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MEGHALAYA STATE ACTION PLAN for Prevention & Control of Air Pollution

Revised - December, 2024



MEGHALAYA STATE POLLUTION CONTROL BOARD
(Forests & Environment Department, Government of Meghalaya)
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Disclaimer

The report of 'Meghalaya State Action Plan for Prevention and Control of Air Pollution' is prepared by compiling the information/data collected from various line departments and includes the indicative template provided by the MoEF&CC/SAP guideline shared by CPCB. This report is the depiction of various measures/initiatives "As is" undertaken by departments to control air pollution.

While every effort has been made to ensure the correctness of the data and information put forward in this report, neither the authors nor MSPCB accepts any legal liability for the accuracy or inferences of the material contained in this report or for any consequences arising from the use of this material.

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Executive Summary

The ‘Meghalaya State Action Plan for Prevention and Control of Air Pollution (MSAP-PCAP)’ has been compiled/revised the objective of improving air quality state-wide. The plan aims to decrease the concentration of air pollutants especially Particulate Matters (PM) and to increase the annual number of days with fairly good air quality. The plan includes verifiable interim emission and sectoral emission reduction targets. This will ensure continuous and timely implementation of important activities/actions in stipulated time frame and the ultimate goal is to achieve/maintain National Ambient Air Quality Standard (NAAQS).

The compilation of Meghalaya SAP for prevention and control of air pollution within the state is necessitated with the aim towards complying to environmental notifications, rules and regulations framed in the past & present decades and supervision & review of Central Ministry/Board as well as towards complying to the direction of Hon’ble National Green Tribunal [O.A. 60/2021/EZ, and O.A. 159/2021/SZ].

Air quality issues are mainly emissions from industrial sector, road dust, transport/vehicular emission, agriculture, domestic, unscientific waste management, construction and demolition waste and burning of wastes etc. which are major contributors to air pollution. Thus, actions and relevant measures for prevention and control of air pollution is taken by various responsible stakeholder/concerned departments with holistic approaches. The Action Plan relies heavily upon the integration of various local government departments in collaboration with other agencies as well. The compiled information on status will help and at the same time result in systematic regulatory actions based on the initiatives taken by responsible stakeholder/concerned departments to meet the commitments of gazette notifications from time to time.

The objective of SAP is a collaborative and participatory approach involving state governments, local bodies, relevant central ministries, and other stakeholders with focus on all sources of pollution forming the crux of the programme. There are prioritizing actions in different source category (industrial, transport, agriculture, waste management, indoor/domestic) and policy interventions required for control of air pollution in the state of Meghalaya listed in the SAP. Each concerned dept./stakeholder is to take relevant measure, and effective & timely implementation of the same. For certain activities having financial implications, the concerned dept./stakeholder may approach the concerned head office/headquarter or avail necessary funds from relevant schemes/programme of the central/state govt. for timely/continuous execution of respective activities in the state of Meghalaya.

A holistic and integrated air quality management policy based on strong scientific insights through data analysis, identification of sources, prioritizing actions and policy interventions along with strong enforcement, governance and monitoring, are the strategies that must be adopted to mitigate and control air pollution. This is crucial for ensuring desired air quality levels. These are the very strategies that are being adopted in the National Clean Air Programme (NCAP). NCAP was launched in 2019 to improve air quality through collaborative policies and actions at national and sub-national levels. Under NCAP, 130 Non-Attainment Cities have prepared City Action Plans (CAP) with involvement of various departments/agencies to improve city air quality especially Particulate Matters (PM). NCAP also envisions to prepare guidelines for State Action Plan for improvement of air quality and required identification of areas and finalizing activities which needs direct intervention in time targeted manner at the state level.

The Meghalaya State Action Plan for Prevention and Control of Air Pollution (MSAP-PCAP) —Initiatives of Government of Meghalaya

1. Introduction/Background

Air pollution emission issues are associated with many sectors, which inter-alia includes power, transport, industry, mining, residential, construction and agriculture. Burning of fossil fuels causes local air pollution that contributes to both global climate change and air pollution. Global climate change is caused by the over-abundance of greenhouse gas (GHG) emissions in the atmosphere. The local air quality generally refers to the level of pollutants in the air that we breathe, which is typically found in the lowest part of the atmosphere (our breathing zone), and the air quality is reduced by excess concentration of specific pollutants, namely PM₁₀, PM_{2.5}, NO₂, SO₂, etc. Among these notified air pollutants, solid particulate matters termed as PM₁₀ and PM_{2.5} are found to exceed the national stipulated standards and said to be toxic if inhaled or exposed for long duration.

Therefore, with the objective of improving air quality both at regional and urban scale, a comprehensive time bound action programme known as the National Clean Air Programme (NCAP) was launched by Ministry of Environment, Forest and Climate Change (MoEF&CC) on 10th January, 2019. This program is implemented in 130 non-attainment cities (including 42 million plus cities/urban agglomerations). The mission of this program is to reduce PM₁₀ and PM_{2.5} concentration by 20–40% by 2025-26 as compared to concentration during 2019-20. This is the first such program implemented with uniform modus operandi across the country. The program calls for integrated action plans including sharing of responsibility by all line central ministries and respective state departments. The Meghalaya SAP for clean air also contributes to/complements the Meghalaya State Action Plan for Climate Change & Human Health (SAPCCHH).

Therefore, it is necessary that all stakeholder organizations are brought on a single platform so as to implement all regulations framed both at central and state government level. The central steering and monitoring committee(s) of this program is headed by the Secretary and Additional Secretary of MoEF&CC respectively. The Central Pollution Control Board (CPCB) is the country's statutory organization responsible for prevention and control of pollution. The main function of the CPCB is to prepare standards, guidelines, implementation strategies etc. to be adopted, followed, implemented and executed across the country. In this matter, CPCB is the designated monitoring/nodal agency for the entire country. With a view to having uniform implementation of NCAP programs, integrated city action plans are prepared and assessment is done quantitatively at regular intervals. The Implementation Committee of the NCAP is headed by the Chairman of CPCB for effective ground level implementation of NCAP in identified 130 Non-Attainment Cities (NACs) across the country.

The necessity of the State Action Plan for clean air is anchored in the need for necessary policy changes, including prioritization and convergence of activities of various ongoing and/or proposed schemes and programs. State Action Plan is prepared for the entire state which includes cities covered under NCAP as well as cities/areas outside the NCAP cities. Implementation of the SAP is to be taken up by the state government and city administration with a detailed funding mechanism. SAP may be supplemented by emission inventory for the state with inclusion of

sectoral emission load reduction plans. Policy intervention at the state level is also essential for the activities identified and approved under the city action plan (CAP) of non-attainment cities (NACs). Such intervention will help in the seamless and smooth implementation of approved city action plan as well as overall air quality improvement.

The compilation/preparation of 'Meghalaya SAP for prevention and control of air pollution' within the state has been formulated with a goal towards complying to environmental notifications, rules and regulations framed in the previous & present decades under the supervision & inspection of Central Ministry/Board and as per direction of Hon'ble National Green Tribunal [O.A. 60/2021/EZ, and O.A. 159/2021/SZ].

Further, there is an urgent need for effective implementation of all acts/rules, notifications, regulations, etc. made both at the central and state level for the public/stakeholders. Moreover, for prevention and control of air pollution within the state, effective implementation & monitoring can be assured by adopting/following environmental norms (prepared by CPCB/MoEFCC) by concerned departments/stakeholders of the state.

- The Air (Prevention and Control of Pollution) Act, Rules/Norms, and Amendments.
- Solid Waste Management Rules, 2016, and Amendments.
- Guidelines for Disposal of Legacy Waste (Old Municipal Solid Waste).
- Construction and Demolition Waste Management Rules, 2016, and Amendments.
- Guidelines on dust mitigation measures in handling Construction material and C&D wastes.
- Guidelines on Environmental Management of Construction & Demolition (C&D) Wastes.
- Plastic Waste Management Rules, 2016, and Amendments.
- Consolidated Guidelines for Segregation, Collection and Disposal of Plastic Waste.
- E-waste, Battery waste, Hazardous waste and biomedical waste management Rule(s)/Guidelines, and Amendments.

2. Topography, Geography & Meteorology of Meghalaya:

Area: 22,429 Sq. Km

Population: 29,66,889 (As Per 2011 Census)

Capital: Shillong

Languages: Khasi, Pnar, Garo & English

Density: 132 Per Sq. Km

Literacy Rate: 75.5 %

Administrative setup:

Autonomous District Councils: 3 Nos. (Khasi, Garo, Jaintia)

District: 12 Nos.

C&RD Blocks: 55 Nos.

Municipality: 7 Nos.

Meghalaya, one of the 'seven sisters states' situated in the North-Eastern part of India, and also known as the 'Abode of clouds,' comprises a geographical area of 22,429 Sq kms and is located between 25° 00"N to 26° 10"N latitude and 89° 45"E to 92° 45"E longitude. It is bounded on the northern and eastern sides by the state of Assam. On the south and south-western side, it shares a 423 km long international boundary with Bangladesh.

Meghalaya has a population of 29.67 lakhs (as per Census, 2011). The population is predominantly tribal, comprising three major tribes viz., Khasi, Jaintia and Garo, that make up around 89% of the state population. The state comprises 12 districts and a district wise map of Meghalaya state is depicted in Fig.1 (below)

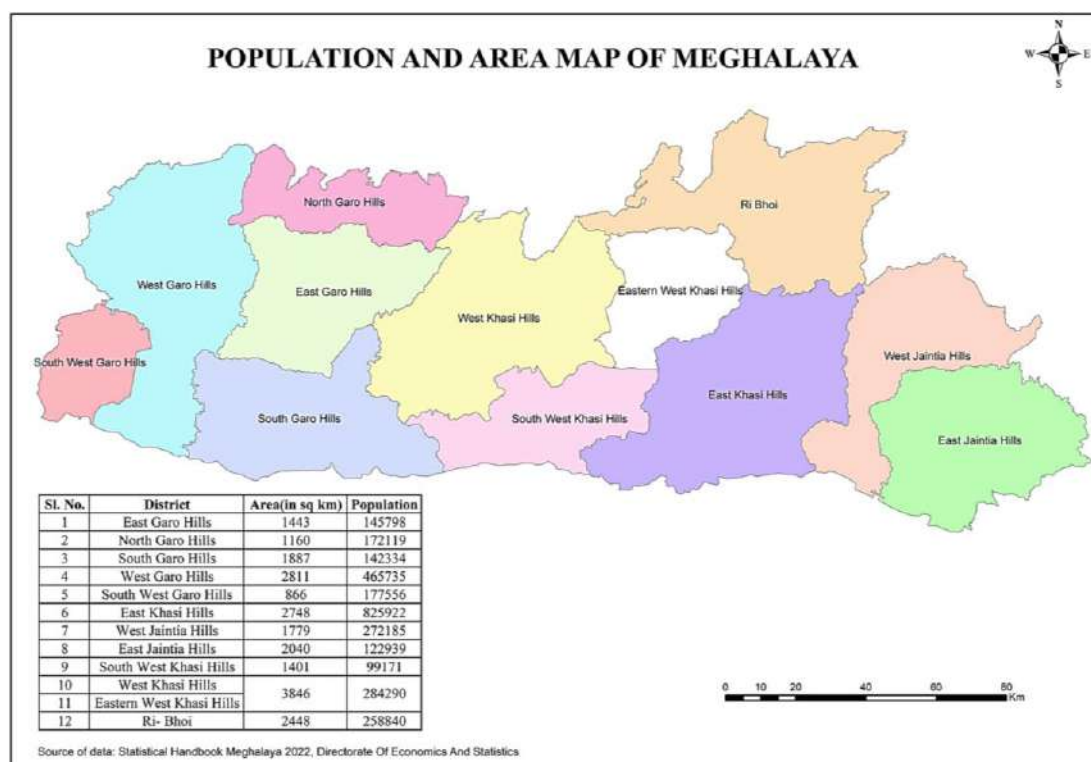


Fig.1. Districts-wise map of Meghalaya State

Shillong is the capital of Meghalaya and is also popularly known as the “Scotland of the East.” The state is part of the Indo-Burma biodiversity hot spot and is a key area for biodiversity conservation due to its high species biodiversity and high level of endemism. The total forest cover in the state extends to about 76 % of its geographical area, as per the Forest Survey Report of 2015. The forests of Meghalaya encompass a large variety of flora and fauna. The climate is moderate with distinct warm-wet and cold-dry periods. It is directly influenced by the south west monsoon and the north east winter winds. The four main seasons of Meghalaya are Spring (March to April), Monsoon (May to September), Autumn (October to November) and Winter (December to February). The temperature starts warming up with the advent of spring and reaches the maximum in the summer (monsoon) months of May and June. The winter is quite severe with minimum temperature coming down to as low as 2° C in the Khasi Hills. The average rainfall in the state is 12000 mm. The western part of the plateau, comprising the Garo Hills region with lower elevations, experiences high temperatures for most of the year while the Shillong area, with the highest elevation, experiences generally low temperatures. The maximum temperature in this region rarely goes beyond 28 °C (82 °F) whereas sub-zero winter temperatures are common. The Cherrapunji-Mawsynram region, located on the southern part of the state, are among the wettest spots in the world. In fact, the town of Sohra (Cherrapunji) in the East Khasi Hills district, south of capital Shillong, holds the world record for most rain in a calendar month while the village of Mawsynram, near Sohra (Cherrapunji), holds the record for the most rainfall in a year.

The state is also known as Meghalaya plateau. The elevation of the plateau ranges from 150 m to 1961 m. The central part of the plateau has the Khasi Hills and the eastern section is bounded by Jaintia Hills. The highest point in the state is the Shillong Peak with an altitude of 1961 meters above sea level. The Garo Hills bound the western section of the plateau. Meghalaya has mostly rain fed seasonal rivers which create beautiful waterfalls and deep gorges in the valleys. The rivers form an important part of the geography of Meghalaya. The important rivers in the Garo Hills region are Damring, Manda, Bugi, Ganol, Jingiram, Dareng and Didram. In the central and eastern sections of the plateau, the important rivers are Khri, Umtrew, Umiam (Mawphlang), Kynshi, Umiam, Umngot, Kupli, Lukha, Myntang and Myntdu. In the southern Khasi Hills region, these rivers have created deep gorges and several beautiful waterfalls.

Meghalaya is rich in biodiversity as it is situated in a biological hotspot region of the eastern Himalayas. The state is mostly mountainous with stretches of valley and highland plateaus. With the state economy's dependence on agriculture instead of industries and due to the hydro power generation therein, Meghalaya is on the lower side of the per capita emission of greenhouse gases (GHG) compared to its counterparts.

Meghalaya has unique strengths and opportunities that can be leveraged upon to promote sustainable development. The state offers significant avenues for investment with abundant natural resources in terms of flora, fauna, forests, medicinal plants, minerals such as coal, limestone, quartz, feldspar, granite, industrial clay, sillimanite, and uranium. A conducive climate for agri-horticulture sectors and eco-tourism, untapped hydroelectric potential, human resources, forest resources, mineral resources and the social capital in the village communities are some of the key ones. Further, most of the state's produce is naturally organic, with some of the well-known high-value agriculture and horticulture crops being Strawberry, Ginger, Lakadong turmeric, Honey, black pepper, Potato, Jackfruit, Pineapple, Areca nut and various exotic flowers.

As per the report of Reserve Bank of India (Handbook of Statistics of Indian States-2021), the Gross State Domestic Product (at Constant price) of state is Rs. 23,29,655 Lakhs (2020-21 data) and per capita net State Domestic Product is of Rs. 56,471 (2020-21). Around 80 percent of the population is dependent upon agriculture and allied sector, which contributes 17 percent to the state GDP. About 80 percent of the population is dependent upon agriculture; however, presently the sector contributes only 17 percent to the state GDP. As per the 2011 census, the state has a literacy rate of 75.5%. Further, Meghalaya has a matrilineal societal structure and women's participation in the workforce, at 34 percent for rural and 24 percent for urban areas, is higher than the national average.

Meghalaya is also geographically rich in minerals and has the potential for industrial setups based on these mineral resources. However, the level of exploitation of mineral resources is poor and the captive utilisation is also low. Since much of the land is privately owned, mining in the state is largely unregulated and unscientific. In fact, unscientific mining in the state has resulted in land degradation as well as air and water pollution. Strict compliance to environmental norms (acts/rules/guidelines/policies) notified/framed by MoEF&CC/CPCB/ MSPCB/Mining & Geology Dept., etc. can play a key role in controlling/mitigating air pollution at mining sites. It is also worth mentioning that the Meghalaya Industrial Policy is framed for the ease of doing

business and increasing trade and commerce. Types of Industry that can be ideally setup in the state are mineral-based industry, horticulture and agro-based industry, electronics and information technology, export-oriented units and tourism. Besides these, the recent development in the state has seen many upcoming service sectors related to customer service, real estate etc. The Department of Commerce and Industries provides various types of State Incentives for the established industrial setup.

Meghalaya is a development priority of the Government of India (GOI). The GOI has set up a special 'NITI Forum' for speedy growth of NER including Meghalaya. For "Transformation by Transportation" in NER under the Forum, 3 rail sections, air-connectivity of Meghalaya with NER and Association of Southeast Asian Nations (ASEAN) countries, and 4 National Highway corridors connecting Meghalaya with Bangladesh are being developed. Government of India's "Act East Policy" has supported North-Eastern States to build trade relations with Southeast Asian countries for trade, agriculture, tourism, and people-to people connections.

