BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,
SOUTHERN ZONE AT CHENNAI

O.A. NO.159 OF 2021 (SZ)

IN THE MATTER OF :

Kankana Das

... ... Applicant

Versus

UOI & others

... ... Respondents

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Dated at Chennai on this the 29th day of January 2025

Counsel for 6th Respondent

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,
SOUTHERN ZONE AT CHENNAI**

O.A. NO.159 OF 2021 (SZ)

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... ... Applicant

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... ... Respondents

MEMO FILED ON BEHALF OF THE 6TH RESPONDENT

It is most respectfully showeth;

1. It is humbly submitted that this Hon'ble Tribunal in its order dated 11.12.2024 had directed all the SPCBs/PCCs including 6th Respondent Karnataka State Pollution Control Board (KSPCB) to get approval of the State Action Plan from the Steering Committee and forward the same to the CPCB on or before 31.01.2025.

2. It is humbly submitted that in compliance to the directions of this Hon'ble Tribunal, the State Level Steering Committee meeting was held on 23.01.2025 under the chairmanship of Chief Secretary to Government of Karnataka, to review and approve State Action Plan for clean Air for Karnataka and the proceedings of the State Level Steering Committee meeting are annexed to this memo.(Annexure I)

3. It is humbly submitted that the Committee had accorded in-principle approval for the State Action Plan for Clean Air in Karnataka and the approved State Action Plan are annexed to this memo.(Annexure II)

4. It is humbly submitted that the Approved State Action Plan was forwarded to the Central Pollution Control Board on 28.01.2025 and a copy of the email has been annexed to this memo.(Annexure III)

It is therefore humbly prayed that this Hon'ble Court may be pleased to accept the approved State Action Plan and pass such order or orders as this Hon'ble Tribunal may deem fit and proper in the interest of justice.

Dated at Chennai on this the 29th day of January 2025

Counsel for 6th Respondent

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ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳಿ
Karnataka State Pollution Control Board

"ಪರಿಸರ ಭವನ", 1 ರಿಂದ 5ನೇ ಮಹಡಿಗಳು, ನಂ. 49, ಚರ್ಚ್ ಸ್ಟ್ರೀಟ್, ಬೆಂಗಳೂರು - 560 001, ಕರ್ನಾಟಕ ರಾಜ್ಯ, ಭಾರತ
"Parisara Bhavan", 1st to 5th Floor, # 49, Church Street, Bangalore - 560 001, Karnataka State, India

No: KSPCB/SAP/CEO-1&3/2024-25/651 Date: 28 JAN 2025

Sir/Madam,

Sub: Proceedings of the State Level Steering Committee meeting held on 23.01.2025 under the chairmanship of Chief Secretary to Govt of Karnataka, at Room No.320, 3rd floor, Vidhana Soudha, Bengaluru regarding review and approval of State Action Plan for clean Air for Karnataka.

****

With reference to the above subject, please find herein enclosed the proceedings of the State Level Steering Committee meeting held on 23.01.2025 under the chairmanship of Chief Secretary to Govt of Karnataka, at Room No.320, 3rd floor, Vidhana Soudha, Bengaluru.

This is for your kind information.

Yours faithfully,
Sd/-
Member Secretary

To,

1. The Member Secretary, Central Pollution Control Board, Parivesh Bhawan, East Arjun Nagar, Delhi-110032 (Submission of approved State Action Plan for Clean Air for Karnataka).
2. The Additional Chief Secretary to Government, Forest, Environment and Ecology Department, Room No. 447, 4th Floor, Gate No. 2, M.S.Building,Bangalore-560001.
3. The Additional Chief Secretary to Government, Urban Development Department, Room No.436, Vikasa Soudha, Bangnlore-560001.
4. The Additional Chief Secretary to Government, Health and Family welfare Department, Room no.104, 1st floor, Vikasa Soudha, Bangalore-560001.
5. The Additional Chief Secretary to Government, Home Department, Room No.222, 2nd Floor, Vidhana Soudha, Bangalore- 560001.
6. The Principal Secretary to Government, Transport Department, Room No. 126, 3rd Gate, M.S Building, Bangalore-560 001.

7. The Principal Secretary to Government, Environment & Ecology, Room No. 708, 7'h Floor, 4th Gate, MS Building Bengaluru-560001.
8. The Chief Commissioner, Bruhat Bengaluru Mahanagara Palike, Hudson Circle, Bengaluru - 560 002.
9. The Commissioner, Directorate of Urban Land Transport, Urban Development Department, BMTC TTMC, 4th Floor, Shantinagar, Bengaluru -560027.
10. The Commissioner, Dept of Transport & Road Safety, 1st Floor, 'A' Block, TTMC Building, Shantinagar, Bengaluru, Karnataka 560027.
11. The General Manager and State level Co-ordinator (Karnataka)IOCL, Indian Oil Bhavan, No.29, Kalingarao Rd, Mission Road, Sampangi Rama Nagar, Bengaluru, Karnataka 560027.
12. Representative of M/s. GAIL Gas Limited 44. New BEL Rd. AG's Layout Mathikere. Bengaluru- 560 054.
13. Representative from Central or Study or Science. Technology and Policy (CSTEP), Nagashetty Haili, RMV 2nd Stage, Bengaluru - 560 094.
14. Director- Southern Regional Centre, The Energy and Resource Institute (TERI), 4th Main, Domlur, 2ndStage, Bengaluru -560 071.
15. The Chairman, center for Infrastructure, Sustainable Transportation and Urban planning(CSTUP), Indian Institute of Science, C.V Raman Road, Bengaluru -560 012.
16. Director- Southern Regional Centre, The Energy and Resource Institute (TERI), 4th Main, Domlur, 2ndStage, Bengaluru -560 071.
17. The President, Karnataka Lorry Owners Federation, No.21st Cross, Chikkanna Garden, Shankarapuram, Bengaluru-560018.
18. The President, Southern States Goods Vehicles Owners Federation, No.13, 1st Floor, Vijaya complex, Shivaganga matt, Chamarajapete, Bengaluru -560018.

Copy submitted to:

1. The Chief Secretary to Government of Karnataka, Room 320, 3rd floor, Vidhana Soudha, Bengaluru- for kind information.
2. The Additional Chief Secretary to Government & Development Commissioner, Room No 306, 3rd floor, Vidhana Soudha, Bengaluru -560001
3. The Regional Director, central Pollution Control Board, Nisargha Bhawana, Thimmaiah road, Bengaluru.
4. Case file.

Member Secretary

KSPCB, Bengaluru

Proceedings of the Steering Committee meeting held on 23.01.2025 at 12:30 PM under the chairmanship of Chief Secretary to Govt of Karnataka, at Room No.320, 3rd floor, Vidhana Soudha, Bengaluru regarding review and approval of State Action Plan for clean Air for Karnataka.

List of Participants is enclosed as Annexure-I

At the outset of the meeting, the Member Secretary of the Karnataka State Pollution Control Board (KSPCB) provided a comprehensive overview of the State Action Plan (SAP) for Clean Air in Karnataka. He highlighted that the Hon'ble National Green Tribunal (NGT), through its order dated December 11, 2024, is closely monitoring the progress of formulation of the action plan. The NGT has directed the State to submit the SAP to the CPCB and to the Hon'ble NGT after approval by the Steering Committee, chaired by the Chief Secretary, Government of Karnataka.

In this regard, the Principal Secretary to the Government, Environment, and Ecology Department, presented a comprehensive overview of the SAP's key components. He emphasized that improvements in air quality could be achieved through the implementation of various schemes by the Central Government, State Government, and City Corporations, focusing on the following areas:

1. Industrial Emissions: By effective implementation of policies, guidelines, and rules for mitigating industrial emissions, promoting the adoption of cleaner technologies, and strengthening compliance measures etc.
2. Vehicular Emissions: By encouragement of electric vehicle (EV) adoption, enhancement of public transport infrastructure, establishment of Charging Stations and phasing out of older, high-emission vehicles etc.
3. Construction and Demolition (C&D) Waste and Road Dust Management: Development of policies for utilizing C&D waste in constructing State Highways, along with initiatives for greening open spaces and parks to curb dust and promoting C & D waste processing units with value addition.

4. Waste Burning Emissions: Enforcement of a ban on open waste burning, improvement of solid waste management practices, Biomining, waste to energy plantsand formulation of policies for managing legacy waste at dumpsites.
5. Agricultural Residue Burning: Introduction of schemes for procuring agricultural machinery, establishing biomass projects, and mitigating emissions in crop residue burning hotspots.
6. Household Emissions: Promotion of LPG/PNG as cleaner cooking fuels and amendments to building by-laws for improved indoor air quality management.

(A detailed presentation of these components is enclosed as Annexure II.)

While reviewing the State Action plan, the Chief Secretary, GoK, conducted a thorough review of the existing policies implemented by various departments and emphasized the importance of assessing the implementation status of these policies and ensuring regular monitoring of compliance.

Further, the Chief Secretary reviewed the progress made under the XV Finance Commission (XVFC) grants allocated to the Bruhat Bengaluru Mahanagara Palike (BBMP) for air quality improvement in Bengaluru. BBMP informed that out of the allocated ₹535 Cr, ₹254.69 Cr has been utilized, while the remaining ₹280.31 Cr is in the tendering stage. The Chief Secretary directed BBMP to expedite the tendering process and submit the utilization certificates (UCs) on the PRANA portal of National Clean Air Programme (NCAP).

After detailed deliberations, the Committee, **accorded in-principle approval for the State Action Plan for Clean Air in Karnataka** for further submission to CPCB and to the Hon'ble NGT before 31.01.2025 as per the directions of the Hon'ble NGT.

Meeting ended with vote of thanks to the Chair.

Shalini

(Dr. Shalini Rajneesh, IAS)
Chief Secretary,
Govt of Karnataka

STATE ACTION PLAN FOR CLEAN AIR FOR KARNATAKA

ANNEXURE - II

STATE ACTION PLAN FOR CLEAN AIR FOR KARNATAKA

By

KARNATAKA STATE POLLUTION CONTROL BOARD

Data Contributors for Sectoral Emissions

Industrial Emissions
Karnataka State Pollution Control Board
Infrastructure Development and Inland Water Transport Department
Energy Department

Vehicular Emissions
Transport Department
Bengaluru Metropolitan Transport Corporation
Karnataka State Road Transport Corporation
Bangalore Metro Rail Corporation Limited

Construction & Demolition Waste and Road Dust Management
Directorate of Municipal Administration
National Highway Authority of India, Regional Office, Bengaluru
Karnataka State Highway ImprovementProject, Bengaluru
Karnataka Forest Department

Emissionsfrom Burning of Waste
Bruhat Bengaluru Mahanagara Palike
Directorate of Municipal Administration

Emissions from Burning of Agro residues
Department of Agriculture
Karnataka Renewable Energy Development Limited

Household Emissions
Food & Civil Supplies Department
Indian Oil Corporation Limited, Karnataka Office
Gas Authority of India Limited

Smart Cities Initiatives
Shivamogga Smart City Limited
Tumakuru Smart City Limited

Executive Summary:

Air pollution is one of the most pressing environmental challenges faced by Karnataka, a dynamic state known for its technological advancements and economic growth. Rapid urbanization, industrial expansion, increased vehicular emissions, and agricultural activities have contributed to deteriorating air quality, posing significant risks to public health, the environment, and the overall quality of life. Recognizing the urgent need to address this issue, Karnataka has developed a comprehensive State Action Plan for Air Pollution under the National Clean Air Programme (NCAP).

NCAP a flagship programme launched by the Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India, aims to tackle air pollution on a national scale by setting clear targets for reducing particulate matter (PM10) concentrations upto 40% by 2025-26, with 2019-20 as the base year. The program emphasizes a multi-sectoral approach, involving various stakeholders including government agencies, industries, and the general public, to collaboratively work towards cleaner air.

Karnataka's State Action Plan aligns with the objectives of the NCAP, tailoring strategies to the specific needs and challenges of the state. The plan emphasizes a holistic approach, integrating measures across multiple sectors such as transportation, industry, agriculture, waste management, and urban planning. By leveraging advanced technologies, regulatory frameworks, and community engagement, Karnataka aims to achieve significant reductions in air pollution levels, thereby improving the health and well-being of its residents.

The State Action Plan is built upon a foundation of robust data collection and analysis, ensuring that interventions are evidence-based and targeted. It also highlights the importance of inter-departmental coordination and stakeholder collaboration, fostering a unified effort towards achieving clean air goals. The plan outlines short-term, medium-term, and long-term measures, each designed to progressively reduce pollution levels and sustain air quality improvements over time.

Key Components of the State Action Plan

The Karnataka State Clean Air Action Plan, under the National Clean Air Program (NCAP), is a comprehensive roadmap aimed at improving air quality across the state through targeted actions and policy measures. The plan identifies key pollution sources, outlines specific mitigation strategies, sets clear timelines, and ensures public engagement in achieving its air quality goals. Below are the key components of the plan:

1. Identification of Sectoral Emissions:

A critical element of the action plan is the identification of emission sources across various sectors, including transport, industry, residential, agriculture, construction, and waste management. By conducting a detailed emissions inventory, the plan maps out the specific contribution of each sector to air pollution, enabling a more focused and efficient approach to mitigation. This step also includes quantifying emissions of pollutants such as Particulate Matter (PM_{10} and $PM_{2.5}$), nitrogen oxides (NOx), sulfur dioxide (SO_2), and volatile organic compounds (VOCs).

2. Mitigation Actions:

The plan outlines specific actions to mitigate emissions from each sector. For the transport sector, measures include promoting electric vehicles (EVs), enhancing public transportation systems, and encouraging non-motorized transport like cycling and walking. In the industrial sector, actions involve adopting cleaner technologies, enforcing stricter emission standards, and encouraging energy efficiency. For the residential sector, the focus is on reducing emissions from cooking and heating by promoting the use of cleaner fuels like LPG and electricity. Waste management, initiatives include banning open burning and improving solid waste processing systems etc.

3. Policy Measures:

To ensure the effectiveness of the plan, a range of policy interventions is proposed. This includes enforcing stricter vehicle emission norms, Registered Vehicle Scrapping Facility, promoting renewable energy in industries, Waste to energy plants, C & D Waste Management and incentivizing the adoption of cleaner technologies etc.

4. Targets for Completion of Planned Activities:

The action plan includes a timeline for the completion of various activities, with clear short-term, medium-term, and long-term targets. These targets are designed to be specific, measurable, and monitorable, enabling progress tracking over time. Short-term targets focus on quick-win actions like public awareness campaigns and enhanced air quality monitoring, while medium and long-term targets involve more extensive measures such as infrastructure upgrades and policy reforms.

5. Financial Implications:

A detailed analysis of the financial requirements for implementing the plan is provided, including the costs of infrastructure development, technology adoption, capacity

building, and public outreach programs. The plan outlines potential sources of funding, such as state budgets, national programs like NCAP, private sector investments etc. Financial provisions for monitoring and evaluating the implementation of the plan are also accounted for, ensuring sustained effort and resource allocation over time.

6. Air Shed Management:

Recognizing that air pollution transcends administrative boundaries, the plan adopts an air shed management approach. This involves coordinating efforts across neighboring districts and regions to manage air quality holistically. Collaborative action will be taken to reduce pollution levels within a defined geographical air shed by considering regional emissions from industries, transport, and agriculture. This approach encourages multi-state and inter-district cooperation, ensuring that pollution is addressed at its source, regardless of jurisdiction.

7. Hotspots Action Plan:

The plan identifies specific pollution hotspots within the state—areas where air pollution levels are significantly higher than surrounding regions. For each hotspot, a localized action plan is developed, targeting the predominant sources of emissions. These plans will focus on rapid interventions such as dust control, industrial pollution regulation, and traffic management to deliver immediate improvements in air quality.

8. Public Awareness and Outreach Program:

Public engagement is a cornerstone of the Karnataka Clean Air Action Plan. A comprehensive awareness and outreach strategy is designed to educate citizens about the sources and impacts of air pollution and encourage their participation in emission reduction efforts. This includes campaigns on behavioural changes, like reducing vehicle idling, minimizing the use of personal vehicles, and proper waste disposal practices. The plan also incorporates the use of digital platforms, social media, and community engagement programs to disseminate air quality information and foster community-level action.

In sum, Karnataka's State Clean Air Action Plan is a multi-faceted, actionable strategy designed to tackle air pollution from all angles—policy, public participation, and technology. With a strong emphasis on collaboration, measurable targets, and sustainable practices, the plan aims to achieve substantial reductions in air pollution and ensure long-term environmental and public health benefits for the state.

Table of Contents

List of Abbreviations

Acronym	Expansion
AAQ	Ambient Air Quality
AAQMS	Ambient Air Quality Monitoring Station
AC	Alternative Current
APC	Air Pollution Control
AQMC	Air Quality Monitoring Cell
BBMP	Bruhat Bengaluru Mahanagara Palike
BenSCL	Bengaluru Smart City Limited
BESCOM	Bangalore Electricity Supply Company Limited
BIPV	Building Integrated Photo Voltaic
BMRCL	Bangalore Metro Rail Corporation Limited
BMTC	Bengaluru Metropolitan Transport Corporation
BTX	Benzene / Toluene / Xylene
CAAQMS	Continuous Ambient Air Quality Monitoring Stations
CBG	Compressed Bio Gas
C & D	Construction & Demolition
CEPI	Comprehensive Environmental Pollution Index
CFBC	Circulating Fluidized Bed Combustion
CFE	Consent For Establishment
CGD	City Gas Distribution
CMC	City Municipal Councils
CNG	Compressed Natural Gas
CO	Carbon Monoxide
COP	Conference of the Parties
CPA	Critically Polluted Areas
CPCB	Central Pollution Control Board
CSTEP	Center for Study of Science, Technology, and Policy
DC	Direct Current
DCC	Department for Climate Change
DG	Diesel Generator

DMA	Directorate of Municipal Administration
DPR	Detailed Project Report
DUDC	District Urban Development Cells
DWCC	Dry Waste Collection Centre
EMPRI	Environmental Management & Policy Research Institute
FAME	Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles
FCS	Food & Civil Supplies
FEE	Forest, Environment & Ecology
GA	Geographical Area
GAIL	Gas Authority of India Limited
GoI	Government of India
GoK	Government of Karnataka
GSR	General Statutory Rules
HAM	Hybrid Annuity Mode
IDD	Infrastructure Development Department
IRC	Indian Road Congress
ISO	International Organization for Standardization
ITPL	International Tech Park Bangalore
JSW	Jindal Steel Works
KCDC	Karnataka Compost Development Corporation
KERC	Karnataka Electricity Regulatory Commission
KIABD	Karnataka Industrial Authority Development Board
KL	kilo litre
KMVT	Karnataka Motor Vehicles Taxation
KPCL	Karnataka Power Corporation Limited
KSHIP	Karnataka State Highway Improvement Project
KSPCB	Karnataka State Pollution Control Board
KSRTC	Karnataka State Road Transport Corporation
KSSIDC	Karnataka State Small Industries Development Corporation
KVA	kilovolt-ampere
LPG	Liquefied Petroleum Gas
MDPE	Medium Density Poly Ethylene

MoEF & CC	Ministry of Environment, Forest & Climate Change
MoPNG	Ministry of Petroleum & Natural Gas
MoRTH	Ministry of Road Transport and Highways
MRF	Material Recovery Facility
MSW	Municipal Solid Waste
MT	Metric Tonnes
MTA	Million Metric Tonnes Annually
MTPD	Metric Tonnes Per Day
MVA	Motor Vehicle Act
MW	Mega Watt
NAC	Non-Attainment Cities
NAMP	National Ambient Air Quality Monitoring Programme
NCAP	National Clean Air Programme
NDIR	Non-Dispersive InfraRed
NG	Natural Gas
NGT	National Green Tribunal
NH_3	Ammonia
NHAI	National Highway Authority of India
NIMHANS	National Institute of Mental Health and Neuro-Sciences
NO	Nitrous Oxide
NO_2	Nitrogen Dioxide
NOx	Nitrogen oxides
NTPCL	National Thermal Power Corporation Limited
OCEMS	Online Continuous Effluent/Emission Monitoring System
O_3	Ozone
OPA	Other Polluted Areas
Pb	Lead
PDS	Public Distribution System
PHH	Priority House Hold
$PM_{2.5}$	Particulate Matter of diameter 2.5 microns or less
PM_{10}	Particulate Matter of diameter 10 microns or less
PMUY	Pradhan Mantri Ujjwala Yojana

PNG	Piped Natural Gas
PNGRB	Petroleum &Natural Gas Regulatory Board
PUC	Pollution Under Control
RDF	Refuse Derived Fuel
RMC	Ready Mix Concrete
RTO	Regional Transport Office
RVSF	Registered Vehicle Scrapping Facility
SAPAP-K	State Action Plan on Air Pollution for Karnataka
SCMD	Standard Cubic Meters Per Day
SEZ	Special Economic Zone
SLC	State Level Committee
SO_2	Sulphur Dioxide
SP	Special Provision
SPA	Severely Polluted Areas
SPCB	State Pollution Control Board
SSCL	Shivamogga Smart City Limited
SWM	Solid Waste Management
SZ	South Zone
TD	Transport Department
TERI	The Energy Resource of India
TMC	Town Municipal Councils
TP	Town Panchayat
TPA	Million Tonnes Per Annum
TPD	Metric Tonnes Per Day
TSCL	Tumakuru Smart City Limited
UDD	Urban Development Department
ULB	Urban Local Bodies
mg/m^3	Milligram per cubic metre
$\mu g/m^3$	Microgram per cubic metre

1 Introduction &Background

Ministry of Environment Forest and Climate Change, Government of India launched the National Clean Air Programme (NCAP) on 10th January 2019 as a time bound national level strategy for pan India implementation to tackle the air pollution problem across the country in a comprehensive manner. NCAP is being implemented in 131 non-attainment cities across 24 states concerning PM_{10} identified by Central Pollution Control Board (CPCB) based on the monitoring results from 2011 to 2015 across India. 4 non-attainment cities were identified from Karnataka due to nonconforming to National Ambient Air Quality Standards consecutively for 5 years. City actions plan for 4 non-attainment cities of Karnataka (Bengaluru, Hubli-Dharwad, Davanagere, and Kalaburagi) were prepared by the Air Quality Monitoring Cell (AQMC), as per the programme objectives, approved by CPCB and are under implementation in these cities intending to reduce the Particulate Matter 10 (PM_{10}) emission upto 40% by 2025-26.

Further in this regard, the Hon'ble NGT (SZ), Chennai in the matter of OA No. 159 of 2021 issued an order dated 29.07.2021, which inter-alia states that: "The Central Pollution Control Board and State Pollution Control Boards of Tamil Nadu, Karnataka, and Telangana and the respective State Governments through their Environment Secretary are directed to file independent statements and reports regarding the action taken by them for preparing the State Action Plan as envisaged by in National Clean Air Programme (NCAP) and what is the present stage of its implementation and how it is being effectively monitored and implemented by the regulators and if there is any gap, what is the action taken by the respective State Governments for filling the gap and fully implement the scheme within the respective States".

According to the guidance document of NCAP, a State Action Plan (SAP) for addressing air pollution is to be prepared. As per the NCAP document in Appendix-VI: NCAP agencies and timelines at Sl.No.1.13 mentions the State Action Plan for Air Pollution detailed below:

Sl. No	Component/Activities	Level for funding	Level for implementation	Agencies	Timelines
1.	A preliminary state action plan for air pollution is to be formulated for all 24 states, which harbour 131 non- attainment cities	Centre	State	SPCB,CPCB &MoEF&CC	2020
2	SAP for air pollution is to be taken up for	State	State	State	2020

	implementation by the state government and city administration				
3	The guidelines for the preparation of the SAP to be formulated	Centre	Centre	CPCB & MoEF&CC	2020

The guidelines are to be formulated by the Centre (MoEF&CC and CPCB) as mentioned in 1.13.3. CPCB communicated the State Action Plan template through mail dated: 15.11.2021.

In the meanwhile, a meeting was held on 08.04.2022 with the line Departments under the chairmanship of Additional Chief Secretary, Department of Forest, Ecology & Environment, Government of Karnataka (GoK), wherein it was decided to entrust the work of preparing the State Action Plan on Air Pollution for Karnataka to Environmental Management and Policy Research Institute (EMPRI), Bengaluru. EMPRI was directed to form a committee involving experts and the Institutes of Repute. The line departments: Karnataka State Pollution Control Board (KSPCB), Industries, Directorate of Municipal Administration (DMA), Bruhat Bengaluru MahanagaraPalike (BBMP), transport, Gas Authority of India Limited (GAIL), Indian Oil Corporation Limited (IOCL), agriculture, Bengaluru Development Authority (BDA), Food & Civil Supplies (FCS) and, Forest Department are required to sharethe necessary data/information andfor preparation of State Action Plan on Air Pollution and to nominate a nodal officer for coordination with EMPRI.

EMPRI constituted the following Committee for the preparation ofthe State Action Plan on Air Pollution for Karnataka (SAPAP-K) vide OM No. EMPRI/CR-02/CCC/2022-23/372 dated: 22.06.2022.

1. Shri Vipin Singh, IFS, Director, EMPRI
2. Dr. K H Vinaya Kumar, IFS (Rtd), Director (Research), EMPRI
3. Shri. Mahesh T, Chief Environmental Officer-1, KSPCB
4. Dr. P Niranjan, Chief Environmental Officer-3, KSPCB
5. Smt. P K Selvi, Scientist D, CPCB, Regional Directorate, Bengaluru
6. Dr. Pratima Singh, Research Scientist, CSTEP, Bengaluru
7. Shri. Akshay Kumar V Ganeshker, Research Associate, DCC, EMPRI

The Meeting of the committee for preparation of the "State Action Plan on Air Pollution-Karnataka (SAPAP-K)"was held on **29.06.2022 at EMPRI**.

The committee deliberated on the agenda items and the following decisions were taken:

Agenda 1: Status of the nomination of Departmental Nodal Officers.

Decision: Follow-up needs to be done via phone and a few additional departments such as Forest and Energy Department and Corporations such as NHAI, KSHIP, BMTC, KRSTC, and KRDCL are required to be added to the list of line departments.

Agenda 2: Template provided by MoEF& CC to be used to collect the required data.

Decision: The committee decided to host a consultative workshop tentatively on 11th July 2022, with the nominated departmental nodal officers to explain the template and the information that needs to be provided by them.

Agenda 3: Framework for preparation of the action plan.

Decision: The committee suggested considering the framework used by the State of Gujarat and Telangana for the preparation of SAPAP-K and improvising the framework if necessary.

Decisions on other aspects of SAPAP-K:

1. The committee agreed to submit the first draft of the report after the compilation of the data (as per the template prescribed by MoEF & CC) as Phase-1. Further, prepare and submit the State Action Plan as phase II.

2. The committee suggested EMPRI, KSPCB, and CSTEP nominate three personnel to collect information by dividing the departments among the three.

3. The committee opined to include all the smart cities of Karnataka for the collection of necessary data.

Accordingly, Karnataka has submitted its State Action Plan (SAP) in November 2022 to CPCB & uploaded the same on PRANA portal. However, in accordance with the Hon'ble NGTs order dated 09.05.2024 in the matter of OA No.159 of 2021 (SZ), CPCB has prepared a revised guidelines for preparation of State action Plan and the same has been issued to all State Pollution Control Boards (SPCBs) advising them to update/revise their SAPs accordingly.

As per the guidance document of CPCB, State Action Plan has to be prepared by AQMC under the Chairmanship of Principal Secretary to Govt of Karnataka, Dept of Ecology & Environment and to be approved by the Steering Committee under the Chairmanship of Chief Secretary to Govt of Karnataka.

2 Karnataka State Profile

The state of Karnataka is divided into 31 districts ((Figure 2.1) and 176 taluks, spanning 29,340 villages, and 347 cities and towns.

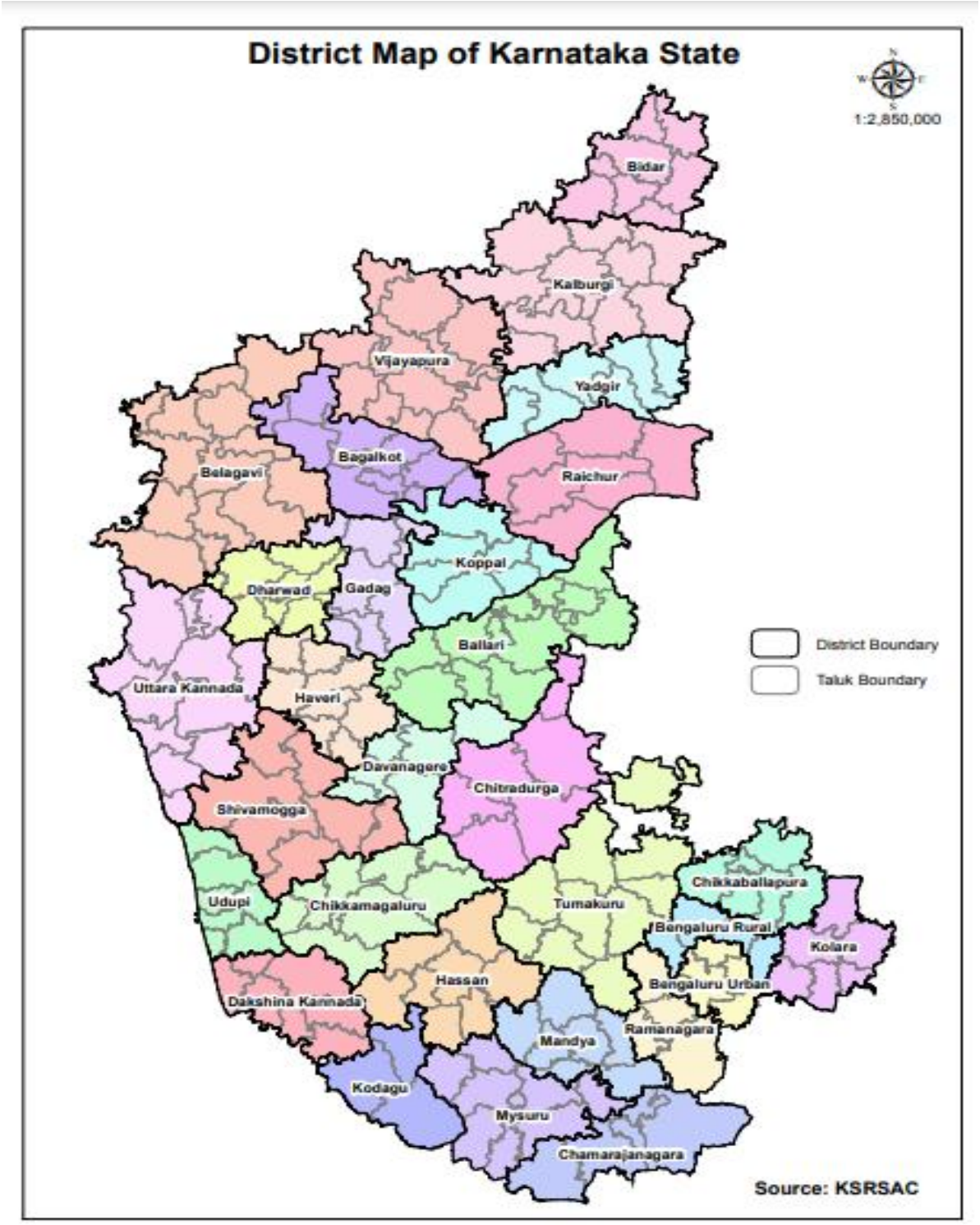


Figure 2.1: Karnataka state and districts

2.1 Topography Geography and Meteorology

2.1.1 Topography Geography

Karnataka has a total geographical area of 191,791 km² accounting for 5.83% of the total geographical area of India. By area, it is the sixth largest state of India. It is situated on the western edge of the Deccan Peninsula, and is located approximately between 11.5° N and 18.5° N latitudes and between 74° E and 78.5° E longitudes. The state is bounded by Goa to the northwest, Maharashtra to the north, Telangana and Andhra Pradesh to the east, Tamil Nadu to the south east and Kerala to the southwest. The western part is flanked by the Arabian Sea. The southern corner of the state is seated at an angle where the Western Ghats and the Eastern Ghats converge into the Nilgiri hills. The state extends to about 760 km from north to south and about 420 km from east to west. The capital of Karnataka state is Bengaluru (Bangalore). Karnataka comprises parts of the Deccan Plateau, the Western Ghats Mountain Range and the Coastal Plains. The state can be divided into four physiographic landforms – the Northern Karnataka Plateau, the Central Karnataka Plateau, the Southern Karnataka Plateau and the Coastal Karnataka Region. - The Northern Karnataka Plateau covers the districts of Belagavi, Bidar, Vijayapura, Yadgir and Kalaburagi. The Northern Plateau has an elevation of 300 metres to 600 metres from the sea level and slopes towards the east. The landscape is mainly covered with rich black cotton soil. The vast expanse of treeless plateau is interspersed with river plains, watersheds, residual hills and ridges. The river plains are represented by river Bhima, Ghataprabha, Krishna and Malaprabha. - The Central Karnataka Plateau consists of the districts of Ballari, Chikkamagaluru, Chitradurga, Davanagere, Dharwad, Gadag, Haveri, Raichur, Koppal and Shivamogga. The elevation of the Central Plateau varies between 450 metres and 700 metres and slopes towards the east. The Tungabhadra river basin is located in this region. - The Southern Karnataka Plateau includes the districts of Bengaluru Urban, Bengaluru Rural, Tumakuru, Ramanagara, Hassan, Kodagu, Kolar, Chikballapur, Mandya, Mysuru, and Chamarajanagar. This region is encircled by the Western Ghats on the west and the south, where the terrain has a high degree of slope. The Southern Plateau has a general elevation of 600 metres to 900 metres. But the Biligirirangan hills of Mysore district and the Brahmagiri range of Kodagu district have residual heights ranging between 1,500 metres to 1,750 metres. The Cauvery river basin forms a significant part of this plateau. - The Coastal Karnataka region starts from the Western Ghats in the west and extends till the edge of the Karnataka Plateau in the east. The coastal region includes the districts of Uttara Kannada, Udupi and Dakshina Kannada. The terrain of this region consists of rivers, creeks, waterfalls, ranges of hills and peaks. The coastal belt has an average width of 50 km to 80 km. It covers a distance of around 320 km from north to south.

2.1.2 Meteorology of Karnataka: A Detailed Overview

Karnataka, situated in southern India, spans diverse geographical regions, including the Western Ghats, the Deccan Plateau, and the coastal plains. Its meteorological profile is influenced by this geographic diversity, resulting in distinct climatic conditions across the state. Karnataka experiences a **tropical monsoon climate** characterized by three primary seasons: summer, monsoon, and winter.

During the **summer months (March to May)**, temperatures range from **28°C to 40°C**, with the northern interior regions experiencing higher heat levels compared to the coastal belt. The humidity remains relatively high in coastal areas, while the interior regions often experience dry and hot conditions.

The **monsoon season (June to September)** is dominated by the **southwest monsoon**, which brings substantial rainfall, particularly to the coastal and Western Ghats regions. Coastal Karnataka receives annual rainfall exceeding **4,000 mm**, making it one of the wettest regions in the state. Conversely, northern Karnataka receives relatively low rainfall, ranging between **500–800 mm annually**, making it prone to frequent droughts. The southern and central regions receive moderate rainfall, between **800–1,200 mm annually**, supporting agriculture and water resource sustainability.

The **winter season (October to February)** is marked by mild and dry weather conditions, with temperatures ranging between **15°C and 28°C**. During this time, the **northeast monsoon** impacts parts of southern Karnataka, bringing additional rainfall, particularly to districts like Bengaluru Rural, Kolar, and Chikkaballapur.

Rainfall and Weather Extremes

Rainfall patterns vary significantly due to the state's diverse topography. The Western Ghats act as a barrier for the southwest monsoon, causing orographic rainfall in coastal districts such as Udupi, Dakshina Kannada, and Uttara Kannada. In contrast, districts like Bagalkot, Gadag, and Kalaburagi in northern Karnataka often face **semi-arid conditions**, leading to persistent water scarcity and droughts. Table 2.1- Actual Annual Rainfall from 2017- 2022.

Flooding is another climatic challenge, especially during the monsoon season in coastal and riverine regions. Rivers like the Nethravathi and Krishna can overflow, causing localized flooding. Additionally, cyclonic systems originating in the **Bay of Bengal** occasionally affect Karnataka, bringing heavy rainfall and strong winds, particularly in the coastal and southern regions like Bengaluru & Mysore.

Table 2.1- Actual Annual Rainfall from 2017- 2022

3. ವಾರ್ಷಿಕ ವಾಸ್ತವಿಕ ಮಳೆ /Actual Annual Rainfall							
3.2b ಮಳೆ (ಮೀ.ಮೀ)							
3.2b Rainfall (in mm)							
ಕ್ರಮ ಸಂಖ್ಯೆ Sl No.	ಜಿಲ್ಲೆ/District	2017 ರಿಂದ 2022 ರವರೆಗೆ ವಾರ್ಷಿಕ ವಾಸ್ತವಿಕ ಮಳೆ (ಮೀ.ಮೀ) Actual Annual Rainfall from 2017 to 2022 (mm)					
		2017	2018	2019	2020	2021	2022
1	2	377	378	379	380	381	382
1	ಬೆಳಗಾವಿ Belagavi	949	1030	1212	993	983	1194
2	ಬಾಗಲಕೋಟೆ Bagalkote	592	349	614	614	550	807
3	ವಿಜಯಪುರ Vijayapura	601	330	520	732	587	927
4	ಕಲ್ಬುರ್ಗಿ Kalburgi	865	703	501	655	1077	847
5	ಬೀದರ Bidar	833	511	674	1035	907	952
6	ರಾಯಚೂರು Raichuru	687	199	512	822	624	805
7	ಕೊಪ್ಪಳ Koppal	606	342	621	800	640	744
8	ಗದಗ Gadag	554	430	698	640	678	995
9	ಧಾರವಾಡ Dharwada	609	723	1306	1009	965	1051
10	ಉತ್ತರ ಕನ್ನಡ Uttara Kannada	2285	2873	4220	3538	3346	2981
11	ಹಾವೇರಿ Haveri	684	752	975	763	1013	1023
12	ಬಳ್ಳಾರಿ Ballari	352	639	386	666	684	795
13	ಚಿತ್ರದುರ್ಗ Chitradurga	576	480	778	775	872	695.53
14	ದಾವಣಗೆರೆ Davanagere	708	605	849	822	987	1162
15	ಶಿವಮೊಗ್ಗ Shivamogga	2001	2910	2721	1996	2444	2439
16	ಉಡುಪಿ Udupi	4032	4653	5200	5159	4797	4672
17	ಚಿಕ್ಕಮಗಳೂರು Chikkamagaluru	1386	2278	2183	2093	2070	2278
18	ತುಮಕೂರು Tumakuru	733	509	784	837	1109	1358
19	ಕೋಲಾರ Kolara	955	387	705	1262	1316	1250
20	ಬೆಂಗಳೂರು (ನ) Bengaluru (Urban)	890	861	831	1078	1128	1456
21	ಬೆಂಗಳೂರು (ಗ್ರಾ) Bengaluru (Rural)	1014	700	851	959	1256	1488.05
22	ಮಂಡ್ಯ Mandya	918	661	827	820	1011	1484
23	ಹಾಸನ Hassan	1192	1858	1469	1161	1326	1701
24	ದಕ್ಷಿಣ ಕನ್ನಡ Dakshina Kannada	3233	4384	4057	3917	3963	4383
25	ಕೊಡಗು Kodagu	2305	4441	3067	2483	2656	2974
26	ಮೈಸೂರು Mysuru	894	892	1003	818	955	1318
27	ಚಾಮರಾಜನಗರ Chamarajanagara	724	653	901	907	906	1159
28	ಚಿಕ್ಕಬಳ್ಳಾಪುರ Chikkaballapura	737	372	721	955	1269	1134
29	ರಾಮನಗರ Ramanagara	1161	793	878	988	1087	1512
30	ಯಾದಗಿರಿ Yadgiri	701	393	587	928	669	933
31	ವಿಜಯನಗರ Vijayanagara	503	375	705	817	772	927
	ಒಟ್ಟು Total	1212	1366	1340	1350	1376	1530

Source: Karnataka at Glance annual report 2022-23-KSRSAC

Temperature and Air Quality

Temperature trends across Karnataka show significant variation between coastal and inland regions. Coastal areas maintain a moderate climate with high humidity, while the northern interior districts witness more significant temperature fluctuations. Cities like Bengaluru enjoy relatively moderate weather throughout the year, with occasional heatwaves or cold spells.

Urban centers, especially Bengaluru, face **air quality challenges** due to rapid urbanization and vehicular emissions. The **Karnataka State Pollution Control Board (KSPCB)** monitors air quality and implements measures to mitigate pollution levels.

*Source **(IMD)***

2.2 Population and Urbanization in Karnataka

2.2.1 Population:

As per the 2011 Census, Karnataka State has a population of 6.11 Cr (6,10,95,297) with 3.10 Cr (3,09,66,657) males and 3.01 Cr (3,01,28,640) females.The sex ratio in Karnataka is 973, indicating an above-average ratio compared to the national average of 943.**Table 2.1 Population 2011 census**

Child Population (Age group 0-6 years) of Karnataka State is 71.61 Lac (71,61,033) which is 11.72% of Karnataka State overall population, Child sex Ratio of Karnataka State is 949 females for every 1000 males.

In 2024, Karnataka State current estimated population is projected to be 7.51 Cr (7,51,93,936), **Table 2.2 projected population for 2024.**

The Urban population of Karnataka State is 2.36 Cr (2,36,25,962), with 1.20 Cr (1,20,37,303) being males and 1.16 Cr (1,15,88,659) being females, making up 38.67% of the Karnataka total population, The sex ratio in urban population is 963 females for every 1000 males.

The Rural population of Karnataka State is 3.75 Cr (3,74,69,335), with 1.89 Cr (1,89,29,354) being males and 1.85 Cr (1,85,39,981) being females, making up 61.33% of the Karnataka total population, The sex ratio in rural population is 980 females for every 1000 males.

Karnataka Area & Households

The Total Area of Karnataka State is 1,91,791 Square KM, with a population density of 319 people per square kilometer, Total Number of towns in Karnataka State are 347 and the Total Number of Villages in Karnataka State are 29,340.The Total Number of households in Karnataka State are 1.34 Cr(1,33,57,027).

Source (Census of India)

Table 2.2 Population 2011 census

2. ವಿಸ್ತೀರ್ಣ ಮತ್ತು ಜನಸಂಖ್ಯೆ / Area and Population								
2.1b ವಿಸ್ತೀರ್ಣ, ಜನಸಾಂದ್ರತೆ ಮತ್ತು ಜನಸಂಖ್ಯೆ-2011ರ ಜನಗಣತಿ								
2.1b Area, Population Density and Population - 2011 Census								
ಕ್ರಮ ಸಂಖ್ಯೆ Sl No.	ಜಿಲ್ಲೆ/District	ಭೌಗೋಳಿಕ ವಿಸ್ತೀರ್ಣ (ಚ.ಕಿ) Geograpical Area (Sq.Kms)	ಜನ ಸಾಂದ್ರತೆ Population Density	ಜನಸಂಖ್ಯೆ /Population			ರಾಜ್ಯದ ಜನಸಂಖ್ಯೆಗೆ ಶೇಕಡಾವಾರು % Share to State Population	ಸ್ಥಾನ Rank
				ಗಂಡಸರು Male	ಹೆಂಗಸರು Female	ಒಟ್ಟು Total		
1	2	90	91	92	93	94	95	96
1	ಬೆಳಗಾವಿ Belagavi	13433	356	2423063	2356598	4779661	7.82	2
2	ಬಾಗಲಕೋಟೆ Bagalkote	6552	288	950111	939641	1889752	3.09	9
3	ವಿಜಯಪುರ Vijayapura	10498	207	1111022	1066309	2177331	3.56	6
4	ಕಲ್ಬುರ್ಗಿ Kalburgi	10954	234	1301755	1264571	2566326	4.2	5
5	ಬೀದರ Bidar	5448	313	870665	832635	1703300	2.79	14
6	ರಾಯಚೂರು Raichuru	8442	228	964511	964301	1928812	3.16	8
7	ಕೊಪ್ಪಳ Koppal	5570	250	699926	689994	1389920	2.28	21
8	ಗದಗ Gadag	4657	229	537147	527423	1064570	1.74	28
9	ಧಾರವಾಡ Dharwada	4260	434	937206	909817	1847023	3.02	10
10	ಉತ್ತರ ಕನ್ನಡ Uttara Kannada	10277	140	726256	710913	1437169	2.35	19
11	ಹಾವೇರಿ Haveri	4823	331	819128	778540	1597668	2.62	17
12	ಬಳ್ಳಾರಿ Ballari	4252	329	706075	694895	1400970	2.29	20
13	ಚಿತ್ರದುರ್ಗ Chitradurga	8436	197	840843	818613	1659456	2.72	15
14	ದಾವಣಗೆರೆ Davanagere	4489	366	832111	811383	1643494	2.69	16
15	ಶಿವಮೊಗ್ಗ Shivamogga	8478	207	877415	875338	1752753	2.87	13
16	ಉಡುಪಿ Udupi	3582	329	562131	615230	1177361	1.93	24
17	ಚಿಕ್ಕಮಗಳೂರು Chikkamagaluru	7202	158	566622	571339	1137961	1.86	26
18	ತುಮಕೂರು Tumakuru	10597	253	1350594	1328386	2678980	4.38	4
19	ಕೋಲಾರ Kolara	3979	386	776396	760005	1536401	2.51	18
20	ಬೆಂಗಳೂರು (ನ) Bengaluru (Urban)	2196	4381	5022661	4598890	9621551	15.75	1
21	ಬೆಂಗಳೂರು (ಗ್ರಾ) Bengaluru (Rural)	2298	431	509172	481751	990923	1.62	30
22	ಮಂಡ್ಯ Mandya	4962	364	905085	900684	1805769	2.96	11
23	ಹಾಸನ Hassan	6814	261	883667	892754	1776421	2.91	12
24	ದಕ್ಷಿಣ ಕನ್ನಡ Dakshina Kannada	4861	430	1034714	1054935	2089649	3.42	7
25	ಕೊಡಗು Kodagu	4102	135	274608	279911	554519	0.91	31
26	ಮೈಸೂರು Mysuru	6307	476	1511600	1489527	3001127	4.91	3
27	ಚಾಮರಾಜನಗರ Chamarajanagara	5648	181	512231	508560	1020791	1.67	29
28	ಚಿಕ್ಕಬಳ್ಳಾಪುರ Chikkaballapura	4244	296	636437	618667	1255104	2.05	23
29	ರಾಮನಗರ Ramanagara	3516	308	548008	534628	1082636	1.77	27
30	ಯಾದಗಿರಿ Yadgiri	5270	223	590329	583942	1174271	1.92	25
31	ವಿಜಯನಗರ Vijayanagara	5644	240	685168	668460	1353628	2.22	22
	ಒಟ್ಟು Total	191791	319	30966657	30128640	61095297	100	-

Table 2.3 projected population for 2024

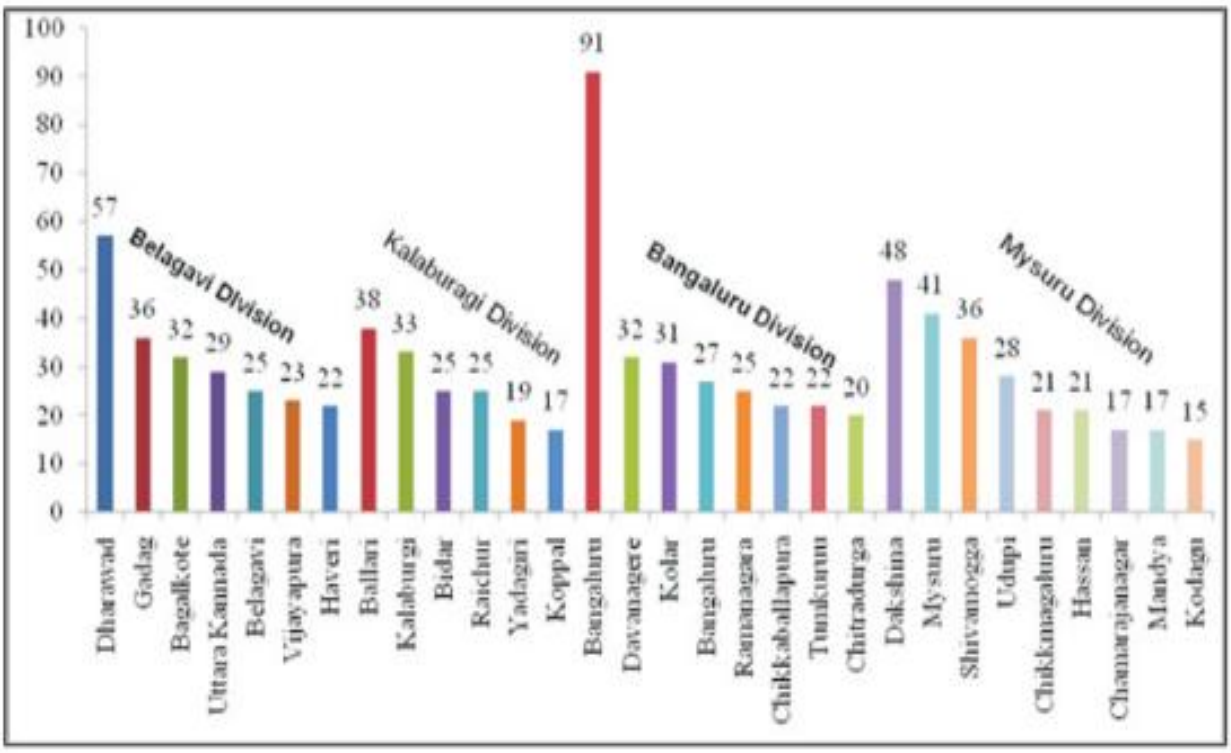
2. ವಿಸ್ತೀರ್ಣ ಮತ್ತು ಜನಸಂಖ್ಯೆ / Area and Population						
2.1c 2024ನೇ ಸಾಲಿಗೆ ಅಂದಾಜಿಸಲಾದ ಜನಸಂಖ್ಯೆ						
2.1c Projected Population for 2024						
ಕ್ರಮ ಸಂಖ್ಯೆ Sl No.	ಜಿಲ್ಲೆ/District	ಜನಸಂಖ್ಯೆ Population			ರಾಜ್ಯದ ಜನಸಂಖ್ಯೆಗೆ ಶೇಕಡಾವಾರು % Share to State Population	ಸ್ಥಾನ Rank
		ಗಂಡಸರು Male	ಹೆಂಗಸರು Female	ಒಟ್ಟು Total		
1	2	97	98	99	100	101
1	ಬೆಳಗಾವಿ Belagavi	2853713	2775437	5629150	7.49	2
2	ಬಾಗಲಕೋಟೆ Bagalkote	1131683	1119212	2250895	2.99	9
3	ವಿಜಯಪುರ Vijayapura	1415808	1358829	2774637	3.69	6
4	ಕಲ್ಬುರ್ಗಿ Kalburgi	1614377	1568262	3182639	4.23	4
5	ಬೀದರ Bidar	1024987	980216	2005203	2.67	11
6	ರಾಯಚೂರು Raichuru	1163411	1163158	2326569	3.09	8
7	ಕೊಪ್ಪಳ Koppal	850836	838764	1689600	2.25	20
8	ಗದಗ Gadag	600117	599803	1199920	1.6	27
9	ಧಾರವಾಡ Dharwada	1125626	1092730	2218356	2.95	10
10	ಉತ್ತರ ಕನ್ನಡ Uttara Kannada	785043	768460	1553503	2.07	22
11	ಹಾವೇರಿ Haveri	938338	891844	1830182	2.43	16
12	ಬಳ್ಳಾರಿ Ballari	922231	907628	1829859	2.43	17
13	ಚಿತ್ರದುರ್ಗ Chitradurga	944182	919220	1863402	2.48	13
14	ದಾವಣಗೆರೆ Davanagere	919335	896444	1815779	2.41	18
15	ಶಿವಮೊಗ್ಗ Shivamogga	954705	952446	1907151	2.54	12
16	ಉಡುಪಿ Udupi	605286	662461	1267747	1.69	25
17	ಚಿಕ್ಕಮಗಳೂರು Chikkamagaluru	564722	569422	1134144	1.51	29
18	ತುಮಕೂರು Tumakuru	1414978	1391711	2806689	3.73	5
19	ಕೋಲಾರ Kolara	886778	868057	1754835	2.33	19
20	ಬೆಂಗಳೂರು (ನ) Bengaluru (Urban)	8301369	7600968	15902337	21.15	1
21	ಬೆಂಗಳೂರು (ಗ್ರಾ) Bengaluru (Rural)	620626	587202	1207828	1.61	26
22	ಮಂಡ್ಯ Mandya	933246	928709	1861955	2.48	14
23	ಹಾಸನ Hassan	920373	929837	1850210	2.46	15
24	ದಕ್ಷಿಣ ಕನ್ನಡ Dakshina Kannada	1172765	1195683	2368448	3.15	7
25	ಕೊಡಗು Kodagu	278492	283870	562362	0.75	31
26	ಮೈಸೂರು Mysuru	1784851	1758789	3543640	4.71	3
27	ಚಾಮರಾಜನಗರ Chamarajanagara	550716	546769	1097485	1.46	30
28	ಚಿಕ್ಕಬಳ್ಳಾಪುರ Chikkaballapura	713871	693939	1407810	1.87	24
29	ರಾಮನಗರ Ramanagara	584287	570022	1154309	1.54	28
30	ಯಾದಗಿರಿ Yadgiri	771066	762724	1533790	2.04	23
31	ವಿಜಯನಗರ Vijayanagara	842018	821484	1663502	2.21	21
	ಒಟ್ಟು Total	38189836	37004100	75193936	100	-

Source: Karnataka at Glance annual report 2022-23-KSRSAC

2.2.2 Urbanization

Karnataka is 7th most urbanized State in India. As per Census 2011, 38.6% (i.e. 2.35 crore) out of total population of 6.11 crores reside in urban areas.

Fig 2.2 District- wise urbanisation in Karnataka 2011



In terms of urbanization, the State has witnessed an increase of 4.68 per cent in the proportion of urban population during the last decade. For the first time since independence, the absolute increase in population has been more in urban areas than in rural areas. Karnataka's urban population has grown by 31.27 per cent between 2001 and 2011, compared with 28.85 per cent in the previous decade. The growth of urban population between 2001 and 2011 is also higher as compared to the growth of 7.63 per cent in the rural population in the same period. The percentage of urban population in the State is above national average in all the censuses and the gap is increasing over the years. The intra state distribution of the urban population indicates that, among the districts, Bengaluru is the most urbanised district with 90.94 per cent of its population residing in urban areas followed by Dharwad district with 56.82 per cent, Dakshina Kannada district with 47.67 per cent, Mysuru district with 41.50 per cent and Bellary district with 37.52 per cent. The least urbanised district in the State is Kodagu with 14.61 per cent, preceded by Koppal district with 16.81 per cent, Mandya district with 17.08 per cent, Chamarajanagar district with 17.14 per cent and Yadgir district with 18.79 per cent.

2.3 Economic and Industrial Development

2.3.1 Economic profile of Karnataka

Karnataka has continued its progressive journey and are among the top states in several indicators like GDP, per capita income, sustainable development goals, technology and innovation, foreign direct investment, exports, startups, IT services, good governance practices. The Human Development Index was 0.432 in 1999 which has increased to 0.644 in 2022. The State has contained its fiscal deficit below 4% of the GSDP. The **Economic Survey 2023-24** provides a comprehensive overview of Karnataka's economic performance, highlighting its pivotal role in India's growth. Karnataka's GSDP for the financial year 2023-24 is estimated at **₹23.3 lakh crore**, marking an annual growth rate of approximately 7.9% compared to the previous year. The detailed breakdown of Karnataka's contributions, achievements, are as follows:

State Income and Prices

- The State has increased the GSDP from Rs.22.70 lakh crore in 2022-23 to Rs. 25.01 lakh crore in 2023-24 with a growth rate of 10.2% at current prices and Rs. 13.35 lakh crore to Rs. 14.23 lakh crore with a growth rate of 6.6% at constant prices during the same period.
- GDP grew by 6.6% during 2023-24 as compared to 7.3% of India at constant prices.
- During 2023-24, the share of Karnataka GSDP in All India GDP is at 8.4% as compared to 8.3 % in 2022-23.
- Karnataka's Percapita Income of Rs.3,32,926 is higher by 79% to All India Percapita Income of Rs.1,85,854 during 2023-24.
- The percapita income has increased from Rs.3,04,474 in 2022-23 to Rs.3,32,926 in 2023-24 with a growth rate of 9.3% at current prices and Rs. 1,75,895 to Rs.1,86,038 with a growth rate of 5.8% at constant prices during the same period.
- Growth of Agriculture sector at constant prices is expected to be -1.8% in 2023-24 as against 2.8% during 2022-23, which was 5.7% growth rate during 2021-22 and fisheries sector also expected to grow by -4.6% due to severe drought conditions and inadequate rainfall in the state, which has affected an area of 48 lakh hectares.
- Industry sector at constant prices is anticipated to reach 7.5% growth rate in 2023-24 as against 3.8% in 2022-23 and 11.1% in 2021-22 showing the gradual recovery from Covid distress. Construction with 8.2% growth rate and 7.4% in manufacturing is gradually boosting the industrial sector growth rate.
- Services at constant prices is expected to attain a level of 8.7% growth rate in 2023-24 as against 9.9% in 2022-23 and 10% in 2021-22 due to growth in IT related services from 11.7% in 2021-22 and 9.2% in 2022-23 to 12.6% in 2023-24. Public Administration

with10.5% growth rate, 8.2% in Other Services, 6.5% in Hotels and Restaurants are major contributing subsectors of services.

- Highest share of Services in GSVA at 67% followed by Industries at 20% and Agriculture at 13th during 2023-24.
- Bangalore Urban District Gross Domestic Product is Rs. 8,59,154 crore with 37.8% contribution to State GDP followed by Dakshina Kannada with 5.5% and Belagavi with 4.0% during 2022-23.
- Kalaburgi revenue region (Ballari, Bidar, Kalaburgi, Koppal, Raichuru, Vijayanagar and Yadagiri districts), stood lowest in the per capita income of Rs.1,66,797, followed by Belagavi (Rs.1,81,911) and Mysore (Rs.3,02,060) regions during 2022-23.
- Bangalore Urban district Per capita Income is Rs.7,60,362 is highest among all the districts, followed by Dakshina Kannada (Rs.4,92,074), Udupi (Rs.4,14,274) and Chikkamagaluru (Rs.3,77,968) are above the State Per capita Income of Rs.3,04,474 for 2022-23.

Environmental Management

- Karnataka State Pollution Control Board (KSPCB) need to evolve policy for Circular Economy (CE) for SWM to replace the linear economy of 'take, make, use and dispose' and reduce environmental burden. The river rejuvenation programme of 17 polluted river stretches in Karnataka is aimed at improving river water quality so that benefit of life support system of sacred rivers is continuously available for future.
- Environmental Management and Policy Research Institute (EMPRI) being a state nodal agency for climate change in the state of Karnataka, has been strengthened as a Karnataka State Strategic Knowledge Centre for Climate Change with the financial support of the Department of Science and Technology (DST), Government of India under the National Mission on Strategic Knowledge for Climate Change (NMSKCC).
- Department for Climate Change (DCC) of EMPRI has prepared a Karnataka state action plan on climate change version 2.0 (KSAPCC V.2) and has taken action for mainstreaming it across line departments and undertaken several projects pertaining to climate change such as:1) Inventorization of ShortLived Climate Pollutants (SLCP) in Karnataka; 2) Emission reduction and energy economy by electric vehicle on Indian roads driving Cycle based study. A new project is initiated on identifying emission hot spots and developing high-resolution emission inventory of major air pollutants using drone technology in Bengaluru. During the current year, a five-year project is sanctioned by DST on Strengthening the State Climate Change Centre in the State of Karnataka – 2nd Phase.

Sustainable Development Goals

- United Nation's 2030 Agenda for Sustainable Development that provides an integrated evidence-based framework that includes 17 Goals, 169 targets and 232 indicators to be achieved by 2030. As per NITI Aayog's SDG India Index Report 2020-21, Karnataka State ranks 3rd among States and is a 'Front Runner' with a score of 72 in comparison to Kerala (75), Tamil Nadu (74) and Himachal Pradesh (74).
- Out of 114 SDG indicators, 24 fall into achiever category (score 100), 42 in front runners (score 65- 99), 16 indicators in performer category (score 50-64) and 28 in aspirants (score 0-49).
- Thirty SDG indicators fall under national average value. Indicators appearing in both aspirant category and below national average category (13 indicators) form the priority of the State followed by the 45 aspirant and below national average indicators. In the next stage, targeting to achieve the status of the best performing State for attaining the achiever status in all the SDGs at the earliest by 2030.
- Government of Karnataka has implemented several policies, schemes and programmers for poverty alleviation, human development, gender, and social equity, and for addressing climate change.Way forward for clean and green Karnataka is Afforestation within and outside the forest areas, waste management, promoting solar, soil and water conservation, e-mobility, and interlinking of rivers.

2.3.2 Industrial Development in Karnataka:

The Economic Survey of Karnataka 2023-24 highlights remarkable advancements in the state's industrial sector, emphasizing its pivotal role in driving economic growth and employment creation. The industrial sector contributes approximately 25% to Karnataka's Gross State Domestic Product (GSDP), reflecting its integral role in the state's economic framework.

Key industries, including manufacturing, construction, and mining, form the backbone of Karnataka's industrial output. The state also excels as a leader in aerospace, biotechnology, and renewable energy, leveraging its innovative policies and investments.

This industrial growth positions Karnataka as one of India's most economically advanced and industrially diverse states, with significant contributions from sectors like information technology, biotechnology, textiles, and manufacturing. The sector's dynamism underscores its importance as a cornerstone of Karnataka's economic success.

Key Highlights:

- State's production and imports of silk yarn till November 2023 is 8,206 MT and import is 1717 MT.

- 712 large and mega industries are working with Rs. 2.95 lakh crore capital investment and providing employment opportunities to 5.10 lakh people.
- 11.76 lakh units are registered MSMEs in the state on the Government of India's Udyam web portal. This has resulted in the creation of larger amount of employability of 108.45 lakh.
- State is having 17,894 registered factories with 17,63,440 workers and 3,252 working Boilers. There are 82 Major Accidents Hazardous Factories in 20 districts.
- GoK has formulated Clean Mobility Policy (2023-28), with the objective of attracting investment up to Rs. 50,000 crore and creating more than one lakh jobs.
- The Government has proposed to establish Knowledge, Healthcare, Innovation and Research (KHIR) City in 2000 acres of land in 2 phases on the outskirts of Bengaluru, expected to attract investment of over Rs.40,000 crores, and create more than 80,000 jobs.
- State PSEs should pay at least 30% of the profit after tax for the respective financial year as dividend, as a result the amount has increased from around Rs.60-70 crore to Rs.300-400 crore in the last two years.
- 9 dedicated vision groups have been formed under Invest Karnataka Forum viz, (Aerospace & Defense, Machine Tools, Electronics System Design & Manufacturing (ESDM), Pharmaceuticals, Core Manufacturing, Automotive/Electric Vehicles, Industry 5.0, Textiles & Green Energy) to attract more investments.
- Till November 2023, 12 clusters are implemented with a project cost of Rs.114 crore and are functioning in Dharwad, Kalburgi, Vijayapur, Bidar, Belagavi, Bengaluru, Ramanagara, Uttara Kannada and Chitradurga.
- Food Karnataka Ltd. has been nominated as the nodal agency for the implementation of the 5 Food Parks at Malur, Bagalkote, Hiriyuru, Jewargi and Vijayapura in the State.
- In order to facilitate land acquisition activities for industrial development, KIADB has introduced a land-sharing scheme.
- Rs. 75 crore plan for the comprehensive development of tourist spots such as Hampi, Mylar, Gangapur, Sannati, Malkheda, Bidar, Raichur and Kalaburagi forts under the Kalyan Karnataka division.
- To attract national and international tourists visiting Mysuru, an international standard Karnataka Archeology Museum and Art Gallery will be constructed with Augmented Reality (AR) and Virtual Reality (VR) technology to showcase the rich art and cultural heritage of Karnataka on a 2.5 acre land at Mysuru.
- Efforts will be made to utilize 10,000 acres of available industrial land to setup plug and play industrial parks and clusters in a PPP model.

- Promote Wellness and Medical tourism; Enlist all Ayush wellness centers, Multispecialty hospitals and Ayurveda centers on Tourism council website.
- Karnataka ensured timely implementation of 352 reform recommendations related to businesses and citizens under SBRAP 2022. More than 1300 compliances have been reduced under the Minimizing Regulatory Compliance Burden for businesses and citizens.
- 'Unified Land Management System' is being developed which may reduce the interfaces between Government and businesses/citizens.
- Karnataka State Electronics Development Corporation Limited (KEONICS): KEONICS has undertaken many projects to provide programming of IT software and e-governance projects to various Government Departments of State and other States. It is also marketing computer hardware, software, e-tendering services, various electronic and IT equipment's, surveillance cameras, manpower and other related services to various Departments / Organizations and other States. KEONICS has set up Electronics City on a sprawling 332 acres of land on Hosur Road, Bengaluru.
- Today it is a major hub for Information Technology activities. Government of Karnataka has established following parks- IT Park in Hubballi with state-of-the art infrastructure. Similarly an IT SEZ at Nidige, Machenhalli with an area of 25 acres and an IT Park in an area of 5 acres have been established in Shivamogga at a cost of Rs.16.10 crore. An IT Park at Kalburagi is established in an area of 1.72 acres at a cost of Rs.11.24 crore. 75,000 Sq. ft. of IT Park (K-wings) complex is established at HSR layout, Bengaluru at a cost of Rs.33.71 crore. 453.9 Sq Mtr. building is established at Peenya 1st stage, Bengaluru at a cost of Rs. 5.04 crore.
- New Initiatives: It is proposed to establish IT park on PPP model in 3.25 acre land at Mangaluru with a built-up area of 3.43 lakh sq.ft. at a cost of Rs. 90.29 crore. It is also proposed to establish IT park Annex - Phase-II on PPP model in the existing 2.5 acres of land adjacent to the IT Park at Machenahalli Industrial Area, Shivamogga with a built up area of 1.80 lakh sq.ft. with a cost of Rs.27.14 crore. DPR & Feasibility report is prepared to set up Hardware / Software IT Park in 12 Acres of land at Hightech Defence and Aerospace Park (IT sector), on PPP model near Kempegowda International Airport, Bengaluru. Till November 2023 total turn-over is Rs.256.10 crore.

Source: Economic Survey of Karnataka 2023-24 Annual Report

2.4 Land Use and Forest Cover

Karnataka, the seventh largest state of country with a geographical area of 1,91,791 sq. km. constitutes 5.83% of the geographical area of the country. The state is endowed with a diverse climate, topography and soils which have resulted in rich biodiversity. The diverse

ecological niches support characteristic flora and fauna. The evergreen forests Western Ghats, which cover about 60% of the forest area of state are recognized as one of the 35 biodiversity hotspots in the world and one of the four biodiversity hotspots of India. Fig 2.3 shows the Land use and land cover map in Karnataka.

