters

In the state, Haryana State Industrial & Infrastructure Development Corporation (HSIIDC) is responsible for development and maintenance of road infrastructures for industrial estates and clusters. Following table shows the district wise detail of road constructed and maintained in the industrial estate in last 03 years i.e from 2021-22, 2022-23 and 2023-24.

Total 118 km of road constructed and 954 km of road maintained in the industrial states and clusters in last 3 years (ie., from 2021 to 2024). The allocated budget for the construction and maintenance of roads in the industrial estate was 973.11 Cr, out of which 320.72 Cr has been utilized till 2024.

Table 3.23: District wise detail of road constructed and maintained in the industrial estate

Sl. no.	Name of District	Km of road constructed in industrial states (2021 to 2024)	Km of road maintenance in industrial states (2021 to 2024)
1	Gurugram	8.41	417.66
2	Nuh	4	0
3	Faridabad	0	35
4	Sonepat	52.38	161.83
5	Rewari	19.6	135.13
6	Rohtak	0	21.9
7	Panipat	9	1.8
8	Karnal	3	0
9	Jhajjar	11	162
10	Jind	1.2	0
11	Sirsa	3.3	0
12	Ambala	6.5	18.66

(HSIIDC)

3.3.10 Any other Policy / Rules/ Standards/ Guidelines pertaining to C&D waste and Road dust management

HSPCB has launched Dust Pollution Control Self Assessment, HSPCB Web portal as per directions no. 11 of CAQM. The dust portal is part of an effort to monitor dust pollution and enforce the Graded Response Action Plan (GRAP) in NCR. In all new relevant changes of land use permissions and approval of building plans for size more than 500 sq.m in the NCR area. The dust portal enables the authorities to track dust mitigation efforts at construction sites, requiring builders and developers to report on their practices, install CCTV cameras, and provide live feeds to the portal. They will also be expected to deploy anti-smog guns in compliance with directions from the Commission for Air Quality Management (CAQM).

There are 70 Nos. of Mechanical Road Sweeping Machines are available with municipalities to tackle the road dust. Further, water is also sprinkled on roads to abate the dust as per requirements.

Common guidelines /Action points for implementation to reduce the emissions from C&D and Road dust:

- All the work /construction sites to be covered/enclosed to prevent the lofting of the dust - occupier
- The demolition waste works if any approved, have to be taken up with a tie up for lifting the waste to the processing /secured placed-ULB
- The C&D waste carrying vehicles shall be covered or wherever possible closed containers to be used.-ULB
- All such vehicles operation shall be taken up from 9.00 pm to 6 AM. This will reduce the traffic congestion and also the disturbances caused due to loading and unloading activities.-ULB and Traffic Police.
- End to end pavement to be taken up in all the identified traffic corridors and junctions-ULB.
- Regular cleaning of the roads and removal of silt from roads after every monsoon and before summer. Monitoring by appointed person from ULB - ULB.
- Identification for provision of plantation to have green cover wherever possible-ULB
- Development of vertical gardens where the green cover is not possible-ULB.
- Earth works on the main traffic corridors to be restricted with containment of loose soil and providing enclosures-**ULB and other stake holders**.
- The Ambient Air Quality monitoring of all the major towns are to be carried out at regular intervals for compliance verification and to take corrective measures required if any.-**HSPCB**
- The AAQ data of the town need to be disseminated through the **ULB/ District Portal**.
- A half yearly report has to be prepared on the compliance status of air pollution with respect to PM_{10} and $PM_{2.5}$ along with the actions initiated as per the state action plan and approved micro action plan. The recommendations if any are to be made-**HSPCB, ULB and Traffic Police Department.**

3.4 EMISSION FROM BURNING OF WASTE

3.4.1 Enforcement of municipal solid waste (MSW) management Rules.

3.4.2 Policy for MSW management.

3.4.3Policy for legacy waste management at dumpsites.

3.4.4 Policy for development and Construction of Waste to Energy Plants, Waste Collection and Segregation status in the city (%).

3.4.5 Material Recovery Facility. Waste to Energy and Waste to Compost plants.

3.4.6 Control open burning of MSW.

3.4 Emission from burning of waste

Open burning of waste as well as spontaneous fires in landfills contribute substantially to air pollution and are a source of high toxic exposure for local communities. The enforcement measures that include ground inspection and penalties and emergency response to public complaints have limited impacts. The effective solution lies in proper waste management. However, the infrastructure for waste collection, transfer, material recovery and safe disposal has to be provided. This leads to waste accumulation in the open that is burnt for easy disposal. Waste management has to ensure proper quantification of waste generation, 100% source segregation (wet and dry, including domestic hazardous waste and sanitary), 100% door-to-door collection of segregated waste from each household, material recovery and recycling and minimize fresh dumping of waste in landfills and full remediation of legacy waste. This requires integration of the informal sector as well.

3.4.1 Enforcement of municipal solid waste (MSW) management Rules

The Haryana State Policy & Strategy on Solid Waste Management has already been finalized and notified in the year 2018. The policy is in line with the SWM Rules of 2016 issued by CPCB. The objectives of the policy are -

1.Providing directions for carrying out the waste management activities (door to door collection, source segregation, transportation, processing and disposal) in environmentally, socially and financially sustainable manner

2. To enhance capability of ULBs for the effective waste management services in the region.
3. To practice scientific disposal of the waste lying on the existing dumpsites
4. Create public awareness through information, education and communication campaigns and educate the waste generators.
5. To introduce "Polluter Pays Principle" in the state, by collecting User Charges from the waste generators.
6. To establish a self-contained and efficient operating framework for MSWM
7. To make the task of solid waste management a safe and honorable occupation for the workers.
8. To provide guidelines for bulk waste generators

As per the policy, the Department of Urban Local Bodies (DULB), Govt. of Haryana is responsible for the implementation. The policy defines the following aspects in details -

1. Primary collection
2. Street sweeping and roadside drain cleaning
3. Secondary collection and transportation, where required
4. Waste processing and disposal
5. Management of special wastes, incl. domestic hazardous waste

3.4.2 Policy for MSW management

There are 87 ULBs and 6230 Village Panchayats in the State of Haryana, which generates approximately 6301 TPD solid waste in urban area and 3016 TPD in rural area. The details of waste management is given in the following table:

Table 3.24: Over all waste management status in States/UTs

S.N.	Particulars	Urban Local Body Department	Village Panchayat
1	**Numbers of ULBs**	87	6230
2	**Over all waste management status in States/UTs**		
a	Quantity of MSW generated (TPD)	6301	3016
b	Quantity of MSW collected (TPD)	5093	851
d	Quantity of MSW processed (TPD)	4200	680

(June 2024 for Panchayat) (Jan 2025 for ULB)

For Compliance to Schedule-I of SWM Rules by 100%, D2D collection, segregation and covered transportation have been achieved in all the 87 ULBs of the state while Development & Panchayat Department will achieve the same by the end of March 2025.

Table 3.25: Details of Door to door collection

Waste Collection	Urban Local Body Department		Development & Panchayat Department			
	Existing	Target	Existing	Target	Gap	Timeframe
ULBs in which D2D collection implemented (No.)	87	87	1950	6230	4280	31.03.2025
ULBs in which segregation of waste is implemented (No.)	87	87	1950	6230	4280	-do-
ULBs in which transportation of segregated waste is implemented (No.)	87	87	1950	6230	4280	-do-

3.4.3 Policy for legacy waste management at dumpsites

The Swachh Bharat Mission Urban 2.0 (SBM 2.0) has mandated remediation of legacy dumpsite through bio-mining, enforcement and incentivization for segregation through extensive bye-laws levels interventions, augmentation of capacity for treatment-processing-recycle-recovery to meet existing and projected generation of municipal solid waste and divert maximum waste from reaching the landfill.

Details of Integrated Solid Waste Management clusters

Total 13 Integrated Solid Waste Management clusters have been formed in Haryana. Out of 13 clusters, 2 waste to energy clusters namely Sonipat-Panipat Gurugram-Faridabad WTE are under implementation. Sonipat-Panipat (700 TPD) waste to energy plant is completed on 15, August, 2021 .11 clusters are based on open technology and the selected agency to decide the technology. Out of these 11 Clusters, 3 clusters namely Karnal-Kaithal-Thanesar Cluster (638 TPD), Bhiwani Cluster (155 TPD) and Sirsa Cluster (168 TPD) have been awarded to the agencies which are under implementation and these clusters are based on waste to compost technology and the concessionaires of the respective clusters have started the work of collection and transportation of waste. For Faridabad-

Gurugram cluster, Karnal-Kaithal- Thanesar cluster, Karnal-Kaithal- Thanesar cluster, Bhiwani cluster and Sirsa cluster the work allocated to M/S Ecogreen Energy Pvt. Ltd., M/S V.N. Engineering Co., M/S Shri Shyam Associates and M/S Pooja Consultation Co., respectively. Tender for rest 8 Clusters will be invited shortly. The details of the clusters are given in the Table 3.26.

Table 3.26: Details of Integrated Solid Waste Management clusters

S.N.	Name of Cluster	Number of ULBs	Name of ULBs in the cluster	Estimated Capacity in (TPD)
1.	Sonipat-Panipat	4	Sonipat, Panipat, Gannaur, Samalkha	700
2.	Faridabad - Gurugram	2	Faridabad, Gurugram	2100
3.	Karnal-Kaithal-Thanesar	18	Karnal, Indri, Nilokheri, Tarori, Gharaunda, Nissing, Assandh, Thanesar, Shahbad, Ladwa, Kaithal, Kalayat, Rajound, Cheeka, Pundri, Pehowa, Ismailabad, Siwan	638
4.	Bhiwan	4	Bhiwani, Bawani Khera, Charkhi Dadri, Loharu	155
5.	Sirsa	5	Sirsa, Rania, Ellenabad, Kalanwali, Mandi Dabwali	168
6.	Ambala-Yamunanagar-Panchkula	9	Ambala, Ambala Sadar, Naraingarh, Panchkula, Kalka, Yamunanagar-Jagadhari, Barara, Radaur, Sadhaura	760
7.	Rohtak-Bahadurgarh-Jhajjar	12	Rohtak, Kalanaur, Meham, Gohana, Bahadurgarh, Kundli, Kharkhoda, Jhajjar, Sampla, Beri, Farukhnagar, Pataudi-Mandi	640
8.	Hisar-Hansi-Fatehabad	11	Hisar, Adampur, Barwala, Hansi, Siwani, Fatehabad, Bhuna, Ratia, Tohana, Jakhal Mandi, Uklana	500
9.	Jind	6	Jind, Narwana, Uchana, Safidon, Narnaund, Julana	230
10.	Manesar- Rewari	9	Manesar, Rewari, Bawal, Dharuhera, Mahendergarh, Kanina, Nangal, Choudhary, Narnaul, Ateli-Mandi	470
11.	Palwal-Sohna	8	Palwal, Sohna, Hathin, Hodal, Nuh, Tauru, Panhana, Firozpur Jhirka	250

These cluster currently generate about 2500+ TPD waste which will be more than 3800 TPD by 2027. Vide letter memo no. Tech/SBM/2022/5035 dated 29.08.2022, action plan for legacy waste and ISWM Cluster already submitted to MoHUA for the funds tune to the Rs. 105.27 Cr. and 155.00 Cr. for ISWM cluster & Legacy waste.