Meghalaya has a road network of 13,000 km and its road density is 0.48 km/sq. km. GOI is also planning to develop BBIN2 corridor, which will connect Meghalaya with Bangladesh, Nepal, and Bhutan. A network of more than 4800 Km of roads consisting of State Highways, Major District Roads & rural roads is being developed under other programs such as Special Accelerated Road Development Program (SARDP) for North-East, Pradhan Mantri Gram Sadak Yojana (PMGSY) and Shillong Smart-city program. Intra-state passenger connectivity is facilitated by Bus terminals in Phulbari, Tura, Williamnagar, Sonapahar, and Shillong while inter-state connectivity is handled by ISBT in Shillong and Tura.

The state has a railhead at Mendipathar and regular train service connecting Mendipathar in Meghalaya and Guwahati in Assam. Guwahati is the nearest major railway station connecting the north-east region with the rest of the country through a broad-gauge track network. The state currently has 22 Km of railway tracks and work is in progress regarding rail links with Manipur, Mizoram, Nagaland, and Sikkim.

3. Current status and challenges to air quality:

Meghalaya State Pollution Control Board (MSPCB) is conducting regular monitoring through a network comprising of 31 (thirty-one) manual Ambient Air Quality Monitoring (AAQM) stations that are stationed in various locations across the state of Meghalaya. These stations, set up under the National Ambient Air Quality Monitoring Programme (NAMP) of CPCB, are located in residential, commercial and industrial areas of cities/towns/rural areas, and covers 8 (eight) districts [see Table-1].

The parameters monitored are Particulate Matter (PM₁₀ & PM_{2.5}), Sulphur dioxide (SO₂) and Nitrogen dioxide (NO₂). The monitoring of pollutants is carried out for 24 hours (4-hourly sampling for gaseous pollutants and 8-hourly sampling for particulate matter), using semi-automatic Respirable Dust Samplers/Fine Particulate Sampler, with a frequency of twice a week so as to have 104 (one hundred and four) observations in a year as per protocol laid out by the CPCB.

Table-1: Number of Ambient Air Quality Monitoring Stations (district-wise) in the state:

District	S.N.	City/town/rural areas/ Industrial cluster	Numbers (Nos.) of manual Ambient Air Quality Monitoring (AAQM)	CAAQMS
Operational up to December-2024				
East Khasi Hills	1	Shillong	4	2 (At Lumphynggad and Polo, Shillong)
	2	Mawkynrew Range Office, Laitdiengsai,	1	-
West Jaintia Hills	3	Dawki	3	-
	4	Thamar, Amlarem,	1	-
East Jaintia Hills	5	Khliehriat	2	-
West Khasi Hills	6	Nongstoin	3	-
West Garo Hills	7	Dadenggre	3	-
	8	Tura	3	-
South West Garo Hills	9	Ampati	3	-
North Garo Hills	10	Narongkol, Bajengdoba	1	-
Ri-bhoi	11	Byrnihat	4	1 (To be operational soon)
	12	Umiam	3	
			31 Nos.	3 Nos.

The ambient air quality viz. Particulate Matter (PM₁₀, PM_{2.5}), Sulphur dioxide (SO₂), Nitrogen dioxide (NO₂), Carbon monoxide (CO), Ozone (O₃), Benzene (C₆H₆), Ammonia (NH₃), Benzene-Toluene-Xylene (BTX), with meteorological parameters, is also monitored for 24×7 using Continuous Ambient Air Quality Monitoring Station (CAAQMS) installed at 2 (two) locations in the capital city of Shillong. One (1) CAAQMS has recently been installed in the Non-attainment city/town of Byrnihat in Ri Bhoi District, Meghalaya, and will soon be operational.

All monitored data of manual AAQM stations is regularly uploaded on the Environmental Air Quality Data Entry System (EAQDES) portal of the CPCB.

3.1 Air Quality Index:

Air Quality Index (AQI) is a tool for effective communication of air quality status to people in terms that is understandable to laymen. It transforms complex air quality data of various pollutants into a single number (index value), nomenclature and colour [Table- 2].

The weekly observed values of parameters monitored are computed in terms of Air Quality Index and disseminated to the public via print/social media/website of the MSPCB and also forwarded to concerned Districts Administrations/websites. The Air Quality Index of the monitored cities/towns in Meghalaya during the year 2021-2023 is given in Table -3.

Table 2: AQI Categories and Health Breakpoints

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

Source: CPCB

Table 3: Annual average Air Quality Index of cities/towns in Meghalaya

City/Town	Annual AQI value		
	2021	2022	2023
Shillong, EKH district	44	47	48.7
Dawki, WJH district	36	39	41
Khliehriat, EJH district	42	48	50
Nongstoin, WKH district	35	38	45
Tura, WGH district	36	36	45
Umiam, RB district	100	96	90
Byrnihat, RB district	155	118	90

Stations in cities/towns not listed (in Table-3) above, were established & made operational during the year 2024. The ambient air quality graph from 2021 to 2023 for 7 cities/towns (operated before 2024) is depicted in Fig.2.

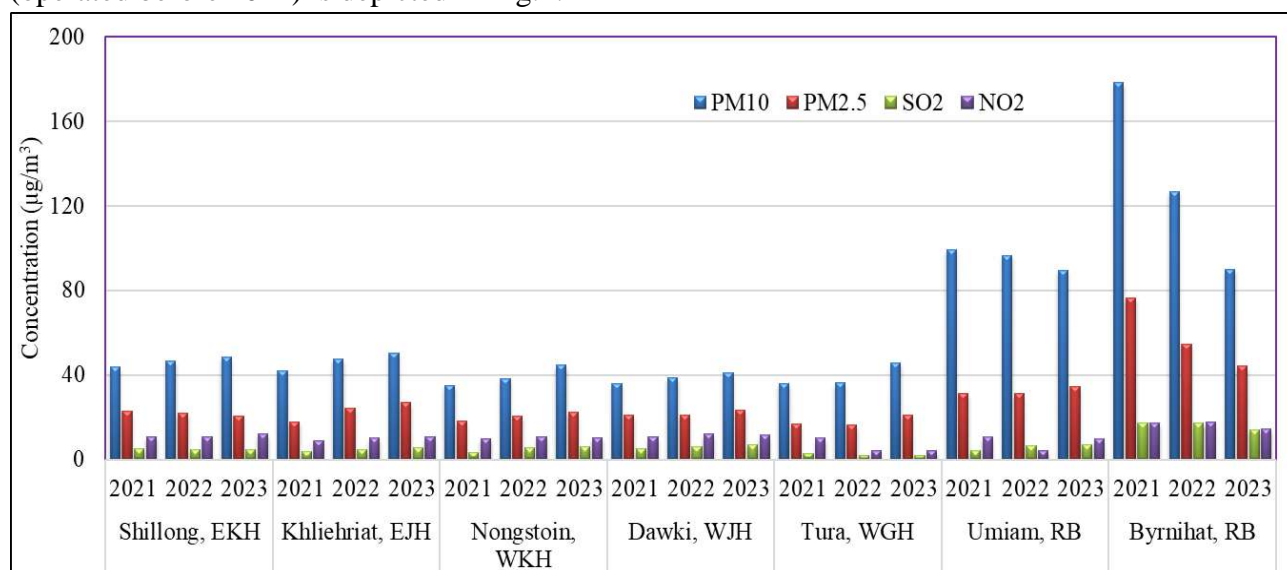


Fig. 2: Air quality scenario in different cities/towns in Meghalaya during 2021, 2022 & 2023.

Based on above graph (Fig. 2), annual concentrations of gaseous parameter i.e. SO₂ and NO₂ at all monitoring stations in Meghalaya are within the permissible limits of 50µg/m³ and 40 µg/m³ respectively, as prescribed by the National Ambient Air Quality Standards (NAAQS, Table- 4). The annual concentration level of PM₁₀ is within the permissible limit of 60 µg/m³ for all locations except Byrnihat (Non-attainment city/town) and Umiam in Ri Bhoi district. This may be attributed to such sources as road dust, industrial, transportation and improper management of wastes etc.

Table-4: National Ambient Air Quality Standards (NAAQS) of CPCB

S. No.	Pollutant	Time Weighted average	Concentration in Ambient Air	
			Industrial, Residential, Rural and other Area	Ecologically sensitive area (notified by Central Govt.)
1	Sulphur Dioxide (SO ₂), µg/m ³	Annual *	50	20
		24 hours **	80	80
2	Nitrogen Dioxide (NO ₂), µg/m ³	Annual *	40	30
		24 hours **	80	80
3	Particulate Matter (size less than 10 microns) or PM ₁₀ µg/m ³	Annual *	60	60
		24 hours **	100	100
4	Particulate Matter (size less than 2.5 microns) or PM _{2.5} µg/m ³	Annual *	40	40
		24 hours **	60	60
5	Ozone (O ₃) µg/m ³	8 hours **	100	100
		1 hour **	180	180
6	Lead (Pb) µg/m ³	Annual *	0.5	0.5
		24 hours **	1.0	1.0
7	Carbon Monoxide (CO) mg/m ³	8 hours **	2	2
		1 hour **	4	4
8	Ammonia (NH ₃) µg/m ³	Annual *	100	100
		24 hours **	400	400
9	Benzene (C ₆ H ₆) µg/m ³	Annual *	5	5
10	Benzo (a) Pyrene (BaP) – particulate phase only ng/m ³	Annual *	1	1
11	Arsenic (As) ng/m ³	Annual *	6	6
12	Nickel (Ni) ng/m ³	Annual *	20	20

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 8 hourly or 1 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Source: CPCB/MoEFCC.

Further, as mandated, the MSPCB regularly conducts inspection and monitoring of industries and strict action is taken against non-complying industrial units viz. issuing of directions, show cause/closure notices & environmental compensations etc. Based on either mandatory requirement or direction of the MSPCB, various industrial units have installed Online Continuous Emission Monitoring Systems (OCEMS) for regular emission monitoring of numerous air quality parameters.

3.2 Emission Inventory/Source Apportionment, key pollutants and consideration for Graded Response Action Plan (GRAP)

Emission Inventory (EI) is an essential tool for identifying the sources of pollution and quantifying pollution load in a defined area. Emission inventory provides a broad estimation regarding the significant air-polluting sources. The study involves preparation of detailed emission inventory with estimation of emissions from various activities such as vehicular, industrial, residential, commercial, waste, etc. to be made using primary as well as secondary data collection via survey, questionnaire etc. Impact of pollution from these sources depends on many factors, viz. vicinity of emission sources, the concentration of pollutants, temporal and spatial variations in emission pattern and receptor types, etc.

Source Apportionment (SA) study is important to understand the actual contribution of various sources to ambient air pollution at selected sites. Presently, complex modelling techniques such as CMB 8.2 (Chemical Mass Balance) or PMF (Positive Matrix Factorization) have gained momentum for quantitative understanding of source contribution at receptor sites. These models utilize reference source signatures to estimate the contribution fraction of major sources at those receptor sites.

Emission Inventory and Source Apportionment (EI&SA) study of Byrnihat town/circle (a non-attainment city/town in Ri-bhoi District of Meghalaya) has been carried out by CSIR-NEERI, Kolkata. Based on draft report of said study, sector-wise calculated emission is given below.

Table-5: Total emissions (^aMT/year) from various sectors in Byrnihat town/circle, Meghalaya

Sector	Emission (MT/year)			
	PM ₁₀	PM _{2.5}	SO ₂	NO ₂
Road Dust	5676.82	1357.5	-	-
Industry	2469.87	1575.21	188.33	922.32
Transport (tailpipe emissions)	475.14	470.39	373.93	4533.30
Residential / Households	284.65	193.53	3.41	21.72
Eateries	23.04	15.67	0.33	2.03
Earth Removal / Construction	9.33	4.53	-	-
Open burning	3.23	3.00	0.21	0.46
Total	8942.08	3619.83	566.21	5479.83

^a MT or Tonne = 1000 kg

Based on regular monitoring of air pollutants throughout the state, and air quality data generated over the years, it is found that all monitored parameters are within NAAQS limit and annual AQI is also found to be in the category of Good to Satisfactory except for PM₁₀ (Particulate Matter, size less than 10 µm) concentration which exceeds the NAAQS at Export Promotion Industrial Park (EPIP), Byrnihat, Ri-bhoi district. The annual concentration of PM₁₀ for EPIP, Byrnihat, exhibited a range from 125.8 to 176.4 µg/m³ during 2015–2019 and the AQI reportedly falls under the ‘satisfactory to moderate’ category. Hence, Byrnihat town has been declared as a Non-Attainment City (NAC) by CPCB. With the launching of NCAP to address air pollution across the country, the state of Meghalaya was requested to initiate action under the programme.

Byrnihat is a small town in Ri-Bhoi District of Meghalaya, situated along the Meghalaya–Assam border. A number of industrial units are located both in Meghalaya as well as Assam side. The industrial area known as EPIP is located in Byrnihat. The area situated in the Assam side has been designated as Critically Polluted Area (CPA) by CPCB. It may be mentioned that the existing number of red category industrial units is more in Byrnihat, Assam, as compared to Byrnihat, Meghalaya (Table-7). City Action Plan (CAP) and Graded Response Action Plan (GRAP) of Byrnihat (Meghalaya) under NCAP is already in place/operational and available on the PRANA portal of CPCB. Due to Byrnihat's peculiar location along the Meghalaya-Assam border, mechanism for coordination between government of Assam and Meghalaya along with CPCB needs to be planned and executed at the ground level for fulfilling the goal towards a cleaner environment.

The Graded Response Action Plan (GRAP) is a framework designed to combat air pollution in identified Non-Attainment City, or any town/region which AQI reaches Poor/Very Poor/Severe. It is a set of emergency measures that kick in to prevent further deterioration of air quality once it reaches a certain threshold. GRAP is pivotal in safeguarding public health, especially during peak pollution seasons. Its proactive approach ensures that measures are taken before air quality deteriorates significantly, preventing adverse health effects and environmental damage. The plan's dynamic nature allows it to adapt to changing pollution levels, providing a comprehensive strategy to combat air pollution.

GRAP may be classified into four stages: Stage I–"Poor" air quality (AQI: 201-300), Stage II–"Very Poor" air quality (AQI: 301-400), Stage III–"Severe" air quality (AQI: 401-500), Stage IV–"Severe+" air quality (AQI > 500). Based on measured air quality data and computed AQI level, the Committee/Competent Authority is to decide/implement GRAP as per stage. The following are activities/action plan to be implemented based on stage of GRAP/ hotspots in city/town/region:

- Regular mechanised sweeping and water sprinkling of roads, particularly at heavy traffic corridors and hotspots to suppress dust.
- Strict enforcement of C&D waste rules/ norms for dust control, earth cutting/mining/buildings and/or close non-compliant sites (if any)/ heavy fine on defaulters.
- Random/spot checking of vehicle emission & strict action against defaulters.
- Strict vigilance and enforcement of PUC (pollution under control) norms and taking action against visibly polluting vehicles with heavy fines.
- Prevent parking of vehicles in the non-designated areas/remove unauthorised parking.
- Ensure transportation of construction/raw materials in covered vehicles.
- Random/spot inspections & monitoring and ensure continuous operation of pollution control devices, water sprinklers within industrial premises.
- Reduce operational hours for red category/heavy/major air polluting industries till air quality improves to moderate or better.
- Strict action against burning of garbage/solid waste/crop residue/stubble, and imposition of heavy fines to defaulters.
- Strict action against bursting of banned fire crackers and use of non-compliant diesel generator sets.

- Synchronisation of traffic movements for smooth flow of traffic/ Diversion of non-destined truck traffic and reducing 50 per cent of heavy goods vehicles except vehicles carrying essential commodities or providing essential services.
- Continuously monitoring the implementation of norms at the identified pollution hotspots in the city/town.
- Regular proper/scientific waste management.
- Issue alerts via newspaper/TV/radio/social media/mobile Apps/websites etc w.r.t. air quality information/advisory to public/stakeholders, etc.

4. Regional Planning, Airshed & Coordination Mechanism:

Recommendation from CSIR-NEERI (IoR):

An airshed is a geographical area where local topography and meteorology limit the dispersion of air pollutants away from the area. Meghalaya shares its border with Assam on the north, north-eastern and eastern sides while on the west and south, it shares its border with Bangladesh. Byrnihat is partly situated in Meghalaya while a part of it is also situated in the border area of Assam. It is assumed that Assam, being the only neighbouring Indian state, shares an airshed with Byrnihat in Meghalaya.

The designated Byrnihat Industrial Area is situated in Assam and runs along Byrnihat town of Meghalaya. Byrnihat Industrial Area has several industries producing coke and cement that are known to be red category industries. CPCB, Delhi, has identified Byrnihat (Assam) as a Critically Polluted Area (CPA) with CEPI Score of 78.31. This CPA has 34 industries, 20 in red category, 12 in orange and 2 in green categories. Hon'ble National Green Tribunal (NGT) vide its order in O.A. No. 1038/2018 dated 10-07-2019 directed that adequate measures be taken in the form of time bound Action Plan to restore and improve the environmental quality of Byrnihat area of Assam. Accordingly, Assam PCB has prepared an Action Plan for the same and submitted to Central Pollution Control Board, Delhi (https://cpcb.nic.in/industrial_pollution/New_Action_Plans/CEPI_Action%20Plan_Byrnihat.pdf).

