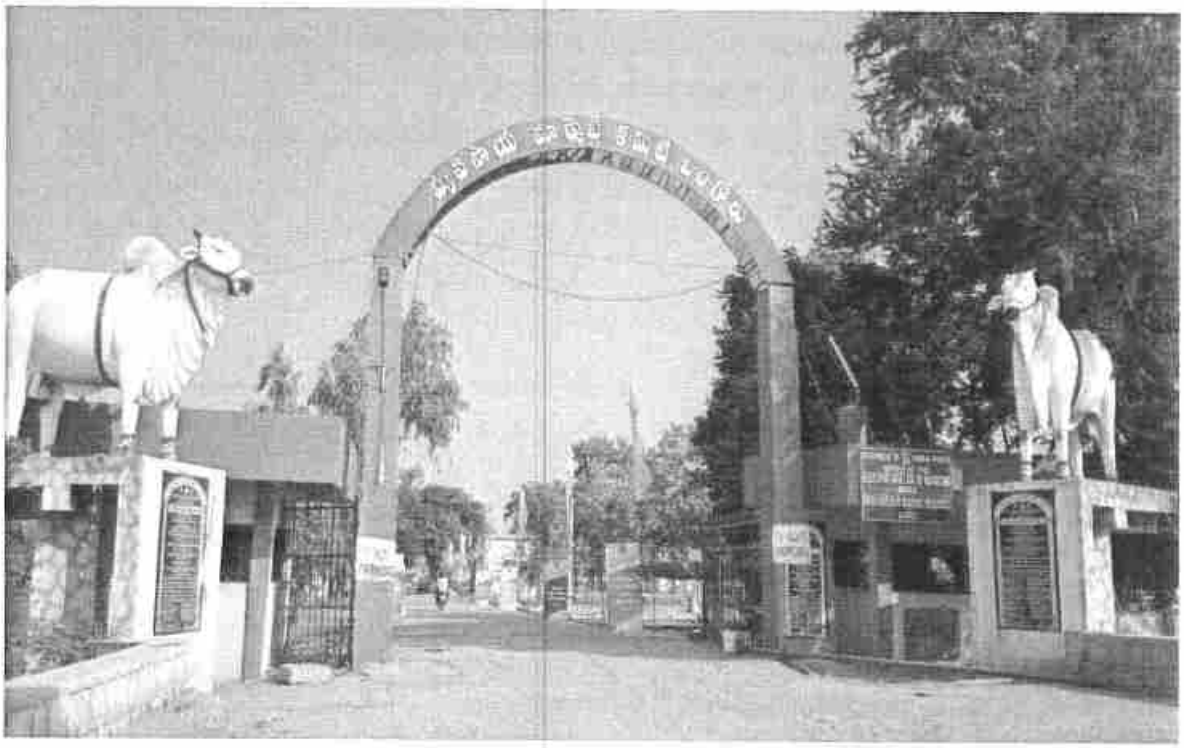
Comprehensive Action Plan (with Micro Planning) for Clean Air in Non-attainment Cities of Andhra Pradesh

Ongole City



Andhra Pradesh Pollution Control Board

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1. Hon'ble National Green Tribunal directions on non-attainment cities

Hon'ble National Green Tribunal, Delhi in its Orders, dated 06.08.2019 in O. A. No. 681 of 2018 on non-attainment cities has issued the following directions to comply with:

1. Actions Plans need to be prepared by States for the additional 20 NACs on the pattern of 102 NACs within three months and after its approval by CPCB within two months, States must initiate time bound action on remediation within next three months.

In this order the Hon'ble National Green Tribunal, Delhi has directed that the "pattern of such plans for 102 cities, already prepared". These earlier plans were made according to the NGT orders, dated 08.10.2018 in O. A. No. 681 of 2018 on non-attainment cities. These have given the following directions to comply with:

1. All the States and Union Territories with non-attainment cities must prepare appropriate action plans within two months, aimed to bring down the air pollution levels to the prescribed norms within six months from the date of finalization of action plans.

2. Action plans may be prepared by six-member Committee comprising of Directors of Environment, Transport, Industries, Urban Development, Agriculture and Member Secretary, State Pollution Control Board or Committee of the concerned State. The Committee may be called Air Quality Monitoring Committee (AQMC). The Committee will function under the overall supervision and coordination of Principal Secretary, Environment of the concerned State or the Union Territory. This may be further supervised by the Chief Secretaries concerned or their counter parts in Union Territories by ensuring intra-sectorial coordination.

3. The action plan will indicate steps to be taken to check different sources of pollution having speedy, definite and specific timelines for execution.

4. The Chief Secretaries of the State and Administrators / Advisors to Administrators of the Union Territories will be personally accountable for the failure to formulate action plans, as directed.

2. Constitution of Air Quality Monitoring Committee (AQMC)

In compliance to the directions of Hon'ble National Green Tribunal, Environment, Forests, Science & Technology Department, Govt. of Andhra Pradesh has issued the G. O. R. T. No. 167, dated 14.11.2018 constituting the Air Quality Monitoring Committee with the following members for preparation/ revision of action plans to control air pollution in the non-attainment cities of Andhra Pradesh. The same committee will look after the newly added eight non-attainment cities.

Table 1: Air Quality Monitoring Committee

S. No.	Member of the Committee	Designation
1	Commissioner, Transport	Member
2	Commissioner, Industries	Member
3	Commissioner & Director, MA&UD	Member
4	Commissioner & Director, Agriculture	Member
5	Member Secretary, APPCB	Member Convener
6	Special Secretary to Government Environment, Forest, Science & Technology Department	Member

3. Newly Added Non-attainment Cities in Andhra Pradesh

Central Pollution Control Board (CPCB) had earlier identified five cities in Andhra Pradesh, namely, Visakhapatnam, Vijayawada, Guntur, Nellore and Kurnool as non-attainment cities. In addition to the above, Central Pollution Control Board (CPCB) has identified additional 08 cities and towns as non-attainment for not meeting the National Ambient Air Quality Standards (NAAQS) for PM10 in Andhra Pradesh. These include Srikakulam, Vizianagaram, Rajamahendravaram, Eluru, Ongole, Chittoor, Kadapa and Ananthapur. (see table 2: PM 10 values in the new Non-attainment cities of Andhra Pradesh)

CPCB has issued directions to APPCB under Section 18 (1) (b) of the Air (Prevention and Control of Pollution) Act, 1981 for preparation of action plans, in coordination with stakeholder departments for control air pollution in the said cities and towns.