Details of legacy waste

Total 30.89 Lakh MT legacy waste is generated in 71 ULBs. 35.62 Lakh MT legacy waste has been processed upto Dec. 2024. Bioremediation of legacy waste in 41 ULBs is already in process. The same in remaining ULBs will be planned and completed using the existing and newly emerging scientific technologies. The total cost estimated for remediation of 37 sites is 100 Crore which is being managed through funding from Swachh Bharat Mission 2.0 and state government funds.

3.4.4 Policy for development and Construction of Waste to Energy Plants Waste to Energy Plants Waste Collection and Segregation status in the city (%)

Table 3.27: Waste – to – Energy Plants: (Number/names of towns/capacity)

Sl. No.	ISWM WtE Plant	Capacity (TPD)	Power Generation Capacity (MW)	Status of Operation
1	Sonipat-Panipat	700	8	Plant has been operationalized since 16.08.2021

3.4.5 Material Recovery Facility. Waste to Energy and Waste to Compost plants

The details of Material Recovery Facility is given in following table

Table 3.28: Details of solid waste management facilities in the state

Facility	Number of Facilities	Capacity
Material Recovery	70	2477 TPD
Plastic Recycling	85	-
Composting Plant	59	2879 TPD
Compost Pits	1674 Pits 1545 Park Pits for horticulture waste	2000 TPD
Bio methanation	3	220 TPD
Landfills	7	98092

3.4.6 Control open burning of MSW

State strategies on continued investment in waste management infrastructure, coupled with robust policy implementation and active community engagement by enhancing waste segregation, promoting decentralized processing, and enforcing measures to prevent open burning. A complaint redressal mechanism is established in all the ULBs for open burning and sensitization programs will be conducted.

Common guidelines /Action points for implementation to stop the burning of the waste:

- Public Awareness to be increased on the segregation and on open burning-ULB
- Awareness to the ULB staff for stopping the open burning practice -ULB
- Implementation of the penalties on open burning- ULB and HSPCB.
- Public Grievance redressal portal to be strengthened with open burning related tracking of complaints and recurrence areas to be kept under surveillance through IP cameras – ULB and HSPCB
- Segregation of the waste to be promoted - ULB

3.5 EMISSIONS DUE TO BURNING OF AGRO RESIDUES

3.5.1 In-situ treatment of biomass residues for management of stubble burning

3.5.2 Ex-situ treatment of biomass residues for management of stubble burning

3.5.3 Biomass projects with respect to the hotspots of crop residue burning

3.5.4 Use of biomass / crop residue based pellets mass blending with coal and its co-firing in thermal power plants with blending ratio which needs no modification in boilers

3.5.5 Policy for supply chain mechanism for in-situ and ex-situ management of stubble

3.5.6 Supply chain for crop residues to cow shelters.

3.5.7 Development of effective protocol for monitoring of fire incidents including crop area consideration and crop fire area data.

3.5.8 Collaboration with ISRO and preparation of Satellite based maps for monitoring of fire incidence.

3.5.9 Enforcement measures

3.5.10 Awareness Campaign

3.5 Emissions due to burning of agro residues

Paddy straw burning is currently practiced on a large scale in Haryana to clear the fields for the sowing of rabi crops, that is, rainy wheat and potato, because the time window available between the harvesting of paddy crop (September 20 – November 15, depending upon the varieties of paddy) and the sowing of the next crop is very short (two–three weeks). Burning of paddy straw is most common in combined harvested fields because it leaves harvested paddy straw and standing stubbles (25–30 cm height) in the field. Paddy straw is seldom used as fodder due to its high silica content. Table 3.29 shows the No. of fire incidents identified by HARSAC.

Table 3.29: No. of fire incidents identified by HARSAC

Year	No. of fire incidents
2020	4997
2021	6987
2022	3661
2023	2303
2024	1406

3.5.1 In-situ treatment of biomass residues for management of stubble burning

Various CAQM directions with regard to paddy stubble management are being complied with by the State including the directions issued vide direction no. 7 dated 10.06.2021 and direction no. 80 dated 12.04.2024.

Strategic Plan to Achieve Zero Burning

1. State Government declared Common Determined Rate for Paddy Straw @Rs 2500/MT and additional Rs 500/MT for moisture <20%- Notified on: 13.03.2023
2. Continuation of Scheme for Rs. 1000 per Acre In-situ/Ex situ , Rs 7000/Acre MPMV and Rs 4000/Acre DSR incentives.
3. Monitoring of Active Fire Location-(AFL) by ICAR/ HARSAC
4. Strategy formulated to achieve Zero Burning Events for kharif 2024 by taking preventive measures and through IEC activities

   Haryana is the only state in the country to launch initiatives 1 & 2 above.

Haryana has deployed more than 100000 crop residue management machines(CRMs) since the inception of the scheme i.e. 2018-19 to 2023-24. Approx. 70% machines have been given to small and marginal farmers. Reduction in stubble fire incidents from 6,987 in 2021 to 3,661 in 2022 (47% reduction) to 2,303 in 2023 (37% reduction). In 2024 the AFLs further reduced to 1406 as per HARSAC report.

Budgetary provisions sanctioned for the procurement of various machines to control stubble burning, along with data from the last three years and the corresponding results are submitted in the table as under:-

Table 3.30: Budgetary provision for CRMs

Year	Release (Rs in Cr)	Expenditure (Rs in Cr)	Individual Machines	CHCs/ Machines
2022-23	223.46	87.20	7150	19/64
2023-24	150.00	101.00 +18.00	11007	0
2024-25	125.00	110.00 (tent)	9884	0

Under in-situ Crop Residue Management practices, the harvested crop stalks/ stubbles are chopped into small pieces and incorporated in-situ into the soil to recycle the crop residue.

Various equipment/ machines such as Super Straw Management System (SMS) attached with existing combine harvester, Happy Seeder, Straw Chopper / Mulcher, Rotary Slasher, Reversible M B Plough, Super Seeder, Crop Reapers etc. have been developed and successfully demonstrated in the farmers, fields.

There are already more than 100000 machines which have been provided for In-Situ and Ex -situ Management of Crop Residue. However, for its optimum utilization the State is providing Rs 1000 per Acre as operational charges so that the same may be utilized to its maximum capacity.

Incentives

- An incentive @Rs. 1000/- per acre for in-situ management of crop residue.
- Special emphasis on Super Seeder
- Subsidy@50% for individual farmers
- Red, Yellow and green panchayats incentives

Table 3.31: State Action Plan of remediation of paddy burning Based on the District Action Plan

Sl. No.	Points	Total
1	Estimated paddy area 2024 (In Acres)	3887353
	Area under basmati (In Acres)	1949478
	Area under non-basmati (In Acres)	1938075
2	Estimated paddy straw generation 2024 (In Lakh Metric Ton/ LMT)	81.08
3	Management strategies	
	In-situ management (In LMT)	33.04
	Ex-situ management (In LMT)	25.39
	Fodder (In LMT)	22.65
4	Total CRM machines available (2018-19 to 2024-25)	100882

3.5.2 Ex-situ treatment of biomass residues for management of stubble burning:

In the State of Haryana, the stubble collection is done by private biomass/CBG/Paper mills /Cardboard /Ethanol plants directly from farmers/aggregators. As per information provided by New and Renewable Energy Department, Haryana, 4.53 lakh metric ton paddy crop residue have already been purchased by major 6 Industries. An online mechanism on departmental portal www.agriharyana.com for linkage between farmers and industries/ gaushala/ end-user is in place

In Ex-situ crop residue management crop residue is taken out of the field by using ex-situ management machinery for utilization as fodder/ fuel/inputs in biomass/CBG/Bio-Ethanol/Packaging/Cardboard & other related industries. These options have the potential to effectively utilize the crop residue/straw and add economic value, thereby minimizing the agricultural residue burning in and around NCR. Ex-situ options have been attempted by both the Government and private

Strategies for Ex-situ treatment

- Special emphasis on bailing units i.e. straw baler, shrub master & hay rake
- Subsidy@50% for individual farmers
- A total of 1405 nos. of bailing units will be provided as per demand submitted by field officers in district action plan.
- An incentive @Rs. 1000/- per acre for ex- situ management of crop residue.
- Biomass supply chain initiative for adequate supply of biomass to the industries will be implemented as per Govt. of India guidelines.

Additional State Specific Initiatives

- Incentive @ Rs. 1000/- per acre for in-situ/ex-situ management of paddy crop residue.
- Incentive @ Rs. 7000/- per acre for diversification of paddy area with alternative crops under Mera Pani Meri Virasat scheme.
- Incentive @ Rs. 4000/- per acre for adoption of direct sowing of rice.
- New and Renewable Energy Department have been tasked to identify&allocate cluster of villages producing bio-mass in vicinity of various industries in consultation with Agriculture & Farmer Welfare Department.
- Haryana has notified the Haryana Ex-situ Management of Paddy Straw Policy-2023 vide notification dated 21.11.2023.
- Haryana has notified the common determined rates for paddy crop residue vide notification dated 13.03.2023.
- Transportation charges @500/- per acre limited to maximum Rs. 15000/- is being provided to Gaushalas for consumption of paddy crop residue bales.
- To promote ex-situ stubble management State Govt has decided to provide additional top up assistance @ Rs.500/MT in addition to current provision of assistance @Rs.500/MT thereby total of Rs. 1000/MT to the clusters identified by IOCL for 2G ethanol plant.

3.5.3 Biomass projects with respect to the hotspots of crop residue burning

The Ministry of New and Renewable Energy (MNRE), Government of India has notified the National Bioenergy Programme on November 2, 2022. MNRE has continued the National Bioenergy Programme for the period from FY 2021-22 to 2025-26. The Programme has been recommended for implementation in two Phases. The Phase-I of the Programme has been approved with a budget outlay of Rs. 858 crore.

The National Bioenergy Programme comprises of the following sub-schemes:

i. Waste to Energy Programme (Programme on Energy from Urban, Industrial and Agricultural Wastes /Residues) to support setting up of large Biogas, Bio-CNG and Power plants (excluding MSW to Power projects).
ii. Biomass Programme (Scheme to Support Manufacturing of Briquettes & Pellets and Promotion of Biomass (non-bagasse) based cogeneration in Industries) to support setting up of pellets and briquettes for use in power generation and non-bagasse based power generation projects.
iii. Biogas Programme to support setting up of family and medium size Biogas in rural areas.
iv. The New and Renewable Energy Department/HAREDA (Government of Haryana) has notified Haryana Bio-Energy Policy in 2018. The Haryana government is implementing the policy, and monitoring its progress regularly. Currently, 11 biomass power projects that utilize 815100 Tonnes/year of paddy straw. Details of these projects is submitted as table 3.32.