Further, recent information on Byrnihat (Assam) w.r.t. CEPI area with map, received through CPCB, RDNE Shillong, is as given below:

Table-6: CEPI area, Byrnihat (Core area of 2 km buffer and impact area 5km buffer from boundary of core area)

S. N.	Area description	Area in hectares
1	Overall study area (Including Meghalaya part)	15383.40
2	CEPI Core area - Assam	575.90
3	CEPI Impact area - Assam	5383.35
4	Total CEPI Area - Assam	11159.25
5	Area outside CEPI (Meghalaya and NH-37)	9424.15
6	CEPI Core Area-Outside forest boundary	388.94
7	CEPI Impact Area-Outside forest boundary	1268.14
8	Amchang WLS ESZ in CEPI impact area	140.62
9	Amchang WLS in CEPI impact area	253.00
10	RF area within CEPI area	3923.90
11	Marakdola R.F within CEPI area	1370.62
12	West Aprikola R.F within CEPI area	2553.28

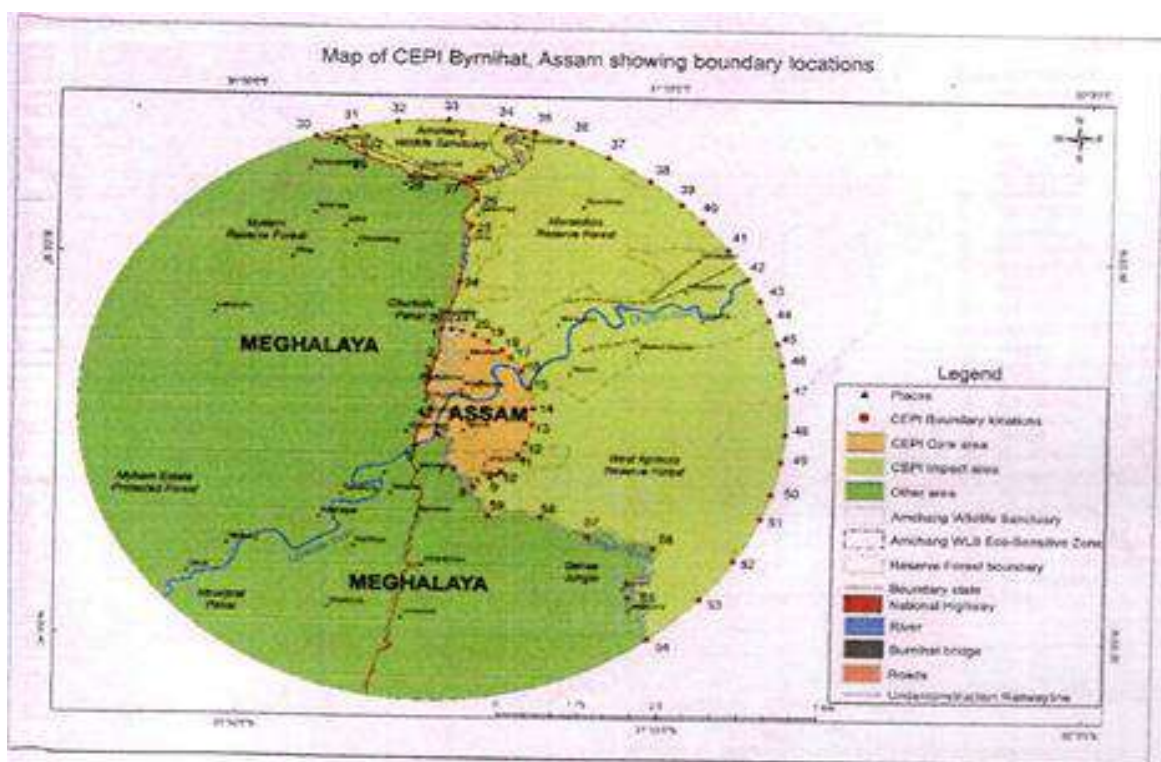


Fig.3: Map of CEPI Byrnihat, Assam showing boundary locations

Table-7: Category wise number of industries located in Byrnihat-Assam and Byrnihat-Meghalaya

Category	Byrnihat-Assam	Byrnihat-Meghalaya
Red	20	5
Orange	15	22
Green	4	14
Total Nos.	39	41

CSIR-NEERI has conducted Emission inventory and Source Apportionment of particulate matter (PM₁₀ and PM_{2.5}) in ambient air of Byrnihat town which is the only non-attainment city of Meghalaya. CSIR-NEERI has identified a few major activities causing air pollution in Byrnihat but the actual contribution of each source towards total ambient air pollution will be ascertained only after completion of receptor model studies.

The following are some observations made by CSIR-NEERI team during 2022-23 on air polluting activities in Byrnihat Town and adjoining areas on both sides of the border:

1. Visible smoke emissions from industrial stacks in Byrnihat Industrial Area and EPIP area indicate possibilities of high emissions and therefore, should be under the purview of strict implementation of prevailing industrial emissions norms.
2. Wood is commonly used for residential and commercial cooking in eateries and also, for residential heating purpose in Byrnihat Town and adjacent hamlets/villages on both sides of the border.
3. Incidences of burning of solid waste/MSW, including plastic waste were noticed in Byrnihat Town, which emit particulates and toxic gases.
4. Road dust re-suspension from (i) movement of heavy vehicles, especially in the partially or entirely unpaved roads, (ii) unpaved truck parking zones and access roads to industries, (iii)

movement of heavy vehicles in unpaved warehouse premises /parking lots and (iv) fine soil at roadsides.

Note: The extent of pollution from visible sources in Byrnihat Town and CPA as observed by CSIR-NEERI Team and presented in the report, were, however, not quantified.

Based on the above observations and understanding of the air pollution sources of Byrnihat area, the following activities are suggested that needs to be considered/taken up on priority basis by all concerned for airshed-based air pollution management in the Byrnihat Town and surrounding areas.

Emission source	Air pollution control measure activities
Road dust re-suspension due to vehicular movement	<ul style="list-style-type: none"> ➤ End to end paving of major and feeder roads, including approach roads to industries ➤ Maintain roadside plantation/vegetation to minimize bare soil exposure in adjoining barren land and subsequent soil transfer on roads by wind. ➤ Plantation on barren lands near roads. ➤ Mechanise road sweeping and water sprinkling.
Industrial Emission	<ul style="list-style-type: none"> ➤ Monthly inspection/monitoring of industrial units, strict action against non-complying industrial units. ➤ Restrictions on the use of polluting fuel such as pet coke for industrial use and switch to cleaner alternative fuels. ➤ Regular validation of the actual implementation of existing emission control norms and regulations in industries. ➤ Modality to ensure the operation of air pollution control systems in industries as necessary. ➤ Periodical third-party audit of efficiency of air pollution control systems installed in industries. ➤ Implementation of common mechanism to control fugitive emissions from industrial premises. ➤ A suitable Emission Trading Scheme (ETS) may be formulated for the industrial zones in the region in consultation with CPCB. ➤ Maintenance of inventory of all the raw materials, fuels consumed, effluent and solid and hazardous waste generated in the industries and updating the same with respective PCBs for periodic inspection and validation.
Transport/Vehicular emission	<ul style="list-style-type: none"> ➤ Ensure PUC testing centre integrated with centralized server, and 100% of registered vehicles with valid PUC certificate. ➤ Conversion of all auto-rickshaws & other vehicles to cleaner fuel such as LPG or CNG etc. ➤ Introduction of E-Vehicles.
Household Emission	<ul style="list-style-type: none"> ➤ Development of suitable schemes for distribution of LPG/PNG as cooking fuels for residential and commercial cooking and heating purpose. ➤ Delineation of a suitable scheme for distribution of thermally efficient

	and low-smoke biomass cookstoves/ tandoors/fixed stoves in villages and eateries.
Waste management, Open burning of wastes including agro-waste	<ul style="list-style-type: none"> ➤ Implementation of MSW management at micro level i.e. sorting at household level and regular collection by designated village-level committees/workers or Panchayats, whichever applicable ➤ Construction of engineered Municipal Solid Waste (MSW) dump yards in a suitable location with screening, waste segregation and composting facilities for common use. ➤ Ban on single use plastic and enforcement of the same ➤ Policy on agro-waste processing and implementation of the same

For effective implementation of aforesaid activities with the objective of improving regional air quality, senior officials from Assam PCB/ Environment & Forests Dept., Assam, may be co-opted as member(s), and quarterly/six-monthly progress/action taken report for clean air may be presented by both states in the meeting(s) of State Monitoring Committee (*headed by ACS/PS of Forest & Env. Dept*) and the Steering Committee (*headed by the Chief Secretary to the Govt. of Meghalaya*) notified vide Notification No. Env.2/2018/187 Dtd. 21.08.2019/revised Notification dated 29-01-2024. A joint/coordination meeting lead by the RD, CPCB, RDNE, Shillong, may also be convened between Assam PCB and Meghalaya SPCB with other concerned stakeholders, from time to time or as and when required.

Further, coordination committee for intra and inter district air pollution issues may be discussed/resolved under the supervision of the Deputy Commissioner(s)/District Authority along with other departments/agencies and minutes of the same be forwarded to State Committee constituted under NCAP.

5. Identification of prominent air polluting sources:

It can be said that air pollution is mainly divided into two categories i.e. Ambient (Outdoor) and Household (Indoor) air pollution, and the general prominent source(s) are as listed below:

(a) Prominent sources of Ambient air pollution:

- Pollution by automobiles/vehicular emission
- Industrial Emission (e.g. cement, coke, metal, and ferro alloy industries etc)
- Municipal and agricultural waste sites and waste incineration/burning
- Residential cooking, heating, and lighting with polluting fuels

(b) Prominent sources of Household air pollution:

- Use of biomass, kerosene as fuel for cooking, heating, and lighting
- Burning of waste, cow dung, coal
- Home products (e.g. floor care products, furniture, and household care fabrics, or when candles and incense are burned)
- Building materials (e.g. asbestos)
- Volatile Organic Compounds (VOC's) (e.g. paints, wood preservatives, cleaners, and disinfectants).

Now with respect to ambient air pollution in the state. It may be pointed out that, based on monitored ambient air quality data, Byrnihat and Umiam town in Ri-bhoi District of Meghalaya,

having industrial clusters, display higher concentration of PM₁₀ that are beyond the annual average permissible limit (60µg/m³) (Fig.2).

(a). Byrnihat town/circle (including EPIP) being a Non-Attainment City/town under NCAP, City Action Plan and GRAP is already in place/operational and the same is available on PRANA portal (City Dashboard). The prominent anthropogenic sources and types of emissions identified in and around Byrnihat Circle are:

- i) Industries located in the EPIP and Tamulkuchi areas.
- ii) Tailpipe emissions from vehicles plying on GS Road and arterial roads leading to EPIP area from GS road,
- iii) Road dust re-suspension due to vehicular movements.
- iv) Construction and digging/cutting activities in the villages in and around Byrnihat circle, Ri-bhoi.
- v) Occasional and uncontrolled open burning of solid waste/yard waste.
- vi) Residential burning of solid fuels (mostly wood).

(b). Umiam Industrial Area: Based on ambient air quality data and preliminary inspection, identification of provisional hotspots along with control measure activities are listed below:

Provisional Hotspots	Air pollution control measure activities/action plan	Concerned/ responsible depts. /stakeholders
High dusty /unpaved/ unmetalled roads in industrial cluster, which is a prominent factor contributing to Particulate Matter (PM) especially PM ₁₀ .	<ul style="list-style-type: none"> ➤ End to end paving of major and feeder roads along with black-topping and maintaining pot-hole free roads & paving of roadside/parking lots, ➤ Vacant area within industries premises should be paved/blacktopped/covered with green vegetation. ➤ Regular mechanised cleaning/sweeping of road dust/silt, and spraying of water to suppress dust. ➤ Maintain plantation/vegetation on roadside to minimize bare soil exposure in adjoining area. ➤ Regular proper/scientific waste management. 	MIDC, Shillong /C&I Dept. All Industrial units
Industrial Emission: Total industries: 28 Nos. Red: 1 No. Orange: 2 Nos. Green: 25 Nos.	<ul style="list-style-type: none"> ➤ Regular inspection & monitoring of industrial units, strict action against non-complying industrial units. ➤ Random auditing of all industrial units for actual air pollution assessment and control measures undertaken. ➤ Industrial units to install water spraying system within respective premises. ➤ Implement Online Continuous Emission Monitoring System (OCEMS)/Live CCTV across all Red and Orange categories of industries. ➤ Implementation of common/effective mechanism to control fugitive emissions from industrial premises. 	MSPCB, All Industrial units



Plate 5.1 Unpaved/high dusty roads in Umiam Industrial Area

(c). Other prominent air polluting sources/hotspot areas especially industrial clusters:

The Board continuously conduct inspection/monitoring in industrial clusters and takes necessary action as per norms as and when required. Recently, Forest & Env. Dept. notified norms/criteria for siting of Coke Plants (with installed production capacity of less than 25,000 MTPA) in Meghalaya, vide notification dated 29-07-2024.

Table-8: Major air polluting industrial cluster

Type of Industry	Total Nos.	Location of maximum units are established	Category	Status of Air Pollution Control Devise & OCEMS	Control measures
Coke Oven industrial units	24	Sutnga, EJH	Red	PCD-Yes OCEMS Connected- 13 Nos.	<ul style="list-style-type: none"> ➤ Regular inspection & monitoring of industrial units, strict action against non-complying industrial units (as and when required). ➤ Industrial units to install water spraying system within respective premises. ➤ Explore the implementation of OCEMS/live CCTV across all Red and Orange categories of industries. ➤ Random auditing of all industrial units for actual air pollution assessment and control measures undertaken.
Ferro Alloy industrial units	8	Byrnihat, Ri-bhoi	Orange	PCD-Yes OCEMS Connected- 8 Nos.	
Cement factories/ industrial units	14	Lumshnong, EJH	Red	PCD-Yes OCEMS Connected- 11 Nos.	

6. Inputs received from stakeholders' consultation process:

Draft revised Meghalaya SAP was circulated to all concerned depts./stakeholders, for providing necessary input/feedback/suggestion/updated information/ATR etc. from their end.

7. Targets & Goals:

The ultimate goal of Meghalaya SAP is to achieve/maintain good air quality i.e. air quality within permissible limits as prescribed in the NAAQS (Table-4) throughout the state. To ensure continuous and timely implementation of major activities/actions in stipulated time frame, the sectoral-wise emission reduction activities have been compiled, segregated and listed in Table 9–14 wherein the responsible/concerned departments/stakeholders have also been mentioned/indicated for taking required/necessary action.

8. Required Policy Interventions:

There are sectoral wise/source specific policies/guidelines/notification as listed in Table 9–14, that relates to air quality improvement requiring immediate attention/action in terms of implementation/taking of follow-up action by all concerned departments of Meghalaya Govt. Additionally, the state govt. depts./concerned stakeholders may also explore ideas/technological intervention etc. that can be implemented in the state/hotspot area for mitigation/control of air pollution.

9. Development of the Action Plan:

The State Action Plan requires a participatory approach from all agencies with planning linked to policy and programs of various govt. departments/stakeholders. Systematic and clear-cut steps, time frame and process may be indicated as per relevance to concerned departments/stakeholders. A holistic and phased approach may be adopted to reduce stress in the existing system and achieve sustainable results. Expected impacts with analysis of cost and feasibility analysis may also be undertaken for development/implementation of State Action Plan.

10. Role & Responsibilities:

For implementing the SAP and maintaining good air quality/improving air quality in the state, the following role and responsibilities have been identified/assigned to concerned departments/stakeholders based on sectoral emissions.