Table 2: PM 10 values in the new Non-attainment cities of Andhra Pradesh

S. No.	Cities	Particulate Matter (PM 10) µg/m^3							Annual standard
		2014	2015	2016	2017	2018	2019	2020	
1	Srikakulam	-	-	-	68	70	63	57	60 µg/m^3
2	Vizianagaram	-	-	-	63	65	65	59	
3	Rajamahendravaram	70	61	62	65	75	63	56	
4	Eluru	97	79	70	70	70	63	60	
5	Ongole	63	67	65	65	65	60	50	
6	Chittoor	68	69	63	69	61	54	42	
7	Kadapa	-	-	-	69	61	52	43	
8	Anantapur	76	86	85	72	71	67	60	

The Air Quality Monitoring Committee has prepared the multi-sector clean air action plans based on the information available from the concerned departments and implementing bodies.

The AQMC has considered the guiding principles linked with the National Clean Air Programme (NCAP), the Air (Prevention and Control of Air Pollution) Act, 1981 and other concerned regulations in different sectors and the good practices that have bearing on the quality and effectiveness of the plans to meet the NCAP target of 20-30 percent reduction by 2024.

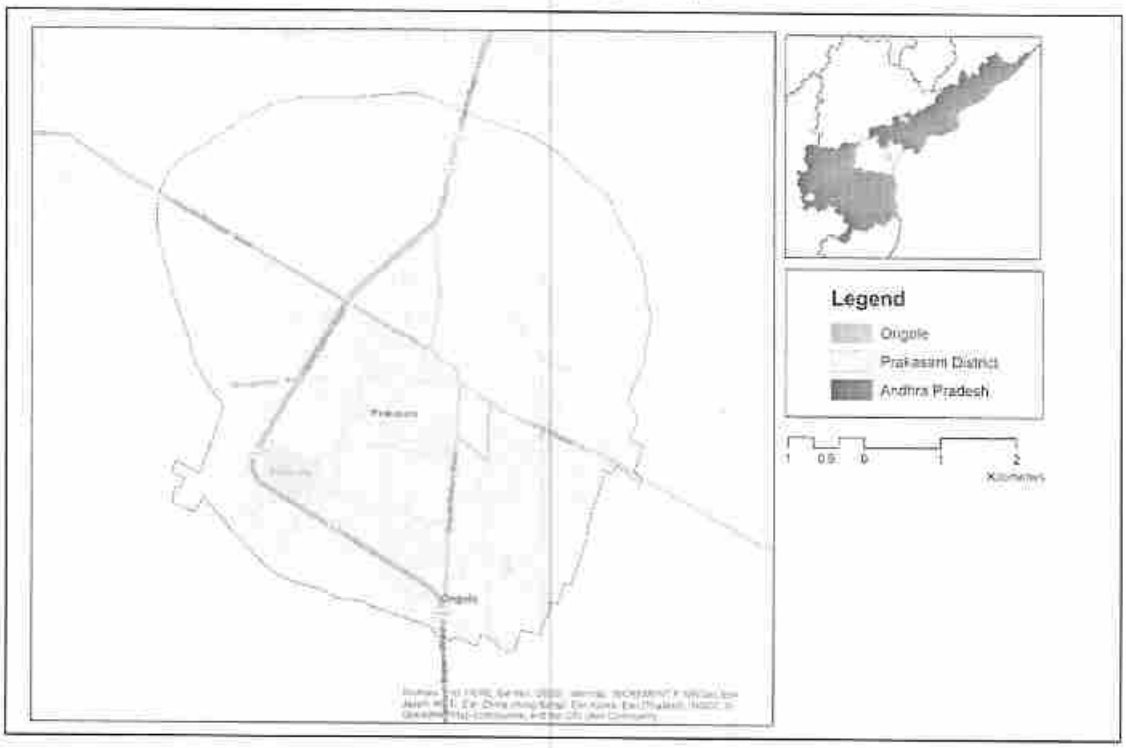
Accordingly, the approved action plans by AQMC for additional eight non-attainment cities namely Srikakulam, Vizianagaram, Rajamahendravaram, Eluru, Ongole, Chittoor, Kadapa & Ananthapur in the state of Andhra Pradesh have been submitted to CPCB on 27.12.2019 for further approval. CPCB vide letter dt: 23.01.2020 has issued certain recommendations to revise the action plans.

The multi-sector plans have drawn upon the regulatory requirements in each sector and have sought robust pollution source assessment, monitoring and advanced air quality management strategies for measurable improvement in air quality. Measures that are part of the national and state regulatory requirements are common to all cities. Some measures are unique to a city depending on the local imperatives. The plans also seek to align the budget lines of the different sectors for more effective leveraging of the available resources. The plans include measurable outcomes and service level benchmarks and also indicate the improvement needed in the processes. The plans seek to promote equitous, affordable and innovative solutions. This also seeks air shed approach to reduce the regional influence on local air quality. This has outlined the institutional arrangement for effective implementation.

4. Ongole City and its Air Quality

Ongole is the district headquarters of Prakasam district, Andhra Pradesh. The city is situated on the Eastern Coastal Plains of Andhra Pradesh with a distance of 15 km from the Bay of Bengal. Ongole city is located at 15.50°N 80.04°E. The city has a population of 2.04 lakh as per 2011 census & flourishing with an additional floating population of about 15,000 every day coming from other parts to the city.

Figure 1: Map of Ongole city limits



APPCB has been monitoring the ambient air quality of Ongole city at four stations under National Ambient Air Quality Monitoring Programme (NAMP) till date for the parameters PM10, SO2, NO2 and ammonia as against 12 parameters as per Notification No B-29016/20/90/PCI-L dated 18 November 2009 of CPCB. Now, the ambient air quality of Ongole city is monitored by total of four manual monitoring stations. Monitoring of PM2.5 was started at two stations and they are at Sri Nilayam and Municipal office. (see Table 3: Location and type of monitoring stations in Ongole).

According to the CPCB criteria Ongole has adequate number of manual monitoring stations. But it needs to plan and expand its real time monitoring to generate real time data.

Table 3: Location and type of monitoring stations in Ongole

S. No.	Location	NAMP / CAAQMS	Types of pollutant monitored	Category of station
1	Sri Nilayam, Sambasiva Nagar, Ongole	NAMP	PM10, PM2.5, SO_2, NO_2, NH_3	Residential
2	Prakasam Milk Producer Company Ltd, Ongole	NAMP	PM10, SO_2, NO_2, NH_3	Residential and Industrial
3	Municipal Office, Ongole	NAMP	PM10, PM2.5, SO_2, NO_2, NH_3	Commercial
4	APIIC, Administrative Office, Growth Centre, Gundlapalli, Maddipadu, Prakasam	NAMP	PM10, SO_2, NO_2, NH_3	Industrial

As per the NAMP data from one station i.e., Sri Nilayam indicated the non-attainment status of Ongole city. Based on the CPCB NAMP database, PM10 has continuously been above the standards since 2014 and the remaining pollutants are well within the limits. The overall trend of PM10 is stable (See Annexure I). NO_2 and SO2 levels are well below the standards. The air quality within the city is also influenced by the pollution sources around the city. Air quality of the Ongole city is given below.