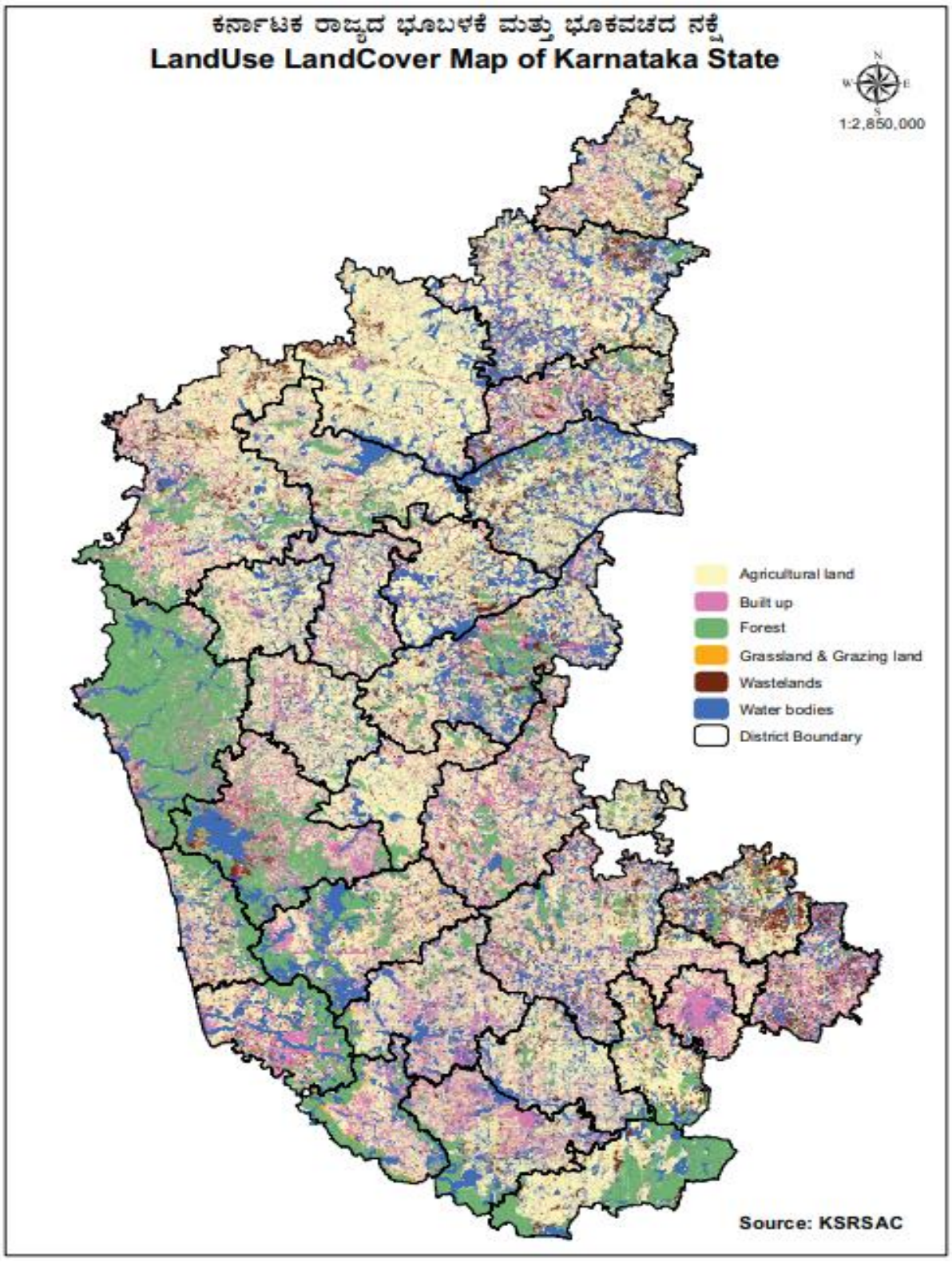


Table 2.4: District–wise Forest Cover along with Geographical Area in 2021 (sq.km)

District	Geographical Area	Very Dense Forest	Mod. Dense Forest	Open Forest	Total Forest Area	% of Geog. area	Change	Scrub
Bagalkot	6552	0	18.99	238.24	257.23	3.93	4.26	393.02
Bellary	8461	0	110.19	627.30	737.49	8.72	-1.73	485.08
Belgavi	13433	35.99	736.99	392.68	1165.66	8.68	24.06	671.67
Bengaluru Urban	2196	0	24.88	263.60	288.48	13.14	1.05	7.45
Bengaluru Rural	2298	0	24.04	133.98	158.02	6.88	-4.73	27.00
Bidar	5448	0	21.48	76.10	97.58	1.79	9.16	46.28
Chamarajnagar	5648	93.19	1525.16	1112.85	2731.20	48.36	7.01	125.82
Chikmagaluru	7202	901.63	2584.95	478.92	3965.50	55.06	13.72	77.10
Chickkaballapur	4244	0	19.73	255.59	275.32	6.49	5.62	184.37
Chitradurga	8436	0	47.06	559.94	607.00	7.20	30.39	618.33
D.Kannada	4861	557.88	1471.73	1035.37	3064.98	63.05	0.32	2.85
Davangere	5924	11.00	167.02	535.56	713.58	12.05	4.01	323.80
Dharwad	4260	0	223.71	151.20	374.91	8.80	0.49	3.52
Gadag	4657	0	0.23	140.82	141.05	3.03	-0.57	117.63
Hassan	6814	147.66	771.51	565.63	1484.81	21.79	6.37	73.39
Haveri	4823	0.0	144.76	202.37	347.13	7.20	3.88	102.29
Kalaburagi	10954	0	91.93	102.96	194.89	1.78	-0.16	40.89
Kodagu	4102	794.32	1886.30	577.29	3257.91	79.42	-5.47	2.16
Kolar	3979	0	58.05	325.67	383.72	9.64	2.33	67.95
Koppal	5570	0	0	35.96	35.96	0.65	2.64	168.95
Mandya	4962	0	114.15	394.18	508.33	10.24	9.01	103.68
Mysuru	6307	124.96	586.74	351.35	1063.05	16.86	10.22	36.02
Raichur	8442	0	0.94	43.29	44.23	0.52	0.00	184.91
Ramanagara	3516	0	196.71	477.30	674.01	19.17	9.32	176.23
Shivamogga	8478	481.89	2827.90	963.39	4273.18	50.40	2.40	22.33
Tumkuru	10597	0	72.34	1250.73	1323.07	12.49	39.03	402.96
Udupi	3582	216.53	1383.74	656.46	2256.73	63.00	-26.65	0.00
Uttara Kannada	10277	1167.88	5856.60	1106.46	8130.94	79.12	7.19	3.49
Vijayapura	10498	0	0	27.12	27.12	0.26	2.07	8.71
Yadgiri	5270	0	17.02	129.89	146.91	2.79	-0.73	132.88
Total	**191791**	**4532.93**	**20984.85**	**13212.20**	**38756.99**	**20.21**	**154.51**	**4610.76**

Source: Economic Survey of Karnataka 2023-24 Annual Report

2.4.1 Afforestation and Forest Conservation Programmes in Karnataka

In Karnataka, several forest conservation and afforestation programs are implemented under centrally sponsored schemes, plan schemes and district sector schemes. Some examples of these programs as presented in the Annual Report 2018-2019 of the Karnataka Forest Department are presented here.

i) Forest Research: The main objective of the scheme is establishment and maintenance of tree preservation plots, raising and maintenance of clonal orchards, silvicultural research plots, species trial plots, espacement and manurial trial plots and seed development.

ii) Western Ghats Task Force: A special task force is established to advise the Government, regarding activities related to conservation and development of Western Ghats ecosystem.

iii) Development of Degraded Forests: Degraded Forest areas are rejuvenated through afforestation and various other measures like protection, regeneration, and soil and water conservation under this scheme. Wherever there is enough rootstock, such areas are protected from biotic pressure thereby encouraging natural regeneration. Alternatively, plantations are raised in other areas. This scheme is being implemented in all districts of the State.

iv) Greening of Urban Areas: Under this scheme, it is envisaged to plant flowering and fruit bearing trees in urban areas. Tree parks and avenue plantations are to be established in towns and cities of the State. Supply of seedlings to the residents of urban areas is also one of the activities under this scheme.

v) Development and Preservation of Devarakadus (Daivivanas): Devarakadu forests arevery unique and significant from religious and ecosystem perspective. This scheme has been introduced to conserve the valuable ecosystems in their pristine conditions as sacred groves and to allow natural evolutionary process to continue without any disturbance.

vi) Roadside Plantation: Raising roadside plantation is implemented by Karnataka Forest Department to compensate for trees cut for various developmental activities such as widening of roads.

vii) Raising of Seedlings for Public Distribution: To promote tree planting by public and farmers, seedlings are supplied by the department at subsidized rates to plant on individual lands. For this purpose, suitable local species are selected and 4”X6”, 5”X8” and 8”X12” sized seedlings are being raised every year by the department.

viii) Krishi Aranya Protsaha Yojane: As per the National Forest Policy, 33% of the geographical area must be tree cover. To achieve the goal, the Forest Department is implementing various afforestation programs. Since the target of afforestation is high, they are promoting voluntary involvement of farmers, public and NGOs. To enlist the cooperation of farmers and general public for increasing tree cover, the Government of Karnatakalaunched the “Krishi Aranya Protsaha Yojane”. As per the guidelines of the

programme, the farmers, public and NGOs obtain seedlings at subsidized rates from the nearest nurseries of the department. Seedlings so obtained are planted in their lands and nourished, in which case they get incentive for each survived seedling from the Government. Apart from getting incentive they are also at liberty of using whatever yield they get from such seedlings.

ix) Samrudha Hasiru Grama Yojane: This scheme is envisaged to achieve self-sustainability of available natural resources and to increase the tree cover. Under this scheme, at least one village in each forest division is adopted by the Forest Department to supply small timber, fodder, green leaves, and to install biogas plants, medicinal gardens etc., to cater to the needs of the villagers, also to supply bamboo and other raw materials to artisans. Besides, it is also proposed to take up afforestation and soil conservation works so as to improve ground water table.

x) Tree Park: The objective of this scheme is to provide better environment to public in urban areas. Under this scheme, it is envisaged to set-up 4 urban forest parks near Bengaluru city and 29 such forest parks near each of District Headquarters in the state for providing good environmental facilities to the local citizens.

xi) Maguvigondu Mara Shalegondu Vana: This scheme has been introduced to create awareness regarding ecology and environment among school children and to encourage them to plant. Under this scheme, protected area available around educational institution is identified, and seedlings of fruit yielding, flowering and shade trees are provided to school authorities for raising plantations. Schools from Primary, College and up to Universities are involved in this scheme. Seedlings are distributed to school children for planting in their households or field on voluntary basis.

Thus, the Karnataka Forest Department is promoting and implementing several tree and biodiversity conservation and afforestation programs in all the districts of the state, in forest lands as well as private and public lands through distribution of seedlings or through promotion of plantations.

2.5 Energy and Transport Profile of Karnataka

2.5.1 Energy:

Power generation in the public sector is managed by the Karnataka Power Corporation Limited (KPCL) whereas the Karnataka Power Transmission Corporation Limited (KPTCL) deals with transmission of power and load despatch functions. As part of the restructuring of the power sector in the State, the erstwhile Karnataka Electricity Board (KEB) was restructured as KPTCL in 1999 by giving it a corporate status. As per the Electricity Act 2003, KPTCL, being the State's transmission utility, is not empowered to trade in electricity. Therefore, the distribution companies directly procure power from power generators, both

public and private and ESCOMs own distribution network, and use KPTCL's transmission network to distribute electricity.

The total installed generation capacity both in the public sector and private sector including the State's share in the Central Generating Station (CGS) upto November-2023 is 32403.70 MW. The installed capacity in the public sector is 13,933.50MW (including CGS allocation) and the private sector's share is 18,470.20 MW. In the private sector capacity, the share of renewable energy sources of power generation capacity (Excluding the Share of IPP Thermal & Mini Hydel) to overall installed capacity is 47.48%. The status of power sector in terms of both installed capacity and electricity generation for Karnataka is provided in table 2.5 below.

Table 2.5 Progress in Power Sector

Source	Unit	2019-20	2020-21	2021-22	2022-23	2023-24 (Upto Nov-23)
B. Electricity Generation(Net) (for 2023-24 UptoNov-2023)						
a) Hydel (KPCL)	MU	13,622.00	12,232.53	13582.86	13228.95	5496.35
b) Thermal(KPCL)	MU	11,444.12	6,366.88	17143.42	16772.20	9846.88
c) Wind	MU	10,050.70	9,434.92	9376.45	9204.08	6734.60
d) Solar PV plant	MU	8,026.02	8,888.70	9281.34	9706.51	5219.77
e) Mini Hydel	MU	1,816.45	2,140.12	2346.35	2307.20	835.36
f) Co-gen and Bio-Mass	MU	2,383.20	2,777.98	2976.83	3046.45	583.11
g) Private sector	MU	4,589.89	2,918.21	2548.04	3448.43	3439.50
Total		**51,932.38**	**44,759.34**	**57,255.29**	**57713.83**	**32155.57**
C. Electricity imports						
Central projects	MU	22,665.07	23,060.76	18,241.82	22,798.34	14711.85
Total Electricity supply	**MU**	**74,597.45**	**67,820.10**	**75,497.11**	**80512.17**	**46867.42**

Source: KPCL, KPTCL, KREDL, PCKL& SLDC; Note: MU- Million Unit, MW-Mega watt,

Source	Unit	2019-20	2020-21	2021-22	2022-23	2023-24 (Upto Nov-23)
A. Installed Capacity						
1. Public Sector						
a) Hydel	MW	3,681.00	3,681.00	3,681.00	3,681.00	3,681.00
b) Wind energy	MW	5.00	5.00	5.00	5.00	5.00
c) Thermal	MW	5,020.00	5,020.00	5,020.00	5,020.00	5,020.00
d) Solar PV plant	MW	34.00	34.00	34.00	34.00	34.00
Total		**8,740.00**	**8,740.00**	**8,740.00**	**8,740.00**	**8,740.00**
e) Jurala Hydro	MW	117.00	117.00	117.00	117.00	117.00
2. Private Sector						
a) IPP Thermal (including small thermal-conventional)	MW	2,192.30	2,192.30	2197.30	2174.20	2176.00
b) Mini Hydel	MW	903.46	903.46	903.46	903.46	907.46
c) Wind energy	MW	4,814.34	4,962.34	5144.14	5,245.19	5272.74
d) Co-generation & Biomass	MW	1,870.19	1,870.19	1870.19	1,870.19	1,870.19
e) Solar (including solar roof top)	MW	7,266.19	7,355.01	7556.30	8039.86	8243.81
Total		**17,046.48**	**17,283.30**	**17,671.39**	**18,232.90**	**18,470.20**
3. Central Generating Station Allocation	MW		4,865.00	4865.00	4,744.35	4626.50
DVC	MW					450.00
TOTAL INSTALLED CAPACITY		**30,061.48**	**31,005.30**	**31,393.39**	**31,834.25**	**32,403.70**

The State has added 235.50 MW of Generating capacity in renewable energy sources during the FY 2023- 24 (Upto Nov-23). The State is in the forefront in capacity addition in Renewable Energy Sector & there is constant increase in capacity under this category. The availability factors of most of the generating plants have been found to be relatively high suggesting an efficient preventive maintenance system being in place.

Karnataka Renewable Energy Development Limited (KREDL):

KREDL is the nodal agency for the development of renewable energy sources in Karnataka. To harness green and clean renewable energy sources in the State for environmental benefits and energy security and to initiate energy conservation & efficiency measures in all the sectors for sustainable development, the Government of Karnataka notified a policy on renewable energy (for the period 2009-14) on 19.01.2010, Solar Policy 2014-21 on 22.05.2014 and Karnataka Renewable Energy Policy 2022-27 on 06.05.2022. Karnataka Renewable Energy Policy 2022-27 State notified Karnataka Renewable Energy Policy 2022-27 to facilitate Government of India in meeting the RE target of 500 GW by 2030. KREDL is the nodal agency which envisages private sector investment for renewableenergy development in the State. The capacity addition in private sector under renewable energy during 2022-23 was 584.61 MW and it is 235.50 MW during 2023-24 (upto Nov-23).

Table 2.6: Capacity additions under Renewable Energy (in MW)

Sources	Capacity addition during		
	2021-22	2022-23	2023-24 (Upto Nov-2023) (Provisional)
Wind Power	181.80	101.05	23.80
Small/Mini Hydro	0.00	0.00	4.00
Solar (including solar roof top)	201.29	483.56	202.70
Solar Wind Hybrid			5.00
Total	**383.09**	**584.61**	**235.50**

Source: KREDL

The cumulative progress in installed capacity additions in the renewable energy sector in the State as on 30.11.2023 is shown in Table 2.7.

Table 2.7: Cumulative Progress in Renewable Energy (in MW) as on 30.11.2023

Source		Potential Available	Allotted Capacity	Installed Capacity
Wind Power		124139	17911.19	5273.99
Small/Mini Hydro		3100	1173.19	907.46
Co-Generation		2000	2212.65	1731.16
Solar (including solar roof top)		24700	14609.10	8276.56
Hybrid	Wind		395.13	3.75
	Solar		59.00	1.25
Biomass		1000	625.85	139.03
Waste to Energy		135	685.75	0.00
Total		**155074**	**37671.86**	**16333.20**

Source: KREDL & Energy Department

The major schemes in the energy sector in Karnataka are Deendayal Upadhyaya Gram Jyoti Yojana, Pradhan Mantri Urja Suraksha Evam Utthaan Mahabhiyaan (KUSUM), Solar Rooftop PV Systems, Solar Irrigation Pump Set Scheme/Solar Pumping Program for Irrigation, Surya Raitha, and Pradhan Mantri Sahaj Bijli Har Ghar Yojana (Saubhagya). The State of Karnataka has achieved near self-sufficiency in power generation to meet the growing demand. The occasional gap due to seasonal variation in demand and supply is met through short term purchases. The State Government is sourcing power from all available sources including short term/energy exchange to meet the demand. Apart from augmenting its generation, the State has been importing power from central power-generating stations and also through energy exchanges for minimizing power shortages. In addition, the government is taking to conservation of energy through demand side management programmes.

As of early 2025, Karnataka's total installed capacity exceeds 32,000 MW. The public sector contributes around 13,000 MW, and the private sector accounts for the remaining capacity, with a substantial share from renewables. In the private sector, renewable sources (excluding IPP Thermal & Mini Hydel) make up about 43.85%. The hydro-thermal mix in the public sector is roughly 1:2, with total power supply surpassing 72,624 MU, reflecting continued capacity growth to meet demand.

Summary of programmes under Energy Sector:

- Rs.4,400 crore is released till 31-12-2023 for free power supply of up to 200 units per month to 1.59 Crore households under Gruha Jyoti Yojana.
- The State has achieved near self-sufficiency in power generation to meet the growing demand. The occasional gap due to seasonal variation in demand and supply is met through short term purchases. The overall positive trend in bridging the energy supply and demand gap suggests advancements in infrastructure and resource management strategies.
- To facilitate network strengthening and seamless transmission of power, 19 new stations, 573.93 circuit Kilometres of transmission lines and augmentation of 98 existing substations have been completed.
- Grahaka Salaha Samithi has been planned at all section offices and subdivision offices under Legislative assembly constituencies to resolve the consumer complaints locally.
- KREDL has been awarded 1st Prize for the third consecutive year under the National Energy Conservation Award (NECA).
- KPCL is implementing 11.5 MW capacity Waste to Energy project at Bidadi, Ramanagara District.
- BESCOM is in the process of establishing 1190 Charging Stations under PPP mode across the State.

2.5.2 Transport

In Karnataka, road is the dominant mode of transport for both passenger and freight, with the road network meeting about 95% of the total passenger demand (GoK & NITI Aayog, 2018). The large dependence on the road network and continued reliance on fossil fuels influence emissions in the transport sector.

Sustainable transport requires fundamental changes in transport planning practice. It requires a more comprehensive analysis of impacts, including indirect and cumulative effects, and the consideration for more solution options. Land use and urban transportations are interdependent. The use of public transportation needs to be encouraged in order to reduce the stress on land transport by private vehicle owners. In order to do this, government needs to provide a good, timely and reliable transport facilities to public. Directorate of Urban Land Tansport (DULT) is working towards providing sustainable Urban Transport to the state in Karnataka like service level benchmarking in Bengaluru; preparation of policies on parking, preparation of comprehensive mobility plans for 16 cities; feasibility studies for mass transit systems (Suburban Rail Projects) etc. It is also working in tandem with BBMP and other city corporations on Non-Motorized Transport (NMT) initiatives. DULT is also spearheading the implementation of Suburban Rail Projects in Bengaluru through K-RIDE.

- Bengaluru Sub-Urban Rail Project Bengaluru Sub-Urban Rail Project at a completion cost of Rs. 15,767 Crores has been taken up for implementation through a joint venture company K-RIDE. Under the project a total rail route of 148.17 kms will be constructed in four Sub-Urban Rail Corridors as detailed below;

Corridors	Section	Length in Kms.
Corridor -1	Bengaluru- Devanahalli	41.40
Corridor -2	Byappanahalli- Chikkabanavara	25.01
Corridor -3	Kengeri- Bengaluru Cantonment	35.52
Corridor -4	Heelalige - Rajanukunte	46.24
	Total	**148.17**

Source: Economic Survey of Karnataka 2023-24 Annual Report

- The project's implementation will be completed in 6 years and is expected to provide affordable and sustainable transport to around 8.9 lakh commuters daily and boost transit-oriented development. Civil work for corridor–II of 25 km from Byappanahalli to Chikkabanavara has been awarded to L&T with a completion period of 27 months and implementation of preliminary works are in progress. Besides tenders for civil works for corridor IV from Heelalige to Rajanukunte and procurement, operation and maintenance of rolling stock on PPP mode has also floated.

- **Bus Priority Lanes 'KalyanaMarg'** - Kalaburagi Bus Priority Lanes BPL plan for Kalaburagi city comprising a total length of 13.68 kms was developed by DULT in-house at an estimated cost of Rs. 19.07 Crore. This project is taken up for

implementation by Kalaburagi City Corporation and NEKRTC. The funding support is provided under SUTF by DULT. Two packages are awarded for execution of works and tender is finalized for one package.

- **BMRCL** In order to augment to the public transportation in Bangaluru and also to reduce the pressure of traffic, Metro Rail has come up in Bengaluru. It is a vital component of the transformation of the urban transport scenario. With urban population continuously growing, there is a need for green solutions. Mass Rapid Transit Systemsare fast, safe and comfortable to travel. This alone will encourage people to switch over from personalized vehicles to public transport.
- Bangalore Metro Rail Project Phase-1 having a total track length of 42.3 Kms, is already running from past several years. East to West from Byaippanahalli to Mysore Road (18.10 Kms) and North to South from Nagasandra to Yelachenahalli (24.20 kms).
- Bangalore Metro Rail Project Phase-2: consists of 4 Extensions to the existing lines and 2 New Lines. The total length of Phase-2 is 75.06 km with 61 stations (49 Elevated and 12 Underground). The estimated project cost is Rs. 30695 Crore. Reach-6 New Line (Under Ground): From Dairy Circle to Nagawara13.76 Kms.Civil works are under progress. Physical and Financial progress are 89.50% & 91.64% respectively up to end of November-2023.
- Bangalore Metro Rail Project Phase-2A and 2B: The construction of 58.19 Kms long Outer Ring Road – Airport Metro, Phase-2A Central Silk Board junction to Krishnarajapura and Phase-2B Krishnarajapura to Bengaluru International Airport via Hebbal at an estimated cost of Rs. 14,788.10 Cr is in progress. Civil works are started and details are as below:
    - Phase-2A: Land Acquisition has been completed. Utility Shifting is nearing to completion. Civil works are in progress.
    - Phase-2B:98% Land Acquisition has been completed. 85% Utility Shifting are completed. Civil works are in progress.
    - The project is programmed to complete by June 2026.
- Proposed Project Bangalore Metro Rail Project Phase-3:

  The Government has approved to take up 45 Kms., ‘Outer Ring Road- West metro’ in the following routes. Kempapura to J.P. Nagar 4th Phase: 32.15 Kms and Magadi Road from Hosahalli Metro Station to Kadabagere: 12.50 Kms. These lines are proposed to be constructed through equal share holding owned by GoI & GoK. Presently, DPR had been approved by Gok and has been sent to GoI for its approval

E-Mobility

According to Bureau of Energy Efficiency, Ministry of Energy, Government of India, the transport sector accounts for 18% of total energy consumption in India. This translates to an estimated 94 million tonnes of oil equivalent (MTOE) energy. If India were to follow the current trends of energy consumption, it would require an estimated 200 MTOE of energy supply annually, by the year 2030 to meet the demand of this sector. At the moment, this demand is being met mostly through imported crude oil, which therefore makes this sector vulnerable to the volatile international crude oil prices. Moreover, the sector also contributes an estimated 142 Million Tonnes of CO2 emissions annually, out of which 123 million tonnes is contributed by the road transport segment alone. Keeping in view the climate change commitments made by Government of India during the COP21 Summit held at Paris to reduce emission intensity by 33- 35% by 2030 from 2005 levels, it is pertinent to introduce alternative means in the transport sector which can be coupled with India's rapid economic growth, rising urbanization, travel demand and country's energy security. Electric mobility presents a viable alternative in addressing these challenges, when packaged with innovative pricing solutions, appropriate technology and support infrastructure and thus, has been on the radar of Government of India. Electric mobility will also contribute to balancing energy demand, energy storage and environmental sustainability. Shifting to electric mobility will help India save nearly one giga tonne of carbon dioxide emissions by 2030. Each electric car on the road helps in reducing the harmful air pollution for the younger generations to come.

Section 39 of the Motor Vehicles Act.1988 makes it mandatory that every motor vehicle shall be registered before it is put for use on any public road. The Regional Transport Officers and Assistant Regional Transport Officers are the registering Authorities for their regions under Chapter IV of the Motor vehicles Act. Total number of Motor Vehicles registered and kept for use in the state as on at the end of 31-03-2024 is 31807605.

Table 2.6: The details of vehicle registered from last 13 years (2011-12 to 2023-24) in Bangalore city and Karnataka (cumulative)

SL.NO.	YEAR	BANGALORE CITY	KARNATAKA
1	2011-12	5033002	13528553
2	2012-13	5526860	14938915
3	2013-14	6022821	16378930
4	2014-15	6575589	17958850
5	2015-16	7161476	19588128
6	2016-17	7785949	21240804
7	2017-18	8383338	22841111
8	2018-19	9027416	24541987
9	2019-20	9638362	26117614
10	2020-21	10010588	27274117
11	2021-22	10409289	28424452
12	2022-23	10860356	29998925
13	2023-24	11775057	31807605

Source: Transport Dept of Karnataka 2023-24 Annual Report

Table 2.5: The details of vehicle Registration in Karnataka as on 31-03-2024

Sl. No.	CATEGORY OF VEHICLES	Newly Registered During			Total Registered as on			% of Increase
		2021-22	2022-23	2023-24	31-03-2022	31-03-2023	31-03-2024	
	NON TRANSPORT VEHICLE							
1	Two Wheelers	800294	1090599	1276359	20163255	21253854	22530213	**6.00**
2	Cars	199698	265974	273398	4137587	4403561	4676959	**6.20**
3	Omni Buses	259	103	501	16779	16882	17383	**2.96**
4	Tractors	47821	55241	50398	678968	734209	784607	**6.86**
5	Trailers	15732	15741	13249	352065	367806	381055	**3.60**
6	Construction Equipment Vehicle	2625	3421	4489	10514	13935	18424	**32.21**
7	Private Service Vehicle	86	90	411	1663	1753	2164	**23.44**
8	Other Vehicles	6138	7287	4824	103697	110984	115808	**4.34**
	TOTAL NON TRANSPORT VEHICELES(A)	**1072653**	**1438456**	**1624512**	**25464528**	**26902984**	**28527496**	**6.03**
9	**TRANSPORT VEHICLE**						0	
a.	Multi Axled/Articulated Vehicle	391	670	821	20047	20717	21538	**3.96**
b.	Trucks and Lorries	13393	20113	19411	505026	525139	544550	**3.69**
	TOTAL	**13784**	**20783**	**20232**	**525073**	**545856**	**566088**	**3.70**
10	**LIGHT GOODS VEHICLES**						0	
a.	Four Wheeler	31814	44904	45845	599232	644136	689981	**7.11**
b.	Three Wheeler	6529	7850	9149	209647	217497	226646	**4.20**
	TOTAL	**38343**	**52754**	**54994**	**808879**	**861633**	**916627**	**6.37**
11	Buses	1539	5366	8499	265396	270762	279261	**3.13**
	TOTAL	**1539**	**5366**	**8499**	**265396**	**270762**	**279261**	**3.13**
12	TAXIES						0	
a.	Motor Cabs	4485	15275	30456	343327	358602	389058	**8.49**
b.	Maxi Cabs	352	1783	4356	115715	117498	121854	**3.70**
c.	Other Taxies	0	0	0	305	305	305	**0**
	TOTAL	**4837**	**17058**	**34812**	**459347**	**476405**	**511217**	**7.30**
13	**LMV PASSENGER**						0	
a.	Three Seater(A/R)	11791	28830	54117	744541	773371	827488	**6.99**
14	Other Vehicles	7388	11226	11514	156688	167914	179428	**6.85**
	TOTAL	**19179**	**40056**	**65631**	**901229**	**941285**	**1006916**	**6.97**
	TOTAL TRANSPORT(B)	**77682**	**136017**	**184168**	**2959924**	**3095941**	**3280109**	**5.94**
	TOTAL (A)+(B)	**1150335**	**1574473**	**1808680**	**28424452**	**29998925**	**31807605**	**6.02**

Summary of programmes under Transport sector:

- Charging units are planned in collaboration with BESCOM and BBMP now and later to establish charging units on highways of the state. There are 126 (AC charger-100 and DC Charger-26) electric vehicles charging stations in Bengaluru city as on 31.03.2023.
- GoK has launched its ambitious scheme ‘Shakti – free travel for women’ on 11th June 2023, a flagship programme. Around 116.98 crores women passengers of the State were benefited from Shakti Yojana.

- During the year 2022-23 and 2023-24 (upto Nov-2023) KSRTC has been recognized for its outstanding performance and has received many National and International level awards. To list out a few among them: PCRI awards, Armed Forces Flag Day Award, CMAK Best Practice Awards, National PSU Award, Asia's Best Brand Employer Award, Asia's Business quality award, Ambari Utsav, EV Power plus and Pallakki won global marketing excellence award under category of best new brand, product or service launch and many more
- KSRTC has planned to induct 2000 buses during 2024-25.
- The newly introduced "Namma Cargo Trucks' will be increased to 100 by the end of 2024-25.
- KSRTC is in the process of implementing Vehicle Tracking and Monitoring System and Command Center, digitalisation of cash transactions through Mobile App and NCMC Cards issuance.
- BMTC has been recognised with several awards on 22nd September 2023 at New Delhi.
- Under central governments FAME-II scheme through CESL,BMTC has signed a contract with Tata Motors for the operation of 921 Non-A/c electric buses on Gross cost contract (GCC) Model with Rs.41.01 per km. A subsidy of Rs.39.08 lakh per vehicle is provided by the central government. At present, 01 Proto vehicle started on 28-07-2023.

(Source: Economic Survey of Karnataka Annual Report of 2023-24)

3 Ambient Air Quality Monitoring Program

Karnataka State Pollution Control Board (KSPCB) is monitoring the Ambient Air Quality (AAQ) at 70 locations in the state. The monitoring of AAQ is carried out through Continuous and Manual stations under two programs called as National Air Monitoring Program (NAMP)and Board Air Monitoring Program (BAMP).

Table 3.1

No. of Ambient Air Quality Monitoring stations under			Total No. of stations
NAMP	**BAMP**	**CAAQMS**	
30	**13**	**39**	**82**
RSPM (PM_{10}), FPM ($PM_{2.5}$), SO_2, NO_2, NH_3, Pb, Ni	RSPM(PM_{10}), FPM($PM_{2.5}$), SO_2, NO_2, NH_3, Pb, Ni	RSPM(PM_{10}), FPM($PM_{2.5}$),SO_2, NO, NO_2, NOx, NH_3,CO,O_3,C_6H_6,CH_4, NMHC, THC, Eth-Benzene, Toluene, Xylene & Meteorological parameters like Temp, RH,WS, WD,SR,BP,VWS	

(Source: KSPCB)

Total No. of Stations in 29 Districts of Karnataka State=82 (43 Manual + 39 CAAQMS)

Table 3.2 **Ambient Air Quality Monitoring Stations in Karnataka**

Manual Stations	Bengaluru	Other than Bengaluru	Total
NAMP	09	21	30
Board Program	06	3	9
NCAP	0	4	4
Total	**15**	**28**	**43**

CAAQMS	Bengaluru	Other than Bengaluru	Total
Existing	07	24	31
Additional	04	04	08
Total	**11**	**28**	**39**

(Source: KSPCB)

- **Data Transmission and Reporting**

Monitoring data is electronically transmitted to the Central Pollution Control Board (CPCB) in New Delhi and uploaded to the Board's website. Additionally, Air Quality Index (AQI) data is shared with relevant departments in Bengaluru.

- **Manual Monitoring**: The Board monitored ambient air quality in major cities across Karnataka using manual equipment under the National Ambient Air Quality Monitoring Programme (NAMP) and the Board Ambient Air Quality Monitoring Programme (BAMP). Sampling was conducted twice a week, 24-hourly, for PM10, PM2.5, SO_2, NO_2, NH_3, and Lead, following CPCB guidelines. Data was electronically transmitted to CPCB and uploaded to the Board's website.

- **General Monitoring Guidelines:**

  As per CPCB standards, ambient air quality is monitored twice a week, 24 hours per day, throughout the year for parameters including PM10, PM2.5, SO_2, NO_2, NH_3, Lead, and Nickel. The collected data is sent to CPCB and published on the Board's website along with the AQI.

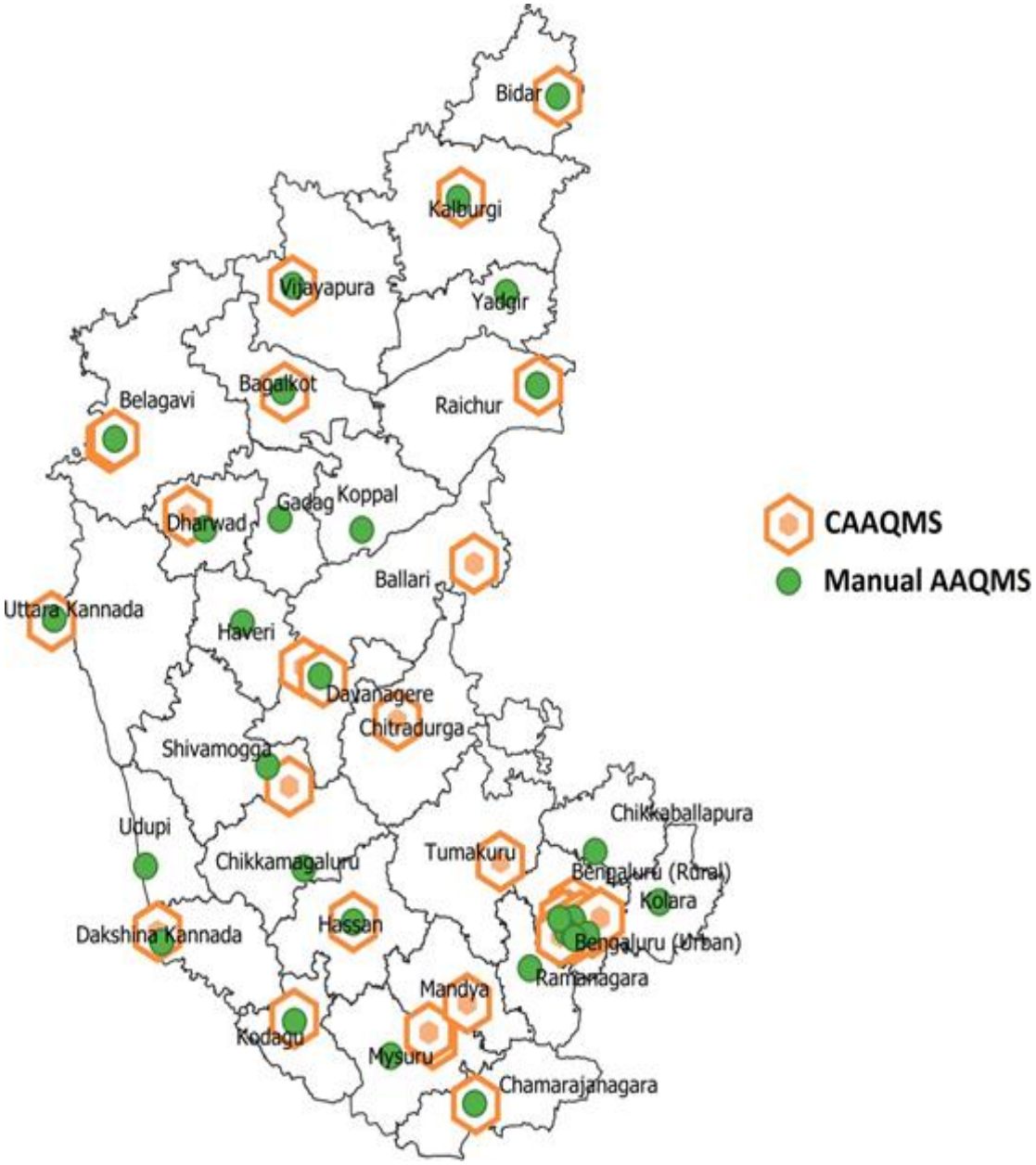


Figure 3.1: Map showing the Network of AAQ stations in Karnataka State*(Source: KSPCB)*

Table 3.3: The details of AAQ Monitoring stations in Karnataka

Sl.No.	Location of the Stations	Name of the District	Type of AAQM station		
			CAAQMS	NAMP (Manual)	BAMP (Manual)
1	Graphite India White Field Road, Bengaluru	Bengaluru		NAMP	
2	AMCO Batteries Mysuru Road Bengaluru			NAMP	
3	KHB Industrial Area Near R.R. Founders Yelahanka. Bengaluru			NAMP	

4	Ace Designers, Peenya Industrial Area, Bengaluru			NAMP	
5	Victoria Hospital, Bengaluru			NAMP	
6	Yeshwanthpura Police Station, Bengaluru			NAMP	
7	TERI office premises,Bengaluru			NAMP	
8	RV College of Engineering, Mysuru Road, Bengaluru			NAMP	
9	Bengaluru University, Bengaluru			NAMP	
10	Central Silk Board, Hosur Road, Bengaluru				BAMP
11	Indira Gandhi Children Health Care Hospital, Bengaluru				BAMP
12	Mr.Madavachari House, KhajisonnenahalliVillage, Bengaluru				BAMP
13	Urban Eco Park, KSPCB Office Premises, Peenya, Bengaluru				BAMP
14	Govt. S.K.S.J. Technological institute, K.R circle, Bengaluru				BAMP
15	Banaswadi Police Station, Bengaluru				BAMP
16	City Railway Station, Bengaluru		CAAQMS		
17	KSPCB office Building, Nisarga Bhavan, Saneguruvanahalli, Bengaluru		CAAQMS		
18	HSR Layout, Near Central Silk Board Flyover, Bengaluru		CAAQMS		
19	Rajeev Gandhi Child Care Institute, NIMHANS, Bengaluru		CAAQMS		
20	Veterinary College, Hebbal, Bengaluru		CAAQMS		
21	Kavika –Mysuru Road, Bengaluru		CAAQMS		
22	Shalini Ground, Jayanagara 5thBlock, Bengaluru		CAAQMS(NCAP)		
23	RV College of Engineering, Mysore Road, Bengaluru		CAAQMS(NCAP)		
24	NTTF, Peenya Industrial Area, Bengaluru		CAAQMS(NCAP)		
25	RTO Office, Indiranagara, Bengaluru		CAAQMS(NCAP)		

26	Jigani Industrial Area, Bengaluru		CAAQMS(NCAP)		
27	KSPCB Office Premises, Tumakuru	Tumakuru		NAMP	
28	KSPCB Office Premises, Tumakuru		CAAQMS (NCAP)		
29	KSPCB Office Premises, Kolar	Kolar		NAMP	
30	KSPCB Office Premises, Kolar		CAAQMS		
31	KSRTC Building, K.R.circle, Mysuru	Mysuru		NAMP	
32	KSPCB Office Premises, Mysuru			NAMP	
33	KSPCB Office Premises, Mysuru		CAAQMS		
34	KSPCB Office Premises, Mandya	Mandya		NAMP	
35	KSPCB Office Premises,Kodagu	Kodagu			BAMP
36	KSTDC Hotel Mayura, Madikeri	Madikeri	CAAQMS		
37	KSPCB Office Premises, Chamarajanagar	Chamarajanagar			BAMP
38	KHB Layout, Opp. Stadium, Chamarajanagar		CAAQMS		
39	KSPCB Office Premises, Hassan	Hassan		NAMP	
40	KSPCB Office Premises, Hassan		CAAQMS		
41	Baikampady Industrial Area, Mangaluru	Mangaluru		NAMP	
42	Circuit Guest House Circle, Mangaluru		CAAQMS		
43	Ranichannamma Circle, Hubballi	Dharwad		NAMP	
44	KSPCB Office Premises, Dharwad			NAMP	
45	University of Agricultural Sciences, Dharwad				BAMP (NCAP)
46	HDMC office premises, Hubballi Town		CAAQMS		
47	Lingarajanagara, Samudaya Bhavana, Hubballi Town		CAAQMS (NCAP)		
48	Kadapa Maidan, Kalabhavan premises, Dharwad		CAAQMS (NCAP)		
49	Port Directors Office, Karwar	Karwar		NAMP	
50	Karwar		CAAQMS		
51	KSPCB Office Premises, Davanagere	Davanagere			BAMP
52	Traffic Police Station (South), PB Road, Davanagere			NAMP	
53	Canteen building, M/s HPF Ltd.,			NAMP	

	Kumarapattanam, Ranebennur				
54	The site yet to be identified, Davanagere				BAMP (NCAP)
55	KSPCB Office Premises, Davanagere		CAAQMS		
56	VISL, Bhadravathi	Shivamogga		NAMP	
57	Vinoba Nagara, Shivamogga		CAAQMS		
58	KSPCB Office Premises, Chitradurga	Chitradurga		NAMP	
59	KSPCB Office Premises, Belagavi	Belagavi		NAMP	
60	KSPCB Office Premises, Belagavi		CAAQMS		
61	KSPCB Office Premises, Vijayapura	Vijayapura		NAMP	
62	Ibrahimpur, Vijayapura		CAAQMS		
63	KSPCB Office Premises, Bagalkote	Bagalakote		NAMP	
64	Vidyagiri, Bagalakote		CAAQMS		
65	KSPCB Office premises, Kalaburgi	Kalaburagi		NAMP	
66	City Corporation building, Kalaburgi				BAMP (NCAP)
67	Office of Weights &Measures, Ring Road, Opp.High Court, Kalaburgi				BAMP (NCAP)
68	Opp. Govt. Depot, Jewargi Road,Kalburgi		CAAQMS		
69	Near KSPCB Office premises, Kalaburgi		CAAQMS (NCAP)		
70	KSPCB Office Premises, Bidar	Bidar		NAMP	
71	KSPCB Office Premises, Bidar		CAAQMS		
72	KSPCB Office Premises, Raichur	Raichur		NAMP	
73	Haji Colony, Raichur		CAAQMS		
74	CMC Building, Ballary	Ballary			BAMP
75	Govt. Junior College, Near DDPI Office Chikkaballapura	Chikkaballapura	CAAQMS		
76	VijayNagar, Ramanagara	Ramanagara	CAAQMS		
77	Brahmagiri, Udupi	Udupi	CAAQMS		
78	Ashwini Nagar, Haveri	Haveri	CAAQMS		
79	Diwator Nagar, Koppala	Koppala	CAAQMS		
80	Collector Office,Yadgiri	Yadgiri	CAAQMS		
81	Panchal Nagar, Gadag	Gadag	CAAQMS		

82	Kalyana Nagara, Chikkamagaluru	Chikkamagaluru	CAAQMS		
		Total	**39**	**30**	**13**

(Source: KSPCB Annual Report)

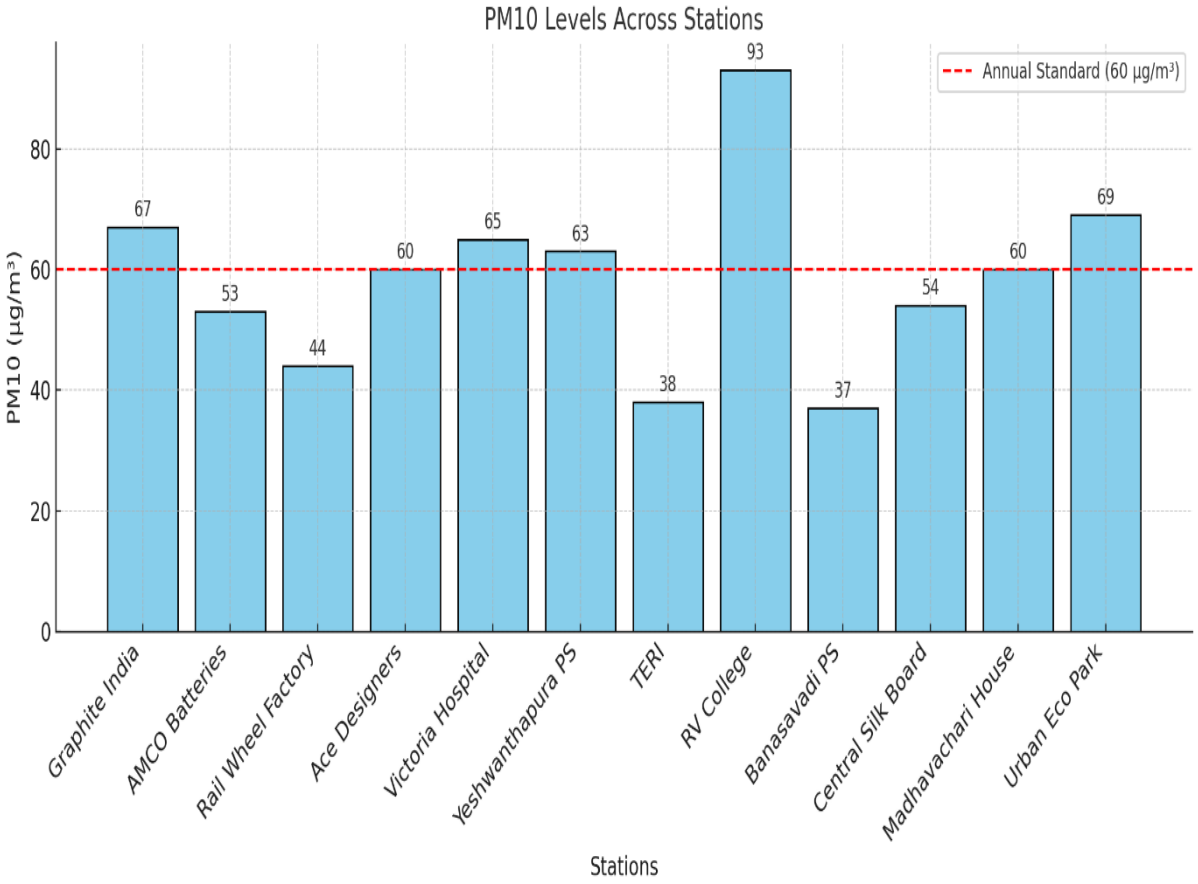
3.1 Annual Average concentration of air pollutants in Bengaluru during 2023-24

Table 3.4 Annual Avg values of air pollutants in Bengaluru during FY 2023-24

Sl. No	Name of the Station	PM_{10} µg/m^3	$PM_{2.5}$ µg/m^3	SO_2 µg/m^3	NO_2 µg/m^3	NH_3 µg/m^3	Pb µg/m^3	Ni ng/m^3
1	Graphite India, Export Promotion Industrial Park, ITPL, White Field Road, Bangalore-560048, Karnataka	67	27	BDL	22	21	0.01	5.56
2	AMCO Batteries, Byatarayanpura, Near GaliAnjaneya Temple, Mysore Road, Bangalore - 560026, Karnataka	53	30	BDL	22	21	0.01	6.78
3	Rail Wheel Factory, KHB Industrial Area Near R.R. Founders, Yelahanka, Bangalore-560064, Karnataka	44	27	BDL	20	21	0.02	7.53
4	Ace Designers Limited, Plot No. 7 & 8, 80 Feet Road, 2nd Phase, Peenya Industrial Area, Bangalore-560058, Karnataka	60	23	BDL	21	21	0.01	6.61
5	Victoria Hospital, Fort Road, near City Market, New Tharagupet, Bangalore-560064, Karnataka	65	-*-	BDL	22	20	0.01	5.31
6	Yeshwanthapura Police Station, 9th Cross Road, Mahalakshmi Layout, Ashokapuram, Yeshwanthpura Industrial Suburb, Bangalore-560022, Karnataka	63	32	BDL	21	21	0.01	4.02

7	The Energy and Resources Institute (TERI), 4th Main, Domlur II Stage, Bengaluru-560071, Karnataka	38	23	BDL	21	20	0.02	6.59
8	RV College of Engineering, RV Vidyaniketan Post, Mysore Road, Bangalore Urban District-560059, Karnataka	93	-*-	10	27	-*-	-*-	-*-
9	Banasavadi Police Station, 5th Main, 3rd Cross Road, Kalyan Nagar, Bangalore-560043, Karnataka	37	-*-	BDL	20	BDL	0.01	6.57
10	Central Silk Board, CSB Complex, BTM Layout, Madivala, Hosur Road, Bangalore-560068, Karnataka	54	32	BDL	21	20	0.01	6.13
11	Madhavachari House, Kazisonnenihalli, Mahadevapura, Bangalore	60	-*-	BDL	21	20	0.02	6.62
12	Urban Eco Park, 3rd Phase, Outer Ring Road, Peenya Industrial Area, Bangalore-560058, Karnataka	69	36	BDL	22	20	0.01	7.71
	Annual Standards	**60.0**	**40.0**	**50.0**	**40.0**	**100.0**	**0.50**	**20.00**

(Source: KSPCB 2023-24Annual Report)



The bar graph showing PM10 levels across the listed stations. The red dashed line represents the annual standard for PM10 (60 µg/m³). Stations exceeding this standard are clear in the visualization.

Brief summary of results:

The measured SO2, NO2, NH**3** and PM2.5values are well within the national limit (50.0 µg/m^3), (40.0 µg/m^3), (100.0 µg/m^3) and (40.0 µg/m^3) respectively in all measured places.

The measured PM10 values have exceeded the national limit (60.0 µg/m^3) in 5 locations namely;

- Graphite India, Export Promotion Industrial Park, ITPL, White Field Road- 67 µg/m^3
- Victoria Hospital, Fort Road, near City Market -65 µg/m^3
- Yeshwanthapura Police Station -63 µg/m^3
- RV College of Engineering -93 µg/m^3
- Urban Eco Park, Peenya Industrial Area- 69 µg/m^3

The increased level of PM10 is attributed to the vehicular emissions/movement, re-suspension of road dust and construction activities.

3.1.1 Air Quality in different zones of Bengaluru

1. ***Industrial Area*:**

Four ambient air quality monitoring stations have been set up in the industrial areas of Bengaluru city viz.

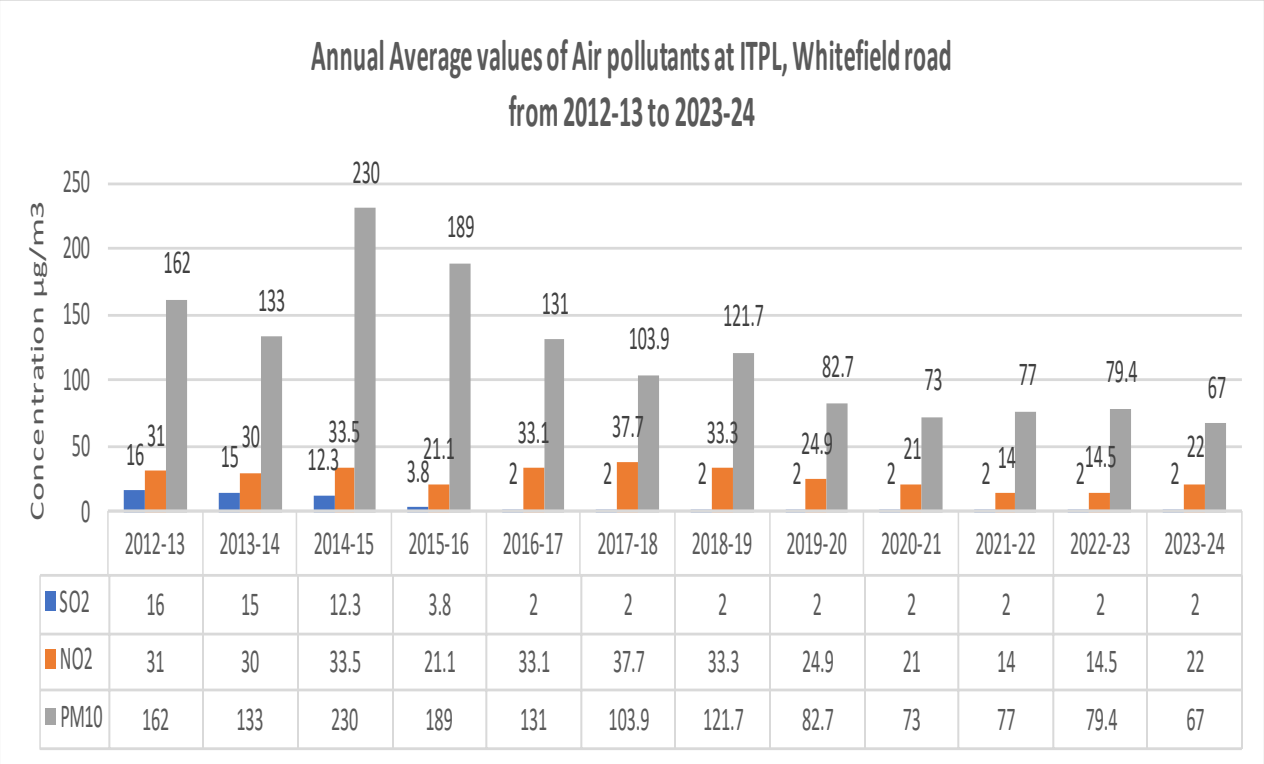
i) Graphite India, Export Promotion Industrial Park, ITPL, White Field Road, Bangalore-560048, Karnataka

ii) Rail Wheel Factory, KHB Industrial Area Near R.R. Founders, Yelahanka, Bangalore-560064, Karnataka

iii) Ace Designers Limited, Plot No. 7 & 8, 80 Feet Road, 2nd Phase, Peenya Industrial Area, Bangalore-560058, Karnataka

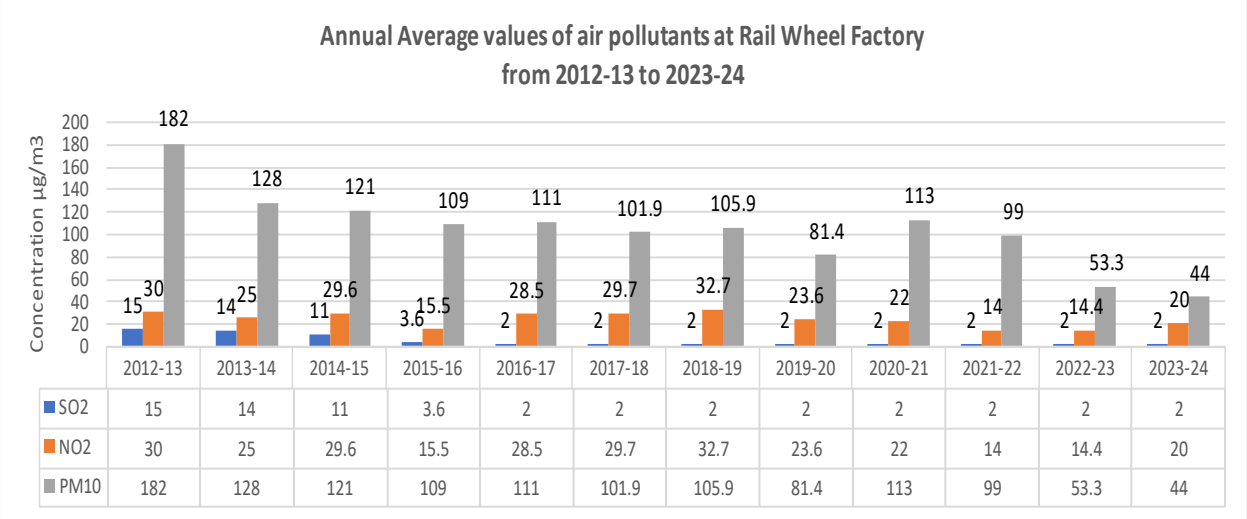
iv) Urban Eco Park, 3rd Phase, Outer Ring Road, Peenya Industrial Area, Bangalore-560058, Karnataka

i) Graphite India, Export Promotion Industrial Park, ITPL, White Field Road, Bangalore-560048, Karnataka



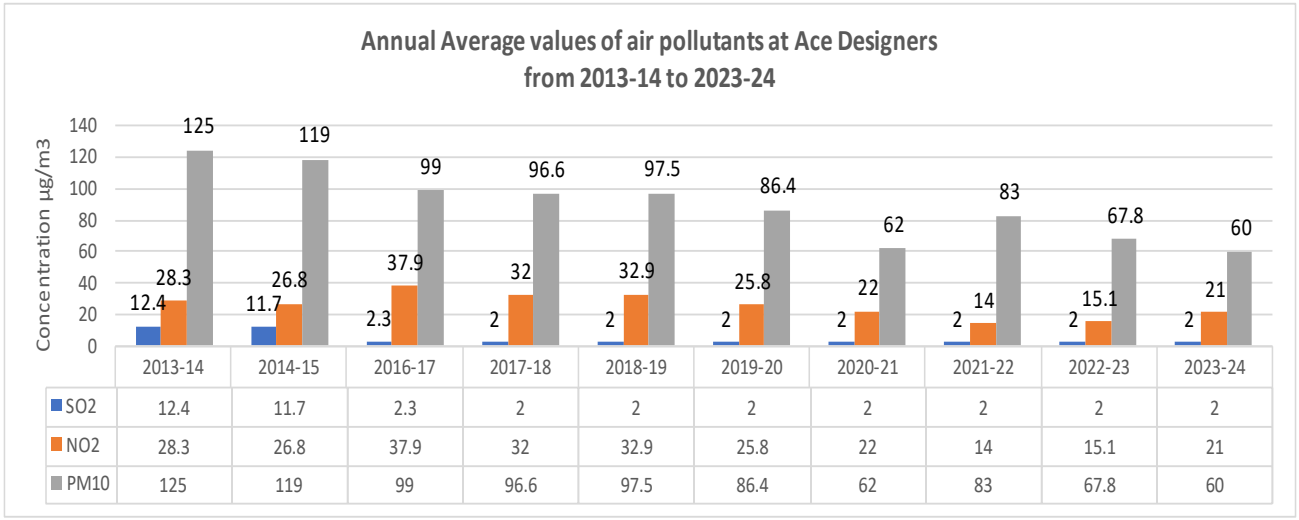
PM10 values have exceeded the national limit (60.0 µg/m^3) in all measured years, whereas SO2 and NO2 values are within the national limit during the period 2012-13 to 2023-24. Higher levels of PM10 may be due to the construction activities and vehicular movement and road dust.

ii) Rail Wheel Factory, KHB Industrial Area Near R.R. Founders, Yelahanka, Bangalore-560064, Karnataka



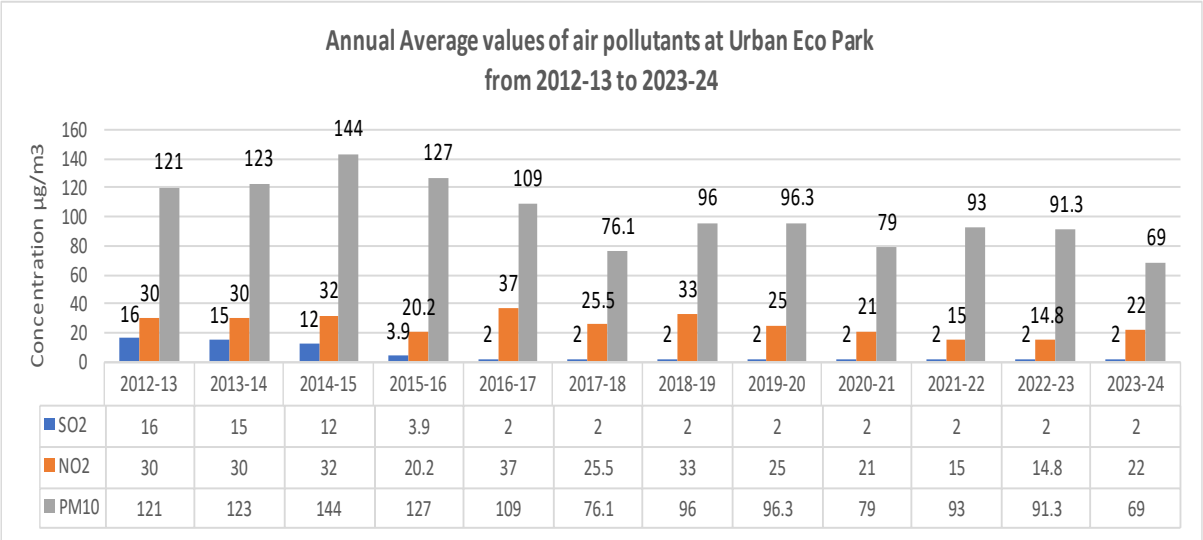
PM10 values are exceeded the national ambient air quality standard (60.0 µg/m3) in all previous years till 2021-22. The PM10 values are in a decreasing trend in 2022-23 and 2023-24. The SO2 and NO2 parameters are within the national limit during all the measured years 2012-13 to 2023-24.

iii) Ace Designers Limited, Plot No. 7 & 8, 80 Feet Road, 2nd Phase, Peenya Industrial Area, Bangalore-560058, Karnataka



PM10 values are exceeded the national ambient air quality standard (60.0 µg/m^3) in all previous years, due to the construction activities and vehicular movement and road dust except 2023-24. The SO2 and NO2 parameters are within the national limit in all the measured years 2013-14 to 2023-24.

iv) Urban Eco Park, 3rd Phase, Outer Ring Road, Peenya Industrial Area, Bangalore-560058, Karnataka



	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
SO2	16	15	12	3.9	2	2	2	2	2	2	2	2
NO2	30	30	32	20.2	37	25.5	33	25	21	15	14.8	22
PM10	121	123	144	127	109	76.1	96	96.3	79	93	91.3	69

PM10 values are exceeded the national ambient air quality standard (60.0 µg/m^3) in all the measured years due to the construction activities and vehicular movement and road dust whereas SO2 and NO2 are within the national limit in all the measured years 2012-13 to 2023-24.

2. Mixed area**:** 6 ambient air quality monitoring stations have been set up in the mixed area (Commercial and Residential areas**)** of Bengaluru city viz.

i) AMCO Batteries Limited, Byatarayanapura, Near GaliAnjaneyaswamy Temple, Mysore Road, Bangalore Urban District-560026, Karnataka

ii) Yeshwanthapura Police Station, 9th Cross Road, Ashokapuram, Yeshwanthpura Industrial Suburb, Bangalore Urban District-560022, Karnataka

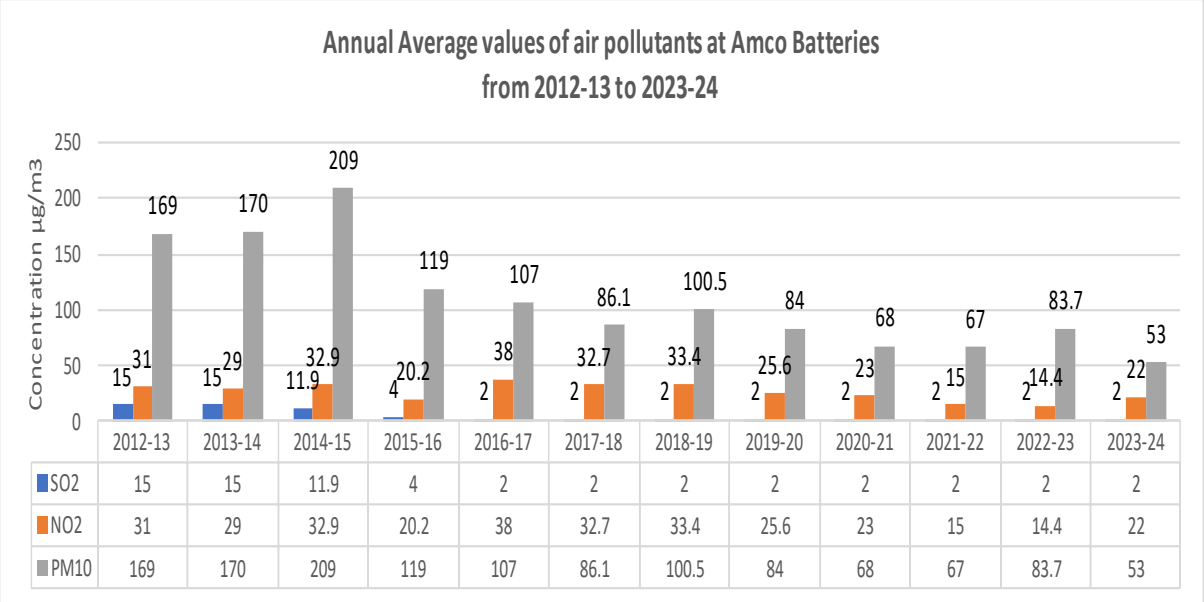
iii) Central Silk Board, CSB Complex, BTM Layout, Madivala, Hosur Road, Bangalore-560068, Karnataka

iv) Madhavachari House, Kazisonnenihalli, Mahadevapura, Bangalore

v) The Energy and Resources Institute (TERI), 4th Main, 2nd Cross, Domlur 2nd Stage, Bangalore Urban District-560071, Karnataka

vi) Banasavadi Police Station, 5th Main, 3rd Cross Road, Kalyan Nagar, Bangalore-560043, Karnataka

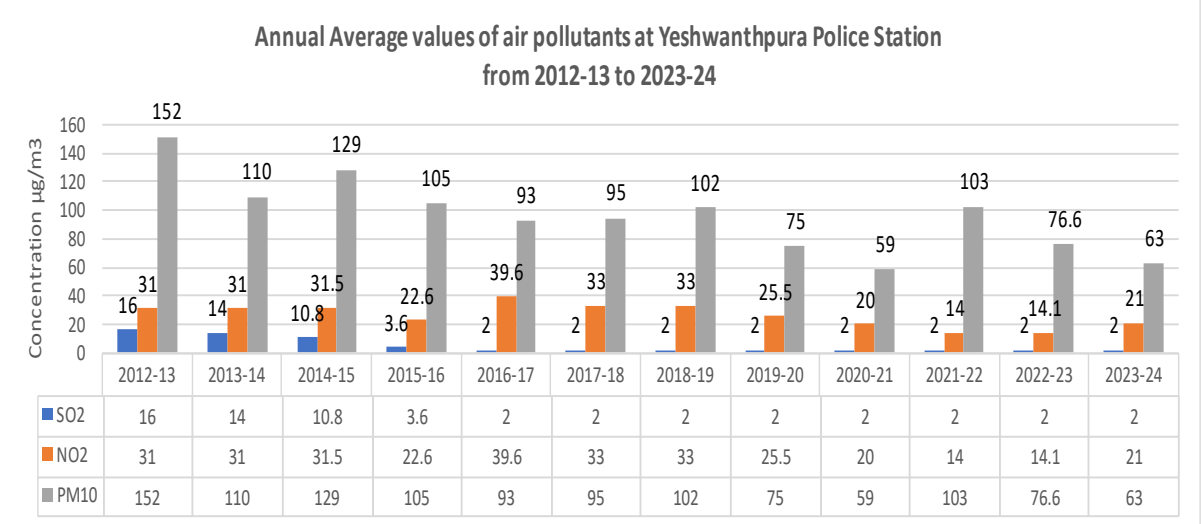
i) AMCO Batteries Limited, Byatarayanapura, Near GaliAnjaneyaswamy Temple, Mysore Road, Bangalore Urban District-560026, Karnataka



	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
SO2	15	15	11.9	4	2	2	2	2	2	2	2	2
NO2	31	29	32.9	20.2	38	32.7	33.4	25.6	23	15	14.4	22
PM10	169	170	209	119	107	86.1	100.5	84	68	67	83.7	53

PM10 values are exceeded the national ambient air quality standard (60.0 µg/m^3) in all previous years, due to the construction activities and vehicular movement and road dust except 2023-24. The SO2 and NO2 parameters are within the national limit in all the measured years 2013-14 to 2023-24.