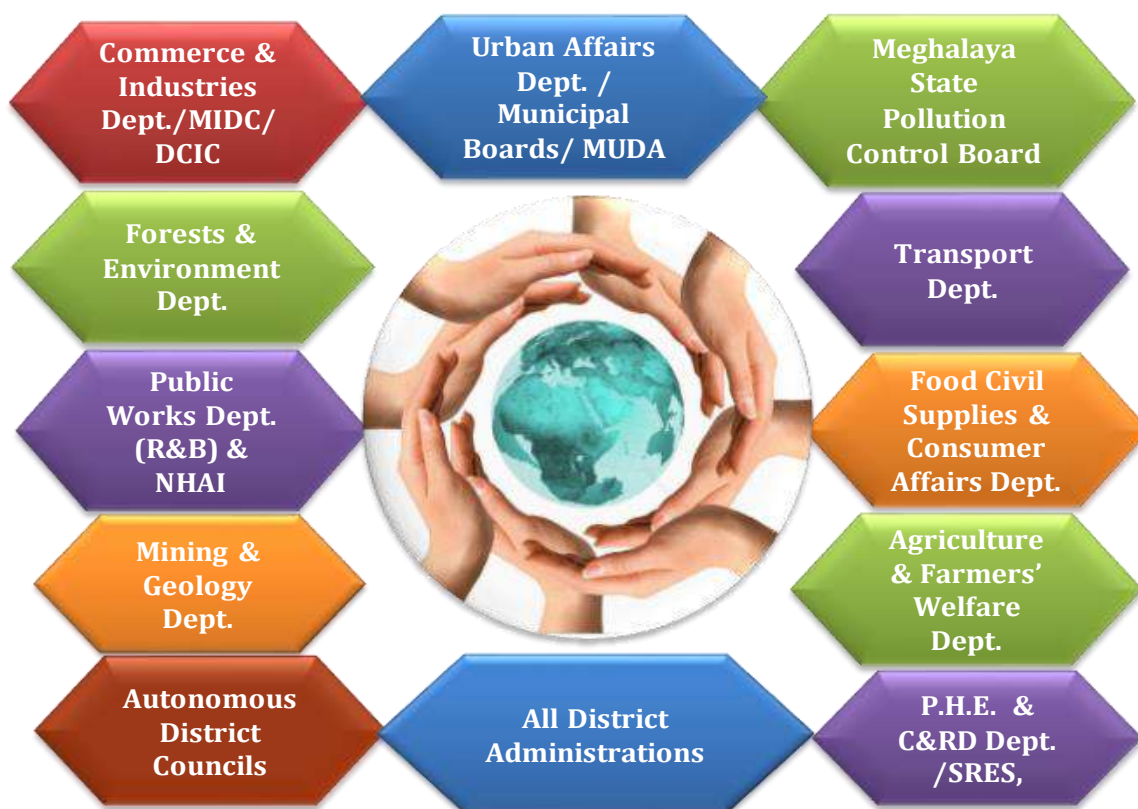


Fig. 4: Major/associated department(s)/stakeholder(s) responsible for implementation of Meghalaya SAP for prevention and control of air pollution.

10 (A). Central Departments:

a). Ministry of Environment, Forest & Climate Change

The Ministry of Environment, Forest and Climate Change (MoEFCC) is the nodal agency in the administrative structure of the Central Government for the planning, promotion, co-ordination and overseeing the implementation of India's environmental and forestry policies and programmes.

The Ministry also serves as the nodal agency in the country for the United Nations Environment Programme (UNEP), South Asia Co-operative Environment Programme (SACEP), International Centre for Integrated Mountain Development (ICIMOD) and for the follow-up of the United Nations Conference on Environment and Development (UNCED). The Ministry is also entrusted with issues relating to multilateral bodies such as the Commission on Sustainable Development (CSD), Global Environment Facility (GEF) and of regional bodies like Economic and Social Council for Asia and Pacific (ESCAP) and South Asian Association for Regional Co-operation (SAARC) on matters pertaining to the environment.

The broad objectives of the Ministry are: Conservation and survey of flora, fauna, forests and wildlife, Prevention and control of pollution, Afforestation and regeneration of degraded areas, Protection of the environment and Ensuring the welfare of animals. These objectives are well supported by a set of legislative and regulatory measures, aimed at the preservation, conservation and protection of the environment.

The central steering and monitoring committee(s) of the NCAP is headed by the Secretary and Additional Secretary of MoEF&CC respectively.

b). Central Pollution Control Board (CPCB)

The Central Pollution Control Board (CPCB) is the statutory organization in the country for prevention and control of pollution. The main function of CPCB is to prepare standards, guidelines, implementation strategies etc. to be adopted, followed, implemented and executed across the country. The CPCB is the designated monitoring/nodal agency for the entire country. With a view of having uniform implementation of NCAP programs, integrated city action plans are prepared and assessment is done quantitatively at regular intervals. The Implementation Committee of the NCAP is headed by the Chairman of CPCB for effective ground level implementation of NCAP in identified 130 Non-Attainment Cities (NACs) across the country.

c). National Highways Authority of India (NHAI):

National Highways Authority of India was set up by an act of the Parliament, NHAI Act, 1988, for maintenance and management of national highways and for matter connected therewith or incidental thereto. NHAI is responsible for creation of the arterial roads of the country for inter-state movement of passengers and goods. They traverse the length and width of the country connecting the National and State capitals, major ports and rail junctions and link up with border roads and foreign highways. Plantations are an integral part of highway development projects. Thus, Green Highways (Plantations, Transplantations, Beautification and Maintenance) Policy-2015, has been adopted to develop green corridors along NHs for sustainable environment and inclusive growth.

The state is well connected to its neighbouring north-eastern states and other parts of India through 6 National Highways namely, NH-44 and NH-44 (Extn.), NH-40 and 40 (Extn.), NH-51, NH-62, NH-127B, Jowai Bypass and The Shillong Bye Pass covering a total Length of 1124.39 Km, out of which 753.13 Km is maintained by State P.W.D. and 214.56 Km is maintained by N.H.A.I. and 156.70 Km is maintained by NHIDCL. NHAI-PIU, Shillong, and National Highways & Infrastructure Development Corporation Ltd. (NHIDCL), Shillong. The responsibility, relevant activities and action of the aforesaid department/agencies are given in Table 10 and 11.

10 (B). State Departments:**a). Forests & Environment Department:**

The Forests and Environment Department (DoFE) since its inception, has undertaken the onerous task of managing and protecting the flora and fauna of the state and the country. For this purpose, several acts & rules have been passed both by the central and the state legislatures to empower the department in fulfilling its mandate. These acts & rules have enabled the department to manage and control the natural resources.

The Forest Directorate comprises 4 (four) Wings, viz Territorial, Wildlife, Social Forestry & Environment and Climate Change, Research & Training Wings which all function under the overall supervision of the Principal Chief Conservator of Forests & Head of Forest Force. The Wings are divided into divisions, which are further sub divided into ranges and beats.

The Territorial Wing manages the reserved forests and protected forests of the state. The main activities are protection and conservation of the reserved forests, statewide implementation of Forests Act and Rules related thereto and collection of revenue.

The Wildlife Wing controls the National Parks, Wildlife Sanctuaries and the Biosphere Reserve. It is headed by the Chief Wildlife Warden who oversees the implementation of the

Wildlife Protection Act throughout the state. The main activities are protection and conservation of wildlife including habitat maintenance within & outside the government-controlled areas.

The Social Forestry Wing undertakes afforestation of degraded forests which are outside government control with the objective of maintaining and improving the greenery of the State.

The Climate Change, Research & Training Wing conducts research and training of technical staff. The Wing formulates scientific working plans for the maintenance of reserved and protected forests and working schemes for forest areas which are outside government control. Of late, the matters related to climate change have also been entrusted to this wing.

The responsibility, relevant activities and action of the Department of Forests & Environment is given in Table 9 and 11.

b). Meghalaya State Pollution Control Board (MSPCB):

The State Board for Prevention and Control of Water Pollution, Meghalaya, was constituted by the Government of Meghalaya on the 16th November, 1983 in pursuance of the Water (Prevention & Control of Pollution) Act, 1974. After the enactment of the Air (Prevention & Control of Pollution) Act, 1981, the enforcing responsibility of the Act was entrusted to the Board. The Board was later renamed as Meghalaya State Pollution Control Board (MSPCB) in 1988. The functions of the Board are as laid down under Section 17 of the Water (Prevention and Control of Pollution) Act, 1974 and Section 17 of the Air (Prevention and Control of Pollution) Act, 1981.

The main activities carried out by the State Board in performing of its functions is as highlighted below: -

- Regular inspection and monitoring of all industries for compliance to various central & state environmental norms (Acts & Rules), and necessary direction to non-complying industries.
- Regular monitoring of numerous parameters through the Online Continuous Emission Monitoring Systems (OCEMS) at different industrial units.
- Monitoring of Ambient Air Quality under National Air Monitoring Programme (NAMP).
- Implementation and Monitoring of National Clean Air Programme (NCAP).
- Monitoring the of ambient air quality and stack emissions.
- Monitoring of water quality of water bodies under National Water Quality Monitoring Programme (NWMP).
- Issue of “Consent to Establish” and “Consent to Operate” in respects of industries, mining projects specified developmental projects, municipal bodies and health care facilities etc.
- Management of waste (C&D waste, Municipal Solid Waste, Plastic, Hazardous, Bio-Medical, Batteries, E-waste etc.) as provided in the Rules framed under EPA, 1986.

The MSPCB is the nodal agency that is to associate, direct and assess the status of integrated action plans. These city action plans are to be linked with adjoining District Environment Plans and finally converge into State Action Plan. In this connection the state is co-ordinating with various central/state organizations with respect to implementation of various actions in the state. Besides discharging key regulatory functions at the state level, the MSPCB maintains regular coordination with all responsible stakeholder/concerned departments and review the implementation status of various schemes under implementation from time to time. The following steps have also been taken for creating awareness amongst the general population:

- MegSPCB Environment app has been launched wherein air quality information is available to public along with provision for registering complaints against air polluting activities.
- Air quality information collection and dissemination from a centralized location. It provides real time air quality status to the public.

The responsibility, relevant activities and action of the MSPCB is given in Table 9 & 12.

c). Department of Commerce and Industries:

The Department of Commerce and Industries is tasked with the overall development of various industrial and commercial activities in the state. The department plays developmental and facilitation role to attract industrial investments in the state. It focuses on creating an industry friendly environment and formulates suitable policies in the state aimed at propelling fast pace modernization and strengthening of industrial units. The department provides an interactive platform for synergistic coordination between investors and the state government. The department is supported by its subsidiaries in the form of Agency, Board and Corporative.

- Directorate of Commerce and Industries.
- District Commerce and Industries Centre (DCIC).
- Meghalaya Industrial Development Corporation Ltd (MIDC).
- Meghalaya Khadi Village and Industries Board.
- Meghalaya Handloom and Handicraft Development Corporation Ltd.

The responsibility, relevant activities and action of the Department of Commerce and Industries is given in Table 9.

Meghalaya Industrial Development Corporation Ltd. (MIDC)

The Meghalaya Industrial Development Corporation Limited was incorporated under the Companies Act 1956 in the year 1971. It is a government of Meghalaya undertaking. Since its inception, the following are the main objective(s) in developing of industrial ventures in the state: (i) To promote, establish and execute industries, project or enterprises. (ii) To promote and operate schemes for industrial development of Meghalaya. (iii) To assist and finance any industrial undertaking of any size. (iv) To promote and establish companies and associations. (v) To procure capital, machinery equipments & other facilities to company/persons connected with the Corporation.

The Corporation performs a variety of industrial developmental works as per schemes and funds provided by the central and state governments. These are: (a) Creation, development and maintenance of necessary infrastructure at Industrial Estates, Industrial Growth Centre, Industrial Area, Export Promotion Industrial Park, Mega Food Park etc., (b) State Financial Corporation (Loaning operation) which includes financial operation to assist and support the people financially for setting up economically viable projects and for transport operators, which will help in creating job opportunities for the people and in turn help in overall development of the State. The responsibility, relevant activities and action of the MIDC is given in Table 11.

d). Department of Mining & Geology:

The Department of Mining & Geology was created out of its parent Department of Assam Government during the bifurcation of the State of Meghalaya in the year 1972. The Directorate of

Mineral Resources (DMR) under the administrative control of the Department of Mining & Geology with its Headquarter at Shillong has 2(two) Divisional Mining Offices (DMO), at Jowai and Williamnagar, and 15(fifteen) other checkgates located on different strategic routes in the State. The Directorate is a multidisciplinary organization comprising a core team of Geologists, Mining Engineers, Drilling Engineers, Chemists and technical and non-technical staff and it has two main sections working in tandem viz. (i). Geology section- investigation of mineral deposits by mapping, surveying, drilling, chemical analysis etc., (ii). Mining Section- administration of mines and minerals, collection of cess\royalty, issue of challans etc.

The responsibility, relevant activities and action of the Mining & Geology Dept is given in Table 9 and 9c.

e). Transport Department:

The Transport Department deals with the subject matter relating primarily to Road Transport. The department administers the Motor Vehicles Taxation Act and Rules made there under. The department also controls, supervises and regulates the working and functioning of the various bodies under the department. These bodies are the State Transport Authority and the Regional Transport Authorities. There is also a Corporation under Transport Department viz. Meghalaya Transport Corporation (MTC) which was constituted under the Road Transport Act, 1950. It is a major revenue earning department and has also an important and significant role to play in the matter of rationalization, development and improvement of Public Surface Transport System.

Transport Department is responsible in administering, regulating and controlling motor vehicles in accordance with the provisions of the Central Motor Vehicles Act, 1988, and the Central Motor Vehicles Rules, 1989. It also enforces Acts and Rules under the Meghalaya Motor Vehicles Taxation Act (Assam Act IX of 1936 as adapted and amended by Meghalaya) and Meghalaya Motor Vehicles Taxation Rules (Assam Rules of 1936 as adapted and amended by Meghalaya).

The main activity of the Transport Department is to administer, regulate and control motor vehicles by way of registration of vehicles, issue of Driving Licenses and Conductor Licenses, granting of Road Permits for transport vehicles and in fostering and nurturing the development and growth of Road Transport Services in the state and to collect revenue from Motor Vehicle Tax, etc. Providing Pool Cars for use by VIPs, ministers, state guests and dignitaries is another important activity of the department.

The responsibility, relevant activities and action of the Transport Department is given in Table 10.

f). Meghalaya Public Works Department:

The Meghalaya Public Works Department (PWD) came into existence with the creation of the state of Meghalaya on 21st January, 1972. There were two circle offices, at Shillong and Tura, and five divisional offices. The government of Meghalaya realized the urgent need of creating a good road network, as in this landlocked hilly State, the only mode of transportation is by road. There has been fast expansion of the department in order to take up the challenge of road network building, which is the most essential infrastructure for development and growth of the state and the people in general.

When Meghalaya was carved out of Assam as an autonomous state, it inherited a total road length of 2786.68 kms including 174 km of National Highways with road density of 12.42 km per 100 square kilometers. Considerable achievement has since been made after attainment of statehood, and up to 01-04-2015, total road length is 9666 kms, out of which 6689 km is surfaced and remaining 2977 km is un-surfaced. The road density has increased to 43.10 km per 100 square kilometers, which is quite significant. However, it is still far below the national average.

Meghalaya needs to strive harder to construct more roads and bridges so as to connect more villages. Up-gradation of the existing roads and bridges with a view to properly utilize the existing assets of the state has become most essential in view of the increase in the commercial traffic. Rapid exploitation of minerals like coal and limestone has seen considerable growth in the traffic intensity and also put more pressure on the existing pavement structure of roads, which cannot cater to the increased load and intensity of present-day traffic. Efforts have been made to upgrade the existing roads by way of improvement, widening, strengthening, metaling and black topping, construction/reconstruction of bridges and culverts. The department is making all efforts to bring road network closer to the rural habitations in phased manner.

The Public Works Department (Roads & Buildings) is responsible for the construction and maintenance of roads, bridges and buildings in the state. The department is also implementing Flood Control Projects. The Meghalaya P.W.D. is also taking up Medium Irrigation Schemes in the state of which Rongai Valley Medium Irrigation Project (RVMIP) at Chibinang is one such Project.

The main objective of the department therefore, is to formulate, plan, design, construct, operate and maintain public infrastructure efficiently and effectively in order to protect public safety and enhance the economic activities of rural and urban habitations.

The department, as already explained above, therefore, comprises 2 (two) wings namely PWD (Roads & Bridges) and PWD (Buildings), which is headed by separate Chief Engineers. Other in-line department/agencies are Office of Chief Engineer (N.H.), Shillong, National Highways Authority of India (NHAI), Project Implementation Unit (PIU), Shillong, and National Highways & Infrastructure Development Corporation Ltd. (NHIDCL), Shillong. The responsibility, relevant activities and action of the aforesaid department/agencies are given in Table 10 and 11.

g). Department of Urban Affairs:

The present Directorate of Urban Affairs traces its genesis to the Department of Town & Country Planning & Housing which was established after the attainment of statehood in 1972 along with the adoption of the Assam Town & Country Planning Act, 1954, 1962 and 1963. The Department of Town and Country Planning was renamed as Department of Urban Development in 1988. In 1990, the Department of Municipal Administration was amalgamated with the Department of Urban Development and a new Department of Urban Affairs was created to give more emphasis on urban planning and urban administration and to achieve better coordination in planning, development and management of urban centers.

The functions and objectives of Urban Affairs Department are basically focused towards planning, development and proper management of the urban areas in the state. Keeping the above-mentioned objectives in mind, the department focuses on the preparation of Master Plans of the urban centers. Stress is given on improvement of civic amenities and revamping the urban infrastructure in the urban centers. Stress is also given towards improvement of the quality of life

of the urban poor through improvement of their physical environment, social welfare and generation of employment. Programme of the department are drawn up and implemented with the above-mentioned objectives. To make the programme successful and beneficial to the people, strict monitoring and evaluation through internal and external mechanism are being attempted at every stages.

For effective enforcement and implementation of schemes, many legislative enactments, rules and bye-laws have been framed or adapted by the department. The department has following role and responsibilities:

- Preparation of Master Plan/Development Plan of the urban areas.
- Development and Execution of Urban Infrastructure Schemes and Projects
- Implementation and Enforcement of the Master Plan
- Proper Management of Urban Areas with emphasis on provision of infrastructure and civic amenities to ensure a healthy living environment and to facilitate economic growth.
- Urban Poverty Alleviation and Slum Improvement.
- Coordination of issues related to Urban Planning, Urban Development Programme and Schemes and Urban Management.