Table 3.32: Details of approximate paddy straw procured by various power plants/industries in Haryana

Sr. No.	Project with location	Capacity in MW	Year of Installation	Paddy straw procured during 2022- 23 in MT	Paddy straw procured during the year 2023-24	Paddy straw procured during the year 2024-25	Paddy straw procurement Plan during the year 2025-26 (App.) (MT)
A.	**Biomass Power Projects (Mixed fuel Based)**						
1.	Sri Jyoti Renewable Ltd. DhanaNarsan, Bhiwani	9.5 MW	2014-15	25,000	25,000	72,000	70,000
2.	M/s Starwire India Vidyut Pvt. Ltd. Khurawta, Mahendergarh	9.9 MW	2013-14	20,000	25,000	4000	4000
3.	M/s. Gemco Energy Ltd., Village Dhinod. Bhiwani	8.0 MW	2013-14	15,000	15,000	10,000	15,000
4.	M/s Sainsons Paper Industries Pvt. Ltd. Kurukshetra	3.0 MW	2009-10	60,000	1,60,000	1,10,500	1,40,000
	M/s Sainsons Paper Industries Pvt. Ltd. Kurukshetra	5.0MW	2020-21	1,00,000			
	Total(A)	**35.4 MW**	**-**	**2,20,000**	**2,25,000**	**1,96,500**	**2,29,000**
B.	**Biomass Power Projects (Paddy Straw Based)**						
5.	M/s Hind Samachar Ltd, Village-Chhajjupur, Tehsil-Pehowa, (Kurukshetra) (100% Paddy Straw based)	15.0 MW	2022	1,75,000	1,35,000	1,20,000	1,20,000
6..	M/s Sukhbir Agro EnergyLtd., Village Kangthali/siwan, (Kaithal) (100% Paddy Straw based)	15.0 MW	2022	1,75,000	1,35,000	1,20,000	1,20,000
7.	M/s Jind Bio-Energy LLP , Village Alewa, (Jind) (100% Paddy Straw based)	9.9 MW	January, 2025 COD Pending	1,00,000	1,13,000	1,07,000	1,00,000
8.	M/s Fatehabad Bio-Energy LLP	9.9 MW	January, 2025	1,00,000	1,13,000	1,15,000	1,00,000

	Village-Bhuna, (Fatehabad) (100% Paddy Straw based)		COD Pending				
	Total (B)	**19.8MW**		**5,50,000**	**4,96,000**	**4,62,000**	**4,40,000**
c	**Other Industries Currently using paddy straw also as a fuel for running their boilers.**						
1.	M/s Mahakali Agro Industries Ltd.	-	-	-	3500	900	900
2.	M/s Partap Fabrics Pvt. Ltd.	-	-	-	4600	24000	24000
3.	M/s Nath Solvent Extractions Pvt. Ltd.	-	-	-	3300	24000	24000
4.	Shree Ganesh Paper Mill	-	-	-	1500	500	500
5.	M/s Chaudhary Solvent Pvt Ltd	-	-	-	2322.4	1200	1200
6.	M/s Imperial Malts Ltd.	-	-	-	NIL	NIL	NIL
7.	M/s R.S. Solvent Extraction Ltd.	-	-	-	6300	5525	5525
8.	M/s Cheeka Solvent Pvt. Ltd.	-	-	-	424	500	500
9.	M/s Jain Udyog	-	-	-	18100	1920	1920
10.	M/s NU Chem Oils Pvt. Ltd.	-	-	-	20000	Nil	Nil
11.	M/s Shristhi Agro Products Pvt Ltd	-	-	-	5850	2900	2900
12.	M/s Anshul Foods	-	-	-	1150	999	999
13.	M/s Nishant Paper Board	-	-	-	2400	2291	2291
14.	M/s T R Solvent Pvt. Ltd.		-	-	NIL	317	317
15.	M/s Shree Jagdambe Paper Mills Ltd.	-	-		10500	8020	8020
	Total (C)	-	-	**3,44,850**	**79,946**	**73,072**	**73,072**
	Grand Total (A+B+C)	-		**11,14,850**	**8,009,46**	**7,31,572**	**7,42,072**

Table 3.33: Details of Briquetting units in the State

Sl.No.	District	No. of operational Briquetting units	Utilisation in operational Briquetting units (in Tonnes/year)
1	Bhiwani	4	39300
2	Charkhi Dadri	1	14700
3	Fatehabad	1	7500
4	Hisar	3	7875
5	Jind	3	30000
6	Kaithal	1	28000
7	Kurukshetra	1	7300
8	Mahendragarh	3	30000
9	Panipat	3	17885
10	Rewari	1	18000
11	Rohtak	1	4000
12	Yamunanagar	4	24900
	Total	**26**	**229460**

Table 3.34: Details of Pelletisation units in the State

District	No. of operational Pelletisation units	Utilisation in operational pelletisation units (in Tonnes/year)	No. of upcoming Pelletisation units	Anticipated Utilisation in upcoming units (in Tonnes/year)
Ambala	1	10800	1	7200
Hisar	1	280000	0	0
Karnal	1	14400	1	1500
Kurukshetra	1	7300	0	0
Palwal	1	12000	0	0
Sirsa	5	91200	0	0
Total	**10**	**415700**	**2**	**8700**

3.5.4 Use of biomass / crop residue based pellets mass blending with coal and its co-firing in thermal power plants with blending ratio which needs no modification in boilers

The CAQM, through a statutory direction, has mandated 5-10% co-firing of biomass including paddy straw in each of the identified 11 thermal power plants located within a

radius of 300 km of Delhi. The Union Budget of 2022–23 has also provided for 5-7 percent of biomass pellets to be co-fired in the thermal plants nationally. This is part of the scheme - SAMARTH (Sustainable Agrarian Mission on use of Agro- Residue in Thermal Power Plants), which is under implementation. It is reported that 50% of the thermal power plants identified by CAQM have started co-firing biomass pellets with coal. Currently 348465 Tonnes/ year of straw utilized in TPPs in the state.

Further, the MoEFCC has notified the Draft Agro Residue Utilization by thermal power plants Rules, 2023. The Rules apply to all thermal plants within the CAQM's jurisdiction. The draft Rules mandate all coal based thermal power plants of power generation utilities to annually use at least 5 percent blend of pellets / briquettes made of crop residue, along with coal. Haryana Power Generation Corporation has also finalized a tender for purchase of 19 lakh MT biomass pellets in next 7 years (approx. 3 lakh ton annually).

3.5.5 Policy for supply chain mechanism for in-situ and ex-situ management of stubble

Effective ex-situ stubble management requires establishing supply chain infrastructure for the collection, bailing, transportation, handling, and storage of paddy straw, as well as promoting its utilisation in various industries such as biomass power generation units, biomass co-firing in thermal power plants, bio-CNG, bio-ethanol and more. To support and strengthen the forward market linkages for promotion of stubble, the government will set-up an incubation centre in partnership with the Haryana Agricultural University, and provide technical assistance and seed funding/matching grant to innovative businesses across the above-mentioned areas of stubble management. Stakeholders eligible for such type of funding will range from budding entrepreneurs in the agri-business sector to farmers to owners of custom hiring centres with innovative practices and an intention to upscale. The incubation centre will be run by the academic institution. However, the business ideas will be evaluated by a committee of technical experts, experienced agri-business entrepreneurs and senior officials from agricultural departments.

Sustained elimination of stubble-burning instances by 2030 via ex-situ and in-situ management, and by strengthening the stubble value chain for diversified use of paddy straw, a provision of 69 Crore budget has been made under HCAPSD.

3.5.6 Supply chain for crop residue to cow shelters

Transportation charges @500/- per acre limited to maximum Rs. 15000/- is being provided is being provided by the Government to Gaushalas for consumption of paddy crop residue bales. Further, for Improving livestock waste management through implementation of clean manure management practices across gaushalas and strengthening operations and maintenance of Compressed Biogas Plants in the state, a budget head of Rs. 218 Crores has been kept under HCAPSD.

3.5.7 Development of effective protocol for monitoring of fire incidents including crop area consideration and crop fire area data

The State is working on development of effective protocol for monitoring of fire incidents including crop area consideration and crop fire area data

3.5.8 Collaboration with ISRO and preparation of Satellite based maps for monitoring of fire incidence

The system is in place for past more than 3 year i.e. ICAR is monitoring the AFL at national level whereas the HARSAC has been engaged for monitoring at State level. For a focused approach and to intensify the activities to curb the stubble burning, a micro level planning has been done based on the Satellite data for kharif and hotspot villages have been identified. The details are given in the table:

Table 3.35: Hotspot villages for AFL

	Kharif 2022	Kharif 2023
Zone	Nos of Villages	Nos of Villages
Red (6 & above AFL)	147	67
Yellow (2-5 AFL)	582	402
Green (0-1 AFL)	6175	6435

3.5.9 Enforcement measures

The enforcement measures as per the notification of Ministry of Environment & Climate Change and directions of CAQM are being taken against the farmer found involved in crop residue burning, as per details given under:

< 2 acres Rs. 5000 per incidence

2-5 acres Rs. 10000 per incidence

>5 acres Rs. 30000 per incidence

During the year 2024, the paddy season the following deterrent action has been taken:-

- A total of 6774 nodal officers deputed at village/block level.
- 657 Challan issued with fine of Rs 16.77 Lakhs, 667 FIR registered.
- 1228 Red entries made in farm record,
- 582nos. of show cause notice issued to the delinquent officers and out of which 28 nos. of suspended, 35 nos. of charge sheeted,33 nos. of action under section “14” of CAQM Act.

3.5.10 Awareness campaign

Massive awareness campaign have been launched to curb the crop residue burning in the state. During the year 2024, following actions has been taken

- Weekly SMS appeal is being sent to 5.35 lakh farmers registered for paddy crop on Meri Fasal Mera Byora portal, on weekly basis.
- Awareness through press note in newspapers, 603 nos.
- 1422Wall Paintings in hotspot villages
- 3692Village/Block/District level awareness camps
- Awareness Vans
- 512Banner/Hoarding erected at prominent places
- 492School/College activities
- Trainings of Farmers/ CHC’s/ Youth of Hot Spot villages on operation and maintenance of CRM machinery by HAMETI, Jind.

3.6 EMISSIONS FROM HOUSEHOLD AND COMMERCIAL ESTABLISHMENTS

3.6.1 Schemes for use of LPG/ PNG for cooking fuels.

3.6.2 Amendments to the building by-laws for "Indoor air quality management".

3.6.3 Implementation of policies aiming for conversion of conventional fuels to cleaner fuels in commercial establishments.

3.6 Emissions from Household and commercial establishments

Cooking with solid biomass such as wood and cow-dung is a major source of household air pollution, which is in turn one of the most prominent health hazards, especially for women and children. Some reasons why unclean cooking fuels continue to be used in Haryana are:

1. Cultural preferences for cooking on chulha: Use of chulha in Haryana is culturally significant, representing tradition and community, especially in the case of some specific dishes that are exclusively prepared on these traditional stoves.

2. Easy availability of free biomass: Biomass like wood and cow-dung is easily accessible and cost-effective.

3. High cost of LPG cylinders: The price of domestic cooking gas (LPG) is subject to market volatility, making it less affordable when compared to traditional biomass.

The Government of Haryana aims to address the above concerns by extensively focussing on IEC (Information, Education, Communication) activities to increase the adoption of clean cooking alternatives and drive a social behaviour change.

3.6.1 Schemes for use of LPG/ PNG for cooking fuels

Pradhan Mantri Ujjwala Yojana was launched by Prime Minister of India on 1 May 2016 to distribute 50 million LPG connections to women of Below Poverty Line families. Pradhan Mantri Ujjwala Yojana 2.0 to offer 1 crore more LPG connections.The same is under implementation.