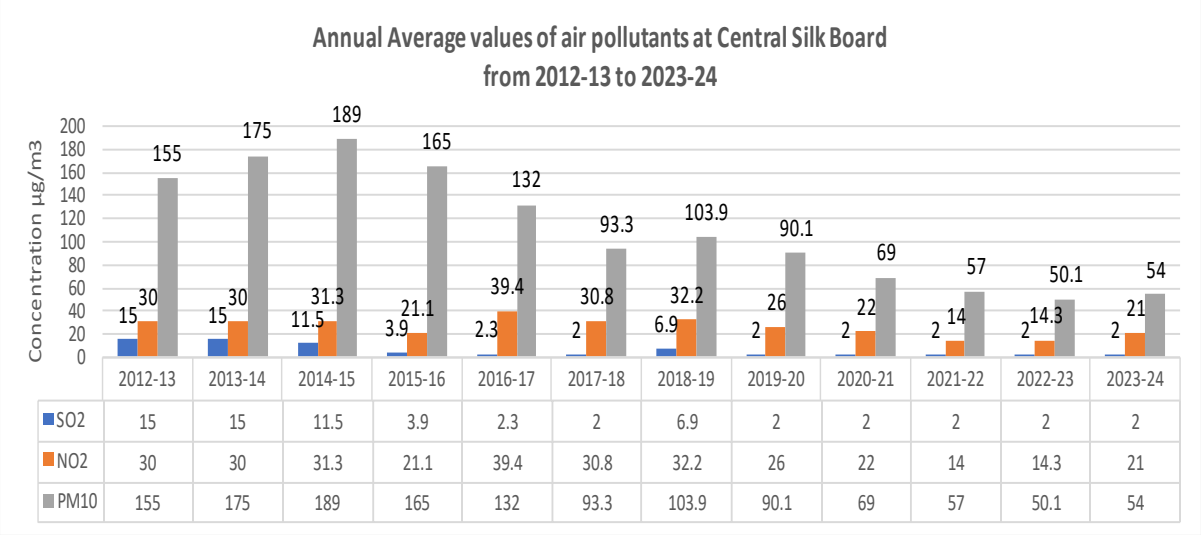
ii) Yeshwanthpura Police Station, 9th Cross Road, Ashokapuram, Yeshwanthpura Industrial Suburb, Bangalore Urban District-560022, Karnataka



	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
SO2	16	14	10.8	3.6	2	2	2	2	2	2	2	2
NO2	31	31	31.5	22.6	39.6	33	33	25.5	20	14	14.1	21
PM10	152	110	129	105	93	95	102	75	59	103	76.6	63

PM10 values have exceeded the national ambient air quality limit (60.0 µg/m^3) during all the years except in 2020-21, due to the construction activities and vehicular movement and road dust. The SO2 and NO2 parameters are well within the national limit during the years 2012-13 to 2023-24.

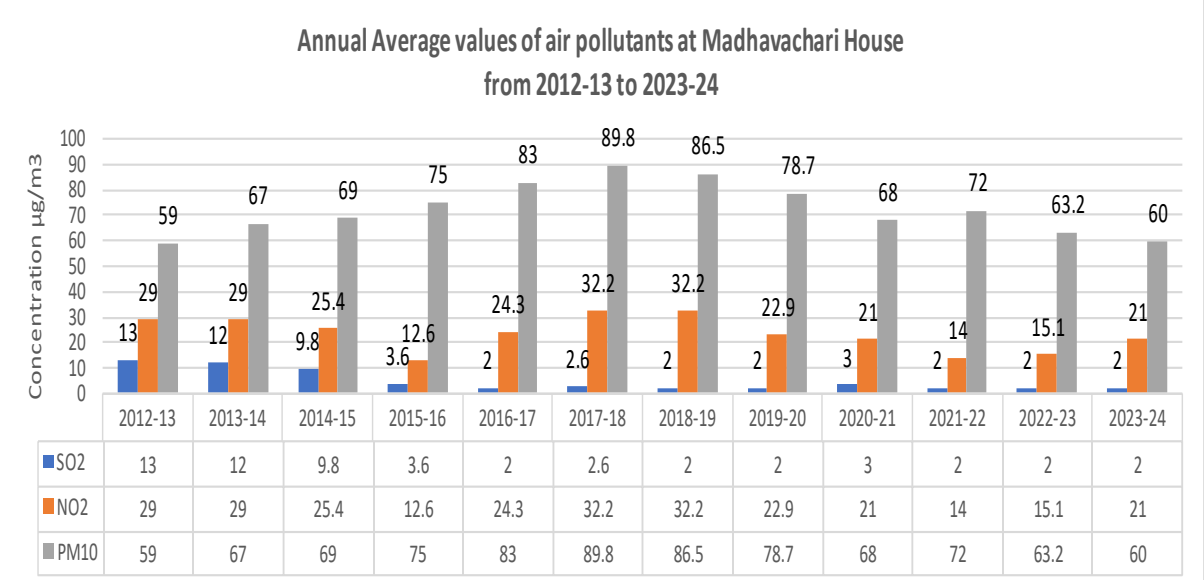
iii) Central Silk Board, CSB Complex, BTM Layout, Madivala, Hosur Road, Bangalore-560068, Karnataka



	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
SO2	15	15	11.5	3.9	2.3	2	6.9	2	2	2	2	2
NO2	30	30	31.3	21.1	39.4	30.8	32.2	26	22	14	14.3	21
PM10	155	175	189	165	132	93.3	103.9	90.1	69	57	50.1	54

PM10 values have exceeded the national ambient air quality standard (60.0 µg/m^3) till 2020-21 due to the construction activities and vehicular movement and road dust. Further till 2023-24, PM10 has followed a downward trend, whereas SO2 and NO2 are within the national limit during 2012-13 to 2023-24.

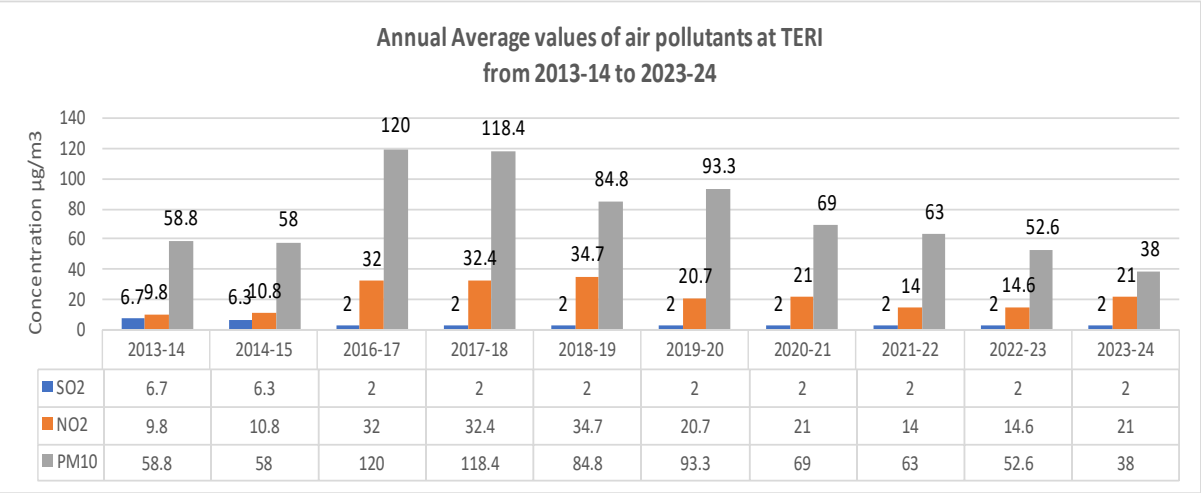
***iv)* Madhavachari House, Kazisonnenihalli, Mahadevapura, Bangalore**



	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
SO2	13	12	9.8	3.6	2	2.6	2	2	3	2	2	2
NO2	29	29	25.4	12.6	24.3	32.2	32.2	22.9	21	14	15.1	21
PM10	59	67	69	75	83	89.8	86.5	78.7	68	72	63.2	60

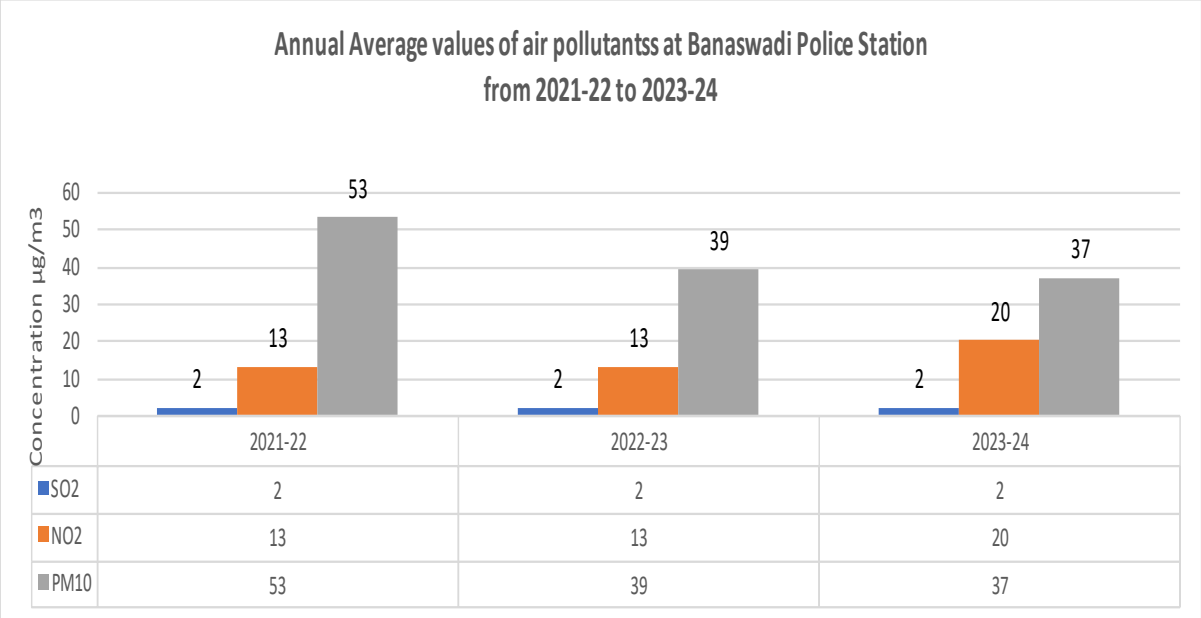
PM10 values have exceeded the national ambient air quality standard (60.0 µg/m^3) in all the measured years, except during 2012-13 and has reached the border in 2023-24. The increase is due to the construction activities and vehicular movement and road dust whereas SO2 and NO2 are within the national limit during 2012-13 to 2023-24.

v)The Energy and Resources Institute (TERI), 4th Main, 2nd Cross, Domlur 2nd Stage, Bangalore Urban District-560071, Karnataka



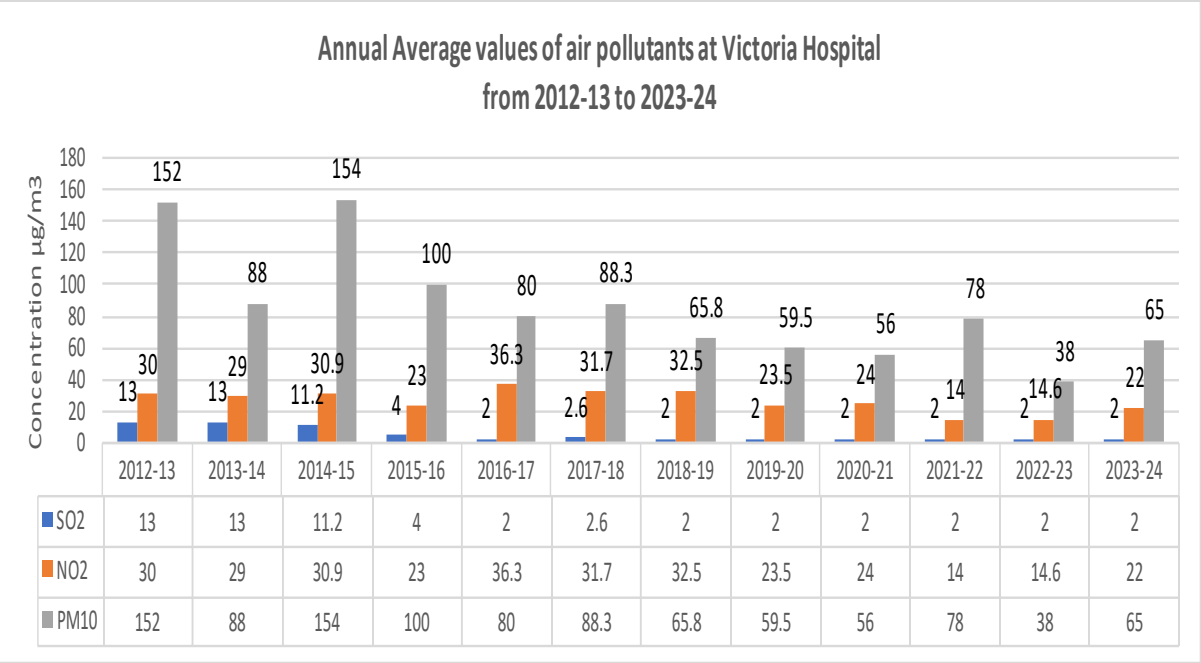
PM10 values have exceeded the national ambient air quality standard (60.0 µg/m^3) in all the measured years, due to the construction activities and vehicular movement and road dust and is in a downward trend since 2022-23 till 2023-24 and SO2 and NO2 are within the national limit during 2012-13 to 2023-24.

vi) Banasavadi Police Station, 5th Main, 3rd Cross Road, Kalyan Nagar, Bangalore-560043, Karnataka



3.Ecologically Sensitive area: Ambient air quality monitoring stations are installed at following Ecologically Sensitive area of Bengaluru:

Victoria Hospital, Fort Road, near City Market, New Tharagupet,



	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
SO2	13	13	11.2	4	2	2.6	2	2	2	2	2	2
NO2	30	29	30.9	23	36.3	31.7	32.5	23.5	24	14	14.6	22
PM10	152	88	154	100	80	88.3	65.8	59.5	56	78	38	65

PM10 values are exceeding the national ambient air quality standard (60.0µg/m^3) in all the years except 2019-20, 2021-22 and 2022-23 whereas SO2 and NO2 are within the national limit during the year 2012-13 to 2023-24.

3.2 Air Quality in different districts of Karnataka

The Board during 2023-24 has monitored the ambient air quality at major cities of Karnataka using manual equipment under National Ambient Air Quality Monitoring Programme (NAMP) and Board Ambient Air Quality Monitoring programme(BAMP). Ambient air quality monitoring is being carried out twice a week throughout the year for 24 hours, for PM10, PM2.5, SO2, NO2, NH3 & Lead using manual equipment as per Central Pollution Control Board guidelines and the data is sent to CPCB, New Delhi electronically and also uploaded AQI in the Board website.

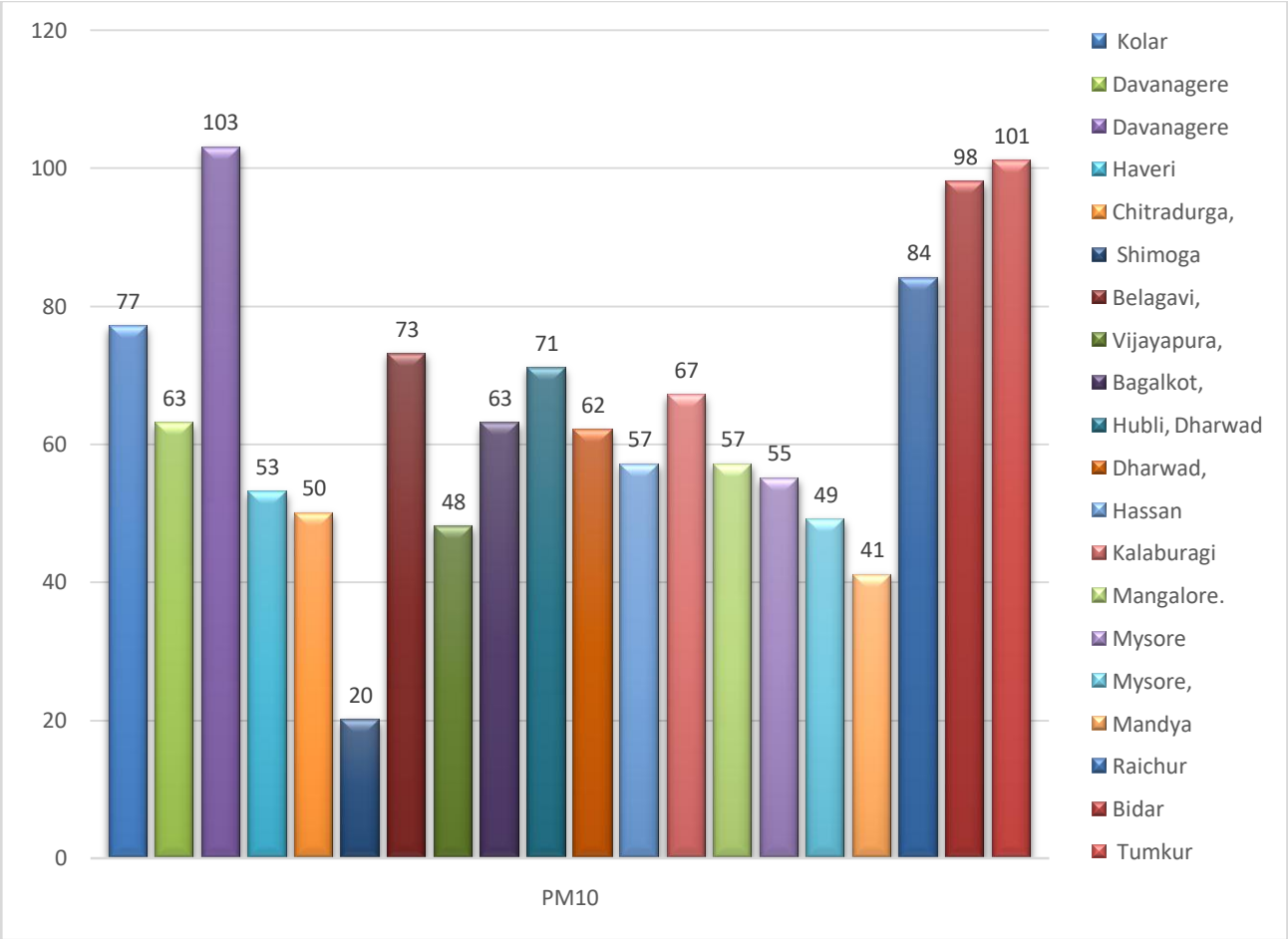
Table 3.7: Annual average values of Air Pollutants in other districts of Karnataka during 2023-24

Sl. No	Name of the Station	PM_{10} µg/m^3	$PM_{2.5}$ µg/m^3	SO_2 µg/m^3	NO_2 µg/m^3	NH_3 µg/m^3	Pb µg/m^3	Ni ng/m^3
1	Premises of KSPCB Office, Plot No.14 'B', KIADB Industrial Area, Bethamangala Road, Tamaka, Kolar-563101,	77	26	2	21	20	0.02	5.28
2	Premises of KSPCB Office, Plot No.97, KIADB Complex, Anthrasanahalli Indl Area, Sira Road, Lingapura, Tumkur-572106,	101	70	2	22	21	0.0100	6.3500
3	Regional Office-Davanagere, Karnataka State Pollution Control Board, Plot No.501, C-Block, Near Central Excise & Customs Office, Devrajurs Layout, Davanagere District-577006,	63	23	2	11	10	-*-	-*-
4	Traffic Police Station(South), Opp. KSRTC Bus Stand, P.B.Road, Davanagere District-577002,	103	29	2	12	10	-*-	-*-
5	HPF Ltd., Canteen Building, Grasim Industry Premises, Kumarapattanam town, Ranebennur Taluk, Haveri District,	53	16	2	5	10	-*-	-*-
6	Regional Office-Chitradurga, Karnataka State Pollution Control Board, House No.C.A-2, 3rd Main, KHB Colony, Behind Pragathi Gramin Bank, Near KHB Office, Sadik Nagar Road.	50	18	2	6	10	-*-	-*-
7	The VISL, Oxygen Plant, BhadravathiTaluk, Shimoga District-577204	20	-*-	2	5	10	-*-	-*-
8	Regional Office-Belagavi, Karnataka State Pollution Control Board, Plot No-1, Autonagar, Kanabargi Industrial Area, Belagavi District-590015,	73	33	2	13	11	1.1	--
9	Regional Office-Vijayapura, Karnataka State Pollution Control Board, Plot No.86, Harakari Layout, Vajra Hanuman Nagar, Bagalkot Road,	48	22	2	13	10	1.1	--

	Vijayapura District-586101							
10	Regional Office-Bagalkot, Karnataka State Pollution Control Board, Sector No.07, Bypass Road, Navanagar, Bagalkot District-587101,	63	29	2	13	11	1.1	--
11	MSME Development Institute, Gokul Road, Opposite New Bus Stand, Hubli, Dharwad District	71	22	5	15	22	0.0100	3.1600
12	Regional Office-Dharwad, Karnataka State Pollution Control Board, Plot No.4, Lakamanahalli, PB Road, KIADB Industrial Area, Dharwad District-580004	62	17	4	13	21	0.0100	2.4800
13	Regional Office-Hassan, Karnataka State Pollution Control Board, Plot No.1A, ParisaraBhavana, C-Block, B.Katihalli Industrial Area,BM Road, Hassan District	57	23	7	20	15	0.0000	0.5500
14	Regional Office-Kalaburagi, Karnataka State Pollution Control Board, Plot No. 12/2, Sy No.19/P, Mansafdar Layout, MG Road, Santraswadi, Kalaburagi District-585101	67	38	4	10	22	-*-	-*-
15	Solara Active Pharma Sciences Ltd.,Solara- API Mangalore, 120 A & B, 36, 120P & 121, Industrial Area, New Mangalore Baikampady,Mangalore.	57	39	8	18	15	0.0600	0.0300
16	KSRTC Building, KR Circle, Vishvesvaraiah Building, Mysore District-570004	55	23	2	16	15	0.0100	1.5500
17	Regional Office-Mysore, Karnataka State Pollution Control Board, Plot no.436D, Hebbal Industrial Area, KRS Road, Metagalli, Mysore District-570016,	49	-*-	2	16	15	0.0200	1.5500
18	Regional Office-Mandya, Karnataka State Pollution Control Board, Assessment No.D3/3364/K L 934, PES Engineering College Road, Behind Govt. Mahavidyalaya, Mandya District-571401,	41	19	2	14	14	0.0100	3.5500

19	Regional Office-Raichur, Karnataka State Pollution Control Board, Shed No.C-3, KSSIDC Industrial Estate, 3rd Cross, Hyderabad Road, Raichur District-584102	84	31	9	11	11	0.0100	2.4300
20	Regional Office-Bidar, Karnataka State Pollution Control Board, Plot No.42, B-2, KIADB Office Building, Naubad Industrial Area, Bidar District-585403	98	-*-	4	11	23	-*-	-*-

Chart depicting the Annual average values of Air Pollutants in other districts of Karnataka during 2023-24



3.3 Continuous Ambient Air Quality Monitoring Stations (CAAQMS)

In Karnataka, the Board has established a total number of 39 CAAQMS for monitoring 8 Air quality parameters along with meteorological parameters in phased manner including NCAP. Bengaluru alone is having 11 CAAQMS and remaining 28 CAAQM Stations are established in other major cities of Karnataka. The Compiled Statistical Data is sent to CPCB, New Delhi and the monthly data is also uploaded in the Board Website every month for displaying and creating mass awareness to general public.

The Graphical representation of Annual Average of Continuous Ambient Air Quality Monitoring Stations (CAAQMS) in other cities of Karnataka for the year 2023-2024.

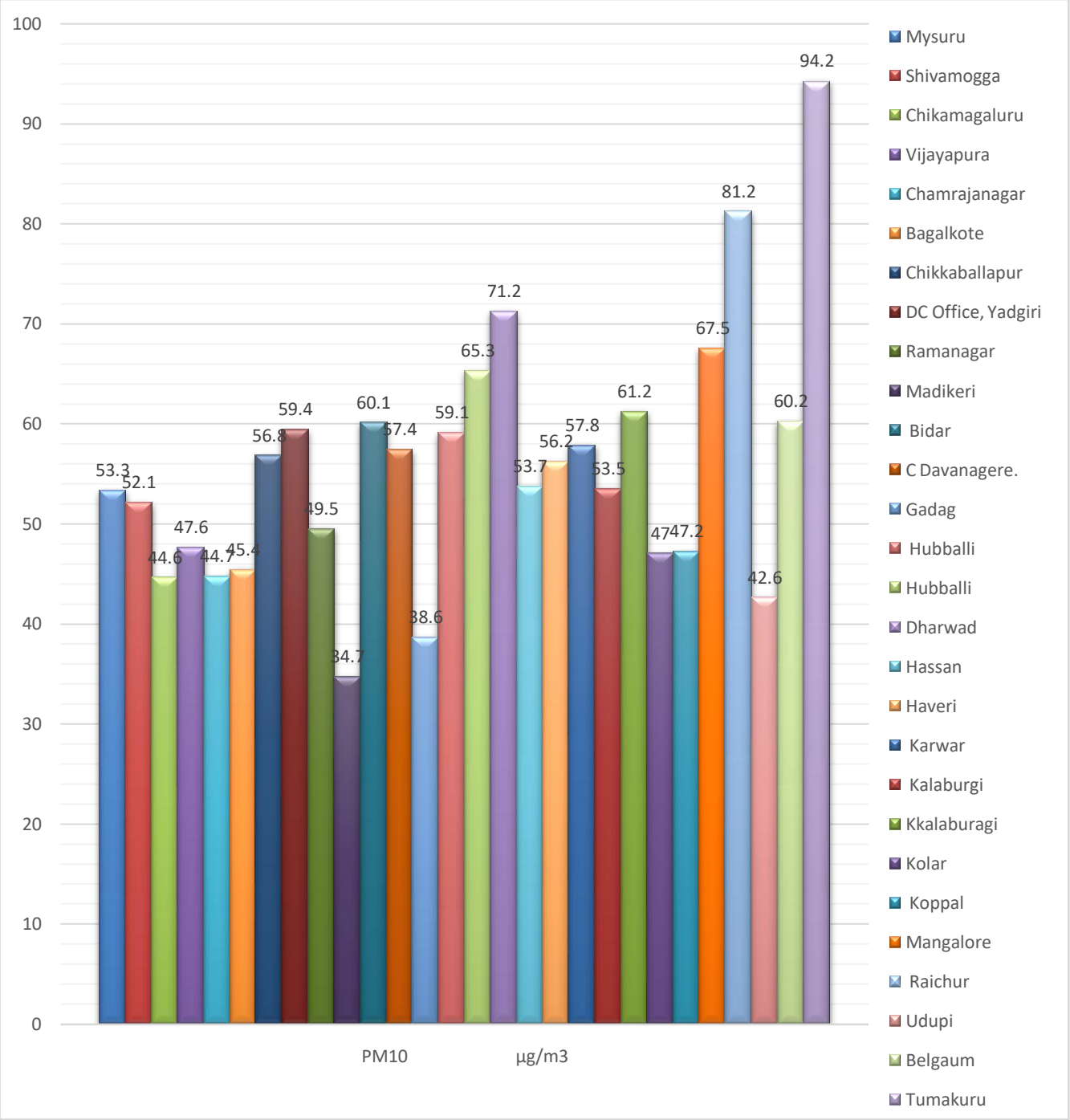


Table 3.8: CAAQM stations annual average values of Air Pollutants of other cities in Karnataka during the year 2023-24

Sl. No	Name of the Station	PM_{10} µg/m^3	$PM_{2.5}$ µg/m^3	SO_2 µg/m^3	NO_2 µg/m^3	NH_3 µg/m^3	O3 µg/m^3	CO mg/m^3
1	KSPCB Office Premises, Mysuru	53.3	22.9	3.9	18.9	11.1	36.8	0.42
2	KSPCB Office Premises, Shivamogga	52.1	22.5	4.6	18.2	15.3	38.4	0.47
3	KSPCB Office Premises, Chikamagaluru	44.6	20.1	3.0	16.9	13.6	31.9	0.44
4	KSPCB Office Premises, Vijayapura	47.6	24.7	5.2	13.4	6.3	16.0	0.55
5	Near District Stadium, Chamrajanagar	44.7	19.7	4.0	20.5	6.4	25.8	0.47
6	Basaveshwar Engineering College, Bagalkote	45.4	23.2	5.2	11.4	6.5	15.6	0.41
7	Government PU college, Chikkaballapur	56.8	30.4	14.6	11.0	4.2	24.2	0.30
8	DC Office, Yadgiri	59.4	31.3	13.1	6.5	2.5	18.8	0.46
9	KSPCB Office Premises, Ramanagar	49.5	26.4	20.4	17.5	7.9	34.1	0.39
10	Hotel KSTDC, Mayura valley, Madikeri	34.7	21.0	4.2	3.6	1.7	27.9	0.32
11	KSPCB Office Premises, Bidar	60.1	34.2	13.6	7.8	8.7	27.3	0.73
12	Central Excise & Customs Office Devaraj URS layout, Davanagere.	57.4	27.2	4.4	9.6	4.8	21.1	0.39
13	Mundaragi Road, Near Chirayu Hospital, Gadag	38.6	21.3	15.1	9.6	11.0	32.5	0.74
14	Corporation Garden Opposite, Hubballi	59.1	26.0	10.1	13.1	20.1	27.7	0.83
15	Near lingarajnagarSamudayaBhavan, Hubballi**(NCAP)**	65.3	24.5	3.8	10.1	10.6	33.7	0.58
16	Kalabhavan Premises, Dharwad**(NCAP)**	71.2	27.3	4.1	14.5	10.1	29.9	0.97
17	KSPCB Office Premises, Hassan	53.7	26.2	16.8	12.6	12.4	18.9	0.38
18	KSPCB Office Premises, Haveri	56.2	29.3	11.8	18.7	12.3	18.2	0.76
19	KSPCB Office Premises, Karwar	57.8	30.4	12.0	19.4	9.0	22.5	0.78

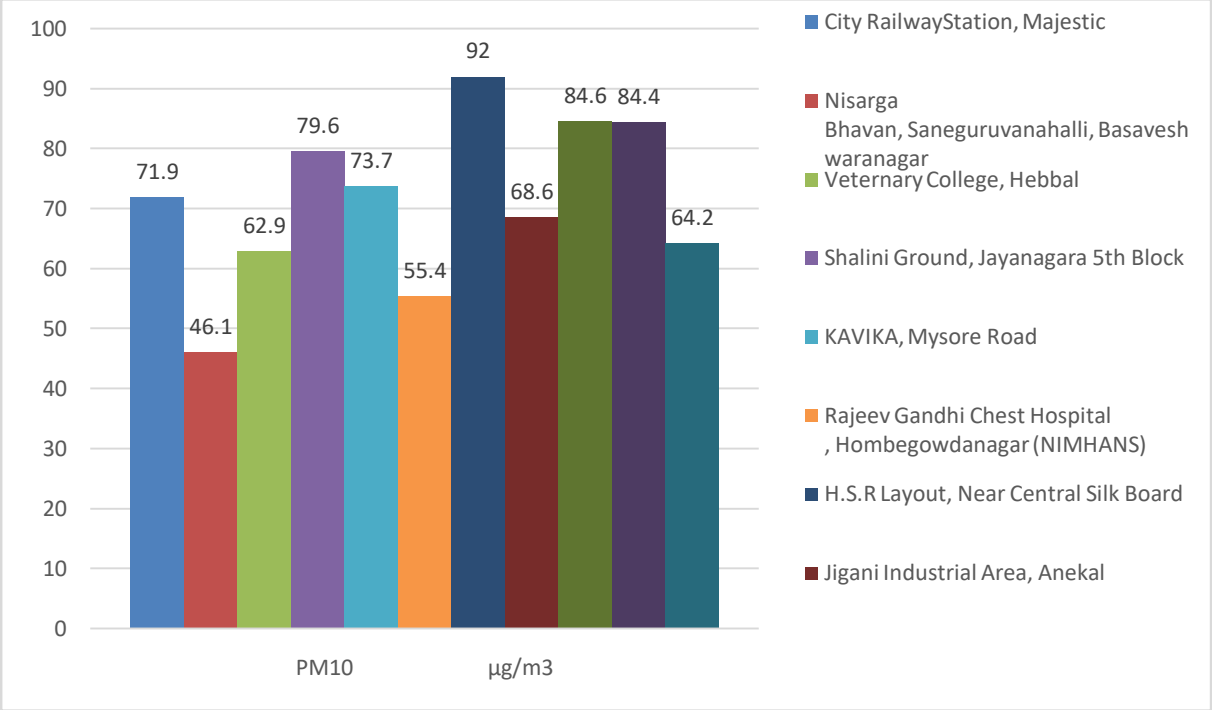
20	GOVT. ITI College, Kalaburgi	53.5	24.1	15.9	10.8	9.6	33.5	0.67
21	KSPCB Office Premises, Santraswadi, Kalaburagi	61.2	24.0	4.5	12.2	12.4	30.9	0.95
22	KSPCB Office Premises, Kolar	47.0	25.1	11.8	7.6	8.9	23.2	0.79
23	DC Office Compound, Koppal	47.2	21.3	17.6	12.9	12.1	41.9	0.78
24	VasanthVihar, Mangalore	67.5	32.6	10.6	8.4	9.0	26.0	0.82
25	DC Office compound, Raichur	81.2	35.2	29.4	20.8	12	14.2	0.96
26	Board High School compound, Udupi	42.6	23.5	12.8	9.9	7.3	39.6	0.79
27	KSPCB Office Premises, Belgaum	60.2	25.7	12.5	18.5	24.5	19.1	0.87
28	KSPCB Office Premises, Tumakuru	94.2	33.7	5.9	18.7	12.0	30.7	0.87
	Annual Standards	**60.0**	**40.0**	**50.0**	**40.0**	**100.0**	**100.0**	**2.0**

The PM_{10} values are within the standards in all cities except Hubli, Dharwad, Kalaburgi, Mangalore, Raichur and Tumkur. $PM_{2.5}$ values are well within the national ambient air quality standard at all monitoring locations. All other parameters are well within the national ambient air quality standards. PM_{10} values are exceeded due to the construction activities, vehicular movement and road dust.

Table 3.9: CAAQM stations annual average values of Air Pollutants at Bengaluru city during the year 2023-24

Sl. No.	Name of the Station	PM_{10} $\mu g/m^3$	$PM_{2.5}$ $\mu g/m^3$	SO_2 $\mu g/m^3$	NO_2 $\mu g/m^3$	NH_3 $\mu g/m^3$	O_3 $\mu g/m^3$	CO mg/m^3
1	City RailwayStation, Majestic	71.9	*	16.8	27.5	*	*	1.29
2	Nisarga Bhavan, Saneguruvanahalli, Basaveshwaranagar	46.1	*	5.0	21.4	*	*	0.71
3	Veternary College, Hebbal	62.9	30.5	11.5	10.8	8.7	17.3	0.37
4	Shalini Ground, Jayanagara 5th Block	79.6	34.6	9.8	9.9	9.4	21.9	0.57
5	KAVIKA, Mysore Road	73.7	34.6	5.4	14.0	6.9	14.2	0.72
6	Rajeev Gandhi Chest Hospital, Hombegowdanagar (NIMHANS)	55.4	24.4	3.6	22.3	3.9	16.0	0.31
7	H.S.R Layout, Near Central Silk Board	92.0	36.1	6.2	20.0	16.8	22.0	0.81
8	Jigani Industrial Area, Anekal	68.6	32.1	8.7	13.3	9.1	39.2	0.88
9	R.V.Engineering College, Kengeri	84.6	36.5	5.5	16.8	11.4	31.1	0.83

10	Kasturinagar RTO	84.4	38.3	6.8	12.6	10.4	44.5	0.50
11	NTTF, Peenya Industrial Area	64.2	28.1	5.5	14.8	10.2	41.4	0.65



Key Factors Contributing to High PM10 Levels:

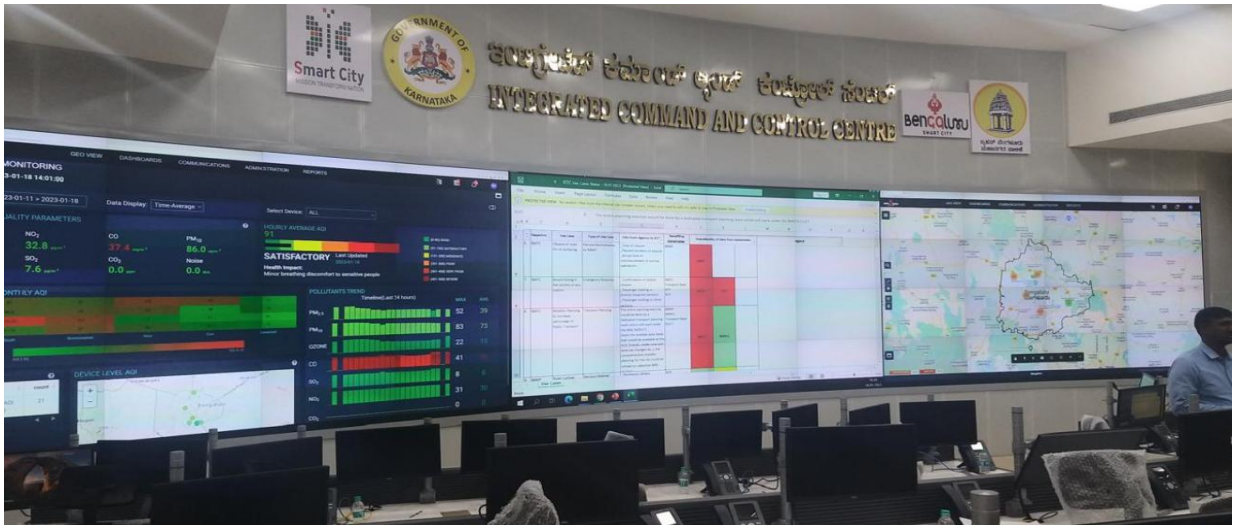
- **Traffic Emissions:** Many of the stations with elevated PM10 levels are located near busy roads or urban centers. High traffic volumes lead to increased vehicle emissions, which contribute significantly to particulate pollution.
- **Industrial Activities:** Stations like **R.V. Engineering College** and **NTTF, Peenya Industrial Area** are located in or near industrial zones, where manufacturing processes can emit particulate matter.
- **Construction and Urbanization:** Urban areas with active construction sites can generate dust and particulate matter, further raising PM10 concentrations.

High Pollution Areas (Above PM10 Standards): The majority of the stations (9 out of 11) have PM10 levels above the recommended limit, indicating that urbanization, traffic congestion, and industrial activities are significantly affecting air quality in these areas. It is essential to address these sources to protect public health, particularly through improved traffic management, stricter industrial regulations, and enhanced environmental awareness.

Relatively Better Air Quality Areas (Below PM10 Standards): Areas like **Nisarga Bhavan** and **NIMHANS** exhibit relatively lower PM10 concentrations, indicating that urban planning, green spaces, and less industrial activity can contribute to better air quality. These areas serve as examples of how natural and urban design elements can mitigate air pollution.

3.4 Integrated Control and Command Centre- ICCC

Fig 3.1: (Air Quality Monitoring Dash Board)



- ICCC has integrated the AQI sensors deployed across the city, of Karnataka State Pollution Control Board through API. ICCC pollution control board operators monitors the air quality data of each sensor 24/7.
- With the help of Machine Learning and Business rules ICCC tracks the real-time data on Air Quality Parameters such as AQI, Particulate Matter 2.5 & 10(PM), Nitrogen Dioxide (NO2), Sulfur dioxide (SO2), Carbon Monoxide (CO), Ozone (O3) and other pollutants and trigger alerts if any abnormal levels of pollutants identified.
- Based on various severity levels followed by the KSPCB, SOPs and alerts were configured in the ICCC application. Various alerts and SOPs configured for AQI such as Alert for AQI >100 &<200; AQI >200 &<300; AQI >300 &<400; AQI > 400.
- The rule engine analyzes the real-time data, triggers alert. ICCC operators will accept the SOP received and notify concerned officers for necessary action to reduce the pollutants as per the approved SOP.
- Operators follow up on the generated incident, with the assigned officer till the AQI comes to the normal permissible levels and also collects the action taken report from the officer to close the SOP.
- Citizens will be informed about the air quality conditions and the health precautionary measures to be taken, through mobile app push notifications.

Outcomes:

- Inter-departmental and stakeholder information can increase response time during such exigencies.
- Information to Citizens through SMS, push notifications, can create awareness and reduces panic situations.
- Integration with pollution control Board, Health department and BTP data can reduce commutation time to affected locality.

- Increased response time by Medical agencies through well informed and data driven approach through ICCC and helps in adequate planning by such agencies
- Proactive information sharing between departments like SMOG, FOG can reduce traffic accidents and can reduce traffic congestion.

Fig 3.2: Mobile App disseminating information of AQI and Health Recommendations to the citizens.

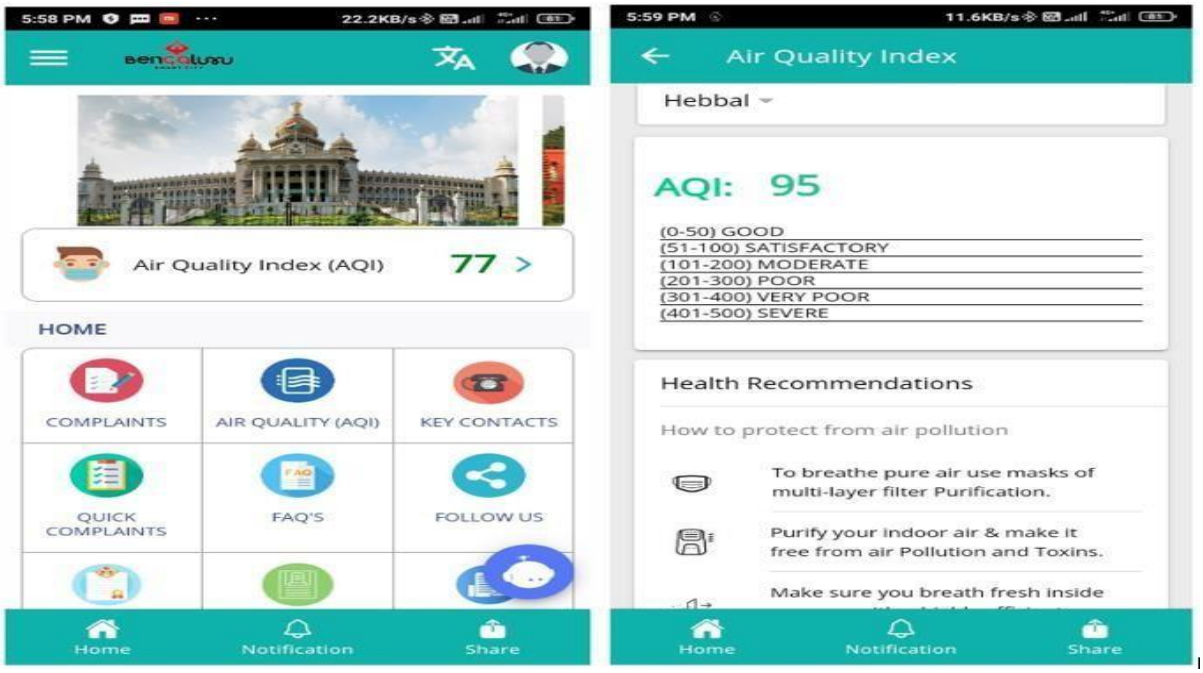


Fig 3.3: AQI Reports for Real time situational awareness

Sl No.	Environmental Sensor Location	Date & Time	Pollutant Name	AQI Value
1	Silk Board	12-02-2024 08:00:00	PM10	95
2	Bapuji Nagar	12-02-2024 08:00:00	PM2.5	116
3	Sanegurava Halli	12-02-2024 08:00:00	PM10	33
4	Peenya	12-02-2024 08:00:00	PM10	122
5	Kasturi Nagar	12-02-2024 08:00:00	PM10	129
6	Jayanagar 5th Block	12-02-2024 08:00:00	PM10	100
7	Hombegowda Nagar	12-02-2024 08:00:00	PM10	87
8	Hebbal	12-02-2024 08:00:00	PM10	95
9	City Railway Station	12-02-2024 08:00:00	PM10	71
10	Silk Board	12-02-2024 09:00:00	PM10	94
11	Bapuji Nagar	12-02-2024 09:00:00	PM2.5	122
12	City Railway Station	12-02-2024 09:00:00	PM10	71
13	Hebbal	12-02-2024 09:00:00	PM10	96

3.5 Mobile Ambient Air Quality Monitoring Vans

The KSPCB has procured two mobile ambient air quality monitoring Vans, one for North Karnataka and another for South Karnataka. The Mobile Vans are equipped with instruments to monitor Sulphur dioxide (SO_2), Nitrogen dioxide (NO_2), Ammonia (NH_3), Benzene (C_6H_6), Carbon monoxide (CO), Ozone (O_3), Particulate matter (Size less than 2.5 microns) $PM_{2.5}$ and Particulate matter (Size less than 10 microns) PM_{10} analyzers along with weather monitoring equipment to measure Wind Speed (WS), Wind Direction (WD), Atmospheric Temperature (AT), and Relative Humidity (RH), etc.,

Figure 2.4: Continuous Air Quality Monitoring Van*(Source: KSPCB 2020-21 Annual Report)*

3.6 Mobile Vehicular Emission Monitoring Vehicles

To assess the impact of vehicular emission on the ambient air quality, the Karnataka State Pollution Control Board has procured 12 vehicular emission monitoring vehicles fitted with a smoke density meter and gas analyzer (6 Nos)deployed in Bangalore city and one each in Mysore, Mangalore, Dharwad, Kalaburgi, Chitradurga and Bellary. The Board has conducted “Joint monitoring of vehicular emission at major cities” along with the Transport & Road Safety Department, Traffic Police, BMTC, and Zonal Office CPCB.

Table 3.10: The details of vehicular emission testing data

Vehicular emission monitored in Karnataka state for the year 2023-2024					
Type of Vehicle	**Total**	**Confirm**	**Percentage**	**Non-Confirm**	**Percentage**
Petrol	9729	9652	99.2%	77	0.8%
Diesel	5850	5771	98.6%	79	1.4%
Total	**15579**	**15423**	**99.0%**	**156**	**1.0%**

(Source: KSPCB 2023-24 Annual Report)

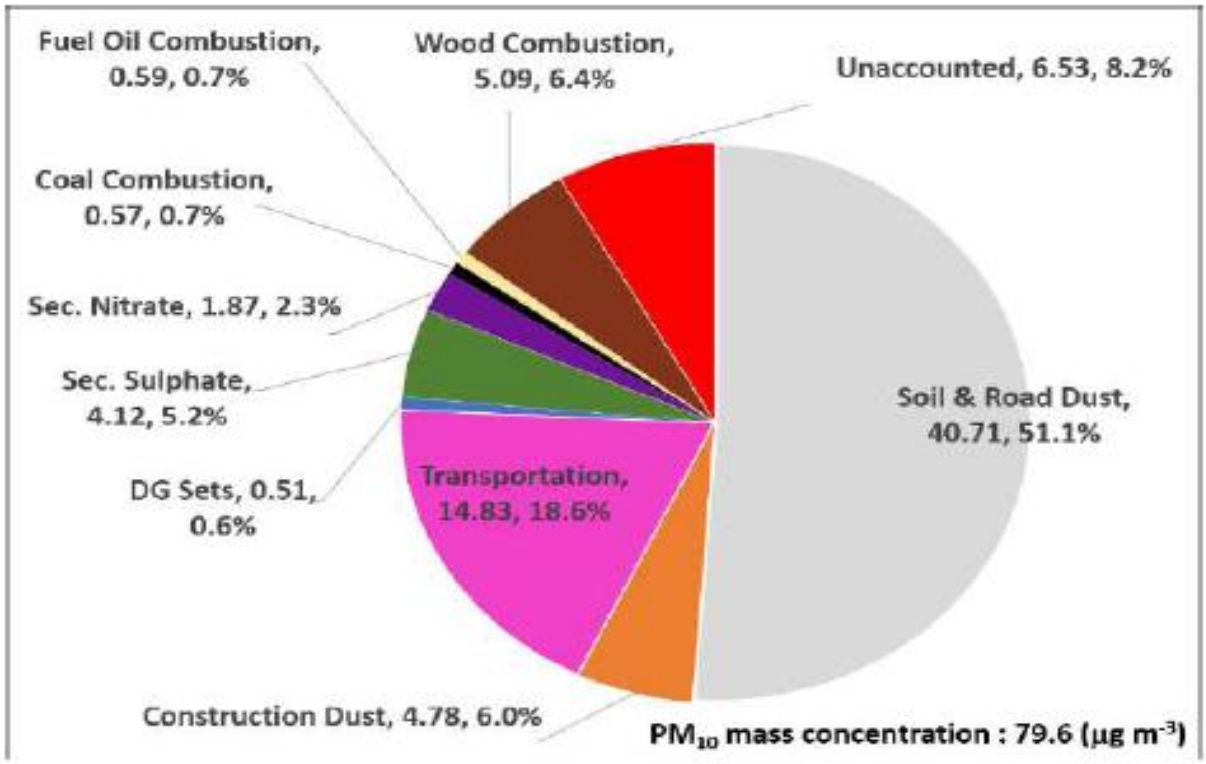
4 Source Identification (Source Apportionment/Emission Inventory and key pollutants)

The source apportionment and emission inventory

The source apportionment and emission inventory for all four non-attainment cities (Bengaluru, Davanagere, Hubli-Dharwad, & Kalaburagi) under the National Clean Air Programme (NCAP) have been completed in 2022 with a base year of 2018-19 for Bengaluru and in 2023 with a base year of 2021-22 for other 3 cities. This critical exercise helps identify and quantify the specific sources contributing to air pollution in these cities, such as Road dust, vehicular emissions, industrial activities, construction dust, and biomass burning etc. By understanding the primary pollution contributors, this data-driven approach will support the development of targeted action plans for reducing air pollution, improving air quality, and achieving compliance with national air quality standards in these non-attainment areas.

4.1 Bengaluru

Fig 4.1 PM10 sources (represented as µg m-3, % of PM10) over Bengaluru



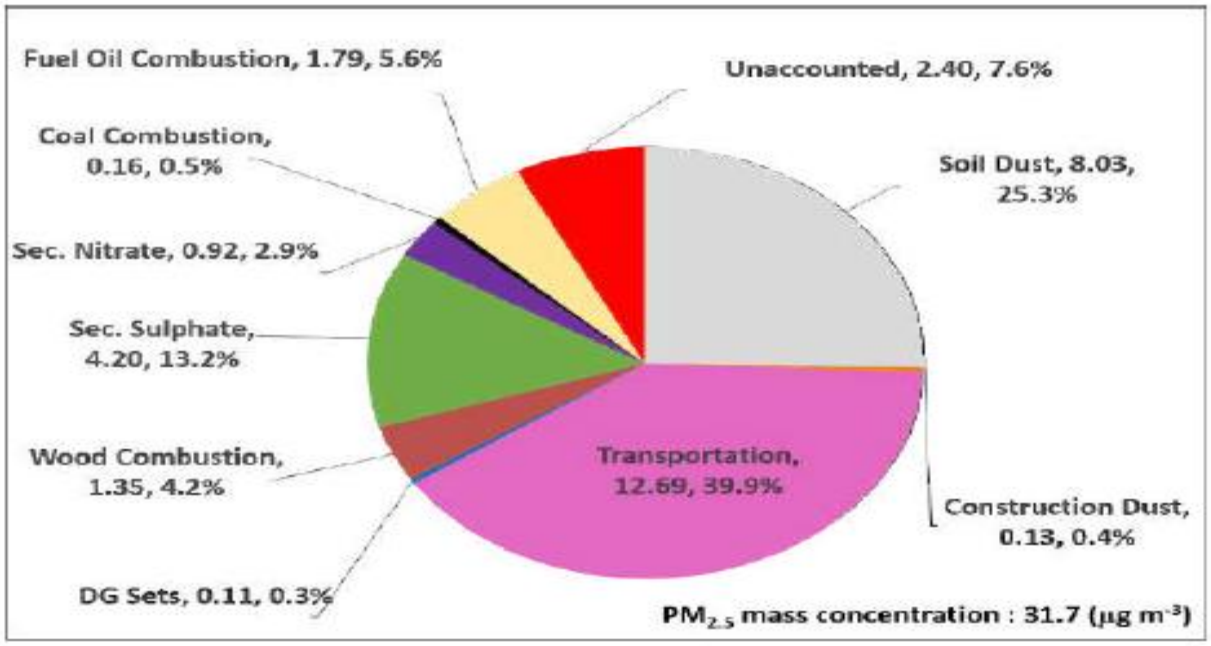


Fig 4.2 PM2.5 sources (represented as µg m-3, % of PM2.5) over Bengaluru

4.1.1 Roadside-dust and soil-dust particles:

It was observed from the studies that Roadside-dust and soil-dust particles have the largest share in PM10 concentrations and the second-largest share in PM2.5 concentrations. Control of dust re-suspension requires a multi-pronged approach. It is imperative that an effective technique to control road dust be identified. Some of the available control options that can be considered include:

- Vacuum sweeping of dust from paved roads.
- Laying end-to-end pavements with the provision of a green cover for the barren areas along the road (geo-engineering) to help reduce the re-suspension of dust.
- Deployment of mechanical sweepers for major and arterial roads, small handheld battery-operated sweepers for narrow roads.

4.1.2 Vehicular exhaust

Vehicular pollution has the largest share in PM2.5 concentrations and the second-largest share in PM10 concentrations. The control options that can be considered for vehicular pollution include:

- Introduction of electric vehicles (EV), with an adequate and efficient EV-charging infrastructure.
- Proper implementation of vehicle scrappage policy, along with improvements in the scrapping infrastructure and automated fitness-check centres.
- Retrofitting of diesel particulate filters (DPFs) for heavy vehicles.

- Regular servicing of public transport vehicles, such as shared autos and buses, as well as heavy government vehicles such as dumper trucks, trolleys, etc.

4.1.3 Domestic and DG sets (Wood and coal burning):

- Third largest share comes from wood and other solid fuels which are widely used in slums for cooking. This leads to significant emissions from the domestic sector.
- To reduce pollution from combustion, LPG access should be improved for eligible house holds at a subsidized rate. Also, the coal used in restaurants, hotels, eateries, etc. for preparing food should be replaced by a cleaner source of energy.
- Commercial establishments and housing societies often switch to DG sets to meet their power requirement during interruptions in the power supply. As per the data received from the electoral inspectorate, there are around 8,700 functional DG sets in Bengaluru itself. Most of these are installed at IT parks and commercial spaces for ensuring an uninterrupted power supply. Installation of pollution control equipment along with roof-top photovoltaic cells could reduce emissions from DG sets. Most of the DG sets do not have filters, causing huge spike in air pollution levels.
- Karnataka's policy on retrofitting diesel generator (DG) sets focuses on reducing air pollution and promoting cleaner energy solutions. The state, in line with Central Pollution Control Board (CPCB) guidelines, mandates the retrofitting of DG sets with emission control devices or technologies. Additionally, the policy encourages the use of cleaner alternatives, such as gas-based generators or hybrid systems, and promotes regular maintenance of DG sets to ensure compliance with emission standards. These measures aim to curb pollution from DG sets, particularly in urban and industrial areas, while supporting the broader objectives of the National Clean Air Programme (NCAP).
- Karnataka State Pollution Control Board has notified for mandatory retrofitting at Emission Control Device (RECD)/equipment to DG sets to comply with the following:
    - Use of certified RECD from approved manufacturers for in-use DG sets of 61 KW 2800 KW (1000 KVA) capacity which are older than 5 years from date of manufacturing and up to its useful life (i.e 15 years from the date of manufacturing or 50,000 hours of operation whichever is earlier) or use of dual fuel system for unused DG sets of less than 800 KW capacity up to its useful life as mentioned above or shifting to gensets meeting emission norms as per GS R804E dated 03.11.2022.
    - Adopt any suitable air pollution control device (APCD), strictly subject to compliance to emission standard notified wide GSR 489 dated 09.02.2022 for DG set of more than 800 KW.

- DG sets should be properly maintained, with regular inspection. Concrete efforts—including those towards ensuring a regular power supply—should be made to reduce the usage of DG sets. Also, the use of solar power generators should be encouraged.

4.1.4 Construction dust

- Construction dust can arise not only from construction sites, but also from the vehicles that transport construction material. Therefore, it is important to keep all construction material fully covered while in transit. Further, all under-construction buildings should be covered vertically with a fine screen, and the material stored on construction sites should also be covered properly.
- Besides controlling dust from construction sites, improvements (such as those given below) should be made in the Construction and Demolition (C&D) processing plants for reducing ambient PM levels:
- Including the provision of last-mile connectivity for transporting the C&D debris to the processing plant.
- Creating public awareness on the process of purchasing the re-processed bricks from the C&D processing plant.

4.1.5 Industrial exhaust

Air-polluting industries in Karnataka, particularly in sectors like cement, thermal power, steel, and chemical manufacturing, are under increasing scrutiny due to their contribution to rising pollution levels. As part of the National Clean Air Programme (NCAP), the Karnataka State Pollution Control Board (KSPCB) is actively monitoring these industries to ensure compliance with emission standards. Many industries have been directed to install emission control devices such as scrubbers, bag filters, and Continuous Emission Monitoring Systems (CEMS) to track and mitigate pollutants like particulate matter (PM), sulfur dioxide (SO_2), and nitrogen oxides (NOx). While some industries have made progress in adopting cleaner technologies and switching to cleaner fuels, enforcement of pollution control measures remains critical. Non-compliant industries face penalties and corrective action to curb their emissions and reduce the overall environmental impact.To control emissions from industrial exhaust, several measures have been recommended:

1. Adoption of Cleaner Technologies: Industries are encouraged to transition to cleaner production technologies, including energy-efficient systems and cleaner fuels, to reduce pollutants like particulate matter (PM), sulfur dioxide (SO_2), and nitrogen oxides (NOx).
2. Installation of Pollution Control Equipment: Industries must install air pollution control devices such as electrostatic precipitators (ESPs), bag filters, and scrubbers to capture harmful pollutants before they are released into the atmosphere.

3. Strict Adherence to Emission Standards: Industries are required to comply with state and national emission norms set by the Karnataka State Pollution Control Board (KSPCB) and the Central Pollution Control Board (CPCB), with regular monitoring of exhaust emissions.
4. Use of Continuous Emission Monitoring Systems (CEMS): Installing CEMS helps industries continuously monitor pollutants and ensures real-time reporting, facilitating timely corrective measures.
5. Switching to Cleaner Fuels: Industries are encouraged to shift from coal and diesel to cleaner fuels such as natural gas or renewables to reduce emissions.
6. Enhanced Regulatory Enforcement: Strengthening the enforcement of environmental regulations through regular inspections and penalizing non-compliance will ensure industrial adherence to pollution control measures.

4.2 Business as usual scenario:

The analysis was conducted for (a) business as usual (BAU) scenario for Bengaluru—no significant changes made in the policy landscape to control emission and (b) emission reduction measures—to assess the potential emission reduction the city could achieve by adopting policies to mitigate emission (high, medium, and low emission reduction targets). BAU Scenario: We projected the total emission load for PM2.5, PM10, NOx, and SO2 in the city till 2024 on the basis of sectoral growth rates and existing policies such as state-level EV policies, solid waste management plans, etc. Growth rates considered for the projections are mentioned in the table4.1 below:

Table 4.1 represents the projected sectoral PM2.5 emission load from 2019 to 2024 under the BAU scenario. It is estimated that the total PM2.5 emission load would be around 16,900 tonnes/year in 2024, a 16.5% increase from the 2019 levels (14,500 tonnes/ year).

Sector	Growth rate considered
Transport	Based on growth in vehicle registration for the past six years
Domestic	Based on population growth rate (*Census of India: Primary Census Abstract*)
Construction	Based on population growth rate
Road dust	Based on vehicle registration and changes in VKT
Solid waste burning	Based on population growth rate
Eateries	Based on population growth rate
Industries	No change was assumed, as most of the polluting industries are either closing down or shifting outside the BBMP area
DG sets	Based on population growth rate and industries growth rate

For Bengaluru the projected emissions for PM10, NOx, and SO2 for 2019 and 2024 are presented in Table 4.2. As expected, in 2024 dust (47%) followed by transportation (33%) will be the biggest contributors to the total PM10 emission load. Transportation (59%) and DG sets (38%) will remain the greatest contributing sectors for NOx. DG sets (50%), eateries (28%), and industry (19%) will be the biggest contributing sectors to the SO2 emission load.

	PM_{10} (tonnes/year)		NO_x (tonnes/year)		SO_2 (tonnes/year)	
Year	**2019**	**2024**	**2019**	**2024**	**2019**	**2024**
Transportation	12,445	14,031	49,592	61,906	-	-
Industry	23.8	23.8	136	136	1,020	1,020
Dust	6,855	7,596	-	-	-	-
Waste burning	1,253	1,625	529	706	88	115
DG sets	2,186	2,733	30,919	40,195	2,039	2,651
Eateries	1,026	1,721	316	529	873	1,458
Domestic	584	732	1,034	1,542	5.7	6.5

Table 4.2 Pollutant emission levels (BAU) (BBMP area)

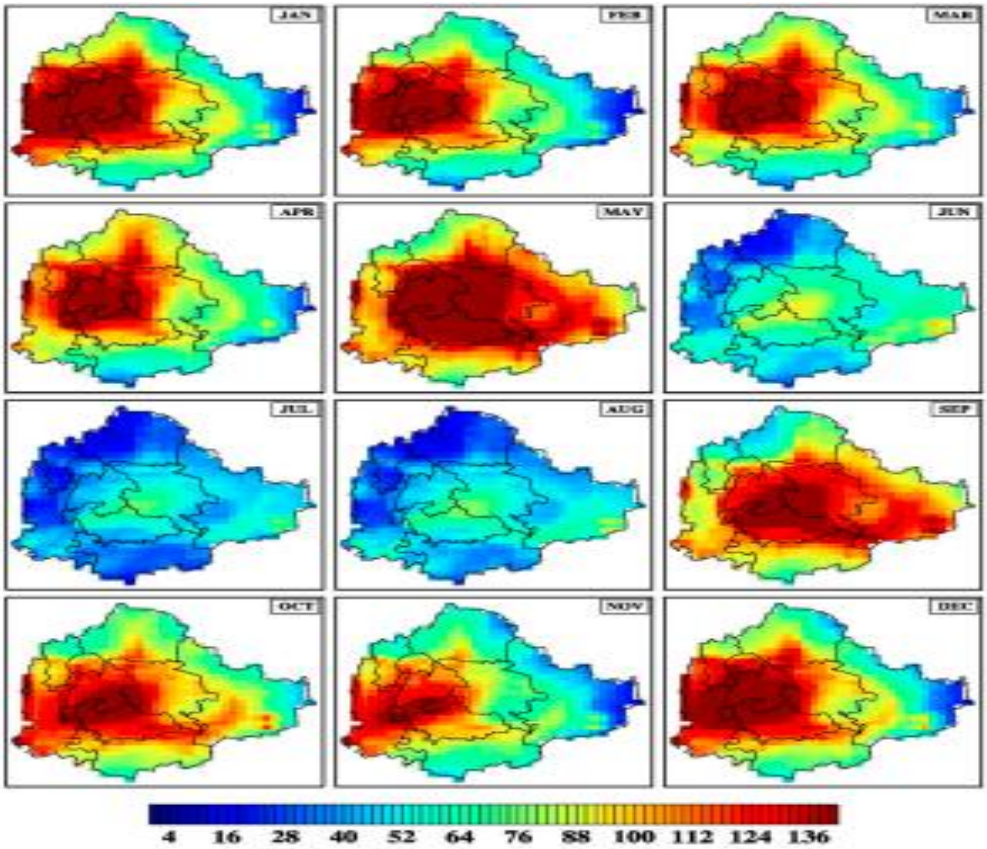


Fig 4.3 Monthly avg values of stimulated PM10 Concentrations during 2024 under high emission reduction scenario over Bengaluru.

4.3 Source identification for Davangere city

The contribution of different emission sources were observed at Karnataka state pollution control board monitoring location. Biomass burning contributions were 56.7%, where the higher contribution may be linked to burning of solid waste and emissions from puffed rice production units. Secondary aerosols were 22.7% which may be from photochemical decomposition of emissions from metal fabricators near to the monitoring station. Re-suspended dust from road surface due to movement of vehicles was 18.7% and the crustal contribution was observed as 2.4%.

Monitoring station is surrounded by commercial area and a major national highway. Non-exhaust emissions during summer were (38.6%) was considerably higher which may be due to resuspension of tyre and break wear where the conditions are conducive for re-suspension of road dust (Jose & Srimuruganandam, 2021). Biomass burning emissions during summer (33.2%) due to open incineration of solid waste and crop residues. the vehicular emissions (17.8%) were considerably higher and mainly it connects major national highway NH 4. Secondary aerosols were only observed during summer (10.5%) which is mainly the byproducts of vehicular and biomass generated primary pollutants and which are mainly contributed by soot particles from the puffed rice production units located towards the north of the city.

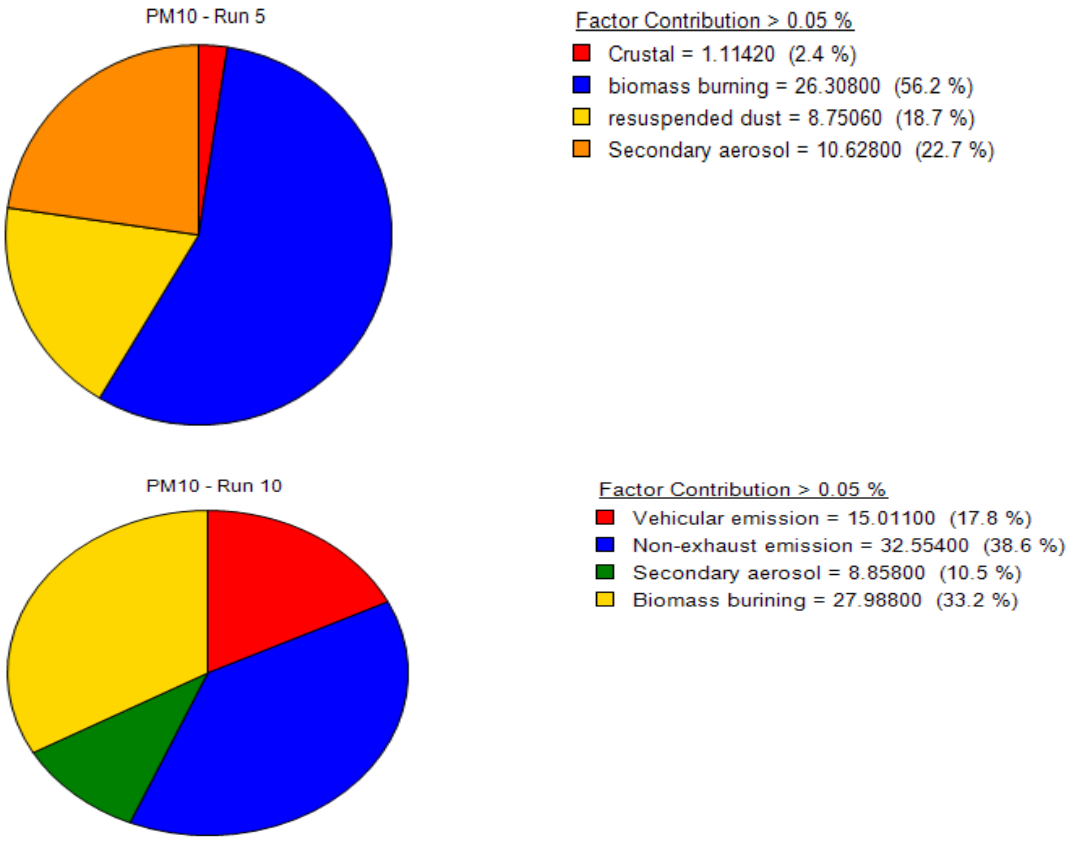


Figure 4.4: ContributingSources at Davangere city

4.4 Source identification for Hubli Dharwad city

Hubli city is a mixed-use region in the district with residential, commercial and industrial zones. The biggest contributor to PM during summer was vehicular emissions (22.9%) which may be attributed to WNW winds blowing towards the monitoring station during summer. Similarly, the major contributor during winter was resuspended dust (18.6%) with a slightly higher percentage of crustal elements (14.5%) due to the fact that the adjacent road was under construction, which contributed greatly to the resuspension of PM. The percentage of biomass burning during (13%) which is because of localized roadside open burning of trash by local residents as a means of heat source during early hours of the day. The non-exhaust emissions were (11%) due to tyre and break wear. Such emissions during winter were negligibly low. Miscellaneous emissions from unidentified sources were found to be 20% , which is strongly indicated by the presence of SO_4^{2-} in elemental analysis.