Moreover, the following boards and agencies have been established under the administrative control of Department of Urban Affairs.

- Municipal Board(s)
- Meghalaya Urban Development Authority (MUDA)
- Meghalaya Urban Development Agency
- New Shillong Township Development Agency (NSTDA)
- State Investment Program Management & Implementation Unit (SIPMIU)

The responsibility, relevant activities and action of the Department of Urban Affairs along with Board and Authority are given in Table 11, 12 and 14.

(i) Municipal Board:

Municipal Board constituted under the Meghalaya Municipal Act 1973, is required to take up such works which are essential for provision of the civic services and management of the city. The objective of the public authority is to ensure the right to public health, efficient and quality basic services to all citizens, to provide a congenial environment, to bridge the gap between the have and the have-nots, in tune with the living standard of the present age.

Mission/Vision statement of the Municipal Board endeavors to provide hygienic services, regulation of trading license, hoardings, kiosks, registration of birth and death, facilitating up-gradation of the means of livelihood and living standards of the urban poor, wholesome and efficient service to all tax payers

Main Activities of the board is to provide services viz. solid waste and sanitation management, maintenance and management of water supply, street lighting and other services like maintenance and management of municipal markets, stalls, public utilities, regulation of hygienic conditions of food stalls, restaurants, hotels, milk supply, etc., Provision of parking space, maintenance of footpaths, lanes, by-lanes, drainage system, public toilets, improving living standard of urban poor through various components of SJSRY and NSDP.

Presently, 7 municipal board offices are in the state, and these are located at Shillong, Jowai Tura, Williamnagar, Baghmara, Rasubelpara and Cantonment area Shillong.

The status as well as responsibility of relevant activities by all Municipal Board(s) is given in Table 11 and 12.

(ii) Meghalaya Urban Development Authority

The Meghalaya Urban Development Authority (MUDA) was constituted under the Meghalaya Town and Country Planning Act, 1973. The function of the Authority is to promote and secure proper planning and development of the towns through enforcement and implementation of the Master Plan. While discharging its duties, the Authority has to carry out survey of areas, prepare reports of such surveys and perform any other function which is supplemental, incidental and consequential to the above. The Authority has also to prepare the Schemes in areas notified as scheme areas under section 15 of the Meghalaya Municipal Act 1973. Scheme area can be any area within the Master Plan boundary and even virgin area can be notified as scheme area.

Since its inception, the Authority had been approving building permissions as per provisions of the Master Plan for Shillong, Tura & Jowai and issuing No-objection Certificates for small-scale industries within the jurisdiction of the Master Plan.

As per powers conferred by Section 74 of the Meghalaya Town and Country Planning Act 1973, the Meghalaya Building Bye Laws 2001, was notified and enforced by MUDA since February 2003 and from 2011, the Meghalaya Building Bye-Laws 2011. Prior to this, building permissions were sanctioned by the Municipal Board after due scrutiny of the plans by MUDA.

The responsibility, relevant activities and action of the MUDA is given in Table 11 & 14.

h). Department of Community & Rural Development:

The Community & Rural Development (C&RD) plays an important role in the process of accelerating the economic and social development of rural areas with a view to increasing the income level and quality of life of the rural people. In bringing the administration closer to the people, new blocks were created from time to time and now the total number of Blocks has gone up to 46.

The aims and objectives of the programme and schemes are alleviation of poverty, generation of employment, creation of durable community social and economic assets, providing social security for the rural people and general development to uplift the economic condition of people living in rural areas. Several centrally and state sector sponsored schemes implemented by the department.

At the government level, there is the Secretariat of the Community and Rural Development of which is an administrative Department. It is headed by the Commissioner and Secretary/Secretary to the Government. The Secretariat deals with all the policy matters of the government in relation to Community and Rural Development, State Institutes of Rural Development (S.I.R.D.) and the implementing societies like State Rural Employment Society (S.R.E.S.), Meghalaya State Rural Livelihood Mission (M.S.R.L.S.) and Meghalaya Society for Social Audit and Transparency (M.S.S.A.T.). It also deals with all establishment matters relating to Gazetted Officers in the appointment and transfer at different levels, constitution of Committees and sanction of schemes etc. (Other than those specifically delegated to subordinate offices).

At the Directorate level, there is the Director of Community and Rural Development who is the head of the directorate under the Community and Rural Development Department. He is responsible for the planning and implementation of the government policies and guidelines for various development programme. He exercises the executive control over all the subordinate offices.

At the District Level, there is the District Rural Development Agency (D.R.D.A.) headed by the Deputy Commissioners as its chairman who is assisted by the Project Director, and at the Block Level, the Block Development Officer, who are responsible for implementation of several relevant schemes at ground level. The responsibility, relevant activities and action of the Department of Community & Rural Development/State Rural Employment Society (SRES) is given in Table 12 and 12(ii).

i). Department of Agriculture & Farmers' Welfare:

The Department of Agriculture was created in 1882 as the Department of Agriculture, Assam. However, on attaining statehood it was bifurcated and renamed as the Department of Agriculture, Meghalaya.

The Department of Agriculture, Meghalaya, has been functioning as an integrated entity comprising the various spheres of development in agriculture, horticulture and minor irrigation. The mandate of the department is to bring about increased crop production and productivity. However, for effective administration in streamlining the developmental activities, the Directorate of Horticulture was created in 1995 and the Directorate of Irrigation in 2001. The three directorates were in operation within the same administrative control of the department till December 2010 where the Directorate of Irrigation was carved out as a Water Resources Department.

The responsibility, relevant activities and action of the Directorate (s) of Agriculture and Horticulture is given in Table 13.

The Directorate of Agriculture was set up with the objective of implementing farmer-oriented schemes of the State and Centre. The Directorate formulates various schemes for harnessing the potential of human and natural resources available in the State, for which active participation of the farming community in the implementation is of outmost importance. Functioning on a farmer first principle, it provides technical advice and services to the farmers. The policy of the department is to evolve as knowledge-based entity providing technology, skills and knowhow to the farming community. It is in this context that the advantages offered by information and communication technologies (ICT) has become a key differentiator where information sharing, knowledge networks including faster and efficient dissemination of information can empower the stakeholders and create economic growth.

The Directorate provides agricultural extension services to farmers including transfer of the latest technical knowledge to the farming community. Introduction of high yielding varieties, field demonstrations, impartation of training to farmers to improve skills & knowledge to boost up agricultural production and productivity are other complementary functions.

The Directorate also assesses requirements of agriculture inputs well in advance and monitor timely supply of seeds, fertilizers and pesticides, implements, credit etc., to the farmers.

The Directorate performs the statutory functions under various acts and regulations (i.e., quality control) to ensure supply of quality inputs i.e., seeds, fertilizers and pesticides to farmers.

It also carries out certain other facilitating functions such as soil testing, watershed management, soil survey, credit assessment/arrangements, media production, training to farmers, arranging plant protection campaigns/diagnostic team visits whenever necessary, monitoring and evaluation disaster management, crop insurance, agricultural mechanization, extending technical assistance to various agencies etc.

j). Department of Food Civil Supplies & Consumer Affairs:

The Food Civil Supplies and Consumer Affairs Department (FCS&CA) discharges the important responsibilities of public distribution, enforcement of markets discipline and promotion of consumer awareness and protection of their interest. The Department started functioning from the inception of the state of Meghalaya. Consequent to the implementation of Consumer Protection Act 1986, the Department has been renamed as Department of Food, Civil Supplies and Consumer Affairs with effect from August 1994.

The primary function of the Civil Supplies and Consumer Affairs Department is to run the public distribution system efficiently and ensure availability of food-grains to everyone and to ensure that it is at price affordable for even the poorest in the state. The department is also entrusted with the responsibility of ensuring availability of essential commodities in the market at reasonable price and prevention of hoarding, black-marketing and artificial price hike. Since most of the food-grains in the state come from outside the state, the PDS is totally dependent on the food-grains supplied by the Govt. of India through FCI.

The responsibility, relevant activities and action of the Dept. of FCS&CA is given in Table 10 and 14.

k). Public Health Engineering Department (PHE):

The Public Health Engineering Department of Government of Meghalaya was created under the Chief Engineer, PWD (R&B), till 1st April, 1972. This Department functioned as a separate wing of the PWD (R&B) headed by Additional Chief Public Health Engineer Meghalaya Shillong. Subsequently, the post of Additional Chief Public Health Engineer Meghalaya, Shillong was up graded to the post of Chief Public Health Engineer, Meghalaya, Shillong with effect from 2nd of April, 1972. The Public Health Engineering Department functioned independently and became fully a separate Department.

The Chief Public Health Engineer was also appointed as Ex-Officio Additional Secretary to the Government of Meghalaya, PHE Department with effect from December, 1973, with separate Secretary for Public Health Engineering Department. Initially, the Public Health Engineering Department was headed by the Additional Chief Public Health Engineer with 1 (one) Executive Engineer, (PHE) Investigation and Planning with 2 (two) SDOs (PHE) attached to the office of the Additional Chief Public Health Engineer, Meghalaya, Shillong.

The PHE Department, started functioning with two number of working Divisions with limited staff, i.e. PHE Hills Division, Shillong and PHE Tura, Division. Subsequently, due to increased volume of works, number of Offices were increased and at present PHED is having 7 (seven) circle, 21 (Twenty One) working Divisions and 41 (forty one) working Sub-Divisions where the Public Health Engineering Department under the Government of Meghalaya is run by one Principal Secretary, one Commissioner & Secretary/Secretary and assisted by one Deputy/Under Secretary. Swachh Bharat Mission (SBM)/Total Sanitation Campaign (TSC) also falls under the PHE department.

The responsibility, relevant activities and action of the PHE Dept. is given in Table 12.

1). Meghalaya Energy Corporation Limited:

Meghalaya Energy Corporation Limited (MeECL), is a state-owned electric utility company headquartered in Shillong, Meghalaya, India. It engages in generation, transmission and distribution of hydro-power. The electricity connection is distributed among households by Meghalaya Power Distribution Corporation Limited (MPDC Ltd).

The responsibility, relevant activities and action of the MeECL and MPDC Ltd is given in Table 9.

11. Monitoring Mechanism:

The quarterly/six-monthly progress of Meghalaya SAP for clean air is to be monitored and reviewed by the Monitoring and Steering Committee respectively, and then shared on PRANA portal of CPCB, periodically.

12. Source Specific Actions:

The source specific action/activities along with timeline, target & financial implication by concerned departments/stakeholders are listed in Table 9–14.

Table 9: Industrial Emissions

S. No.	Activities/Action plan	Status of activity (Completed/ Ongoing /To be Started)	Timeline for completion	Implementati on period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implicatio ns (Yes/No)	Funds Allocat ed (Rs. Cr.)	Funds Utilized as on date (Rs. Cr.)	Responsible / Concern Dept.(s)
1.	Policy for permitting new industries in Critically Polluted Areas (CPAs)	No CPAs has been identified in Meghalaya State. Therefore, the need for permitting new industries does not arise. Based on Byrnihat (NAC) Carrying Capacity/EI&SA study report by CSIR-NEERI, restriction on new industries may be taken into consideration.	NA	NA	NA	No	-	-	Commerce & Industries Dept., Planning Dept., MSPCB
2.	Guidelines for laying city gas distribution network for Industries	No project for city gas distribution in Meghalaya. Policy/ Guideline is as per Ministry of Petroleum and Natural Gas.	NA	NA	NA	No	-	-	Agency to be identified by MoPNG. FCS&CA Dept., Planning Dept. etc.
3.	Policy for replacement of heavy oil (e.g., furnace oil, diesel etc.) based industries to alternate energy	Draft state level policy regarding use of pet coke and furnace oil has been sent to the Govt. of Meghalaya on 14/11/2019. Awaiting Govt. approval.	Dec.-2025	Short term	All relevant Industrial units	No	-	-	MSPCB, Forest & Env. Dept./ Commerce & Industries Dept.

S. No.	Activities/Action plan	Status of activity (Completed/ Ongoing /To be Started)	Timeline for completion	Implementati on period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implicatio ns (Yes/No)	Funds Allocat ed (Rs. Cr.)	Funds Utilized as on date (Rs. Cr.)	Responsible / Concern Dept.(s)
	sources (CNG/ PNG/Electricity)								
4.	Policy for restriction on usage of Pet coke for industrial use		Dec.-2025	Short term	All relevant Industrial units	No	-	-	MSPCB, Forest & Env. Dept.
5.	Rules and Regulations on uninterrupted power supply in State/UT	The rules followed as per Meghalaya State Electricity Regulatory Commission (Electricity Supply Code) Regulation 2018. In Meghalaya there is only Hydel power station having minimum impact on the environment.	Regular activity	Long term	-	No	-	-	MeECL, MPDC Ltd
6.	Policy for use of DG sets	All DG sets are regulated as per the notification of MoEF&CC.	Regular activity	Long term	All DG sets	No	-	-	MSPCB
7.	Policy regarding installation of CAAQMS based on the emission potential or capacity of air polluting industries	Installation of OCEMS as per CPCB directions has been made mandatory.	December -2025	Short term	100%	No	-	-	Directorate of C&I Dept., MSPCB, Forests & Env. Dept.

S. No.	Activities/Action plan	Status of activity (Completed/ Ongoing /To be Started)	Timeline for completion	Implementati on period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implicatio ns (Yes/No)	Funds Allocat ed (Rs. Cr.)	Funds Utilized as on date (Rs. Cr.)	Responsible / Concern Dept.(s)
8.	Mechanism to be devised for expansion of OCEMS to air polluting industries are not covered currently (such as emission from utility stacks in 17 categories etc)	OCEMS installed in all 17 category industries. Please see table 9a.	Regular activity	Long term	All 17 category industries	-	-	-	MSPCB
9.	Mechanism to control fugitive emissions sources	Pollution Control Devises/ Systems are installed to trap fugitive emission before discharge into the atmosphere. Direction being issued for installation of water sprinkler system and installation of appropriate Air Pollution Control measures.	Regular activity	Mid term	100%	No	-	-	MSPCB
10.	Regulations for conversion of brick kilns to clean technologies	At present regulated by adopting bull trench type brick kilns with fixed chimney. However, direction has been issued to all brick	Mar-2025	short term	100%	No	-	-	MSPCB

S. No.	Activities/Action plan	Status of activity (Completed/ Ongoing /To be Started)	Timeline for completion	Implementati on period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implicatio ns (Yes/No)	Funds Allocat ed (Rs. Cr.)	Funds Utilized as on date (Rs. Cr.)	Responsible / Concern Dept.(s)
		kilns to convert to zig-zag technology within two (2) years.							
11.	Regulations for Emission Trading Scheme (ETS)	ETS may be explored/ proposed for introduction & implementation by the State Govt.	2 Year	Long term	All relevant units	-	-	-	For. & Env. Dept., C&I Dept., MSPCB
12.	Policy to set up e-waste recycling unit in industrial areas in compliance to e-waste management rules	Setting up of e-waste recycling unit in state is not feasible as quantum of waste is low. EPR to be ensured so that a buy back policy for e-waste is enabled and made more effective.	NA	NA	NA	No	-	-	MSPCB, Commerce & Industries Dept.,
13.	Number of industries in the state complying to emission standards	349 Please see table 9b and 9c.	Regular activity	Long term	100%	No	-	-	MSPCB, DMR
14.	Inventory of fuel consumed in the industries (type and quantity)	To be started.	June-2025	Short term	100%	No	-	-	Commerce & Industries Dept./ MSPCB
15.	Shifting of industries /commercial units	Proposed project for laying/building/operating of natural gas pipelines	-	Long term	-	No	-	-	Commerce & Industries Dept.,

S. No.	Activities/Action plan	Status of activity (Completed/ Ongoing /To be Started)	Timeline for completion	Implementati on period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implicatio ns (Yes/No)	Funds Allocat ed (Rs. Cr.)	Funds Utilized as on date (Rs. Cr.)	Responsible / Concern Dept.(s)
	to gaseous fuels (CNG/PNG/CBG)	grid in North-East is yet to be started. However, the conversion to gaseous fuel (CNG/PNG/CBG) will be expedited once the network is in place.							Planning Dept./ MSPCB
16.	Any other Policy/ Rules/Standards/ Guidelines pertaining to industrial emissions	MSPCB notified the norms/criteria for siting limekiln/brickkiln, vide Notification dated 08-06-2017. Forest & Env. Dept. issued Meghalaya Stone Crusher Order, 2021 (i.e. General requirement, norms, pollution control measures, legal source of boulders & other T&C) vide dated 13-12-2021. Forest & Env. Dept. notified norms/criteria for siting of Coke Plants (with installed production capacity of less than 25,000 MTPA) in Meghalaya, vide notification dated 29-07-	Regular activity	Long term	100%	No	-	-	MSPCB/ Forest & Env. Dept., Commerce & Industries Dept.