Table 3.36: LPG profile of state

No. of Households as per 2011 Census (In Lakhs)	No. of Distributors	No. of LPG Consumers (In Lakhs)	PMUY CUSTOMERS (In Lakhs)
47.18	625	82.11	9.94

(Source: LPG profile report April 2023 to Dec 2023)

Table 3.37: Details of the LPG connection based on the category

Category	Total
PMUY	994723
CSR	184591
State Sponsored Scheme	198545
Total	1377859

(Source: LPG profile report April 2023 to Dec 2023)

Under HCAPSD an allocation of Rs. 34 Cr has been made to design and implement a mass IEC campaign to drive adoption of clean cooking practices by households.

3.6.2 Amendments to the building by-laws for "Indoor air quality management"

THE HARYANA BUILDING CODE, 2017- Along with amendments upto 25.05.2023 were issued to maintain the set backs for improved air circulation.

3.6.3 Implementation of policies aiming for conversion of conventional fuels to cleaner fuels in commercial establishments

The Government of Haryana implements the directions under GRAP given by the Commission for Air Quality Management (CAQM) from time to time. Going forward too, strict implementation of all directions under the GRAP will be ensured.

CHAPTER – 4

GRADED RESPONSE ACTION PLAN

(GRAP)

Graded Response Action Plan (GRAP)

The Commission has comprehensively revisited the contours of the GRAP in vogue, towards an effective implementation mechanism and control on the adverse air quality scenario that generally persists in the entire NCR during the peak winter months. Salient features of the revised GRAP are as under:

The GRAP for NCR has now been classified under four different stages of adverse air quality in Delhi, reflected through the Air Quality Index (AQI) — Stage I - 'Poor' (AQI 201-300); Stage II - 'Very Poor' (AQI 301-400); Stage III - 'Severe' (AQI 401-450); Stage IV - 'Severe+' (AQI >450).

Actions under Stages II, III and IV shall be invoked at least three days in advance of the AQI reaching to the projected levels of that stage, based on the dynamic model and weather/ meteorological forecast to be provided to the Commission by IMD / IITM on a day-to-day basis.

Proposed restrictions are to be progressive from a lower stage to higher stage i.e., restrictive actions undertaken as per previous stages shall be continued, in addition to the air pollution stage under which the restrictive actions are envisaged to be taken. For example, restrictive actions under the Stage III category, whenever invoked, shall be in addition to those under Stage I and II respectively and so on and so forth.

The Sub-Committee on GRAP constituted by the Commission shall meet frequently to plan for advance action and issue necessary orders for invoking various provisions of the GRAP, based on the prevalent air quality and the AQI forecast to be provided by IMD from time to time. The Sub-Committee shall also review the actions taken by various agencies responsible towards effective implementation of the GRAP. Key restrictions / regulations of activities during the revised GRAP are as under:

Stage I – 'Poor' Air Quality (AQI 201-300)

- Ensure proper implementation of Directions/ Rules/ guidelines on dust mitigation measures in Construction and Demolition (C&D) activities and sound environmental management of C&D waste.
- Ensure strict compliance of Direction Nos. 11-18 dated 11.06.2021 and do not permit C&D activities in respect of such projects with plot size equal to or more than 500

sqm which are not registered on the 'web portal' of the respective state / GNCTD and / or which do not fulfil the other requirements as per the above noted statutory directions, for remote monitoring of dust mitigation measures.

- Ensure regular lifting of Municipal Solid Waste (MSW), Construction & Demolition (C&D) waste, and Hazardous wastes from dedicated dump sites and ensure that no waste is dumped illegally in open land areas.
- Carry out periodic mechanized sweeping and water sprinkling on roads and ensure scientific disposal of the dust collected in designated sites/landfills.
- Ensure that C&D materials & waste are properly stored/ contained, duly covered in the premises. Ensure transportation of C&D materials and C&D waste only through covered vehicles.
- Strictly enforce the statutory directions and yardsticks for use of anti-smog guns at C&D sites, in proportion to the total built-up area of the project under construction.
- Intensify use of anti-smog guns, water sprinkling and dust suppression measures in road construction / widening / repair projects and maintenance activities.
- Stringently enforce prohibition on open burning of bio-mass and municipal solid waste. Impose maximum EC upon violations in accordance with Hon'ble NGT's orders dated 04.12.2014 and 28.04.2015 in OA 21/2014. 9. Strict vigil to ensure that there are no burning incidents in the landfill sites / dumpsites.
- Deploy traffic police for smooth traffic flow at all identified corridors with heavy traffic and congestion prone intersections.
- Strict vigilance and enforcement of PUC norms for vehicles. 12. No tolerance for visible emissions – Stop visibly polluting vehicles by impounding and / or levying maximum penalty.
- Strictly enforce the Hon'ble Supreme Court order on diversion of non- destined truck traffic for Delhi, through Eastern and Western Peripheral Expressways.
- Strictly enforce NGT / Hon'ble SC's order on overaged diesel / petrol vehicles and as per extant statutes.
- Ensure strict penal/ legal action against non-compliant and illegal industrial units. 16. Stringently enforce all pollution control regulations in Industries, brick kilns and hot mix plants etc. - strict compliance of the prescribed standards of emissions. 17.

Ensure that only approved fuels are used by the industries in NCR including in brick kilns and hot mix plants and enforce closure in case of violations, if any

- Stringently enforce emission norms in thermal power plants and strict actions be taken against non-compliance.
- Strictly enforce Hon'ble Courts / Tribunal orders regarding ban on firecrackers.
- Ensure regular lifting and proper disposal of industrial waste from industrial and non-development areas.
- DISCOMs to minimise power supply interruptions in NCR
- Ensure that diesel generator sets are not used as regular source of power supply
- Strictly enforce the extant ban on coal / firewood as fuel in Tandoors in Hotels, Restaurants and open eateries. 24. Ensure hotels, restaurants and open eateries use only electricity / gas-based / clean fuel - based appliances.
- Information dissemination including through social media and bulk SMS etc. Mobile Apps to be used to inform people about the pollution levels, contact details of control room, enable them to report polluting activities / sources to the concerned authorities and inform them about actions that would be taken by Government.
- Ensure quick actions for redressal of complaints on 311 APP, Green Delhi App, SAMEER App and other such social media platforms to curb polluting activities.
- Encourage offices to start unified commute for employees to reduce traffic on road.

Stage II – 'Very Poor' Air Quality (AQI 301-400)

- Carry out mechanical/ vacuum sweeping and water sprinkling of the identified roads on a daily basis. Enhance the number of shifts / hours of deployment of such machines to further intensify mechanised sweeping.
- Ensure daily water sprinkling along with dust suppressants, preferably before peak traffic hours, on roads and right of ways especially at hotspots, heavy traffic corridors and ensure proper disposal of the collected dust in designated sites/ landfills.
- Intensify inspections for strict enforcement of dust control measures at C&D sites.
- Ensure focussed and targeted action for abatement of air pollution in all identified hotspots in NCR. Intensify remedial measures for the predominant sector(s) contributing to adverse air quality in each of such hotspots.

- Ensure uninterrupted power supply to discourage use of alternate power Generating sets/ equipment (DG sets etc.).
- Strict implementation of Direction No. 76 for regulated operations of DG sets across all sectors in the NCR including Industrial, Commercial, Residential etc.
- Synchronize traffic movements and deploy adequate personnel at intersections / traffic congestion points for smooth flow of traffic.
- Alert in newspapers / TV / radio to advise people about air pollution levels and Do's and Don'ts for minimizing polluting activities.
- Enhance vehicle parking fees to discourage private transport.
- Augment public transport services through CNG/ electric buses and metro services by inducting additional fleet and increasing the frequency of service. Introduce differential rates to encourage off – peak travel.
- Resident Welfare Associations to necessarily provide electric heaters to staff engaged in security, sanitation, horticulture and other miscellaneous services to avoid open Bio-Mass/ MSW burning during winters.
- Do not permit inter-state buses from NCR states, other than EVs / CNG / BS-VI Diesel, to enter Delhi (excluding buses / Tempo Travellers operated with All India Tourist Permit). - Commissioners or head of Transport Department in GNCTD/ NCR States - Commissioner of Police / Head of Traffic Police of Delhi and NCR towns.

Stage III – 'Severe' Air Quality (AQI 401-450)

1. Construction & Demolition activities:

(i) Enforce strict restrictions on the following categories of dust generating/ air pollution causing C&D activities in the entire NCR:

- Earthwork for excavation and filling including boring & drilling works.
- Piling works.
- All demolition works.
- Laying of sewer line, water line, drainage and electric cabling etc. by open trench system. Brick / masonry works.
- Operation of RMC batching plant.
- Major welding and gas-cutting operations.

- Minor welding activities for MEP works (Mechanical, Electrical and Plumbing) to be, however, permitted.
- Painting, polishing and varnishing works etc.
- Cement, Plaster / other coatings, except for minor indoor repairs/maintenance.
- Cutting / grinding and fixing of tiles, stones and other flooring materials, except for minor indoor repairs/maintenance.
- Road construction activities and major repairs.
- Transfer, loading / unloading of dust generating materials like cement, fly-ash, bricks, sand, murram, pebbles, crushed stone etc. anywhere within / outside the project sites.
- Movement of vehicles carrying construction materials on unpaved roads.
- Any transportation of demolition waste.

(ii) All construction related activities, other than those listed under

1(i) above, which are relatively less polluting / less dust generating shall be permitted to be continued in the NCR, subject to strict compliance of the C&D Waste Management Rules, dust prevention/ control norms including compliance with the directions of the Commission issued from time to time.

(iii) All C&D related activities, including those under

1(i) above, shall be continued to be permitted only for the following categories of projects, however subject to strict compliance of the C&D Waste Management Rules, dust prevention/ control norms including compliance with the directions of the Commission issued from time to time:

(a) Projects for Railway services and stations

(b) Projects for Metro Rail Services and stations

(c) Airports and Inter State Bus Terminals

(d) National security/ defence related activities/ projects of national importance;

(e) Hospitals/ health care facilities

(f) Linear public projects such as highways, roads, flyovers, over bridges, power transmission/ distribution, pipelines, telecommunication services etc.

(g) Sanitation projects like sewage treatment plants and water supply projects etc.

(h) Ancillary activities, specific to and supplementing the above project categories.

2. Close down operations of stone crushers in the entire NCR.

3. Close down all mining and associated activities in the entire NCR.

4. NCR State Govts. / GNCTD to impose strict restrictions on plying of BS III petrol and BS IV diesel LMVs (4 wheelers) in Delhi and in the districts of Gurugram, Faridabad, Ghaziabad and Gautam Budh Nagar. Note: Persons with Disabilities shall be permitted to ply BS – III Petrol / BS – IV Diesel LMVs, provided that these are specifically adopted for them and are run only for their personal use.

5. GNCTD to impose strict restrictions on plying of Delhi - registered Diesel operated Medium Goods Vehicles (MGVs) to BS-IV standards or below, in Delhi, except those vehicles carrying essential commodities / providing essential services.

6. GNCTD to not permit BS-IV and below diesel operated LCVs (goods carriers), registered outside Delhi, to enter Delhi, except those carrying essential commodities / providing essential services.

7. (i) State Govts. in the NCR and the GNCTD to mandatorily conduct classes in schools for children up to class V in a “Hybrid” mode i.e., both in physical and online mode (wherever online mode is feasible) in the territorial jurisdiction of the NCT of Delhi and in the districts of Gurugram, Faridabad, Ghaziabad and Gautam Buddh Nagar.

(ii) The NCR State Governments may also consider conducting classes for students up to Class V in a “Hybrid” mode as above in other areas in NCR. Note: The option to exercise the online mode of education, wherever available, shall vest with the students and their guardians.