Table 4: Air Quality Monitoring Results of Ongole City

S. No.	Parameter	2014	2015	2016	2017	2018	2019	2020	Annual average Standard
1	PM10	63	67	65	65	65	60	50	**60**
2	SO2	4.6	4.9	5.1	5.4	5.1	4.8	4.6	**50**
3	NOx	21.5	28.6	28.9	26.5	22.9	19.2	17.0	**40**
4	NH3	---	---	---	28	30	29	24.8	**100**
Average of no. of stations		1				4			---
5	PM2.5	---	---	---	---	---	25	23	**40**
Average of no. of stations		---	---	---	---	---	3	2	---

Note: All values are expressed in $\mu g/m^3$

5. National Air Quality Index and daily emergency response

The non-attainment cities under the NCAP are also required to adopt graded response action plan for short-term emergency response during smog episodes or high pollution days. The Ministry of Environment, Forest and Climate Change (MoEF & CC) had notified the National Air Quality Index (NAQI) and a corresponding health advisory in 2015. Based on this index, daily pollutant concentrations are classified and graded as good, satisfactory, moderate, poor, very poor and severe and color-coded so that the general public can understand the gravity of the problem. The health advisory has also been framed to indicate the expected health outcomes at varying severity of daily air pollution (see Table 5: National Air Quality Index of India and Table 6: Health Advisory at different AQI levels in India). This is designed to control daily pollution peaks and reduce exposure and associated health risk. Smog episodes largely occur when weather is adverse with calm atmosphere or no wind, cold temperature, and lower mixing height of air that traps air and pollution very close to the ground. Short-term policy action can control further loading of emissions and prevent higher smog peaks.

Table 5: National Air Quality Index of India

AQI Category (Range)	PM10 24-hr	PM2.5 24-hr	NO2 24-hr	O3 8-hr	CO 8-hr (mg/ m3)	SO2 24-hr	NH3 24-hr	Pb 24-hr
Good (0-50)	0-50	0-30	0-40	0-50	0-1.0	0-40	0-200	0-0.5
Satisfactory (51-100)	51-100	31-60	41-80	51-100	1.1-2.0	41-80	201-400	0.5-1.0
Moderately polluted (101-200)	101-250	61-90	81-180	101-168	2.1-10	81-380	401-800	1.1-2.0
Poor (201-300)	251-350	91-120	181-280	169-208	Oct-17	381-800	801-1200	2.1-3.0
Very poor (301-400)	351-430	121-250	281-400	209-748*	17-34	801-1600	1200-1800	3.1-3.5
Severe (401-500)	430+	250+	400+	748+*	34+	1600+	1800+	3.5+

Note: Ambient concentration values of all regulated pollutants are compared with corresponding standards and an exceedance factor is used for qualitative assessment of air quality. Air quality for a particular pollutant is defined as good, satisfactory, moderate, poor, very poor and severe if concentration value is < 0.5, between 0.5 and 1.0, >1.0 but <1.5, and >1.5 times the standard value for that pollutant respectively.
Source: Ministry of Environment and Forest and Climate Change

Table 6: Health advisory at different AQI levels in India

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

There is a need to install real time Continuous Ambient Air Quality Monitoring (CAAQM) system in Ongole city for generation of real time air quality data and enable implementation of the air quality index and graded response action plans. Following that and based on the AQI categories emergency action can be defined and codified for implementation. The Air Quality Index (AQI) of all the cities of Andhra Pradesh state is being prepared by APPCB and placed in its website.

6. Air Pollution Sources at Ongole City

As of 2020, pollution source inventory and source apportionment studies have not been carried out for the city. Broad review shows that the major sources contributing to PM10 in Ongole City are vehicular movement and construction activities. The reasons for higher values of PM10 could be attributed to re-suspension of road dust, emissions from vehicle movement, burning of biomass, municipal solid waste & garbage, construction activities, transportation of construction material such as sand, crusher metal, soil, congested roads, vehicle service centers, use of wood & coal for domestic & commercial cooking activities, etc. It is however not possible to assess their relative contribution.

Industrial Emissions

There are few industries within the Ongole Municipal Corporation limits which includes pesticide and dairy products and paraboiled rice mill. As per the CPCB Classification, there are three red category, one orange category, and none green category industries within municipal limits. The city also does not have any major iron and steel and cement plants in the vicinity. (See Table 7: List of industries within the Ongole Municipal Corporation).

Though all the major plants are registered under the APPCB, granular data collection on stack emissions, fuel used and status of air pollution control devices is required, along with data on the state of implementation of Continuous Emission Monitoring System (CEMS), management of fugitive emissions and use of clean fuel.

Table 7: List of industries within and upto 15 kms of Ongole City

S. No.	Name & Address of the Industry	Line of Activity	Distance from City
1	M/s. Bhagiradha Chemicals & Industries Ltd., Cheruvukummupalem (V), Ongole (M), Prakasam District	Pesticide Technical Mfg. unit	Within City
2	M/s. Prakasam Milk Producer Company Limited, Plot.No. 132 &138, Kurnool Road, Pernamitta (V), Santhanuthalapdu (M), Prakasam District	Dairy	Within City
3	M/s. Ongole Medical Waste Treatment facility, Kandulur (V), Tangutur (M), Prakasam District	Commmon Biomedical waste Treatment Plant	12

4	M/s. SIGC Chemicals, Plot No. 13 APIIC, IE Pernamitta (V) Ongole (M), Prakasam District	Reactivation of Raney Nickel catalyst from Spent Raney Nickel Catalyst, with 200 Kg/hr wood fired boiler	Within City
5	M/s. Cream Line Dairy Products Ltd, Pidathalagudipadu (V), Santhanuthalapadu (M), Prakasam District	Dairy	15

Source: Andhra Pradesh Pollution Control Board.