S. No.	Activities/Action plan	Status of activity (Completed/ Ongoing /To be Started)	Timeline for completion	Implementati on period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implicatio ns (Yes/No)	Funds Allocat ed (Rs. Cr.)	Funds Utilized as on date (Rs. Cr.)	Responsible / Concern Dept.(s)
		2024.							
		Hand holding of Industries to adopt better/newer technologies in mitigating air pollution through externally/ relevant funding source to be explored.	3 Year	Long term	All relevant units	-	-	-	Forest & Env. Dept., Com. & Ind. Dept., MSPCB

Table 9a: Status of OCEMS in 17-Category Industries in State

S.N.	17-Category Industries	Total No. of industries	Connected	Not connected/Remark
1	Cement Plant	14	11	2 No. not connected, 1 No. not operational
2	Power Plant	10	7	3 Nos. not operational
	Total	24	18	

Table 9b: Air Pollution Control (APC)/PCD status of industries in the State

S.N.	District	No. of Operating Industries			Status of Air Pollution Control (APC) system/ PCD	Defaulters (No adequate facility)
		Red	Orange	Green		
1	East Khasi Hills	3	39	2	All comply	None
2	West Khasi Hills	5	8	3		
3	South West Khasi Hills	3	1	0		
4	Ri Bhoi	5	85	47		
5	West Jaintia Hills	2	6	6		
6	East Jaintia Hills	34	10	0		
7	East Garo Hills	0	6	0		
8	West Garo Hills	0	63	0		
9	North Garo Hills	0	3	0		
10	South West Garo Hills	0	16	0		
11	South Garo Hills	0	1	0		
12	Eastern West Khasi Hills	0	1	0		
	Total	52	239	58		
		349				

Table 9c: List of mining industries in the State

S.N.	District	No. of mining industries under red category	Activities/Control measures	Concerned Depts.
1	East Garo Hills	1	Strict enforcement of environmental norms (acts/rules/guidelines/policies) notified/framed by MoEFCC/CPCB, Mining & Geology Dept., F&Env. Dept/MSPCB, for controlling/mitigating air pollution at mining sites.	Mining & Geology Dept., SEIAA/SEAC, MoEFCC, MSPCB
2	East Jaintia Hills	37		
3	Eastern West Khasi Hills	1		
4	East Khasi Hills	75		
5	North Garo Hills	1		
6	Ri Bhoi	25		
7	South Garo Hills	1		
8	South West Khasi Hills	12		
9	West Garo Hills	32		
10	West Jaintia Hills	26		
11	West Khasi Hills	1		
	Total	212		

Table 10: Vehicular/Transport Emission

S. No.	Activities/Action plan	Status of activity (Completed/ Ongoing/ To be Started)	Timeline for completion	Implementation period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implications (Yes/No)	Funds Allocated (Rs. Cr.)	Funds Utilized as on date (Rs. Cr.)	Responsible / Concern Dept.(s)
1.	Notification for phasing out old vehicles (Commercial: 10 years; Private: 15 years)	To be started	Dec.-2025	Mid term	-	-	-	-	Transport Dept.
2.	Policy for scrapping old vehicles	To be started	Dec.-2025	Mid term	-	-	-	-	Transport Dept.
3.	Policy/Plan for Li-battery waste management from scrapped vehicles	To be started	Dec.-2025	Mid term	-	-	-	-	Transport Dept.
4.	Policy/Scheme for Eco-Friendly Mass Rapid Transport Systems	To be started	Dec.-2025	Mid term	-	-	-	-	Transport Dept.
5.	Policy for augment e-vehicles	Ongoing	Dec.-2025	Mid term	-	-	-	-	Transport Dept.
6.	Notification and enforcement of PUC norms	Ongoing	Regular activity	Short term	-	-	-	-	Transport Dept.
7.	Online monitoring of PUC implementation	Completed	Regular activity	Short term	-	-	-	-	Transport Dept.
8.	Mechanism for centralized record maintenance of PUC checks, certification and cross check by the concerned transport	Completed	Regular activity	Short term	-	-	-	-	Transport Dept.

S. No .	Activities/Action plan	Status of activity (Completed/ Ongoing/ To be Started)	Timeline for completion	Implementat ion period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implicatio ns (Yes/No)	Funds Allocate d (Rs. Cr.)	Funds Utilized as on date (Rs. Cr.)	Responsible / Concern Dept.(s)
	authorities to be incorporated								
9.	Construction of bypass/ring roads	Ongoing Construction of Jowai By-pass with paved shoulder connecting NH-40E at Km 214 and NH-44 at Km 58.21 including construction of Bridge. Up-gradation of Shillong-Mawlai By-pass=5.60Km. Construction of newly proposed Shillong By-pass connecting NH-40 at 62 nd (Barapani) with NH-44 at 36 th km (Mawryngkneng) =55 Km	1.5 year/ Dec.-2025 Completed	Mid term	100%	No	93.58	-	PWD (Roads/ N.H.), NHAI-PIU, Shillong, NHIDCL, Shillong
10.	Re-filling Stations retrofitted with Vapor Recovery System	To be started (Instruction has been given to all Oil marketing	Dec.-2025	Short term	All relevant stations	No	-	-	FCS&CA Dept.

S. No .	Activities/Action plan	Status of activity (Completed/ Ongoing/ To be Started)	Timeline for completion	Implementat ion period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implicatio ns (Yes/No)	Funds Allocate d (Rs. Cr.)	Funds Utilized as on date (Rs. Cr.)	Responsible / Concern Dept.(s)
		companies)							
11.	Incentive of setting up R& D facilities related to EVs	-							Transport Dept.
13	Establishment of number of Registered Vehicle Scrapping Facilities (RVSF) and Automated Testing Station (ATS) under Voluntary-Vehicle Fleet Modernization Program (V-VMP) as per MoRTH OM dated 24.04.2023 and MoEF&CC's D.O. No. Q-16016/23/2020-CPA dated 13.06.2023.	To be started	March-2026	Mid term	-	-	-	-	Transport Dept./DTOs
12	Any other Policy/ Rules/ Standards/Guidelines pertaining to vehicular emissions	-	-	-	-	-	-	-	Transport Dept.

Table 11: Construction & Demolition Waste and Road Dust Management

S. No.	Activities/ Action plan	Status of activity (Completed/ Ongoing/ To be Started)	Timeline for completion	Implementation period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implications (Yes/No)	Funds Allocated (Rs. in Cr.)	Funds Utilized as on date (Rs. in Cr.)	Responsible / Concern Dept.(s)
1.	Policy for development of projects /plants for C&D waste management	Draft policy prepared by the Urban Affairs Dept. (UAD). Awaiting cabinet approval.	Completed	Short term	-	No	-	-	UAD, MUDA PWD (Roads, N.H. & Building), NHAI-PIU & NHIDCL, Shillong, Autonomous District Councils (Khasi, Jaintia, Garo)
2.	Policy for use of C&D waste in laying and construction of State highways	To be Started	Dec.-2025	Mid term	-	No	-	-	PWD (Roads/ N.H.), NHAI-PIU & NHIDCL, Shillong
3.	Demand creation for C&D waste and alternative use of C&D waste material	Urban Affairs Dept: Processing and utilization of C&D waste has been included in section 5.3 of the draft Meghalaya state policy on construction and demolition waste, 2022.	-	Short term	-	-	-	-	UAD, MUDA, Municipal Boards. PWD (Road, N.H. & Building), NHAI-PIU &

S. No .	Activities/ Action plan	Status of activity (Completed/ Ongoing/ To be Started)	Timeline for completion	Implementation period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implications (Yes/No)	Funds Allocated (Rs. in Cr.)	Funds Utilized as on date (Rs. in Cr.)	Responsible / Concern Dept.(s)
		C&D waste collected by the Municipal Boards are very less in quantity and it is being reused in disposal sites for levelling/making approach roads/pavements. Williamnagar Municipal Board: The C&D waste generated in Williamnagar town area are being stored within the site itself which can be reused at the same site for the purpose of construction, levelling/ making road/pavement etc. The waste generated cannot be treated as there is no treatment facility for the same.							NHIDCL, Shillong
4.	Schemes for development of green belt/open spaces and street sides greening	Forest & Env. Dept.: For the year 2020-21 and 2021-22, 9.6 Km roadside plantation has been completed for Street	Completed	Short term	100%	No	-	-	Forest & Env. Dept., Municipal Boards/ Shillong

S. No.	Activities/ Action plan	Status of activity (Completed/ Ongoing/ To be Started)	Timeline for completion	Implementation period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implications (Yes/No)	Funds Allocated (Rs. in Cr.)	Funds Utilized as on date (Rs. in Cr.)	Responsible / Concern Dept.(s)
	on State highways	sides greening on State highways under CAMPA. Jowai Municipal Board: Submitted though AMRUT 2.0 scheme. Shillong Cantonment Board: 200 new saplings have been planted in different places of Shillong Cantonment during the year 2021-22 and survival rate was about 65%.							Cantonment Board
5.	Penalty provisions for non-compliance of C&D waste management rules at construction sites	UAD: Once the Meghalaya C&D waste Management policy gets the approval, the Dept. shall within 6 months come up with Meghalaya C&D Bye Law where clause of violators shall be included. Shillong Cantonment Board: Any violation of the provision of the C&D waste management rules	Completed	Mid term	-	-	-	-	UAD, MUDA Municipal Boards/ PWD (Road, N.H. & Building), NHAI-PIU & NHIDCL, Shillong, Autonomous District Councils (Khasi,

S. No.	Activities/ Action plan	Status of activity (Completed/ Ongoing/ To be Started)	Timeline for completion	Implementation period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implications (Yes/No)	Funds Allocated (Rs. in Cr.)	Funds Utilized as on date (Rs. in Cr.)	Responsible / Concern Dept.(s)
		2016 shall attract the penal provision of Environment Protection Act 1986 (29 of 1986).							Jaintia, Garo)
6.	Maintenance, repair and paving of State highways	Up-gradation /improvement of State/Internal roads=262.32 Km.	~3.5 Years	Long term	100% (~ 43.5% completed)	Yes (Road works under Meghalaya integrated Transport project)	557.3	157.6	PWD (Roads, N.H.), NHAI-PIU, Shillong, NHIDCL, Shillong
		Maintenance, repair and paving of State highways= 32 Km.	1 Year	Mid term	(~ 85% completed)	Yes PR work under MoRTH	20.67	21.87	
		Maintenance, repair and paving of State highways= 35.89 Km	1 Year	Mid term	Work under tender stage		50.089	-	
7.	Monitoring of road dust especially in and around hotspots areas and in the vicinity of State highways	Water sprinkling is being carried out during construction of roads. Please see below table 11 (i).	Regular activity	Long term	-	-	-	-	PWD (Roads, N.H.), NHAI-PIU, Shillong, NHIDCL, Shillong
8.	Mechanism for development and maintenance of road	Up-gradation to double lane standard including improvement and strengthening of Byrnihat	Completed	Short term	100%	Yes	1447.56	1327.01	PWD (Roads, N.H.), NHAI-PIU & NHIDCL,

S. No.	Activities/ Action plan	Status of activity (Completed/ Ongoing/ To be Started)	Timeline for completion	Implementation period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implications (Yes/No)	Funds Allocated (Rs. in Cr.)	Funds Utilized as on date (Rs. in Cr.)	Responsible / Concern Dept.(s)
	infrastructure for industrial estates and clusters	EPIP approach road. Up-gradation / Improvement of 3.4 km road in EPIP, Byrnihat	Completed	Short term	100%	Yes under NCAP	1.71	1.71	Shillong, Directorate of C&I Dept./ MIDC
9.	Any other Policy / Rules / Standards / Guidelines pertaining to C&D waste and Road dust management	C&D Waste Management Rule 2016 has been notified by MoEF&CC on 29/03/2016, and adopted by the state of Meghalaya vide letter No. ENV.1/2016/21, Dtd 16.05.2016. CPCB 'Guidelines on Dust mitigation measures in handling Construction material & C&D wastes' has been circulated to all concerned Dept./Stakeholder for effective implementation in Meghalaya by MSPCB.	1 year	Mid term	-	No	-	-	UAD, MUDA, C&RD Dept., PWD (Road, N.H. & Building), NHAI-PIU, Shillong, NHIDCL, Shillong
10.	C&D waste processing plants	P.W.D.: The Department is in the process of sending proposals to the Govt. for procurement of	2 years		-	-	-	-	PWD (Road, N.H. & Building), NHAI-PIU,

S. No.	Activities/ Action plan	Status of activity (Completed/ Ongoing/ To be Started)	Timeline for completion	Implementation period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implications (Yes/No)	Funds Allocated (Rs. in Cr.)	Funds Utilized as on date (Rs. in Cr.)	Responsible / Concern Dept.(s)
		the plants in each district headquarter. Urban Affairs Dept.: Under SBM(U)2.0 waste characterization studies shall be conducted by all Municipal Boards after which proposals shall be made for setting up of C&D waste processing plants. Please also see below table 11 (ii).	Dec.-2025	Mid term		Yet to prepare DPRs possible funding UIDF as suggested by MoHUA			Shillong, NHIDCL, Shillong UAD, MUDA
11.	Greening of open spaces/ parks developed	For the year 2020-21 and 2021-22, 860.6524 Ha plantation has been completed for development of green belt/ open spaces under State plan Schemes, CAMPA & C.S.S schemes like IDWH.	Completed	Short term	100%	-	Completed	31-03-22	Forest & Env. Dept., UAD. Autonomous District Councils (Khasi, Jaintia, Garo)
		For the year 2022-23, plantation up to area of 416.24 Ha is ongoing for development of green belt/ open spaces under	Ongoing	Short term	August-2025	Yes	5.85	-	

S. No .	Activities/ Action plan	Status of activity (Completed/ Ongoing/ To be Started)	Timeline for completion	Implementati on period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implicatio ns (Yes/No)	Funds Allocated (Rs. in Cr.)	Funds Utilized as on date (Rs. in Cr.)	Responsible / Concern Dept.(s)
		MEPRF.							
		For the year 2022-23, 1002.4 Ha under CAMPA & State Plan Scheme has been prepared and approved for which money is yet to be released and for the year 2023-24 & 2024-25, 7766.17 Ha plantation target has been set by mobilizing funds under State Scheme, CAMPA, MEPRF & GIM which will be achieved by 2024-25.	8768.57 Ha plantation target	Short term	August-2025	Yes	~26.58	-	
12.	Any other activity/ project pertaining to C&D waste and Road dust management	-	-		-	-	-	-	PWD (Roads, N.H. & Building), NHAI-PIU & NHIDCL, Shillong, UAD.

Table 11 (i): Monitoring of road dust especially in and around hotspots areas and in the vicinity of state highways

Sl. No.	Name of Work	Sanctioned Amount in Rs.	Action taken	Stage	Financial implications in Rs.
1.	Upgradation /Improvement of the following roads (i). Shillong – Diengpasoh Road (L=11.769 Km). (ii). Laitkor – Pomlakrai – Laitlyngkot Road (5 th – 16 th Km) (L=11.358 Km). (iii). Umling Patharkhmah Road (L=31.091 Km) – PKG –01 (iv). Pasyih – Garampani Road (L=26.982 Km) – PKG –06 (v). Mawmaram Mawlyndep Road (L=41.527 Km)	2,46,22,61,042	Sprinkling of water in the settlement and working area as per Instruction of SC	Construction stage	13,80,000
			Monitoring near all hot mix plant locations approved by the Engineer as per NAAQS, 2009 CPCB	Construction stage	3,70,000
			Monitoring at construction sites in tandem with construction Engineer as per NAAQS, 2009 CPCB	Construction stage	3,70,000
2.	Rehabilitation/improvement of roads: (i). Within Jowai Town (L=33.973) (ii). Within Nongstoin Town (L=21.372 Km) (iii). In Williamnagar Town (L=13.287 Km)	82,48,21,225	Air quality monitoring at 3 locations for 3 seasons for 2 consecutive years	Construction stage	4,86,000
			Air quality monitoring at 3 locations for 3 seasons for 2 consecutive years	Operational stage	4,86,000
3.	Up-gradation/improvement of (i). Nongstoin-Maweit Road (L=23 Km) (ii). Umsning – Jagi Road (L=40.00 Km)	1,60,52,01,427	Air quality monitoring at 3 locations for 3 seasons for 2 consecutive years	Construction stage	3,24,000
			Air quality monitoring at 3 locations for 3 seasons for 2 consecutive years	Operational stage	3,24,000
4.	Construction of approach Roads i. From Laitartet to Nonglyput for development of tourism Infrastructure (L=3.050 Km) ii. From Mawklot to Umiam for development of tourism infrastructure (L=0.6 Km) iii. From Niangmer to Sohmylleng for Development of Tourism Infrastructure (L=2.971) iv. From Mawphanlur to Mawthadraishan for development of tourism Infrastructure (L=3.545 Km)	170296390	Monitoring of air, water, soil, noise and Soil	Construction and Operation Period	20,00,000
			Dust Suppression at the project site@Rs 1500/trip x 1 trip/day x 300 days x 1 year	Construction stage	18,00,000

Source: Office of the Chief Engineer (NH), PWD (Roads), Meghalaya

Table 11 (ii) C&D waste processing plants

Sl. No.	Name of Work	Sanctioned Amount in Rs	Action taken	Stage	Financial implications in Rs
1	Construction of approach Road from (i) Laitartet to Nonglyput for development of tourism Infrastructure (L=3.050 Km) (ii) Mawklot to Umiam for development of tourism infrastructure (iii) Niammer to Sohmylleng for Development of Tourism Infrastructure (L=2.971 Km) (iv) Mawphanlur to Mawthadraishan for development of tourism Infrastructure (L=3.545 Km)	17,02,96,390	Demolition wastes and scrap disposal as per C&D rules 2016	Construction stage	8,00,000