8. (i) GNCTD and NCR State Governments to stagger timings for public offices and municipal bodies in the National Capital Territory of Delhi and the districts of Gurugram, Faridabad, Ghaziabad and Gautam Buddh Nagar.

(ii) State Governments may take a decision to stagger timings for public offices and municipal bodies in other areas of NCR.

9. Central Government may take a decision on staggering of timings of Central Government offices in Delhi – NCR.

Stage IV - 'Severe+' AQI category (AQI > 450)

Stop entry of truck traffic into Delhi (except for trucks carrying essential commodities/ providing essential services. All LNG/ CNG / Electric/ BS-VI Diesel trucks) shall however be permitted to enter Delhi.

2. Enforce strict ban on plying of Delhi - registered diesel operated BS-IV and below Heavy Goods Vehicles (HGVs) in Delhi, except those carrying essential commodities / providing essential services.

3. Ban C&D activities, as in the GRAP Stage- III, also for linear public projects such as highways, roads, flyovers, overbridges, power transmission, pipelines, telecommunication etc.

4. (i) State Govts. in the NCR and the GNCTD to mandatorily conduct classes in schools for children even for higher classes i.e. from class VI to IX and XI in a "Hybrid" mode i.e., both in physical and online mode (wherever online mode is feasible) in the territorial jurisdiction of the NCT of Delhi and in the districts of Gurugram, Faridabad, Ghaziabad and Gautam Buddh Nagar.

(ii) The NCR State Governments may also consider conducting classes for students as above in a "Hybrid" mode in other areas in NCR.

5. NCR State Governments / GNCTD to take a decision on allowing public, municipal and private offices to work on 50% strength and the rest to work from home.

6. Central Government may take appropriate decision on permitting work from home for employees in central government offices.

7. State Governments may consider additional emergency measures like closure of colleges/ educational institutions and closure of non-emergency commercial activities, permitting running of vehicles on odd-even basis of registration numbers etc.

CHAPTER – 5

COORDINATION WITH NEIGHBORING STATES

Coordination with Neighboring States

Air pollution is a cross-border matter, with a significant "travelled" component to the ambient air in any given area. Air quality in Haryana is affected by actions in neighbouring states, and similarly, activities in Haryana impact the air quality in other states. The challenge of air pollution is particularly acute in the Indo-Gangetic Plain (IGP) which contains 18 of India's 20 most polluted cities. Further, there is similarity in the characteristics of air pollution in the states that form part of the IGP airshed. While the state of Haryana is implementing significant measures to mitigate sectoral emissions that contribute to air pollution, the interconnectedness of air quality in IGP demands cooperation with neighbouring states for sustainable improvement. In this context, Haryana proposes to undertake certain steps for collaboration with IGP states and create forums for cross-learning.

Collaboration with states will comprise measures to enhance knowledge sharing and capacity building in monitoring air quality.

1. Knowledge sharing

The similarity in the challenges faced by IGP states makes it important for the states to share their learning through various platforms.

a. Conference and Working Groups: Haryana will be responsible for hosting one conference or working group meeting a year on a topic in air quality management in the IGP region. Potential topics include:

- Sustainable urban mobility to reduce air pollution.
- Innovative technologies for air quality improvement with thrust on pollution from industries and agriculture.
- Legislation and enforcement mechanism for airshed air quality management. Air quality monitoring at regional level, capturing cross-border effects in real-time.

b. Workshops for officers of State Pollution Control Board (SPCB)/ Pollution Control Committees (PCC)/ Transport, Industries, Urban and Agriculture departments: Haryana will invite up to two officers from the SPCB/ PCC/sector departments of each of the IGP states,

to participate in scheduled training and cross-learning workshops. While HSPCB conducts regular training for its officers, external participants will also be invited to share their experience as well as benefit from the training. Potential workshop topics include:

- Strengthening enforcement of state and central policies.
- Streamlining of inspections across industries and construction sites.
- Crop residue management.
- Management of ammonia emissions.
- Management of heavy-duty vehicles.
- Promoting use of clean fuel among industrial units.

The above-mentioned topics have been proposed keeping in mind the spillover benefit for Haryana as states across the country implement these common measures. The goal of knowledge sharing is to enable states to learn from each other's experiences, and adapt analogous measures accordingly in their respective areas.

c. Case study compendium: Haryana will document learnings from design, implementation and impact of sectoral measures to curb air pollution, as case studies. The case studies will be made available in the public domain for the benefit of IGP states.

2. Capacity building in monitoring air quality

Given the cross-border nature of air pollution, there is a need to create political/ bureaucratic structures and tools to monitor air quality-related actions and data. Creation of open-source customisable data visualisation solution for IGP states: The Central Control Room for Air Quality Data, maintained by the Central Pollution Control Board (CPCB), contains real-time data from active CAAQMS in the country.[42] This data, along with data flowing in from the proposed command control centre at HSPCB, can be leveraged to build comprehensive decision-making tools for IGP states. A potential data analysis and visualisation tool could contain the following elements:

a. Comprehensive view with additional real-time datasets such as IMD's weather data given the significant impact of climatic factors on air quality in IGP, ISRO's satellite-based

monitoring of aerosol optical depth, and air quality forecasting. Other data sets can be added as they become available.

b. Tool to build visualisations, with flexibility to choose geography, time, pollutant, correlating climatic factors.

c. The dataset and visualisation tool will be publicly available, free of charge, to encourage its adoption and to generate actionable insights.

The activities outlined above are expected to require a total outlay of INR 5 crore over six years. A separate budget head 'HCAPSD' will be created, once the programme receives approval for regional

CHAPTER – 6

INDICATIVE DELINEATION FOR STATE ACTION PLAN

Indicative Delineation for State Action Plan

1. Industrial Emissions

S. No.	Activities	Status of activity (Completed/ Ongoing/ To be Started)	Timeline for completion	Target (Coverage/ Percentage)	Financial implications (Yes/ No)	Funds Allocated (Rs. crore)	Funds Utilized As on date (Rs. crore)	Responsible agency
1.	Policy for permitting new industries in Critically Polluted Areas (CPAs)	Only issuing CTE to those units which will use cleaner fuels i.e. CNG/PNG/LPG/Propane/Butane etc. and biomass in their manufacturing process.	Already being complied with.	100%	No	NA	NA	HSPCB
2.	Guidelines for laying city gas distribution network	Policy and guidelines for laying city gas distribution is under draft. There is provision of PNG pipelines to all urban industrial clusters for fuel switching. In the state of Haryana, PNGRB has authorized 18 Geographical Areas (GAs) for development of CGD Network with Minimum Work Programme (MWP) target of 327 CNG Stations, 22,94,709 PNG Domestic Connections. As on 30.11.2024, the entities have established 498 CNG stations, 4,43,466 PNG Domestic connections, 2,724 PNG Industrial connections in the state of Haryana.	Dec 2025	under draft	No	NA	NA	Department of Industries & Commerce, Government of Haryana

3.	Policy for replacement of heavy oil (eg., furnace oil, diesel etc.) based industries to alternate energy Sources (CNG/PNG/ Electricity)	**Furnace Oil:-** As per the Supreme Court of India in WPC no. 13029/1985 M.C. Mehta Vs Union of India & Ors. Order dated 24.10.2017**, the furnace oil had been banned in the state of Haryana.** **CNG/PNG:-** In NCR, old Diesel operating unit had been directed to completely switch over to PNG or biomass fuels latest by 30.09.2022 (for industries in areas in NCR where PNG infrastructure / supply is available) and by 31.12.2022 (for industries in areas in NCR where PNG infrastructure /supply is not available. As on date such directions have been complied with in NCR part of the State and non complying industrial units have been closed/sealed. The CAQM has approved the standard fuel list for uniform adoption of clean fuels across the entire NCR as per direction no. 65. The State has taken a provision of Disbursement of incentives to 1000 boilers to convert their boiler on PNG/CNG/Electricity (20 lakhs/unit)	Dec, 2026	100%	No	200.00 Cr	0	Industries & Commerce under HCAPSD project. Enforcement by HSPCB.
4.	Policy for restriction on Usage of Pet coke for industrial use.	Consequent upon Hon'ble Supreme Court Orders dated 24.10.2017, the usage of pet coke has been banned in the State.	Already Implemented	100%	No	NA	NA	HSPCB
5.	Rules and Regulations on uninterrupted power supply in State/ UT	Haryana Electricity Regulatory Commission (HERC) has already notified Regulations on standards of Performance of Distribution Licensees and Determination of Compensation. All the cities of Haryana are provided by 24x7 power supply by UHBVN & DHBVN. Further, UHBVN provides 24x7 power supply to 3358 out of 3590 villages while DHBVN provides 24x7 power supply to 2506 out of 3666 villages.	Already notified 24x7 electricity by 31.12.2026 to all villages	100%	Yes	DHBVN-817.78 Cr	DHBVN-576.16 Cr	Haryana Electricity Regulatory Commission (HERC), DHBVN and UHBVN

6.	Policy for use of DG sets	All the DG sets in NCR area of the state are regulated as per the notification of CAQM direction no. 76. Under HCAPSD 1000 DG sets will be incentivized to switch to RECD /dual fuel mode and another incentives for purchase of 1400 new DG sets compliant with the CPCB emission norms.	The policy will be implemented in all respect by Dec-2025	100%	No	330 Cr under HCAPSD	NA	Industries & Commerce Department under HCAPSD project. Enforcement of direction no. 65 of CAQM by HSPCB
7.	Policy regarding installation of CAAQMS based on the emission potential or capacity of air polluting industries.	29 nos. (21 NCR + 08 Non-NCR) of CAAQMS are already installed in different districts. The HSPCB is following the CAQM policy and direction in this regard. Under Haryana Clean Air Project (HCAP) for sustainable development, additional 10 nos. CAAQMS with real time source apportionment capabilities. Another 02 nos. mobile CAAQMS with source apportionment capabilities will be deployed in the State.	Dec-2026	100%	Yes	73 Cr.	0	HSPCB under HCAPSD project
8.	Mechanism to be devised for expansion of OCEMS to air polluting industries are not covered currently (such as emission from utility stacks in 17 categories, etc.)	All the 17 category units in the state and red category units in NCR area have provided OCEMS. Under HCAPSD State has proposal of Financial assistance to 300 MSMEs for installation of CEMS devices (10 lakhs/unit)	Dec, 2026	100%	Yes	30 Cr	0	HSPCB under HCAPSD project

9.	Mechanisms to control fugitive emissions sources.	The Haryana State Pollution Control Board and Urban Local Bodies in the State are taking stringent action against the fugitive emissions such as MSW / HW / other solid waste burning in the State. There is a mechanism of penalizing such offenses. During the GRAP period (13.10.2024 to 26.1.2025) total 469 number of challans were issued on MSW burning However a more deterrent and effective mechanism is desired to control the fugitive emissions. Such a mechanism will be devised by the Urban Local Bodies.	Dec, 2025	100%	No	NA	NA	HSPCB/ ULB
10.	Regulations for conversion of brick kilns to clean technologies	All the Brick kilns have been converted to zig-zag technology. Closure action has already been taken against brick kiln not converted to zig-zag technology. Brick kilns have been directed for compliance NGT orders (Utkarsh Panwar Vs CPCB & Ors. dated 17.02.2021 and MoEF&CC notification dated 22.02.2022). Now under Haryana Clean Air Project for sustainable development (HCAPSD), tunnel technology will be experimented in 02 nos. of brick kilns in the state and after establishing the financial viability, the same may be promoted to other brick kilns.	Dec, 2026	100	Yes	4 Cr	0	HSPCB under HCAPSD project
11.	Regulations for Emission Trading Scheme(ETS)	As of now there is no Emission Trading Scheme(ETS) working in the state. Emission Trading Scheme may be formulated and adopted in future depending upon the success of pilot projects being run by the MoEF in Gujrat, Maharashtra and Tamil Nadu. Once any model is devised by the ministry for emission trading scheme, the state will be happy to adopt the same.	-	-	-	-	-	-