Fuels containing high levels of sulphur lead to high emission of particulates and gaseous emissions like SO_x and contribute to 'secondary' particulate load. High-sulphur fuels also contain heavy metals, which add to the toxicity and contamination of the environment. The Supreme Court of India vide order of 24 October 2017 has banned use and sale of petroleum, coke and fuel oil in Haryana, Rajasthan and Uttar Pradesh. Delhi had banned these fuels in 1998. Only the cement, lime kiln, calcium carbide and gasification industries are allowed to use this as feedstock but not fuel. Further, vide order dated 13 July 2018, the Supreme Court has asked for a ban on import of pet-coke into India, with specific exemptions given to these four categories of Industries. The Ministry of Commerce, GOI has issued an order dated 17 August 2018 to this effect. Further, under India's commitments to the WTO, the country's laws are bound to treat imported and domestic pet coke equally. As of November 2018, the Ministry of Commerce and MoEF & CC is considering restricting the usage of all pet coke in India—domestic and imported. In future, policy instruments such as tax incentives might be explored as an option to incentivize industries to upgrade technologies and fuel that will bring down emissions. Following this CPCB has asked state governments to frame a policy to discourage pet coke and furnace oil as combustion fuels.

In addition, following the Supreme Court order dated 29 January 2018, CPCB notified NOx and SOx standards for 16 groups of industries out of 35 industries as directed by the Supreme Court. This will have to be enforced nation-wide. Accordingly the 16 category of industries need to be identified for implementation.

There needs to be thorough inspection for units to collect granular and transparent data on the following aspects to promote Best Available Technology (BAT):

- Stack emissions
- PM emission load per unit per day
- State of Air Pollution Control (APC) Devices
- State of CEMS monitoring
- Stack height
- Management of fugitive emissions
- Extent of green cover, buffer zones and plantations around major plants
- Paved roads within and around the factories to minimize dust due to freight and raw material transportation
- Detailed Environment Health and Safety norms inventory for all operating units

Address management and disposal of industrial waste in industrial areas that are vulnerable to open burning. Also to address emissions from large number of small and medium scale units adopts detailed mitigation strategies including common boiler policy, clean fuel and pricing strategy.

Industrial Siting Policy

Like many other states, Andhra Pradesh Pollution Control Board has a siting policy in place. There are specific guidelines' for the establishment of cement factories, stone crushers, dairies, LPG bottling units, cashew processing units, rice mills, pesticide units and sponge iron manufactures. All units with investment of Rs 10 Crores and above must be away from residential areas, educational institutions and national highways. Additionally, they must also have clearly demarcated buffer zones, which can only be used for the following.

1. Vehicle parking.
2. Administrative building and security office.
3. Green belt.
4. Electrical Substation / transformers.
5. Fuel Station.
6. Water supply sumps and
7. Other non-industrial activities

Brick Kilns and Stone Crushers

There are no brick kilns within the city limits and upto 15 km radius from the city. There are no hot mix plants, stone crushers and concrete batching plants in the vicinity of the city.

Thermal Power Plants

There are no power plants located within the city limits and upto 40 km radius from the city limits.

Municipal Solid Waste

The city generates 125 TPD of municipal solid waste. Dry and Wet waste segregation is carried out at the door-to-door level manually and treated through different processes. Wet waste constitutes 66 percent and is sent to Vermi composting (44 percent) and bulk generators (12 percent) whereas dry waste constitutes 44 percent which is sent to MRF centre (20 percent), domestic medical waste (3 percent) and scientific landfill site (21 percent). There is one scientific landfill site at Guttikondavaripalem, Division No 9, Ongole.

There is one biomedical waste management facility in Prakasam district, which is located at a distance of 12 km from the Ongole city.

Construction and Demolition Waste

Due to a vast number of residential and commercial projects that are ongoing in the city limits, there is a continuous problem of generation and management of construction and demolition waste (C&D). As of 2020, there are about 150 active construction sites within the city limits and about 8 tonnes per day of C&D waste is generated in Ongole. There is no scientific processing of this waste as of now.

Infrastructure for collection, segregation, in-situ re-utilization in the construction sites, transportation, recycling plants and market uptake of recycled products in the construction industry will have to be planned according to the Construction and Demolition Rules, 2016.

In the year 2018, the Ongole Municipal Corporation issued a circular, enforcing the implementation of C&D Waste Rules, 2016 within the city limits.

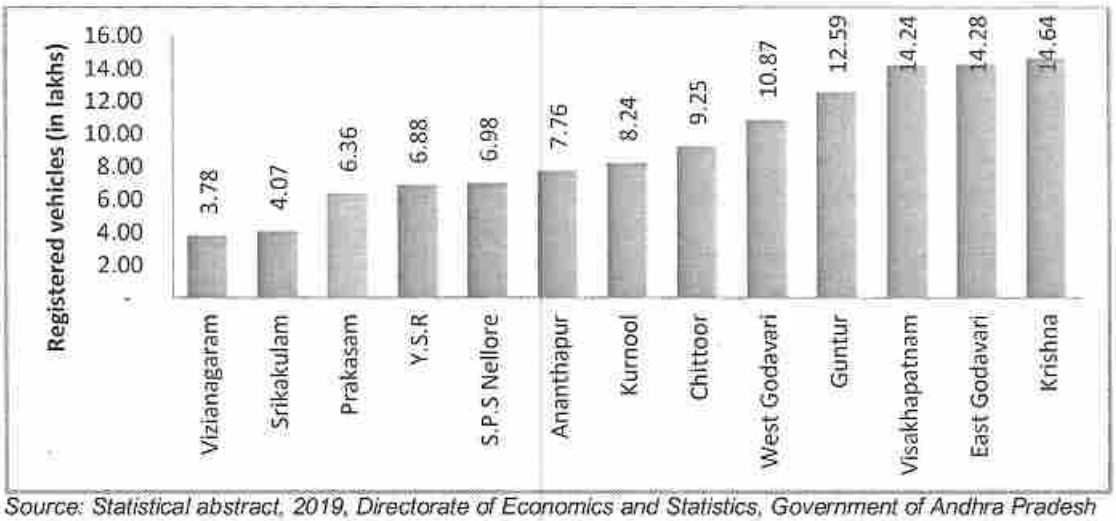
These guidelines are available for dust control from construction. These include adequate covering, barricades at construction sites, sprinkling, washing of vehicles, covering, use of gunny bags while plastering etc Planning secretaries are creating awareness among the Builders, site owners and Building owners about the CPCB guidelines and rules. Those not following the guidelines are penalized, and the building plan approvals are promptly cancelled.

Vehicular Emissions

Vehicles are among the dominant sources of air pollution and are responsible for high toxic exposure. Therefore, mobility strategy is a critical intervention point to control toxic emissions and exposure from vehicles.