Dharwad city is a mixed-use region in the district with residential, commercial and industrial zones. The contributor to PM was biomass combustion (9%) which may be attributed to open burning of solid waste during winter with prevailing cold climate. Similarly, the major contributor secondary sulphates (24%) which comprises of photochemically evolved SO_4^{2-} from industrial area. The contributions from vehicular emissions were found to be (23.9%). The secondary aerosols were 30.4% due to atmospheric photo-chemical decay of industrial emissions and vehicular exhaust emissions. Resuspended emissions were found to be (9.4%). with a slightly lower contribution from crustal emissions were found to be (3.3%). The contributions of re-suspended and crustal emissions are due to construction activities during the period encompassing November and December.

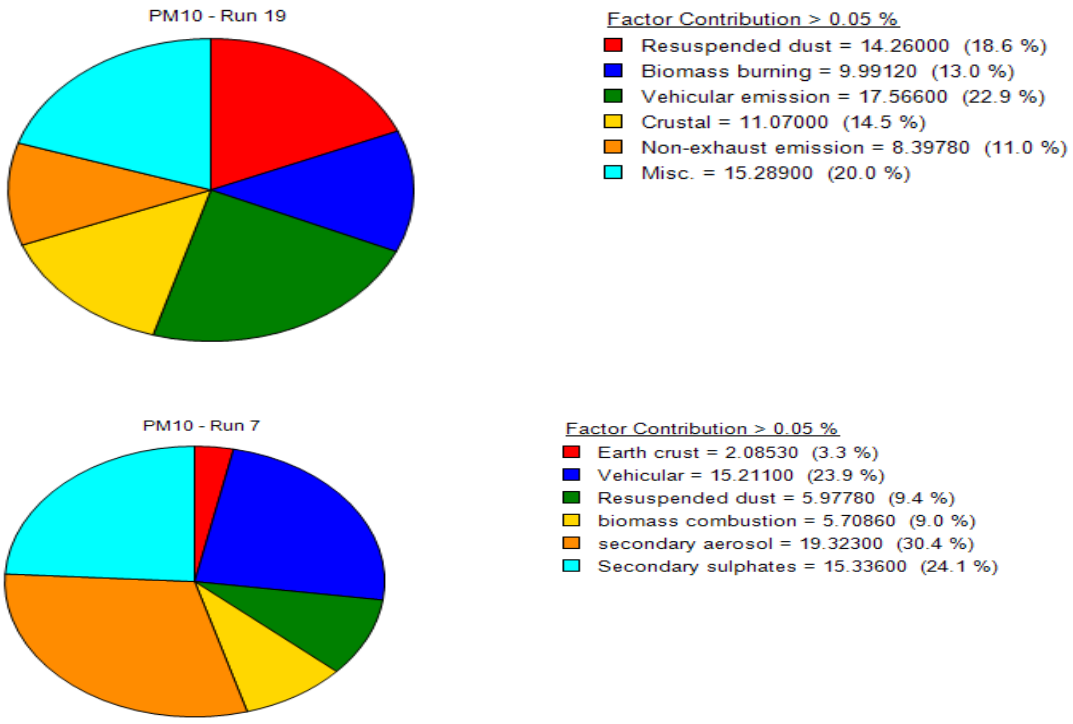


Figure 4.5: Contributing sources at Hubli and Dharwad city

4.5 Source identification for Kalaburagi city

Monitoring station is surrounded by a residential area. Khaja Bande Nawaz Darga is on the north side of the monitoring station which is a busy area. The government Tool Room and Training Centre (GTTC) is near this monitoring station. Contribution from re-suspended road dust (23%) is expected since summers in the region can be dry with temperatures climbing up to 40°C. These conditions are conducive for re- suspension of road dust (Jose & Srimuruganandam, 2021), Considerable amount of crustal material is re-suspended around the pollution control board monitoring station during summer season it was noticed to (26%) and this was resultant of unpaved shoulders of road and construction activity carried in neighbouring sites. Secondary aerosols generated is (20.5%) it is suspected that aerosols generated could be due to reaction of primary pollutants emitted from diesel generators in the vicinity,The vehicular emissions (17.8%) were considerably high and mainly it connects major roads of market, railway station and bus stand. (13.8 %) of emission was recorded because of construction of a five-story hospital building and road asphalting near to monitoring station.

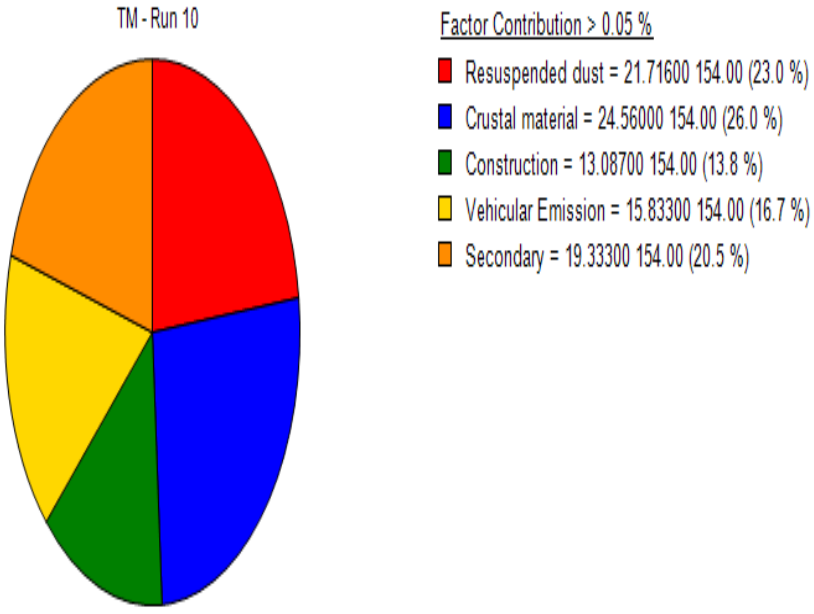


Figure 4.6: Contributing sources at Kalaburagi city

5 Inspection and enforcement plan:

The KSPCB constituted in 1974, is mandated under the Water Act 1974 and the Air Act 1981, to prevent and control pollution of water and air, through enforcement, education, awareness and offering scientific and technological solutions to achieve its goals of cleaner and greener environment. The Major activities carried out by the Board during 2023-24 are described in the following para. The below Table 4.3 describes the details of Categorization of industries/organization covered by the Board and the total number along with the status of Closed, Operating and Yet to Commission (YTC) industries.

Table 5.1: Abstract of Number of Organizations Covered

Category of industries/organization	Total Nos. as on 31.03.2024	Operating	Closed	YTC
Red	5616	2361	2486	769
Orange	13457	7431	4327	1699
Green	27163	13937	9230	3996
White**	4184	2450	1272	462
Local bodies	289	267	0	22
Others	91167	74486	8269	8412
Total	141876	100932	25584	15360

**White category industries/organizations are not requiring consent of the Board.

Table 5.2: Details of Industries in Karnataka as on 31.03.2024

Details of Industries in Karnataka as on 31.03.2024				
Category of Industries	**Total No. of Industries**	**Operating**	**Closed**	**YTC**
Red	5616	2361	2486	769
Orange	13457	7431	4327	1699
Green	27163	13937	9230	3996
White	4184	2450	1272	462
Total	**50420**	**26179**	**17315**	**6926**
Details of Organizations/Other Activities in Karnataka as on 31.03.2024				
Category of Organizations/ Other Activities	**Total No. of Organizations**	**Operating**	**Closed**	**YTC**
Urban Local Body	289	267	0	22
Infrastructure Activity*	12461	4709	535	7217
Hospitals covered under consent mechanism	3128	2894	88	146
HCEs Not covered under consent mechanism	53012	49322	3661	29
Coffee Estates	3629	3373	231	25
Stone Crushers	5090	2145	2308	637

Mines	999	145	752	102
Telephone Towers	10919	10448	353	118
Others	1929	1450	341	138
Total	**91456**	**74753**	**8269**	**8434**
*** (Layouts, Apartments, Education institution, Commercial Establishments, Hotels & Resort)**				

5.1 Inspections conducted by the Regional Offices during 2023-24:

Inspection and monitoring are mandate for verification of compliance by the industry to the conditions of consent issued by the Board. The Board has set time schedule for inspection of industries/organizations falling under Red, Orange and Green Categories in order to harmonize the monitoring activities of the Board. The CPCB on 12.12.2019 has issued a direction under Section 18(1) (b) of the Water Act on the frequency on inspections to be carried out by the Regional Officers of SPCB across the country for different category of industries as below:

Table 5.3:

Sl.No	**Category of Industry**	**Inspection frequency as per CPCB letter dated 12.12.2019**
1	Highly polluting 17 category industries	Once in 3 months
2	Red category (excluding 17 category)	Once in 6 months
3	Orange category	Once in a year
4	Green category	Once in 2 years
5	CBWTF/CHWSRDF/CMSWTDF/CETP/STP	Once in 3 months

The Green category of industries with history of satisfactory compliance is exempted from environmental compliance inspection. During 2023-24, the total number of inspections carried out is **20124**. The summary of inspections carried out is given in Table 5.4 as below:

Table 5.4: Abstract of Inspections for 2023-24

Sl. No.	Zone		Bengaluru City	Bengaluru East	Bengaluru North	Bengaluru South	Belagavi	Davanagere	Dharwad	Gulbarga	Mangaluru	Mysuru	Ramanagara	Vijayanagara
1	Industries	Large	217	283	131	416	274	212	242	190	161	259	143	350
		Medium	62	69	49	110	45	40	46	117	68	111	50	36
		Small	766	465	252	290	444	594	573	290	710	403	380	478
2	Stone Crusher		0	130	39	2	273	303	126	87	135	52	103	144
3	HWM		57	102	58	111	5	15	28	0	10	61	53	5
4	Plastic		2	8	7	1	562	1	18	4	1	33	10	0
5	HCE		106	30	35	28	58	49	59	30	35	49	22	21
6	Common BMW Facility		0	8	0	1	9	4	9	12	9	2	2	9
7	CETP		1	7	4	3	0	6	0	4	3	0	8	0
8	MSW		0	4	11	1	21	18	5	15	23	13	6	5
9	Mines		0	0	0	0	0	25	37	2	0	1	0	30
10	Coffee Estates		0	0	0	0	0	0	0	0	84	50	0	0
11	Layouts		0	34	8	13	3	10	4	5	4	9	9	10
12	Infrastructure		320	412	166	183	37	8	17	0	101	2	91	2
13	Local Bodies		36	8	6	111	17	14	33	0	8	14	10	7
14	Complaints		237	104	130	204	57	95	54	55	153	130	131	58
15	Others		159	651	551	802	197	100	120	242	388	590	308	50
Total			**1963**	**2315**	**1447**	**2276**	**2002**	**1494**	**1371**	**1053**	**1893**	**1779**	**1326**	**1205**

Board is also enforcing air pollution control system as a mandatory condition under Section 21 of the Air Act while issuing the consent. The details of Air Pollution Control Status of industries in the state are given in Table 5.5 below:

Table 5.5: Air Pollution Control Status of Industries for 2023-24

Sl. No	Zonal Office	Category	Total No. of Operating Industries	APC system under Operation	Defaulters (No adequate facility)
1	Bengaluru City	Red	312	292	0
		Orange	813	650	0
2	Bengaluru East	Red	229	229	0
		Orange	470	464	0
3	Bengaluru North	Red	328	313	0
		Orange	727	576	0
4	Bengaluru South	Red	336	336	1
		Orange	498	498	
5	Belagavi	Red	140	140	--
		Orange	339	339	--
6	Davanagere	Red	117	110	0
		Orange	721	652	0
7	Dharwad	Red	64	64	-
		Orange	191	191	-
8	Gulbarga	Red	96	95	1
		Orange	203	199	4
9	Mangaluru	Red	110	110	0
		Orange	947	947	0
10	Mysuru	Red	160	160	-
		Orange	442	442	-
11	Ramanagara	Red	201	201	0
		Orange	538	538	0
12	Vijayanagara	Red	145	145	0
		Orange	600	598	2

5.2 Public perspective/ complaint redressal and awareness programme

Karnataka has grown exponentially in the past few decades as a result of urbanisation and large-scale migration from other states in search of better opportunities. State has witnessed massive growth in population, infrastructure, and industries. The unplanned growth of the cities has come at the cost of deteriorating air quality, polluted water bodies, reduced green covers, and flooding of city areas, among other civic issues. The city administration has taken several steps to cope with this development. However, issues such as traffic congestion, improper waste management, and preference for private over public transportation still persist. If these issues remain unresolved, which will have catastrophic health effects on the residents of the state. It would also have grave repercussions for the economy. Though KSPCB and the Government. of Karnataka have already initiated a few mitigation measures such as addressing the solid waste management problem in the city, improving the road infrastructure, and following CPCB norms at construction sites to reduce air pollution in the state the ground-level implementation of these strategies remains a challenge. Synergy among various government departments will be the key to addressing this. Also, most of these mitigation measures are restricted to the city, with the air-shed area being completely ignored. As evident from the SA & EI studies, transportation and dust are two key polluting sectors in the city & State. Therefore, policymakers should focus on the transportation sector to achieve optimum emission reduction. Measures such as increasing the share of public transport modes, promoting the use of pollution-free vehicles, restricting the entry of HCVs inside the city limits, phasing out of old vehicles, and installing pollution control equipment will be instrumental in reducing emissions from the transportation sector.

KSPCB has already laid down action points for improving the air quality in Non-attainment cities under NCAP. While government efforts are indispensable for lowering the PM concentrations, achieving thedesired goal also requires initiative and participation of the citizens. For instance, to effectivelymitigate pollution from waste burning, transportation, and industrial operations, active publicinvolvement in adopting and implementing the control measures is crucial.

Finally, no policy measure can be successful without public participation. It is important therefore to engage with the public and create awareness on air pollution issues through public campaigns, display of digital boards at traffic junctions and hotspots to give spot pollution levels, and regular public service messages on the ill effects of solid fuels (wood, and coal), kerosene, and furnace oil.

The Karnataka State Pollution Control Board (KSPCB) is actively engaging in public awareness initiatives. These programs are organized regularly and coincide with significant environmental observances such as World Environment Day on June 5th, International Day of Clean Air for Blue Skies on September 7th, Ozone Day on September 16th, and National Anti-Pollution Day on December 2nd. These initiatives are conducted at both the Regional and Zonal Office levels.

Furthermore, KSPCB extends its efforts by conducting workshops and seminars on air pollution control within the 4 non-attainment cities of Karnataka. These events involve key stakeholders and are made possible through funding allocated under the "Capacity Building & Public Outreach" (CBPO) component of the National Clean Air Programme (NCAP).

In addition to the mentioned public awareness programs and engagement with stakeholders, KSPCB leverages electronic media to disseminate vital information to the general public on Air quality data, Water quality data, Noise levels etc through VMS display boards, this includes providing guidance on what to do and what to avoid during the Deepavali festival each year.

WORLD ENVIRONMENT DAY 2023

- Environment Cycle Jatha:

On the occasion of “World Environment Day” on 05/06/2023, an "Environmental Cycle Jatha" was organized from the Karnataka State Pollution Control Board, Head office, Church Road to Jnanajyoti Auditorium, involving school and college students, interested public and non-governmental organizations.

- Lifestyle For Environment Mission

As part of the World Environment Day, the Union Ministry of Forests, Environment and Climate Change has directed the states to conduct state-wide awareness programs on the "Lifestyle for Environment Mission" and has identified the following 07 mission themes. They are 1. Energy saving, 2. Water saving, 3. Alternative to single use plastic, 4. Reducing e-waste, 5. Sustainable food system 6. Reducing waste and 7. Adoption of a healthy lifestyle to achieve mission life goals. States were directed to organize programs by all departments to create widespread awareness about these themes.

The Secretaries of the Ministry of Forest Environment and Climate Change of the Central Government have written a semi-official letter to the Chief Secretary on 02/05/2023 and have been instructed to organize programs with all the departments on “World Environment Day-2023” to give wide publicity on the Life Mission theme.

In this background, the Board was organized “Hackthon Event” on the theme of Energy Saved & E-Waste Reduced on May-2023 in collaboration with M/s. Waste Impact Trust, Bengaluru and the awards were distributed to the winners in the programme and before “World Environment Day-2023” (June 5) wall paintings on mission life themes were done on the outer wall of Lalbagh Botanical Garden (from North Gate to West Gate) for approximately 1 km.

5.3 Complaints Redressal

Zonal Office-wise details complaint redressal details are shown in Table 5.6 below:

Table 5.6: Abstract of Complaint – Zone wise for 2023-24

Sl. no.	Zonal Office:	Opening Balance	No. of complaints received during the period	Total No. of complaints received	No. of complaints resolved	No. of complaints pending
1	Bengaluru City	29	311	340	326	14
2	Bengaluru East	7	255	262	254	8
3	Bengaluru North	24	446	470	380	90
4	Bengaluru South	4	185	189	182	7
5	Belagavi	4	161	165	163	2
6	Davanagere	13	247	260	254	6
7	Dharwad	5	163	168	166	2
8	Gulbarga	0	126	126	125	1
9	Mangaluru	16	348	364	353	11
10	Mysuru	8	299	307	301	6
11	Ramanagara	8	202	210	203	7
12	Vijayanagara	5	270	275	271	4
	Total	123	3013	3136	2978	158

6 Emergency/ Graded Response Action Plan for Karnataka State

Air Pollution is becoming a serious concern because of its health impact. As per the latest data available, the PM (particulate matter) concentration levels in few cities are exceeding the NAAQM standards. Air quality management is becoming a great concern in the major cities of the state due to rapid urbanisation, Industrialisation and increase in vehicular movements over the past years. However, major Air Quality monitoring stations in Karnataka have not crossed the moderate level in the Air Quality Index (AQI). Further, the Ministry of Environment, Forest & Climate Change and the Central Pollution Control Board have directed all states to prepare an Emergency/Graded Response Action Plan that is to be implemented under different AQI categories, namely Poor, Very Poor, and Severe, as per the National Air Quality Index. The plan is intended to mitigate the effects of air pollution in the state, including monitoring and controlling the sources of pollution and educating the public about the steps they can take to reduce their exposure to ambient air. The implementation of this plan is crucial in maintaining the air quality in Karnataka within safe and healthy limits.

Therefore, in pursuant to the direction of the Ministry of Environment, Forest & Climate Change &Central Pollution Control Board, an Emergency/Graded Response Action plan has been prepared for implementation in Karnataka under different Air Quality Index (AQI) categories namely, Poor, Very Poor and severe as per National Air Quality Index.

1. The GRAP for the Karnataka has been classified under 3 different stages of adverse air quality viz. Stage – I ‘Poor’ (AQI 201 – 300), Stage – II ‘Very Poor (AQI 301-400) and Stage – III ‘Severe’ (AQI 401-450).
2. Actions under Stages II and III of the GRAP shall be invoked at least three days in advance of the AQI reaching to the projected levels of that stage, based on the forecast on a day-to-day basis.
3. 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.
4. The Karnataka State Pollution Control Board will 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.The KSPCB shall frequently review the actions and implementation of the GRAP especially when the air quality falls or is likely to fall in

the 'Severe'category (Stage III and beyond). The KSPCB may decide upon additional measures and exceptions to the schedule of the GRAP, under different air pollution categories i.e., Stages I to III, as per the prevalent AQI and weather forecast.

Breakpoints for AQI Scale 0-500 (units: µg/m3 unless mentioned otherwise)

AQI Category (Range)	PM_{10} 24-hr	$PM_{2.5}$ 24-hr	NO_2 24-hr	O_3 8-hr	CO 8-hr (mg/m^3)	SO_2 24-hr	NH_3 24-hr	Pb 24-hr
Good (0-50)	0-50	0-30	0-40	0-50	0-1.0	0-40	0-200	0-0.5
Satisfactory (51-100)	51-100	31-60	41-80	51-100	1.1-2.0	41-80	201-400	0.6 –1.0
Moderate (101-200)	101-250	61-90	81-180	101-168	2.1- 10	81-380	401-800	1.1-2.0
Poor (201-300)	251-350	91-120	181-280	169-208	10.1-17	381-800	801-1200	2.1-3.0
Very poor (301-400)	351-430	121-250	281-400	209-748*	17.1-34	801-1600	1201-1800	3.1-3.5
Severe (401-500)	430 +	250+	400+	748+*	34+	1600+	1800+	3.5+

AQI	Associated Health Impacts
Good (0–50)	Minimal Impact
Satisfactory (51–100)	May cause minor breathing discomfort to sensitive people
Moderate (101–200)	May cause breathing discomfort to the people with lung disease such as asthma and discomfort to people with heart disease, children and older adults
Poor (201–300)	May cause breathing discomfort to people on prolonged exposure and discomfort to people with heart disease with short exposure
Very Poor (301–400)	May cause respiratory illness to the people on prolonged exposure. Effect may be more pronounced in people with lung and heart diseases
Severe (401-500)	May cause respiratory effects even on healthy people and serious health impacts on people with lung/heart diseases. The health impacts may be experienced even during light physical activity

Schedule of the GRAP for Karnataka

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

Poor (ambient $PM_{2.5}$ or PM_{10} concentration value is between 91-120µg/m^3 or 251- 350 µg/m^3 respectively)	**Agency responsible/ Implementing Agency**
1. Stringently enforce/stop garbage burning in landfills and other places and impose heavy fines on person responsible	Dept of Municipal Administration City Corporation(s) of concerned city's
2. Close / stringently enforce all pollution control regulations in industries	KSPCB, District Administration
3. Stringently enforce pollution control in thermal power plants through PCB monitoring	Industries ,KSPCB
4. Do periodic mechanized sweeping on roads with heavy traffic and water sprinkling also on unpaved roads	City Corporation(s) DMA
5. Strict vigilance and no tolerance for visible emissions – stop plying of visibly polluting vehicles by impounding or fine	Transport department Highways and NHAI
6. Strict vigilance and enforcement of PUC norms	
7. Stringently enforce rules for dust control in construction activities and close non – compliant sites	City Corporation, Town planning authorities.
8. Deploy traffic police for smooth traffic flow at identified vulnerable areas	Traffic Department
9. Ensure fly ash ponds are watered every alternate day during summer months (March – May)	Industries, KIADB
10. Information dissemination Social media, mobile Apps should be used to inform people about the pollution levels, contract details of control room, enable them to report polluting activities / sources to the concerned authorities, and that will be taken by government based on the level of pollution.	KSPCB, District Administration and City Corporation

Stage II (AQI ranging between 301-400)

Very Poor (ambient $PM_{2.5}$ or PM_{10} concentration value is between 121- 250 µg/m^3 or 351- 430 µg/m^3 respectively)	**Agency responsible/ Implementing Agency**
1. BESCOMs/ MESCOMs etc to minimize power supply interruptions in Karnataka.	KPTCL
2. Ensure that diesel generator sets are not used as regular source of power supply.	KSPCB, City Corporation and District administration.
3. Compliance to norms by the industries	KSPCB
4. Cleaner technology in coal based power plants	Industries, KIADB
5. Reduction of non-point pollution emission sources such as handling of coal, transport of coal.	
6. Stop use of coal/firewood in hotels and open eateries	City Corporation/ District Administration
7. Carry out periodic mechanized sweeping and/or water sprinkling on roads and ensure disposal of dust collected in designated sites/landfills.	City Corporation/ District Administration, DMA, Road owning and maintaining

	agencies.
8. Enforce guidelines for use of anti-smog guns at construction sites	City Corporation/ District Administration, DMA All construction agencies
9. Alert in newspapers / TV / Radio/ social media to advise people to avoid polluted areas and restrict outdoor movement.	District Administration and Police.

Stage III (AQI > 400)

Severe (Ambient $PM_{2.5}$ or PM_{10} concentration value is more than 250 µg/m^3 or 430 µg/m^3 respectively)	**Agency responsible/ Implementing Agency**
1. Increase power generation from existing wind and solar plants (renewable source) to reduce operation of coal-based power plants	KREDL
2. Strengthen and encourage public transport services to reduce the vehicular congestion.	State Transport Corporations, City Corporation and District Administration
3. Identify road stretches with high dust generation and Increase frequency of mechanized clearing of road and sprinkling of water on paved and unpaved roads	City Corporation, DMA, State Highway and National Highway Authority of India.
4. Stop entry of truck traffic into Karnataka (except for trucks carrying essential commodities/ providing essential services and all CNG / electric trucks).	Transport Department/ Police Department/ Commissioners, City Corporation(s)
5. Close down all industries in State, even in areas which do not have PNG. Note: Industries like milk & dairy units and those involved in manufacturing of life saving medical equipments / devices, drugs and medicines shall however be exempted from the above restrictions.	KSPCB, Deputy Commissioners of respective cities.
6. Ban C&D activities in linear public projects such as highways, roads, flyovers, over bridges, power transmission, pipelines etc	KSPCB, City Corporations/ District Administration
7. Shut down of schools and colleges and allowing work from home for offices other than essential services	Education Department
8. Alert in newspapers / TV / radio to advise peopleabout air pollution levels and Do's and Don'ts for minimizing polluting activities and also to wear masks and take precautionary measures.	KSPCB, Information Department, & City Corporations

Citizen Charter:

1. Keep engines of your vehicles viz. cars/ bikes/ scooters etc. properly tuned, especially Rickshaws.
2. Maintain proper air pressure in tyres of your vehicles
3. Keep PUC certificates of your vehicles up to date.
4. Do not idle your vehicle; also turn off the engine at red lights in traffic signals.
5. Do not dispose waste /garbage in the open spaces.
6. Report air pollution activities through online complaint registration number 080-25582559 and also through PGRS portal https://WWW.ipgrs.karnataka.gov.in
7. People to use public transport and minimize use of personal vehicles. Encourage carpooling.
8. Regularly replace air filters at recommended intervals in your automobiles.
9. Avoid dust generating construction activities during months of October to January.
10. Choose a cleaner commute - share a ride to work or use public transport or walk or cycle.
11. People, whose positions allow working from home, may work from home.
12. Do not use coal and wood for heating purpose.
13. Individual house owners may provide electric heaters (during winters) to security staff toavoid open burning.
14. Combine errands and reduce trips. Walk to errands wherever possible.
15. Children, elderly and those with respiratory, cardiovascular, cerebrovascular or other chronic diseases to avoid outdoor activities and stay indoors, as much as possible.

7 State Action Plan

The State Action Plan is to provide guidance and mandatory activities to be implemented by different stakeholder departments, civil societies, and others concerned with reducing emissions and improving ambient air quality. The increasing evidence on the health effects of air pollution from studies across the globe shall be an alarm for sensitizing the public, stakeholder departments, and civil societies towards concerted actions for reducing air pollution and thus providing a better and healthier society for future generations.

The ambient air quality data of the KSPCB and that of the CPCB indicate that 2 out of the 12 notified parameters in ambient air under the National Ambient Air Quality Standards (NAAQS) are exceeding the standards. The Particulate matter of size less than 10 microns called Respirable Suspended Particulate Matter(PM_{10}) and Fine Particulate Matter($PM_{2.5}$) are exceeding the standards in some of the places in the State. The major sources of air pollution in Karnataka are industrial emissions, vehicular emissions, construction and demolition waste, road dust, emissions from the burning of solid waste, emissions due to the burning of agro residues, and household emissions.

The health impacts of PM_{10} are known to cause nasal and upper respiratory tract health problems. Fine particles ($PM_{2.5}$) penetrate deeper into the lungs and cause heart attacks, strokes, asthma, and bronchitis, as well as premature death from heart ailments, lungdisease, and cancer.

A separate action plan for improving the air quality by reducing Particulate Matter emissions is under implementation in Bengaluru, Hubli-Dharwad, Davanagere, and Kalaburagi. The action plan is prepared in line with the existing action plan under implementation in the non-attainment cities and taking into account the CPCB Graded Action Plan communicated for preparation of the action plan during 2019.

The action plan provides the actions to mitigate

1. Industrial Emissions
2. Vehicular emissions
3. Construction and Demolition waste and Road Dust Management
4. Emissions from burning of Waste
5. Emissions from burning of agro residues
6.Household emissions

The action plan proposed for the above activities and others is tentative. The regulatory actions are continuous and any amendments in terms of the regulatory activities will be continued as they are in force. Those actions that require the budget will be taken as per the availability and approval of the financial allocations.The indicative template for State Action Plan on Air Pollution can be found in **Annexure I**.

7.1 Industrial Emissions

As of 31st March 2024, the industrial landscape in Karnataka is categorized by different colors, each representing a specific type of industry. The Red category comprises a total of 5,616 industries, with 2,361 currently operating, 2,486 closed, and 769 in the "Year to Come" (YTC) status. The Orange category includes 13,457 industries, with 7,431 operating, 4,327 closed, and 1,699 in YTC. In the Green category, there are 27,163 industries, with 13,937 operating, 9,230 closed, and 3,996 in YTC. The White category has 4,184 industries, with 2,450 operating, 1,272 closed, and 462 in YTC. Overall, Karnataka has a total of 50,420 industries, with 26,179 currently operating, 17,315 closed, and 6,926 in YTC.Annexure II: District-wise details of the industries in Karnataka.

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

The CPCB has revised the criteria for determining of Comprehensive Environmental Pollution Index (CEPI) of industrial areas in the year 2016 and laid out components which include the scale of industrial activity, scale of exceedance of Environment Quality (Level of Exposure), health-related statistics and compliance status of industries. Where the CEPI score crosses 70, the areas are designated as Critically Polluted Areas (CPA's) where the index is between 60 and 70 those areas are designated as Severely Polluted Areas (SPA's), and those below 60 are designated as other polluted Areas (OPA's).

Based on the revised criteria, CPCB carried out Environment Quality Monitoring in the year 2017-18 wherein it was found that the number of identified polluted industrial clusters went up to 100 in the country. This number includes 38 critically polluted industrial areas, 31 severely polluted industrial areas, and the remaining 31 as other polluted industrial areas. In the state of Karnataka, two industrial clusters were declared as critically polluted areas, one as severely polluted industrial areas, and three as other polluted industrials area.

The Board has prepared and submitted separate action plans for the CPAs & SPAs to bring down the pollution levels. The implementation of these action plans is being monitored by Local Area Committee (LAC) constituted for each CPA /SPA/OPA. Further, the implementation progress was reviewed in the meetings held at Board Office on 17.08.2023.

Table 7.1: The CEPI scores of the six industrial areas identified in the State

Sl. No	Name of the Industrial Area	CEPI Score	Remarks
1	Peenya Industrial Area, Bengaluru	78.12	Critically Polluted Area
2	KIADB Industrial Area, Jigani-Anekal, Bengaluru	70.99	Critically Polluted Area
3	Kolhar Industrial Area, Bidar	65.64	Severely Polluted Area
4	Bhadravathi, Shivmogga	58.48	Other Polluted Area
5	Baikampady Industrial Area, Mangaluru	58.20	Other Polluted Area
6	Raichur Growth Centre, Raichur	53.42	Other Polluted Area

7.3 Policy Regarding CAAQMS based on the emission potential or capacity of air polluting industries

Installation of an Online Continuous Effluent/Emission Monitoring System (OCEMS) as per the CPCB directions issued on 05.02.2014 has been made mandatory. KSPCB is also asserting major industries have Continuous Ambient Air Quality Monitoring Stations (CAAQMS) and publish the air quality on their website.

7.4 Mechanism to be devised for the expansion of OCEMS to air-polluting industries is not covered currently (Such as emission from utility stacks in 17 categories, etc.)

Karnataka has 246 industries operating under this category; KSPCB is asserting these 17 category industries to have an Environmental Cell with qualified Environmental Engineers/Scientists with required staff and also to establish a self-monitoring system.The details of various categories of industries connected with OCEMS are provided in table No.7.2.

Table 7.2 Status of OCEMS in the State

Sl. No.	17-Category Industries	Total No. of industries	Connected	Not Connected
1	Aluminium	1	1	Nil
2	Bulk Drugs & Pharmaceutical	83	83	
3	Caustic Soda	1	1	
4	Cement	23	23	
5	Distillery	14	14	
6	Dyes & Dye Intermediates	2	2	
7	Fertilizer	3	3	
8	Oil Refinery	1	1	
9	Pesticides	1	1	

10	Petrochemicals	1	1	
11	Pulp & Paper	5	5	
12	Sugar (Sugar & Co-gen, Sugar, Co-gen and Distillery)	71	71	
13	Thermal Power	10	10	
14	Integrated Iron & Steel	30	30	
15	Tannery	0	0	
16	Copper Smelter	0	0	
17	Zinc Smelter	0	0	
	17- Category Industries Total	**248**	**248**	**0**

7.4.1 Status of 17 category highly polluting industries:

There are 248 industries are operating under 17 category in the state. Board is insisting these 17 category industries to have an Environmental Cell with qualified Environmental Engineer/Scientist with required staff. Installation of Online Continuous Effluent/Emission Monitoring system as per the CPCB directions issued on 05.02.2014 has been made mandatory. KSPCB is also insisting major industries to have Continuous Ambient Air Quality Monitoring Stations (CAAQMS) and publish the Environmental quality in their website.

Closure/Revoke Directions:

In 17 category section, 07 Closure Directions have been issued under Water and Air Act and the Closure Direction has been revoked in 04 cases during the year 2023-24.

Personal Hearing Conducted:

34 Personal Hearings were conducted during the year 2023-24.

No Increase in Pollution Load (NIPL) Committee:

Technical Committee has been constituted as per EIA notification amendment, dated: 02.03.2021 for scrutinizing the applications received under No Increase in Pollution Load (NIPL). During the year, two meetings were held on 21.08.2023 (2 subjects) and 08.01.2024 (5 subjects).

7.4.2 Hon'ble NGT directions:

The Hon'ble NGT has registered a Suo Motu petition vide OA No. 1038/2018 and issued various directions to the Ministry of Environment, Forest and Climate Change, Central Pollution Control Board, State Pollution Control Boards, and State Governments. Accordingly, the Karnataka State Pollution Control Board has prepared action plans and got them approved by the Committee headed by the Additional Chief Secretary and Development

Commissioner in the State Level Committee Meeting held on 11.04.2019 and submitted to CPCB. Local Area Committees have been constituted for all three Polluted industrial areas to oversee the implementation of Action Plans submitted to the CPCB to Improve Environmental Quality.

The Hon'ble NGT in its order Dated 10/7/2019 has directed SPCBs not to grant Consent for Establishment /Expansion of Red and Orange Category industries in the Critically Polluted Areas (Peenya and Jigani- Bommasandra Industrial; Area) till these industries satisfy the pollution control norms.

Subsequently in the NGT order dated 19.8.2019, it is stated that there is no absolute bar to such units (Red and Orange Category) being set up if they are found to be viable. MoEF & CC to devise an appropriate mechanism to ensure that new legitimate activity or expansion can take place after due precautions are taken by these units. The MoEF & CC, GoI devised a Mechanism on 25.10.2019 for the Environment Management of CPAs and SPAs for the said direction and communicated to SPCB for implementation and the same is being followed.

7.5 Guidelines for laying city gas distribution network

India is an emerging economy with the world's second-largest population and growing energy demands. To meet the energy demand, increasing the share of cleaner energy sources in its fuel mix is critical for having sustainable economic growth. In addition to renewable energy sources, Natural gas is an alternative cleaner fossil fuel and is going to play a significant role in providing solutions to environmental challenges along with meeting our growing energy demands in a sustainable manner. Globally, the use of natural gas as fuel for cooking, industrial use, and transport has resulted in significant changes in environmental conditions.

With impetus from the Government of India to promote renewable energy resources, natural gas is steadily emerging as the fuel of choice. The Government of India (GOI) has set a target to increase the share of natural gas in the country's primary energy mix from 6.2% to 15% by 2030. The Government of India through Petroleum & Natural Gas Regulatory Board (PNGRB) has authorized 295 Geographical Areas to various CGD Entities, covering about 98 % of India's population and 88% of the areas. In the State of Karnataka, CGD infrastructure is operational in 18 Geographical Areas (Gas) covering all the districts of the State. The first GA was authorized in 2015 and the last GA was authorized in 2022. About 92,39,529 PNG (Domestic) connections and 1,414 CNG stations will be developed in the coming years as per commitment by various CGD entities. There is an investment potential of Rs. 12,000 Crores.

Under the City Gas Distribution (CGD) Project, the CGD Entities have the obligation to develop the City Gas Distribution network to supply Piped Natural Gas (PNG) to domestic households, commercial & industrial segments and Compressed Natural Gas (CNG) as fuel

to automobiles through CNG Stations. The City Gas Distribution Project has been categorized by Government of India as a public utility project. The CGD project is not only the means to bring the clean and green fuel for household cooking and as automobile fuel, but it is also the means for sustainable industrial growth in the state and impacting sustainable development.

The gas pipeline infrastructure can be categorized largely in two segments:

1. Major trunk gas pipeline
2. CGD gas pipeline network

I) Major trunk gas pipeline

As on date there are two major trunk gas pipelines under operation in the State of Karnataka, name (i) Dhabol – Bengaluru Pipeline (DBPL) and (ii) Kochi – Koothanad- Mangalore-Bangalore Pipeline (KKMBPL). This natural gas pipeline is being operated by GAIL India Limited. These lines are part of National Gas Grid which ensures the supply of natural gas to Karnataka and adjoining States like Tamil Nadu, Kerala, Goa and Maharashtra. The line Supply Natural Gas to the various industries and CGD Entities. The industries which are supplied natural gas through trunk gas pipelines are invariably having large gas requirements above 50,000 SCMD.

- For DBPL gas pipeline GAIL has spent about Rs. 1,821 Crores which passes through 9 Districts of the State. This line connects and caters natural gas to 15 large Industries. Further it caters to 6 CGD Geographical Areas through direct connectivity and supplies to 10 CGD Geographical Areas through Cascade mode.
- For the KKMBPL gas pipeline GAIL has spent about Rs.371 Crores which passes through 2 Districts of the State. This line connects and caters natural gas to 1 large Industries. Further it caters to 1 CGD Geographical Areas through direct connectivity.

II) CGD gas pipeline network

As on date there are 18 Geographical Areas (GA) awarded to 8 CGD Entities (namely GAIL Gas Limited, MNGL, BGRL, AG&P, MEIL, IOGPL, ATGL and UEPL) which covers all the 30 Districts of the State. The detailed present status of each Geographical Area as on 31.03.2023 and planned till 2028is enclosed as **Annexure III**.

As on 31.03.2023, the CGD Entities have so far invested about Rs. 4,574 Crores in the State of Karnataka to develop the City Gas Distribution network. They have cumulatively laid about 4,792 Kms of gas pipeline network, currently supplying domestic PNG to 1,36,263 houses; 531 Commercial Customers and 303 Industrial Customers in the State. Further, they have cumulatively setup 262 CNG Stations in the State and as Vahaan portal about 69,486 CNG based vehicles are plying in the State which are mainly private / commercial vehicles.

Further within next five years the CGD Entities are planning to invest about Rs. 11,627 Crores in the State for further development of the CGD infrastructure. This will facilitate about 42,72,955 Domestic PNG connections; 4811 Commercial Connections and 1813 Industrial Connections. Further, about 1093 CNG Stations will be established.

State Initiative: GAIL India has developed and is operating two major gas pipeline networks in Karnataka namely; Dhabol-Bangalore (DBPL) and Kochi-Koottanadu-Mangalore-Bangalore pipeline (KKMPL).

The details of both Gas pipelines are

1) Dabhol - Bangalore Pipeline (DBPL):

[A] Current Status as on 31.03.2023:

1. The total length of gas pipeline laid and operational as on 31.03.2023

- *Length of pipeline in Karnataka: **816.8 KM**, Diameters of Pipeline varies from 4" to 36*".

2. The names of the districts covered by the gas pipeline

- *DBPL is passing through following Districts in Karnataka:*
  (i) Belagavi (Belgaum)
  (ii) Dharwad
  (iii) Gadag
  (iv) Vijayanagara
  (v) Davangere
  (vi) Chitradurga
  (vii) Tumkur
  (viii) Bengaluru
  (ix) Ramanagara

3. The total number of CGD GA connected as on 31.03.2023
   6 Nos CGD GAs are connected directly through network, whereas 10 CGD GAs are connected through Cascade
4. The names of the CGD GA connected as on 31.03.2023
   6 Nos CGD GAs connected directly are

Gail gas ltd.
Indian oil-Adani gas private limited Hubli
Megha engineering & infrastructures Belgaum
Maharashtra natural gas limited
Unison enviro private limited Chitradurga
Adani total gas limited, Hubli

10 CGD GAs are drawing gas through Cascade Mode (Not connected with Pipeline)

AGP City Gas Private Limited, Mysore
BGRL-Gadag-Ballari through IOAGPL Hubli
AGP Kalaburagi and Vijayapur Through IOAGPL Hubli
AGP Bagalkot, Koppal and Raichur thorugh IOAGPL Hubli
AGP Anantapur and YSR Kadapa through UEPL Chitradurga
AGP Uttara Kannada, Haveri and Shivamogga Districts Through UEPL Chitradurga-
AGP Chikkamagaluru, Hassan and Kodagu Through UEPL Chitradurga
AGP City Gas Private Ltd, (Kollar, Tirupati, Vellore through GGL Bangalore
AGP-Uttara Kannada, Haveli and Shivamogga District Through IOGPL-Hubli
BGRL-Ballari through UEPL CHITRADURGA

5. The names of Industrial Areas already connected as on 31.03.2023

1. Bidadi Industrial Area
2. Belgavi Industrial Area
3. Hubbali Industrial Area

6. The total number of Industrial connections with active supply as on 31.03.2023

15 Industrial connections (excluding KPCL) with active supply exists as on day with active supply.

7. The names of the connected Industries with active supply as on 31.03.2023

Hindalco Industries Limited
Toyota Kirloskar Auto Parts Private
Paramount Nutritions India Pvt Ltd
At India Auto Parts Private Limited
Prism Johnson Limited
Bosch Limited
Britannia Industries Limited
Cataler India Auto Parts Pvt Ltd

Kaveri Plasto Containers Pvt. Ltd.
Hindustan Coca-Cola Beverages
Fabionix (India) Pvt Ltd
Goa Glass Fibre Limited
Saint Gobain India Pvt Ltd
Parle Biscuits Private Ltd.
Murudeshwar Ceramics Limited, Sira

Total Capital Investment in the Geographical Area as on 31.03.2023 = Rs 1821 Cr

[B] Additional Plan for next Five Years (upto 31.03.2028):

i) The total additional length of gas pipeline to be laid by 31.03.2028 = 160 KMs

ii) The names of the additional districts to be covered by the gas pipeline by 31.03.2028 = Will be done on the basis of requirement from any Industry etc.

iii) The total number of additional CGD GA to be connected by 31.03.2028= 8.

iv) The names of the additional CGD GA to be connected by 31.03.2028 = 8 GAs are

a) Bagalkot, Koppal & Raichur
b) Chikkamagaluru, Hassan & Kodagu
c) Chamarajanagar, Mandya & Mysuru
d) Haveri, Uttara Kannada & Shivamogga
e) Ballari & Gadag
f) Ramanagara
g) Chikballapur

v) The names of additional Industrial Areas to be connected by 31.03.2028 = Industrial Area in Ballari

vi) The total additional number of Industrial to be connected by 31.03.2028 = 2

vi) The names of the additional Industries to be connected by 31.03.2028 =

a) Gold Plus Float Glass Pvt. Ltd., Belgaum
b) JSW Steel, Ballari

vii) Total additional capital Investment planned by 31.03.2028 (Tentative) =

- Total 105 Cr at present (25 Cr for CGDs, 80 Cr for Gold plus LMC)
- Approx 400 Cr additional investment anticipated for JSW Ballari based on customer readiness for minimum required offtake & investment approval (at present in preliminary discussion stage).

2) Kochi - Kootnad- Mangalore- Bangalore Pipeline (KKMBPL):

[A] Current Status as on 31.03.2023:

1. The total length of gas pipeline laid and operational as on 31.03.2023 =

Length of pipeline in Karnataka is 57 KM. Diameters of Pipeline varies from 4" to 24"

2. The names of the districts covered by the gas pipeline =

KKMBPL is passing through following Districts in Karnataka:

1. *Dakshina Kannada*
2. *Bengaluru*

3. The total number of CGD GA connected as on 31.03.2023 *=1 CGD GA is connected directly through network*
4. The names of the CGD GA connected as on 31.03.2023 = *GGL MANGALORE*
5. The names of Industrial Areas already connected as on 31.03.2023 = *Mangalore Industrial Area*
6. The total number of Industrial connections with active supply as on 31.03.2023 = *1*
7. The names of the connected Industries with active supply as on 31.03.2023= *Mangalore Chemicals & Fertilizers Ltd.(MCF)*
8. Total Capital Investment in the Geographical Area as on 31.03.2023 = Rs 371.1 Cr

[B] Additional Plan for next Five Years (upto 31.03.2028):

1. The total additional length of gas pipeline to be laid by 31.03.2028 = Not yet firm.
2. The names of the additional districts to be covered by the gas pipeline by 31.03.2028
3. The total number of additional CGD GA to be connected by 31.03.2028 = 1
4. The names of the additional CGD GA to be connected by 31.03.2028 = Udupi
5. The names of additional Industrial Areas to be connected by 31.03.2028 = Mangalore Industrial Area
6. The total additional number of Industrial to be connected by 31.03.2028 = 1.
7. The names of the additional Industries to be connected by 31.03.2028 = Kudremukh Iron Ore Company Ltd. (KIOCL), Mangalore, Karnataka
8. Total additional capital Investment planned by 31.03.2028 (Tentative) = 3.587 Cr for Udipi CGD.

Source: Information received from Infrastructure Development Dept

7.6 Policy for restriction on the usage of Pet coke for industrial use

KSPCBconcerning the Order of the Hon'ble National Green Tribunal, New Delhi, regarding the use of pet coke as fuel, has declared Pet Coke as an "approved" fuel under Section 2(d) of the Air (Prevention and Control of Pollution) Act, 1981 in Cement Kilns including captive power plants of Cement Plants only, vide Board Notification dated: 22.07.2017.

The Government of Karnataka because of the Orders of Hon'ble NGT, New Delhi has prohibited the use of pet coke as fuel in the entire State of Karnataka on 11.08/2017 under the provisions of Section 19(3) of the Air (Prevention and Control of Pollution) Act, 1981 except for the following activities.

1) The Cement Kilns

2) Captive Power Plants within Cement Plants having the facility of Circulating Fluidized Bed Combustion (CFBC) Boilers, wherein SO_2 emissions are controlled by the use of limestone.

To regulate the use of Pet Coke, the Board has issued directions under Section 31(A) of the Air (Prevention and Control of Pollution) Act, 1981 to M/s Mangalore Refinery and Petrochemicals Limited, Mangaluru, Dakshina Kannada on 15.06.2018 which is the only producer of pet coke in the state to sell the pet coke only to industries having the permission of the Board and submit the details on the quantity of pet coke generated and sold every month.

As per the Office Memorandum of the Ministry of Environment, Forest and Climate Change, Government of India dated: 10.09.2018, the quantity of pet coke permitted for use in the Cement Kiln has been specified in the Consent Order.

KSPCB, given the Order of Hon'ble Supreme Court, issued in respect of WP (C) No. 13029 of 1985 issued a Modification to Office Memorandum issued on 22.07.2017 wherein the approval granted under Section 2(d) of the Air (Prevention and Control of Pollution) Act, 1981 for use of pet Coke was withdrawn. Instead, the Board permitted the use of Pet coke as a feedstock only in cement industries for clinker production, lime kiln, calcium carbide, gasification plants, and calcined Pet coke for anode making in Aluminium Industries.

7.7 Rules and Regulation on uninterrupted power supply in State

- Electricity (Rights of Consumers) Rules, 2020 issued by GoI Vide Gazetted Notification No. G.S.R. 818(E) dated 31st December, 2020, stipulates 24 X 7 Power supply to consumers.
- Karnataka Electricity Regulatory Commission (KERC) (Standards of Performance) Regulation, Notification No. D/01/03 dated 24.05.2004 is already in place which specifies minimum standards of performance with reference to quality and reliability of services that a Licensee shall achieve in the discharge of its obligations as a licensee.
- No: KERC/3/DDD/2022-23/1039, Bengaluru, dated 07.10.2022 Karnataka Electricity Regulatory Commission (Rights of Consumers Relating to Supply of Electricity, Standards of Performance (SoP) and allied matters) Regulations, 2022.

Measures/ Initiatives taken by Energy Department:

- Significant Capacity addition of more than 10 GW in the renewable energy sector during the last 6 years, with a cumulative achievement of 15579 MW.
- Aligning with the GoI's Mission of 500 GW by 2030, GoK has come up with a new holistic "Karnataka Renewable Energy Policy 2022-2027" that aims to achieve energy security primarily from Renewable energy sources.

- Deployment of Electric Vehicle Charging Stations across the State in order to achieve net zero emission target by 2070.
- State's Discoms through EESL & CESL encouraging sale of LED bulbs, LED Tubelights and energy efficient fans under UJALA & GRAM UJALA programme and use of LED bulbs under various Government schemes.
- Implementation of Battery Storage system, Hybrid Park and Pumped Hydro Storage Projects are under progress.
- Development of Green Hydrogen Policy is under progress.

7.8 Policy For use of DG sets

KSPCB has issued an order, vide No.KSPCB/SEO-INFRA/DG-RETROFITTING/2021-22/955 datedMay 25, 2023;Notification at Annexure IV.

In exercise of powers under conferred under Section 19(1) of the Air (Prevention & Control of Pollution) Act 1981, the State Government has declared the entire State of Karnataka as Air pollution control Area. In line with the same, the Board had issued an order No.KSPCB/SEO-INFRA/DG-RETROFITTING/2021-22/2887,Dtd.17/09/2021 regarding mandatory retrofitting of emission control devices/equipment in DG sets with capacity of 125 KVA and above in the State of Karnataka.

The Hon'ble National Green Tribunal (NGT) had directed for reduction of Particulate Matters (PM) emitted by in-use diesel operated power generating sets.The Hon'ble National Green Tribunal (NGT) directed Central Pollution Control Board (Herein after referred to as "CPCB") to develop & evolve the standards and norms for use of Retrofitted Emission Control Equipment or Devices (RECDs).

Accordingly, CPCB formulated procedure for certification of the RECD namely "System and procedures for emission compliance testing of RECD for in-use diesel power generating set engines up to gross mechanical power of 800 KW" on 1.2.2022. This is with the objective for reduction of Particulate Matters (PM) by using Retrofitted Emission Control Devices (RECD) for in -use diesel operated internal combustion engines upto 800 KW or 1000 KVA. The details of compliance and testing procedures developed by CPCB is available in their web site and the same may be referred to.

The CPCB for the purpose of type approval and conformity of production verification compliance process, may revise the procedure from time to time. The currently the approved 04 test agencies for Certificate of type approval are as follows;

1. Automotive Research Association of India (ARAl Pune).

2. International Centre for Automotive Testing (ICAT, Manesar)

B. Indian Institute of Petroleum (UP, Dehradun)

4. Vehicle Research Development Establishment (VRDE, Ahmad Nagar)

Hence, all Industries, Establishments, Projects, Buildings, Utilities, Airports, Railway Stations or any other places operating DG sets of capacity 125 KVA and above, within the jurisdiction of the State of Karnataka, are directed to:

1) Retrofit all operational DG sets of capacity with an Emission Control Device/Equipment. For diesel power generating set engirls upto gross mechanical power 800 kW, the emission control device has to be type approved as per CPCB system and procedure for emission compliance Testing of Retro-fit Emission control Devices (RECD).

2) For diesel power generating set engines above gross mechanical power of

800 kW or 1000KVA, the emission control device has to be tested for minimum 70% reduction in Carbon Monoxide, Particulate Matter and Hydrocarbon emissions, The Emission Control Device has to be tested on 800 kW or 1000KVA, the emission control device has to be tested for minimum 70% reduction in Carbon Monoxide, Particulate Matter and Hydrocarbon emissions. The Emission Control Device has to be tested on equivalent KVA rating of the DG set by one of the 04 approved test agencies mentioned supra. CPCB has formulated procedures for testing in terms of 5-Mode Constant Speed Cycle(As per D2 Steady State discrete mode test cycle specified in ISO-8178-Part 4). The equivalent KVA is considered if either the rated power or swept volume of the test engine is in the range of +25% of the rated power or swept volume of the engine for which the device is being used.

OR

3) Shift to gas-based generators by deploying new gas-based generators or retrofitting the existing DG sets for partial gas usage.

Further, all the Industries, Establishments, Projects, Buildings, Utilities, Airports, Railway Stations or any other places operating DG sets of capacity 125 KVA and above, shall ensure that Retro-fitting of Emission Control Devices vendor is in accordance with the CPCBs document Dtd.01/02/2022 mentioned in Para (3) of this notification.

This order supersedes all other previously issued orders and same shall be complied within six months from the date of issue of this Notification, failing which the Board is contemplated to initiate action under the relevant provisions the Air (Prevention and Control of Pollution) Act, 1881.

7.9 Online Continuous Emission Monitoring Systems:

Directions issued by the Board under section 33(A) of Water Act, 1974 and Section 31(A) or Air Act, 1931 in the matter of pollution control in 17 category of highly polluting industries, CETP's & Common Hazardous waste and Biomedical waste incinerators - regarding self-monitoring of compliance:

Central Pollution Control Board (CPCB) has issued Directions under Section 18 (l) (b) of The Water (Prevention and Control of Pollution) Act, 1974 and The Air (Prevention and Control of Pollution) Act, 1981 vide letter No. B 29016/04/06/PCI/5401 dated 05.02.2014 to all the State Pollution Control Boards/Pollution Control Committees on strengthening of monitoring mechanism for effective compliance through self-monitoring mechanism in highly polluting industries (17 category industries), Common Effluent Treatment Plants (CETP's), Common Hazardous Waste Incinerators(CHWI) and Common Bio-Medical Waste Incinerators (CBMWD).

In exercise of the powers conferred under Section 33(A) of the Water (Prevention and Control of Pollution) Act, 1974 and Section 31(A) of the Air (Prevention and Control of Pollution) Act, 1981 and keeping in view of strengthening on the monitoring mechanism for effective compliance through self-regulatory mechanism, the Board has issued directions to the above industries/common facilities to install continuous online emission/effluent monitoring systems as per the guidelines issued by CPCB, Delhi on August, 2018 (Revision - 01) and July, 2018 (Revision-01) respectively to keep track on the discharges of environmental pollutants from such units.So far about 314 No's of Industries/Common facilities are connected under online monitoring system to the CPCB Server at Delhi.

7.10 Number of Industries in the State complying with emission standards

Board is also enforcing air pollution control system as a mandatory condition under Section 21 of the Air Act while issuing the consent. The details of Air Pollution Control Status of industries in the state are given in Table 7.3below:

Table7.3: Air Pollution Control (APC) Status of Industries as on 2024

Sl. No	Zonal Office	Category	Total No. of Operating Industries	APC system under Operation	Defaulters (No adequate facility)
1	Bengaluru City	Red	312	292	0
		Orange	813	650	0
2	Bengaluru East	Red	229	229	0
		Orange	470	464	0
3	Bengaluru North	Red	328	313	0
		Orange	727	576	0
4	Bengaluru South	Red	336	336	1
		Orange	498	498	
5	Belagavi	Red	140	140	--
		Orange	339	339	--
6	Davanagere	Red	117	110	0
		Orange	721	652	0
7	Dharwad	Red	64	64	-
		Orange	191	191	-

8	Gulbarga	Red	96	95	1
		Orange	203	199	4
9	Mangaluru	Red	110	110	0
		Orange	947	947	0
10	Mysuru	Red	160	160	-
		Orange	442	442	-
11	Ramanagara	Red	201	201	0
		Orange	538	538	0
12	Vijayanagara	Red	145	145	0
		Orange	600	598	2
	Total		8727	8289	8

(Source: KSPCB 2023-24 Annual report)

7.11 Mechanisms to control fugitive emission sources

- The Fugitive Emission Standards are prescribed for the industries wherever required and regular monitoring of the same is being carried out. The industries were instructed to operate with enclosures, suction hoods with APC, and sprinklers.
- The interlocking system of the Air Pollution Control(APC) equipment with the process plant is also made mandatory in all industries to ensure the functioning of the APC.
- Separate Energy meters for the APC are also made mandatory for certain category industries to ensure the operation of the APC.
- Siting guidelines for certain air-polluting industries like stone crushers are notified and the same are under implementation.
- A green belt of 33% area is being insisted in the industries with air pollution sources to mitigate the air pollution.
- Most industries are opting for heat recovery systems for better utilization of the heat and to cut the utilization of fossil fuels thereby reducing emissions.
- The industries are regularly being monitored for compliance verification and actions are being initiated in case of non-compliance by way of issuing directions and closure of the industry.

7.12 Implementation of Hazardous and Other Waste (Management and Transboundary Movement) Rules, 2016

The Rule ensures safe storage, transport, treatment and disposal of various category of industrial hazardous and other waste mentioned in the rules. One of the main features of this rule is that the occupier of the activities generating or handling hazardous and other wastes

becomes legally responsible for taking all practical steps to ensure that such wastes are properly handled, labeled, stored and disposed off without any adverse impact on the environment. The rule also regulated the import and export of the hazardous and other waste. KSPCB is implementing the said rules in the state.

The Board has identified3972 hazardous waste generating industries in Karnataka and issued authorization.

The summary of the quantity of hazardous waste generated in the state during the reporting year 2023-24 is as below:

Table 7.4quantity of hazardous waste generated during 2023-24

Type of Hazardous Waste	Quantity of hazardous waste generated during 2023-24 in MT
Landfillable Waste	97113.85
Incinerable Waste	33129.48
Recyclable Waste	122231.57
Utilizable Waste	290082.81
Total	542557.71

(Source: KSPCB 2023-24 Annual report)

7.13 Treatment, Storage and Disposal Facilities (TSDF) for land fillable hazardous waste

There are 2 Treatment, Storage and Disposal facilities for scientific disposal of hazardous waste generated in the State.

Facility No : 1.

The Treatment, Storage, Disposal Facility (TSDF) is established at Dabaspet, Nelamangala Taluk, Bengaluru Rural District by M/s. Karnataka Waste Management Projects {A Division of Re-sustainability Ltd., (Formerly Ramky Enviro Engineers)} on BOOT model basis and same is in operation since 2008. The salient features of TSDF are as follows:

1) Extent of land : 93.18 Acres
2) Total Design capacity : 8 lakh MT
3) Active life span : 20 Years
4) Post monitoring period : 30 Years
5) Designed by : GTZ- ERM

6) Land filling of 05 cells is completed in 1st Phase Cell Nos. of 6, 7, 8 in 2nd Phase are in operation.

Table 7.5: Details of Hazardous Wastes Disposed in the TSDF

Sl. No	Description	Total Quantity Disposed so far upto 31.03.2023
1	Land Fill Waste	50918.6 MT

(Source: KSPCB 2023-24 Annual report)

Facility No : 2.

One more Treatment, Storage, Disposal Facility (TSDF) is established at Harohalli Industrial area, Kanakapura Taluk, Ramanagar District by M/s. Mother Earth Environ Tech Pvt. Ltd. The salient features of TSDF are as follows.

1) Extent of land : 4 Acres
2) Total Design capacity : 1,51,000 MT

Table 7.6: Details of Hazardous Wastes Disposed in the TSDF

Sl. No.	Description	Quantity disposed during 2021-22 in MT	Total Quantity Disposed during 2021-22 in MT
1	Land Fill Waste	Reached its full capacity in February, 2021	1,51,000.00

This TSDF has reached its full capacity & stopped accepting hazardous waste from 03.02.2021.

Facility No: 3

One more Treatment, Storage, Disposal Facility (TSDF) is established at Kadechur Industrial Area, Kadechur Taluk, Yadgir District by M/s. Kalyana Karnataka Waste Management Project Private Limited (Formerly M/s. Mother Earth Environ Tech Pvt. Ltd.,),The salient features of TSDF are as follows.

1) 1. Extent of land : 30 Acres
2) 2. Total Design capacity : 2,57,297 MT

Table 7.7: Details of Hazardous Wastes Disposed in the TSDF

Sl. No	Description	Total Quantity Disposed so far upto 31.03.2023
1	Land Fill Waste	31153.21 MT

7.14 Recyclable/Utilizable waste:

The recyclable/utilizable hazardous and other waste are to be handed over only to the KSPCB authorized recyclers/utilizers 257 hazardous & other waste recycling units (viz. reprocessing used oil, waste oil, spent solvents, spent etchant, discarded containers, copper, zinc waste & Other waste etc.,) are under operating in the State.

7.15 Incinerable Waste:

Board has issued authorization to standalone common incineration facilities in the State. The list of common incineration facilities is given in the Table 7.8 below:

Table 7.8: Details of Units authorized to incinerate

Sl. No.	Incinerators	Installed Capacity Incineration (MT/A)	Installed Capacity AFR (MT/A)	Remarks
1	M/s. Haat Incinerator India Private Limited, Anekal Taluk, Bengaluru.	1800	---	Operating.
2	M/s. Gomti Incinco, Kumbalagodu, Bengaluru.	900	---	Operating.
3	M/s. Century Refineries Pvt. Ltd. Hoskote, Bengaluru.	2400	7200	Operating.
4	M/s. Bengaluru Incinerator Pvt. Ltd., Kunigal Taluk, Tumakuru.	1000	---	Operating.
5	M/s. E Nano Incintech, Plot No.342-B, of Harohalli Industrial Area, 2nd Phase, 2nd Sector, Ramanagar District.	2400	2400	Operating.
6	M/s. Bengaluru Eco Park Pvt. Ltd, No.298 B, KIADB Industrial Area, Sompura 1st Stage, Nidavanda, Nelamangala, Bengaluru Rural District	6000	---	Not Operating (Due to self-closed)
7	M/s Re Sustainability Industrial Solutions Private Limited (Formerly known as M/s Ramky IWM Private Limited) (Formerly M/s Century Eco Solutions Pvt. Ltd.) Plot NO. 161B & C, 1st Phase, Vasanthapura, KIADB Industrial Area, Kora village, Tumkur Taluk& District.	3600	3600	Operating.
8	M/s. Karnataka Waste Management Projects {A Division of Re-sustainability Ltd., (Formerly Ramky Enviro Engineers)} Sy. No.75 to 85 of Pemmanahalli and Sy.No.7 & 9 of himmanayakanahalli, Dabaspet, Nelamangala Tq. Bangalore.	1.5 TPH	---	Operating.

9	M/s. Kalyana Karnataka Waste Management Project Private Limited (Formerly M/s. Mother Earth Environ Tech Pvt Ltd.,) Plot No. 158 to 164, KIADB Kadechur Industrial Area, Kadechur Village, Yadgir Taluk & District.	4320	60000	Operating.

(Source: KSPCB 2023-24 Annual report)

7.16 Co-processing

The Board has accorded authorization for co-processing of incinerable hazardous waste in Cement plant. Cement plants have established facilities for handling the incinerable hazardous waste.

Table 7.9: Details of Units authorized for Co-processing as on 2023-24

Sl. No.	Co-processing Units
1	M/s. Vasavadutta Cements, Sedum Taluk, Kalburgi District-585222
2	M/s. Ultratech Cement Limited (Unit- Rajashree Cement Works), Adityanagar, PO Malkhed Road, Sedam Taluk, Kalburgi District -585292
3	M/s. ACC Limited, Wadi Cement Works, PO Wadi, Kalburgi -585225
4	M/s. Chettinad Cement Corporation, Kallur Works, Sangem K, Garagapalli Post, Chandapur (SO), Chincholi Taluk, Kalburgi District -585305
5	M/s. Kalburgi Cement Pvt Ltd., (Formerly M/s. Vicat Sagar Cement Pvt. Ltd.,) ChatrasalaVillage, Chincholli Taluk, Kalaburagi District -585320
6	M/s. J.K. Cement Works, Muddapur Village, Mudhol Taluk, Bagalkot District – 587122.
7	M/s. Dalmia Cement (Bharat) Ltd., RS No.394, Yadwad Village, Gokak Taluk, Belagavi District -591136
8	M/s. Orient Cement Ltd, Itga village, Chittapura Taluk, Kalburgi District-585292
9	M/s. Shree Cement Ltd, (Unit: Karnataka Cement Project), Benkanhalli Industrial Area, Benkanahalli & Kodla, Kodla Post, Sedam Taluk, Kalaburagi District -585222

(Source: KSPCB 2023-24 Annual report)

The incinerable waste generated in the state is being used for co-processing in the cement industries as a result of which the fuel used for incineration and the operation of the APC are saved leading to lesser air pollution and is managed in an environmentally sound method.

The amount of material co-processed in 9 cement plants during the year 2020-21 is 1,27,103 Metric Tonnes and for the year 2021-22 is 2,32,045 Metric Tonnes respectively.

7.17 Implementation of Battery Waste Management Rules, 2022.

The Ministry of Environment, Forest and Climate change, New Delhi has notified the Battery Waste Management Rules, 2022 on 22nd August 2022 which is effective from the date of issue of this notification. These Rules apply to Producer, dealer, consumer, entities involved in collection, segregation, transportation, re-furbishment and recycling of Waste Battery. There are 44 used Lead Acid Battery Recycling units operating in the state of Karnataka. During 2022-23, 2 Units have established for recycling of used Lithium-Ion Batteries.

So far as per the Battery Waste Management Rules, 2022, 18 units have file application for registration under EPR portal developed by CPCB as per the Rules

Table 7.10Total number or Lead Acid Battery Recycler /Manufacturers in Karnataka as on 2023-24

Sl. No.	Type of Categories	Number
1	Manufacturers	21
2	Recyclers	46
Total		67

7.18 Implementation of the Plastic Waste Management Rules, 2016

The Forest, Ecology and Environment secretariat, Government of Karnataka vide Notification No. FEE 17 EPC 2012, Bengaluru Dated 11.03.2016 in exercise of the powers conferred under the Environment (Protection) Act, 1986, issued directions imposing ban on manufacture, supply, sale and use of plastic carry bags, plastic banners, flex, plastic flags, plastic plates, plastic cups, plastic spoons, cling films and plastic sheets used for spreading on dining table including the above items made out of thermocol and plastic which use plastic micro beads in the Karnataka State. In the said notification of GoK, the role of KSPCB is enforcement regarding functions specified in clause (a) of Rule 4 of the Plastic (Management & Handling) Rules, 2011.

During the current year, the Board has initiated the following action against violating industries in respect of manufacture of banned SUP products.

1) Closure directions issued - 02

The MoEF&CC has notified the Plastic Waste (Management and Handling) Rules, 2016 which is in effect from 18th March 2016. Prescribed authority for enforcement of the

provisions of these Rules related to registration, manufacture of plastic products and multilayered packaging, processing and disposal of plastic wastes is SPCB.

Further, the Ministry of Environment, Forest and Climate Change (MoEF&CC), has amended the Plastic waste Management Rules, 2016 Notification dated: 12th August, 2021 on banning of identified Single use Plastic (SUP) items with effect from 1st July 2022. The manufacture, import, stocking, distribution, sale and use of following Single Use Plastic (SUP), including polystyrene and expanded polystyrene commodities shall be prohibited;

a) *ear buds with plastic sticks, plastic sticks for balloons, plastic flags, candy sticks, ice-cream sticks, polystyrene [Thermocol] for decoration;*

b) *plates, cups, glasses, cutlery such as forks, spoons, knives, straw, trays, wrapping or packing films around sweet boxes, invitation cards, and cigarette packets, plastic or PVC banners less than 100 micron, stirrers.*

Board is regularly conducting inspections/raids of different entities in the State in co-ordination with Local bodies and the details of quantity of Banned SUP seized and penalty imposed till 2024 are as follows:

Table 7.11

Number of entities inspected	15106
Total quantity of plastic seized	164.7 MT
Total amount of fine imposed	Rs. 73,23,140/-

The Ministry of Environment, Forest and Climate Change (MoEF & CC), Government of India has notified guidelines on Extended Producer Responsibility (EPR) for Plastic Packaging on 16.02.2022 as 4th amendment to Plastic Waste Management Rules, 2016 under Environmental (Protection) Act, 1986.

The CPCB has launched Centralized EPR portal on April, 5th 2022 to facilitate process of registration of Producers, Importers, Brand owners (PIBOs), Plastic Waste Processing Facilities (PWPs) like Plastic Waste Recyclers, Plastic Waste to Energy Processers, Plastic Waste Co-processors and issued directions to all SPCBs/PCCs to process the registration application through Centralized EPR portal.