12.	Policy to set up e-waste recycling unit in industrial areas in compliance with e-waste management rules	Haryana Electronics Waste Recycling Policy, 2024 is under final stage for notification. In the state, there are total 26 numbers of E-waste recycler and 26 dismantler. Out of that 25 recycler with capacity 217532.11 MTA and 23 dismantler with capacity 114003 MTA are in NCR part of the State and 01 recycler with capacity 547.663 MTA and 3 dismantler with capacity 1571.25 MTA falls in non – NCR part of the State.	March 2025	100	No	NA	NA	Department of Industries & Commerce, Government of Haryana
13.	Any other Policy / Rules/Standards / Guidelines pertaining to industrial emissions	In this regard, the latest status of compliance of New Emission norms by Thermal power plants is as under: MoEF& CC vide notification dated 07.12.2015 has issued norms for SPM, Specific Water Consumption, Mercury, NOx and SOx. All plants of HPGCL are meeting the norms related to SPM. Thermal power plants of NTPC and Jhajjar Power Plant have installed the NOx burner and FGD. The tendering process for installation of NOx burner and FGD in the HPGCL thermal power plant is under way. NOx Burners has also been installed in all the Units of HPGCL except RGTPP Unit-1,Hisar and the same shall be completed during the proposed Overhauling of RGTPP Unit-1 wef 10.02.2025 to 25.04.2025. Indira Gandhi Super Thermal power project Jhajjar is running with NOx burner in all units and FGD in 1 unit and other 2 units expected to equipped in March 2025 and M/s Jhajjar power limited, Jhajjar all the units are equipped with NOx burner and FGD.	December. 2025	100%	Yes	-	-	HPGCL

14.	Number of industries in the state complying emission standards	There are 6992 no. of Air Polluting Industries in Haryana as per record of Haryana State Pollution Control Board, which are covered under consent management of HSPCB. All industries are complying with the prescribed emissions standards pre. However this is ongoing process and wherever while monitoring the emission found in excess of the prescribed standards, the actions as per the Air Act / EP Act / NGT Act are being taken against such establishments.	Completed	100%	No	NA	NA	HSPCB
15.	Inventory of fuel consumed in the industries (type and quantity)	The inventory of the various fuels used by the Industries in the state (as per HSPCB record). Annexed as per Annexure-1.	Completed	100%	No	NA	NA	HSPCB
16.	Shifting of industries/ commercial units to gaseous fuels (CNG/ PNG/ CBG)	Total 866 nos. of air polluting industries have shifted to CNG/LPG/CBG and network expansion is under progress. The State has taken a provision under HCAPSD for Disbursement of incentives to 1000 boilers to convert their boiler on PNG/CNG/Electricity (20 lakhs/unit)	Ongoing and long term by 2027	based on availability	No	200 Cr	0	Department of Industries & Commerce under HCAPSD project
17.	Number of households Shifted to PNG/LPG	443466 No. of domestic PNG and 8211738 No. of domestic LPG connection in the state. 100% area of the State is covered under LPG ambit for home delivery on demand.	Achieved	100%	Yes	Subsidy provided under PMUY scheme	-	Department of Food Supply

18.	Source Apportionment and Emission inventory studies	SAS are ongoing for Faridabad, Gurugram, Panipat and Sonipat. Apart from this the state has taken a provision under HCAPSD for providing 10 nos. of new CAAQMS with real time source apportionment capabilities and 02 nos. of mobile CAAQMS with SAS capabilities to cover the whole state. For such procurement under HSCAPSD a budget of Rs 101 Cr has been provisioned. For SAS in Faridabad the budget provisions are made by MCF and like wise the budget provision for SAS in Gurugram, Sonepat and Panipat are made by HSPCB.	Dec. 2025	100 %	Yes	103.67 Cr	0.99 Cr	HSPCB under HCAPSD project. MCF for Faridabad.
19.	Driving citizen engagement	Under HCAPSD an allocation of Rs. 24 Cr has been made for driving citizen engagement in all meta's related to air quality through awareness initiatives and governance mechanism.	Dec, 2029	100%	Yes	24 Cr under HCAPSD		HSPCB
20.	Training and capacity building of officers	Under HCAPSD an allocation of Rs. 16 Cr has been made for training and capacity building of officers.	Dec, 2029	100%	Yes	16 Cr under HCAPSD		HSPCB
21.	Strategy and implementation unit	Under HCAPSD an allocation of Rs. 114 Cr has been made for Strategy and implementation of various air pollution related actions and measures.	Dec, 2029	100%	Yes	114 Cr under HCAPSD		HSPCB
22.	Command control centre	Under HCAPSD an allocation of Rs. 50 Cr has been made to setup a command control centre for integration of old data sources which will help and foster the decisions making in various actions and measures for air pollution mitigation.	Dec, 2029	100%	Yes	50 Cr under HCAPSD		HSPCB

23.	Expanding and upgrading the monitoring infrastructure	Under HCAPSD an allocation of Rs. 107 Cr has been made for establishment of one number state of the art air pollution monitoring laboratory and upgrading the existing 04 number laboratories with state of the art air monitoring facilities. Apart from this 22 mini air labs will be established in the regional offices and 22 digital stack monitoring kits will be procured.	Dec, 2026	100%	Yes	107 Cr under HCAPSD		HSPCB
2. Vehicular Emissions								
1.	Notification for phasing out old vehicles (Commercial: 10 years; Private: 15 years)	The government mandated phasing out of 10-year-old diesel and 15-year-old petrol vehicles, in compliance with NGT directions for NCR regions of the state. The Transport Department, Haryana submitted that total number of 10 year old diesel vehicles in NCR are 611097, out of which 4160 vehicles has been deregistered till Jan, 2025. On the other hand a total number of 15 year old petrol vehicles in NCR are 1145645, out of which 2377 has been deregistered till date in NCR. The traffic police department of Haryana has issued 1358 number of challans on visible polluting vehicles in NCR from 2019 to 2024. Most of the challan were issued in Gurugram and Faridabad district. Over the next five years, the Government of Haryana will continue to focus on deregistering older vehicles in the NCR districts. The Traffic Department, Haryana has submitted that total 5400 No. over aged vehicles have been issued with the challans in the last 06 years (i.e., 2019-24) by Traffic Police.	Policy in place and the implementation is ongoing	NA	No	NA	NA	Transport/ Traffic Department Haryana

2.	Policy for scrapping old vehicles	The state government notified the Haryana Vehicle Scrappage Policy in 2022 and now issued Haryana Registered Vehicle Scrappage & Recycling Facility Incentive Policy 2024 under which subsidy passed for establishment of RVSF, rebate on SGST, park development and skill development. Presently, 17 no. of RVSF are operational in the state.	Policy in place and implementation in place	NA	yes	From Departmental budget	NA	Transport Department Haryana Department of Industries
3.	Policy/Plan for Li- battery waste Management from scrapped vehicles	Recycling of lithium battery is given under schedule-II of Battery Waste Management Rules, 2020 (amended in 2022). As per existing / previous practices the unserviceable Li-Batteries are disposed-off through licensed scrapped dealers by way of either to sell through E-auction or exchange/replacement of such unserviceable old Batteries with new batteries. Exigo recycling pvt ltd karnal is the only recycler in the state for Li batteries with an annual capacity of 7000 TPA.	Implemented	100%	No	NA	NA	Industry & Commerce Department/ HSPCB

4.	Policy / Scheme for Eco- Friendly Mass Rapid Transport Systems	i. Haryana's bus fleet has 4,767 vehicles. Out of these, 88% are running on diesel engines that adhere to BS-III, BS-IV, and BS-VI emission standards ii. GMCBL- 150 CNG-Buses iii. FCTSL- 50 CNG-Buses iv. Stage carriage permits to around 1500 private operators, have been given for providing transport services to the general public. v. In the year 2023, 7,430 electric 2-wheelers and 20,318 electric 3-wheeler vehicles were registered in the state. vi. In January 2024, the state launched city bus service across 9 cities of Haryana with the addition of 375 electric buses. vii. Under HCAPSD, 500 EV buses will be deployed in Gurugram and Faridabad. viii. The Government has future plan of further expansion of Delhi Metro in Faridabad, Gurugram, Sonipat. ix. The Regional Rapid Transit System (RRTS) in Haryana includes the Delhi-Panipat and Delhi-Karnal corridors. The RRTS is a high-speed rail system that connects cities in the National Capital Region (NCR). x. Under HCAPSD a provision of Rs. 50000/- incentives have been kept for purchase of new first 20,000 EV Three wheelers. Additional provision of Rs. 15000 incentive for the purchase of first 30000 three wheelers replacing older diesel vehicles.	2029 140			phase 3 Gurugram rapid metro project Rs. 6800 Cr. RRTS - Rs. 21627 Cr. HCAPSD- 1282 Cr	NA	Transport Department, Haryana Roadways, Gurugram Metropolitan City Bus Ltd., Faridabad Metropolitan Bus Services Ltd., Haryana Mass Rapid Transport Corporation Ltd. Department of Industries

5.	Policy for augmented - vehicles	The state launched the EV Policy in 2022. The total fleet of electric vehicles increased from 25,864 in 2022 to 86,655 in 2024. The state has also set-up 377 charging stations In January 2024, the state launched city bus service across 9 cities) of Haryana with the addition of 375 electric buses to (Panipat, Yamunanagar, Panchkula, Ambala, Karnal, Sonipat, Rewari, Rohtak, and Hisar) the total fleet. Under HCAPSD, 500 EV buses will be deployed in Gurugram and Faridabad. 145 Cr earmark under HCAPSD as incentives for purchase of new EV three wheelers.	2029	100% clean fleet for Faridabad & Gurugram 500 E-Buses (in Faridabad & Gurugram)	Yes	1282 Cr	-	Transport Department, Department of industries Haryana under HCAPSD
6.	Notification and enforcement of PUC norms	At present there are 2639 numbers of PUC centres in Haryana. Out of these 1756 are situated in the NCR area. For a perspective, 6,81,49,33 numbers of PUCC were issued during the 01.01.2021 to 31.05.2022 in the State. These PUCs centres are being monitoring by the DTOs and the district level road safety committees. Regular report of these PUCs centre are being issued on the Vahan portal. From this, it is evident that the State of Haryana has a robust system of pollution checking. The present PUC regime is not very effective and easily manipulative, so the state is working to find out the technological solutions or new technology to fill the lacunas in the existing regime.	PUC regime implemented	100%	Yes	Will be worked out	-	Transport and HSPCB.