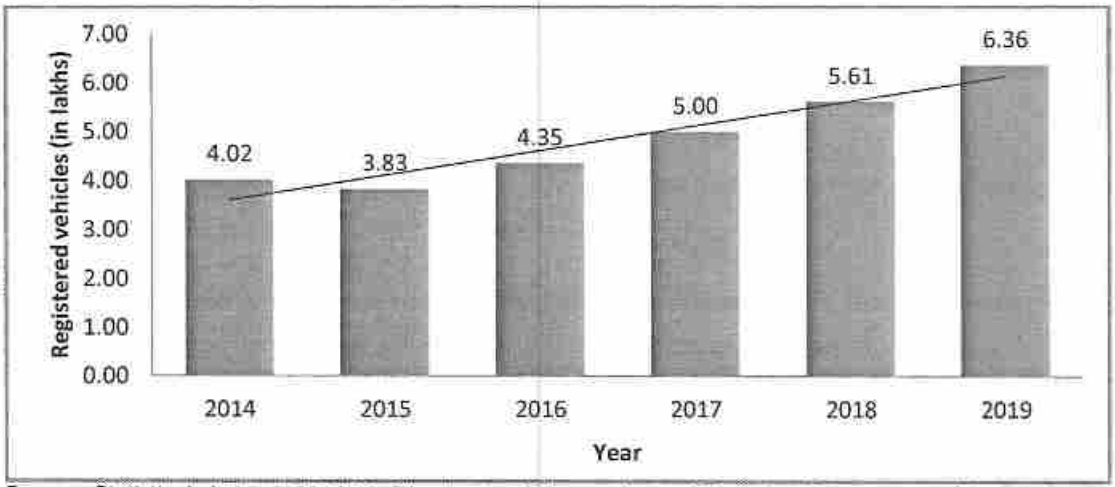
As of March 2019, the Prakasam district had about 5.3 per cent (i.e. 6.36 lakhs) of the total registered vehicles in the state of Andhra Pradesh (i.e. 1.19 crores) *(see Graph 1: District-wise number of registered motor vehicles in Andhra Pradesh [March 2019])*. Between the years 2015-19, vehicles have grown at a rate of 10.7 per cent *(see Graph 2: Year-wise growth of registered motor vehicles in Prakasam* district).

Graph 1: District-wise number of registered motor vehicles in Andhra Pradesh [March 2019]



Source: Statistical abstract, 2019, Directorate of Economics and Statistics, Government of Andhra Pradesh

Graph 2: Year-wise growth of registered motor vehicles in Prakasam district

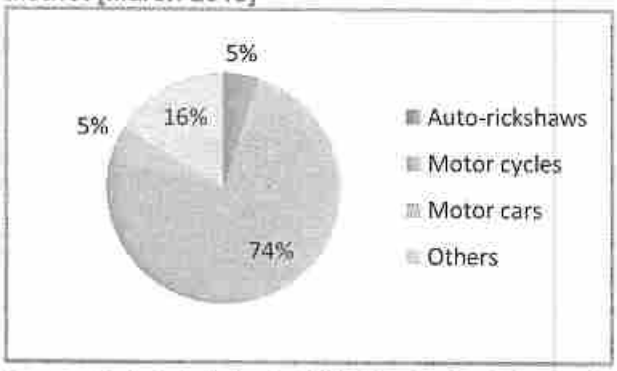


Source: Statistical abstract, 2014-19, Directorate of Economics and Statistics, Government of Andhra Pradesh

Two wheelers (i.e. motor cycles) dominate the fleet- 74 per cent of the total registered vehicles *(see*

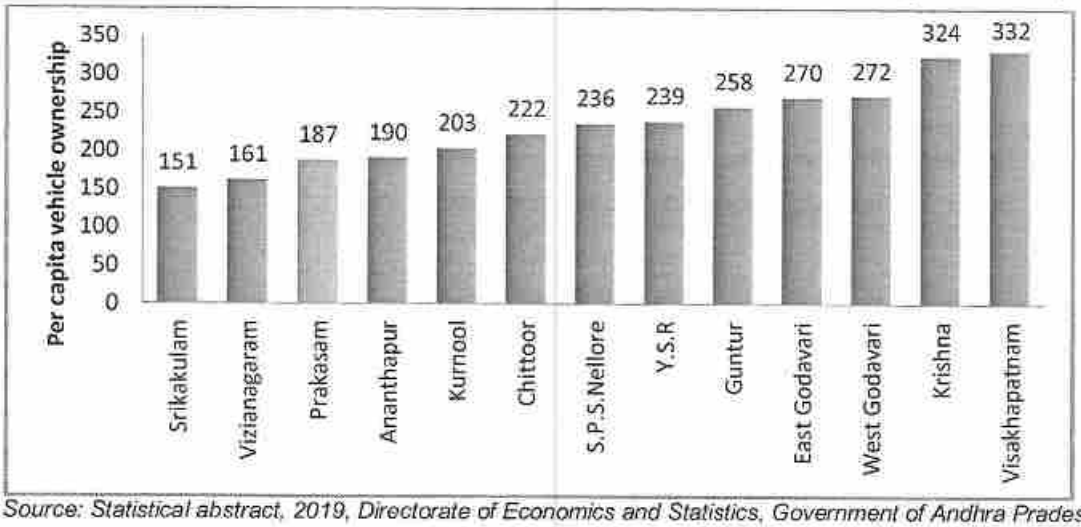
Graph 3: Percentage distribution of registered vehicles as per vehicle category in Prakasam district [March 2019]). The vehicle per thousand population in the district is 187 and is third lowest in the state (see *Graph 4: District-wise registered motor vehicles per thousand population [March 2019]).*

Graph 3: Percentage distribution of registered vehicles as per vehicle category in Prakasam district [March 2019]



Source: Statistical abstract, 2019, Directorate of Economics and Statistics, Government of Andhra Pradesh

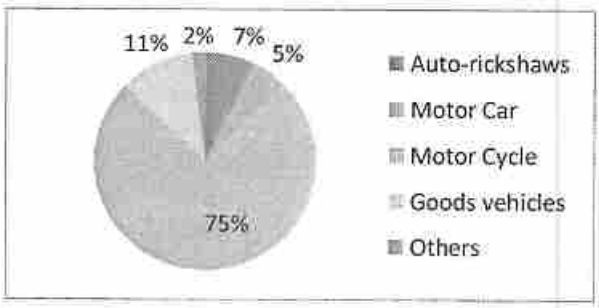
Graph 4: District-wise registered motor vehicles per thousand population [March 2019]



Source: Statistical abstract, 2019, Directorate of Economics and Statistics, Government of Andhra Pradesh

Ongole city has total 4.61 lakhs registered vehicles. The motor-cycles in the city also dominates the vehicular fleet with a share of 75 per cent. It is followed by goods vehicles (i.e. 11 percent), auto-rickshaws (i.e. 7 percent), motor-car (i.e. 5 percent), and others *(see Graph 5: Percentage distribution of registered vehicles as per vehicle category in Ongole city).*

Graph 5: Percentage distribution of registered vehicles as per vehicle category in Ongole city



Source: Regional Transport Authority (RTA), Ongole

PUC System

There are 10 PUC centres within the municipal boundary of Ongole and approximately 70 percent of the vehicles are being inspected every year in these centres. These centres are audited once in three months by the transport department. Currently, PUC centres are not linked to the centralised server but then there is a proposal to do the linkages to the transport department server.