Source: Office of the Chief Engineer (NH), PWD (Roads), Meghalaya

Table 12: Emissions from burning of waste/waste management

S. No.	Activities/Action plan	Status of activity (Completed/Ongoing/ To be Started)	Timeline for completion	Implementati on period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implications (Yes/No)	Funds Allocated (Rs. Cr.)	Funds Utilized as on date (Rs. Cr.)	Responsible / Concern Dept.(s)
1.	Notification and Enforcement of solid waste management (SWM) rules	SWM Rule, 2016 has been notified by MoEF&CC on 08/04/2016 and adopted by Meghalaya state vide letter No. ENV.8/99/253, Dtd 29.04.2016. Urban Affairs Dept. notified Meghalaya SWM byelaws, 2020 (No. DUA115/2017/Pt/61 Dtd.19-05-2020)	Notified/ Completed	Short term	-	No	-	-	Urban Affairs Dept. (UAD), Municipal Boards, C&RD Dept./ SRES, Autonomous District Councils (Khasi, Jaintia, Garo), P.H.E., MSPCB
2.	Policy for MSW management	Urban Affairs Dept. notified the Meghalaya State Waste Management Policy and Strategy 2019.	Notified/ Completed	Short term	-	No	-	-	Urban Affairs Dept., Municipal Boards, Autonomous District Councils (Khasi, Jaintia, Garo)
3.	Policy for legacy waste management at dumpsites	Urban Affairs Dept.: The preparation of Legacy waste management is under	March - 2025	Short term	-	No	-	-	Urban Affairs Dept., Municipal Boards, Autonomous

S. No.	Activities/Action plan	Status of activity (Completed/Ongoing/ To be Started)	Timeline for completion	Implementati on period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implications (Yes/No)	Funds Allocated (Rs. Cr.)	Funds Utilized as on date (Rs. Cr.)	Responsible / Concern Dept.(s)
		progress. Williamnagar Municipal Board: Action plan for remediation of legacy waste from dumpsite at Upper Balsrigittim have been prepared and expected to start bio-mining by 2024. The estimated cost to clear the above dumpsite at Upper Balsrigittim may be approx. Rs. 1.68 Crore.	August- 2025						District Councils (Khasi, Jaintia, Garo)
4.	Policy for implementation of ban on single use plastics	Comprehensive action plan on elimination of single use plastic has been approved by Task Force of Govt of Meghalaya. Shillong Cantonment Board: Two plastic shredders installed at Board office through Board fund. Urban Affairs Dept.	Regular activity March - 2025	Mid term	-	No	-	-	MSPCB, Urban Affairs Dept., Municipal Boards, District Administrations, Autonomous District Councils (Khasi, Jaintia, Garo)

S. No.	Activities/Action plan	Status of activity (Completed/Ongoing/ To be Started)	Timeline for completion	Implementati on period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implications (Yes/No)	Funds Allocated (Rs. Cr.)	Funds Utilized as on date (Rs. Cr.)	Responsible / Concern Dept.(s)
		Draft policy completed and sent to stakeholders for views and comments							
5.	Policy for development and Construction of Waste to Energy Plants	Urban Affairs Dept: Development and construction of waste to energy plants is covered under the Meghalaya SWM Byelaws 2020	Completed	Long term	-	-	-	-	Urban Affairs Dept., Municipal Boards, Autonomous District Councils (Khasi, Jaintia, Garo), C&RD Dept/ SRES,
	(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	CPCB has issued guideline for disposal of legacy waste (Old Municipal Solid Waste) in Feb. 2019, and circulated by MSPCB to all concerned Dept.	-		-	-	-	-	Urban Affairs Dept., Municipal Boards,

S. No.	Activities/ Action Plan	Status of activity (Completed/ Ongoing/ To be Started)	Timeline for completion	Implementation period (short/mid/ long term)	Target (Coverage/ Percentage)	Financial implications (Yes/ No)	Funds Allocated (Rs. Cr.)	Funds Utilized as on date (Rs cr.)	Responsible / Concerned Deptt.(s)
1	Waste collection status in the city (%)	Please see table 12 (i) & (ii) below		Long term		Yes			Urban Affairs Dept., Municipal Boards, Towns committee, Autonomous District Councils (Khasi, Jaintia, Garo), C&RD Dept/SRES, P.H.E.,
2	Waste segregation status in the city (%)								
3	Material Recovery Facility								
4	Waste to Energy plants								
5	Waste to compost plants								
6	Remediation of dumpsites in the city								
7	Control open burning of MSW								
8	Any other activity/ project pertaining to MSW Management								

Table 12(i): Solid Waste Management Status: Urban Towns Meghalaya
7 ULBs, 96 Wards

Municipal Waste Generated 182.5 TPD						
Collection and Transportation						
Sl. No.	Particulars	Present Status		Target		Timeline
		Quantity TPD	Percentage	Percentage		
1	Waste Collection status in the city %	147	81%	100%		2024
2	Waste Segregation status in the city	76.5	52%	100%		2024
Processing/Treatment						
	Particulars	Present Status		Target		Timeline
Sl. No.		Quantity TPD	Units	Quantity TPD	Units	
1	Material Recovery Facility	12	9	47.9	34	2026
2	Waste to Energy Plants	10	1	20	2	2025
3	Waste to Compost Plants	63.5	2	245	6	2026
4	Remediation of dumpsites in the city	0	0	288037 Tons	6	2026
Enforcement						
Sl. No.	Particulars		Action Taken			
1	Control Open Burning of MSW		Meghalaya SWM Byelaws 2020 strictly prohibited Burning of Solid Waste			
2	Any other activity/project pertaining to MSW Management		SBM (U) 2.0, City Solid Waste Action Plans proposals was approved by the SLTC (State) and NARC (National), Fund release is awaiting.			

Source: Urban Affairs Dept.

Table 12 (ii): SRES Action Taken status w.r.t. 'Waste to Compost Plants'

Sl. No.	District	Composting Plants								Soak pit/ Soakage Channel	
		NADEP Compost		Vermi Compost		Compost Pit		Berkley Compost			
		No. of Units	Sanction Amount (Rs. in Lakh)	No. of Units	Sanction Amount (Rs. in Lakh)	No. of Units	Sanction Amount (Rs. in Lakh)	No. of Units	Sanction Amount (Rs. in Lakh)	No. of Units	Sanction Amount (Rs. in Lakh)
1	East Garo Hills	1	0.31	60	43.15	28	6.13	109	36.61	74	185.87
2	East Jaintia Hills	0	0.00	33 6	27.55	46	3.70	1062	18.93	2	16.96
3	East Khasi Hills	7	1.82	50 1	116.62	172	44.44	776	20.19	96	9.26
4	North Garo Hills	0	0.00	8	4.05	0	0.00	17	1.25	26	104.86
5	Ri Bhoi	3	1.35	63	8.53	140	67.88	1581	73.46	108	9.34
6	South Garo Hills	2	15.01	18	33.57	26	4.53	831	47.15	16	76.36
7	South West Garo Hills	0	0.00	83	12.39	10	2.02	162	88622.2	73	16.65
8	South West Khasi Hills	0	0.00	25	13.80	82	17.46	768	29.22	4	19.11
9	West Garo Hills	57	0.30	360	10980.91	42	4.47	334	9.96	78	103.22
10	West Jaintia Hills	0	0.00	11	8.05	21	0.56	184	13.34	23	11.29
11	West Khasi Hills	0	0.00	28	7.18	149	4.72	21	0	53	11.17
Grand Total		70	18.80	1493	11255.8	716	155.9	5845	88872.3	553	564.1

Table 13: Emissions due to burning of agro residues

S. No.	Activities/ Action Plan	Status of activity (Completed/ Ongoing/ To be Started)	Timeline for completion	Target (Coverage/ Percentage)	Implementati on period (short/mid/ long term)	Financial implications (Yes/ No)	Funds Allocate d (Rs. Cr.)	Funds Utilized as on date (Rs. Cr.)	Responsible / Concern Deptt.(s)
1.	In-situ treatment of biomass residues for management of stubble burning i) Burning of residue is not a practice in Meghalaya. However, stubbles are left in-situ and re-ploughed into the field in the next planting season. ii) Crop residues are used in preparation of compost. iii) Paddy straw is used as fodder and media for mushroom cultivation etc. Therefore, schemes/assistance for in crop residue does not arise in this sector.								Directorate of Agriculture & Horticulture, Dept. of Agriculture & Farmers' Welfare
a)	Scheme for procurement of agriculture machinery	Does not arise as burning of residues is not practiced in Meghalaya	NA	NA		NA	NA	NA	
b)	Assistance for establishment of farm machinery banks/ custom hiring centres	No machinery is included in FMBs for this purpose as burning of residues is not practiced in Meghalaya	NA	NA		NA	NA	NA	
c)	Use decomposer for in-situ Crop residue management	To be Started	Will be an ongoing activity	-	long term	Yes	-	-	
2.	Ex-situ treatment of biomass residues for management of stubble burning								
a)	Schemes for balers/ pellet/ briquette machine, etc.	To be Started	Will be an ongoing activity	-	long term	Yes	-	-	Directorate of Agriculture & Horticulture, Dept. of Agriculture &
3.	Biomass projects with respect to the hotspots	Does not arise as burning of residues	NA	NA		NA	NA	NA	

S. No.	Activities/ Action Plan	Status of activity (Completed/ Ongoing/ To be Started)	Timeline for completion	Target (Coverage/ Percentage)	Implementati on period (short/mid/ long term)	Financial implications (Yes/ No)	Funds Allocate d (Rs. Cr.)	Funds Utilized as on date (Rs. Cr.)	Responsible / Concern Deptt.(s)
	of crop residue burning	is not practiced in Meghalaya							Farmers' Welfare
4.	Use of biomass/ crop residue-based pellets mass blending with coal and its co-firing in thermal power plants with blending ratio which needs no modification in boilers	NA	NA	NA		NA	NA	NA	
5.	Policy for supply chain mechanism for in-situ and ex-situ management of stubble	NA	NA	NA		NA	NA	NA	
6.	Supply chain for crop residues to cow shelters	NA	NA	NA		NA	NA	NA	Directorate of Agriculture & Horticulture, Dept. of Agriculture & Farmers' Welfare
7.	Development of effective protocol for monitoring of fire incidents including crop area consideration and crop fire area data	NA	NA	NA		NA	NA	NA	
8.	Collaboration with ISRO and preparation of Satellite based maps for monitoring of fire	NA	NA	NA		NA	NA	NA	

S. No.	Activities/ Action Plan	Status of activity (Completed/ Ongoing/ To be Started)	Timeline for completion	Target (Coverage/ Percentage)	Implementati on period (short/mid/ long term)	Financial implications (Yes/ No)	Funds Allocate d (Rs. Cr.)	Funds Utilized as on date (Rs. Cr.)	Responsible / Concern Deptt.(s)
	incidence								
9.	Any other scheme/ program that may help in reducing air pollution	1. The Department of Agriculture and Farmers Welfare promotes and support organic farming by discontinuing subsidy on in-organic fertilisers, chemical pesticides/fungicides etc. 2. Increase plantation for more crop area and prevention of soil erosion thereby reducing air pollution.							

Source: Directorate of Agriculture.

Table 14: Emissions from Household and Commercial establishments

S. No.	Activities/Action plan	Status of activity (Completed/Ongoing/To be Started)	Timeline for completion	Implementation period (short/mid/long term)	Target (Coverage/Percentage)	Financial implications (Yes/No)	Funds Allocated (Rs. Cr.)	Funds Utilized as on date (Rs. Cr.)	Responsible / Concern Dept.(s)
1.	Schemes for use of LPG/PNG for cooking fuels	PMUY, Centralized scheme implemented through IOCL	Regular activity	Mid term	-	-	-	-	FCS&CA Dept.
2.	Amendments to the building by-laws for "Indoor air quality management"	Meghalaya Building Byelaws 2021 Section G Green and Sustainability Provision 3. Soft cover provision of minimum 10% up to 20% plot.	Implemented under the Notified Meghalaya Building Bye Law 2021	Mid term	100%	No	-	-	Urban Affairs Dept., MUDA.
3.	Number of households shifted to PNG/LPG	LPG connection in Meghalaya is being done by Govt. Oil Companies. It is an ongoing activity. Out of 555380 household in the state, 353229 household availed LPG connection (General and PMUY)	Regular activity	Long term	100%. The present coverage is nearly 67.47%. Target for next one year is 80%.	No	-	-	Dept. of FCS&CA
4.	Implementation of policies aiming for conversion of conventional fuels to	To be explored	1 Year	Mid term					FCS&CA Dept., Transport Dept. etc.

	cleaner fuels in commercial establishments.								
5.	Incentive measures to switch over to cleaner fuels.	To be explored	1 Year	Mid term					FCS&CA Dept., Transport Dept. etc.
6.	Any other Policy/ Rules/ Standards/ Guidelines pertaining to Household emissions	-	-		-	-	-	-	Dept. of FCS&CA, Dept. of Urban Affairs,

13. Integration of Mission LiFE (Lifestyle for Environment)

Mission LiFE (Lifestyle for Environment) was launched by the Government of India in 2022 as a global movement to safeguard the environment from the impact of climate change. It follows three strategies:

- i) Nudging individuals to practice simple yet effective environment friendly actions in their lives (demand);
- ii) Enabling industries and markets to respond swiftly to the changing demand (supply);
- iii) Influencing government and industrial policy to support both sustainable consumption and production (policy).

MoEFCC issued Office Memorandum dated 23-01-2023, inclusion & implementation of Mission LiFE actionable points is mandatory as part of the state and city air action plans and identified 14 action points from Mission LiFE which can help to improve air quality with monitorable targets. These are as follows:

Table 15: Mission LiFE's Actionable Points under SAP

S. N.	Mission LiFE's Actionable Points	Activities/Action Plan	Implementation period/ timeline	Responsible/ concerned agencies /depts.
	Action on all 75 action under Mission LiFE			
1	Awareness generation on LiFE activities for all 75 points	Number of persons to be provided awareness through Capacity Building and Public Outreach Programme (CBPO)	Regular activities / continuous in nature	All mentioned/concerned depts./ stakeholders in SAP, and/or all officials of Implementation/ Monitoring /Steering Committee under NCAP.
2	Signages for LiFE actions at important locations for all 75 points.	Total number of locations provided with Life Action signages		
3	Posting of infographics/ audio visuals in social media platforms	Total number of days in the present year in which infographics/ audio visuals are to be posted on social media		
	Relevant Actions under LiFE themes for improvement of air quality			
4	Action No. 2: Use Public transport whenever possible	Total length of public transport network to be developed (roads, metro, last mile connectivity) in Km		P.W.D. (Road, NH), MIDC/DCIC, NHAI, NHIDCL
5	Action No. 5: Use bicycles for local or short commute	Total length of NMT to be constructed in the city/town (in km)		
6	Action No. 7: Prefer CNG /EVs over Petrol & Diesel	Total capacity of EV charging stations to be introduced (in kW)		Transport Dept./DTOs., FCS&CA Dept./DC(Supply)
		Total number of EVs to be introduced/converted		
		Total number of CNG Vehicles to be introduced/converted		
7	Action No. 39: Prefer non-plastic eco-friendly cutlery during gatherings and events	Total number of Capacity Building and Public Outreach (CBPO) events to be organized without using plastics cutlery		

8	Action No. 42: Use recycled plastic over virgin plastic, wherever possible	Additional Quantity of Plastic Waste (TPD) proposed for collection		P.H.E., Autonomous District Councils, UAD/ Municipal Boards, District Administrations
		Additional capacity of plastic waste segregation plant (TPD) proposed		
9	Action No. 47: Compost food waste at home	Additional Capacity (TPD) of food waste composting plants proposed		Directorate of Agriculture & Horticulture/ Dept. of Agriculture & Farmers' Welfare
10	Action No. 52: Contribute cattle waste, food waste and agricultural waste to biogas plant (provided under GOBARDHAN)	Capacity (TPD waste and m ³ of biogas) of biogas plants proposed to be set up to process the food waste		
		Capacity (TPD waste and m ³ of biogas) of biogas plants proposed to be set up to process the food waste		P.H.E., Autonomous District Councils, UAD/Municipal Boards, District Administrations
11	Action No. 53: Practice segregation of dry and wet waste at homes	Additional Quantity (TPD) of waste segregation proposed		
12	Action No. 61: Do not discard waste in water bodies and in public spaces	Proposed Quantity (TPD) of waste to be collected		Forest & Env. Dept., Autonomous District Councils, NHAI, PWD, UAD/Municipal Boards etc.
		Total waste to be generated (TPD)		
13	Action No. 68: Plant trees to reduce impact of pollution	Additional Area (hectare) of open spaces/parks/roads proposed for plantation/greening		UAD/ Municipal Boards, Autonomous District Councils, MSPCB etc.
		Additional Area (%) of open spaces/parks/roads proposed for plantation /greening		
14	Action No. 73: Discard gadgets in nearest e-recycling units	Total number of e-waste collection centres proposed to be created		

For detail visit on: <https://missionlife-moefcc.nic.in/> <https://merilife.nic.in/>
<https://www.niti.gov.in/sites/default/files/2022-10/Brochure-10-pages-op-2-print-file-20102022.pdf>

14. Additional Actions related to State Action Plan:

(i). Augmenting & Strengthening of Air Quality Monitoring Network:

The state's ambient air quality is being monitored via a network of 31 (thirty-one) manual Ambient Air Quality Monitoring Stations (AAQMS) spread across Meghalaya (Table-1)

With the objective of augmenting & strengthening the AAQM Network in the state, the MSPCB has recently approved proposals for establishment of 3 (three) manual AAQM stations in East Jaintia Hills District and 3 (three) in South West Khasi Hill District under the State Air Monitoring Programme which will be established/made operational soon (Table-16). Establishment of additional manual AAQM stations can also be availed via other scheme(s) of the state.