The Board has taken action to register PIBOs and PWPs under CPCB centralized EPR portal and the details of the registered PIBOs and PWPs units during 2023-24 are as follows.

Table 7.12

Number of registered PIBOs	Brand Owners	103
	Producers	299
	Importers	465
Number of registered PWPs	Plastic waste Processors	94

(Source: KSPCB 2023-24 Annual report)

7.19 Policy to set up e-waste recycling units in industrial areas in compliance with e-waste management rules

- Electronic waste (e-waste) is the waste arising from end-of-life electronic products. It is the fastest-growing waste stream in the world at present.
- Annual global production of e-waste is estimated to surpass 50 million tons in 2020, It is reported that India is contributing over 3.2 million tons out of which Karnataka contributes approximately 0.1 million tons.
- All e-waste is valuable as it is highly rich in some valuable and rare metals i.e., e-WEALTH.
- Environmentally sound management of electrical and electronic waste is currently one of the most critical and challenging issues, not only for India but for the World.
- India is one of the fastest-growing markets for electronics and the demand was about USD 400 billion in the year 2020.
- Presently bulk of the e-waste recycling is done by the informal sector in India, wherein recovery of valuable materials is just 10–20%.

7.20 Implementation of the E-Waste Management Rules, 2022

The Ministry of Environment, Forest and Climate Change, Govt. of India has notified E-waste (Management) Rules, 2022 vide notification No. GSR 801(E) dated November 02, 2022. The Rules are effective from April 01, 2023 and have superseded existing E-waste (Management) Rules, 2016.

As per the E-waste (Management) Rules, 2016 there were only 21 items of electrical and electronic equipment listed in Schedule I and as per new E-waste Rules,2022 there are 106 items electrical and electronic equipment listed in Schedule I.

Bengaluru has the potential to become e-waste hub due to IT capital of India. E-Waste Generation is the tune of 292,846 MT/annum amounting to Rs.2886 crore, which should be tapped. (Economic Survey of Karnataka Annual Report)

Table 7.13: Status of E-Waste processing units as on 31.03.2024

Sl.No	Type of E-waste units	Working	Closed	Yet to commission	Total
1	Dismantler	26	23	17	66
2	Recycler	33	8	11	52
3	Dismantler & Recycler	11	8	4	23
4	Refurbisher	9	3	4	16
5	Dismantler, Refurbisher & Recycler	3	1	4	8
6	Dismantler, Refurbisher	10	2	1	13
7	Refurbisher & Recycler	16	1	6	23
	Total	108	46	47	201

(Source: KSPCB 2023-24 Annual report)

A few important goals that contribute to the objective of a robust e-waste system are:

1. Identify and employ public policy instruments that incentivize the manufacturers/producers to invest in achieving 'design for environment' changes in their product design.
2. Generate greater awareness of e-waste and its impacts on society, the responsibilities of various stakeholders under current regulations, and responsible actions that citizens can take.
3. Facilitate an e-waste management supply chain that integrates the informal sector in a manner that recognizes the right to livelihoods of the workers.
4. Develop a regularly updated and publicly available inventory of generation of e-waste quantities by e-waste type (e.g. computers, mobiles, and appliances), waste composition, and flows. Concerning Karnataka, work in this regard has been entrusted to EMPRI and work is underway.
5. Create a policy framework for the development of indigenous technologies and technology transfer to encourage the widespread application of environment-friendly e-waste recycling technologies.

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

Table7.14: Abstract of the fuel consumed in the industries (type and quantity) from the all Zonal offices of Karnataka

	Zonal Office	Total No. of Industries				Type and Quantity of fuel used in Kg/per day							Status of Emission		Total No. of Industries provided OCEMS	No. Of Industries provided CAAQM	Total No. of Industries having PNG connection
		Red	Orange	Green	White	High Speed Diesel (HSD)	Furnace Oil (FO)	CNG	PNG	LPG	Solid fuels/ Briquettes	Coal/ Coke	Confirming	Non Confirming			
1	**Mysuru**	226	955	1065	1772	8,40,489.81	5,22,721.11	-	-	96,400	66,40,432.2	67,70.580.8	All	-	16	-	-
2	**Bengaluru City**	164	808	1246	1743	1,86019.14	5535	-	1200	-	42,227.70	-	All	-	-	-	25
3	**Mangaluru**	166	1445	915	4.0	4,83,890.76	6,12,020	-	-	-	26,48,274.0	1,17,87,744	All	-	7	2	-
4	**Dharwad**	312	1184	1067	3580	81,996.53	10,979	1.7	-	89	1,18,49,595	4,27,622	All	-	22	2	-
5	**Bengaluru North**	217	448	768	55	16,917	7440	96.84	589	16	45,130	37,656	-	-	-	-	-
6	**Kalaburagi**	100	401	315	470	13,761.83	10,000	-	-	1633	39,83,949	94,09,538.6	All	-	39	9	-
7	**Bengaluru East**	315	659	724	98	13,05,974	5710	200	3,26,893	3349	35,263.55	1678	All	-	4	-	5
8	**Bengaluru South**	602	1072	1586	220	14,50,563.3	4,40,724.33	55,863.23	9251.11	2020	66,59,246.69	18,727	76	15	22	2	-
9	**Chitradurga**	148	1039	626		1,55,384.1	8570	1,60,100	2442	5400	3,50,426	24,14,479	18	3	20	3	-
10	**Ballary**	216	828	767	717	5,79,889	14,800	-	-	-	7,76,200	1,20,52,648	All	-	56	15	-
Total		**2466**	**8839**	**9079**	**8659**	**51,14,885.**	**16,38,499**	**21,62,623**	**3,40,375**	**1,08,906**	**3,30,30,744**	**4,29,20,674**	**94**	**18**	**186**	**33**	**30**

7.22 Any other Policy/Rules/standards/Guidelines pertaining to industrial emissions

The status of fly ash generation and utilization as per Fly Ash Notification SO 5481 (E) dated 31.12.2021 for the period 01.04.2023 to 31.03.2024 is given in the following table;Notification at Annexure V.

Table 7.15: Details of Fly Ash Utilization

Sl. No.	Name & Address of the fly ash generating Industry	Power Generating Capacity [MW]	Quantity of fly ash generated (in MTPA)	% disposed/ in house consumption	Mode of disposal / utilization
THERMAL POWER PLANTS					
1	Karnataka Power Corporation Limited, Raichur Thermal Power Station, Shaktinagar, Raichur- 584 170	7x210MW 1X 250 MW Total 1720 MW	30,58,444	73.29	Supplied to cement Industries, brick & tile manufacturing industries.
2.	Yermarus Thermal Power Station. Raichur	800MWx2	17,21,404	79.00	Supplied to cement Industries, brick & tile manufacturing industries
3.	Karnataka Power Corporation Limited, Ballari Thermal Power Station, K.P.C.L. Kudithmi Village, Ballari Taluk and District-583 112.	2 x 500 MW 1 x 700 MW	26,78,891	70.23	Supplied to cement Industries, brick & tile manufacturing industries
4.	NTPC Limited Kudigi Super Thermal Power Project, Kudigi Basavanabagewadi taluk Vijayapura district	3 x 800 MW	53,90,227	80.21	Supplied to cement Industries, ready mix concrete, brick & tile manufacturing industries
5.	Udupi Power Corporation Ltd., Yelluru Village, Pilar Post, Padubidri, Udupi District 574 113.	2 x 600 MW	1,42,635	98.11	Supplied to Cement Industries, Bricks manufacturing and bottom ash is stored in ash pond
6	JSW Energy Limited, Thoranagallu, Ballari District	2x 130MW 2 x 300 MW	212957.00 (Awaiting for report)	100	Supplied to Cement industry, Brick units and used for slime pond bund construction.
CEMENT UNITS WITH CAPTIVE POWER PLANTS					
7.	ACC Ltd., Wadi, Kalaburagi district.	125 MW	1.53,127	100	Completely utilized in house for cement production
8	Kesoram Industries Limited, Unit: Vasavadatta Cements, Sedam, Kalaburagi	79.2 MW	1,57,643	100	Completely utilized in house for cement production

	District.585222				
9	Ultratech Cement (Formerly Rajashree Cements), Malkhed Kalaburagi District.	108.2 MW	1,56,758	100	Completely utilized in house for cement production
10.	Kalburgi Cement Private Limited, Chatrasala Village, Chincholi Taluk, Kalaburagi District	30 MW	15,424	100	Completely utilized in house for cement production
11.	Chettinadu Cement Corporation, Kallurand Sangam Villages, Chincholi Taluk, Kalaburagi	30 MW	31,904	100	Completely utilized in house for cement production
12.	Dalmia Cement Limited Yedwad village, Gokak taluk, Belgaum District	27MW	0	0	CPP is under shutdown
13.	Orient Cement Limited Chittapura Taluk, Kalburagi district	45 MW	47,527	100	Completely utilized in house for cement production
14.	JK Cement Works, Muddapur, Bagalkot District	2 x 25 MW	0	0	CPP is under shutdown
STEEL UNITS WITH CAPTIVE POWER PLANTS					
15.	BMM Ispat Ltd, Ballari	1X 25MW 3X70 MW	48,908	100	Handed over to cement unit, brick manufacturing units, internal road construction
16	The Sandur Manganese & Iron Ore Limited, Hanumanahalli Vyasanakaere Post, Hospet Taluk, Bellary District	1 X 32 MW	0	0	CPP is under shutdown
PAPER , PULP & TEXTILE UNITS WITH CAPTIVE POWER PLANTS					
17.	West Coast Paper Mill, Dandeli, Uttara Kannada district.	74.8 MW	79,079	100	Supplied to outside cement brick manufacturing units.
18.	Grasim Industries Ltd, Kumarapatnam, Ranebennur Taluk, Haveri district.	20 MW	60,197	100	Supplied to cement brick manufacturing industries.
19.	Himatsingka Linens, Plot No. 1, SEZ, KIADB Industrial Area, Hanumanthapura Post, Hassan	12.5 MW	1363	-	Supplied to outside cement brick manufacturing units.

(Source: KSPCB 2023-24 Annual report)

7.23 Prohibition on use of Pet Coke as Fuel:

The Board keeping in view of the Order of the Hon'ble National Green Tribunal, New Delhi, regarding use of pet coke as fuel, the Board has declared Pet Coke as "approved" fuel under Section 2(d) of the Air (Prevention and Control of Pollution) Act, 1981 in Cement Kilns including captive power plants of Cement Plants only, vide Board Notification dated: 22.07.2017.

The Government of Karnataka keeping in view of the Orders of Hon'ble NGT, New Delhi has prohibited the use of pet coke as fuel in entire State of Karnataka on 11.08/2017 under the provisions of Section 19(3) of the Air (Prevention and Control of Pollution) Act, 1981 except for the following activities.

1. The Cement Kilns
2. Captive Power Plants within Cement Plants having facility of Circulating Fluidized Bed Combustion (CFBC) Boilers, wherein SO_2 emissions are controlled by use of limestone.

In order to regulate the use of Pet Coke, the Board has issued directions under Section 31(A) of the Air (Prevention and Control of Pollution) Act, 1981 to M/s. Mangalore Refinery and Petrochemicals Limited, Mangalore , Dakshina Kannada on 15.06.2018, which is the only producer of pet coke in the state to sell the pet coke only to industries having permission of the Board and submit the details on quantity of pet coke generated and sold on monthly basis.

As per the Office Memorandum of Ministry of Environment, Forest and Climate Change, Government of India dated: 10.09.2018, the quantity of pet coke permitted for use in Cement Kiln has been specified in the Consent Order.

The Board keeping in view of the Order of Hon’ble Supreme Court issued in respect of WP (C) No. 13029 of 1985 issued Modification to Office Memorandum issued on 22.07.2017 wherein the approval granted under Section 2(d) of the Air (Prevention and Control of Pollution) Act, 1981 for use of pet Coke was withdrawn. Instead the Board permitted the use of Pet coke as feed stock only in Cement industries for clinker production, Lime Kiln, Calcium carbide, Gasification plants, Calcined Pet coke for anode making in Aluminum Industries.

7.24 Common Action points for implementation in industrial estates and areas to reduce air pollution

- Extensive Plantation is to be taken up within the industries and also in the industrialareas by the concerned industries, industrial associations, KIADB, KSSIDC, 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- KIADB, KSSIDC, and ULB.
- The loading and unloading operations are to be taken up in covered areas to prevent any lofting of dust-ULBs and the Industries Department.
- Industries shall be mandated with suitable air pollution control equipment to meetthe environmental standards-KSPCB
- All in charge of industrial estates and areas to monitor the construction works, loading, and unloading activities. Also to have a dedicated Public Redressal System toaddress the grievances-KSPCB and ULBs.
- The monitoring of all the industrial estates and areas is to be carried out at regular intervals for compliance verification and to take corrective measures required if any-KSPCB
- All the air-polluting industries with boilers, furnaces and any other air-polluting sources 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-KSPCB.
- All concerted efforts are to be made for switching over to cleaner fuels like CNG, and LPG, and wherever new industries are coming up they should be mandated to use cleaner fuels wherever available- KSPCB & Infrastructure dept.
- The Pollution Under Control(PUC) for the vehicles plying in the estates shall be mandatory-Transport and Police 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-ULB’s
- All fire accidents within the industrial estate/area are to be mitigated at the earliest and the environmental damage needs to be fixed as per the procedures-Dept. of Factories
- Hot spots for air pollution need to be identified within 30 days of approval of the state action plan by KSPCB and other line departments. A micro-action plan has to be prepared for mitigation of the air pollution atsuch hot spots and placed before the competent authority (District Collector) for approval and implementation.
- A half-yearly report has to be prepared by KSPCB and ULBs on the compliance status of air pollution for PM_{10} and $PM_{2.5}$ along with the actions initiated as per the state action plan and approved micro action plan.

8 Vehicular Emissions

8.1 Innovative technology for effective transport management initiative

Useof LPG and CNG as base fuel in motor vehicles

By amending Section 52 of MV Act 1988, provision has been made for use of LPG in vehicles. The use of LPG in Auto rickshaws and Light motor vehicles is being popularized. Department has already approved 42 LPG Kit models and given permissions for 76 retro fitment centres in Bangalore City and 271 retrofitment centers in Karnataka state. Encouragement is given for those who apply to open retro fitment centres. These centres fit approved LPG Cylinders to Auto rickshaws and Light Motor vehicles (Motor cars). Further, CNG fuel has been introduced in the state and 15 different types of CNG kits have been approved for installation in 2, 3 and 4 wheelers as well as trucks and buses. About 138 centers are functioning for fitting CNG kits to vehicles in the state. Further, CNG fuel has been introduced in the state in fifteen categories, and also CNG kits implemented for two wheeler, Three wheeler, Four wheeler, Trucks and Buses. In this regard, the government has given approval for the implementation of kits in vehicles in the state.

8.2 Implementation of networking of computerized pollution testing centres in Karnataka

Emission testing centres checks the levels of exhaust that emitted from motor vehicle to guide vehicle owners for rectification. The Transport Department Government of Karnataka has provided online networking facility to all the emission testing centers in Karnataka. This is achieved in Karnataka by means of software that provides test details of motor vehicles and it uploads online test data to a centrally located server. The Motor Vehicle Inspectors also cross check the test data of vehicle through website http://etc.karnataka.gov.in.

This project will cover approximately 3.10 crores vehicles. The existing Emission Testing Centres have been converted to the new system. This is a secured way to monitor the Emission data across state and it helps to take the necessary step to reduce pollution. The said system has been inaugurated in Bangalore City on 22-11-2010. From December 2016, the system of online networking of emission testing centres in the State is being maintained by the Transport Department.

8.3 Use of air pollution measuring equipments

Action is being taken by KSPCB and Forest-Environment and Ecology department to set up air pollution measuring equipments and to display the level of air pollution at important traffic junctions and other such places to make people aware about the polluting air and the details shall be published in all daily newspapers. Action in this regard is under progress. Regular Vehicle checks are organized through special squads. For monitoring the air quality in the Bengaluru city in association with KSPCB installation of CAAQMS station at RTO, Bengaluru (East) is under progress

8.4 Vehicular air pollution and noise pollution management initiative

Education

Awareness programs is being conducted for the public about the ill effects of air and noise pollution and control measures and also to check their vehicles for air pollution once in every six month / year and carry the Emission Under Control Certificate while using the vehicle on road.

November month is observed as pollution awareness and control month

Due to urbanization and industrialization the demand for Transport has also increased considerably. The exponential rise in petrol and diesel vehicles in turn has led to the deterioration of the air quality. Presently, some of the Indian cities recognised as most polluted cities in the world due to which there is an urgent need to bring awareness among general public regarding vehicular pollution. Every year, Transport Department observes November month as Air Pollution awareness month. In this regard various programmes are carried out during the November month, to enlighten the public on the ill effects of vehicular pollution.

8.5 Special training for the staff working at emission testing centres

Directions have been given to manufacturers and distributors of gas analyzer and smoke meters to give training for the staff at Emission Testing Centres. According to rule 231(b) of Karnataka Motor Vehicles Rules, 1989, all the Emission Testing Centres are being inspected regularly for their proper functioning. If defects are found at the time of inspection, notices will be issued to them to rectify the defects. If more defects are found and bad functioning is noticed, action is being taken to suspend or cancel the licences of those centers. **As on 31-03-2024, there are 653 centres in Bengaluru and 1,586 centres in other places. In all 2239 Emission Testing Centres are working in the State.** All the Emission testing centres are computerized for proper functioning and to check vehicles in a more scientific and transparent way.

8.6 Programmes / activities conducted for controlling of vehicular air pollution.

1) The action taken by the Ministry of Road Transport and Highways, New Delhi in making compulsory registration of Bharat Stage-VI is a major step in reforming the air quality level of the atmosphere.

2) The State of Karnataka is encouraging the registration of electric vehicles. In this regard, an MoU has been entered with BESCOM at a cost of Rs.4 crores so as to make convenient to the owners of electric vehicles by establishing 100 AC and 26 DC charging stations by the BESCOM in the following places of Bruhat Bengaluru Mahanagara Palike limits. These charging stations can be viewed through mobile app and the charging unit fee can be paid. Further, it is proposed to establish such charging units on Highways of the State

8.7 Development and encouragement of eco-friendly alternative fuels in vehicles

With a view to reduce vehicular air pollution, vehicle manufacturers are introducing new vehicles in the market with ecofriendly alternative fuels like electricity, battery operated, LPG, CNG etc. which are less or zero in emission of pollutants. To encourage and popularize the use of these vehicles, Department is assisting to get loans to battery operated vehicles through financial institutions.

The Government has proposed to promote ethanol mixed petrol as fuel to control air pollution in the State by selling the same through petrol bunks for which the oil companies and sugar manufacturing companies has to jointly workout the scheme. Further, M/s GAIL Gas Ltd, M/S AG& P city pvt ltd, M/S Maharashtra Natural Gas Limited has established CNG re-filling stations in Bangalore City and other part of the state. In order to control vehicular pollution and also to encourage the usage of CNG fuel, the Transport Department has granted permission to CNG retrofitment centres in Bangalore City and other part of the state.

8.8 Awareness programmes for vehicle users and control of air pollution.

It is also proposed and action being taken to hold awareness programmes to promote the use of battery / solar energy operated vehicles and granting license for opening of Emission Testing Centres at fuel dispensing stations.

8.9 Utilization of green tax

The amount collected under Green Tax is being used for programmes chalked out for control of air pollution by vehicles under the proper guidance of the Government. Air Pollution control awareness programs through theatre,LED vehicles, Railways LED, Radio jingles, Hoardings and Bus Shelters has successfully done through DIPR, Karnataka

8.10 Effective enforcement activities for control of air and noise pollution

Air-Pollution

During the year 2023-24 checking was conducted on polluting vehicles and 13,39,662 vehicles were checked, cases were booked against 57,051 vehicles and Rs.8.45 crores is collected as fine.

Noise-Pollution

During the year 2023-24 checking was conducted against noise polluting vehicles and 11,44,648 vehicles were checked, cases were booked against 34,106 vehicles and Rs. 9.05 crores is collected as fine.

8.11 Control of carrying overload in goods vehicles and public service vehicles.

The carrying of overload in goods vehicles by violating the permit conditions is the main reason for the vehicular air pollution and road accidents. In order to check this menace, the Transport Department has taken stringent and planned action by suitably instructing all the executive staff of check posts situated at the borders of the State. During the year 2023-24 as

many as 777677 goods vehicles have been checked, 5096 cases have been booked and 1168 vehicles seized and Rs 9.52 crore has been collected as fine for overload offences. As per Supreme Court directions fine is being enforced under Sec. 200 and excess load is being un-loaded from the vehicles in respect of 1877 cases

8.12 Vehicle Inspection and Certification Centre:

1. A fully functional Inspection and Certification Centre in Nelamangala established with the help of Ministry of Road Transport and Highway (MORTH) and ARAI, Pune. The centre is working successfully.

2. Inspection and certification centers at Mysore and Dharwad are operating successfully. 27 Annual Report 2023-24

3. To establish Vehicle Fitness Testing Centre At Chokkanahalli, Hesaraghatta Hobli, Bangalore, Government has approved revised estimate cost of Rs.894 lakhs. The project is implemented by BMTC. Civil work has been completed, installation of machineries is under progress.

4. Vehicles coming for Fitness Certificate renewal, will have to be mandatorily checked through **Automated Testing Station (ATS).** Steps have been taken to upgrade Vehicle Inspection and Certification Centers to Automated Testing Centers. And in 13 places of the state where land is available (Devanahalli, Tumkur, Kolara, Shivamogga, Davanagere, Belagavi, Gadag, Ranibennur, Vijayapura, Bagalkote, Bellari, Bidar and Yadgiri) under Design Build Finance Operate and Transfer (DBFOT) model and in 19 places where land is not available (four places in Bangalore, Chikkaballapur, Ramanagara, Mandya, Chamarajanagar, Hassan, Madikeri, Dakshina Kannada, Udupi, Chitradurga, Chikkamagaluru, Uttara Kannada, Kalaburagi, Raichur, Koppal and Hospet) have been given administrative approval to set up Automated Testing Centers (ATS) on Build Own Operate (BOO) model under PPP

As per the Government notification TD 187 TDO 2020, dated 03-02-2022, the Renewal of Fitness certificate for 2-stroke auto rickshaw plying in Bengaluru has been restricted. The notification can be found in **Annexure VI.**

8.13 Scrapping Policy

The Ministry of Road Transport and Highways has recently launched the visionary Voluntary Vehicle-Fleet Modernization Program (V-VMP). This Policy is aimed at creating an ecosystem for phasing out old unfit, polluting vehicles and replacing them with new safe and fuel-efficient vehicles. The Ministry has also notified the Registered Vehicle Scrapping Facility (RVSF) Rules vide Notification No.GSR 653(E) dated 23-09-2021 and GSR 695(E) dated 13-09-2022 to enable setting up of modern vehicle scrapping facilities in India which can recycle the vehicles in an environment friendly manner.

In this regards, Government of Karnataka has introduced the Registered Vehicle Scrapping Policy Karnataka 2022 on 30th December, 2022 vide Notification No. TD 191 TDO 2022 and the same has been published in the Department Website www.transport.karnataka.gov.in. 29 Annual Report 2023-24 The Department has granted Permission (Registration Certificate) to set up and operate a Vehicle Scrapping facility Centers in the State of Karnataka.

1. M/s Mahindra MSTC Recycling Pvt Ltd Vijayapura, Devanahalli Taluk, Bangalore Rural District.

2. **Suhas Automotive Private Limited**, Kolala Hobli, Vamachihalli Village, Koratagere Taluk, Tumkur.

Public can make use of these centers to scrap their old unfit vehicles on voluntary basis and can avail the rebate on road tax for their new vehicles at the time of registration against the submission of Certificate of Deposit(COD) issued by the Scrapping facility centres.

Up to December 2023, a total of 188 vehicles have undergone the scrappage process as part of this initiative. This figure includes 138 Two Wheelers and 50 Four Wheelers. The implementation of this policy signifies a significant step towards efficient vehicle disposal and recycling, contributing to the sustainable and responsible management of end-of-life vehicles in the region.

RVSF, Annual Capacity to dismantle vehicles are as follows:

- **"L" Vehicles: 10800 No's**
- **"M" Vehicles: 14400 No's**
- **"N" Vehicles: 300 No's**
- **Others: 300 No's**

Karnataka State Road Transport Corporation (KSRTC) as a public sector has adopted the scrapping Policy as below:

For ordinary vehicles: 09 lakh km

For Corona seater: 10 lakh km

For Corona sleeper: 11 lakh km

For Volvo vehicles: 13 lakh km

Bengaluru Metropolitan Transport Corporation (BMTC) as a public sector has adopted the scrapping policy of 8.5 lakh kilometres or 11 years whichever is earlier.

Table8.1: **The details of more than 15 years old vehicles in bangalore metropolitan city and karnataka state as on 31-03-2024**

SL NO	CATEGORY OF VEHICLE	BENGALURU URBAN DIVISON	KARNATAKA STATE
	NON TRANSPORT VEHICLE		
1	Two Wheelers	2145709	6913452
2	Cars	711824	1541640
3	Omni Buses	10018	20103
4	Tractors	20991	268324
5	Trailers	5561	150011
6	Construction Moving Equipment	648	2909
7	Private Service Vehicle	76	571
8	Other Vehicles	13890	28743
	TOTAL NON TRANSPORT VEHICELES(A)	**2908717**	**8925753**
9	**TRANSPORT VEHICLE**		
a.	Multi Axled/Articulated Vehicle	6782	10012
b.	Trucks and Lorries	107884	290011
	TOTAL	**114666**	**300023**
10	**LIGHT GOODS VEHICLES**		
a.	Four Wheeler	102314	302115
b.	Three Wheeler	34832	85434
	TOTAL	**137146**	**387549**
11	**Buses**	20771	20771
	TOTAL	**20771**	**20771**
12	**TAXIES**		
a.	Motor Cabs	40113	71861
b.	Maxi Cabs	23645	47921
c	Others	0	1
	TOTAL	**63758**	**119783**
13	**LMV PASSENGER**		
a.	Three Seater(A/R)	136224	322087
14	Other Vehicles	42841	91902
	TOTAL	**179065**	**413989**
	TOTAL TRANSPORT(B)	**515406**	**1285002**
	TOTAL (A)+(B)	**3424123**	**10210755**

(Source: 2023-24 Annual Report of Transport Dept)

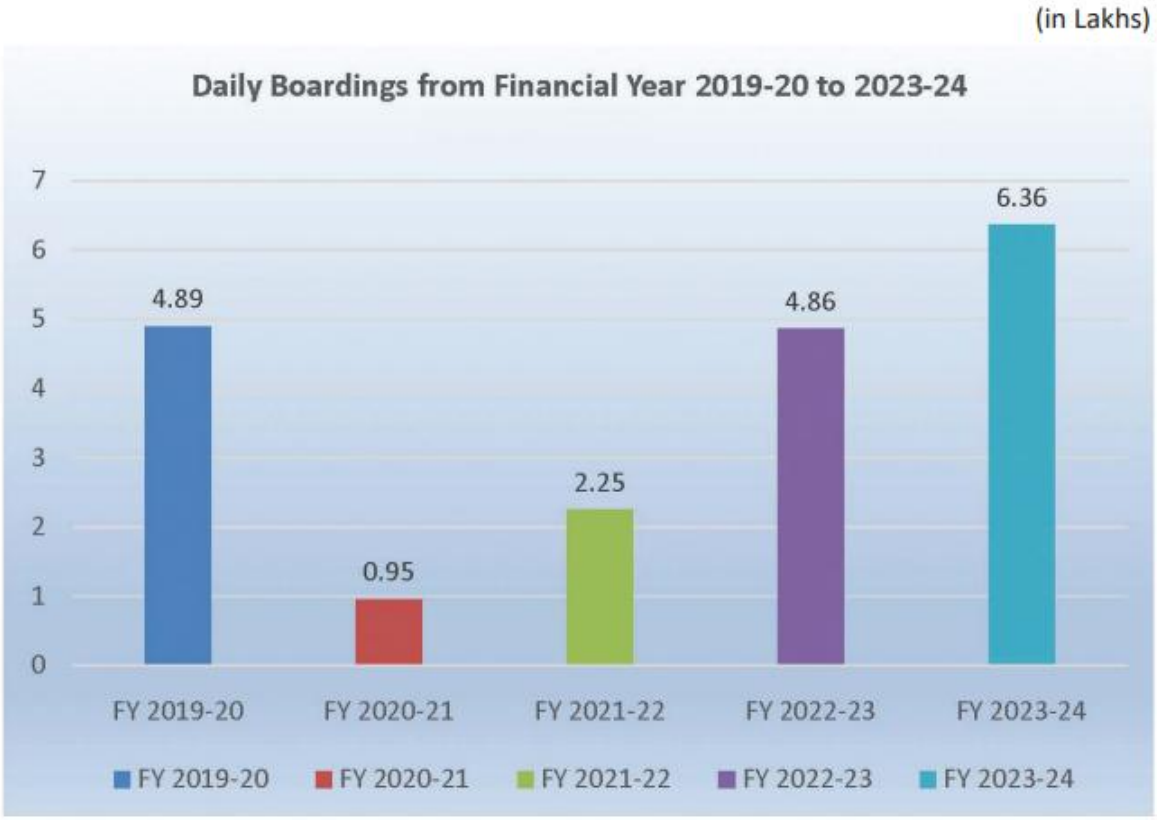
8.14 Policy/Scheme for Eco-Friendly Mass Rapid Transport Systems

Metro rail is a vital component of thetransformation of the urban transportscenario in India. With the urban populationcontinuously growing, there is a need for green solutions. Mass Rapid TransitSystems are fast, safe, and comfortable totravel. This alone will encourage people toswitch from personalized vehicles topublic transport.

The Hon'ble Prime Minister of India dedicated the two (2) stretches – Baiyappanahalli Metro Station to K.R.Pura Metro Station and Kengeri Metro Station to Challaghatta Metro Station to the nation, in a virtual event held on 20th October 2023 in the august presence of the Hon'ble Chief Minister and Hon'ble Deputy Chief Minister, Government of Karnataka, which was opened for the public on 9th October 2023. With the fully completed East-West Corridor, the operational Metronetwork increased from 70 KMs to 74 KMs comprising of 65

Stations. This also marked completion of 12 years of Namma Metro Operations. As on date, Bangalore Metro network is the 2nd longest in the Country. The BMRCL network average Boardings per day stood at 6.36 Lakhs per day.

The Comparative Position of Passenger Boardings from the Financial Year 2019-20 to 2023-24 is depicted graphically below:



South India's 1st Double Decker Flyover opens for Public South India's first Double Decker flyover from Ragigudda to Central Silk Board Junction built by your Company was opened for traffic on 17th July 2024, on trial basis. Shri D.K. Shivakumar, Hon'ble Dy. Chief Minister, Government of Karnataka along with Shri Ramalinga Reddy, Hon'ble Minister for Transport and Muzrai, GoK, took a trial run from Ragigudda to Central Silk Board Junction. This new flyover spans 5.12 KMs, and has reduced the traffic congestion in the Central Silk Board Junction. The feasibility of building a double-decker will be studied for other parts of the city where new Metro Lines are proposed.

First & Last Mile Connectivity

BMRCL has provided parking space at Metro stations facilitating commuters to park their vehicles and travel conveniently in the Metro network. A total of 1,09,995 sq.mt ofspace has been providedfor parking, in which 14,531 two wheelers and 2,641 four wheelers are being parked regularly. During the year, a total revenue of `13.07 Crore was earned from parking as against `8.62 Crore earned in the previous financial year, i.e., an increase of 34.05%.

BMRCL has entered into an agreement with BMTC to operate feeder bus services at all the Metro stations. During the year under review, a total of eight one (81) buses were introduced in the new routes. Majority of the buses are operating mainly from K.R. Pura to Central Silk Board for the convenience of IT Company employees, in addition to ninety-four (94) existing buses, which are under operation from various other Metro stations. More such services will be operated based on the demand. To encourage use of First & Last Mile connectivity, BMTC is providing information through QR Code which is being displayed in the trains & at Metro Stations exit. Your Company has also entered into agreement with Bangalore Traffic Police (BTP) to operate and manage Pre-Fixed Auto-fare booth system in the Metro stations. Two new Metro stations were identified viz., Konanakunte Cross Metro Station and Jayanagar Metro stations. BMRCL has provided the place to install Pedal port with cycle stands by DULT. DULT have installed the cycle stands in ten (10) Metro stations, this facility will be extended to other Metro stations.

Bangalore Metro Rail Project Phase-1

Metro services have been in operation 56 Km on the East-West corridor - 25.6 km long, starting from Baiyappanahalli in the East and terminating at Kengeri Terminal in the West and on 30.4 km North-South corridor commencing at Nagasandra in the North and terminating at Silk Institute in the South.

Bangalore Metro Rail Project Phase-2A andPhase-2B

BMRCL has initiated the process of setting up a separate Metro line from Central Silk Board Junction to Kempegowda International Airport via K.R.Puram and Hebbal on the Outer Ring Road and thereafter by the side of NH-44 with a total length of 58 Km and 30 stations. The GoK has approved the project and the sanction of the GoI was received on 07.06.2021 with a completion plan targeted for June 2026. The approved project cost for Phase-2A & 2B of the BMRC project is estimated at Rs.14,788.101 Crore. The physical progress upto July 2022 is 18.5%. The construction of Phase-2A & 2B is under progress in all packages. The entire network is programmed to be completed by September 2025.

Bangalore Metro Rail Project Phase-3

This Phase of the Metro Project covers 44.65 KMs at a cost of `15,611 Crore comprising of two (2) Metro rail corridors i.e. from: i) J.P. Nagar 4th Phase to Kempapura along Outer Ring Road west for a length of 32.15 KMs with twenty-one (21) elevated stations and ii) Hosahallito Kadbagere along Magadi Road for a length 12.50 KMs with nine (9) elevated stations. HasbeenapprovedbytheGovrenmentofIndiaon13th September2024andGovernment of Karnataka.

Phase-3A • This Phase of the Metro Project will cover 36.59 KMs of metro line from Hebbal to Sarjapur along the Sarjapur road with twenty-eight (28) elevated/underground stations at an estimated completion cost of `28,405 Crore. The Detailed Project Report (DPR) has been submitted by the Company to the State Government for their approval.

8.15 Policy for augment e-vehicles

Karnataka is encouraging the registration of electric vehicles. In this regard, Transport Department hasentered MoU with BESCOM at a cost of Rs.4.0Crores to make it convenient to the owners of electric vehicles by establishing 100 AC and 26 DC charging stations by the BESCOM withinBBMP limits. These charging stations can be viewed through a mobile app and the charging unit fee can be paid. Further, it is proposed to establish such charging units on Highways of the State. To promote the use of electric vehicles and to control air pollution 1190 charging stations are under development, the proceedings of the GoK can be found in **Annexure VII**.

BMTC has already incorporated 90 electric buses in its fleet, a financial provision of Rs.50.0 Crores was provided by Bengaluru Smart City Limited (BenSCL) and Rs.25.0 Crores is being utilized.A fleet of 300 electric vehicles is incorporated for which a financial provision of Rs.157.0 Crores is being provided under the FAME II scheme, implemented in April 2019 by the Department of Heavy Industries, Govt. of India and Rs.20.0 Crores is being utilized. BMTC has a vision of replacing all diesel buses with electric buses by 2030. Also Rs 76 Cr has been released to BMTC under XVFC grants for BBMP which is used for purchase of 127 E-buses.

Similarly, KSRTC has incorporated 50 electric buses in its fleet, a financial provision of Rs.27.50 Crores was providedunder the FAME II scheme and Rs.5.5 Crores is being utilized.

Further, 148.17 kms construction has been planned in 4 Sub-Urban Rail Corridors under Bengaluru Sub-Urban Rail Project at Rs. 15,767 crores, taken up by K-RIDE which will benefit Rs.8.9 Lakhs commuters daily. (Economic Survey annual report).

8.16 Bengaluru Sub-Urban Rail Project

Bengaluru Sub-Urban Rail Project at a completion cost of Rs. 15,767 Crores has been taken up for implementation through a joint venture company K-RIDE. Under the project a total rail route of 148.17 kms will be constructed in four Sub-Urban Rail Corridors as detailed below;

Corridors	Section	Length in Kms.
Corridor -1	Bengaluru- Devanahalli	41.40
Corridor -2	Byappanahalli- Chikkabanavara	25.01
Corridor -3	Kengeri- Bengaluru Cantonment	35.52
Corridor -4	Heelalige - Rajanukunte	46.24
	Total	**148.17**

The project's implementation will be completed in 6 years and is expected to provide affordable and sustainable transport to around 8.9 lakh commuters daily and boost transit-oriented development. Civil work for corridor–II of 25 km from Byappanahalli to Chikkabanavara has been awarded to L&T with a completion period of 27 months and implementation of preliminary works are in progress. Besides tenders for civil works for corridor IV from Heelalige to Rajanukunte and procurement, operation and maintenance of rolling stock on PPP mode has also floated.

9 Construction& Demolition Waste and Road Dust Management

9.1 Implementation of Construction & Demolition Waste Management Rules, 2016.

The Ministry of Environment, Forest and Climate Change (MOEF & CC) has notified "The Construction and Demolition (C&D) Waste Management Rules, 2016" vide GSR 317 (E); dated 29th March 2016, and as per Rule (6) of C&D waste Management Rules, 2016 the local authority shall,-

1) Issue detailed directions with regard to proper management of Construction and Demolition waste within its jurisdiction in accordance with the provisions of these rules and the local authority shall seek detailed plan or undertaking as applicable, from generator of construction and demolition waste;
2) Chalk out stages, methodology and equipment, material involved in the overall activity and final clean up after completion of the construction and demolition;
3) Seek assistance from concerned authorities for safe disposal of construction and demolition waste contaminated with industrial hazardous or toxic material or nuclear waste if any;
4) Shall make arrangements and place appropriate containers for collection of waste and shall remove at regular intervals or when they are filled, either through own resources or by appointing private operators.
5) Shall get the collected waste transported to appropriate sites for processing and disposal either through own resources or by appointing private operators;
6) Shall give appropriate incentives to generator for salvaging, processing and or recycling preferably in-situ;
7) Shall examine and sanction the waste management plan of the generators within a period of one month or from the date of approval of building plan, whichever is earlier from the date of its submission;
8) Shall keep track of the generation of construction and demolition waste within its jurisdiction and establish a data base and update once in a year;
9) Shall device appropriate measures in consultation with expert institutions for management of construction and demolition waste generated including processing facility and for using the recycled products in the best possible manner;
10) Shall create a sustained system of information, education and communication for construction and demolition waste through collaboration with expert institutions and civil societies and also disseminate through their own website;
11) Shall make provision for giving incentives for use of material made out of construction and demolition waste in the construction activity including in non-structural concrete, paving blocks, lower layers of road pavements, colony and rural roads.

The Government of Karnataka has taken note of the draft Construction and Demolition Waste Management Rules, 2024 issued by the Ministry of Environment, Forests and Climate

Change, Government of India. The said rules are in the draft stage and are open for public comments. Upon finalisation of the Construction and Demolition Waste Management Rules, 2024, relevant changes will be made to Karnataka State Policy and Strategy on Construction and Demolition Waste to make it in line with the Construction and Demolition Waste Management Rules, 2024.

Existing facility:

1) M/s. Rock Crystals has obtained consent and authorization from KSPCB for operating 1000 TPD C & D processing facility at Chikkajala, Bengaluru.
2) M/s. Rubble Revival Pvt. Ltd., has obtained consent from KSPCB for operating 22500 MT/M C & D processing facility at Sy. No. 50, Kannur Village, Bidarahalli Hobli, Bengaluru East Taluk, Bengaluru Urban District.

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

Karnataka State Policy and Strategy on Construction and Demolition Wastehas made a penalty provision for noncompliance, once the policy is notified, penalties will be applicable. The Karnataka State Highways Improvement Project (KSHIP) has no such provision made under the concession agreement. Further, the authority can suspend the whole or part of the work for environmental reasons after the recommendation of the Independent Engineer.

9.3 Maintenance, repair, and paving of State highways

Maintenance of roads is carried out regularly to keep the roads in good condition. The shoulders of roads are either compacted earthen or paved surfaces where dust is not emitted.

9.4 Schemes for development of green belt/open spaces and street sides greening on State highways[1]

Greening is an integral part of the Concessionaire Agreement. The guidelines followed for greening in National Highway Authority of India (NHAI) projects are IRC: SP: 21-2009 and Green Highways (plantation, transplantation, beautification & maintenance), Policy-2015.

As per the information received from the various Regional Offices of NHAI in the State, it is estimated that 4,64,891 avenues of plantation (plantation on both sides of the road) and 10,20,895 median of plantation are being carried out[1].

[1]Information received by NHAI via Letter No. NHAI/RO-BNG/GHM/25057/5/2021-22/1438 dated: 22.07.22

9.5 Greening of open spaces/parks developed:

9.5.1 Roadside Plantation Scheme:

Karnataka State has an area of about 4000 km of national highway, 21,000 km of state highway and 38,000 km of district roads under various afforestation programmes. In the year 2023-24, a grant of Rs.3048.803 lakh has been allocated, of which Rs.1409.901 lakh will be spent on carrying out plantation maintenance work of 1218 km and raising of plantation of 485.26 km and advance work for 1399 km by the end of November-2023.

9.5.2 Greening of Urban Areas:

The main objective of this scheme is to reduce the effects of pollution caused by the high concentration of people, vehicles and industries in urban areas by planting ornamental, shade-giving and fruit-bearing trees. Tree parks, wood lots and avenue plantations are also established in towns and cities to improve aesthetics. In the year 2023-24, a grant of Rs.1215.957 lakh has been provided and expenditure upto the end of November-2023 is Rs.512.195 for maintenance of 1418.50 kms plantation, maintenance of 1.025 lakh seedlings, raising of 247.40 kms plantation has been undertaken.

9.5.3 Hasiru Karnataka:

With more emphasis on social forestry, indigenous species of trees will be extensively planted on government lands around small hills, mangroves and lakes. In this regard, it has been announced to implement the “Green Karnataka” program in the budget of 2018-19 with an expenditure of Rs. 10.00 crore to grow a tree for every house, a forest for a village, a small forest for a taluk, and a forest for a district, with the active involvement of school and college students and environmental organizations. An amount of Rs. 202.053 lakh is allocated for the year 2023-24 under the Green Karnataka scheme. Out of which Rs. 89.647 lakh is spent upto the end of November 2023, for maintenance of 975 ha plantation.

9.5.4 Afforestation in Other Areas:

During road widening on state and national highways, trees across the road are felled. For planting saplings in place of the said trees, deposit the prescribed amount from the utility companies like K-Ship, KPTCL, KRDCL and other utility companies to account number 0406-01-800-0-08-000. In the year 2023-24, a grant of Rs.1000.00 lakh have been allocated and Rs. 666.64 lakh is released out of which Rs. 347.429 lakh is spent upto November 2023, to carry out afforestation works such as advance work, Raising and maintenance of plantations etc as per rules within the limits of the amount paid by the User Agencies.

9.5.5 Tree Park Scheme and Smruthivana Nirmana:

The Scheme is to provide better environment to public in urban areas. Under this scheme, it was envisaged to set up tree parks in each of district and talukas headquarters and forest or Non-forest land or any other community land, wherever there is more population and these Tree parks may be useful to the public, in each taluk place. An amount of Rs.2000.00 lakh is provided during 2023-24, out of which Rs. 1909.062 lakh has been allocated to Tree Park scheme and remaining amount of Rs. 90.938 lakh is allocated under Smruthivana Scheme. Total Rs. 1250.00 lakh have been released and Rs. 718.697 lakh expenditure was incurred upto the end of November 2023 for the programme, out of 181 Tree-parks, 146 Tree-parks maintenance and 13 New Tree parks were undertaken.

9.5.6 Development and Preservation of Devarakadu (Dyvivana):

The Devarakadu Forests are very unique and significant from religious and ecological points of view. This scheme has been introduced to conserve the valuable eco-systems in their pristine conditions as sacred groves, allowing them to have their natural evolutionary process continue without any disturbance. This scheme has been started to construct and develop one Daivivana in each district. In 2023-24, Rs. 300.00 lakh has been provided and Rs.150.00 lakh was released, out of which Rs.58.55 lakh has been spent upto November 2023. for the programme, out of 91 Devarakadus, 32 Devarakadus maintenance and 6 New Devarakadus are being carried out.

9.5.7 Medicinal Plants Conservation Areas & Medicinal Plants Development Areas (MPCA & MPDA):

Under the scheme, revitalization of Medicinal Plants Conservation Areas and Medicinal Plants Development, areas in the forest areas being implemented and also conserving endangered species, myristica swamps. During 2023- 24, a target of Rs.130.00 lakh has been made and Rs.64.99 lakh was released, out of which Rs.49.09 lakh was spent up to November-2023.

9.5.8 Forest Protection Natural Re-generation and Cultural Operations:

An amount of Rs.1070.00 lakh has been allocated for fire protection works and Engaging Fire Watcher, Creation New Fireline, Maintenance existing fire line, Procurement of Fire Fighting Equipments, Awareness Programme, SMC Work. Accordingly, allocations are made to the unit offices. Up to November-2023 is Rs. 178.33 lakhs has been released and Rs. 137.68 lakhs has been spent.

9.5.9 Nagaravana Scheme:

In recent days due to modernization pollution is being increased drastically in towns and cities. This results in health hazards and great impact on daily activities of human. In order to control and to provide eco-friendly environment, to increase green cover and to develop bio-diversity Department of Forest and climate change, Government of India has proposed to implement a scheme titled Nagaravana in towns and cities. Government of India has approved the work programme for Rs.372.08 lakh for implementing the scheme at Uplam area of Kalburgi Division, Bhuthanal in Vijayapara Division, Muddinkoppa area of Shivamogga Division and Malvi in Vijayanagara Division and released Rs.260.44 lakh has 1st installment. The same has been released to the above implementing officers for incurring the expenditure.

(Source: Economic Survey of Karnataka annual report 2023-24)

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

To monitor the management of the C & D waste generated by institutions, residential and commercial establishments, KSPCB has issued a notification Vide No. PCB/031/C&D/2016/5753 dated 30.01.2019 (**Annexure-VIII**). In this regard all the Regional Officers are required to follow:

1. Collect the information regarding the estimated quantity of construction and demolition waste proposed to be generated and managed during the time of CFE and get certification in case of demolition activities.
2. Collect the information regarding the quantity of construction and demolition waste generated and managed during the time of CFO and collect certification regarding the management of the said waste and verify, and enclose the certificate while forwarding the consent application
3. RSEOs and ROs shall monitor the implementation of construction and demolition waste management rules 2016, by the bulk generators.

ULBs may also propose imposition of User Fee as per Rule 3(54) of SWM Rules 2016 on the waste generation to cover full or part cost of providing solid waste collection, transportation, processing and disposal services. Pertaining to C&D waste, Section 4(5) of C&D Waste Management Rules 2016 mandates thatevery waste generator generating more than 20 TPD or 300 TPM shall have to pay for processing and disposal of C&D waste. The total expected income from imposition of user fee for SWM and C&D waste and SWM processing in Bengaluru alone is around Rs.1030 Crores.[2]

[2]Karnataka Economic Survey Report 2023-24

10 Emission from burning of waste

10.1 Notification and Enforcement of Municipal Solid Waste (MSW) management rules/Policy for MSW management

A direction under section 5 of the Environment (Protection) Act, 1986 for implementation of the Solid Waste Management Rules, 2016 is issued vide No. KSPCB/SEO-WMC/MSW/4421 dated 01.12.2021 **(Annexure IX)**by KSPCB.

Status of implementation of the Solid Waste Management Rules, 2016 is given Table 10.1 below:

Table 10.1: Status of implementation of the Solid Waste Management Rules, 2016

Local Body	**Total Numbers**
Metropolitan City Corporation (BBMP)	1
City corporations	10
City Municipal Corporations	61
Town Municipal Corporations	124
Town Panchayaths	115
Notified Area Committee	4
Total	315

Quantity of waste Generated in Urban Local Bodies (ULBs) of Karnataka : 12140 TPD

Quantity of waste Collected in ULBs of Karnataka : 12123 TPD

Quantity of waste Segregated and transported in ULBs of Karnataka : 6416.5 TPD

Quantity of waste Processed in ULBs of Karnataka : 6639 TPD

Quantity of waste Disposed in secured landfill in ULBs of Karnataka : 3405 TPD

Solid waste processing facilities operational

Composting : 188

Biogas : 13

Disposal of solid waste

Land fill sites identified : 277

Landfill operational : 182

Solid waste dumpsite

Total number of existing dump sites: 201

To Secretary, Urban Development Department:

i. Provide upgraded information w.r.t Direction dated 20.12.2021 regarding bio- mining issued to All Urban Local bodies of Karnataka. It is to be ensured that updated information w.r.t at least all Metro cities is provided in accordance with NGT Directions.

To conduct comprehensive risk assessment studies and accordingly prepare detailed On-site Emergency Plan for each dumpsite located in their jurisdiction addressing the following issues:

a) The onsite emergency plan to cover potential risks/emergencies due to fire, obnoxious / flammable emissions, odour, vector borne diseases, rodents, bird nuisance, seasonal affects i.e. summer / winter / monsoon (rainy season) and all other potential risks at the dumpsites.

b) The onsite emergency plans to address the worst possible case scenarios preferably using appropriate risk assessment software covering any or all of the potential emergency issues / scenarios cited above.

c) The on-site emergency plan to contain detailed remedial measures both hardware and software based for mitigating various emergency situations, which should finally be available with respective control rooms and on-site emergency notice boards.

d) The on-site emergency plan to contain detailed remedial measures both hardware and software based for mitigating various emergency situations, which should finally be available with respective control rooms and on-site emergency notice boards

To Deputy Commissioners:

a) Integrate dumpsite On-site Emergency Plans with the existing Off-site District Disaster Management Plans in compliance with Rule 14 of the Manufacture, storage and Import of Hazardous Chemicals Rules, 1989

To Karnataka State Disaster Management Authority:

a) Prepare the on-site & off-site (or update off-site) emergency management plans preferably through an expert agency on the subject

b) The following interim measures to be implemented on priority till the time On-site/Off-site Emergency Plans are prepared and implemented.

a) Disposal of waste: Fresh waste not to be disposed at the dumpsite where bio-remediation is being undertaken. Organic waste from slaughter house, fish market etc., industrial waste not to be disposed at the dumpsite. It is to be further ensured that industrial waste/E-waste/lithium battery is not dumped at the site. Waste that is being unloaded at the site should be examined visually for potential fire sources when located, should be neutralized with cover material immediately. Emergency tipping area to be provided to set aside from the immediate working area where incoming loads of material known to be on fire or suspended of being so can be deposited, inspected and dealt with. Adequate compacting of waste to be done to minimise formation of air or methane pockets which can lead to subsurface fire at site.

b) Monitoring at dumpsites: Methane Gas Detectors (on downwind side) to be installed at site so that area with high methane concentration can b identified and preventive actions be undertaken. Further temperature at windrows to be monitored with non-contact infrared thermometer and records be maintained for any major deviations. The temperature is to be in the 35^{o}C to 59^{o}C. Treated leachate water to be sprayed on the waste when rise in temperature is observed at the bio-remediation site. Suitable mechanism to be in place. Installation of CCTV cameras at the site and provision of fencing & frequency patrolling to be done for checking unauthorised entry at dumpsite.

c) Arrangement of Fire Extinguishing: Arrangement for adequate storage of sand /chemical fire extinguishing medias such as foam or powder at site to be made to douse fire in case a fire incident is reported. Usage of water for dousing fire to be avoided. Isolation and allowing rapid natural burnout or smothering with soil to be done for dousing dumpsite fires. Dedicated fire tenders (Preferably chemical extinguishing media) and adequate fire safety measures are to be deputed, specifically during summer season which dumpsite fire is more likely to take place. All mobile equipment or vehicles should be fitted with fire extinguisher and spark arrester.

d) Health & Safety of Workers: Fire protection measures and safety equipment to be provided to all workers at the site and checked before entry to the dumpsite. Workers to be trained for detection of fire and necessary action to be taken in case of fire. Periodic training of workers be conducted in safe handling of Waste, PPEs, Health and Safety issued etc.,

e) Mock Drills & safety audits: Periodic mock drills to be conducted to prevent fire accidents at dumpsite. Quarterly, fire safety and hazardous emission audits to be conducted.

The directions for Deputy Commissioners are as follows:

1. Deputy Commissioner shall hold a review meeting as per section 12 (b) of the SWM Rules, 2016, and GoK Order No. FEE07 ENG 2019, dated 13.02.2019, and take corrective measures in consultation with the Commissioner or Director of Municipal Administration or Director of local bodies and Secretary-in-charge of the State Urban Development.
2. Facilitate identification and allocation of suitable land for setting up solid waste processing and disposal facilities to local authorities.
3. Take necessary actions with the directions issued by the Hon'ble NGT in O.A.606/2018 from time to time.

For Urban Local Bodies (ULBs):

1. Comply with Rule 15 of SWM Rules, 2016.
2. Segregation of waste at source is to be made mandatory for ensuring the safe disposal of MSW. Wet waste should be composted and dry waste should be sent to a Material Recovery Facility (MRF) for further segregation and usage.
3. Every ULB shall adhere to applicable Guidelines issued by CPCB.

(Source: KSPCB Annual report 2023-24)

10.2 Policy for legacy waste management at dumpsites

As per the SWM Rules – 2016, guidelines have been issued to convert legacy waste landfill sites to useful sites by doing Bio-Mining. A grant of Rs.100.00 Crores for biomining of the Mandur landfill site is given. The work is initiated and biomining of nearly 100 Acres of land will be taken up subsequently, the said land will be planned to develop as a biodiversity park. It is planned to take up bioremediation of the landfill site at Bellahalli to make use of 22 acres of land.

Table 10.1: District-wise SWM in Karnataka (Excluding BBMP)

District	Waste Generation					Waste processed		
	Wet Waste (TPD)	Dry Waste (TPD)	Drain Silt and other inert	Total MSW (TPD)	C&D waste (TPD)	Wet waste (TPD)	City Compost generated (TPD)	Dry waste (TPD)
Bellary	155	99	28	282	20	79	8	33
Vijaynagara	108	69	20	196	39	58	6	7
Davanagere	129	82	23	235	57	113	11	54
Bengaluru (R)	74	47	14	135	31	44	4	14
Mandya	76	49	14	139	26	30	3	13
Kodagu	23	14	4	41	7	13	1	2
Chamarajanagara	40	26	7	73	15	6	1	3
Dharwad	256	163	47	466	96	215	22	96
Vijaypura	127	81	23	231	53	46	5	12
Haveri	72	46	13	131	34	33	3	11
Kalaburagi	199	126	36	361	33	191	19	93
Gadag	81	52	15	148	33	39	4	20
Udupi	64	40	12	116	21	55	6	24
Bagalkote	130	83	24	237	55	85	9	46
Yadgir	47	30	8	85	24	17	2	9
Bengaluru U	89	56	16	161	30	56	6	28
Tumkuru	140	89	25	255	52	97	10	43
Kolar	122	78	22	222	40	67	7	20
Ramanagara	69	44	13	126	20	28	3	15
Shivamogga	175	111	32	318	56	173	17	63
Chikkaballapura	59	37	11	107	25	27	3	11
Uttara Kannda	68	43	12	124	31	62	6	13
Belagavi	307	195	56	557	131	233	23	104
Bidar	91	58	17	166	35	52	5	22
Chitradurga	71	45	13	129	27	61	6	11
Dakshina Kannda	238	152	43	434	74	288	29	79
Mysuru	314	200	57	571	112	344	34	158
Raichur	121	77	22	220	49	68	7	8
Chikkamagaluru	63	40	11	114	20	42	4	3
Koppala	67	42	12	121	28	53	5	13
Hassana	77	49	14	140	35	78	8	4
TOTAL	**3652**	**2324**	**664**	**6640**	**1308**	**2755**	**276**	**1032**
Details of BBMP								
BBMP	3025	1925	550	5500		2150	218	650

Table 10.2: Karnataka State Total Waste Generation, including BBMP (TPD)

Karnataka State Total Waste Generation (TPD)	Waste Generation					Waste processed		
	Wet Waste (TPD)	Dry Waste (TPD)	Drain Silt and other inert	Total MSW (TPD)	C&D waste (TPD)	Wet waste (TPD)	City Compost generated (TPD)	Dry waste (TPD)
313 ULBs	3652	2324	664	6640	1308	2755	276	1032
BBMP	3025	1925	550	5500	0	2150	218	650
Grand Total	**6677**	**4249**	**1214**	**12140**	**1308**	**4905**	**494**	**1682**

10.3 Policy for implementation of the ban on single-use of plasticsand Implementation of the Plastic Waste Management Rules, 2016:

The MoEF & CC has notified the Plastic Waste (Management and Handling) Rules, 2016 which is in effect from 18th March 2016. The prescribed authority for enforcement of the provisions of these Rules related to registration, manufacture of plastic products, multi-layered packaging, processing, and disposal of plastic wastes is SPCB.

State Initiative: The Forest, Ecology and Environment Secretariat, GoK vide Notification No. FEE 17 EPC 2012, Bengaluru, dated 11.03.2016**(Annexure IX)** in the exercise of the powers conferred under the Environment (Protection) Act, 1986, issued directions imposing a ban on the manufacture, supply, sale, and use of plastic carry bags, plastic banners, flex, plastic flags, plastic plates, plastic cups, plastic spoons, cling films and plastic sheets used for spreading on dining table including the above items made out of thermocol and plastic which use plastic microbeads in the Karnataka State. In the said notification of GoK, the role of KSPCB is enforcement regarding functions specified in clause (a) of Rule 4 of the Plastic (Management & Handling) Rules, 2011.

The Board has initiated the following action against violating industries in 2021

1. Closure directions issued - 104
2. Notice of proposed directions issued - 36
3. Criminal cases filed for violations
    a. Bellary - 09
    b. Mysuru - 03

- KSPCB has conducted raids at different places in the State in coordination with Local bodies.Violation of Rules has been observed and the director of municipal administration has conducted 8357 raids, Rs.88,77,318/- fine has been collected and about 2205 tons of banned plastic seized during raids (As per CPCB).
- KSPCB has permitted ten cement industries to co-processing of plastic waste in their kilns.Approx. 49056 TPA of low-value plastic is supplied to cement plants. Approx. 73584 TPA is supplied for recycling.
- As per Plastic Waste Management Rules, 2016 plastic waste recyclers require registration. As of 31-03-2021, the KSPCCB has given authorization to 83 plastic waste recycling units.

Further, the Ministry of Environment, Forest and Climate Change (MoEF & CC), has amended the Plastic waste Management Rules, 2016 Notification dated: 12th August, 2021 on banning of identified Single use Plastic (SUP) items with effect from 1st July 2022. The manufacture, import, stocking, distribution, sale and use of following Single Use Plastic (SUP), including polystyrene and expanded polystyrene commodities shall be prohibited;

a) *ear buds with plastic sticks, plastic sticks for balloons, plastic flags, candy sticks, ice-cream sticks, polystyrene [Thermocol] for decoration;*

b) *plates, cups, glasses, cutlery such as forks, spoons, knives, straw, trays, wrapping or packing films around sweet boxes, invitation cards, and cigarette packets, plastic or PVC banners less than 100 micron, stirrers.*

Board is regularly conducting inspections/raids of different entities in the State in co-ordination with Local bodies and the details of quantity of Banned SUP seized and penalty imposed till date are as follows:

Number of entities inspected	15106
Total quantity of plastic seized	164.7 MT
Total amount of fine imposed	Rs. 73,23,140/-

The Ministry of Environment, Forest and Climate Change (MoEF & CC), Government of India has notified guidelines on Extended Producer Responsibility (EPR) for Plastic Packaging on 16.02.2022 as 4th amendment to Plastic Waste Management Rules, 2016 under Environmental (Protection) Act, 1986.

The CPCB has launched Centralized EPR portal on April, 5th 2022 to facilitate process of registration of Producers, Importers, Brand owners (PIBOs), Plastic Waste Processing Facilities (PWPs) like Plastic Waste Recyclers, Plastic Waste to Energy Processers, Plastic Waste Co-processors and issued directions to all SPCBs/PCCs to process the registration application through Centralized EPR portal.

The Board has taken action to register PIBOs and PWPs under CPCB centralized EPR portal and the details of the registered PIBOs and PWPs units during 2023-24 are as follows.

Number of registered PIBOs	Brand Owners	103
	Producers	299
	Importers	465
Number of registered PWPs	Plastic waste Processors	94

10.4 Policy for development and Construction of Waste to Energy Plants[3]

BBMPhas spread across a 709 sq. km. area and has a population of 1.30 Crores. The total quantity of waste generated from domestic generators, commercial waste generators, and

[3,15]UDD Annual Report 2022-23

bulk waste generators is approximately 5500 MTPD. It is the duty of BBMP and the Government to carryout day-to-day management of solid waste.

In the BBMP area, the quantity of waste generated from domestic waste generators and small establishments (excluding bulk waste generators) is around 4000 to 4500 MTPD. To do scientific collection, transportation, and processing of this waste vide G.O. No. UDD/150/MNY/2019 dated: 04-11-2019 under the "Shubra Bengaluru" Project the Government sanctioned Rs.999.00 Crores for the year 2019-20, 2020-21, and 2021-22. This allocation of funds is purely provided for the creation of SWM Infrastructure.

Under these Shubra Bengaluru, Waste to Energy Plant of capacity 11.5 MW power generation with 600 MT of RDF waste to be provided by BBMP and executed by M/s. KPCL at Bidadi. The work is under progress at a project cost of Rs.260.00 Crores. The cost-sharing for the project is 50:50 to be shared between KPCL and BBMP.

This is the Karnataka's first waste-to-energy plant operational. Rs 260-crore, 11.5-MW plant will have an annual operation period of 7,500 hours and will bear 75% of the load in year one.The plant is expected to help BBMP dispose of 25% of solid waste generated by the city in a scientific and sustainable way. The annual report of the urban development department for 2022-23 claimed that the state govt has already paid Rs 50 crore to KPCL under the Shubhra Bangalore scheme for the plant.

The first set of waste loads will come from Mandur. The primary criterion is the waste has to be dry. "The electricity generated at the plant will benefit 2 lakh houses, and ash a residue will be used as material to line walls,".

Additionally, a smaller 200 TPD Waste-to-Energy plant is being developed by NTPC in Dharwad City Corporation.

Wet Waste Management

At present, out of 6677 TPD, wet waste generated in Karnataka only 4905 TPD is converted into 494 TPD of compost, which is sold to farmers in coordination with the Department of Agriculture. BBMP generates around 5500 TPD of waste generated out of this, 3025 TPD is wet waste, and 2150 wet waste is processed to 218 TPD of compost which is sold to farmers in coordination with the Department of Agriculture. In other ULBs, 6640 TPD of waste is generated, out of this 3652 TPD is wet waste. 2755 TPD wet waste is treated and 276 TPD of compost is produced. Mysore, Hubli-Dharwad, Kalaburagi, Davanagere, Vijayapura, Mangalore, Shivamogga City Corporations are generating 137 TPD of compost per day. Other ULBs are producing compost in small scale adopting technologies like Windrow compost, Vermicompost, pipe compost etc. Under Swachh Bharath Mission and other schemes all ULBs are establishing the basic infrastructure required for complete processing of waste.

Dry waste Management

4250 tonnes of dry waste is generated daily in urban areas of the state, about 400 tonnes are recycled daily and last year 15,252 tonnes of dry waste was used for cement manufacturing units. An action plan to set up Material Recovery Facility in all urban institutions for managing 4700 tons of dry waste every day under the Swachh Bharat Mission scheme has been approved for scientific management of dry waste.

RDF produced from the dry waste generated from domestic and commercial activities includes biodegradable and non-biodegradable combustible materials. RDF with a calorific value higher than 2000 Kcal/Kg would form a good alternative source of energy in cement industries or it can be incinerated in waste-to-energy plants. Further, in the 'Guidelines on Usage of RDF in Various Industries' by the Ministry of Housing and Urban Affairs, RDF has been valued at a suggestive price of Rs.600.00 to Rs.2400.00 per tonne, which could form a continuous revenue source for ULBs.

Districts like Bengaluru Urban, Mysuru, Shivamogga, Dakshina Kannada, Belagavi, Bagalkot, Vijayapura, Uttara Kannada and Kalburgi recycle more than 40 TPD of dry waste. However, in districts like Bengaluru Rural, Dharwad, Kodagu, Davanagere, Chikkaballapur, Mandya, Chamarajanagar, Hassan, Chikkamagaluru, Raichur and Koppal recycle of dry waste is inadequate. BBMP has proposed major projects of 'Waste-to-Energy', which are in the early inception stages. There is a large scope for valorising the remaining of dry waste, which is otherwise land filled and causes a serious environmental problem.

b) Bio-Methanation/Bio CNG

Establishment of Bio- Methanation Plants of capacity 5 TPD to 50 TPD at various locations in BBMP at a project cost of Rs.40.00 Crores are planned to construct. To process wet waste, 5 ton capacity Bio–methanization plants are being established at 16 locations, out of which 4 have been made functional. The biogas generated from these plants is being utilized to light the street lights in that locality.

GAIL India Ltd., has proposed setting up 300 Tonnes per day (TPD) capacity Compressed Bio Gas (CBG) Plant in North Bengaluru at their cost. It is been proposed to utilize 300 TPD of segregated wet waste from BBMP and convert this into Compressed Bio Gas and Manure. The CBG produced will be utilized in CNG stations for fueling vehicles or the GAIL GAS Bengaluru's CGD network. The Infrastructure Development Department is encouraging the CGD entities to develop CBG plants in the districts along with the municipal corporations.

Further, GAIL Gas Limited is planning to set up 15 compressed biogas (CBG) plants across 15 districts in the state of Karnataka at an investment of Rs 4.5 billion.

Besides, it has sought the state government's approval for setting up the plants.

The plants will have the capacity to process 100 tonnes per day (tpd) waste. While the municipal corporations will provide land for the plants and supply wet waste, GAIL will bear the operational costs.

c) Composting plant etc.

To achieve 100% processing of waste, Government has sanctioned six new facilities. These new facilities are being set up at the following locations:

1) Kanahalli - 500 TPD
2) Seegihalli - 200 TPD
3) Doddabidarakallu - 200 TPD
4) Lingaderenahalli - 200 TPD
5) Subrayanpalya - 200 TPD
6) Chikkanagamangala - 500 TPD
7) KCDC(upgradation) - 500 TPD

Out of the above 4 plants have started functioning (Kanahalli, Seegihalli, Doddabidarakallu and Lingaderenahalli) remaining 3 plants are expected to start functioning in 2025.

10.5 Waste collection & waste segregation status in the city (%)

As reported by the DMA, 97% of door-to-door waste collection is achieved in 6739 wards out of 6932 wards and 4865wards (77%) of source segregation is achieved. 7154.22 (64%) tons of Municipal Solid Waste is processed daily (out of 11085 TPD total waste generated in the State).

10.6 Material Recovery Facility (MRF)

As reported by the DMA, 55 MRFs have been completed and 309 new MRFs are targeted to be developed in the 309 ULBs for an allocated fund of Rs.362.47 Crores by March 2026.

10.7 Waste to compost plants

As reported by the DMA, 185 Waste to compost plants have been completed and 124 new plants are yet to be developed to achieve the target of 309 ULBs for an allocated fund of Rs.214.18 Crores by March 2026.

10.8 Remediation of the dumpsite in the city

As reported by the DMA, remediation of 5 dumpsites is ongoing and additional 190 dumpsites are yet to be remediated to achieve the target in 195 ULBs for an allocated fund of Rs.451.83 Crores.

10.9 Control open burning of MSW

As per the notification, FEE 6 ENG 2017(**Annexure X**), issued by the Department of Forest Ecology and Environment, Government of Karnataka, imposed a complete ban on burning solid waste of any kind including twigs and leaves of plants in open places within the

jurisdiction of all urban local bodies including BBMP and solid waste landfill sites throughout the State.