At the city level, the traffic police also have a surveillance programme for detecting visibly polluting vehicles. These vehicles are heavily penalized.

This is an opportunity to expand the CNG programme especially for the public transport, intermediate public transport like autos and taxis, and small commercial vehicles. This requires a roadmap for targeted replacement of existing fleet with the vehicles on alternative fuels.

The State Government has also issued guidelines for levying "green tax"[ii], wherein older polluting vehicles are taxed higher to discourage them to ply. Vehicles over a certain age have to pay green tax, in accordance to the polluter pay's principle. Vehicles operating on LPG, CNG, Battery or Solar Power are exempt for paying green tax. This is expected to accelerate fleet renewal and phase out older vehicles. It must be noted that the green tax currently is very low (Transport vehicles are expected to pay only Rs 200 per annum after 7 years of registration and non-transport vehicles are expected to pay between Rs 250-500 for five years after 15 years of registration). It is recommended to incorporate a scrappage policy for older vehicles and implement green taxes more strictly.

Electric Mobility[ii]

The Andhra Pradesh government notified the electric vehicle policy in the year 2018. The policy emphasizes on manufacturing of Electric Vehicles (EV) and its components, charging infrastructure, hydrogen generation and refuelling infrastructure, demand creation for EVs, research and development.

The policy aims to achieve the following targets:

- Attract combined investments of over INR 30,000 crore in the next 5 years across the electric mobility ecosystem with an employment potential for 60,000 people.
- Target to bring in manufacturing units of high density energy storage of at least 10GWh capacity in the next 5 years to cater to both domestic as well as export market.
- Target to convert 100 per cent of APSRTC bus fleet of over 11,000 buses into electric buses by 2029, with the first phase of 100 per cent conversion of bus fleet in top 4 cities by 2024.
- Phase out all fossil fuel based commercial fleets and logistics vehicles in top 4 cities by 2024 and all cities by 2030.
- All forms of government vehicles, including vehicles under government corporations, boards and government ambulances etc. will be converted to electric vehicles by 2024.
- Target to have 10 lakh EVs, combined across all segment of vehicles, by 2024.
- Target to have 1 lakh slow and fast charging stations by 2024.

This is an opportunity to scale up zero emissions mobility in Ongole city. The state level policy may be complemented by a city level electric vehicle policy with targeted electrification over the next five years. Ongole city can set the milestones in terms of charging infrastructure and targeted electrification of three-wheelers, two-wheelers, small commercial vehicles, feeders and delivery fleet

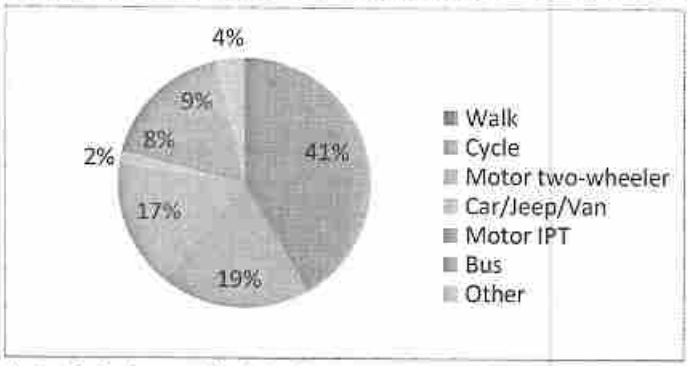
Public Transport and Mobility

Ongole city is connected to Vijayawada and Chennai via National Highway (NH) 16 which is a part of Golden Quadrilateral highway network, bypasses the city. Ongole railway station falls on the

railway route between Vijayawada and Chennai and is administered under Vijayawada railway division of South Coast Railway zone (formerly South Central Railway). In terms of earnings and outward passengers handled, Ongole is categorized as a Non-Subruban Grade-3 (NSG-3) railway station. For air commute, the nearest airport is located 167 km away in Vijayawada.

At the district level, according to the 2011 Census, 60 per cent of the total work trips in urban areas of the district are being made by walk and bicycle followed by motor two-wheeler and others *(see Graph 6: Modal share in urban areas of Prakasam district)*. Walk trips dominate at about 41 percent share followed by bicycle at 19 percent. Car share is 2 percent. Bus share is mere 9 percent.

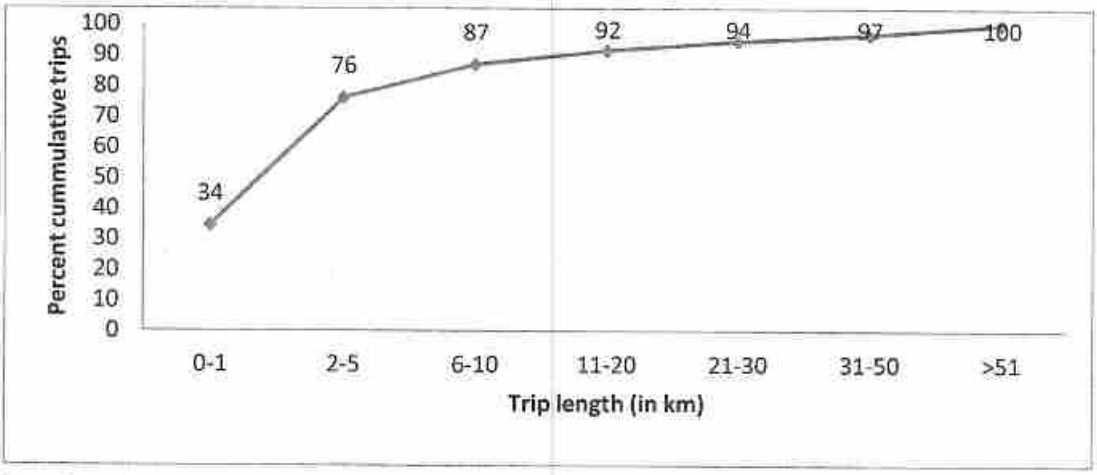
Graph 6: Modal share in urban areas of Prakasam district



Note: Data does not include "no travel" and "distance not stated" category in Census statistics
Source: Census of India 2011

The distribution of trips as per trip length shows that more than 50 percent of the trips end within bicyclable distance which shows a potential to attract people towards bicycling provided adequate infrastructure is made available *(see Graph 7: Distribution of trip length from place of residence to workplace as per trip length in Prakasam district)*.