7.	Online monitoring of PUC implementation	The online system for the grant of licenses to set up Pollution under Control Check Centres (PUCC) is in place. The details of the pollution under control certificate issued by the Centres to the motor vehicle owners can be checked on parivahan porta	Implemented	100%	No	NA	NA	Transport Department, Haryana
8.	Mechanism for centralized record maintenance of PUC checks, certification and cross check by the concerned transport authorities to be incorporated	i. The records are maintained by the concerned DTOs- cum-Secretaries, RTAs in the State. ii. Haryana has 2,628 PUC centres certifying vehicles for their emission limits. In December 2023, the Government of Haryana issued 57 lakh PUCCs across districts.	Implemented	100%	No	NA	NA	Transport Department, Haryana
9.	Construction of bypass / ring roads	Construction of 16 bypass and ring roads of 96.619 Km is under process in the state at different locations. Out of that 4.725 Km of Tohana bypass has been completed and inaugurated on 23 Jan, 2023. All the major towns are provided with by-pass roads to divert and decongest the traffic. Further, larger by-passes are also under construction in different cities to further divide and decongest the traffic.	On going	100%	Yes	1030.89 Cr	58.1 Cr	NHAI and PWD Haryana
10.	Re-filling Stations retrofitted with Vapor Recovery System	All the refilling station in NCR part of State have provided Vapor Recovery System	Implemented	100 %	No	NA	NA	Department of Food & Civil Supplies

11.	Incentive of setting up R&D facilities related to EVs	The following incentives shall be provided for R&D under Electric Vehicle Policy-2022. • Developing new electric charging technology and new electric vehicle technology and for research • Non-fossil-fuel based mobility solution • Setting up of infrastructure related to R&D in educational institutions	-	100 %	Yes	provision for Incentives	NA	Transport
12	Implementation of Intelligent Traffic System (ITS)	CCTV Cameras have been installed to monitoring the traffic system in 12 Districts i.e. Panchkula, Yamunanagar, Kurukshetra, Ambala, Karnal, Panipat, Sonepat, Rohtak, Kaithal, Mewat, Gurugram Faridabad and National Highway No. 152-D, Delhi-Mumbai Expressway and NH-44 of Haryana are using these. ANPR Cameras have been installed in Smart Cities i.e. Gurugram, Faridabad & Karnal and rest of Districts are Pushing manually data on ITMS. ANPR Cameras have also been installed on NH-44, 152D and Delhi-Mumbai Express. Details of ITMS are mentioned below: 1. NH-44 (Ambala to Kundli Border) – 80 ANPR (Automatic Number Plate Recognition) cameras installed by Haryana Police. The control room is in Karnal, ADG Traffic Police office. 2. NH-152D (Ismailbad to Narnaul)- 176 ANPR Cameras installed by NHAI. The control room is in Jamni, Jind and Jat Guwana, Mahendragarh. 3. NH-Delhi-Mumbai Expressway (Sohna to Firozpur Jhirka)- 80 ANPR cameras installed by NHAI. The control room is in Sohna Gurugram.	Dec. 2029	100	Yes	From State Govt Budget	-	Traffic Police/ NHAI
3. Construction & Demolition Waste and Road Dust Management								

1.	Policy for development of projects/ plants for C&D waste management	Policy for C&D Waste Management in municipal areas has already been notified on 23.11.2020	Completed	100%	No	NA	NA	Urban Local Bodies
2.	Policy for use of C&D waste in laying and construction of State highways.	ULB:-Policy for C&D Waste Management in municipal areas has already been notified on 23.11.2020	Completed	100%	No	NA	NA	Urban Local Bodies
3.	Demand creation for C&D waste and alternative use of C&D waste material	As per C&D Waste Management Policy, 80% of recycled C&D waste products shall be put into effective use though municipal and government construction or related activities. The state will take active measures to promote reuse of the C&D processed materials. For this, the state will introduce a buy-back policy to mandate all government departments involved in construction work to use a minimum percentage of C&D processed aggregates in their construction projects. In addition, the state will undertake at least two demonstration projects constructed with at least 20% C&D processed materials used in their construction. Under HCAPSD, the DULB will identify two such projects and undertake construction through buying the C&D waste material from the existing plant facilities in Haryana. Further, the state will also undertake extensive citizen awareness activities to drive reuse of C&D processed aggregates.	Dec 2029	100%	Yes	By implementing road owning agencies and 289 Cr. under HCAPSD	-	Urban Local Bodies, PWD (B&R), NHAI

4.	Penalty provisions for non-compliance of C&D waste management rules at construction sites	Already notified vide policy dated 23.11.2020 for C&D Waste Management. Apart from this Commission for Air Quality Management in NCR and other areas, prescribed the environmental compensation for non compliance at the construction sites, which is already implemented in the NCR part of the State.	Completed	100 %	No	NA	NA	Urban Local Bodies, HSPCB
5.	Maintenance, repair and paving of State highways	Total 1676 Km. of State Highways maintained by PWD B&R. 361 km length repaired and maintained during 2024 and 346 km road length planned for the year 2025.	Regular Activity	100 %	Yes	616.83 Cr.	235.49 Cr.	PWD (B&R)
6.	Monitoring of road dust especially in and around hot spots areas and in the vicinity of State highways	111 water sprinkler, 69 MRSM, 24 anti smog guns have been deployed near hotspot areas while additional requirement of 55 water sprinkler, 69 MRSM, 82 anti smog guns to cover all the area under ULB. End to end paving of roads is desired to mitigate the dust emission from the roads. Under HCAPSD project, an allocation of 699 Cr has been done for creating “dust-free” roads through end-to-end paving, strengthening effectiveness of use of mechanised sweeping and increasing green cover along central and side verges in the NCR. Under this 500 Km roads, berms will be paid.	31.12.2025	100%	Yes	From Departmental Budget and 699 Cr under HCAPSD	NA	Urban Local Bodies, PWD (B&R), NHAI
7.	Mechanism Development and maintenance of road infrastructures for industrial states and clusters	Total 118 km of road constructed and 954 km of road maintained in the industrial states and clusters in last 3 years (ie., from 2021 to 2024). Kundli-Manesar-Palwal green field bypass highway of approximate 93 Km constructed for decongestion of traffic in Delhi.	Regular Activity	100 %	Yes	973.11 Cr.	320.72 Cr.	HSIIDC

8.	Any other Policy / Rules/ Standards/ Guidelines pertaining to C&D waste and Road dust management	There are construction and demolition waste management rules, 2016 as notified by GoI. Haryana has constituted dust control and management cells with the special task of monitoring and implementation of dust control measures in accordance with the CAQM directions no. 22. Further dust portal has been created for the construction project having area more than 500 sqm in the NCR area to be mandatorily register and to provide the dust mitigation measures such as anti smog guns, regular wetting and coverage of raw material and boundary wall fencing. Such project also need to provide the web cameras with the web link on the portal for remote monitoring of sites.	Regular Activity	100 %	No	NA	NA	HSPCB
9.	C&D waste processing plants	There are 03 nos. of C&D waste management plants in the state Gurugram: 300 TPD to be expanded to 1000 TPD Faridabad:300 TPD Rewari: 400 TPD Under HCAPSD an allocation of 289 Cr has been made to Streamline Construction and Demolition (C&D) waste management in Gurugram and Faridabad	Dec, 2026 (to achieve 100% processing in all the 03 C&D plants)	-	Yes	ULB from their budget and 289 Cr under HCAPSD	-	Urban local Bodies

10	Greening of open spaces/parks developed	63 numbers of air pollution hotspots were identified and out of these 76% of the identified hotspots (48 out of 63 hotspots identified) have been converted into green spots. The remaining 24% are in the process of being converted into green spots. Further, new hotspots have to be identified and to be converted into green spots. Apart from this the open spaces and parks to be developed adequately in the State. Total 3935 no. of parks had been developed out of 4025 parks of the state. Plantation target for the year 2024-25 is 18597557 and achieved 15702978 plantation. About 84.4% of target of FY 2024-25 has been achieved till Sept 2024. The state has developed about 609 acre area for Herbal garden, 172.125 acre area for oxy Van and 232.5 acre area under Nagar Van scheme.	Regular Activity	Greening Target for 2024-25 is 18597557 no. of plants -	Yes	Concerned Departmental Budget	Concerned Departmental Budget	PW (B&R) GMDA Higher Education Department Development and Panchayats Department Forest Department, Haryana HSVP HSIIDC HSPCB
11	Any other activity/project pertaining to C&D waste and Road dust management	HSPCB has launched Dust Pollution Control Self Assessment, HSPCB Web portal as per directions no. 11 of CAQM. There are 70 Nos. of Mechanical Road Sweeping Machines are available in municipalities to tackle with the road dust. Further, water is also sprinkled on roads to abate the dust as per requirements.	Regular Activity	100 %	Yes	Born by ULB by convergence fund	-	Urban Local Bodies/ HSPCB
4. Emissions from burning of waste								
1.	Notification and Enforcement of municipal solid	The Haryana State Policy & Strategy on Solid Waste Management has already been finalized in the year 2018	Implemented	For all ULBs	Yes	Annual budget of ULB	-	Urban Local Bodies

2.	Policy for MSW management	The Haryana State Policy & Strategy on Solid Waste Management has already been finalized in the year 2018.	Implemented	100%	No	-	-	Urban Local Bodies
3.	Policy for legacy waste management at dump sites	Already covered under SWM Rules -2016	Implemented	100%	No	-	-	Urban Local Bodies
4.	Policy for implementation of ban on single use plastics	Notification regarding ban on Single Use Plastic has already been issued in year 2013 which has been amended in the year 2022, in accordance with Plastic Waste Management Rules (amendment) 2021. Total 22028 nos. of challans were issued with the penalty of Rs 20021706/- imposed on SUP by MCs in the state from 2021-2024.	Implemented	100 %	No	-	-	Urban Local Bodies/ HSPCB
5.	Policy for development and Construction of Waste to Energy Plants	The Haryana State Policy & Strategy on Solid Waste Management has already been finalized in the year 2018	Implemented	100%	No	NA	NA	Urban Local Bodies
	(a)non-recyclable/combustible dry waste	One WtE Plants were installed with the capacity of 750 TPD at Sonipat- Panipat Cluster (8 MW) while 1 is proposed in MC Ambala Corp. with the capacity of 675 TPD. 86 Material Recovery Facilities (MRF) in urban areas with capacity 2589 TPD and 2281 MRF centers in Panchayats with capacity of 1441 TPD. The process of installation of RDF for more units are in final stage.	March 2025	2800 TPD in 114 MRF in urban areas	Yes	ULB and Panchayat from their departmental budget	-	Urban Local Bodies, Development &Panchayat Dept.