10.10 Any other Policy/Rules/Standards/Guidelines pertaining to MSW Management

The state strategy for solid waste management "**Karnataka State Urban SWM Strategy-2020**" prepared in compliance with the SWM rules, 2016, contains an overview of the waste flow from generation to disposal including the different options available to the ULB for processing solid waste while recovering the maximum resources from it. It also provides a framework for the implementation and monitoring of waste management systems and the strategy to be adopted by the ULB to effectively manage the different streams of waste generated within their jurisdictions. In addition, the State Government, by way of this strategy, determines the roles and responsibilities of Urban Local Bodies, statutory and regulatory agencies in implementing solid waste management strategies detailed here, and as per timelines for compliance recording. This would be undertaken in comprehensive compliance with provisions of the Environment Protection Act and its subordinate rules and notifications, in particular SWM Rules 2016, and also all other applicable laws and rules, to produce a socially just, environmentally wise, and economically viable management approach to solid waste management across Karnataka. The State Government resolves to provide all necessary financial, managerial, and infrastructure support to ensure these strategies are effectively implemented.

In this context, this Karnataka State Urban SWM Strategy applies to all urban areas in the state of Karnataka. It is meant for key players, relevant authorities, and other functionaries of "local bodies" in the state of Karnataka to prepare SWM-related plans and procedures for the management of solid waste (including plastic waste) within their jurisdictions. It is clarified that hazardous waste, bio-medical waste, e-waste, faecal sludge and sewage, construction and demolition waste, and industrial waste (solid and liquid components) are not covered by this strategy because they do not fall within the scope of SWM Rules, 2016 and are governed by different regulations. The State of Karnataka shall prepare separate policies, strategies, and regulations for such waste streams as required under applicable law and requirements of the state.

The Karnataka State Urban SWM Strategy will be reviewed and amended at least every two years (or earlier, if there it is deemed necessary by the government), to accommodate the innovations and research on the processing of solid waste management and any other developments that are relevant in the waste sector.

10.11 Strategies for effective Solid Waste Management[4]

- Integrated MSW management to ensure safe and environmentally sound disposal of waste.

[4]Karnataka Economic Survey Report 2023-24

- Encourage decentralized collection centres as mandated by MSW Rules 2016, Section 3(15) to process dry waste to avoid contamination by wet waste and minimize transportation.
- Set up advanced wet waste processing units for composting and bio-methanation.
- Sensitize general public about effective SWM techniques and create awareness regarding the consequences of poor waste management.
- Establish source segregation of MSW through performance-based incentive scheme.
- Minimize the gap in generation and processing of MSW by emphasizing 5 R's of waste hierarchy i.e. 'reduce, re-use, recycle and recover and disposal' as mandated by MSW Rules 2016, Section 3(57).
- Adopt environmentally sound technologies like composting, bio-methanation, RDF and waste to energy initiatives.
- Boost the incomes of ULBs through earnings from effective MSW processing likerecycling, composting, and RDF.
- Set up zone-wise segregation and processing facilities to ensure 100%processing of MSW and minimize land-filling.
- Reduce transportation of MSW to minimize the dependence on fossil fuels and impact on air quality.

11 Emission due to burning of Agro residues

11.1 Status of Implementation of measures for control of Stubble Burning in the State:

Sustainable Development Goals in Agriculture not only restrict management of primary produce but also includes the management of secondary produces which includes mainly Agriculture waste, crop residues and stubbles. Around 140-150 billion tonnes of bio mass is generated annually in the world. Inadequate management of such a huge quantity of bio mass lead pollution and climate change. There is a huge potential to convert these Agricultural waste bio mass into source of energy and raw materials for large scale industries and community level enterprises. But the problem facing is aggregation and collection of this bio mass which includes residual stocks, straw, leaves, roots, husk, nuts, seed shells, waste wood, waste produced from animal husbandry including diary, fishery and aquaculture waste.

The inadequate management of such a huge bio mass lead to burning of crop residues causing huge loss of nutrients and pollution which affects the human health and safety. In India it is estimated that annually around 38.5 lakh tons of organic carbon, 0.59 lakh tons of nitrogen, 0.2 lakh tons of phosphorous and 0.34 lakh tons of potassium is being lost due to burning of paddy straw alone. The other major crops residues in which the crop residues are being burnt are wheat, sugarcane, cotton, jute, maize, millets, rape seed mustard and Groundnut.

Further, harvesting of crops through combined harvesters aggravated the aggregation and management of crop residues in a better manner.

Now the challenge is collecting and effective management of agriculture bio mass to convert internal sources of energy and productive uses by adopting various methods.

India is the second largest agro-based economy with year round crop cultivation, generates a large amount of agricultural waste, including crop residues. According to the Indian Ministry of New and Renewable Energy (MNRE), India generates on an average 500 Million tons of crop residue per year. The majority of this crop residue is in fact used as fodder, fuel for other domestic and industrial purposes. However, there is still a surplus of 140 Mt out of which 92 Mt is burned each year, in the absence of adequate sustainable management practices, causing excessive particulate matter emissions and air pollution.

According to Inter-Government Panel on Climate Change (IPCC), approximately 25% of the crop residues are burnt on farm. Crop residue burning has become a major environmental problem causing health issues as well as contributing to global warming. The fraction of crop residue subjected to burning ranged from 8-80% of Rice straw (Karnataka occupies 4th place after Punjab, Haryana and Himachal Pradesh), 23% of wheat straw (approximately 10% in Karnataka) and 25% in Sugarcane (Karnataka tops in Sugarcane thrash burning).

Crop residues produced by Rice, Wheat and Sugarcane are Husk, bran; Bran, Straw and Sugarcane tops, bagasse, molasses respectively. Composting, biochar production and mechanization are a few effective sustainable techniques that can help to curtail the issue while retaining the nutrients present in the crop residue in the soil.

The State Department of Agriculture, Government of Karnataka has taken action to provide Equipment for residue management for various crops under subsidy scheme to beneficiaries and to CHSCs. Some of the residue management machines that are being provided under subsidy schemes are Tractor operated Trash Cutter/ Multcher/ Shredder, Engine operated Rake, Balers etc.,

Control of Paddy/ Wheat stubble burning:

A. By utilization of stubble:

Area under Paddy and Wheat cultivation is approximately 12.83 Lakh Hac and 1.75 Lakh Hac (all three season). Approximately, 3-4 tonnes paddy/ wheat straw are generated per Hac. Of the 12.83 Lakh Hac Paddy Cultivation in Karnataka, 9.56 Lakh Hac is cultivated in Kharif Season. High cost associated with traditional method of in-field management of paddy straw and non-availability of farm labours during peak harvesting season are the major cause of burning paddy straw in the field. Straw balers can be used to pick-up the straw from the harvested paddy field and densify in to bales.

In Karnataka, 197 Balers are available (121 numbers in CHSCs and 76 numbers are privately held). One Baler approximately covers 10 -12.5 acres (5 Hac) per day. Paddy harvesting lasts around 40 days during season. To cover approximately 9.56 Lakh Hac Paddy area (Max area sown season), 3650 Balers are required pick-up the straw from the harvested paddy field and densify in to bales. Existing balers covers an area of approximately 50,000/ year.

B. By retaining the stubble in Rice Fallow:

An extent of 26,600 Hac (inclusive of demonstration and distribution of inputs) of Paddy is covered under Targeting Rice Fallow Area (TRFA) scheme of the Government of India. Under this, pulses and oilseeds are sown in Paddy harvest areas without removing the stubble.

Control of Sugarcane Thrash burning:

Area under Sugarcane cultivation in Karnataka is approximately 6.64 Lakh Hac. Approximately, 5-8 tonnes trash is generated per Hac and the total straw generated is approximately 49-50 Lakh tonnes/ year. Most of the sugarcane trash is burnt which leads to loss of nutrients and affects environment. Sugarcane trash cutter/ multcher/ ratoon manager can be used to managing sugarcane trash in the fields.

In Karnataka, 3 numbers of Sugar Cane Trash cutters are available (3 in CHSCs), 25 numbers of Sugarcane Mulchers (16 numbers in CHSC and 9 numbers are privately held), 7 numbers of Sugarcane Ratoon Managers (1 in CHSC and 6 numbers are privately held) and 200 Sugar cane harvesters (all privately held). In a day, Trash cutters can cover 10 acres of Sugar Cane field (5 Hac) and Sugarcane harvesters can trash 180 tonnes/ hour.

As Paddy and Sugarcane grown area co-exist in most of the districts and the harvesting seasons are different, the balers and rakes proposed in Paddy/ Wheat stubble can also be used in Sugarcane residue management.

In Karnataka, cereals generate around 12.00 million tons, sugarcane generates around 9.00 million tons and oil seed crops generates 0.81 tons of crop residues annually. This surplus crop residues burnt on farm. According to one study it is estimated that annually 5.93 million tons of crop residues are burnt. This agriculture waste can be used in various ways like, fodder, roof thatches, fuel, manure, raw material for mushroom and bio gas production, Oil mills, Brick kilns, Pellets / Briquettes, raw material for bio mass power plant etc., which gives an economic value.

The main problems in management of Agricultural wastes are

1. Collection / aggregation of crop residues / agriculture waste.
2. Low density of crop residues.
3. Non availability of Proper Mechanical equipments for collection and transportation.
4. Non availability of Proper Mechanical equipments for management processing of crop residues.

Hence, there is a need to address the problem faced by the management of agriculture bio mass or bio waste. The major interventions are as below.

1. Public awareness campaign about the crop residue management and alternative usage of crop residues.
2. Increase the availability of tilling equipments by providing subsidy so that the crop residues can be incorporated into the soil (in situ incorporation).
3. Increase the availability of crop residues management equipments by providing subsidy like-
    a) Thrash cutter
    b) Mulcher
    c) Shredder
    d) Balers
    e) Coconut frond choppers
    f) Motor operated wheel barrows or load cart
    g) Chaff Cutter
    h) Rake

i) Rice Straw Chopper cum Shredder
j) Stubble Shaver (Ratoon Manager)
k) Sugarcane thrash cutter
l) Sugarcane Harvester
m) Briquette or Pellet making machine.
n) Straw Combined Harvesters / modified Combined Harvesters to collect the crop residues.
o) Happy Seeder or Turbo Seeder
p) Zero seed cum fertilizer drill.

4. Crop diversification to have alternative crop which produce less crop residue and wider gap between two crops.
5. Increase the availability of bio digesters and decomposers by providing subsidy.
6. Incentivising the establishment of industries which utilizes crop residues as raw materials.
7. Strengthening the Custom Hiring Service Centres (CHSC) by providing Crop Residue Management equipments on subsidy basis.
8. Providing subsidy for City Compost produced out of biodegradable city waste which helps in recycling the nutrients coupled with avoiding the wastage of nutrients.

By integrating different ways one can manage agriculture waste and avoid burning.

By considering the above points Agriculture Department is submitting the following Action plan.

1. Distribution of machineries required for Crop Residue Management to the farmers under subsidy programme as per the prevailing guidelines of the department- **Annexure-1A.**

2. Strengthening of established Farm Machinery banks / Custom Hiring Service Centres (CHSC) by providing Crop Residue Management equipments under subsidy programme as per the prevailing guidelines of the department - **Annexure-IIA.**

(Source: Information received by Agriculture Department)

11.2 Schemes for procurement of agriculture machinery[5]:

Mechanization of Farm Operations helps to reduce the drudgery of farm operations, saves time, and improves efficiency and farm productivity. The general farmers are provided with a subsidy of 50% and 90% subsidy is provided to the farmers belonging to Schedule Caste/Schedule Tribe limited to Rs.1.00 lakh. During 2023-24 Out of the allocation Rs.11921.81 lakh an amount of Rs.11912.84 lakh has been released of which Rs.3837.63 lakh expenditure is incurred upto November 2023

[5,18]Economic Survey Report of Karnataka 2023-24

Sub mission on agricultural mechanization (SMAM): The scheme is being implemented to promote the usage of farm mechanization and increase the ratio of farm power to a cultivable unit area up to 2.5 kW/ha. During 2023-24 an amount of Rs.12923.32 lakh is provided of which Rs. 12379.54 lakh has been incurred and 35619 farmers have been benefitted.

Assistance for the establishment of farm machinery banks/custom hiring and service centres: Department of Agriculture implemented **'Krishi Yantra Dhare'** for the establishment of farm machinery banks/custom hiring centres, implemented in the State in 2014; the project aims to provide farm machinery to small and marginal farmers at nominal hiring charges in all districts of the State.

From 2014-15, 696centers have been established with a budget of Rs.28734.52 lakhs. During 2021-22, thebudget allocated for implementation of CHSC is Rs.3533.30 lakhs (Rs.3000 Lakhsunder state and Rs.33.30 Lakhs under RKVY), of which Rs.1933.30 Lakhs (Rs.1400 Lakhs under state and Rs.533.30 Lakhs under RKVY) has been released till date and 25.12lakh farmers have been benefited so far[6].

11.3 Any other scheme/program that may help in reducing air pollution[7]

A. Under the organic and millet promotional scheme of the State, natural/traditional/organic millet growers are being provided with an incentive of Rs.6000/- per ha, thereby reducingtheir carbon footprint. Organic/natural farming systems are being promoted in the farmer's field incorporating best practices of organic farming system and ZNBF system, wherein incorporation of crop residues into the soil or biodigestor along with multi-cropping, intercropping, and crop rotation practices. Stubble burning is discouraged under these systems.

The state needsthe Crop Residue Management (CRM) scheme of GoI, as the practice of residue burning is being followed in the State.

11.4 Action Plan for control of stubble burning in Karnataka

In Response to direction VI of the orders of the Hon'ble NGT at Delhi in OA No.681/2018, the Department of Agriculture, GoK, has an action plan implemented in the State. The copy can be found in **Annexure XI**.

11.5 Common Action points for implementation for effective management of crop residue burning

- Encouragement of private companies and Public Private Partnerships (PPP) in biomassbased energy and fuelplants.

[21]Indian Council of Food and Agriculture Report on Crop Residues Burning: Challenges & Solutions

- Crop residues can be showcased as a portable and valuable source of additional income.
- Providing incentives to companies using crop residues as raw materials.
- Linking Corporate Social Responsibility (CSR) activities of large oil companies who are also into biofuel production.
- Development of agro-ecological zones for management of crop residues and implement the same under the Annual Work Plan (AWP) of various ongoing schemes or programmes.
- Dedicated agencies for educating, awareness building, and monitoring crop residue burning.
- Collaboration with ISRO and preparation of Satellite based maps for monitoring of fire incidences.

12 Household emissions

12.1 Scheme for use of LPG/PNG for cooking fuels[8]

The state government launched **Anila Bhagya Scheme Karnataka 2024,** which is expected to benefit 30 lakh families in the state. Chief Minister Siddaramaiah, who inaugurated the scheme, said it was better than the Centre's Ujjwala scheme, which covered only a small section of the population. Unlike the Centre's Ujjwala Yojana, which only provided LPG connections to BPL households, the state government, under the Anila Bhagya Yojana, provided all the equipment required for cooking with LPG, such as cylinders, stoves and gas lighters. The scheme is expected to cost the state exchequer Rs 1,350 crore.

Out of the 30 lakh beneficiaries of the scheme, 10 lakh beneficiaries will be included in the first phase, he said. The scheme is being implemented jointly by the Department of Food and Civil Supplies, Social Welfare, Forest and Labor.

12.2 Any other Policy/Rules/Guidelines pertaining to Household Emissions

A.In May 2016, the Ministry of Petroleum and Natural Gas (MOPNG), introduced the 'Pradhan Mantri Ujjwala Yojana' (PMUY) as a flagship scheme to make clean cooking fuel such as LPG available to rural and deprived households which were otherwise using traditional cooking fuels such as firewood, coal, cow-dung cakes etc. The usage of traditional cooking fuels had detrimental impacts on the health of rural women as well as on the environment.

As of the most recent updates, Karnataka has released a total of **37.59 lakh LPG connections** under the Pradhan Mantri Ujjwala Yojana (PMUY), including its second phase, Ujjwala 2.0. This includes connections provided to low-income families to promote clean cooking fuel and reduce dependence on traditional biomass fuels.

B. For the control of air pollution and to make Karnataka State kerosene free, through the Public Distribution System (PDS), the distribution of kerosene from April 2016, is been cut down gradually in phases. At present only a few districts and taluks have been approved for kerosene distribution, and 2 liters of kerosene is being distributed to households that do not have an LPG connection. For the year 2018-19, the central government released 155968 KL of kerosene to the State. In the year 2021-22, the central government released 2230 KL of kerosene, this quantity exceeds the demand of the State and hence the excess quantity is being surrendered back to the central government.

13 Environmental initiatives undertaken by Smart Cities of Karnataka

Smart City Mission: Government of India has launched Smart City Mission during 2015 and has contemplated to cover in five years with an objective to provide a fillip to the development of innovative smart solutions that directly impact the needs of the cities. In Karnataka 7 cities have been selected under Smart City Mission and Rs.6524.00 crore (Rs.3256.50 crore from GoI and Rs.3267.50 crores from GoK) have been released and Rs. 5928.96 crore has been spent up to end of Nov. 2023.

13.1 Shivamogga Smart City Limited (SSCL)

Shivamogga smart city limited ("SSCL") registered under companies act, 2013 as special purpose vehicle (SPV) to implement the various infrastructure development projects in Shivamogga with an equal funding contribution from state and central governments (Rs. 500 Cr each from GOK&GOI released over a period of 5 years for projects implementation).

Shivamogga smart city's vision statement is "transforming Shivamogga into eco-tourism destination through green urbanism". SSCL has taken up various infrastructure development projects under ABD area (6.0 sq km of the core commercial area of the city, which impacts about 23% (83,000) of the city population as per census) viz.,8 smart roads of 110 km length with underground utility corridors for running electrical lines, water supply lines, ofc lines in order to reduce the frequent road cuttings road cuttings for laying the utilities by different service providers. These smart roads will have dedicated utility corridors, dedicated cycle paths for about 34km's with an overall 120 km of cyclable roads and dedicated pedestrian paths which are expected to improve the decongestion in the core commercial area and thereby improving the traffic flow conditions by and there by introducing the public bicycle sharing system with 30 stations and 300 bicycleson subscription and rental basis for promoting non-motorized transport and sustainable transport modes in the city.

Table 13.1 The Sector wise projects taken up by Shivamogga Smart City are as below for 2023-24

Sl. No	Components	No's	Project Cost (In Rs Crores)
1	Smart Road Packages	8	470.46
2	Development Conservancies	5	18.05
3	Development of Parks & Green Spaces (Includes Riverfront Development & Canal Front Development projects)	14	154.79
4	ICT Projects(Command & Control Center, Smart Library, Smart Education in Govt. Schools etc.,)	6	81.79
5	Heritage projects	3	23.08
6	Other Infrastructure DevelopmentProjects	35	181.83
	Total	**71***	**930.00**

(Source: Shivamogga Smart City Annual report 2022-23)

13.2 Tumakuru Smart City Limited (TSCL)

- **Climate Smart Cities:**Initiative by GoI to create awareness among the citizen on the importance ofthe environment and containing pollution at different levels. TSCL has conducted many activities viz., Workshop, Seminar, and Climate Audit at Government Schools, etc.
- **Environmental Sensors:** This is one of the integrated components in the Integrated Command and Control Centre and Smart Pole projects implemented at Rs.30 Croreand Rs.1Crorerespectively**.**
- **Street Light (PPP):** LED-based Street Light project implemented across the city. 32,620 lights are commissioned in the city.
- **06KW and 50 KW centralized Off-Grid Solar Power Plant with LED-based Solar street lighting system:** The 06KW system with an allocated budget of Rs.29.90 lakhs, is designed to cater electricity through clean energy for 72 street lights in 3 streets of Vidyanagar in Tumakuru city. This system operates from dusk to dawn mode with a remote monitoring system imbibed in it, which allows one to pinpoint if any fault occurs in the system and such an issue can be addressed at the exact location of the fault immediately**.**

  The 50KW innovation is planned with the following activities with an allocated budget of Rs.65.53 lakhs.

  1. Micro Grid: The system designed and implemented would be independent of the Grid which is called a Micro grid or Mini Grid
  2. Remote Monitoring Solution
  3. CO_2 emission reduction
  4. Savings on Electricity
- **300 KW- on-grid BIPV Solar Roof-Top Photo Voltaic (SRTPV) system:** An area-based development with an allocated budget of Rs.2.9 Crore. Amanikere Lake is a beautiful lake that recently got revived in Tumakuru. On its banks, is a magnificent Glass House of an area of 2100 Sq.m constructed over its roof is an innovative energy generation plant using Building Integrated Photo Voltaic (BIPV). Together it has become a cynosure in the mid of theCity.
- **Solar Smart Bench:** Part of a Park development Project implemented across the city. The Solar Smart Bench is capable of generating 7.92 kWh/day and is self-sustainable. The project has additional components summing to Rs.3.00 Crore.
- **Solar Street Lights:** Part of a Park development Project implemented across the city. The Solar LED Street Light so far has 1322.64 kWh of total power generation and is self-sustainable. The project has additional components summing to Rs.3.00 Crore.

13.3 Bengaluru Smart City Limited (BenSCL)

- BenSCL has completed 33 projects and 16 projects are ongoing. In Bengaluru works amounting to Rs 1076 Cr have been completed and work worth Rs 329 Cr in progress. Few completed projects are as follows:
- The ICCC – (Integrated Command and Control Center) project is operational.
- Providing Smart Traffic Solutions to Bengaluru Traffic Police at Providing Smart Traffic Solutions to Bengaluru Traffic Police at ABD area-Phase-2with a project cost of 1.94 Cr.
- Electric buses feeder service to Namma Metro by BMTC, Fleet Procurement with a project cost of 50 Cr.
- Improvement of Drains and Foothpaths and asphalting of 21 selected roads in peenya industrial area in Dasarhalli Constituency- 26.34 Cr
- Improvement of Drains Foothpaths and asphalting of 6 selected arterial and Sub arterial roads in Mahadevapura zone - 11.45 Cr
- Integrated mobility towards creating vibrant destination Shivajinagar Bus Terminal Redevelopment (Terminus + Parking Structure + Subway) - 3.82 Cr
- Revitalization of historic heart of the city - Smart Tender SURE Roads Phase A Package in 1 to 7 packages – 343.77 Cr

13.4 Belagavi Smart City Limited

Belagavi, also known as “Venugrama” or the “Bamboo Village” is a city in the Indian state of Karnataka. It is the administrative headquarters of the eponymous Belagavi division and Belagavi district. It is also called as the second capital for the state of Karnataka.

A total of 102 works have been undertaken, amounting to a cost of 930 crores. Out of these, 96 works have been completed, and 6 are currently in operation. Additionally, six works have been initiated under the PPP model, costing 211 crore rupees, with one already completed.

So far, the central government has released 441 crores, and the state governments have contributed 439 crores, totaling 880 crores. Currently, 110 crores have been released, including 49 crores from the central government and 61 crores from the state government.

Some of the completed works are as follows:

- Providing parking for Private buses at Cantonment property opposite to Railway Station
- Smart Bus shelters Phase 01, 02 & 03

- 39 Nos of Bus shelter
- Advertisement Boards
- E-toilets
- Waiting Stand
- Food kiosk
- All Bus Shelters Completed

- System Integrator for Establishment of Command-and-Control Centre in Belagavi
  - Solid Waste Management (SWM)
  - Emergency Services (Ambulance & Fire Engine)
  - Intelligent Transport System (ITS).
  - Intelligent Traffic Management System (ITMS)
  - Intelligent Pole.
  - Smart Water.
  - .E-Governance & Citizen App
- Supply, Installation & Commissioning of Traffic signal
  - Red LED, Yellow LED ,& Green LED Aspect
  - Pedestrian Red & Green LED Aspect
  - Countdown Timer
  - Standard Pole & Cantilever Pole
  - Energy Meter
  - Junction Controller Box
  - UPS System with Battery
  - Civil Work and Site Preparation
- **Procurement of E-Rickshaw at Belagavi City** -Distribution of 50 Nos of E Rickshaw
- **Construction of Smart Roads in Belagavi city**
  - Storm water Drain
  - White topping road
  - Footpath
  - Street lighting

13.5 Mangalore Smart City Limited

33 projects under Smart City Mission are under progress in the city, four of which are being taken up under PPP mode under Smart City. 55 projects have already been completed.

Financial grants worth Rs 390 crore from the central government and Rs 414 crore from the state government, totaling Rs 806 crores, have been sanctioned for Mangaluru Smart City projects. 92 % of the allocated grant, equivalent to Rs 739.39 crore, has been utilized. Some of the works undertaken are as follows:

- Conversion of Existing 11 KV HT / LT overhead lines of 11 KV Bolara and Mangaladevi feeders, emanating from 33 / 11 KV MUSS Nandigudda into UG Cabling system at Mangaladevi Temple Road and New Monkey Stand RoadLED lights in government buildings
    - Mangaluru Smart City has proposed a Development of Kadri Park. The main aim of this project is to develop the existing Kadri Park Road situated between Kadri Park and Kadri Park 2 (old deer park) totally measuring 779 M in length and 6.28 acres (25,433 Sqm) in area as a suitable annexure to the existing Kadri Park with all required facilities of leisure and citizens user amenities.
    - Mangaluru Smart City is proposed project of Smart Bus Shelter. This project mainly focuses on implementation of Smart Bus Shelter and E-toilets along with Smart Bus Shelter.
    - Centralized control centre infrastructure designed and deployed at the place provided and approved by the Mangaluru Smart City Limited, the SPV.
    - Connector Road from NH66 near Jeppu to Morgansgate Including construction of RUB. The project will be solving one of the major bottlenecks at the entry to Mangaluru city from NH 66.It is proposed to develop 4 lanes 18m wide road from NH66 to Morgan’s gate and 4 lanes RUB across the railway tracks.Total Project Cost : Rs. 49.95 Crores
    - Mangaluru Smart City Limited (MSCL), a special purpose vehicle has been formed for designing, developing, managing and execution of the Smart City Projects. One of the projects envisioned under the SCP for Mangaluru is to replace conventional street lights by Solar LED street lights in ABD Area and LED Street lights in PAN city area on PPP Basis. It is desired to achieve reducing energy consumption as well as to reduce environmental damage. The proposed project involves converting all the street lights to LED lights. Total number of streetlights: 64,000. Total Project Cost: Rs. 62.63 Crores. Installation Work in progress. (12,200 Nos. out of 66,000 Nos Completed)

13.6 Davanagere Smart City Limited

As of January 2025, Davanagere Smart City Limited (DSCL) has advanced several key initiatives under the Smart Cities Mission to modernize the city's infrastructure and enhance quality of life. The plan focuses on transforming 785 acres of the city's inner core and includes pan-city ICT solutions and area-based developments such as retrofitting, redevelopment, and greenfield projects.

Recent updates include:

Funding: A total of ₹394 crore has been allocated to DSCL from the Government of India and Karnataka.

Area-Based Developments:

Revitalization of public spaces such as parks and educational precincts.

Projects like the development of smart lounges, rooftop solar power installations, and afforestation initiatives.

Revival of lakes, including projects for Amanikere Lake and others, focused on water management and environmental sustainability.

Pan-City Solutions:

Deployment of intelligent traffic management, smart bus shelters, e-learning centers, and a centralized command control center.

Focus on enhancing citizen services, including public bicycle sharing and LED street lighting systems

These projects are in various stages of implementation, with some already underway and others in the tendering or planning phases. For more details, you can visit the official Davanagere Smart City portal

13.7 Huballi-Dharwad Smart City Limited:

Rs 304 Cr released under the mission and the city has planned the projects like development of Tolankere Lake, Mahatma Gandhi Park, Green Mobility Corridor, Bengeri Market, Janata Market, Chitaguppi Hospital, Nehru Stadium, are some of the key projects that have been developed under the Hubballi-Dharwad Smart City project aimed at improving the ease-of-living of denizens of the commercial city of the southern state.

The Hubballi Dharwad project focuses on the rejuvenation of the Unkal Nala, the 9.25-km-long drainage channel in the city, from being a mere storm-water drain to a developed, holistic space for the community. The Hubballi-Dharwad Smart City Ltd (HDSCL) has provided all modern amenities and infrastructure in “Bengeri Market for fruits and vegetable vendors at a very nominal fee of Rs 30 per stall for a single day. Facilities like CCTV cameras for security, new toilets, security cabins, and display boards to make it easier for consumers to navigate the markets have been established at the market, similarly, the old Janata Bazaar, located a few metres from Hubballi’s iconic Kittur Rani Chennamma Circle, have also witnessed a sea change.

The Green Mobility Corridor: This idea was suggested as part of a challenge called Cities Investment to Innovate, Integrate, and Sustain. It received a grant from the European Union. The GMC project will construct an 8.5-kilometre length of road along the Unkal nala, incorporating bicycle and walking paths, drain lining and wastewater diversion, landscape design, and other features. The project intends to reduce the twin cities' carbon footprint and raise India's ranking in the United Nations' Sustainable Development Goals.

Through its new Bicycle Sharing Scheme, Savari, Hubballi is promoting greener alternatives to public transportation. It has automated hubs for monitoring bicycles and locking/unlocking them at docking stations. The programme contains 34 electric-powered bicycles and 306 traditional multi-speed bicycles, which are available at 34 docking stations located across the city. Users can download the Savari app, pay a security deposit and a subscription fee, and then ride bicycles across the city.

Hubballi residents have been dealing with parking challenges as cars and two-wheelers crowd the roads. To address this issue, HDSCAS authorities undertook a feasibility study and intended to construct a Multi Level Car Parking (MLCP) Complex at Court Circle, which is positioned between two of the city's busiest locations.

The facility will have a built-up area of approximately 1,22,500 square feet and a commercial size of approximately 35,000 square feet. Smart Card systems will be used to monitor access and departure, and the complex will have a bike-sharing design as well as digital billboards for advertising.

The mentioned initiatives represent a snapshot of projects implemented as part of the Smart City Mission in seven selected cities under the program. Comparable projects will be initiated throughout the state, aiming for the sustainable development of the region. This approach seeks to ensure that the progress of both urban centers and the overall state development is achieved without compromising environmental equilibrium.

14 Airshed Approach in Karnataka:

The Importance of Airshed Delineation and Planning for Improving Air Quality in Karnataka State

An airshed is a specific geographical area characterized by a unique air mass influenced by common factors such as topography, climate, and meteorology. Unlike administrative boundaries that define clean air action plans, considering airsheds becomes essential as they encompass broader environmental factors that impact air quality. Administrative boundaries often fail to address crucial aspects such as meteorological conditions that can extend beyond boundaries and transboundary pollution that can affect neighbouring areas. Additionally, significant pollution sources like thermal power plants and airports are not confined to city boundaries, further emphasizing the need for airshed-level planning.

Recognizing the significance of airshed delineation and planning in Karnataka State, we can outline the following key measures:

1. Identification and Delineation of Airsheds:

To effectively manage air quality, it is vital to conduct a comprehensive state-wide exercise to identify and delineate key airsheds. This exercise will employ appropriate methods, taking into account local meteorological conditions and integrating data from relevant sources. The process of airshed delineation would involve not only defining the boundaries but also identifying major emission sources within each airshed. Additionally, it is crucial to engage key stakeholders from the public and private sectors to ensure comprehensive involvement and collaboration.

2. Stakeholder Roles, Responsibilities, and Cost Allocation:

Clear guidelines will be established to define the roles and responsibilities of stakeholders involved in airshed management. These guidelines would specify the responsibilities of various administrations, such as state bodies, urban local bodies, and other relevant agencies, in implementing air quality improvement measures. Moreover, the allocation of costs associated with airshed management among different administrations should be deliberated upon to ensure equitable distribution of financial resources. In some cases, it may be necessary to introduce legislation that creates a dedicated body or constitution of a committee for airshed governance. Such legislation would outline the composition of the governing body, as well as its geographical and financial jurisdiction.

3. Monitoring Guidelines:

Developing comprehensive guidelines for air quality monitoring is crucial to ensure effective assessment and optimization of resources. These guidelines should consider the use of ground-based monitoring stations and remote sensing technologies. By harmonizing these monitoring methods, we can achieve cost-effectiveness while ensuring data quality and availability at high spatial and temporal resolutions. It is also essential to validate the datasets generated from each monitoring method through rigorous data quality checks and analytics. This validation process should capture spatial and temporal trends to accurately assess air quality trends and identify areas for improvement.

4. Airshed Load Standards:

Incorporating "airshed load standards" as a supplement to ambient air quality standards can significantly contribute to regional development control and ecological modernization. These load-based standards would aim to set maximum pollutant loading limits for specific airsheds. By imposing these limits, we can effectively reduce the impact of downwind transboundary pollution on air quality, particularly in residential and ecologically sensitive areas. Moreover, airshed load standards would encourage the adoption of renewable energy sources, promote green mobility solutions, and facilitate the uptake of cleaner technologies.

By prioritizing airshed delineation and planning, Karnataka State can make significant strides in improving air quality, promoting sustainable development, and safeguarding the well-being of its residents. Implementing these measures would require strong collaboration among relevant authorities, stakeholders, and the public to ensure effective governance and impactful outcomes in the quest for clean and healthy air.

15 Bengaluru Climate Action and Resilience Plan (BCAP)

Bengaluru, the capital of Karnataka and the fifth-largest city in India, stands out among the select global cities that have unequivocally pledged to address the challenges posed by climate change. Having joined the C40 cities network in 2017, Bengaluru is committed to playing its part in limiting global warming to 1.5 degrees. Simultaneously, the city is dedicated to preparing for and adapting to the impacts of climate change. Notably, Bengaluru serves as the co-lead of the Global Air Quality Network.

In collaboration with Bruhat Bengaluru Mahanagara Palike (BBMP), the Government of Karnataka has embarked on an ambitious mission to curtail greenhouse gas (GHG) emissions. The aim is to achieve a 16% reduction by 2030, 26% by 2040, and an impressive 56% by 2050, measured against the 2019 baseline. The commitment in meeting these long-term targets is underscored by the implementation of BCAP actions.

In alignment with the dedication to the international objective of limiting global warming and upholding the Paris Agreement as a member of the C40 cities, the Government of Karnataka has initiated Bengaluru Climate Action and Resilience Plan (BCAP) in November 2023. Formulating a practical roadmap for mitigating and adapting to climate change, while fostering greater resilience, is a key priority for the government of Karnataka, reflecting a commitment to human development. Over the coming years, BCAP will be implemented through a collaborative, multi-sectoral effort, drawing on the active participation of various departments of the Government of Karnataka, civil society, and the private sector.

It includes sectoral priorities in framing actions under BCAP: The seven sectors have been identified to orient actions reflect the existing institutional set-up of the city, as well as the strong interdependencies certain sectors have on others. The identified actions have been framed carefully to make them implementable. The 7 sectors are as follows:

1. Energy and Buildings
2. Transportation
3. Solid Waste
4. Air Quality
5. Water, Wastewater and Storm water
6. Urban Planning, Greening and Biodiversity
7. Disaster Management

16 SectoralEmissionHotspotsin non-attainment cities.

The ambient air quality in Karnataka is adversely influenced by a spectrum of activities spanning multiple sectors. These activities include, but are not limited to, transportation-related emissions (such as tailpipe emissions and road dust), construction and demolition processes, the operation of diesel generator (DG) sets, the burning of municipal solid waste, and the consumption of fuels in domestic, commercial, and industrial settings. The cumulative impact of these sources contributes significantly to air pollution levels in the region.

It is noteworthy that certain pollution hotspots exhibit a high degree of dynamism, evolving over time. Examples of such dynamic and time-sensitive hotspots are often found in areas associated with construction, demolition activities, and the burning of waste materials. These sites can experience fluctuations and changes in emission patterns, underscoring the need for adaptive and responsive pollution control measures.

The Center for Study of Science, Technology, and Policy (CSTEP) and IIT Madras has compiled a list of hotspots for 4 non-attainment cities of Karnataka. A sector-specific list of these hotspots helps in addressing emissions in these areas is crucial for improving the air quality of non-attainment cities in Karnataka.

Efforts aimed at reducing emissions in these identified hotspots are paramount for enhancing the air quality of non-attainment cities within Karnataka. Furthermore, recognizing the interconnected nature of air quality challenges, these initiatives extend beyond the boundaries of specific regions, with a commitment to improving air quality in other cities across Karnataka. Consequently, the proactive management of sector-specific hotspots emerges as a crucial component in the broader framework of air quality improvement initiatives in the state.

16.1 List of hotspots and action plan for Bengaluru.

1. Silk Board:

S.No	Prominent PM sources	Action Plan for hotspots	Regulatory Department
1.	• Vehicular Emissions • Soil Dust/ Road Dust • Construction	End to End paving of roads/ pedestrian walkways/ footpaths in all the key locations	BBMP
2.		Efficient road dust management through green barriers and water sprinkling in hotspots	BBMP
3.		Deployment of mechanical sweeping machines	BBMP
4.		Robust public transportation enhancements	BMTC
5.		Cycle-friendly paths in hotspots	BBMP

6.		Decongestion of Roads	Traffic
7.		Mandating DPF (Diesel particulate filter) fitting in heavy diesel vehicles	Transport Dept

2. Yeshwanthpur Police Station

S.No	Prominent PM sources	Action Plan for hotspots	Regulatory Department
1.	• Vehicular Emissions • Soil Dust/ Road Dust • Construction • Wood residue burning	End to End paving of roads/ pedestrian walkways/ footpaths in all the key locations	BBMP
2.		Reduce dust re-suspension by road side plantation, laying of pebbles, geo synthetic materials to cover the open areas in road dividers and footpaths	BBMP
3.		Deployment of mechanical sweeping machines	BBMP
4.		Robust public transportation enhancements	BMTC
5.		Development of EV-charging infrastructure	Electricity dept
6.		Cycle-friendly paths in hotspots	BBMP
7.		Decongestion of Roads	Traffic
8.		Mandating DPF (Diesel particulate filter) fitting in heavy diesel vehicles	Transport Dept
9.		Strict enforcement to reduce leaf burning on road sides and near railway tracks	BBMP
10.		Enforce dust control measures at construction sites, including covering materials, damping surfaces, and using water sprays.	KSPCB/ BBMP
11.		Mandate the covering of truck and construction vehicle loads to prevent dust from becoming airborne during transport.	BBMP

3.AMCO batteries

S.No	Prominent PM sources	Action Plan for hotspots	Regulatory Department
1)	• Vehicular Emissions • Soil Dust/ Road Dust • Construction • Wood residue burning	End to End paving of roads/ pedestrian walkways/ footpaths in all the key locations	BBMP
2)		Deployment of mechanical sweeping machines	BBMP
3)		Improve last mile connectivity to metro stations	BMRCL/ BMTC
4)		Robust public transportation enhancements	BMTC
5)		Development of EV-charging infrastructure	Electricity

			dept
6)		Cycle-friendly paths in hotspots	BBMP
7)		Decongestion of Roads	Traffic
8)		Mandating DPF (Diesel particulate filter) fitting in heavy diesel vehicles	Transport Dept
9)		Strict enforcement to reduce leaf burning on road sides	BBMP
10)		Enforce dust control measures at construction sites, including covering materials, damping surfaces, and using water sprays.	KSPCB/ BBMP
11)		Mandate the covering of truck and construction vehicle loads to prevent dust from becoming airborne during transport.	BBMP

4.ITPL

S.No	Prominent PM sources	Action Plan for hotspots	Regulatory Department
1)	• Vehicular Emissions • Soil Dust/ Road Dust • Construction • Wood residue burning	End to End paving of roads/ pedestrian walkways/ footpaths in all the key locations	BBMP
2)		Deployment of mechanical sweeping machines	BBMP
3)		Improve last mile connectivity to metro stations	BMRCL/ BMTC
4)		Robust public transportation enhancements	BMTC
5)		Development of EV-charging infrastructure	Electricity dept
6)		Cycle-friendly paths in hotspots	BBMP
7)		Decongestion of Roads	Traffic
8)		Mandating DPF (Diesel particulate filter) fitting in heavy diesel vehicles	Transport Dept
9)		Strict enforcement to reduce leaf burning on road sides	BBMP
10)		Enforce dust control measures at construction sites, including covering materials, damping surfaces, and using water sprays.	KSPCB/ BBMP
11)		Mandate the covering of truck and construction vehicle loads to prevent dust from becoming airborne during transport.	BBMP

5. Peenya industrial area

S.No	Prominent PM sources	Action Plan for hotspots	Regulatory Department
1.	• DG sets • Vehicular Emissions • Soil Dust/ Road Dust • Fuel oil combustion • Construction • Wood residue burning	End to End paving of roads/ pedestrian walkways/ footpaths in all the key locations	BBMP
2.		Deployment of mechanical sweeping machines	BBMP
3.		Use cleaner industrial fuels	KSPCB/ KIADB
4.		Development of EV-charging infrastructure	Electricity dept
5.		Cycle-friendly paths in hotspots	BBMP
6.		Decongestion of Roads	Traffic
7.		Mandating DPF (Diesel particulate filter) fitting in heavy diesel vehicles	Transport Dept
8.		Strict enforcement to reduce leaf burning on road sides.	BBMP
9.		Enforce dust control measures at construction sites, including covering materials, damping surfaces, and using water sprays.	KSPCB/ BBMP
10.		Mandate the covering of truck and construction vehicle loads to prevent dust from becoming airborne during transport.	BBMP
11.		Distribution of Automation system to provide uninterrupted power system	BESCOM
12.		Establishment of photovoltaic solar power plants for replacement of DG sets	BBMP

6. Railwheel factory, Yelhanka new town

S.No	Prominent PM sources	Action Plan for hotspots	Regulatory Department
1.	• Vehicular Emissions • Soil Dust/ Road Dust • Fuel oil combustion • Construction • Wood residue burning	End to End paving of roads/ pedestrian walkways/ footpaths in all the key locations	BBMP
2.		Deployment of mechanical sweeping machines	BBMP
3.		Use cleaner industrial fuels	KSPCB/ KIADB
4.		Development of EV-charging infrastructure	Electricity dept
5.		Cycle-friendly paths in hotspots	BBMP
6.		Decongestion of Roads	Traffic

7.		Mandating DPF (Diesel particulate filter) fitting in heavy diesel vehicles	Transport Dept
8.		Strict enforcement to reduce leaf burning on road sides.	BBMP
9.		Enforce dust control measures at construction sites, including covering materials, damping surfaces, and using water sprays.	KSPCB/ BBMP
10.		Mandate the covering of truck and construction vehicle loads to prevent dust from becoming airborne during transport.	BBMP

7. Hebbal Junction

S.No	Prominent PM sources	Action Plan for hotspots	Regulatory Department
1.	• Vehicular Emissions • Soil Dust/ Road Dust	Development of EV-charging infrastructure	Electricity dept
2.		Cycle-friendly paths in hotspots	BBMP
3.		Decongestion of Roads	Traffic
4.		Mandating DPF (Diesel particulate filter) fitting in heavy diesel vehicles	Transport Dept
5.		Mandate the covering of truck and construction vehicle loads to prevent dust from becoming airborne during transport.	BBMP

8. Bagmane techpark, International Tech Park Bangalore (ITPB), Mahadevpura, Tech Park, Kadubeesanahalli

S.No	Prominent PM sources	Action Plan for hotspots	Regulatory Department
1.	• DG sets • Vehicular Emissions • Soil Dust/ Road Dust	Development of EV-charging infrastructure	Electricity dept
2.		Cycle-friendly paths in hotspots	BBMP
3.		Decongestion of Roads	Traffic
4.		Mandating DPF (Diesel particulate filter) fitting in heavy diesel vehicles	Transport Dept
5.		Distribution of Automation system to provide uninterrupted power system	BESCOM
6.		Establishment of photovoltaic solar power plants for replacement of DG sets	BBMP

16.2 List of hotspots and action plan for Kalaburagi.

S.No	Hotspot location	Possible potential cause of pollution	Action Plan for hotspots	Regulatory Department
1.	Super Market area, Sardhar Vallabhai patel Circle. Central Bus stand road, Court Road, Railway Station road.	1. Road Dust 2. Vehicles exhaust emission 3. Open Burning	End to End paving of roads/ pedestrian walkways/ footpaths in all the key locations	ULB
2.			Efficient road dust management through green barriers and water sprinkling in construction areas.	ULB
3.			Deployment of mechanical sweeping machines	ULB
4.			Robust public transportation enhancements	Transport Dept
5.			Cycle-friendly paths in hotspots	ULB
6.			Decongestion of Roads	Traffic Dept
7.			Cleaner fuel options for industries	KSPCB/ Industries
8.			Creating infrastructure for E-vehicle charging	Electricity dept
9.			Special Squad to monitor and ban open burning sites.	KSPCB
10.			Regular check and control of Municipal Solid wastes and landfill sites.	ULB

16.3 List of hotspots and action plan for Hubli- Dharwad.

S.No	Hotspot location	Possible potential cause of pollution	Action Plan for hotspots	Regulatory Department
1.	Gokul Road, Hubli, Jubilee Circle, Dharwad, Flyover Construction in Hubli, KSRTC Bus stand Hubli, Land fill sites at Ayodhya Nagar	1. Road Dust 2. Vehicles exhaust emission 3. Open Burning	End to End paving of roads/ pedestrian walkways/ footpaths in all the key locations	ULB
2.			Efficient road dust management through green barriers and water sprinkling in construction areas.	ULB

3.	and Hosayellapura		Deployment of mechanical sweeping machines	ULB
4.			Robust public transportation enhancements	Transport Dept
5.			Cycle-friendly paths in hotspots	ULB
6.			Decongestion of Roads	Traffic Dept
7.			Cleaner fuel options for industries	KSPCB/ Industries
8.			Creating infrastructure for E-vehicle charging	Electricity dept
9.			Special Squad to monitor and ban open burning sites.	KSPCB
10.			Regular check and control of Municipal Solid wastes and landfill sites.	ULB

16.4 List of hotspots and action plan for Davanagere

S.No	Hotspot location	Possible potential cause of pollution	Action Plan for hotspots	Regulatory Department
1.	K R Market, Big Bazar, Jayadeva Circle and South Traffic Police station	1. Road Dust 2. Vehicles exhaust emission 3. Open Burning	End to End paving of roads/ pedestrian walkways/footpaths in all key locations	ULB
2.			Efficient road dust management through Green barriers and water sprinkling in hotspots	ULB
3.			Deployment of Mechanical sweeping machines	ULB
4.			Robust public transportation enhancements	Transport Dept
5.			Cycle-friendly paths in hotspots	ULB
6.			Decongestion of Roads	Traffic Dept

7.			Cleaner fuel options for industries	KSPCB/ Industries
8.			Creating infrastructure for E-vehicle charging	Electricity dept
9.			Special Squad to monitor and ban open burning sites	KSPCB
10.			Regular check and control of Municipal Solid wastes	ULB

17 Mechanism for smooth and seamless flow of information, tie funds and interdepartmental coordination and a review monitoring mechanism for effective rollout and functioning of State Action Plan

Within the framework of the National Clean Air Programme, Karnataka has established various state and city-level committees dedicated to executing and overseeing clean air action plans in identified non-attainment cities such as Bengaluru, Davanagere, Hubli-Dharwad, and Kalaburagi. This segment provides information on the composition of these committees and the involved departments, facilitating a seamless flow of information, efficient fund utilization, and interdepartmental coordination. Additionally, a monitoring mechanism is outlined to ensure the effective implementation and functioning of the State Action Plan.

17.1 State Level Committees

Various State level Committees have been constituted to monitor and implement NCAP activities:

i. **Steering Committee:** The Committee is headed by the Chief Secretary to Govt of Karnataka. The Steering Committee would provide overall guidance for the program and review it on a yearly basis.

ii. **Air Quality Monitoring Committee:** The Committee is headed by the Principal Secretary to Govt of Karnataka. This monitoring committee will monitor the program closely and meet on a quarterly basis.

iii. **The State Level Monitoring and Implementation Committee**: the Committee is headed by the Additional Chief Secretary to the Government of Karnataka, plays a pivotal role in overseeing the execution of action plans funded by the XVFC grants. This committee holds the authority to approve these action plans and is responsible for monitoring and reviewing the activities carried out in accordance with the approved plans. Through its leadership, the committee ensures effective implementation and adherence to the stipulated guidelines for optimal utilization of resources in pursuit of clean air objectives. Annexure XIV committee orders.

17.2 City level Committees:

City-level committees have been established in all four non-attainment cities of Karnataka, with the respective District Collectors leading them. These committees are responsible for approving the annual action plans at the city level, as well as reviewing and

monitoring the progress and implementation of the goals outlined in the National Clean Air Program (NCAP) in bimonthly basis.

The state and city-level committees mentioned above play a pivotal role in ensuring the effective review, monitoring, and implementation of air quality measures. Under their guidance and oversight, a comprehensive assessment of progress is conducted, enabling timely adjustments and improvements to the strategies outlined in the National Clean Air Program (NCAP). Notably, these committees are instrumental in overseeing the implementation of annual action plans at the city level.

Moreover, their responsibilities extend to monitoring the state action plan, ensuring that the broader regional goals and initiatives are aligned with the overall objectives of the NCAP. This integrated approach, with active involvement at both state and city levels, enhances the efficiency and coordination of air quality management efforts. As a result, the committees serve as critical entities in the ongoing commitment to address and improve air quality in the specified regions. Their proactive engagement contributes significantly to the success of the air quality initiatives outlined in the NCAP.

18 List of activities causing Air Pollution in Karnataka from neighbouring states

This section provides a comprehensive overview of activities originating from neighbouring states that have the potential to contribute to air pollution in Karnataka. The identified sources span diverse sectors, including industrial, agricultural, and transportation, among others. Recognizing the need for a precise understanding of transboundary pollution sources, it is emphasized that conducting a scientific study is crucial. The outcomes of such a study will guide the development of effective cross-border strategies, which are instrumental in mitigating air pollution and ensuring the well-being of public health and the environment. The scientific study forms the foundational basis for making informed decisions and implementing targeted interventions to address specific sources and impacts of transboundary pollution. Despite this, a preliminary list of potential emission sectors has been identified and is detailed below.

1. Industrial Emissions: Industries in neighbouring states release pollutants such as particulate matter, sulfur dioxide (SO2), nitrogen oxides (NOx), and volatile organic compounds (VOCs), contributing to air pollution in Karnataka.

2. Power Plants: Emissions from power plants in neighbouring states, particularly those burning fossil fuels, release pollutants such as sulfur dioxide, nitrogen oxides, and particulate matter, impacting air quality in Karnataka.

3. Agricultural Burning: The practice of burning crop residues and stubble in neighbouring states results in the release of significant amounts of particulate matter and pollutants into the atmosphere, affecting air quality in Karnataka.

4. Transportation: Vehicles travelling from neighbouring states emit pollutants, including nitrogen oxides, carbon monoxide, and particulate matter, contributing to air pollution in Karnataka.

5. Deforestation and Land-use Changes: Activities such as deforestation and land-use changes in neighbouring regions can lead to increased dust and particulate matter, influencing air quality in Karnataka.

6. Waste Burning: Improper disposal of waste through burning in neighbouring states releases harmful pollutants into the air, adversely impacting air quality in Karnataka.

7. Construction Activities: Construction projects in neighbouring states generate dust and particulate matter, which, when carried by the wind, contribute to air pollution in Karnataka.

8. Wildfires: Forest fires or uncontrolled burning in neighbouring regions release large amounts of pollutants, affecting air quality in Karnataka.

9. Mining Operations: Dust and particulate matter from mining activities in neighbouring states may be transported by wind, contributing to air pollution in Karnataka.

10. Fugitive Emissions: Uncontrolled emissions from various sources, such as fugitive dust from unpaved roads or open storage of materials, can contribute to air pollution in Karnataka.

The identified activities originating from neighbouring states significantly impact the air quality in Karnataka. Addressing these sources requires collaborative efforts, emphasizing regional cooperation, and implementing effective policies to reduce emissions. Mitigation strategies should be developed and implemented jointly to ensure sustained improvements in air quality for the well-being of the residents and the environment in Karnataka.

In view of this, it is imperative to establish a coordination committee in collaboration with neighbouring states. The primary objective of this committee is to facilitate the efficient implementation of mitigative measures aimed at addressing transboundary air pollution. The committee will serve as a platform for coordinated efforts, information exchange, and joint initiatives among the involved states to effectively tackle the challenges posed by air pollution that transcends geographical boundaries.

19 Way forward

The Karnataka State Action Plan represents more than just a culmination; it's a crucial step towards making air quality management a key part of how the state plans for its future. It's not just the end of a process but a significant move to ensure that thinking about climate issues and sustainable development of the state.

The success of the National Clean Air Programme (NCAP) in the long run is intricately linked to the level of commitment demonstrated in its early stages, particularly in terms of governance and financial support. The initial years play a crucial role in setting the tone for the entire program. Moreover, the adoption of the NCAP by a diverse range of stakeholders is imperative for its effectiveness. This inclusivity requires more than a superficial acknowledgment; it necessitates a deep institutional alignment, coherence, and enhanced capacity throughout the decision-making value chain. In simpler terms, everyone involved in the decision-making process needs to be on the same page, and the institutions responsible for implementing the plan must be well-prepared and capable.Ultimately, the Karnataka State Action Plan serves as a blueprint for embedding climate consciousness into the very essence of the state’s development, ensuring a sustainable and resilient future.

20 Annexures

20.1 Annexure I: Indicative template for State Action Plan on Air Pollution

1. Industrial Emission – Annexure II district wise details of Industries.

Sl. No	Activities	Status of activity (Completed/ongoing /To be Started)	Timeline for completion	Target (Coverage/ Percentage)	Financial implication (Yes/No)	Funds Allocated (Rs. crore)	Funds Utilized as of date (Rs. crore)
1	Policy for permitting new industries in Critically Polluted Areas (CPAs)	New red and orange category permitted only if they comply with the CPCB guidelines.	completed	As and when proposals are received	Nil	-	-
2	Guidelines for laying city gas distribution network	Policy and guidelines for laying city gas distribution are prepared details are in section 7.4	December 2028 (Long term)	100%	Under the scope of the territorial distributors	**Annexure III**	
3	Policy for replacement of heavy oil (e.g., furnace oil, diesel etc., based industries to alternate energy sources (CNG/PNG/Electricity)	Policy on the usage of CNG/ LPG is in place for non-attainment cities	Ongoing	Implemented depending on the technical feasibility by the factory	Nil	-	-
4	Policy for restriction on the usage of Pet coke for industrial use.	KSPCB has issued directions under Section 31(A) of the Air (Prevention and Control of Pollution) Act, 1981to M/s Mangalore Refinery and Petrochemicals Limited, Mangaluru, Dakshina Kannada on 15.06.2018 to sell the pet coke only to industries having the permission of the KSPCB and submit the details on the quantity of pet coke generated and sold every month.					
5	Rules and Regulations on	Electricity (Rights of Consumers) Rules, 2020 issued by GoI Vide Gazetted Notification No. G.S.R.					

	uninterrupted power supply	818(E) dated 31st December 2020, stipulates 24 X 7 power supply to consumers.					
6	Policy for use of DG sets	KSPCB has issued an order, vide No. KSPCB/SEO-INFRA/DG-RETROFITTING/2021-22/955 dated 25th May 2023 (**Annexure IV**)					
7	Policy regarding the installation of CAAQMS based on the emission potential or capacity of air-polluting industries	33 industries have installed the CAAQMS&186 OCEMS	Ongoing	100%	Nil	-	-
8	Mechanisms to be devised for expansion to air polluting industries are not covered currently (Such as emission from utility stacks in 17 categories, etc.,)	Details are provided in the Table 7.2 Status of OCEMS in the State	Completed	100%	Nil	-	-
9	Mechanisms to control fugitive emission sources	Stipulated at the time of issue of Consent for Operation to reduce the fugitive emissions by installing appropriate APC to meet the prescribed standards	Completed and ongoing	100%	Regulatory activity	-	-
10	Regulations for conversions of brick kilns to clean technologies	Ongoing	Two years (Medium term)	50% percent to be completed by Dec-2025	Regulatory	-	-
11	Regulations for Emission Trading Scheme (ETS)	Yet to be initiated	-	-	-	-	-
12	Policy to set up e-waste recycling unit in industrial areas in compliance with e- waste	Identified dismantlers refurbishers and recyclers. Details of No of	Completed	100%	Regulatory	-	-

	management rules	Recyclers, refurbishers are in Table 7.13					
13	Any other Policy /Rules/ Standards/Guidelines pertaining to industrial emissions	Citing Guidelines for the establishment of red, orange, and green industries**(Annexure XIII)**	Completed	100%	Regulatory activity	-	-
14	Number of industries in the state complying emission standards	The details are provided in Table 7.3: Air Pollution Control (APC) Status of Industries	Completed and ongoing	100%	Regulatory activity	-	-
15	Inventory of fuel consumed in the industries (type and quantity)	The details are provided in Table 7.14: Abstract of the fuel consumed in the industries (type and quantity) from the all Zonal offices of Karnataka		-	-	-	-
16	Shifting of industries / commercial units to gaseous fuels (CNG/NG/CBG)	The policy is already laid down and is ongoing. The details are provided in Annexure III.	2028 (Long term)	100%	Yes	105	0
17	Number of households shifted to PNG/LPG	The details are provided in Annexure III. As per National family health survey 79.7% households in Karnataka use clean fuel for cooking					
18	Any other activity/project pertaining to industrial emissions	Source Apportionment and Emission inventory studies for Non-attainment cities are completed. Details are in section 4.	Completed for all 4 NACs	4 non-attainment Cities	Yes	0.5	0.25

(Source: KSPCB)

2. Vehicular Emission

Sl. No	Activities	Status of activity (Completed/ongoing /To be Started)	Timeline for completion	Target (Coverage/ Percentage)	Financial implication (Yes/No)	Funds Allocated (Rs. crore)	Funds Utilized as on date (Rs. crore)
1	Notification for phasing out old vehicles (Commercial: 10 years; Private: 15 years)	As per the Government notification TD 187 TDO 2020, dated 03-02-2022, the Renewal of Fitness certificate for 2 -stroke auto rickshaw plying in Bengaluru has been restricted (Annexure VI)	Notified	100%	Regulatory	-	-
		MORTH, New Delhi enhanced the fees of Renewal of Fitness certificate and registration certificate to discourage the use of old vehicles	notified	100%	Yes	The fee for renewal of fitness certificate has been increased from Rs. 600 to Rs. 1,200, while the fee for renewal of registration certificate has been increased from Rs. 600 to Rs. 1,000.	No

		Green Tax is being collected at the time of Renewal of fitness certificate and registration certificate as per 3-B of KMVT, 1957	Ongoing	100%	Yes	15.0Cr (the revenue collected from Green Tax is being utilized for the purpose of control and monitoring air pollution as per the MoRTH guidelines. (02/02/2021)	6.0 Cr utilised to create awareness about air pollution among the public through LED Vehicles, Hoardings etc.
2	Policy for scrapping old vehicles	MoRTH, New Delhi has issued a notification vide GSR 653(E), dated: 23-09-2021. RVSF is operational by M/s. Mahindra MSTC Recycling Pvt ltd in Bengaluru. Plant has the capacity to scrap all types of vehicles upto 3000/month.	Operational	100%	yes	Project cost is 8.40 Cr	8.40 Cr cost project setup by M/s. Mahindra MSTC Recycling Pvt ltd.
		KSRTC as a public Sector has adopted the scrapping Policy as below: For ordinary vehicles 09 lakh kms, For Corona seater 10 lakh kms, For Corona sleeper 11 lakh kms, for Volvo vehicles 13 lakh kms					
		BMTC as a public sector has adopted the scrapping policy of 8.5 lakh kilometres or 11 years whichever is earlier					
3	Policy/Plan for Li-battery waste management from	Details are in Table 7.10 Total number or Lead Acid Battery Recycler	Plan is operational	NA	NA	NA	NA

	scrapped vehicles	/Manufacturers in Karnataka as on 2023-24 are 67.					
4	Policy/Scheme for Eco-Friendly Mass Rapid Transport Systems	Ongoing: Bangalore Metro Rail Project Phase-2A and Phase-2B	Sept 2025 (short term)		Yes	14,788.101	2735.8 (July 2022)
5	Policy for augment e-vehicles	Fees tax and permit exemption for EV vehicles. Setting up of EV charging stations in the State	Ongoing		Yes	In the FY 2018-19, Rs.4.00 Cr and in the FY 2021-22 Rs.3.00 Cr was transferred to BESCOM for setting up of EV charging stations in Karnataka	7.0 Crore
		KSRTC: ongoing A) 50 Buses	completed	NA	Yes	FAME-II is providing Rs.27.5 Crore	5.5 Crore
		BMTC: Ongoing a) 90 buses b) 300 buses c) 921 buses	c) ongoing	NA	NA	a) Bengaluru Smart City Ltd (BenSCL) provided Rs.50 Cr b) FAME-II is providing Rs.157 Cr c) XVFC air quality grants of Rs Rs 76 Cr.	a) Rs.25 Cr provided by BenSCL b) Rs.20 Cr provided by MHI c) 50 Cr

6	Notification and enforcement of PUC norms	Enforcement is in place and penalty is being imposed on vehicles that do not comply with the Emission norms	Ongoing	100%	No	No	No
7	Online monitoring of PUC implementation	Ongoing: There are 2239 Emission Testing Centres in Karnataka and these centres are being connected with the centralized servers through online networking					
8	Mechanism for centralized record maintenance of PUC checks, certification and cross-check by the concerned transport authorities to be incorporated	All Emission Testing Centres are connected with the centralized servers through online networking for centralized monitoring and maintenance of PUC check	On going	NA	NA	NA	NA
9	Construction of bypass/ring roads	To be started	3 years (long term)	-	-	14,934	-
10	Re-filling stations retrofitted with Vapour Recovery System (VRS)	CPCB on January 07, 2020 in Compliance of the Hon'ble NGT order dated January 18, 2019 in OA No. 86/2019, issued guidelines for setting up of new petrol pumps, recommending installation of VRS in all new petrol pumps having sale potential of more than 100 KLPM and located in million plus cities, and petrol pumps with sale potential of more than 300 KLPM and located in cities with population between 01 lakh to 01 million. CPCB in exercise of the power vested under section 5 of the E(P) Act, 1986, the direction dated 18.09.2020 issued to OMCs to install VRS as per the following timelines: • VRS stage II: 100% retail outlets by October 2022 out of which 50% of retail outlets shall have VRS by June 2022. • VRS stage IB: 100% retail outlets by June 2022 out of which 50% of retail outlets shall have VRS by Dec.2021. • VRS stage IA (Storage Terminals): March 2024.					

		Oil Manufacturing Companies (OMCs) are responsible for maintaining the installed VRS. Working of dispenser shall be interlinked with VRS functioning. Work zone monitoring for TOCs and Benzene shall be conducted by OMCs for petrol pumps selling more than 100 KL per month and more than 10 lakhs population. There are around 230 petrol pump stations in the million-plus cities with a sale potential of >100 KL MS per month each, all230 have been provided with VRS in phased manner as per the information received from BP and Jio in Karnataka.					
11	Incentive of setting up R&D facilities related to EVs	Karnataka Electric Vehicle and Energy Storage Policy-2017 Incentives and concessions shall be offered to MSME for manufacturing, Exemption from Stamp duty, concessional reg chargers, Reimbursement of land conversion fee, exemption from tax on electricity tariff, interest free loan on Net SGST to large, medium, etc. Incentives and concessions to EV battery manufacturing or assembly enterprises incentives and concessions to EV charging swapping infrastructure equipment manufacturing enterprises Service providers for EV mobility etc https://indianstates.csis.org/uploads/KarnatakaStateElectricVehicleEnergyStoragePolicy2017.pdf					
12	Any other Policy/Rules/Standards/ Guidelines pertaining to vehicular emissions	Ongoing, Green Tax Fund No. TD 113 TDO 2022, dated:23-05-2022. (Creating awareness regarding controlling Air Pollution)	Ongoing	100%	Yes	15.00 Lakhs	6.00 Lakhs
		BMTC has a vision of replacing all diesel buses with electric buses by 2030					
13	Automated Testing Stations	Completed in Bengaluru and Hubli Dharwad ongoing in Davanagere and Kalaburagi (under planning on PPA mode)	2026 (Medium term)	100%	NO	NIL	NIL

4. Construction & Demolition Waste and Road dust Management[8]

Sl. No	Activities	Status of activity (Completed/ongoing /To be Started)	Timeline for completion	Target (Coverage/ Percentage)	Financial implication (Yes/No)	Funds Allocated (Rs. crore)	Funds Utilized as on date (Rs. crore)
1	Policy for development of projects/plants for C&D waste management	**A draft Karnataka State Construction & demolition waste management Strategy is prepared for the state to sustainably manage the C & D waste in urban and rural areas and the same is uploaded in Directorate of Municipal Administration website (www.municipaladmn.gov.in).**					
2	Policy for use of C&D waste in laying and construction of State Highways	NA	NA	NA	NA	NA	NA
3	Demand creation for C&D waste and alternative use of C&D waste material	NA	NA	NA	NA	NA	NA
4	Schemes for the development of green belts/open spaces and street sides greening on State highways	NA	NA	NA	NA		
		NHAI: Greening is an integral part of the Concessionaire Agreement. The guidelines followed for greening in National Highway Authority of India (NHAI) projects are IRC: SP: 21-2009 and Green Highways (plantation, transplantation, beautification & maintenance), Policy-2015. As per the information received from the various Regional Offices of NHAI in the State, it is estimated that 4,64,891 avenues of plantation (plantation on both sides of the road) and 10,20,895 median of plantation are being carried out.					
5	Penalty provisions for non-compliance of C&D waste management rules at construction sites	Karnataka State Construction & Demolition Waste Management Policy & Strategy – 2024 in its annexure II has mentioned about illustrative penalty provision for various non-compliances in ULBs.					
6	Maintenance, repair and paving	KSHIP: Ongoing	Regular	30	HAM project, the cost is included in the		

[8] Information received from DMA via letter No. 565640/DMA/16/2020-21/4504 dated: 17.09.2022, KSHIP's Letter No: PIU/KSHIP-III/Env/SAPAP/Pkg-1, 2 & 3/2022-23/1112 dated: 22.07.2022 and NHAI's letter NO. NHAI/RO-BNG/GHM/25027/5/2021-22/1438 dated: 22.07.2022.

	of State highways		activity		estimates		
		NHAI: Maintenance of roads is carried out regularly to keep the roads in good condition. The shoulders of roads are either compacted earthen or paved surfaces where dust is not emitted.					
7	Monitoring of road dust especially in and around hotspot areas and in the vicinity of State highways	KSHIP: Ongoing	Regular activity	30	HAM project, the cost is included in the estimates		
		NHAI: Usually wherever earthworks are taken during the project construction, to avoid dust continuous sprinkling of water is done					
8	Mechanism for development and maintenance of road infrastructures for industrial states and clusters	Karnataka Industrial Areas Development Board is responsible for this activity based on the orders issued with regard to Consent for Establishment by KSPCB					
9	C&D waste processing plants	There are 154 cities identified under the SBM 2 Guidelines which are eligible to receive funding to set up processing facilities for effective management of C&D Waste. In Karnataka, these cities include Bengaluru (BBMP), Hubli-Dharwad, Mysore, Gulbarga and Davanagere. In addition to these, the various categories of ULBs are instructed to consider making the minimum arrangement for processing of C&D Waste.					
		DMA: Ongoing	2025 (short term)	100	Yes	71.58	Nil
		BBMP: Completed (Chikkajala, Kannur) processing about 1250 MTD; completed at a cost of 19.3 Cr from XVFC grants for air quality management.					
11	Greening of open spaces/parks developed	KSHIP: Ongoing	Sept-2025 (short term)	30	HAM project, the cost is included in the estimates		
		In the year 2023-24, a grant of Rs.1215.957 lakh has been provided and expenditure upto the end of November-2023 is Rs.512.195 for maintenance of 1418.50 kms plantation, maintenance of 1.025 lakh seedlings, raising of 247.40 kms plantation has been undertaken. Karnataka Forest Department (KFD): An amount of Rs.591.11 Lakhs has been spent for Plantation in green belt area of Bangalore City, Development of Parks and maintenance work in BDA Layouts. KFD provides certain facilities for general public through a number of schemes involving tree planting					

		and/or raising of awareness, some of the schemes include: (a) Tree Park & Daivivana - provides facilities to general public for recreation and environmental awareness; and (b) Chinnara Vana Darshana - provides facilities to school children to visit forest and wildlife areas to increase their environmental awareness. UDD: Under the 15th Finance commission Grants, 19.63 cr of grants are utilized to create parks and greening of open spaces in Bengaluru. Detailed information is given in section 9.5.			
12	Any other activity/project pertaining to C&D waste and Road dust management	KSHIP: Ongoing	2025	30	HAM project, the cost is included in the estimates
		BBMP has procured 17 self-propelled; 8 trucks mounted and 2 rides on mechanical sweeping machines.			