Graph 7: Distribution of trip length from place of residence to workplace as per trip length in Prakasam district



Note: Data does not include "no travel" and "distance not stated" category in Census statistics
Source: Census of India 2011

Public Transport Service

Ongole city does not have dedicated bus transport system and is served by the buses of Andhra Pradesh State Road Transport Corporation (APSRTC) that runs inter-city bus service in the state. On a daily basis, 146 APSRTC buses are being departed from city bus station to different places including other districts and states at frequency of 10 minutes. Based on the travel pattern, road

network pattern, and road inventory of the city, intra-city bus transport can be introduced. For a city size of Ongole, mini /midi buses can be used for operation. This service should have routes that penetrate within the city and should be in accordance to accepted level as per MOUD service-level benchmark.

Para Transit System

There exists only unorganized Intermediate Para Transit (IPT) in form of shared services and 33,445 auto-rickshaws. These cater to bulk of the public transport service in the city. These are low occupancy but high frequency services that meet the local requirement and provide efficient connectivity including the last mile connectivity. Ongole should reorganize and modernize this system and upgrade these services with GPS, route rationalization, service level benchmark. This is an important opportunity to reduce dependence on personal vehicles. These vehicles can also be linked with electric vehicle programme.

Walking and Cycling

The condition of existing footpath is poor which forces pedestrians to walk on the carriage way. On street vendor encroachment, electric transformers, irregularly placed dustbins etc., are few reasons to name. The existing hawking activities should be accommodated with design such that they do not encroach upon the road side walking space. Also, the roads lack zebra markings and other safety measures that increase accident risk. But given the fact that walking and cycling share constitutes 60 per cent of the modal share and more than 50 per cent trips end within bicyclable distance in urban areas of Prakasam district, this presents an immense opportunity to promote infrastructure for walking and cycling to move towards zero emissions. This is an opportunity to reduce dependence on motorized travel for short distances. This can promote clean and active mobility for clean air.

Parking Strategy to Reduce Traffic Volume

Rapid motorization, haphazard development, and unorganized parking are all contributing to traffic congestion in the city. Most of the city roads are encroached with haphazardly parked vehicles. The hawking activities are not regularized. The city needs to adopt a city wide parking policy and rules at the early stages that will enable adoption of parking area management plan. This will help to identify the legal parking area and lead to demarcation in all land uses enable enforcement against illegal parking, allow parking charges to manage demand and reduce parking pressure, and prevent parking from happening in green areas, parks, on footpaths and near intersections. This can help to improve integrated management of off-site and on-site parking management, maximise utilisation of the available parking spaces. This can help to promote park and walk strategies. This city wide approach can reduce parking chaos, congestion and pollution. Parking management is considered an important demand management and pollution reduction measure.

Traffic Management and Enforcement

Traffic management and enforcement of traffic rules is handled by the city's traffic police. The city has 9 road junctions and all are signalized. Total 241 CCTV Cameras are erected in main traffic centres and surveillance is made through a command control room. These help in identifying traffic Jams different centres which cleared by giving instructions to the concerned points police centres and traffic mobiles parties. The traffic police have implemented e-challan system. During the period between April to June 2020, a total of 39,266 e-challans were issued which generated revenue of Rs 1.84 crores. Two Bypass roads pass through Ongole City. All entry and exit points from diversion points are implemented by deputing additional force to avoid traffic congestions in the city.

Road Dust

The city has about 80 percent metalled and 20 percent unmetalled roads. The municipal corporation has none mechanical sweeping machines. The total of 420 km is being cleaned and out of this 330 km is cleaned every day.

Most roads have end to end paving with green buffers along major traffic corridors, totaling a stretch of 6 km. However, a detailed plan is needed for metaling of the rest of the road network, green barriers, and paved footpaths to control dust generation.

7. Comprehensive Clean Air Action Plan (CAP) for Ongole City

This pollution source-wise comprehensive action plan has been developed for Ongole city to meet the NCAP objective of 20-30 percent reduction in particulate pollution by 2024. This plan indicates the nature, scale, scope and depth of action needed for effective reduction in different sectors.

This plan has integrated the on-going action of the state government in each sector and has further built upon that based on good practices. Sufficient indicators are included in the plan to define the nature and scope of each strategy.

This plan has identified the agencies responsible for implementation of each action point and has also indicated the timeline for implementation. This can be monitored for reporting and compliance.

This section deals with department-wise clean air action plan and compliance strategy to meet clean air standards. The following tables indicate the short, medium and long-term action along with agencies responsible for implementation of the action points in the city of Ongole. This plan indicates short term as six months; medium term as up to one year and long term 1-2 years.

Comprehensive Action Plan (CAP): Short, medium and long-term measures Source-wise clean air action plan and compliance strategy for non-attainment cities to meet clean air standards.

1. Air Quality

S. No.	Source	Action Points	Micro level Action points	Present status	Agency responsible	Timeline for action	Budget
1.1.	Air quality monitoring and assessment	Installation and commissioning of CAAQM stations as per CPCB criteria.	Install and commission one or more CAAQM station as per CPCB criteria as real time monitoring is needed for GRAP. All stations should monitor parameters as specified in NAAQS, 2009 and weather parameters to have real time data.	There are 4 manual monitoring stations. Need minimum 1 real time station	APPCB and CPCB	One year	Departmental funds/ NCAP funds
1.2.	Air quality monitoring and assessment	Reporting daily air quality data to public	Plan for public dissemination— web-based, billboard-based, through audio visual media, etc. Adopt as per graded response action plan.	The AQI data is available on APPCB website and paryavaran app.	APPCB	Continuous	Departmental funds/ NCAP funds
1.3.	Air quality monitoring and assessment	Quality control and quality assurance system for air quality data.	Ensure all monitors are functioning and recording data. Adopt detailed protocol for transparent reporting of CEMS data (wherever applicable) for industrial emissions monitoring and NAMP data	The NAMP data is being uploaded in the CPCB website for public dissemination.	APPCB	Continuous	Departmental funds
1.4	Air quality monitoring and assessment	Adopt satellite-based monitoring to complement ground-based air quality monitoring	Adopt an airshed approach for rural and peri-urban areas as recommended by NCAP and MoEF & CC Explore application of sensor based monitoring for areas where there is no regulatory monitors and cover unmonitored areas and agricultural burning/forest fires that impacts urban air quality.	To be initiated	APPCB, CPCB, India Meteorological Department (IMD), Ministry of Earth Sciences (MoES)	One year	Departmental funds
1.5	Air quality monitoring and assessment	Adopt protocol for assessing annual and daily air quality trend for reporting compliance with the NAAQS and NCAP targets.	Adopt detailed protocol for transparent reporting of CEMS data (wherever applicable) for industrial emissions monitoring and NAMP data	The CEMS data of industries is connected to central server at APPCB head office and is being monitored for any abnormalities.	APPCB, CPCB	Six months	Departmental funds
1.6	Assessment of pollution sources	Source apportionment and Emission inventory studies to be carried out	The SA study may be directed to a competent institution. The SA study must include the surrounding airshed along with a	National Knowledge Network (NKN) act as an advisory board to the CPCB.	APPCB, CPCB	One year	Departmental funds/ NCAP funds