	(b)Bio-methanation / Bio CNG	220 TPD in 3 plants 15 TPD by MC at Karnal, 200 TPD at Ambala by private agency, 5 TPD by IOCL at Faridabad	Dec, 2026	Exploration and installation of more Biomethanation plants	Yes	-	-	Urban Local Bodies
	(c) Composting plant etc.	59 composting plants with the capacity of 2879.5 TPD in urban area. Total 2281 sheds for bio composting with capacity 680 TPD installed in the rural areas. Target to achieve 3000 TPD composting in urban areas and 2412 TPD in the rural areas.	Dec, 2026	Target to achieve 3000 TPD composting in urban areas and 2412 TPD in the rural areas.	Yes			Urban Local Bodies, Development &Panchayat Dept.
6.	Remediation of dump sites in the city	Work has been started in 47 ULBs. These ULBs presently have approximate 30.89 Lakh MT legacy waste. 35.62 Lakh MT legacy waste has been processed upto Dec. 2024	Dec, 2025	100%	Yes	With departmental funds	-	Urban Local Bodies
7.	Control open burning of MSW	Regular activity	Regular activity	100 %	Yes	-	-	Urban Local Bodies
8.	Launch extensive drive against open burning of biomass, crop residue, garbage, leaves, etc.	Regular activity During the GRAP period (13.10.2024 to 26.1.2025) total 469 number of challans were issued on MSW burning	Regular	ULB and Panchayats	No	NA	NA	Urban Local Bodies
5. Emissions due to burning of agro residues								
1. In-situ treatment of biomass residues for management of stubble burning								

a)	Schemes for procurement of agriculture machinery	Procurement of agricultural machinery by providing subsidy on crop residue management machinery under the 100% centre sector scheme ie. "Promotion of Agriculture mechanization for In- situ Management of crop in the State of Punjab Haryana Uttar Pradesh and NCT of Delhi" has been made. The component as is under: Crop residue management machinery to individual farmers @50% subsidy. Haryana has given subsidies on more than 100000 crop residue management machines(CRMs) since the inception of the scheme i.e. 2018-19 to 2023-24. In the paddy harvesting season 2024, all the applications for subsidized CRMs considered by the State for passing on the subsidy. .	End of November every year	100%	Yes	125	110	Agriculture Dept
b)	Assistance establishment of hiring centres	To established custom hiring centres (CHCs) with crop residue management machinery by providing subsidy @80%. The above activity is completed for the year 2024. In the State 6794 CHCs has been established with machinery bank of 31510 nos. Over the next year the budget is available for any further requirement.	End of November every year	319650 acre	Yes	Budget provisions are made out of Centre assistance and State budget	0	Agriculture Dept
c)	Use of decomposer for in- situ Crop residue management.	A field trail on 83349 acres area has been carried out on PUSA Decomposer as State Initiative, the decomposer take Initiative, the decomposer capsules were provided free of cost to the farmers, besides this a total of 236000 acres has been covered by M/s Union Phosphorus Ltd.(UPL) with this technology. Thus, a total of 250000 to have been called with decomposer technology during the year 2024.	End of October	319650 acre	Yes	Budget provisions are made out of Centre assistance and State budget	0	Agriculture Dept

2.	Ex-situ treatment of biomass residues for management of stubble burning	1. Ethanol Plant at Panipat by IOCL: Capacity 2.00 Lac MT paddy stubble 2. 4 nos. of biomass project with mixed fuel (Capacity:- 35.4 MW) with paddy straw procurement of 1,96,500 MT during 2024-25. 3. 4 nos. of biomass project with paddy stubble (Capacity:-49.8 MW) with paddy straw procurement of 4,62,000 MT during 2024-25. 4. 26 nos. of briquettes plants (Capacity:-229460) 5. 10 nos. of pelletisation plants (Capacity:-415700) The Ministry of New and Renewable Energy (MNRE), Government of India has notified the National Bioenergy Programme on November 2, 2022. MNRE has continued the National Bioenergy Programme for the period from FY 2021-22 to 2025-26. The Programme has been recommended for implementation in two Phases. The Phase-I of the Programme has been approved with a budget outlay of Rs. 858 crore.	More ex-situ plants are expected to operational in 2025 and many more to come after that.	-	No	Subsidies passed by Central Government	NA	Ministry of New and Renewable energy, Agriculture Department
a)	Schemes for balers/pellet/briquette machines, etc.	The state has issued the Haryana bio energy policy 2018. The centre is giving the subsidies on installation of pellets/briquette manufacturing units.	End of October		Yes			Agriculture Dept

3.	Biomass projects with respect to the hotspots of crop residue burning	1. 4 nos. of biomass project with mixed fuel (Capacity:- 35.4 MW) with paddy straw procurement of 1,96,500 MT during 2024-25. 2. 4 nos. of biomass project with paddy stubble (Capacity:-49.8 MW) with paddy straw procurement of 4,62,000 MT during 2024-25.	More biomass plants are expected to operational in 2025 and many more to come after that.					Agriculture Dept HAREDA
4.	Use of biomass / crop residue based pellets mass blending with coal and its co-firing in thermal power plants with blending ratio which needs no modification in boilers	The draft Agro Residue Utilization by thermal power plants Rules mandate all coal based thermal power plants of power generation utilities to annually use at least 5 percent blend of pellets / briquettes made of crop residue, along with coal. The state is having 05 thermal power plants, one is of NTPC, 03 nos. of HPGCL and 01 no. private thermal power plant. The NTPC and private thermal power plant in the state started utilizing the pellets to replace 5% coal consumption. Haryana Power Generation Corporation has also finalized a tender for purchase of 19 lakh MT biomass pellets in next 7 years (approx. 3 lakh ton annually). As on date, the state has achieved 3% replacement of coal in thermal power plants by biomass pellets and the 5% will be achieved by Dec, 2025.	Dec, 2025	-	Yes	NTPC, HPGCL, Jhajjar Power plant from their own budget	-	NTPC, HPGCL, Jhajjar Power plant
5.	Policy for supply chain mechanism for in-situ and ex-situ management of stubble	Sustained elimination of stubble-burning instances by 2030 via ex-situ and in-situ management, and by strengthening the stubble value chain for diversified use of paddy straw, a provision of 69 Crore budget has been made under HCAPSD.	-	-	Yes	69 Crore under HCAPSD	-	Agriculture Dept

6.	Supply chain for crop Residues to cow shelters	Transportation charges @500/- per acre limited to maximum Rs. 15000/- is being provided is being provided by the Government to Gaushalas for consumption of paddy crop residue bales. Further, for Improving livestock waste management through implementation of clean manure management practices across gaushalas and strengthening operations and maintenance of Compressed Biogas Plants in the state, a budget head of Rs. 218 Crores has been kept under HCAPSD.	-	-	Yes -	218 Crore under HCAPSD and rest by Agriculture Department		Department of Agriculture
7.	Development of effective protocol for monitoring of fire incidents including crop area consideration and crop fire area data	The system is in place for past more than 5 year i.e. ICAR is monitoring the AFL at national level whereas, the HARSAC has been engage for monitoring at State level For effective monitoring / enforcement of stubble burning incidences in the State of Haryana.	Implemented	-	-	41.48 Lakh	-	HARSAC
8.	Collaboration with ISRO and preparation of Satellite based maps for monitoring of fire incidence	Services of HARSAC are being used by the state for this purpose. Under HCAPSD an allocation of Rs. 6 Cr has been made for expending network and use cases of satellite based monitoring.	Implemented	100%	Yes	6 Cr under HCAPSD	-	HARSAC, HSPCB
6 . Household emissions								

1.	Schemes for use of LPG/ PNG for cooking fuels	There are 3 schemes running in the state. Out of which PMUY -994723 CSR- 184591 State Sponsored Scheme – 198545 Under HCAPSD an allocation of Rs. 34 Cr has been made to design and implement a mass IEC campaign to drive adoption of clean cooking practices by households.	Implemented	-	Yes	Central Govt Fund and 34 Cr under HCAPSD	-	Food, Civil & Supplies Department
2.	Amendments to the building by-laws for" Indoor air quality management"	Haryana building code, 2017 (amendments 5.8.2024)	Implemented					HSVP/TCP

Annexure-I

Sl.No.	Name of Regional Office	Total number of Air Polluting industries				Number of Industries operating on CNG/ PNG /CBG	Number of Industries operating on Biomass / Agro waste	Number of Industries operating on Coal	Total number of industrial area in the jurisdiction	Total number of industrial areas having CNG/ PNG line	Total units that have to be converted to CNG/PNG/CBG (Pending for conversion)
		Red	Orange	Green	Total						
1	Ambala	26	193	6	225	0	Biomass / Agro waste - 28 Wood Briquettes/ Chips - 23 Diesel - 17 Electricity - 59	98	2	0	0
2	Bhiwani	7	260	9	276	0	Biomass-110, Electricity-166	0	1	0	0
3	Charkhi Dadri	12	267	3	282	0	Biomass-24 Biomass Briquettes-3 Diesel-4 Electricity-251	0	0	0	0
4	Ballabhgarh	83	206	24	313	PNG-129, LPG-01	Biomass-67 LSHS-28 Metallurgical Coke- 23, Electricity- 65	0	15	14	0
5	Faridabad	63	51	7	121	74	47	0	6	6	0
6	Fatehabad	11	180	0	191	0	180	11	1	0	0
7	Gurugram (N)	9	52	0	61	48	Biomass-7 Electricity-6	0	4	4	1
8	Gurugram (S)	39	67	6	112	86	26	0	4	4	0
9	Hisar	64	263	0	327	9	297	21	1	1	0
10	Jhajjar	44	299	2	345	CNG- 3, LNG-1, PNG- 26, LPG-19	Biomass-141 LSHS- 93 Metallurgical coke- 21 electricity-29 wood charcoal-10	2	6	5	0
11	Jind	26	188	0	214	0	214	0	2	0	0
12	Kaithal	21	279	89	389	0	123	266	0	0	0

13	Karnal	106	444	11	561	15	Biomass - 503 LSHS - 40 Wood Charcoal/Metallurgical Coke- 03	0	1	1	15
14	Kurukshetra	24	141	2	167	0	Agro Waste/ Biomass-19 Bio Fuel- 01 Cow Dunk-01 Diesel-01 HSD-01 Rice Husk / Parali-68 Wood Chips-05 Liquid-01 LSDO-01 Electricity-01	68	1	0	0
15	Mahendragarh	3	1	0	4	Nil	Biomass-01, HSD- 2, LSHS- 01	0	0	0	0
16	Nuh	29	100	3	132	CNG = 1 LPG = 11	LSHS = 5 Biomass = 108 Electricity = 7	0	1	0	0
17	Panipat	344	68	11	423	27	Biomass-353 LSHS-9	Coal-1 (Thermal Power Plant) Metallurgical Coke-32 (Foundries) Wood Charcoal-1	7	6	353
18	Rewari	45	130	8	183	51	Biomass = 124 Electricity = 08	0	2	2	0
19	Rohtak	40	98	2	140	LPG/Gas-17	Bagasse-2 Rice Husk-2 Biomass-39 Biomass & Wood Chips-37 Charcoal-19 LSHS-24	0	2	0	0
20	Sirsa	32	299	68	399	0	61 (Agro Waste) 178 (Wood) 68 (electricity)	92	3	0	0

21	Sonipat	236	722	120	1078	315	Biomass-609 LSHS- 71 Bio Fuel- 16 Metallurgical coke-3 Municipal Solid Waste-1 Wood Charcoal-2 Wooden Chips-2 Electricity-59	0	6	4	0
22	Yamuna Nagar	98	593	11	702	LPG-2	Biomass-52 Bagasse-3 Agrowaste-1 Rice Husk-5 Electricity-21 HSD-36 LDO-11 Wood-428 Oil-6 LSHS-6 Pellet-4	127	2	0	0
23	Palwal	31	196	8	235	31	Biomass - 170 (including brick kilns), Agro waste - 4, Electricity - 18, HSHS - 6, Rice husk - 6	0	1	0	0
24	Panchkula	21	91	0	112	0	Biomass-22, HSD-22, Electricity-1	Coal-67 (including brick kilns-63, Units-4)	3	0	0