4. Emissions from burning of waste[9]

Sl. No	Activities	Status of activity (Completed/ongoing /To be Started)	Timeline for completion	Target (Coverage/ Percentage)	Financial implication (Yes/No)	Funds Allocated (Rs. crore)	Funds Utilized as on date (Rs. crore)
1	Notification and Enforcement of municipal solid waste (MSW) management rules	Completed	A direction under section 5 of the Environment (Protection) Act, 1986 for implementation of the Solid Waste Management Rules, 2016 is issued vide No. KSPCB/SEO-WMC/MSW/4421 dated 01.12.2021 **(Annexure VIII)** by KSPCB. For ULB's: Meet the terms with respect to Rule 15 of SWM Rules, 2016				
2	Policy for MSW management	Completed					
3	Policy for legacy waste	Completed	Karnataka State Urban SWM Strategy-2020				

[9] Information received from DMA via letter No. 565640/DMA/16/2020-21/4504 dated: 17.09.2022 and BBMP through E-mail dated 13.07.2022.

	management at dumpsites						
4	Policy for implementations of ban on single use plastics	Completed. The Forest, Ecology and Environment Secretariat, GoK vide Notification No. FEE 17 EPC 2012, Bengaluru, dated 11.03.2016 (**Annexure IX**) in the exercise of the powers conferred under the Environment (Protection) Act, 1986.					
5	Policy for development and Construction of Waste to Energy Plants	Waste to Energy is the Karnataka's first waste-to-energy plant operational. Rs 260-crore, 11.5-MW plant will have an annual operation period of 7,500 hours and will bear 75% of the load in year one.The plant is expected to help BBMP dispose of 25% of solid waste generated by the city in a scientific and sustainable way. Establishment of Bio- Methanation Plants of capacity 5 TPD to 50 TPD at various locations in BBMP at a project cost of Rs.40.00 Crores are planned to construct. To process wet waste, 5 ton capacity Bio–methanization plants are being established at 16 locations, out of which 4 have been made functional. The biogas generated from these plants is being utilized to light the street lights in that locality. More details in section 10.4					
	a) Non-recyclable/ combustible dry waste						
	b) Bio-methanation/Bio CNG						
	c) Composting plant etc.,						
6	Any other Policy /Rules /Standards / Guidelines pertaining to MSW Management	NA	-	-	-	-	-
Sl. No	**Activities**	**Status of activity (Completed/ongoing /To be Started)**	**Timeline for completion**	**Target (Coverage/ Percentage)**	**Financial implication (Yes/No)**	**Funds Allocated (Rs. crore)**	**Funds Utilized as on date (Rs. crore)**
1	Waste collection status in the city (%)	94%, Ongoing	Ongoing	100%	Yes	325.0	100%
2	Waste segregation status in the city (%)	66%, Ongoing	Ongoing	100%	Yes	325.0	100%
3	Material Recovery Facility	Ongoing	March 2025 (Medium Term)	138 Wards	Yes	70 .0	100%

		To be started: 310	March -2025 (long term)	310 ULBs	Yes	402.144	Nil
4	Waste to Energy plants	To be started: 1	March -2025 (long term)	100%	yes	82.8	100%
5	Waste to compost plants	BBMP: Ongoing	March 2025 (Medium Term)	6 Plants	Yes	44.0	100%
		DMA: Completed:185 To be started: 124	March -2026 (long term)	309 ULBs	Yes	207.51	Nil
6	Remediation of dumpsites in the city	BBMP: Ongoing	3years (long term)	7 Sites	Yes	100.0	Nil
		DMA: Ongoing: 05 To be started: 124	March 2025 (Medium Term)	195 ULBs	Yes	989.84	Nil
7	Control open burning of MSW	BBMP: Ongoing	1 year (short term)	100%	Yes	12.0	Nil
		As per the notification, FEE 6 ENG 2017 (**Annexure X**), issued by the Department of Forest Ecology and Environment, Government of Karnataka, imposed a complete ban on open burning solid waste.					
8	Any other activity/project pertaining to MSW Management	BBMP: Ban of single use of plastic, Zero waste management, 3R Principles and Awareness to capacity building.	1year (Short term)	100%	Yes	10.00	Nil

Note: *The information provided by BBMP is only for Bengaluru City and that provided by DMA is for the State.*

5. Emissions due to burning of Agro residues

Sl. No	Activities	Status of activity (Completed/ongoing /To be Started)	Timeline for completion	Target (Coverage/ Percentage)	Financial implication (Yes/No)	Funds Allocated (Rs. crore)	Funds Utilized as on date (Rs. crore)
1	**In-Situ treatment of biomass residues for management of stubble burning**						
a.	Schemes for procurement of agriculture machinery	To be started There is no Exclusive Scheme for Procurement of Agri Machinery for insitu treatment of Biomass Residue Management of stubble burning. However the machineries suitable for bio mass residue of crop residues like Balers, Rakes, Chaff cutters, Power weeders, Shredders, stubble shavers can be distributed to the farmers by providing Subsidy. Details are in Annexure-IA.	2023-24 to 2026-27 (4 years) (long Term)	Major Crop Residue for using cropped of rice, sugarcane, maize, wheat, millets, sunflower, cotton and Toor.	Yes	77.50	-
b.	Assistance for establishment of farm machinery banks/custom hiring centres	Ongoing Scheme Detailed Action plan for strengthening the existing farm machinery banks by providing various machinery required for Crop Residue Management has been annexed as Annexure-IIA.	Regular Activity	Major Cropped area which produced highest Crop Residues.	Yes	74.00	-
c.	Use of decomposer for in-situ Crop residue management	NA	-	-	-	-	-
2	**Ex-Situ treatment of biomass residues for management of stubble burning**						
a.	Schemes for balers/pellet/briquette	Balers are included under farm machinery as one of the components under farm machinery schemes.					

	machines, etc.,						
		To be started There is no Exclusive Scheme for Procurement of Agri Machinery for insitu treatment of Biomass Residue Management of stubble burning. The Action plan for the machineries required for Ex-Situ treatment of biomass residues has been Annexure-1.	2023-24 to 2026-27 (4 years) (Long Term)	Major Crop Residue for using croped of rice, sugarcane, maize, wheat, millets, sunflower, cotton and Toor.	Yes	Included in 77.50 cr.	
3	Biomass projects with respect to the hotspots of crop residue burning	"There is no exclusive project with respect to the hotspots of crop residue burning. Department is motivating farmers to take up solid and liquid organic fertilizers production on their own at the farm level by effective use of bio waste produced in crop cultivation. Use of organic fertilizers in crop cultivation helps to reduce Air pollution and also improves soil health, water holding capacity and soil fertility. In addition, Under Organic Fertilizers promotion programme, department is giving subsidy to firms for the distribution of city compost directly to farmers field. It helps to effective utilization of city waste generated in city Municipal and Panchayath. Using of compost in crop cultivation is helps to reduce air pollution and increases soil organic carbon."					
4	Use of biomass/crop residue based pellets mass blending with coal and its co-firing in thermal power plants with blending ration which needs no modification in boilers	As per the Karnataka Renewable Energy Development Ltd (KREDL), State has an allocated capacity of 395.13 MW and commissioned capacity is 139.03 MW. The State has a potential for generating 1000 MW. KREDL has Commissioned 20 Biomass Power Plants in different districts of the State under various Electricity Supply Commissions (ESCOMs) https://kredl.karnataka.gov.in/storage/pdf-files/bio-cogen-wte/Bio_com.pdf					
5	Policy for supply chain mechanism for in-situ and ex-situ management of stubble	-	-	-	-	-	-

6	Supply chain for crop residues to cow shelters	-	-	-	-	-	-
7	Development of an effective protocol for monitoring fire incidents including crop area consideration and crop fire area data	-	-	-	-	-	-
8	Collaboration with ISRO and preparation of Satellite-based maps for monitoring fire incidence	-	-	-	-	-	-
9	Any other scheme/program that may help in reducing air pollution	"Under organic and millet promotional scheme of the state, natural/traditional/organic millets growers are being provided with incentive of Rs. 6000/- per ha thereby to reduce carbon foot print. Organic/ Natural farming systems are being promoted in farmer's field incorporating best practices of organic farming system and ZBNF system, wherein incorporation of crop residues into soil or into biodigester along with multicropping, intercropping and crop rotation practices. Stubble burning is totally discouraged.	2023-24 to 2026-27 (4 years) (Long term)	40%	Yes	Not allocated yet	NIL

Annexure IA

Detailed Action Plan for distribution of machineries required for Crop Residue Management			
Sl.	**Name of the Machinery**	**Physical (Nos)**	**Financial (in Lakhs)**
1	MB Plough	500	500.00
2	Rotovator	500	500.00
3	Happy Seeder or Turbo Seeder	100	100.00
4	Zero seed cum fertilizer drill.	100	100.00
5	Roto slasher	50	50.00
6	Thrash cutter	100	100.00
7	Mulcher	50	50.00
8	Motor operated wheel barrows or load cart	100	100.00
9	Chaff Cutter	1000	1000.00
10	Coconut frond choppers	100	100.00
11	Shredder	500	500.00
12	Straw Combined Harvesters / modified Combined Harvesters to collect the crop residues.	100	100.00
13	Sugarcane Harvester	100	3800.00
14	Rake	100	100.00
15	Rice Straw Chopper cum Shredder	50	50.00
16	Stubble Shaver (Ratoon Manager)	50	50.00
17	Balers	400	400.00
18	Sugarcane thrash cutter	50	50.00
19	Briquette or Pellet making machine.	100	100.00
TOTAL		**4050**	**7750.00**

Annexure II A

List of Crop Residue Machineries and subsidy for Strengthening of Established Farm Machinery Banks/Custom Hiring Centres (as per the local needs with Maximum numbers to each centre)			
			(Phy-in Nos. & Fin-Rs. In Lakh)
Sl. No.	**Name of the Machinery**	**Physical**	**Financial**
1	MB Plough	5	5.00
2	Rotovator	5	5.00
3	Happy Seeder or Turbo Seeder	2	6.00
4	Zero seed cum fertilizer drill	2	2.00
5	Roto slasher	2	2.00
6	Thrash cutter	2	2.00
7	Mulcher	2	2.00
8	Tractor Operated Chaff Cutter	4	4.00
9	Coconut frond choppers	4	4.00
10	Shredder	4	4.00
11	Straw Combined Harvesters / modified Combined Harvesters to collect the crop residues.	2	50.00
12	Sugarcane Harvester	3	114.00
13	Rake	1	2.00
14	Rice Straw Chopper cum Shredder	2	4.00
15	Stubble Shaver (Ratoon Manager)	3	3.00
16	Balers	4	12.00
17	Sugarcane thrash cutter	2	2.00
18	Briquette or Pellet making machine.	5	5.00

Detailed Action Plan for Strengthening of Number of Farm Machinery Banks/Custom Hiring Centres by providing the Crop Residue Machineries			
			(Phy-in Nos. & Fin-Rs. In Lakh)
Sl. No.	**Name of the Machinery**	**Physical**	**Financial**
1	Farm Machinery Banks	50	400.00
2	Custom Hiring Centres	100	7000.00
TOTAL		**150**	**7400.00**

6. Household Emissions[10]

Sl. No	Activities	Status of activity (Completed/ongoing /To be Started)	Timeline for completion	Target (Coverage/ Percentage)	Financial implication (Yes/No)	Funds Allocated (Rs. crore)	Funds Utilized as on date (Rs. crore)
1	Schemes for use of LPG/PNG for cooking fuels	Ongoing: Total LPG connections released under PMUY(earlier PMUY and Ujjwala 2.0 schemes) for the Karnataka State are 36,99,255 as on 27.09.2022. From 2023 onwards 30 Lakh beneficiaries are targeted. Out of the 30 lakh beneficiaries of the scheme, 10 lakh beneficiaries will be included in the first phase, he said. The scheme is being implemented jointly by the Department of Food and Civil Supplies, Social Welfare, Forest and Labor with a budget of 1,350 crore.					
		Ongoing Chief Minister Anila Bhagya Yojane	NA	30 Lakh	Yes	1350	
		PNGRB has authorized 8 entities to establish a CGD network in all the districts of Karnataka to supply PNG & CNG. IDD in coordination with district and other state agencies is working for successful implementation of the CGD projects in the State.					
2	Amendments to the building by-laws for "Indoor air quality management"	The Municipal Corporation Model Building Bye-Laws, 2017 has been published in the State Gazette Dated: 13-02-2020 vide Notification No: UDD 12 TTP 2018, dated: 05-02-2020, for indoor air quality, the ventilation provisions are as per National Building Code of India.					
3	Any other Policy/ Rules/Standards/Guidelines pertaining to Household emissions	Under the Transformation of Fair Price Shops, in order to increase the income of Fair Price Shop owners, Govt. of Karnataka has initiated the following programmes such as Common Service Center (CSC) services at FPS, IPPB Business Correspondent (BC) / financial services at FPS, Retail sale of 5 kg LPG cylinders at FPS, PM-WANI services at FPS and Sale of non-PDS commodities. Special Component Plan: The LPG gas connection and the distribution of solar lamps are given to the beneficiaries of schedule caste families, bee-hive boxes were distributed to improve their economic conditions and maintenance					

[10]Information received from FCS Department via letter No. FCS/CS/PTL/33/2009-10 dated 13.07.2022 and letter No. FCS/CSTT/03/2019-20 dated 18.07.2022 and from Anila Bhagya Scheme Karnataka 2024

		of avenue plantations along the roads that lead to Scheduled Caste colonies is carried out. In 2023-24, an amount of Rs.200 lakh was earmarked out of which Rs.159.99 lakh is provided for refilling of 2 cylinders to 7207 schedule caste beneficiaries and Rs.40.01 lakh for free distribution of 50 nos bamboosto each Scheduled Caste family. Rs. 133.32 lakh was released out of which Rs.114.61 lakh was utilized upto November 2023 for 2 free cylinder refills to 6378 Scheduled Caste beneficiaries. Tribal Sub-Plan: To relieve pressure on the forest, LPG gas connections, gas cylinder refilling, solar water heaters and solar lamp distribution were provided to Schedule Tribe beneficiaries. In addition to this, bee hive boxes were also given them to improve their economic conditions. An initiative has been taken to maintain raised avenue plantations along the roads leading to the colonies inhabited by the Schedule Tribe population. In 2023-24, an amount of Rs.200 lakh was earmarked out of which Rs.159.99 lakh is provided for refilling of 2 cylinders to 7207 schedule tribe beneficiaries and Rs.40.01 lakh for free distribution of 50 nos bamboos to each Scheduled Tribe family. Rs. 133.32 lakh was released out of which Rs.113.56 lakh was utilized upto November 2023 for 2 free cylinder refills to 6392 Scheduled Caste beneficiaries.

20.2 Annexure II: District-wise details of the industries in Karnataka

Zonal Office	Particulars of the Regional Office	Name of the District	Red	Orange	Green	White	Grand Total
Bengaluru City	Bengaluru City-East	Bengaluru Urban	58	188	107	673	1026
	Bengaluru City-South	Bengaluru Urban	103	292	387	899	1681
	Bengaluru City-West	Bengaluru Urban	3	161	138	6	308
	Bengaluru - Peenya	Bengaluru Urban	138	167	614	165	1084
		Total	**302**	**808**	**1246**	**1743**	4099
Bengaluru North	Dasarahalli	Bengaluru Urban	17	83	12	0	112
	Doddaballapur	Bengaluru Rural	49	85	146	53	333
	Nelamangala	Bengaluru Rural	112	182	452	1	747
	Yelahanka (Byatarayanpura)	Bengaluru Urban	39	98	158	1	296
		Total	**217**	**448**	**768**	**55**	1488
BengaluruSouth	Anekal	Bengaluru Urban	149	161	333		643
	Bommanahalli	Bengaluru Urban	172	272	386	59	889
	Rajarajeswari Nagar	Bengaluru Urban	57	193	229	2	481
	Ramnagara	Ramanagara	90	218	202	2	512
	Sarjapura	Bengaluru Urban	188	228	436	157	1009
		Total	**656**	**1072**	**1586**	**220**	3534

Bengaluru East	Chikaballapura	Chikaballapura	16	151	91	7	265
	Hoskote	Bengaluru Rural	50	135	167	8	360
	Kolar	Kolar	77	144	241	8	470
	Mahadevpura	Bengaluru Urban	172	229	225	75	701
		Total	**315**	**659**	**724**	**98**	1796
Mysuru	Chamrajnagara	Chamrajanagar	5	73	41	158	277
	Hassan	Hassan	33	197	322	460	1012
	Kodagu(Coorg)	Kodagu	4	66	158	100	328
	Mandya	Mandya	30	218	155	314	717
	Mysuru - 1	Mysuru	94	259	223	464	1040
	Mysuru - 2	Mysuru	60	142	166	276	644
		Total	**226**	**955**	**1065**	**1772**	4018
Mangaluru	Chikkamagaluru	Chikkamagaluru	10	106	180	0	296
	Karwar	Karwar	20	177	144	0	341
	Mangaluru	Mangaluru	115	617	225	0	957
	Udupi	Udupi	21	545	366	4	936
		Total	**166**	**1445**	**915**	**4**	2530
Dharwad	Bagalkot	Bagalkot	86	104	161	274	625
	Belgaum - 1	Belagavi	91	427	299	2576	3393
	Belgaum - 2 (Chikkodi)	Belagavi	40	6	5	0	51
	Dharwad	Dharwad	76	355	240	37	708
	Haveri	Haveri	8	89	122	245	464
	Gadag	Gadag	5	74	136	168	383
		Total	**306**	**1055**	**963**	**3300**	5624
Ballary	Bellary	Bellary	132	452	255	314	1153
	Koppal	Koppal	39	207	201	16	463
	Raichur	Raichur	45	169	311	387	912
		Total	**216**	**828**	**767**	**717**	2528

Chitradurga	Chitradurga	Chitradurga	21	110	134		265
	Davangere	Davangere	23	233	163		419
	Shimoga	Shimoga	21	281	51		353
	Tumukur	Tumakur	83	415	278		776
		Total	**148**	**1039**	**626**	**0**	1813
Kalaburgi	Vijayapura	Vijayapura	15	148	133	360	656
	Bidar	Bidar	34	39	52		125
	Kalaburagi	Kalaburagi	37	166	60		263
	Yadgiri	Yadgiri	14	48	70	110	242
		Total	**100**	**401**	**315**	**470**	1286
		Grand Total	2652	8710	8975	8379	28716

(Source:KSPCB)

20.3 Annexure IIIThe detailed present status of each Geographical Area as on 31.03.2023 and planned till 2028

Geographical Area / District --->	Bengaluru Urban & Rural	Dakshin Kannada	Tumkur	Dharwad	Ramnagara	Bagalkot, Koppal and Raichur Districts	Chikkamagaluru, Hassan and Kodagu Districts	Kalaburagi and Vijayapura Districts	Mysuru, Mandya and Chamarajanagar Districts	Uttara Kannada, Haveri and Shivamogga Districts	Udupi	Chitradurga & Davanagere Districts	Belgaum	Chikkaballapur	Yadgir	Kolar	Gadag & Bellary	Bidar
CGD ENTITY	**GAIL GAS LTD**	**GAIL GAS LTD**	**MEIL**	**IOAGP**	**MNGL**	**AG&P**	**AG&P**	**AG&P**	**AG&P**	**AG&P**	**AGL/ATGL**	**UNISON**	**MEIL**	**MEIL**	**MEIL**	**AG&P**	**BPCL**	**BGRL/ BPCL**
[A] Current Status as on 31.03.2023:																		
The total length of gas pipeline laid and operational as part of CGD Network	1882	53	799	669	16	192	73	50	161	101	0	79	669	0	0	48	0	0
i The total number of PNG Domestic connections with active supply	65,357	43	29034	10300	38	1164	0	0	761	0	0	2195	27371	0	0	0	0	0
i The total number of Commercial connections with active	197	8	168	14	2	0	0	0	2	0	0	0	140	0	0	0	0	0

supply																		
he total number of Industrial connections with active supply	162	9	62	9	13	0	0	0	11	0	0	0	37	0	0	0	0	0
The total number of CNG Stations operational	78	16	3	8	4	24	18	16	23	19	7	15	6	0	0	9	11	5
Total Capital Investment in the Geographical Area	1478	300	504	185	107	231	134	135	230	187	151	82	485	50	0	50	170	95
Name of Industrial Areas already connected	Bommasandra, Jigani, Attibelly, Peenya, Hosakote and Veerasandra	Baikmpady	Hirehalli Industrial Area, Antarasanahalli Industrial Area, Vasantanarsapura Industrial Area, Kunigal Industrial Area	Rayapur, Lakmanhalli Industrial area, Belur Industrial area, Gokul road, Mummigatti Industrial Area.	Bidadi	Nil	Nil	Nil	Hebbal Industrial Area & Nanjangudu Industrial Area	Nil	0	Nil	Autonagar, Machha Indl Area, Udambhag Indl Area, Honaga Indl Area, Navage Indl Area, Kangral Indl Area, Angol Indl Area, Santi Bastwa	NIL	NIL	NIL	NIL	Kolar Indusrial Area

													d Indl Area, Waghawade Indl					
[B] Planned for next Five Years: till 2028																		
The total length of gas pipeline laid and operational	2200	100	1159	700	250	5000	8030	4653	11141	7718	569	1482	1329	1300	140	905	167	58
The total number of PNG domestic connections with active supply	150000	150000	41000	50000	113115	455872	722284	409540	1053666	699464	66059	98905	58000	75000	25000	70000	53850	6200
The total number of Commercial connections with active supply	500	250	268	150	28	250	150	2000	200	75	100	5	240	100	20	150	250	75
The total number of Industrial connecti	250	100	112	30	110	25	6	818	53	7	10	2	140	50	15	70	10	5

ons with active supply																		
The total number of CNG Stations operational	175	59	28	14	37	100	106	54	150	110	11	27	36	25	6	45	90	20
Total Capital Investment planned in the Geographical Area by (**in Crores**)	2000	1200	150	260	207	876	969	644	1463	1058	286	419	200	400	80	744	506	165
Name of Industrial Areas planned to be connected by 31.03.2028 =	Doddaballapur, Dabaspet	Yeyyadi, MSEZ, Kolnad, Puttur Industrial Area.	Satyamangala Industrial Area, Sira Industrial Area, Gubbi Industrial Area	Tarihal Industrial Area	Harohalli and Kanakpura	Koppal-Ginieera Ind Area, Koppal-Bhanapur Area, Raichur Ind Area, Wadloor, Raichur Shakti Nagar Industrial Area.	Hassan Kiadb Area, Kiadb Kushalnagar	Kapnoor, Nandur Industrial Area, Mahalbagayat Industrial Area	Koorgalli Industrial Area, Hootagalli Industrial Area, Kadakola Industrial Area, Badanaguppe Industrial Area and balance of Hebbal and Nanjangudu Industrial Area	Nil	Padubidri Industrial Area, Manipal Industrial Area, Malpe Fisheries Industrial Area	Nil	Kittur Indl Area, Kanagala Indl Estate, Aeques SEZ, Bailahongal Indl Area, Gokak Indl Area	Mastenahalli Indl Area, Kudumalakunte Indl Area, Chikkabalapur Indl Area	Kadechur Indl Area	Malur Industrial area, Narasapura Industrial area, Vemgal Industrial area, Tamaka Industrial area.	Hospet-Torannagalu-Ballari Belt	Humnabad Industrial Area

Source: Information received from Infrastructure Development Dept

20.4 Annexure IV: Retrofitting of Emission Control Devices to DG sets

ಹೆಲ್ಪ್‌ಲೈನ್ / Helpline : 080-25582559
ಈಮೇಲ್ / Email : contact@kspcb.gov.in
ವೆಬ್‌ಸೈಟ್ / Website : kspcb.karnataka.gov.in

080-25581383, 25589112
080-25589113, 25589114

ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳಿ
Karnataka State Pollution Control Board

"ಪರಿಸರ ಭವನ", 1 ರಿಂದ 5ನೇ ಮಹಡಿಗಳು, ನಂ. 49, ಚರ್ಚ್ ಸ್ಟ್ರೀಟ್, ಬೆಂಗಳೂರು - 560 001, ಕರ್ನಾಟಕ ರಾಜ್ಯ, ಭಾರತ
"Parisara Bhavan", 1st to 5th Floor, # 49, Church Street, Bangalore - 560 001, Karnataka State, India

No. KSPCB/SEO-Infra/DG-Retrofitting/2021-22/ 955 **Date:** 25 MAY 2023

NOTIFICATION

Sub.: Mandatory Retrofitting of Emission Control Devices (RECD)/Equipment to DG sets with Capacity of 125 KVA and above in the State of Karnataka-Reg.

****

Preamble:

The Ministry of Environment, Forest and Climate Change(MoEFCC) launched National Clean Air Programme(NCAP) in January 2019 with an aim to improve air quality in 131 cities(non-attainment Cities and million plus cities) in 24 States and UTs by engaging all stakeholders. Further, the Hon'ble National Green Tribunal (NGT) in the matter of OA.681/2018, dated:6.8.2019 issued an order for the remedial measures to be adopted to enforce the Ambient Air Quality Standards with reference to the Air (Prevention and Control of Pollution) Act, 1981 and the Environment (Protection) Act, 1986 in cities classified as 'Non–Attainment Cities' (NACs) based on monitoring of the Ambient Air Quality.

In exercise of powers under conferred under Section 19(1) of the Air (Prevention & Control of Pollution) Act 1981, the State Government has declared the entire **State of Karnataka** as **Air pollution control Area**. In line with the same, the Board had issued an order No.KSPCB/SEO-INFRA/DG-RETROFITTING/2021-22/2887, Dtd.17/09/2021 regarding mandatory retrofitting of emission control devices/equipment in DG sets with capacity of 125 KVA and above in the State of Karnataka.

The Hon'ble National Green Tribunal (NGT) had directed for reduction of Particulate Matters (PM) emitted by in-use diesel operated power generating sets. The Hon'ble National Green Tribunal (NGT) directed Central Pollution Control Board (Herein after referred to as "CPCB") to develop & evolve the standards and norms for use of Retrofitted Emission Control Equipment or Devices (RECDs).

Accordingly, CPCB formulated procedure for certification of the RECD namely **"System and procedures for emission compliance testing of RECD for in-use diesel power generating set engines up to gross mechanical power of 800 KW"** on 1.2.2022. This is with the objective for reduction of Particulate Matters (PM) by using Retrofitted Emission Control Devices (RECD) for in -use diesel operated internal combustion engines upto 800 KW or 1000 KVA. The details of compliance and testing procedures developed by CPCB is available in their web site and the same may be referred to.

The CPCB for the purpose of type approval and conformity of production verification compliance process, may revise the procedure from time to time. The currently the approved 04 test agencies for Certificate of type approval are as follows;

1. **Automotive Research Association of India (ARAI Pune).**
2. **International Centre for Automotive Testing (ICAT, Manesar)**
3. **Indian Institute of Petroleum (IIP, Dehradun)**
4. **Vehicle Research Development Establishment (VRDE, Ahmad Nagar)**

Hence, all Industries, Establishments, Projects, Buildings, Utilities, Airports, Railway Stations or any other places operating DG sets of capacity 125 KVA and above, within the jurisdiction of the State of Karnataka, are directed to:

1) Retrofit all operational DG sets of capacity with an Emission Control Device/Equipment. For diesel power generating set engines upto gross mechanical power 800 kW, the emission control device has to be type approved as per CPCB system and procedure for emission compliance Testing of Retro-fit Emission control Devices (RECD).
2) For diesel power generating set engines above gross mechanical power of 800 kW or 1000KVA, the emission control device has to be tested for minimum 70% reduction in Carbon Monoxide, Particulate Matter and Hydrocarbon emissions. The Emission Control Device has to be tested on equivalent KVA rating of the DG set by one of the 04 approved test agencies mentioned supra. CPCB has formulated procedures for testing in terms of 5-Mode Constant Speed Cycle(***As per D2 Steady State discrete mode test cycle specified in ISO-8178-Part 4***). The equivalent KVA is considered if either the rated power or swept volume of the test engine is in the range of ±25% of the rated power or swept volume of the engine for which the device is being used.

OR

3) Shift to gas-based generators by deploying new gas-based generators or retrofitting the existing DG sets for partial gas usage.

Further, all the Industries, Establishments, Projects, Buildings, Utilities, Airports, Railway Stations or any other places operating DG sets of capacity 125 KVA and above, shall ensure that Retro-fitting of Emission Control Devices vendor is in accordance with the CPCBs document Dtd.01/02/2022 mentioned in Para(3) of this notification.

This order supersedes all other previously issued orders and same shall be complied within **six months** from the date of issue of this Notification, failing which the Board is contemplated to initiate action under the relevant provisions the Air (Prevention and Control of Pollution) Act, 1981.

25/05/2023

CHAIRMAN
Karnataka State Pollution Control Board

To

All Concerned Industries, Establishments & Organizations.

20.5 Annexure V: Utilization of Fly ash generated by coal based Thermal Power plants operating in the State of Karnataka

ಫ್ಯಾಕ್ಸ್ / Fax : 080-25586321
ಈಮೇಲ್ / E-mail : ho@kspcb.gov.in
ವೆಬ್‌ಸೈಟ್ / Website : http://kspcb.gov.in

☎ 25581383, 25589112
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ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳಿ
Karnataka State Pollution Control Board
"ಪರಿಸರಭವನ", 1 ರಿಂದ 5ನೇ ಮಹಡಿಗಳು, ನಂ.49, ಚರ್ಚ್‌ಸ್ಟ್ರೀಟ್, ಬೆಂಗಳೂರು - 560 001, ಕರ್ನಾಟಕ, ಭಾರತ
"Parisara Bhavana", 1st to 5th Floor, # 49, Church Street, Bengaluru - 560 001, Karnataka, INDIA

No: PCB/Fly Ash/2018-19 5350

Dated: 16 JAN 2019

To;

1) The Additional Chief Secretary to the Government, Urban Development Department, Room No. 436, Vikas Soudha, Bangalore 560 001.	7) The Chief Engineer, Public Works Department (Communication and Building)- North, Sir M.V. Marg, Dharwad-580 008.
2) The Additional Chief Secretary & Development Commissioner, Rural Development and Panchayat Raj 3rd Gate, 3rd Floor, MS Building Bangalore-560001.	8) The Chief Engineer, National Highways, PWD Annexe, K.R.Circle, Bangalore- 560001.
3) The Principal Secretary, Public Works, Ports and Inland Water Transport Department, Karnataka Government Secretariat, 3rd Floor, Vikasa Soudha, M.S.Building, Dr.Ambedkar Road, Bangalore-560001	9) The Chief Engineer, Karnataka Road Development Corporation, 16J, Millers Tank Bund Road, Bangalore 560 052.
4) The Secretary to the Government, Urban Development Department, Room No. 434, Vikasa Soudha, Bangalore.	10)The Managing Director, Karnataka Road Development Corporation Limited, "Samparka Soudha", Survey No.8, B.E.P Premises (Opp. Orion Mall),Dr. Rajkumar Road, Rajajinagar 1st Block, Bangalore- 560010.
5) The Director, Department of Mines and Geology,#49, Khanija Bhavan, Race Course Road, Bangalore 560 001.	11)The Chief Project Officer, Karnataka State Highways Improvement Project, PWD, Annexure, K.R.Circle, Bangalore 560 001.
6) The Chief Engineer, Public Works Department (Communication and Building) - South, K.R. Circle, Bangalore 560 001.	

1

Sir,

Sub: Utilization of fly ash generated by Coal or Lignite based Thermal Power Plants operating in the State of Karnataka –Reg.

Ref:
1. Notification issued by Ministry of Environment, Forest and Climate Change, Government of India,S.O.763 (E) dated: 14.09.1999 and its amendments on 27.08.2003, 03.11.2009 and 25.01.2016.
2. Board Office letter No. PCB/17 Cat/Flyash/2016-17/462 Dated: 12.01.2017
3. Letter of Department of Ecology and Environment, Government of Karnataka, No.APG23ENV 2014 dated: 03.03.2017.
4. Board Office letter No. PCB/17 Cat/Fly ash/2016-17/462 dated: 12.01.2017.
5. Board Office letter No.PCB/17Cat/Fly Ash/2016-17/611 Dated: 25.03.2017.
6. Proceedings of the Meeting of State Monitoring Committee held on 16.11.2017 under the Chairmanship of Additional Chief Secretary, Forest, Ecology and Environment. Government of Karnataka.
7. Directions issued by Central Pollution Control Board under Section 18(1) (b) of the Water (Prevention and Control of Pollution)Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981 No.B-33018/07/IPC-II/12521 dated: 08.11.2018.

****

With reference to the above subject, it is to be informed that, the Ministry of Environment, Forest and Climate Change, Government of India has issued Notification under Section 5 of the Environment (Protection) Act, 1986 on utilization of fly ash, bottom ash or pond ash generated by Coal and lignite based thermal power plants for use in manufacture of bricks and other construction activities. As per the provisions of the said notification and subsequent amendments issued from time to time, the concerned authorities are required to comply with the following provisions **in order to protect the environment, conserve top soil and promote utilization of ash generated from Coal/lignite based thermal power plant operating in the State;**

1. (1A).Every construction agency engaged in construction of buildings within a radius of 300 kms from coal or lignite based thermal power plant shall use only fly ash based products for construction, such as cement or concrete, fly ash bricks or tiles or clay fly ash bricks or blocks or tiles or cement fly ash bricks or blocks or similar products or a combination or aggregate of them in every construction project.

1. (1B) The provisions of Sub-paragraph (1A) shall be applicable to all construction agencies of Central or State or Local Government and private or public sector and it shall be responsibility of the agencies either undertaking construction of approving the design or both to ensure compliance of the provisions of Sub-paragraph (1A) and to submit annual returns to the concerned State Pollution Control Board.

2

1. (1.C). Minimum fly ash content for building materials or products to qualify as "fly ash based products" category" shall be as per Table –I of the Fly Ash Notification.

1. (5). No agency, person or organization shall, within a radius of 300 kms from coal or lignite based thermal power plant undertake construction or approve design for construction of roads or fly over embankment with top soil...

1. (7) No agency, person or organization shall, within a radius of 300 kms from coal or lignite based thermal power plants undertake or approve or allow reclamation and compaction of low lying areas with soil; only fly ash shall be used for compaction and reclamation...

1. (8)(i). No person or agency shall , within fifty kilometers (by road) from coal or lignite based thermal power plants undertake or approve stowing of mines without using at least 25% of fly ash on weight to weight basis, of the total stowing materials used....

1. (8)(ii) No person or agency shall, within fifty kilometers (by road) from coal or lignite based thermal power plant under take or approve without using at least 25% of fly ash on volume to volume basis of the total materials used for external dump of overburden and same percentage in upper bencher of backfilling of open cast mines....

`Further, as per amended Notification issued by MoEF & CC on 25.01.2016;

- It shall be the responsibility of the State approving various construction projects to ensure that Memorandum of Understanding or any other arrangement for using fly ash or fly ash based products is made between the thermal power plants and the construction agency or contractors.
- The State shall amend building bye laws of the cities having population one million or more so as to ensure the mandatory use of fly ash bricks keeping in view of specification necessary as per technical requirements for load bearing structures.
- The concerned authority shall ensure mandatory use of ash based bricks products in all the Government Scheme or programmes e.g., Mahatma Gandhi National Rural Employment Guarantee Act, 2005 (MNERGA), SWATCH BHARATH ABIYAN, Urban and Rural Housing Scheme, where built up area is more than 1000 square feet and infrastructure construction including building in designated industrial estates or parks or Special Economic Zones.
- The Ministry of Agriculture may consider the promotion of ash utilization in agriculture as soil conditioner.

In this regard the Board vide letters cited at reference (4) and (5) informed to take necessary action to implement the said notification and to furnish the details on action taken in this regard. Till date Board has not received action taken report regarding implementation of the said notification.

3

The Chairman, Central Pollution Control Board, Delhi has issued directions vide reference (7) under Section 18(1)(b) of the Water Act, 1974 and Air Act,1981 and directed as under (Copy enclosed) ;

1) To enlist all agencies and authorities undertaking the construction or approving the design or both within radius of three kilometers from coal or lignite based thermal power plants in the state (and keep updating the list every quarter) and co-ordinate at the State level as well as district level with the designated enforcement authority i.e., State Government, so as to ensure compliance of relevant provisions of the Notification by all such agencies and authorities.

2) To enlist the entire road and fly over projects within radius of 300 kms from coal or lignite thermal power plants and update the list every quarter to ensure compliance with relevant provisions of the fly ash notification and submit annual implementation report to CPCB every year.

In view of the above, you are once again requested to furnish the action taken report **within 15 days** to comply with provisions of the said Notification and also furnish the list of agencies coming under your Department responsible of direct implementation of the provisions of the notification and regularly furnish list of projects indicated in the said CPCB directions along with Annual Returns as per para(1B) of the said Notification with a copy to the Department of Ecology and Environment, Government of Karnataka.

Encl: As above.

Yours faithfully,
Sd/-
MEMBER SECRETARY
KARNATAKA STATE POLLUTION CONTROL BOARD

Copy to:

1) Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex East Arjun Nagar, Delhi - 110 032, India
2) Zonal Central Pollution Control Board, Nisarga Bhavan, Thimmaiah Road, 7th D Main Rd, Shivanagar, Bengaluru, Karnataka 560079
3) The Principle Secretary, Department of Ecology and Environment for information.
4) EO, e-governance to upload this letter in the Board's website.

CHIEF ENVIRONMENTAL OFFICER-1
KARNATAKA STATE POLLUTION CONTROL BOARD

4

20.6 Annexure VI: Notification for the Renewal of Fitness certificate for 2-stroke auto rickshaw plying in Bengaluru City

ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ನಡವಳಿಗಳು

ವಿಷಯ: ಬೆಂಗಳೂರು ನಗರದಲ್ಲಿ 2ಸ್ಟ್ರೋಕ್ ಆಟೊರಿಕ್ಷಾಗಳ ಅರ್ಹತಾ ಪ್ರಮಾಣ ಪತ್ರ ನವೀಕರಣದ ಅವಧಿಯನ್ನು ವಿಸ್ತರಿಸುವ ಬಗ್ಗೆ- ಆದೇಶ.

ಓದಲಾಗಿದೆ: 1. ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ಸಾರಿಇ 267 ಸಾಇಪ 2018, ದಿನಾಂಕ: 23-10-2018.
2. ಆಯುಕ್ತರು, ಸಾರಿಗೆ ಮತ್ತು ರಸ್ತೆ ಸುರಕ್ಷತೆ ಇವರ ಪತ್ರ ಸಂಖ್ಯೆ:ಸಾಆ/ಪ್ರವರ್ತನ-2/ಪಿಆರ್-661/2016-17, ದಿನಾಂಕ: 09-07-2020.

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ಪ್ರಸ್ತಾವನೆ:-

ಮೇಲೆ ಓದಲಾದ (1)ರ ಆದೇಶದಲ್ಲಿ ಬೆಂಗಳೂರು ನಗರದಲ್ಲಿ ಸಂಚರಿಸುತ್ತಿರುವ ಎಲ್.ಪಿ.ಜಿ ಕಿಟ್ ಅಳವಡಿಸಿರುವ 2-ಸ್ಟ್ರೋಕ್ ಆಟೋರಿಕ್ಷಾಗಳನ್ನು ರದ್ದುಪಡಿಸಿರುವುದನ್ನು ಹಿಂಪಡೆದು ಈ ಆಟೋರಿಕ್ಷಾಗಳ ಅರ್ಹತಾ ಪ್ರಮಾಣ ಪತ್ರವನ್ನು ದಿನಾಂಕ:31-03-2020 ರವರೆಗೆ ನವೀಕರಿಸಲು ಅನುಮತಿ ನೀಡಿ ಆದೇಶಿಸಲಾಗಿರುತ್ತದೆ.

ಮೇಲೆ ಓದಲಾದ (2)ರ ಪತ್ರದಲ್ಲಿ ಆಯುಕ್ತರು, ಸಾರಿಗೆ ಮತ್ತು ರಸ್ತೆ ಸುರಕ್ಷತೆ ಇವರು ಸರ್ಕಾರಕ್ಕೆ ಪ್ರಸ್ತಾವನೆ ಸಲ್ಲಿಸಿ, ಇಲಾಖೆಯ ಹಿರಿಯ ಅಧಿಕಾರಿಗಳು ಮತ್ತು ಆಟೋ ಸಂಘಟನೆಗಳನ್ನೊಳಗೊಂಡ ಸಮಿತಿಯು ದಿನಾಂಕ: 10-06-2020ರಂದು ನಡೆದ ಸಭೆಯಲ್ಲಿ ಚರ್ಚಿಸಿ ಕೈಗೊಂಡ ನಿರ್ಣಯದಂತೆ ಬೆಂಗಳೂರು ನಗರದಲ್ಲಿನ ಎಲ್.ಪಿ.ಜಿ ಕಿಟ್ ಅಳವಡಿಸಿರುವ 2-ಸ್ಟ್ರೋಕ್ ಆಟೋರಿಕ್ಷಾಗಳ ಅರ್ಹತಾ ಪ್ರಮಾಣ ಪತ್ರದ ಅವಧಿಯು ದಿನಾಂಕ: 31-03-2020ಕ್ಕೆ ಅಂತ್ಯಗೊಂಡಿದ್ದು, ಈ ಅವಧಿಯನ್ನು ಮುಂದಿನ ಎರಡು ವರ್ಷಗಳ ಅವಧಿಗೆ ಅಂದರೆ ದಿನಾಂಕ: 01-04-2020ರಿಂದ 31-03-2022ರವರೆಗೆ ಅರ್ಹತಾ ಪ್ರಮಾಣ ಪತ್ರಗಳನ್ನು ನವೀಕರಿಸಲು ಅನುಮತಿ ನೀಡಿ ಸೂಕ್ತ ಆದೇಶ ಹೊರಡಿಸಲು ಕೋರಿರುತ್ತಾರೆ.

ಸಾರಿಗೆ ಆಯುಕ್ತರ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಕೂಲಂಕಷವಾಗಿ ಪರಿಶೀಲಿಸಿ, ಸರ್ಕಾರವು ತೀರ್ಮಾನಿಸಿ ಈ ಕೆಳಕಂಡಂತೆ ಆದೇಶಿಸಿದೆ.

ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ಟಿಡಿ 187 ಟಿಡಿಓ 2020 , ಬೆಂಗಳೂರು, ದಿನಾಂಕ: 03-02-2022.

ಪ್ರಸ್ತಾವನೆಯಲ್ಲಿ ವಿವರಿಸಿರುವ ಅಂಶಗಳ ಹಿನ್ನೆಲೆಯಲ್ಲಿ, ಬೆಂಗಳೂರು ನಗರದಲ್ಲಿ ಸಂಚರಿಸುತ್ತಿರುವ ಎಲ್.ಪಿ.ಜಿ ಕಿಟ್ ಅಳವಡಿಸಿರುವ 2-ಸ್ಟ್ರೋಕ್ ಆಟೋರಿಕ್ಷಾಗಳ ಅರ್ಹತಾ ಪ್ರಮಾಣ ಪತ್ರವನ್ನು ದಿನಾಂಕ:31-03-2022 ರವರೆಗೆ ನವೀಕರಿಸಲು ಅನುಮತಿ ನೀಡಿ ಆದೇಶಿಸಿದೆ.

ಕರ್ನಾಟಕ ರಾಜ್ಯಪಾಲರ ಆದೇಶಾನುಸಾರ
ಮತ್ತು ಅವರ ಹೆಸರಿನಲ್ಲಿ,
Pushpa V.S
(ಪುಷ್ಪ ವಿ.ಎಸ್)
ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಯದರ್ಶಿ,
ಸಾರಿಗೆ ಇಲಾಖೆ

ಇವರಿಗೆ:

1. ಪ್ರಧಾನ ಮಹಾಲೇಖಪಾಲರು, (ಜಿ & ಎಸ್.ಎಸ್.ಎ)/ (ಇ & ಆರ್.ಎಸ್.ಎ),(ಎ & ಎ) ಕರ್ನಾಟಕ, ಬೆಂಗಳೂರು.
2. ಆಯುಕ್ತರು, ಸಾರಿಗೆ ಮತ್ತು ರಸ್ತೆ ಸುರಕ್ಷತೆ, ಟಿ.ಟಿ.ಎಂ.ಸಿ. 'ಎ' ಬ್ಲಾಕ್, 1ನೇ ಮಹಡಿ, ಶಾಂತಿನಗರ, ಬೆಂಗಳೂರು.
3. ಎಲ್ಲಾ ಜಂಟಿ /ಉಪ ಸಾರಿಗೆ ಆಯುಕ್ತರು (ಸಾರಿಗೆ ಆಯುಕ್ತರ ಕಛೇರಿಯ ಮುಖಾಂತರ).

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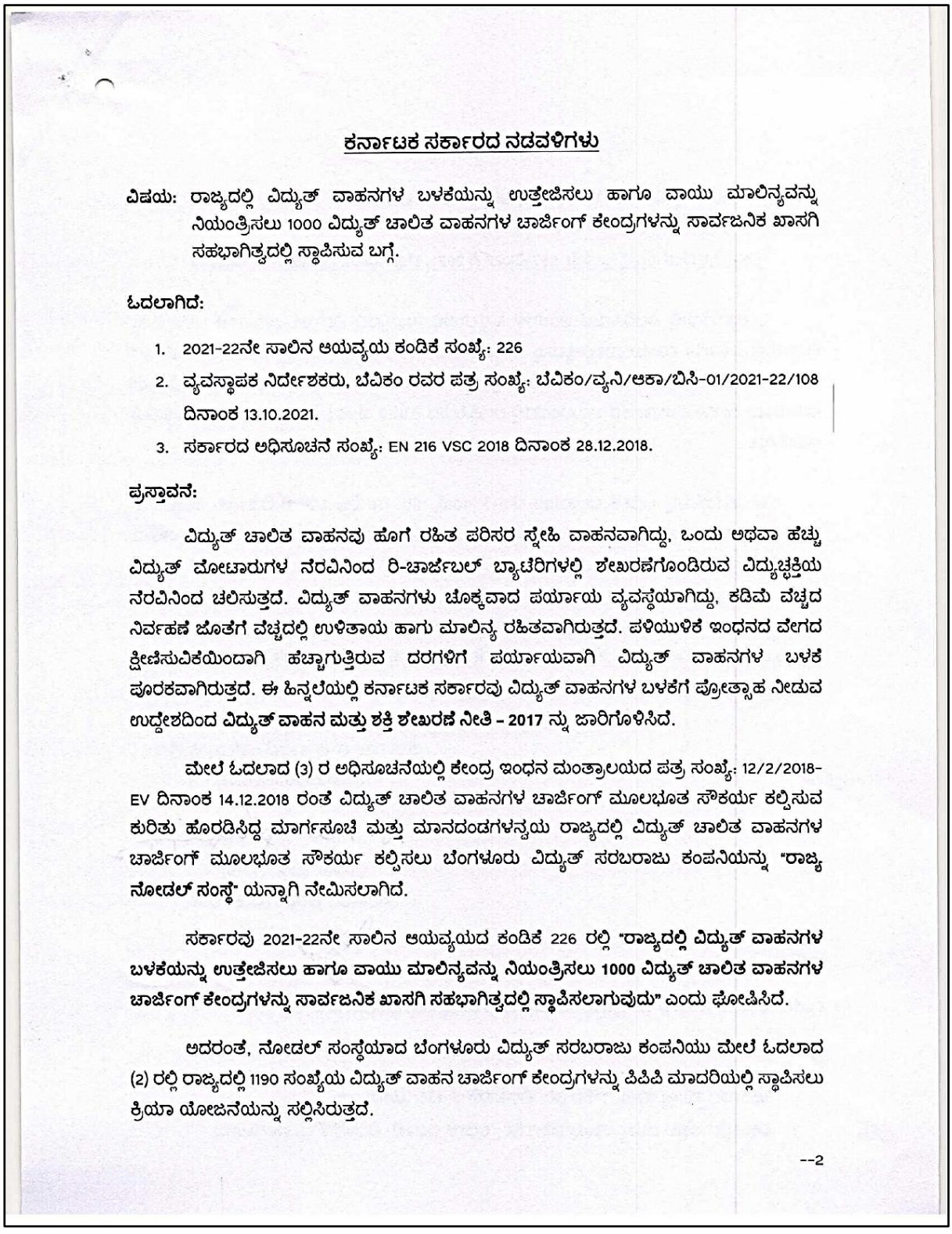
20.7 Annexure VII: Installation of 1190 Electric Vehicles Charging stations by BESCOM



ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ನಡವಳಿಗಳು

ವಿಷಯ: ರಾಜ್ಯದಲ್ಲಿ ವಿದ್ಯುತ್ ವಾಹನಗಳ ಬಳಕೆಯನ್ನು ಉತ್ತೇಜಿಸಲು ಹಾಗೂ ವಾಯು ಮಾಲಿನ್ಯವನ್ನು ನಿಯಂತ್ರಿಸಲು 1000 ವಿದ್ಯುತ್ ಚಾಲಿತ ವಾಹನಗಳ ಚಾರ್ಜಿಂಗ್ ಕೇಂದ್ರಗಳನ್ನು ಸಾರ್ವಜನಿಕ ಖಾಸಗಿ ಸಹಭಾಗಿತ್ವದಲ್ಲಿ ಸ್ಥಾಪಿಸುವ ಬಗ್ಗೆ.

ಓದಲಾಗಿದೆ:

1. 2021-22ನೇ ಸಾಲಿನ ಆಯವ್ಯಯ ಕಂಡಿಕೆ ಸಂಖ್ಯೆ: 226
2. ವ್ಯವಸ್ಥಾಪಕ ನಿರ್ದೇಶಕರು, ಬೆವಿಕಂ ರವರ ಪತ್ರ ಸಂಖ್ಯೆ: ಬೆವಿಕಂ/ವ್ಯನಿ/ಆಕಾ/ಬಿಸಿ-01/2021-22/108 ದಿನಾಂಕ 13.10.2021.
3. ಸರ್ಕಾರದ ಅಧಿಸೂಚನೆ ಸಂಖ್ಯೆ: EN 216 VSC 2018 ದಿನಾಂಕ 28.12.2018.

ಪ್ರಸ್ತಾವನೆ:

ವಿದ್ಯುತ್ ಚಾಲಿತ ವಾಹನವು ಹೊಗೆ ರಹಿತ ಪರಿಸರ ಸ್ನೇಹಿ ವಾಹನವಾಗಿದ್ದು, ಒಂದು ಅಥವಾ ಹೆಚ್ಚು ವಿದ್ಯುತ್ ಮೋಟಾರುಗಳ ನೆರವಿನಿಂದ ರಿ-ಚಾರ್ಜೆಬಲ್ ಬ್ಯಾಟರಿಗಳಲ್ಲಿ ಶೇಖರಣೆಗೊಂಡಿರುವ ವಿದ್ಯುಚ್ಛಕ್ತಿಯ ನೆರವಿನಿಂದ ಚಲಿಸುತ್ತದೆ. ವಿದ್ಯುತ್ ವಾಹನಗಳು ಚೊಕ್ಕವಾದ ಪರ್ಯಾಯ ವ್ಯವಸ್ಥೆಯಾಗಿದ್ದು, ಕಡಿಮೆ ವೆಚ್ಚದ ನಿರ್ವಹಣೆ ಜೊತೆಗೆ ವೆಚ್ಚದಲ್ಲಿ ಉಳಿತಾಯ ಹಾಗು ಮಾಲಿನ್ಯ ರಹಿತವಾಗಿರುತ್ತದೆ. ಪಳಿಯುಳಿಕೆ ಇಂಧನದ ವೇಗದ ಕ್ಷೀಣಿಸುವಿಕೆಯಿಂದಾಗಿ ಹೆಚ್ಚಾಗುತ್ತಿರುವ ದರಗಳಿಗೆ ಪರ್ಯಾಯವಾಗಿ ವಿದ್ಯುತ್ ವಾಹನಗಳ ಬಳಕೆ ಪೂರಕವಾಗಿರುತ್ತದೆ. ಈ ಹಿನ್ನಲೆಯಲ್ಲಿ ಕರ್ನಾಟಕ ಸರ್ಕಾರವು ವಿದ್ಯುತ್ ವಾಹನಗಳ ಬಳಕೆಗೆ ಪ್ರೋತ್ಸಾಹ ನೀಡುವ ಉದ್ದೇಶದಿಂದ **ವಿದ್ಯುತ್ ವಾಹನ ಮತ್ತು ಶಕ್ತಿ ಶೇಖರಣೆ ನೀತಿ – 2017** ನ್ನು ಜಾರಿಗೊಳಿಸಿದೆ.

ಮೇಲೆ ಓದಲಾದ (3) ರ ಅಧಿಸೂಚನೆಯಲ್ಲಿ ಕೇಂದ್ರ ಇಂಧನ ಮಂತ್ರಾಲಯದ ಪತ್ರ ಸಂಖ್ಯೆ: 12/2/2018-EV ದಿನಾಂಕ 14.12.2018 ರಂತೆ ವಿದ್ಯುತ್ ಚಾಲಿತ ವಾಹನಗಳ ಚಾರ್ಜಿಂಗ್ ಮೂಲಭೂತ ಸೌಕರ್ಯ ಕಲ್ಪಿಸುವ ಕುರಿತು ಹೊರಡಿಸಿದ್ದ ಮಾರ್ಗಸೂಚಿ ಮತ್ತು ಮಾನದಂಡಗಳನ್ವಯ ರಾಜ್ಯದಲ್ಲಿ ವಿದ್ಯುತ್ ಚಾಲಿತ ವಾಹನಗಳ ಚಾರ್ಜಿಂಗ್ ಮೂಲಭೂತ ಸೌಕರ್ಯ ಕಲ್ಪಿಸಲು ಬೆಂಗಳೂರು ವಿದ್ಯುತ್ ಸರಬರಾಜು ಕಂಪನಿಯನ್ನು **"ರಾಜ್ಯ ನೋಡಲ್ ಸಂಸ್ಥೆ"** ಯನ್ನಾಗಿ ನೇಮಿಸಲಾಗಿದೆ.

ಸರ್ಕಾರವು 2021-22ನೇ ಸಾಲಿನ ಆಯವ್ಯಯದ ಕಂಡಿಕೆ 226 ರಲ್ಲಿ **"ರಾಜ್ಯದಲ್ಲಿ ವಿದ್ಯುತ್ ವಾಹನಗಳ ಬಳಕೆಯನ್ನು ಉತ್ತೇಜಿಸಲು ಹಾಗೂ ವಾಯು ಮಾಲಿನ್ಯವನ್ನು ನಿಯಂತ್ರಿಸಲು 1000 ವಿದ್ಯುತ್ ಚಾಲಿತ ವಾಹನಗಳ ಚಾರ್ಜಿಂಗ್ ಕೇಂದ್ರಗಳನ್ನು ಸಾರ್ವಜನಿಕ ಖಾಸಗಿ ಸಹಭಾಗಿತ್ವದಲ್ಲಿ ಸ್ಥಾಪಿಸಲಾಗುವುದು"** ಎಂದು ಘೋಷಿಸಿದೆ.

ಅದರಂತೆ, ನೋಡಲ್ ಸಂಸ್ಥೆಯಾದ ಬೆಂಗಳೂರು ವಿದ್ಯುತ್ ಸರಬರಾಜು ಕಂಪನಿಯು ಮೇಲೆ ಓದಲಾದ (2) ರಲ್ಲಿ ರಾಜ್ಯದಲ್ಲಿ 1190 ಸಂಖ್ಯೆಯ ವಿದ್ಯುತ್ ವಾಹನ ಚಾರ್ಜಿಂಗ್ ಕೇಂದ್ರಗಳನ್ನು ಪಿಪಿಪಿ ಮಾದರಿಯಲ್ಲಿ ಸ್ಥಾಪಿಸಲು ಕ್ರಿಯಾ ಯೋಜನೆಯನ್ನು ಸಲ್ಲಿಸಿರುತ್ತದೆ.

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ಸದರಿ ಪ್ರಸ್ತಾವನೆಯನ್ನು ವಿವರವಾಗಿ ಪರಿಶೀಲಿಸಿ, ಈ ಕೆಳಗಿನಂತೆ ಆದೇಶಿಸಿದೆ.

ಸರ್ಕಾರಿ ಆದೇಶ ಸಂಖ್ಯೆ: ಎನರ್ಜಿ 267 ಎಎಸ್ ಸಿ 2021, ಬೆಂಗಳೂರು, ದಿನಾಂಕ: 02.02.2022

ಪ್ರಸ್ತಾವನೆಯಲ್ಲಿ ವಿವರಿಸಿರುವ ಅಂಶಗಳ ಹಿನ್ನಲೆಯಲ್ಲಿ, ರಾಜ್ಯದಲ್ಲಿ ವಿದ್ಯುತ್ ವಾಹನಗಳ ಬಳಕೆಯನ್ನು ಉತ್ತೇಜಿಸಲು ಹಾಗೂ ವಾಯು ಮಾಲಿನ್ಯವನ್ನು ನಿಯಂತ್ರಿಸಲು 1190 ವಿದ್ಯುತ್ ಚಾಲಿತ ವಾಹನಗಳ ಚಾರ್ಜಿಂಗ್ ಕೇಂದ್ರಗಳನ್ನು ಸಾರ್ವಜನಿಕ ಖಾಸಗಿ ಸಹಭಾಗಿತ್ವದಲ್ಲಿ ಸ್ಥಾಪಿಸಲು ನೋಡಲ್ ಸಂಸ್ಥೆಯಾದ ಬೆಂಗಳೂರು ವಿದ್ಯುತ್ ಸರಬರಾಜು ಕಂಪನಿ ಮುಖಾಂತರ ಅನುಬಂಧದಲ್ಲಿ ಲಗತ್ತಿಸಿರುವ ಕ್ರಿಯಾ ಯೋಜನೆಯಂತೆ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಆದೇಶಿಸಿದೆ.

ಈ ಆದೇಶವನ್ನು ಆರ್ಥಿಕ ಇಲಾಖೆಯ ಟಿಪ್ಪಣಿ ಸಂಖ್ಯೆ: FD 476 Exp-1/2021 ದಿನಾಂಕ: 18.01.2022 ಮತ್ತು ಯೋಜನಾ ಇಲಾಖೆಯ ಟಿಪ್ಪಣಿ ಸಂಖ್ಯೆ: ಪಿಡಿಎಸ್ 7 ಎಂಸಿಎಂ 2022-ಪಿಪಿಡಿ ದಿನಾಂಕ: 28.01.2022 ರ ಸಹಮತಿಯಂತೆ ಹೊರಡಿಸಲಾಗಿದೆ.

ಬೆಂಗಳೂರು ವಿದ್ಯುತ್ ಸರಬರಾಜು ಕಂಪನಿಯು KTPP ಅಧಿನಿಯಮ ಮತ್ತು ಕೇಂದ್ರ ಇಂಧನ ಮಂತ್ರಾಲಯದಿಂದ ಕಾಲಕಾಲಕ್ಕೆ ಹೊರಡಿಸುವ ಮಾರ್ಗಸೂಚಿ ಮತ್ತು ಮಾನದಂಡಗಳನ್ವಯ ಯೋಜನೆಯನ್ನು ಅನುಷ್ಠಾನಗೊಳಿಸುವುದು.

ಕರ್ನಾಟಕ ರಾಜ್ಯಪಾಲರ ಆದೇಶಾನುಸಾರ
ಮತ್ತು ಅವರ ಹೆಸರಿನಲ್ಲಿ,

N. mangalagouri 2/2/22

(ಎನ್. ಮಂಗಳಗೌರಿ)
ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಯದರ್ಶಿ,
ಇಂಧನ ಇಲಾಖೆ.

ಇವರಿಗೆ,

ಸಂಕಲನಕಾರರು, ಸರ್ಕಾರಿ ಮುದ್ರಣಾಲಯ, ಕರ್ನಾಟಕ ರಾಜ್ಯ ಪತ್ರ ಪ್ರಕಟಣೆಗಾಗಿ.

ಪ್ರತಿ:-

1. ಸರ್ಕಾರದ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳು, ವಿಧಾನಸೌಧ, ಬೆಂಗಳೂರು.
2. ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳು, ಆರ್ಥಿಕ ಇಲಾಖೆ, ವಿಧಾನಸೌಧ, ಬೆಂಗಳೂರು.

20.8 Annexure VIII: Implementation of C & D waste management Rules, 2016 by the Infrastructure Projects

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ವೆಬ್‌ಸೈಟ್ / Website : http://kspcb.gov.in

☎ 25581383, 25589112
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ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳಿ
Karnataka State Pollution Control Board
"ಪರಿಸರಭವನ", 1 ರಿಂದ 5ನೇ ಮಹಡಿಗಳು, ನಂ.49, ಚರ್ಚ್‌ಸ್ಟ್ರೀಟ್, ಬೆಂಗಳೂರು - 560 001, ಕರ್ನಾಟಕ, ಭಾರತ
"Parisara Bhavana", 1st to 5th Floor, # 49, Church Street, Bengaluru - 560 001, Karnataka, INDIA

No. PCB/031/C&D/2016 5253 **Date:** 30 JAN 2019

CIRCULAR

Sub: Implementation of the Construction and Demolition (C&D) Waste Management Rules, 2016 by the Infrastructure Projects.

****

The Ministry for Environment and Forest, Climate Change has notified the Construction and Demolition Waste Management Rules, 2016. Rule 3(J) defines waste generator as under;

> *"waste generator" means any person or association of persons or institution, residential and commercial establishments including Indian Railways, Airport, Port and Harbour and Defense establishments who undertakes construction of or demolition of any civil structure which generate construction and demolition waste.*

The duties of the waste generator is given under Rule 4 which includes

> *Sub Rule 4(3) Waste generators who generate more than 20 tonnes or more in one day or 300 tonnes per project in a month shall segregate the waste into four streams such as concrete, soil, steel, wood and plastics, bricks and mortar and shall submit waste management plan and get appropriate approvals from the local authority before starting construction or demolition or remodeling work and keep the concerned authorities informed regarding the relevant activities from the planning stage to the implementation stage and this should be on project to project basis.*
>
> *Sub Rule 4(4) Every waste generator shall keep the construction and demolition waste within the premise or get the waste deposited at collection centre so made by the local body or handover it to the authorized processing facilities of construction and demolition waste; and ensure that there is no littering or deposition of construction and demolition waste*

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so as to prevent obstruction to the traffic or the public or drains.

The Board is conducted review meeting with various stake holders and also the Government of Karnataka has conducted meetings regarding implementation of Construction and Demolition Waste Management Rules, 2016.

The Board is granting consent under the Water (Prevention & Control of Pollution) Act, 1974 to the many bulk generators as defined under the Construction and Demolition Waste Management Rules, 2016.

As per Rule 8 of said rules the State Pollution Control Board is require to monitor the implementation of the provision rules. In order to monitor the Management of the C&D waste by institutions, residential and commercial establishment. In this connection all the Regional Officers are require to follow;

1. Collect the information regarding the estimated quantity of Construction and Demolition Waste proposed to be generated and management during the time of CFE & to get certification in case demolition activities.
2. Collect the information regarding the quantity of Construction and Demolition Waste generated and managed during the time of CFO and to collect certification regarding the management of the said waste and to verify, enclose the certificate while forwarding consent application.
3. RSEOs and ROs shall monitor the implementation of Construction and Demolition Waste Management Rules, 2016 by the bulk generators.

Sd/-
MEMBER SECRETARY

To,
All ROs & RSEOs

Copy to:

1. SEO, Infrastructure Cell for information & necessary action.
2. EO, E-Governance for information to upload in Board Website and also make provision in XGN for uploading the certificate as a mandatory field.
3. Technical Officer to Chairman for information and to bring to the kind notice of the Chairman.

Senior Environmental Officer

2

20.9 Annexure IX: Directions for implementation of SWM Rules 2016

ಫ್ಯಾಕ್ಸ್ / Fax : 080-25586321
ಈಮೇಲ್ / Email : ho@kspcb.gov.in
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ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳಿ
Karnataka State Pollution Control Board
"ಪರಿಸರ ಭವನ", 1 ರಿಂದ 5ನೇ ಮಹಡಿಗಳು, ನಂ. 49, ಚರ್ಚ್ ಸ್ಟ್ರೀಟ್, ಬೆಂಗಳೂರು - 560 001, ಕರ್ನಾಟಕ ರಾಜ್ಯ, ಭಾರತ
"Parisara Bhavan", 1st to 5th Floor, # 49, Church Street, Bangalore - 560 001, Karnataka State, India

No. KSPCB/SEO-WMC/MSW/ 4421

Date: 01 DEC 2021

To

All Deputy Commissioners
Karnataka State

All Urban Local bodies
Karnataka State

Sub.: Direction under Section 5 of Environment (Protection) Act, 1986 for implementation of the Solid Waste Management Rules, 2016

***

1. **WHEREAS,** as per rule 12 (a) of the Solid Waste Management (SWM) Rules, 2016, the Deputy commissioner shall facilitate identification and allocation of suitable land as per clause (f) of rules 11 for setting up solid waste processing and disposal facilities to local authorities in his district in close coordination with the Secretary-in-charge of State Urban Development Department within one year from the date of notification of these rules;

2. **WHEREAS,** as per rule 12 (b) of the SWM Rules, 2016, Deputy Commissioner shall review the performance of local bodies, at least once in a quarter on waste segregation, processing, treatment and disposal and take corrective measures in consultation with the Commissioner or Director of Municipal Administration or Director of local bodies and secretary-in-charge of the State Urban Development;

3. **WHEREAS,** Government of Karnataka (GoK) vide Order No. FEE 07 ENG 2019, Dated 13.02.2019 formed District Level Special Task Force (DLSTF) under the chairmanship of Deputy commissioner;

4. **WHEREAS,** GoK vide Order No. FEE 07 ENG 2019, Dated 13.02.2019 formed DLSTF under the chairmanship of Deputy commissioner who shall hold meeting periodically to review the progress of the compliance of the Solid Waste Management Rules, 2016 and submit action taken report to the State level committee with regard to implementation of the SWM rules, 2016 ;

5. **WHEREAS,** the DLSTF shall take necessary actions to comply with the directions issued by the Hon'ble National Green Tribunal in O.A.606/2018 from time to time;

6. **WHEREAS,** it has been reported that there are several complaints/litigations with regard to non-implementation of SWM Rules, 2016;

7. **WHEREAS,** local authorities and village Panchayats of census towns and urban shall comply with Rule 15 of SMW Rules, 2016;

KSPCB BANGALORE WMC Section

"ಪ್ಲಾಸ್ಟಿಕ್ ಬಳಕೆ ನಿಲ್ಲಿಸಿ, ಪರಿಸರ ಹಾನಿ ತಪ್ಪಿಸಿ"

AVOID USE OF PLASTIC BE 'ECO' FRIENDLY

8. **WHEREAS,** more than four years have been passed from the notification of SWM Rules, 2016 and majority of Municipal Authorities and Deputy Commissioners have failed to comply with provisions of the Rules;

9. **WHEREAS,** most of MSW dumpsites have been exhausted in a city/town, however, dumping of mixed MSW is continued;

10. **WHEREAS,** Hon'ble National Green Tribunal upon hearing all the States/UTs passed several order in the matter of OA No. 606/2018;

11. **WHEREAS,** as per as pert the Regional officers of KSPCB have reported serious deficiencies in compliance of provisions of Solid Waste Management Rules, 2016;

12. **WHEREAS,** several local body have hove not taken Environmental clearance in accordance with Ministry of Environment, Forest and Climate Change, 2006 S.O 1533 (E), dated the 14th September, 2006; and

13. **NOW THEREFORE,** in view of the above observations on implementation of the provisions of the rules under SWM Rules, 2016 and in exercise of powers vested to the Chairman, Karnataka State Pollution Control Board under Section 5, Environment (Protection) Act, 1986 to Chairman, DCs and ULBs are hereby directed as under:

For Deputy Commissioners:

1. Deputy commissioner shall hold review meeting in accordance with 12 (b) of the SWM Rules, 2016, and GoK Order No. FEE 07 ENG 2019, Dated 13.02.2019 and take corrective measures in consultation with the Commissioner or Director of Municipal Administration or Director of local bodies and secretary-in-charge of the State Urban Development.
2. Facilitate identification and allocation of suitable land for setting up solid waste processing and disposal facilities to local authorities
3. Take necessary actions to comply with the directions issued by the Hon'ble National Green Tribunal in O.A.606/2018 from time to time.

For Urban Local Bodies (ULBs):

1. Comply with Rule 15 of SMW.Rules, 2016.
2. Segregation of waste at source is to be made mandatory for ensuring safe disposal of MSW. Wet waste should be composted and dry waste should be sent to Material Recovery Facility (MRF) for further segregation & its usage.
3. Every ULB shall adhere to applicable Guidelines issued by CPCB.