The MSPCB is continuously exploring ways and means for augmenting and strengthening the air quality monitoring network through NAMP, CPCB and/or state govt. However, based on additional requirement in areas such as hotspots (where identified), ecologically sensitive areas (where identified), and/or district/town with no AAQM stations etc., the MSPCB may expand the air quality monitoring network through NAMP, CPCB or state govt.

Table-16: Proposed manual AAQM station under State Govt./Board fund:

District	City/town/rural areas/cluster	Nos. of manual AAQM station
East Jaintia Hills	Lumshnong, Nongsning, Chiehruphi	3
South West Khasi Hills	Kulang, Mongjri, Nonghyllam	3

(ii). Air Quality Forecasting:

Air quality forecasting aims to predict the composition of air pollution in the atmosphere at a given location and time. An algorithm prediction of the pollutant concentration can be translated into air quality index akin to actual measurements. Different techniques and approaches to air quality forecasting combines historical data with data generated via on-ground sensors or even satellite observations to provide insights, analysis, and forecasts from global to street-level air pollution. Local factors like traffic, regional weather patterns, or emissions in the atmosphere are also taken into consideration.

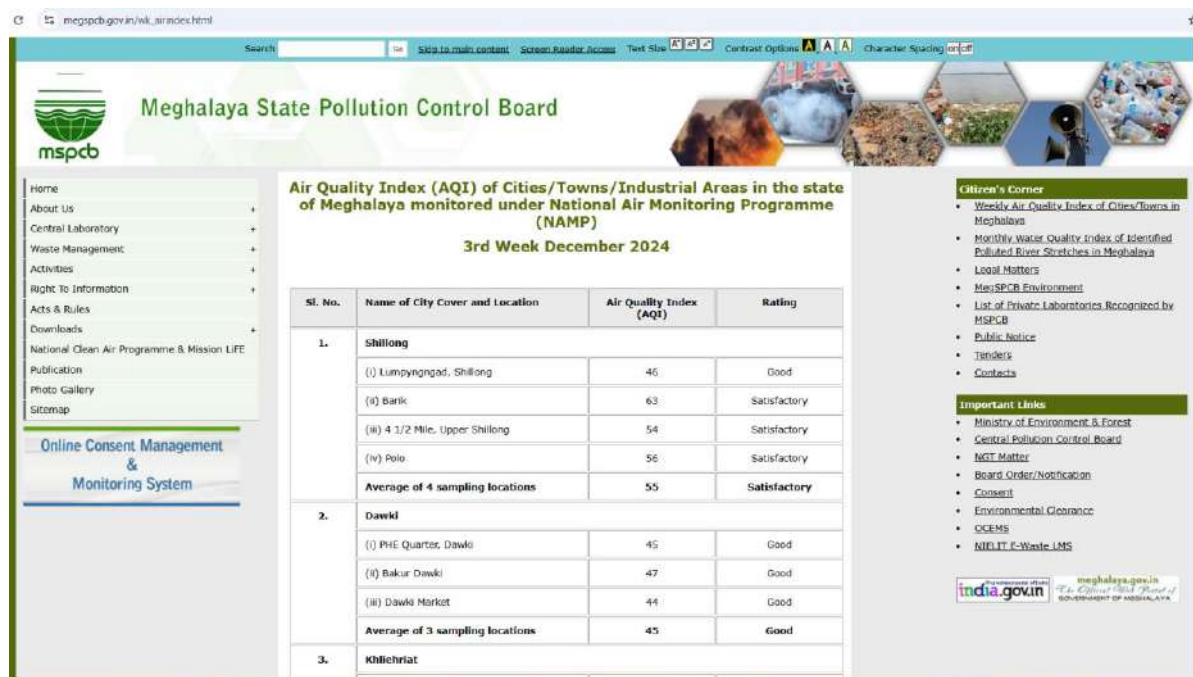
Though a system for forecasting future air quality cannot, in and of itself, solve the problem of air pollution, nevertheless forecasts, if reliable and sufficiently accurate, can play an important role in air quality management. The applications of air quality forecasts fall into broad areas like providing warnings to the public when air pollution levels exceed specified levels, supplementing existing emission control programs and action strategies, and aiding operational planning for such activities as private and commercial aviation etc.

The MSPCB is presently exploring the introduction of a state-of-the-art Air Quality Forecasting System (AAQFS) in collaboration with India Meteorological Department, Meteorological Centre, Shillong, with the objective of providing forecasts on air pollution trends in the state.

(iii). Air Quality Data and Information System:

The weekly observed values of parameters monitored are computed in terms of Air Quality Index (AQI) and disseminated to the public via print/social media (Facebook & Instagram)/website of the MSPCB and also forwarded to concerned Districts

Administration/websites. Air quality data at each location are also presented in the Annual Report of the MSPCB. The daily air quality data is also displayed via digital display board of CAAQMS located in Shillong (Lumpyngad and Polo) and via MegSPCB Environment App.



(iv). Institutional Strengthening

Institutional Strengthening is an important pillar for effective roll-out of air pollution mitigation strategy. For effective implementation of prescribed activities in SAP, following awareness programme/CBPO events is to be planned and executed by each mentioned depts/agency for public/communities/stakeholders/officials/students, that will help to achieve the goal towards a cleaner environment.

General awareness/CBPO title	Concerned dept./stakeholders
Air Pollution Sources and Control Measures	All dept./stakeholders
Norms & control related to industrial emission, etc.	MSPCB/F&E Dept., C&I Dept., DMR etc
Vehicular Emission Testing (PUC) and Awareness on Need of Regular Maintenance of Vehicles, Switch to cleaner fuels vehicle /E-vehicle, etc.	Transport Dept./DTO etc
Waste Management/ Segregation, collection, scientific disposal of wastes, stop waste burning etc.	Urban Affairs Dept./Municipal Boards, C&RD Dept/SRES, Autonomous District Councils (Khasi, Jaintia, Garo), P.H.E. MSPCB etc.
Emissions due to burning of agro-residues/ management of agro-waste and use as compost. Stop stubble burning etc.	Agriculture and Farmers' Welfare Department/ District Agriculture/ Horticulture Officer, etc
Construction & Demolition Waste and Road Dust Management, etc.	PWD (R, NH, B), NHAI, Urban Affairs Dept./MUDA/Municipal Boards
Afforestation/Green Cover/Plantation drive etc.	F&E Dept./DFO, other concerned

	dept./stakeholders.
Indoor Air Pollution Control Measure and switching to cleaner fuels source, etc.	FCS&CA Dept./DC(Supply), etc.

The awareness may also be conducted through display board/signages/electronic media/websites/social media etc.. The report of conducted awareness/CBPO (including numbers, title, location, date, GPS-photos etc.) are to be provided quarterly/six-monthly to the MSPCB, Shillong, for onward submission to the Monitoring/Steering Committee etc.

(v). Afforestation & Green Cover

Afforestation and maintaining of green cover are mainly executed by the Forest & Env. Dept through its Divisional Forest Offices. As per Table 11 (Sl. No. 11: Greening of open spaces/parks developed), afforestation & green cover/road side plantation in hotspot areas/road side/availability of vacant land etc. is to be implemented by Forest & Env. Dept., NHAI, Autonomous District Councils (Khasi, Jaintia, Garo) and other concerned depts/stakeholders as per relevant schemes/programme (CAMPA/NVY etc.).

(vi). Public grievance redressal mechanism at State Level:

MSPCB developed 'MegSPCB Environment' a mobile/android App for the public to register complaints related to air pollution in the non-attainment city (Byrnihat) of Meghalaya. It also provides Air Quality Index (AQI) which is an effective tool for providing the status of air quality to people in terms that are easy to understand: AQI transforms complex air quality data of various pollutants into a single nomenclature and colour. The 'MegSPCB Environment' App was released on 20th February, 2020, and the link to the same is available on MSPSB website and Google play store.



The Board disseminates weekly monitored AQI in public domain via social media/print media/websites of MSPCB and concerned district administration. Any complaint related to air pollution made via emails/letters/app etc. is resolved at the earliest.

(vii). Hotspots of air pollution:

Hotspots with respect to air pollution (episodic events viz. stubble burning, illegal waste burning, unauthorised operations, forest fires & other air pollution activities) is to be identified and localised action plan for mitigation of the same is to be prepared and implemented.

S.N.	Episodic events/Tentative localised hotspot (as and when occurred)	Responsible/concerned depts./stakeholders
1	Stubble Burning: Burning of residue is not a practice found in Meghalaya. However, if any case of stubble burning is found/occurs, necessary action along with immediate control measures is to be taken by concerned authority under relevant rules/norms.	Concerned District Agriculture/Horticulture Officer, District Administration, F&ES Station, Agriculture and Farmers' Welfare Department.
2	Illegal Waste Burning: The concerned authority is to ensure that proper waste management facility (D2D collection, segregation & scientific disposals) is in place/operational in the whole state (rural/town/city). If frequent illegal waste burning is found/occurs, necessary action along with immediate control measures is to be taken by concerned authority under relevant rules/norms.	Concerned Municipal Board/Urban Affairs Dept./Concerned District Administration, Autonomous District Councils (Khasi, Jaintia, Garo)/P.H.E. etc., F&ES Station
3.	Forest Fires: If forest fire is found/occurs, immediate control measures is to be taken by concerned authority.	Concerned O/o of the DFO/Forest & Env. Dept., concerned F&ES Station, District Administration
4.	Unauthorised operations/ cluster activities /mining/industrial activities: If such unauthorised mining/ industrial units etc are found, necessary action along with immediate closure is to be taken by concerned authority under relevant rules/norms.	Divisional Mining Officer/ Mining & Geology Dept., MSPCB, District Administration etc.

(viii). Categorization of industries zones:

Categorizing the state of Meghalaya into zones based on the state of environment may be explored and implemented so as to enable the state to choose whether to permit or disallow the setting up of particular type of industries or even ban certain types either within particular zones or throughout the state. In Meghalaya, while Byrnihat is the only designated non-attainment city/town, there is no designated critically/severely polluted area in the state. The categorization into environment zones will go a long way in ensuring that areas within the state do not turn into non-attainment or critically/severely polluted areas.

15. Timeline & Budget:

The timeline for formulation & approval of relevant policy/guideline/notification etc. are to be provided at the earliest or by FY 2025-26. However, ground level implementation of control measure activities/sector wise emission reduction and implementation of all relevant policies/guidelines/notifications etc. within the state is to be carried out in a continuous manner.

For implementing relevant actions/activities, concerned departments may avail fund from relevant schemes/programmes of union govt./parent ministry/state govt./departmental fund etc. (in line with convergence of schemes/programmes). The Finance Dept. of Meghalaya Govt. may also provide special budget provision/allocation for air pollution control measures w.r.t. Meghalaya SAP, as and when required by concerned depts/stakeholders, and/or as per decision of Monitoring/Steering Committee constituted under NCAP vide Notification dated 21-08-2019/29-01-2024.

Further, the Govt. of Meghalaya/concerned depts. may also explore funding opportunities from external sources viz. international funding agencies like World Bank, Asian Development Bank, United Nations Development Programme, Union/Central Govt., private sector companies through corporate social responsibility (CSR) initiatives, and/or Philanthropic organizations such as foundations and non-profit organizations etc.

16. Review & Approval Mechanism

The Monitoring Committee (i.e. Air Quality Monitoring Committee) under NCAP shall revise/update the Meghalaya SAP from time to time or as and when required, and forward the same to the Steering Committee for final approval.

The progress/implementation of Meghalaya SAP for clean air is being monitored/reviewed on a quarterly/six-monthly basis by the State Monitoring Committee (headed by ACS/PS of Forest & Env. Dept) and reported to the Steering Committee (headed by the Chief Secretary to the Govt. of Meghalaya) as per Notification No. Env.2/2018/187 Dtd. 21.08.2019/revised Notification No. ENV.2/2028/1331, dated 29-01-2024.

With permission of the Chairman of the Committee, other concerned/responsible depts./stakeholders, officials may be invited to the review meeting for presentation of respective progress (as and when required).

17. Observations and suggestion:

The objectives of State Action Plan is to reduce air pollution and improve air quality state-wide. Incorporating all of the mentioned measures is crucial to achieving the objective towards cleaner air quality thereby guaranteeing a healthier habitation for citizens of the state.

However, it is observed that there are gaps and lacunae in the information/data shared by various departments which is the major hurdle to realising the goal towards clean air. The same therefore needs to be provided in order to achieve the objective of SAP.

Further, it may be mentioned that there are several schemes/programs under central and state ministries/governments whereby financial assistance can be availed for implementing the action plan/activities towards improving air quality in the state in general and the non-attainment city in particular. Below are the tentative/provisional list of line ministries under which various schemes/programs are mentioned whereby sector specific action can be planned and executed to improve air quality:

S.N.	Ministry	Major Emission Sources	Focused Action Areas
1	Ministry of Housing and Urban	<ul style="list-style-type: none"> Uncovered construction activity Open storage and carriage 	❖ Measures to control dust, manage C&D waste & Municipal Solid Waste under Swachh Bharat Mission (SBM) .

S.N.	Ministry	Major Emission Sources	Focused Action Areas
	Affairs	<ul style="list-style-type: none"> of construction materials • Open dumping of C&D waste and Municipal Solid Waste • Fires at Legacy waste dumpsites and Landfills • Open Burning of Waste including Plastic • Older Public Transport Fleet 	<ul style="list-style-type: none"> ❖ Supplement efforts of the States to strengthen urban transport under policies such as National Urban Transport Policy and Metro Rail Policy. ❖ Undertake greening of open spaces and street sides, strengthening of non-motorized transport infrastructure under AMRUT Mission ❖ Inclusion of air quality management in building bye laws
2	Ministry of Power	<ul style="list-style-type: none"> • Thermal Power Plants • Older coal-based power plants • DG sets 	<ul style="list-style-type: none"> ❖ Implementation of emission norms in thermal power plants ❖ Phasing out old coal-based power plants ❖ Uninterrupted electric power supply ❖ Integration of renewable energy (RE) capacity ❖ Acceleration of E-mobility transition in the country by supporting EV Charging Infrastructure
3	Ministry of Petroleum and Natural Gas	<ul style="list-style-type: none"> • Exploration and production of Oil & Natural Gas refining, distribution • Transportation of petroleum products • Use of petroleum products such as kerosene • DG sets 	<ul style="list-style-type: none"> ❖ Shift to cleaner fuels for industries, transport and cooking needs through schemes such as SATAT, PMUY, etc. ❖ Discourage use of kerosene (except for industrial use) by implementation of Direct Benefit Transfer (DBT) in Kerosene
4	Ministry of Agriculture & Farmers' Welfare	<ul style="list-style-type: none"> • Stubble burning • Pesticides/Insecticides • Tillage operations 	<ul style="list-style-type: none"> ❖ Implementation of central sector schemes to convert stubble as a 'resource' through Ex-situ and In- Situ treatment of biomass residues. ❖ Encourage use of organic / eco-friendly /natural pesticides/insecticides
5	Ministry of New and Renewable Energy	<ul style="list-style-type: none"> • Organic / food waste • Horticulture waste 	<ul style="list-style-type: none"> ❖ Implementation of biogas/ bio- CNG/ composting plants for managing organic/ food/ horticulture waste ❖ Implementation of waste to energy plants for managing municipal solid waste ❖ Implementation of biomass power projects for managing stubble
6	Ministry of	<ul style="list-style-type: none"> • Older Polluting Vehicles 	<ul style="list-style-type: none"> ❖ Implementation of BS-VI standards

S.N.	Ministry	Major Emission Sources	Focused Action Areas
	Road Transport and Highways	<ul style="list-style-type: none"> Road Development 	<p>from 1st April 2020 throughout the country</p> <ul style="list-style-type: none"> ❖ Phasing out old vehicles through implementation of vehicle scrapping policy ❖ Promotion of cleaner fuels and fuel technology ❖ Decongestion of urban traffic by construction of bypass, ring roads ❖ Lane expansion, flyovers, etc. ❖ Use of C&D waste in National Highway Construction
7	Ministry of Heavy Industries	<ul style="list-style-type: none"> Older Polluting Vehicles 	<ul style="list-style-type: none"> ❖ Implementation of Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles (FAME) Scheme (Phase II)
8	MoEFCC	-	<ul style="list-style-type: none"> ❖ CAMPA/Nagar Van Yojna

Meghalaya State Action Plan for Prevention and Control of Air Pollution



Prepared/compiled by

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