KSPCB BANGALORE WMC Section

CHAIRMAN
KSPCB

20.10 Annexure X: Notification on Plastic ban in Karnataka

FOREST, ECOLOGY AND ENVIRONMENT SECRETARIAT

NOTIFICATION

No. FEE 17 EPC 2012, Bangalore, Dated: 11.03.2016

Whereas, plastic carry bags and other plastic items used in daily life cause short term and long term environmental damage and health hazard;

And whereas, Article 48-A of the Constitution of India, inter alia, envisages that the State shall endeavor to protect and improve the environment;

And whereas, it has come to the knowledge of the Government that, the use of plastic carry bags, banners, buntings, flex, plastic flags, plastic plates, plastic cups, plastic spoons, cling films and plastic sheets used for spreading on dining table and items that are made of thermocol are causing serious environmental hazards and affects health of human beings as well as animals;

And whereas, it is observed that the plastic wastes is also causing blockage of gutters, sewers and drains apart from resulting in pollution of water bodies in urban areas;

And whereas, with a view to prevent the recurrence of such problems, the State Government in exercise of the powers conferred under Section 5 of the Environment (Protection) Act, 1986, issues the following directions imposing ban on manufacture, supply, sale and use of plastic carry bags, plastic banners, plastic buntings, flex, plastic flags, plastic plates, plastic cups, plastic spoons, cling films and plastic sheets used for spreading on dining table including the above items made of thermocol and plastic which use plastic micro beads in the state. This notification comes into effect from the date of its publication in the Official Gazette.

DIRECTION

1. No person including shopkeeper, vendor, wholesaler, retailer, trader, hawker or salesmen shall use plastic carry bags, plastic banners, plastic buntings, flex, plastic flags, plastic plates, plastic cups, plastic spoons, cling films and plastic sheets used for spreading on dining table irrespective of thickness including the above items made of thermocol and plastic which use plastic micro beads. Further, no industry or person shall manufacture, supply, store, transport, sale and/or distribute plastic carry bags, plastic banners, plastic buntings, flex, plastic flags, plastic plates, plastic cups, plastic spoons, cling films and plastic sheets used for spreading on

dining table irrespective of their thickness including the above items made of thermocol and plastic which use plastic micro beads in the State.

Provided that, the plastic used for the following purposes and circumstances are exempted from this notification;

a) The plastic carry bags manufactured exclusively for export purpose against any export orders in a plastic industry located in Special Economic Zone (SEZ) and Export Oriented Units (EOU).
b) The plastic bags which constitute or form an integral part of packaging in which goods are sealed prior to use at manufacturing/processing units.
c) The plastic bags and sheets used in Forestry and Horticulture nurseries against the orders from the Govt Departments or from the firms concerned.
d) The plastic used for packing of milk and milk products (dairy products).

2. That the following Officers shall enforce this direction in exercise of power conferred on them by law in their jurisdiction.

a) The Commissioner, Joint Commissioners, Revenue Officers, all Health Officers and all Engineers of BBMP.
b) All Deputy Commissioners of the districts.
c) All Commissioners of City Corporations, Chief Officers, Health Officers and all Engineers of Urban Local Bodies.
d) All Assistant Environmental Officers, Deputy Environmental Officers, Environmental Officers and Senior Environmental Officers of KSPCB.
e) All Assistant Commissioners of Revenue Sub Divisions.
f) Tahsildars of all Taluks.
g) All officers of Commercial Tax Department.
h) All officers of Department of Food and Civil supplies.
i) The Controller, Deputy Controller and Regional Officers of Legal Metrology Department.

3. That the following officers shall take cognizance of offences and initiate legal action in case of noncompliance of this direction as per the powers conferred on them under section 19 of the Environment (Protection) Act, 1986 and to file complaint in the jurisdictional court of law on all violators.

a) Secretary to Government (Ecology & Environment), Forest, Environment and Ecology Department.
b) Chairman and Member Secretary, KSPCB.
c) Deputy Commissioners of the Districts.
d) Assistant Commissioners of Revenue Sub Divisions.
e) Regional Officers of KSPCB.

Explanation 1- "Plastic" means any of the items mentioned in this direction made out of poly propylene (PP), non-woven poly propylene, multi layered co-extruder poly propylene, poly ethylene (PE), poly vinyl chloride (PVC), high and low density poly ethylene (HDPE & LDPE), poly styrene (PS) which is also called thermocol, poly amides (Nylon), poly terephthalate (PT), poly methyl methacrylate (PMM) and plastic micro beads.

Explanation 2- The word "carry bag" will have the same meaning that is provided in Rule 3 (b) of the Plastic Waste (Management and Handling) Rules, 2011. In this definition exemption is provided for plastic bag that constitute or form an integral part of packaging in which goods are sealed prior to use.

Explanation 3- Karnataka State Pollution Control Board shall be responsible for enforcement regarding the functions specified in clause (a) of Rule 4 of the Plastic Waste (Management and Handling) Rules, 2011 and Urban Local Bodies shall be responsible for enforcement regarding the functions specified in clause (b) of rule 4 of the said Rules;

Explanation 4- Officers as mentioned in Government of India's Notification No.S.O.394 (E) dated 16.04.1987 amended from time to time are authorized to file complaints against violation of directions included in this Notification under Section 19 of the Environment (Protection) Act, 1986.

By Order & in the name of the Governor of Karnataka,

Mahendra Jain
Additional Chief Secretary to Government,
Forest, Ecology and Environment Department

ಸರ್ಕಾರಿ ಮುದ್ರಣಾಲಯ, ವಿಕಾಸ ಸೌಧ ಘಟಕ, ಬೆಂಗಳೂರು. (ಪ್ರ) 500 ಪ್ರತಿಗಳು)

20.11 Annexure XI: Ban on open burning of Solid Waste

GOVERNMENT OF KARNATAKA

No. FEE 6 ENG 2017

Karnataka Government Secretariat,
M.S. Building,
Bangalore, Dated:03.08.2017.

NOTIFICATION

Research findings reveal that burning of solid waste including plastic in the open places especially in the urban areas releases harmful chemicals such as Sulpher Dioxide (SO_2) Carbon Dioxide (CO_2), Carbon Monoxide (CO), Dioxins and Furans in addition to lot of Particulate Matter which get into the environment and create serious health hazard on all living creatures including human beings.

The Karnataka State Pollution Control Board have submitted a proposal recommending for issue of a notification banning burning of solid waste including twigs, dry leaves and other wastes in open places of urban areas in accordance with section 19(5) of the Air (Prevention and Control of Pollution) Act, 1981 to prevent its ill-effect on the health of general public as concentration of the Particulate Matter is increasing in the urban areas because of burning of solid waste in open places.

Considering the recommendation made by the Karnataka State Pollution Control Board and in exercise of the powers conferred under section 19(5) of the Air (Prevention and Control of Pollution) Act, 1981, the State Government hereby impose a complete ban on burning of solid wastes of any kind including twigs and leaves of plants in open places within the jurisdiction of all urban local bodies including Bruhat Bengaluru Mahanagara Palike and in solid waste landfill sites throughout the State.

The competent authorities shall deal with violation of this notification if any, as violation of the provisions of the Air (Prevention and Control of Pollution) Act, 1981.

By Order & in the name of the
Governor of Karnataka,

(H.C. Rajendra Kumar)
Under Secretary to Government (I/c),
(Ecology and Environment)
Forest, Ecology and Environment Department

To:

The Compiler, Karnataka State Gazette – with a request to publish in the next issue and arrange to furnish 200 copies to this Department.

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20.12 Annexure XII: Action plan for control of stubble burning in Karnataka

ACTION PLAN FOR CONTROL OF STUBBLE BURNING IN KARNATAKA(2020-21)

(Response to direction number vi of the orders of the Hon'ble National Green Tribunal at Delhi in OA number 681/2018)

India, the second largest agro-based economy with year round crop cultivation, generates a large amount of agricultural waste, including crop residues. According to the Ministry of New and Renewable Energy (MNRE), India generates on an average 500 million tonnes of crop residue per year. The majority of this crop residue is in fact used as fodder, fuel for other domestic and industrial purposes. However, there is still a surplus of 140 million tonnes, of which 92 million tonnes is reportedly burnt each year, causing excessive particulate matter emissions and air pollution.

According to the Inter-Government Panel on Climate Change (IPCC), approximately 25% of the crop residues are burnt on farm. Crop residue burning is a major environmental problem causing health issues as well as contributing to global warming. The fraction of crop residue subjected to burning comprises mainly of Rice straw,wheat straw and Sugarcane.

Crop residues produced by Rice, Wheat and Sugarcane are Husk, bran; Bran, Straw and Sugarcane tops, bagasse, molasses respectively. Composting, bio-char production and mechanization are a few effective sustainable techniques that can help to curtail the issue while retaining the nutrients present in the crop residue in the soil.

In Karnataka, Paddy straw is rarely burnt. This is because the straw is extremely useful and precious to be used as dry fodder for cattle. After the straw has been collected, the remaining stubble is retained in the fields. In the forthcoming sowing season, the lands are ploughed. The pieces of stubble are sorted by size by land owners and the big pieces discarded. The small pieces are used as mulch and fertigation / organic manure.

In case of sugarcane, burning trash is practiced in few scattered pockets. Though stubble/trash burning has not been reported to cause air pollution or

smog of significant intensity, with a view to contain the burning of stubble/trash, both in paddy/wheat and Sugarcane, the Department of Agriculture, Government of Karnataka, has taken action to provide machinery and equipment for residue management for various crops under subsidy scheme to beneficiaries and throughCustom Hiring Centres (CHSC). Some of the residue management machines that are being provided under subsidy schemes are Tractor operated Trash Cutter/ Mulcher/ Shredder, Engine operated Rake, Baler, Ratoon Manager, Sugarcane harvester etc.

CONTROL OF PADDY/ WHEAT STUBBLE BURNING

A. By utilization of stubble:

As already mentioned above, stubble is not a waste. It has immense potential to be utilized as a product useful to the farmer. All it requires is providing appropriate technology to harvest and convert the stubble into useful product. Balers and Rakes are machines that do this and these are quite popular too. The cost being slightly high for the farmer, these are provided on rental basis through CHSCs and also on subsidy basis to individual farmers.

Area under Paddy and Wheat cultivation in Karnataka is approximately 12.83 lakh hectares and 1.75 lakh hectares (all cropping seasons included) respectively. Approximately, 3-4 tonnes paddy/ wheat straw is generated per hectare.Straw balers can be used to pick-up the straw from the harvested paddy field and densify into bales.

In Karnataka, 197 Balers are available as of date (121 in CHSCs and 76privately held). One Baler approximately tackles about 5 hectares of rice/wheat per day. Paddy/wheat harvesting lasts around 40 days during a season. Thus one baler will tackle about 200 hectares of rice/wheat area per season. Taking two seasons per year, each Baler will tackle 400 hectares in a year. The existing 197 Balers are thus already tackling stubble burning in 78800 hectares annually.

Similar is the case with Rakes.121 Rakes are available as of date with CHSCs. One Rake approximately tackles about 5 hectares of rice/wheat per day. Paddy/wheat harvesting lasts around 40 days during a season. Thusone Rake

will tackle about 200 hectares of rice/wheat area per season. Taking two seasons per year, each Rake will tackle 400 hectares in a year. The existing 121 Rakes are thus already tackling stubble burning in 48400 hectares annually.

This year, 76 Balers are proposed to be given on subsidy to farmers. Since these will be used only in one season (Rabi), these 76 Balers would tackle stubble burning in 15200 hectares.

Summarily, there are Balers and Rakes tackling stubble burning in 127200 (78800 by Balers + 48400 by Rakes) hectares of paddy/wheat cultivation area annually. An additional 15200 hectares would be added to this in the current year taking the total Paddy/wheatcultivation area tackled against stubble burning to become 142400 hectares annually by utilization of stubble.

B. By retaining the stubble in Rice Fallows:

An extent of 26600 hectares (inclusive of demonstration and distribution of inputs) of Paddy is covered under Targeting Rice Fallow Area (TRFA) scheme of the Government of India for 2020-21. Under this, pulses and oilseeds are sown in Paddy harvest areas without removing the stubble. Thus, 26600 hectares of paddy cultivation area will be tackled against stubble burning this year by retention of stubble.

The total area tackled against stubble burning in paddy/wheat cultivated areas in 2020-21 is thus 169000 (142400 + 26600) hectares.

CONTROL OF SUGARCANE THRASH BURNING

Area under Sugarcane cultivation in Karnataka is approximately 6.64 Lakh hectares. Approximately5-8 tonnes of trash are generated per hectare. In some places sugarcane trash is burnt which leads to loss of nutrients, affects environment and causes air pollution. Sugarcane trash cutter/ Mulcher/ Ratoon manager can be used to managing sugarcane trashin the fields.

In Karnataka, 3 Sugarcane Trash cutters (in CHSCs), 25 Sugarcane Mulchers (16 in CHSC and 9 are privately held), 7 Sugarcane Ratoon Managers (1 in CHSC and 6 privately held) and 200 Sugarcane harvesters (all privately held) are already available. In a day, one Trash Cutter/Mulcher/Ratoon Manager

can cover 5 hectares and each Sugarcane harvester nearly 10 hectares of sugarcane area. With the sugarcane harvest season spanning 70 days a year, the existing 35 Trash Cutters/Mulchers/Ratoon Managers tackle 12250 hectares of sugarcane area against trash burning. Similarly, the existing 200 Sugarcane harvesters tackle 140000 hectares of sugarcane area against trash burning. The existing machines and technology are thus tackling 152250 (140000+12250) hectares of sugarcane area against trash burning annually.

This year, 50 Trash Cutters/Mulchers/Ratoon Managers and 60 Sugarcane harvesters are proposed to be given on subsidy to farmers. Since these will be used only in only a part of the year, taking that these would be utilized for only half the harvest season i.e. 35 days, these 50 Trash Cutters/Mulchers/Ratoon Managers would tackle stubble burning in 8750 hectares and the60 Sugarcane harvesterswould tackle stubble burning in 21000 hectares. Thus totally 29750 (8750 + 21000) hectares of additional capacity would be added to the already existing annual capacity of 152250 hectares of sugarcane area against trash burning making the total to become 182000 hectares annually.

Summarily, **152250 hectares of sugarcane area is being tackled against trash burning in 2020-21 and an extent of 29750 hectares is being added to it this year.**

03/09/20

Commissioner for Agriculture

Commissioner for Agriculture
Bellary Road, Bengaluru-560001.

Page 4 of 4

20.13 Annexure XIII: Sitting guidelines for Establishment of Industries

PR-399

GOVERNMENT OF KARNATAKA

No: FEE 106 EPC 2021 (i)

Karnataka Government Secretariat,
M.S.Building,
Bangalore, dated:10.12.2021.

NOTIFICATION

In exercise of the powers conferred by section 64 of the Water (Prevention and Control of Pollution) Act, 1974, (Central Act 6 of 1974), in consultation with the Karnataka State Pollution Control Board, the Government of Karnataka hereby makes the following rules further to amend the Karnataka State Board for the Prevention and Control of Water Pollution (Procedure for Transaction of Business) and the Water (Prevention and Control of Pollution) Rules 1976, namely:

1. **Title and commencement**: - (1) These rules may be called the Karnataka State Pollution Control Board for Prevention and Control of Water Pollution (Procedure for Transaction of Business) and the Water (Prevention and Control of Pollution) (Second Amendment) Rules, 2021.

   (2) They shall come into force from the date of their publication in the official Gazette.

2. **Amendment to Rule 32 —** In Rule 32 of the Karnataka State Board for the Prevention and Control of Water Pollution (Procedure for Transaction of Business) and the Water (Prevention and Control of Pollution) Rules 1976.-

   (1) after sub-rule (4), the following sub-rule shall be inserted, namely:—

   ''(5) Siting guidelines for Consent for Establishment for different category of industries is specified in Schedule IV.''

   (2) the siting guidelines to accompany the combined application form for Consent for Establishment for Orange and Green category industries, published vide Notification No.FEE 195 ENV 2002, dated 21st June, 2003, shall be omitted.

3. **Insertion of new Schedule:** After Schedule III of the Karnataka State Pollution Control Board for Prevention and Control of Water Pollution (Procedure for Transaction of Business) and the Water (Prevention and Control of Pollution) Rules, 1976 the Schedule IV shall be inserted and appended to this Notification.

By order and in the name of
Governor of Karnataka

(Muralidhar S. Tallikeri)
Under Secretary to Government,
Forest, Ecology and Environment Department
(Ecology and Environment)

Schedule IV

Matrix of Siting Guidelines (New Industries excluding New Health Care Establishments and New Infrastructure Projects)

Sl. No.	Category of Industry		Minimum distance from Water-body *(river and lake)*
1.	**Red**		Only beyond 500 meters
2.	**Orange**	***With Effluents***	Only beyond 75 Meters
		Without effluents	Only beyond 30 Meters
3.	**Green**		Only beyond 30 Meters

Matrix of Siting Guidelines (New Health Care Establishments and New Infrastructure Projects)

1.	Health Care Establishments and Infrastructure Projects	Prevailing Local bye-law or local regulation may be followed subject to the condition that a minimum distance of 30 Meters from water-body (river and lake) shall be maintained.

Note:

1. These Guidelines are not applicable to notified industrial estates.
2. These guidelines are the minimum standards. If any local/special law, Statutory Notification/Direction, Orders of court, Tribunal or directions of Central Pollution Control Board stipulate more stringent standards, the latter shall prevail.
3. Distance from water body shall be measured from the nearest boundary of water body as depicted in the revenue sketch.

4. Infrastructure Projects means residential township including commercial buildings, Office building, School, College, University, Special Economic Zone, Metro Station, Railway station, Bus Depot, Airport, Seaport, Highway infrastructure, Fire Station, Warehouse, Business Plaza, Malls & Multiplex, Nursing Homes, Resort, Hotel/Restaurant/Food Plaza, Holiday Home/Guest home/Hostels/ Banquet Hall/Marriage Gardens, IT Complex, Logistics & Cargo, Clubs and Trade Centre as indicated in Annexure VI of Notification No. S.O. 3289 (E), dated 24th September 2020 issued by Ministry of Jal Shakti, Government of India.

(Muralidhar S. Tallikeri)
Under Secretary to Government,
Forest, Ecology and Environment Department
(Ecology and Environment)

PR-400

GOVERNMENT OF KARNATAKA

No: FEE 106 EPC 2021 (ii)

Karnataka Government Secretariat,
M.S.Building,
Bangalore, dated: 10.12.2021.

NOTIFICATION

In exercise of the powers conferred by Section 54 of the Air (Prevention and Control of Pollution) Act, 1981 (Central Act 14 of 1981), in consultation with the Karnataka State Pollution Control Board, the Government of Karnataka hereby makes the following rules further to amend the Karnataka Air (Prevention and Control of Pollution) Rules, 1983, namely:

1. **Title and commencement**: - (1) These rules may be called the Karnataka Air (Prevention and Control of Pollution) (Second Amendment) Rules, 2021.

   (2) They shall come into force from the date of their publication in the official Gazette.

2. **Amendment of Rule 20**:- In Rule 20 of the Karnataka Air (Prevention and Control of Pollution) Rules, 1983.-

   1. after sub-rule (5), the following sub-rule shall be inserted, namely:—

      ''(6) Siting guidelines for Consent for Establishment for different category of industries is specified in Schedule IV.''

   2. the siting guidelines to accompany the combined application form for Consent for Establishment for Orange and Green category industries, published vide Notification No.FEE 195 ENV 2002, dated 21st June, 2003, shall be omitted.

3. **Insertion of new Schedule:** After Schedule III of the Karnataka Air (Prevention and Control of Pollution Rules, 1983, the Schedule IV shall be inserted and appended to this Notification.

By order and in the name of
Governor of Karnataka

(Muralidhar S. Tallikeri)
Under Secretary to Government,
(Ecology and Environment)
Forest, Ecology and Environment Department

Schedule IV

Matrix of Siting Guidelines (New Industries excluding New Health Care Establishments and New Infrastructure Projects)

Sl. No.	Category of Industry		Minimum distance from Water-body *(river and lake)*
1.	**Red**		Only beyond 500 meters
2.	**Orange**	***With Effluents***	Only beyond 75 Meters
		Without effluents	Only beyond 30 Meters
3.	**Green**		Only beyond 30 Meters

Matrix of Siting Guidelines (New Health Care Establishments and New Infrastructure Projects)

1.	Health Care Establishments and Infrastructure Projects	Prevailing Local bye-law or local regulation may be followed subject to the condition that a minimum distance of 30 Meters from water-body (river and lake) shall be maintained.

Note:

1. These Guidelines are not applicable to notified industrial estates.
2. These guidelines are the minimum standards. If any local/special law, Statutory Notification/Direction, Orders of court, Tribunal or directions of Central Pollution Control Board stipulate more stringent standards, the latter shall prevail.
3. Distance from water body shall be measured from the nearest boundary of water body as depicted in the revenue sketch.
4. Infrastructure Projects means residential township including commercial buildings, Office building, School, College, University, Special Economic Zone, Metro Station, Railway station, Bus Depot, Airport, Seaport, Highway infrastructure, Fire Station, Warehouse, Business Plaza, Malls & Multiplex, Nursing Homes, Resort, Hotel/Restaurant/Food Plaza, Holiday Home/Guest home/Hostels/ Banquet Hall/Marriage Gardens, IT Complex, Logistics & Cargo, Clubs and Trade Centre as indicated in Annexure VI of Notification No. S.O. 3289 (E), dated 24th September 2020 issued by Ministry of Jal Shakti, Government of India.

(Muralidhar S. Tallikeri)
Under Secretary to Government,
Forest, Ecology and Environment Department
(Ecology and Environment)

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20.14 Annexure XIV: Committee orders under NCAP

ಕರ್ನಾಟಕ ಸರ್ಕಾರದ ನಡವಳಿಗಳು

ವಿಷಯ: ರಾಷ್ಟ್ರೀಯ ಶುದ್ಧ ವಾಯು ಕಾರ್ಯಕ್ರಮ (NCAP) ಅಡಿಯಲ್ಲಿ ದೀರ್ಘಾವಧಿ ಹಾಗೂ ಅಲ್ಪಾವಧಿ ನಿರ್ದಿಷ್ಟ ಕಾರ್ಯಯೋಜನೆಗಳ ಪರಿಣಾಮಕಾರಿ ಅನುಷ್ಠಾನಕ್ಕಾಗಿ ರಾಜ್ಯ ಮಟ್ಟದ ಚಾಲನಾ ಸಮಿತಿ (Steering Committee), ಉಸ್ತುವಾರಿ ಸಮಿತಿ (Monitoring Committee) ಮತ್ತು ಅನುಷ್ಠಾನ ಸಮಿತಿ (Implementation Committee) ಗಳನ್ನು ರಚಿಸುವ ಬಗ್ಗೆ.

ಓದಲಾಗಿದೆ: 1. ಕೇಂದ್ರ ಸರ್ಕಾರದ ಪರಿಸರ, ಅರಣ್ಯ ಮತ್ತು ಹವಾಮಾನ ಬದಲಾವಣೆ ಮಂತ್ರಾಲಯದ ಅಧಿಕೃತ ಜ್ಞಾಪನ ಸಂ: ಕ್ಯು 16017/41/2019-ಸಿಪಿಎ ದಿನಾಂಕ:24.06.2019.

2. ದಿನಾಂಕ:10.06.2019ರಂದು ಜರುಗಿದ ರಾಷ್ಟ್ರೀಯ ಶುದ್ಧ ವಾಯು ಕಾರ್ಯಕ್ರಮದ ಕೇಂದ್ರ ಚಾಲನಾ ಸಮಿತಿಯ ಮೊದಲನೇ ಸಭೆಯ ನಡವಳಿಗಳು.

3. ಕೇಂದ್ರ ಸರ್ಕಾರದ ಪರಿಸರ, ಅರಣ್ಯ ಮತ್ತು ಹವಾಮಾನ ಬದಲಾವಣೆ ಮಂತ್ರಾಲಯದ ಜಂಟಿ ಕಾರ್ಯದರ್ಶಿಯವರು ಸರ್ಕಾರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಯವರಿಗೆ ಬರೆದಿರುವ ಅರೆ ಸರ್ಕಾರಿ ಪತ್ರ ಸಂಖ್ಯೆ: ಕ್ಯು-16017/12/2019-ಸಿಪಿಎ, ದಿನಾಂಕ:24.04.2019.

4. ಸರ್ಕಾರದ ಆದೇಶದ ಸಂಖ್ಯೆ: ಅಪಜೀ 13 ಇಎನ್‌ಜಿ 2018, ದಿನಾಂಕ:19.09.2018.

5. ಸರ್ಕಾರದ ಆದೇಶದ ಸಂಖ್ಯೆ: ಎಫ್‌ಇಇ 216 ಇಪಿಸಿ 2018, ದಿನಾಂಕ:24.11.2018.

* * * * *

ಪ್ರಸ್ತಾವನೆ:

ಮೇಲೆ ಓದಲಾದ (1), (2) ಮತ್ತು (3)ರ ಕೇಂದ್ರ ಸರ್ಕಾರದ ಪತ್ರಗಳಲ್ಲಿ ರಾಜ್ಯದಲ್ಲಿ ವಾಯು ಗುಣಮಟ್ಟ ಸುಧಾರಣೆಗಾಗಿ ರಾಷ್ಟ್ರೀಯ ಶುದ್ಧ ವಾಯು ಕಾರ್ಯಕ್ರಮದ ಅಡಿಯಲ್ಲಿ ದೀರ್ಘಾವಧಿ ಹಾಗೂ ಅಲ್ಪಾವಧಿ ನಿರ್ದಿಷ್ಟ ಕಾರ್ಯಯೋಜನೆಗಳನ್ನು ಅಂತಿಮಗೊಳಿಸಿ, ಅವುಗಳನ್ನು ಪರಿಣಾಮಕಾರಿಯಾಗಿ ಅನುಷ್ಠಾನಗೊಳಿಸುವ ದೃಷ್ಟಿಯಿಂದ ಕೆಳಕಂಡಂತೆ ಮೂರು ಸಮಿತಿಗಳನ್ನು ರಚಿಸಲು ಸೂಚಿಸಲಾಗಿದೆ.

(ಅ) ರಾಜ್ಯ ಸರ್ಕಾರದ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಯವರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿನ ರಾಜ್ಯ ಮಟ್ಟದ ಚಾಲನಾ ಸಮಿತಿ (Steering Committee)

(ಆ) ರಾಜ್ಯ ಸರ್ಕಾರದ ಪರಿಸರ ಇಲಾಖೆಯ ಪ್ರಧಾನ ಕಾರ್ಯದರ್ಶಿಯವರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ಉಸ್ತುವಾರಿ ಸಮಿತಿ (Monitoring Committee)

(ಇ) ನಗರ ಮಟ್ಟದಲ್ಲಿ ಸಂಬಂಧಪಟ್ಟ ಜಿಲ್ಲೆಗಳ ಜಿಲ್ಲಾಧಿಕಾರಿಗಳು ಅಥವಾ ಸಂಬಂಧಪಟ್ಟ ನಗರಗಳ ನಗರಸಭೆಗಳ ಆಯುಕ್ತರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ಅನುಷ್ಠಾನ ಸಮಿತಿ (Implementation Committee)

ಮೇಲೆ (4)ರಲ್ಲಿ ಓದಲಾದ ಸರ್ಕಾರದ ಆದೇಶದ ಮೂಲಕ ಬೆಂಗಳೂರು ನಗರದಲ್ಲಿ ಹೆಚ್ಚುತ್ತಿರುವ ವಾಯು ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣಕ್ಕಾಗಿ ಸರ್ಕಾರದ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳವರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ವಿವಿಧ ಇಲಾಖೆಗಳು ಮತ್ತು ಸಂಸ್ಥೆಗಳ ಮುಖ್ಯಸ್ಥರು / ಪ್ರತಿನಿಧಿಗಳನ್ನೊಳಗೊಂಡ ಕಾರ್ಯಪಡೆಯನ್ನು (Task Force) ರಚಿಸಲಾಗಿದೆ. ಮುಂದುವರೆದು, ಮಾನ್ಯ ರಾಷ್ಟ್ರೀಯ ಹಸಿರು ನ್ಯಾಯಾಧಿಕರಣ, ನವದೆಹಲಿರವರು ಮೂಲ ಅರ್ಜಿ ಸಂಖ್ಯೆ:681/2018ರ ಮೇಲೆ ದಿನಾಂಕ:08.10.2018ರಂದು ಹೊರಡಿಸಿರುವ ನಿರ್ದೇಶನದ ಅನುಸಾರ ಕೇಂದ್ರ ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳಿಯು ನಿಗದಿಪಡಿಸಿರುವ ಮಾನದಂಡಗಳನ್ನು ಸಾಧಿಸದ ನಗರಗಳಲ್ಲಿನ ವಾಯುಗುಣಮಟ್ಟ ಸುಧಾರಣೆಗಾಗಿ ಕಾರ्यಯೋಜನೆಯನ್ನು

ರೂಪಿಸಿ ಅನುಷ್ಠಾನಗೊಳಿಸುವ ದೃಷ್ಟಿಯಿಂದ ಮೇಲೆ (5)ರಲ್ಲಿ ಓದಲಾದ ಸರ್ಕಾರದ ಆದೇಶದ ಅನುಸಾರ ಸರ್ಕಾರದ ಪ್ರಧಾನ ಕಾರ್ಯದರ್ಶಿಗಳು (ಪರಿಸರ ಮತ್ತು ಜೀವಿಶಾಸ್ತ್ರ), ಅರಣ್ಯ, ಜೀವಿಪರಿಸ್ಥಿತಿ ಮತ್ತು ಪರಿಸರ ಇಲಾಖೆ, ಕರ್ನಾಟಕ ಸರ್ಕಾರ ರವರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ಒಂದು "ವಾಯುಗುಣಮಟ್ಟ ಮೇಲ್ವಿಚಾರಣಾ ಸಮಿತಿ"ಯನ್ನು ರಚಿಸಲಾಗಿದೆ.

ಮೇಲೆ (4) ರಲ್ಲಿ ಓದಲಾದ ಸರ್ಕಾರದ ಆದೇಶದ ಅನುಸಾರ ರಚಿಸಲ್ಪಟ್ಟಿರುವ ಕಾರ್ಯಪಡೆಯ ಸ್ವರೂಪ, ಉದ್ದೇಶ ಮತ್ತು ಕಾರ್ಯಭಾರಗಳು ಕೇಂದ್ರ ಸರ್ಕಾರವು ಪ್ರಸ್ತಾಪಿಸಿರುವ ರಾಜ್ಯ ಮಟ್ಟದ ಚಾಲನಾ ಸಮಿತಿಯ ಸ್ವರೂಪ, ಉದ್ದೇಶ ಮತ್ತು ಕಾರ್ಯಭಾರಗಳು ಒಂದೇ ಆಗಿರುವುದನ್ನು ಗಮನಿಸಲಾಗಿದೆ. ಆದುದರಿಂದ, ಮೇಲೆ (4) ರಲ್ಲಿ ಓದಲಾದ ಸರ್ಕಾರದ ಆದೇಶಾನುಸಾರ ಸರ್ಕಾರದ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳವರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ರಚಿಸಲ್ಪಟ್ಟಿರುವ ಸಮಿತಿಯನ್ನು ಕೇಂದ್ರ ಪರಿಸರ, ಅರಣ್ಯ ಮತ್ತು ಹವಾಮಾನ ಬದಲಾವಣೆ ಮಂತ್ರಾಲಯದ ಸೂಚನೆಯಂತೆ ರಾಜ್ಯ ಮಟ್ಟದ ಚಾಲನಾ ಸಮಿತಿ ಎಂದು ಗುರುತಿಸಿ ಚಾಲನಾ ಸಮಿತಿಯ ಜವಾಬ್ದಾರಿಯನ್ನು ಸದರಿ ಸಮಿತಿಗೆ ವಹಿಸುವ ಬಗ್ಗೆ ಪರಿಗಣಿಸಲಾಗಿದೆ.

ಮೇಲೆ (5) ರಲ್ಲಿ ಓದಲಾದ ಸರ್ಕಾರದ ಆದೇಶದ ಅನುಸಾರ ರಚಿಸಲ್ಪಟ್ಟಿರುವ ವಾಯುಗುಣಮಟ್ಟ ಮೇಲ್ವಿಚಾರಣಾ ಸಮಿತಿಯ ಸ್ವರೂಪ, ಉದ್ದೇಶ ಮತ್ತು ಕಾರ್ಯಭಾರಗಳು ಕೇಂದ್ರ ಸರ್ಕಾರವು ಪ್ರಸ್ತಾಪಿಸಿರುವ ರಾಜ್ಯ ಮಟ್ಟದ ಉಸ್ತುವಾರಿ ಸಮಿತಿಯ ಸ್ವರೂಪ, ಉದ್ದೇಶ ಮತ್ತು ಕಾರ್ಯಭಾರಗಳು ಒಂದೇ ಆಗಿರುವುದನ್ನು ಗಮನಿಸಲಾಗಿದೆ. ಆದುದರಿಂದ, ಮೇಲೆ (5) ರಲ್ಲಿ ಓದಲಾದ ಸರ್ಕಾರದ ಆದೇಶಾನುಸಾರ ಸರ್ಕಾರದ ಪ್ರಧಾನ ಕಾರ್ಯದರ್ಶಿಗಳು (ಪರಿಸರ ಮತ್ತು ಜೀವಿಶಾಸ್ತ್ರ), ಅರಣ್ಯ, ಜೀವಿಪರಿಸ್ಥಿತಿ ಮತ್ತು ಪರಿಸರ ಇಲಾಖೆ, ಕರ್ನಾಟಕ ಸರ್ಕಾರ ರವರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ರಚಿಸಲ್ಪಟ್ಟಿರುವ ಸಮಿತಿಯನ್ನು ಕೇಂದ್ರ ಪರಿಸರ, ಅರಣ್ಯ ಮತ್ತು ಹವಾಮಾನ ಬದಲಾವಣೆ ಮಂತ್ರಾಲಯದ ಸೂಚನೆಯಂತೆ ರಾಜ್ಯ ಮಟ್ಟದ ಉಸ್ತುವಾರಿ ಸಮಿತಿ ಎಂದು ಗುರುತಿಸಿ ಉಸ್ತುವಾರಿ ಸಮಿತಿಯ ಜವಾಬ್ದಾರಿಯನ್ನು ಸದರಿ ಸಮಿತಿಗೆ ವಹಿಸುವ ಬಗ್ಗೆ ಪರಿಗಣಿಸಲಾಗಿದೆ.

ಅಲ್ಲದೆ, ಕೇಂದ್ರ ಸರ್ಕಾರದ ಪರಿಸರ, ಅರಣ್ಯ ಮತ್ತು ಹವಾಮಾನ ಬದಲಾವಣೆ ಮಂತ್ರಾಲಯವು ರಾಜ್ಯದ ಬೆಂಗಳೂರು, ದಾವಣಗೆರೆ, ಗುಲ್ಬರ್ಗಾ ಮತ್ತು ಹುಬ್ಬಳ್ಳಿ-ಧಾರವಾಡ ನಗರಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ರಾಷ್ಟ್ರೀಯ ಶುದ್ಧ ವಾಯು ಕಾರ್ಯಕ್ರಮದ ಅನುಷ್ಠಾನದ ಉದ್ದೇಶಕ್ಕಾಗಿ ಜಿಲ್ಲಾಧಿಕಾರಿಗಳು ಅಥವಾ ಸಂಬಂಧಪಟ್ಟ ನಗರಗಳ ನಗರಸಭೆ ಆಯುಕ್ತರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ನಗರ ಮಟ್ಟದ ಅನುಷ್ಠಾನ ಸಮಿತಿಗಳನ್ನು ರಚಿಸುವ ಬಗ್ಗೆ ಪ್ರಸ್ತಾಪಿಸಿರುತ್ತದೆ. ಈ ಬಗ್ಗೆ ಸರ್ಕಾರದ ಮಟ್ಟದಲ್ಲಿ ಪರಿಶೀಲಿಸಲಾಗಿದ್ದು, ಈ ಮೇಲ್ಕಂಡ ಎಲ್ಲಾ ನಗರಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟ ಜಿಲ್ಲೆಗಳ ಜಿಲ್ಲಾಧಿಕಾರಿಗಳ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ಕೆಳಕಂಡಂತೆ ರಾಷ್ಟ್ರೀಯ ಶುದ್ಧ ವಾಯು ಕಾರ್ಯಕ್ರಮದ ಅನುಷ್ಠಾನ ಸಮಿತಿಗಳನ್ನು ರಚಿಸಲು ತೀರ್ಮಾನಿಸಲಾಗಿದೆ.

ಕ್ರಮ ಸಂಖ್ಯೆ	ಅಧಿಕಾರಿ ಮತ್ತು ಇಲಾಖೆ	ಪದನಾಮ
1.	ಸಂಬಂಧಪಟ್ಟ ಜಿಲ್ಲೆಗಳ ಜಿಲ್ಲಾಧಿಕಾರಿಗಳು	ಅಧ್ಯಕ್ಷರು
2.	ಆಯುಕ್ತರು, ಸಂಬಂಧಪಟ್ಟ ಮಹಾನಗರಪಾಲಿಕೆ	ಸದಸ್ಯರು
3.	ಸಂಬಂಧಪಟ್ಟ ಜಿಲ್ಲೆಯ ಉಪ ನಿರ್ದೇಶಕರು, ಗಣಿ ಮತ್ತು ಭೂ ವಿಜ್ಞಾನ ಇಲಾಖೆ	ಸದಸ್ಯರು
4.	ಸಾರಿಗೆ ಇಲಾಖೆಯ ಸಂಬಂಧಪಟ್ಟ ಜಿಲ್ಲೆಯ ಸಾರಿಗೆ ಅಧಿಕಾರಿ	ಸದಸ್ಯರು
5.	ಸಂಬಂಧಪಟ್ಟ ಜಿಲ್ಲೆಯ ಪರಿಸರ ಅಧಿಕಾರಿ	ಸದಸ್ಯ ಸಮಾವೇಶಕರು

ಅದರಂತೆ ಆದೇಶ.

ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ಅಪಜೀ 72 ಇಪಿಸಿ 2018,
ಬೆಂಗಳೂರು, ದಿನಾಂಕ:28.08.2019

ಪ್ರಸ್ತಾವನೆಯಲ್ಲಿನ ಅಂಶಗಳನ್ನು ಕೂಲಂಕಷವಾಗಿ ಪರಿಶೀಲಿಸಿ, ಕೆಳಕಂಡಂತೆ ಆದೇಶಿಸಲಾಗಿದೆ.

I. ಸರ್ಕಾರದ ಆದೇಶದ ಸಂಖ್ಯೆ: ಅಪಜೀ 13 ಇಎನ್‌ಜಿ 2018, ದಿನಾಂಕ:19.09.2018ರ ಅನುಸಾರ ಸರ್ಕಾರದ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳವರ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ಪುನರ್ ರಚಿಸಲ್ಪಟ್ಟಿರುವ ಅನುಬಂಧ-1 ರಲ್ಲಿನ ವಾಯು ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಕಾರ್ಯಪಡೆಯು ರಾಷ್ಟ್ರೀಯ ಶುದ್ಧ ವಾಯು

ಕಾರ್ಯಕ್ರಮದ ರಾಜ್ಯ ಮಟ್ಟದ ಚಾಲನಾ ಸಮಿತಿಯಾಗಿಯೂ ಕಾರ್ಯನಿರ್ವಹಿಸತಕ್ಕದ್ದು ಹಾಗೂ ಹಾಲಿ ಇರುವ ಕರ್ತವ್ಯ ಮತ್ತು ಹೊಣೆಗಾರಿಕೆಗಳ ಜೊತೆಗೆ ರಾಷ್ಟ್ರೀಯ ಶುದ್ಧ ವಾಯು ಕಾರ್ಯಕ್ರಮದ ಪರಿಣಾಮಕಾರಿ ಅನುಷ್ಠಾನಕ್ಕೆ ಅಗತ್ಯವಾದ ಎಲ್ಲಾ ಕ್ರಮಗಳನ್ನು ಕೈಗೊಳ್ಳುವುದು.

II. ಸರ್ಕಾರದ ಆದೇಶದ ಸಂಖ್ಯೆ: ಎಫ್‌ಇಇ 216 ಇಪಿಸಿ 2018, ದಿನಾಂಕ:24.11.2018 ಸರ್ಕಾರದ ಪ್ರಧಾನ ಕಾರ್ಯದರ್ಶಿಗಳು (ಪರಿಸರ ಮತ್ತು ಜೀವಿಶಾಸ್ತ್ರ), ಅರಣ್ಯ, ಜೀವಿಪರಿಸ್ಥಿತಿ ಮತ್ತು ಪರಿಸರ ಇಲಾಖೆ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ರಚಿಸಲ್ಪಟ್ಟಿರುವ ಅನುಬಂಧ-2 ರಲ್ಲಿನ ವಾಯುಗುಣಮಟ್ಟ ಮೇಲ್ವಿಚಾರಣಾ ಸಮಿತಿಯು ರಾಷ್ಟ್ರೀಯ ಶುದ್ಧ ವಾಯು ಕಾರ್ಯಕ್ರಮದ ರಾಜ್ಯ ಮಟ್ಟದ ಉಸ್ತುವಾರಿ ಸಮಿತಿಯಾಗಿಯೂ ಕಾರ್ಯನಿರ್ವಹಿಸತಕ್ಕದ್ದು ಹಾಗೂ ಹಾಲಿ ಇರುವ ಕರ್ತವ್ಯ ಮತ್ತು ಹೊಣೆಗಾರಿಕೆಗಳ ಜೊತೆಗೆ ರಾಷ್ಟ್ರೀಯ ಶುದ್ಧ ವಾಯು ಕಾರ್ಯಕ್ರಮದ ಪರಿಣಾಮಕಾರಿ ಅನುಷ್ಠಾನಕ್ಕೆ ಅಗತ್ಯವಾದ ಎಲ್ಲಾ ಕ್ರಮಗಳನ್ನು ಕೈಗೊಳ್ಳುವುದು.

III. ರಾಜ್ಯದ ಬೆಂಗಳೂರು, ದಾವಣಗೆರೆ, ಗುಲ್ಬರ್ಗಾ ಮತ್ತು ಹುಬ್ಬಳ್ಳಿ-ಧಾರವಾಡ ನಗರಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ರಾಷ್ಟ್ರೀಯ ಶುದ್ಧ ವಾಯು ಕಾರ್ಯಕ್ರಮದ ಅನುಷ್ಠಾನದ ಉದ್ದೇಶಕ್ಕಾಗಿ ಸಂಬಂಧಪಟ್ಟ ಜಿಲ್ಲೆಗಳ ಜಿಲ್ಲಾಧಿಕಾರಿಗಳ ಅಧ್ಯಕ್ಷತೆಯಲ್ಲಿ ಕೆಳಕಂಡಂತೆ ನಗರ ಮಟ್ಟದ ಅನುಷ್ಠಾನ ಸಮಿತಿಗಳನ್ನು ತಕ್ಷಣದಿಂದಲೇ ಜಾರಿಗೆ ಬರುವಂತೆ ರಚಿಸಲಾಗಿದೆ.

ಕ್ರಮ ಸಂಖ್ಯೆ	ಅಧಿಕಾರಿ ಮತ್ತು ಇಲಾಖೆ	ಪದನಾಮ
1.	ಸಂಬಂಧಪಟ್ಟ ಜಿಲ್ಲೆಗಳ ಜಿಲ್ಲಾಧಿಕಾರಿಗಳು	ಅಧ್ಯಕ್ಷರು
2.	ಆಯುಕ್ತರು, ಸಂಬಂಧಪಟ್ಟ ಮಹಾನಗರಪಾಲಿಕೆ	ಸದಸ್ಯರು
3.	ಸಂಬಂಧಪಟ್ಟ ಜಿಲ್ಲೆಯ ಉಪ ನಿರ್ದೇಶಕರು, ಗಣಿ ಮತ್ತು ಭೂ ವಿಜ್ಞಾನ ಇಲಾಖೆ	ಸದಸ್ಯರು
4.	ಸಾರಿಗೆ ಇಲಾಖೆಯ ಸಂಬಂಧಪಟ್ಟ ಜಿಲ್ಲೆಯ ಸಾರಿಗೆ ಅಧಿಕಾರಿ	ಸದಸ್ಯರು
5.	ಸಂಬಂಧಪಟ್ಟ ಜಿಲ್ಲೆಯ ಪರಿಸರ ಅಧಿಕಾರಿ	ಸದಸ್ಯ ಸಮಾವೇಶಕರು

ಈ ಎಲ್ಲಾ ಸಮಿತಿಗಳ ರಚನೆಯು ತಕ್ಷಣದಿಂದಲೇ ಜಾರಿಗೆ ಬರುವಂತೆ ರಚನೆಗೊಂಡಿದ್ದು, ರಾಷ್ಟ್ರೀಯ ಶುದ್ಧ ವಾಯು ಕಾರ್ಯಕ್ರಮದ (NCAP) ಪರಿಣಾಮಕಾರಿ ಅನುಷ್ಠಾನಕ್ಕಾಗಿ ಕಾರ್ಯಪ್ರವೃತ್ತರಾಗತಕ್ಕದ್ದೆಂದು ಆದೇಶಿಸಲಾಗಿದೆ.

ಕರ್ನಾಟಕ ರಾಜ್ಯಪಾಲರ ಆದೇಶಾನುಸಾರ
ಮತ್ತು ಅವರ ಹೆಸರಿನಲ್ಲಿ

28/8/2019

(ಬಾಲಚಂದಿರ್ರಾವ್ ಕೋ. ಹುಣಶಾಳ)
ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಯದರ್ಶಿಗಳು (ಪ್ರ),
(ಜೀವಿಪರಿಸ್ಥಿತಿ ಮತ್ತು ಪರಿಸರ)
ಅರಣ್ಯ, ಜೀವಿಪರಿಸ್ಥಿತಿ ಮತ್ತು ಪರಿಸರ ಇಲಾಖೆ.

ಇವರಿಗೆ,
ಸಂಕಲನಕಾರರು, ಕರ್ನಾಟಕ ರಾಜ್ಯ ಪತ್ರ, ಸರ್ಕಾರಿ ಮುದ್ರಣಾಲಯ, ಬೆಂಗಳೂರು ಇವರನ್ನು ಮುಂದಿನ ಸಂಚಿಕೆಯಲ್ಲಿ ಪ್ರಕಟಿಸಲು ಹಾಗೂ 250 ಪ್ರತಿಗಳನ್ನು ಇಲಾಖೆಗೆ ಕಳುಹಿಸಲು ಕೋರಿದೆ.

ಇವರಿಗೆ:

1. ಮಹಾಲೇಖಪಾಲಕರು (ಲೆಕ್ಕಪತ್ರ) ಕರ್ನಾಟಕ, ಬೆಂಗಳೂರು.
2. ಮಾನ್ಯ ಅರಣ್ಯ ಜೀವಿಪರಿಸ್ಥಿತಿ ಮತ್ತು ಪರಿಸರ ಸಚಿವರ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿಗಳು, ವಿಕಾಸ ಸೌಧ, ಬೆಂಗಳೂರು.
3. ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿಗಳು, ಕರ್ನಾಟಕ ಸರ್ಕಾರ, ವಿಧಾನಸೌಧ, ಬೆಂಗಳೂರು.

4. ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳು, ಒಳಾಡಳಿತ ಇಲಾಖೆ, ವಿಧಾನಸೌಧ, ಬೆಂಗಳೂರು.
5. ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳು, ಆರೋಗ್ಯ ಮತ್ತು ಕುಟುಂಬ ಕಲ್ಯಾಣ ಇಲಾಖೆ, ವಿಕಾಸ ಸೌಧ, ಬೆಂಗಳೂರು.
6. ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳು, ವಾಣಿಜ್ಯ ಮತ್ತು ಕೈಗಾರಿಕಾ ಇಲಾಖೆ, ಬೆಂಗಳೂರು.
7. ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳು, ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ, ವಿಕಾಸ ಸೌಧ, ಬೆಂಗಳೂರು.
8. ಸರ್ಕಾರದ ಪ್ರಧಾನ ಕಾರ್ಯದರ್ಶಿಗಳು, ಸಾರಿಗೆ ಇಲಾಖೆ, ಬಹುಮಹಡಿಗಳ ಕಟ್ಟಡ, ಬೆಂಗಳೂರು.
9. ಆಯುಕ್ತರು, ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ, ಬೆಂಗಳೂರು,
10. ಕೈಗಾರಿಕಾ ಅಭಿವೃದ್ಧಿ ಆಯುಕ್ತರು ಮತ್ತು ನಿರ್ದೇಶಕರು, ಕೈಗಾರಿಕೆ ಮತ್ತು ವಾಣಿಜ್ಯ ಇಲಾಖೆ, #49, ಖನಿಜ-ಭವನ, ರೇಸ್ ಕೋರ್ಸ್ ರಸ್ತೆ, ಬೆಂಗಳೂರು – 560001.
11. ಆಯುಕ್ತರು, ನಗರ ಭೂ ಸಾರಿಗೆ ನಿರ್ದೇಶನಾಲಯ, ಬಿ.ಎಂ.ಟಿ.ಸಿ, ಟಿ.ಟಿ.ಎಂ.ಸಿ 'ಬಿ' ಬ್ಲಾಕ್, 4ನೇ ಮಹಡಿ, ಶಾಂತಿನಗರ, ಕೆ.ಹೆಚ್ ರಸ್ತೆ,ಬೆಂಗಳೂರು– 560027.
12. ಆಯುಕ್ತರು, ಸಾರಿಗೆ ಮತ್ತು ರಸ್ತೆ ಸುರಕ್ಷತೆ, 1ನೇ ಮಹಡಿ, 'ಎ' ಬ್ಲಾಕ್, ಟಿಟಿಎಂಸಿ ಕಟ್ಟಡ,ಶಾಂತಿನಗರ, ಬೆಂಗಳೂರು –560027.
13. ನಿರ್ದೇಶಕರು, ಪೌರಾಡಳಿತ ನಿರ್ದೇಶನಾಲಯ, ಬೆಂಗಳೂರು.
14. ಆಯುಕ್ತರು, ಕೃಷಿ ಇಲಾಖೆ, ಬೆಂಗಳೂರು.
15. ಜಿಲ್ಲಾಧಿಕಾರಿಗಳು, ಬೆಂಗಳೂರು ನಗರ/ ದಾವಣಗೆರೆ/ಗುಲ್ಬರ್ಗಾ/ಧಾರವಾಡ ಜಿಲ್ಲೆ.
16. ಆಯುಕ್ತರು, ಮಹಾನಗರಪಾಲಿಕೆ, ದಾವಣಗೆರೆ/ಗುಲ್ಬರ್ಗಾ/ಧಾರವಾಡ.
17. ಉಪ ನಿರ್ದೇಶಕರು, ಗಣಿ ಮತ್ತು ಭೂ ವಿಜ್ಞಾನ ಇಲಾಖೆ, ಬೆಂಗಳೂರು, ದಾವಣಗೆರೆ, ಗುಲ್ಬರ್ಗಾ ಮತ್ತು ಧಾರವಾಡ.
18. ಜನರಲ್ ಮ್ಯಾನೇಜರ್ ಮತ್ತು ಸ್ಟೇಟ್ ಲೆವೆಲ್ ಕೋ–ಆರ್ಡಿನೇಟರ್ (ಕರ್ನಾಟಕ), ಇಂಡಿಯನ್ ಆಯಿಲ್ ಕಾರ್ಪೋರೇಷನ್, ಬೆಂಗಳೂರು
19. ಗ್ಯಾಸ್ ಅಥಾರಿಟಿ ಆಫ್ ಇಂಡಿಯಾ ಲಿಮಿಟೆಡ್‌ನ (GAIL GAS Ltd.,) ನ ಪ್ರತಿನಿಧಿ, ಎಸ್–44, 3ನೇ ಮಹಡಿ, ಎಂ.ಎಸ್ ಕಾಂಪ್ಲೆಕ್ಸ್, ನ್ಯೂ ಬಿಇಎಲ್ ರೋಡ್, ಬೆಂಗಳೂರು, 560054
20. ಸೆಂಟರ್ ಫಾರ್ ಸ್ಟಡಿ ಆಫ್ ಸೈನ್ಸ್, ಟೆಕ್ನಾಲಜಿ & ಪಾಲಿಸಿ (C-STEP), ನಂ.18, 10ನೇ ಕ್ರಾಸ್, ಮಯೂರ ಸ್ಟ್ರೀಟ್, ಪಾಪಣ್ಣ ಲೇಔಟ್, ನಾಗಶೆಟ್ಟಿಹಳ್ಳಿ, ಆರ್.ಎಂ.ವಿ, 2ನೇ ಹಂತ, ಬೆಂಗಳೂರು– 560094.
21. ರೆಪ್ರೆಸೆಂಟಿಟಿವ್ ಆಫ್ ದಿ ಎನರ್ಜಿ & ರಿಸೋರ್ಸ್ ಇನ್‌ಸ್ಟಿಟ್ಯೂಟ್, (TERI), 4ನೇ ಮುಖ್ಯ ರಸ್ತೆ, ದೊಮ್ಮಲೂರು, 2ನೇ ಹಂತ, ಬೆಂಗಳೂರು– 560071
22. ಅಧ್ಯಕ್ಷರು, Centre for Infrastructure Sustainable Transportation and Urban Planning (CISTUP), ಭಾರತೀಯ ವಿಜ್ಞಾನ ಸಂಸ್ಥೆ, ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು.
23. ಸದಸ್ಯ ಕಾರ್ಯದರ್ಶಿ, ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳಿ, ನಂ.49, ಪರಿಸರ ಭವನ, ಚರ್ಚ್ ಸ್ಟ್ರೀಟ್, ಬೆಂಗಳೂರು.
24. ರಕ್ಷಾ ಕಡತ/ ಹೆಚ್ಚುವರಿ ಪ್ರತಿ.

ಪ್ರತಿ ಮಾಹಿತಿಗಾಗಿ:

1. ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳು ಅರಣ್ಯ, ಜೀವಿಪರಿಸ್ಥಿತಿ ಮತ್ತು ಪರಿಸರ ಇಲಾಖೆ ಇವರ ಹಿರಿಯ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿ, ಬಹುಮಹಡಿಗಳ ಕಟ್ಟಡ, ಬೆಂಗಳೂರು.
2. ಸರ್ಕಾರದ ಪ್ರಧಾನ ಕಾರ್ಯದರ್ಶಿಗಳು (ಜೀವಿಪರಿಸ್ಥಿತಿ ಮತ್ತು ಪರಿಸರ), ಅರಣ್ಯ, ಜೀವಿಪರಿಸ್ಥಿತಿ ಮತ್ತು ಪರಿಸರ ಇಲಾಖೆ ಇವರ ಹಿರಿಯ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿ, ಬಹುಮಹಡಿಗಳ ಕಟ್ಟಡ, ಬೆಂಗಳೂರು.
3. ವಿಶೇಷ ನಿರ್ದೇಶಕರು (ತಾಂತ್ರಿಕ ಕೋಶ), ಅರಣ್ಯ, ಜೀವಿಪರಿಸ್ಥಿತಿ ಮತ್ತು ಪರಿಸರ ಇಲಾಖೆ ಇವರ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿಗಳು, ಬಹುಮಹಡಿಗಳ ಕಟ್ಟಡ, ಬೆಂಗಳೂರು.

ಅನುಬಂಧ –1

(ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ಅಪಜೀ 72 ಇಪಿಸಿ 2018, ಬೆಂಗಳೂರು, ದಿನಾಂಕ:28.08.2019)

ಸರ್ಕಾರದ ಆದೇಶದ ಸಂಖ್ಯೆ: ಅಪಜೀ 13 ಇಎನ್‌ಜಿ 2018, ದಿನಾಂಕ:19.09.2018ರಲ್ಲಿ
ಪುನರ್ ರಚಿಸಲ್ಪಟ್ಟಿರುವ ವಾಯು ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಕಾರ್ಯಪಡೆ ಹಾಗೂ
ರಾಷ್ಟ್ರೀಯ ಶುದ್ಧ ವಾಯು ಕಾರ್ಯಕ್ರಮದ ರಾಜ್ಯ ಮಟ್ಟದ ಚಾಲನಾ ಸಮಿತಿ

1.	ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳು, ಕರ್ನಾಟಕ ಸರ್ಕಾರ	ಅಧ್ಯಕ್ಷರು
2.	ಸರ್ಕಾರದ ಅಪ್ಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳು, ಅರಣ್ಯ, ಜೀವಿಪರಿಸ್ಥಿತಿ ಮತ್ತು ಪರಿಸರ ಇಲಾಖೆ	ಸದಸ್ಯರು
3.	ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳು, ಒಡಾಳಿತ ಇಲಾಖೆ	ಸದಸ್ಯರು
4.	ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳು, ಆರೋಗ್ಯ ಮತ್ತು ಕುಟುಂಬ ಕಲ್ಯಾಣ ಇಲಾಖೆ	ಸದಸ್ಯರು
5.	ಸರ್ಕಾರದ ಅಪರ ಮುಖ್ಯ ಕಾರ್ಯದರ್ಶಿಗಳು, ನಗರಾಭಿವೃದ್ಧಿ ಇಲಾಖೆ	ಸದಸ್ಯರು
6.	ಸರ್ಕಾರದ ಪ್ರಧಾನ ಕಾರ್ಯದರ್ಶಿಗಳು, ಸಾರಿಗೆ ಇಲಾಖೆ	ಸದಸ್ಯರು
7.	ಸರ್ಕಾರದ ಪ್ರಧಾನ ಕಾರ್ಯದರ್ಶಿಗಳು, (ಜೀವಿಪರಿಸ್ಥಿತಿ ಮತ್ತು ಪರಿಸರ), ಅರಣ್ಯ, ಜೀವಿಪರಿಸ್ಥಿತಿ ಮತ್ತು ಪರಿಸರ ಇಲಾಖೆ	ಸದಸ್ಯರು
8.	ಆಯುಕ್ತರು, ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ	ಸದಸ್ಯರು
9.	ಆಯುಕ್ತರು, ನಗರ ಭೂ ಸಾರಿಗೆ ನಿರ್ದೇಶನಾಲಯ, ಬಿ.ಎಂ.ಟಿ.ಸಿ, ಟಿ.ಟಿ.ಎಂ.ಸಿ 'ಬಿ' ಬ್ಲಾಕ್, 4ನೇ ಮಹಡಿ, ಶಾಂತಿನಗರ, ಕೆ.ಹೆಚ್ ರಸ್ತೆ, ಬೆಂಗಳೂರು–560027.	ಸದಸ್ಯರು
10.	ಆಯುಕ್ತರು, ಸಾರಿಗೆ ಮತ್ತು ರಸ್ತೆ ಸುರಕ್ಷತೆ, 1ನೇ ಮಹಡಿ, 'ಎ' ಬ್ಲಾಕ್, ಟಿಟಿಎಂಸಿ ಕಟ್ಟಡ, ಶಾಂತಿನಗರ, ಬೆಂಗಳೂರು –560027	ಸದಸ್ಯರು
11.	ಜನರಲ್ ಮ್ಯಾನೇಜರ್ & ಸ್ಟೇಟ್ ಲೆವೆಲ್ ಕೋ–ಆರ್ಡಿನೇಟರ್ (ಕರ್ನಾಟಕ), ಇಂಡಿಯನ್ ಆಯಿಲ್ ಕಾರ್ಪೋರೇಷನ್, ನಂ.29, ಪಿ, ಕಾಳಿಂಗರಾವ್ ರಸ್ತೆ, ಬೆಂಗಳೂರು–560027.	ಸದಸ್ಯರು

12.	ಗ್ಯಾಸ್ ಅಥಾರಿಟಿ ಆಫ್ ಇಂಡಿಯಾ ಲಿಮಿಟೆಡ್‌ನ (GAIL GAS Ltd.,) ನ ಪ್ರತಿನಿಧಿ ಎಸ್-44, 3ನೇ ಮಹಡಿ, ಎಂ.ಎಸ್ ಕಾಂಪ್ಲೆಕ್ಸ್, ನ್ಯೂ ಬಿಇಎಲ್ ರೋಡ್, ಬೆಂಗಳೂರು, 560054.	ಸದಸ್ಯರು
13.	ಸೆಂಟರ್ ಫಾರ್ ಸ್ಟಡಿ ಆಫ್ ಸೈನ್ಸ್, ಟೆಕ್ನಾಲಜಿ & ಪಾಲಿಸಿ (C-STEP), ನ ಪ್ರತಿನಿಧಿ ನಂ.18, 10ನೇ ಕ್ರಾಸ್, ಮಯೂರ ಸ್ಟ್ರೀಟ್, ಪಾಪಣ್ಣ ಲೇಔಟ್, ನಾಗಶೆಟ್ಟಿಹಳ್ಳಿ, ಆರ್.ಎಂ.ವಿ, 2ನೇ ಹಂತ, ಬೆಂಗಳೂರು-560094.	ಸದಸ್ಯರು
14.	ದಿ ಎನರ್ಜಿ & ರಿಸೋರ್ಸ್ ಇನ್‌ಸ್ಟಿಟ್ಯೂಟ್ (TERI) ನ ಪ್ರತಿನಿಧಿ, 4ನೇ ಮುಖ್ಯ ರಸ್ತೆ, ದೊಮ್ಮಲೂರು, 2ನೇ ಹಂತ, ಬೆಂಗಳೂರು- 560071	ಸದಸ್ಯರು
15.	ಅಧ್ಯಕ್ಷರು, Centre for Infrastructure, Sustainable Transportation and Urban Planning (CISTUP) ಭಾರತೀಯ ವಿಜ್ಞಾನ ಸಂಸ್ಥೆ, ಮಲ್ಲೇಶ್ವರಂ, ಬೆಂಗಳೂರು	ಸದಸ್ಯರು
16.	ಅಧ್ಯಕ್ಷರು, ಕರ್ನಾಟಕ ಲಾರಿ ಮಾಲೀಕರು ಒಕ್ಕೂಟ / ಸಂಘ, ನಂ.165, 15ನೇ ಮುಖ್ಯರಸ್ತೆ, ಚಾಮರಾಜಪೇಟೆ, ಬೆಂಗಳೂರು-560018.	ಸದಸ್ಯರು
17.	ಅಧ್ಯಕ್ಷರು, ದಕ್ಷಿಣ ರಾಜ್ಯದ ಸರಕು ವಾಹನಗಳ ಮಾಲೀಕರ ಒಕ್ಕೂಟ, ನಂ.13, 1ನೇ ಮಹಡಿ, ವಿಜಯ ಕಾಂಪ್ಲೆಕ್ಸ್, ಶಿವಗಂಗಾ ಮಠ, ಚಾಮರಾಜಪೇಟೆ, ಬೆಂಗಳೂರು-560 018.	ಸದಸ್ಯರು
18.	ಸದಸ್ಯ ಕಾರ್ಯದರ್ಶಿ, ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳಿ, ನಂ.49, ಪರಿಸರ ಭವನ, ಚರ್ಚ್ ಸ್ಟ್ರೀಟ್, ಬೆಂಗಳೂರು.	ಸದಸ್ಯರು - ಸಂಚಾಲಕರು

(ಬಾಲಚಂದ್ರಲಾಮ ಗೋ. ಹುಣಶಾಳ)
ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಯದರ್ಶಿಗಳು (ಪ್ರ),
(ಜೀವಿಪರಿಸ್ಥಿತಿ ಮತ್ತು ಪರಿಸರ)
ಅರಣ್ಯ, ಜೀವಿಪರಿಸ್ಥಿತಿ ಮತ್ತು ಪರಿಸರ ಇಲಾಖೆ.

ಅನುಬಂಧ – 2

(ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ಅಪಜೀ 72 ಇಪಿಸಿ 2018, ಬೆಂಗಳೂರು, ದಿನಾಂಕ:28.08.2019)

ಸರ್ಕಾರದ ಆದೇಶದ ಸಂಖ್ಯೆ: ಎಫ್ಇಇ 216 ಇಪಿಸಿ 2018, ದಿನಾಂಕ:24.11.2018ರಲ್ಲಿ ರಚಿಸಲ್ಪಟ್ಟಿರುವ
ವಾಯುಗುಣಮಟ್ಟ ಮೇಲ್ವಿಚಾರಣಾ ಸಮಿತಿ ಹಾಗೂ ರಾಷ್ಟ್ರೀಯ ಶುದ್ಧ ವಾಯು ಕಾರ್ಯಕ್ರಮದ
ರಾಜ್ಯ ಮಟ್ಟದ ಉಸ್ತುವಾರಿ ಸಮಿತಿ

1.	ಸರ್ಕಾರದ ಪ್ರಧಾನ ಕಾರ್ಯದರ್ಶಿಗಳು (ಜೀವಿಪರಿಸ್ಥಿತಿ ಹಾಗೂ ಪರಿಸರ), ಅರಣ್ಯ, ಜೀವಿಪರಿಸ್ಥಿತಿ ಮತ್ತು ಪರಿಸರ ಇಲಾಖೆ	ಅಧ್ಯಕ್ಷರು
2.	ಸಾರಿಗೆ ಮತ್ತು ರಸ್ತೆ ಸುರಕ್ಷತಾ ಆಯುಕ್ತರು, ಸಾರಿಗೆ ಇಲಾಖೆ	ಸದಸ್ಯರು
3.	ಕೈಗಾರಿಕಾ ಅಭಿವೃದ್ಧಿ ಆಯುಕ್ತರು ಮತ್ತು ನಿರ್ದೇಶಕರು, ಕೈಗಾರಿಕೆ ಮತ್ತು ವಾಣಿಜ್ಯ ಇಲಾಖೆ.	ಸದಸ್ಯರು
4.	ನಿರ್ದೇಶಕರು, ಪೌರಾಡಳಿತ ನಿರ್ದೇಶನಾಲಯ	ಸದಸ್ಯರು
5.	ಆಯುಕ್ತರು, ಕೃಷಿ ಇಲಾಖೆ	ಸದಸ್ಯರು
6.	ಸದಸ್ಯ ಕಾರ್ಯದರ್ಶಿ, ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಳಿ	ಸದಸ್ಯ–ಸಂಚಾಲಕರು

28/8/2019

(ಬಾಲಚಂದಿರಮ್ಮ ಗೋ. ಹುಣಶಾಳ)
ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಯದರ್ಶಿಗಳು (ಪ್ರ),
(ಜೀವಿಪರಿಸ್ಥಿತಿ ಮತ್ತು ಪರಿಸರ)
ಅರಣ್ಯ, ಜೀವಿಪರಿಸ್ಥಿತಿ ಮತ್ತು ಪರಿಸರ ಇಲಾಖೆ.

KARNATAKA STATE POLLUTION CONTROL BOARD

Email **Member Secretary KSPCB**

Proceedings of the Steering Committee meeting on State Action plan

From : Member Secretary KSPCB <ms@kspcb.gov.in> Tue, Jan 28, 2025 06:14 PM

Subject : Proceedings of the Steering Committee meeting on State Action plan 2 attachments

To : Vaishali M D <legalcell@kspcb.gov.in>, MS, CPCB <mscb.cpcb@nic.in>, J Chandra Babu <jcb.cpcb@nic.in>, P K SELVI <pkselvi.cpcb@nic.in>, NCAP MoEFCC <ncap.moefcc@gov.in>, Vivek K <vivek.cpcb@gov.in>, CPCB AQM NCAP <ncap.cpcb@gov.in>

Cc : Raju N R <ceo-2pd@kspcb.gov.in>, monica moef <monica.moef@gmail.com>

Sir,

Please find herein attached the proceeding of the Steering committee on State Action plan for Karnataka along with approved state action plan.

With regards,
PA to MS
Karnataka State Pollution Control Board
Parisara Bhavan
Bengaluru

State Action plan for clean air for karnataka.pdf
15 MB

IMG_0001.pdf
2 MB

BEFORE NATIONAL GREEN TRIBUNAL SOUTHERN ZONE, CHENNAI.

O.A. 159 of 2021

Kankana Das

…Applicant

-Vs-

UOI and Others

…Respondents

MEMO FILED ON BEHALF OF THE 6TH RESPONDENT

M.R.GOKUL KRISHNAN
Standing Counsel for
Karnataka State Pollution Control Board (KSPCB)

COUNSEL FOR THE RESPONDENT