		for the city	Health Impact Study incorporating exposure impacts.	CPCB along with the advisory board identified the Institute of Repute (IoR) to carry out the SA& EI studies in all the states of Non-attainment cities.			
1.7	AQI forecasting	Adopt pollution forecasting system for implementation of graded response action plan.	This will also require monitoring of weather data and prior support from MOES and IMD. The system to be adopted could be on the lines of SAFAR	-	Department of Environment, APPCB, CPCB, MoES	One year	Departmental funds/ NCAP funds

2. Industries

S. No.	Source	Action Points	Micro Level Action points	Present Status	Agency responsible	Timeline for action	Budget
2.1	Industrial emissions	Implement SOx and NOx standards	Standards notified by MoEF & CC on 29 January 2018 for 16 categories of industries in and around the city – as applicable.	Under implementation	APPCB	Six months	Nil
2.2	Industrial emissions	Management of emissions from MSME sector	Inspection and monitoring surveillance of small, medium and large-scale category of industries and necessary penal action for violation of standards	Regular and random inspections are being taken up by the APPCB	APPCB, CPCB	One year	Departmental funds
2.3.	Industrial emissions	Introduction of Clean Fuels Notify approved fuel list for the state and ban use of pet coke and furnace oil.	• Notify approved list of fuels for the state • Ban use of pet coke and furnace oil • Ensure conversion to CNG/PNG from pet coke/ furnace oil • Strict enforcement against use of high sulphur content fuels and levying fines on the violators. • Implement phase-in plan to promote clean fuels in industry like natural gas.	A condition of not to use pet coke in industries is being included in the CFO as per Hon'ble NGT order.	APPCB	One year	Nil
2.4	Industrial emissions	Use of CEMS	Enforce monitoring of polluting industries within urban air-shed zones via CEMS. Check for installation, upkeep and data collection.	The CEMS data of industries is connected to central server at APPCB head office and is being monitored for any abnormalities.	APPCB	Six months	Nil
2.5	Industrial emissions	Control of fugitive emissions across all industries	Implementation of control measures during various industrial processes (in ancillary units, material transfer and handling etc). Construction of paved roads around all	All the required conditions are kept in the CFO and are being implemented by the concerned industries.	APPCB	Six months	Nil

S. No.	Source	Action Points	Micro Level Action points	Present Status	Agency responsible	Timeline for action	Budget
			major industrial belts and estates; Installation of dust suppression system and green belt				
2.6	**Pesticide Industries**						
2.6.1	Industrial Emissions	Control of fugitive emissions and Odour	• Ensure to comply with the NAAQS, 2009 outside the premises and stack/ incinerators emissions as specified in the CFO order. • The industry shall comply with the standards for emission and discharges for all the parameters as per the standards notified by MoEF, vide GSR No. 446 (E) Dt. 13.06.2011 and amendments thereof, for pesticides manufacturing and formulation industry. • Implement adequate measures to control fugitive emissions, VOCs and DG set stack emissions. • Installation of online VOC meters and their placement should be way towards village habitation and downwind direction. • All the reactor vents and storage tanks should be connected with condensers to catch solvent vapours. • Regular monitor and check for the odour causing substances / Mercaptans in the surroundings. • Install and operate Air Pollution Controlling Equipment or Devices (APCE).	The industries are implementing all the conditions as specified in the CFO	APPCB	Continuous	Nil
2.7	**Chemical Industries**						
2.7.1	Industrial Emissions	Control of acid fumes	Ensure to comply with the NAAQS, 2009 outside the premises and stack/ chimney emissions as specified in the CFO order. Install and operate Air Pollution Controlling Equipment or Devices (APCE)	The industries are implementing all the conditions as specified in the CFO	APPCB	Continuous	Nil

3. Vehicles

S. No.	Source	Action Points	Micro level action points	Present status	Agency responsible	Timeline	Budget
3.1	Vehicular emissions	Emission standards and fuel quality for new vehicles	Ensure implementation of Hon'ble Supreme Court order of October 24, 2018 and subsequent Central Government notification by MoRTH- Only BS VI compliant fuels and vehicles to be registered after April 1, 2020.	Only BS VI complaint vehicles are being registered after April 1, 2020. Regular / random checks are being conducted by RTO's to ensure the implementation of Hon'ble Supreme Court order.	Transport Department and Auto Industry Associations	Ongoing	Nil
3.2	Vehicular emissions	Gaseous fuel programme for vehicles	Shifting/ replacement of petrol/diesel driven vehicles viz., auto rickshaws, taxis and buses to CNG/LPG based vehicles.	-	Transport Department, Department of ICE, MoPNG	1 year	Nil
3.3	Vehicular emissions	Encourage clean fuels	Introduce favorable fiscal measures such as reduction in road tax to promote clean fuels and vehicles.	The State Government has issued guidelines to exempt levy of green tax on vehicles operated by LPG, CNG, battery and solar power.	Transport Department	1 year	Nil
3.4	Tail pipe emissions	Strengthen periodic auditing and over- sight of PUC centres and calibration of equipment and third-party checks.	• Ensure PUC centers are upgraded to be capable of testing all the notified parameters and vehicles including BS VI. • Ensure further strengthening of ongoing linking of PUC centers with NIC vahan server to eliminate manual intervention in PUC testing. • Ensure all vehicles obtain valid PUC certificate vehicles without PUC certificates are not allowed to ply. Link PUC certificate with annual vehicle insurance.	Currently, there are 10 PUC centres in the city. Communication has made to the MoRTH for taking necessary action in this matter. Integration with NIC vahan software is initiated. PUC program in place, though all not linked to e-Vahan server	Transport Department	1 year	Departmental Funds.
3.5	Tail pipe emissions	Ensure universal linking of PUC centres with remote server and eliminate manual intervention in PUC testing.	Implement testing of all notified emissions parameters including Lambda testing for petrol cars as notified by MORTH in 2004.	-	Transport Department	6 months	Nil
3.6	Tail pipe emissions	Integrate on-board diagnostic (OBD)	As per the MORTH advisory PUC centres have to check malfunctioning indicator light	Presently there is no OBD system within the city.	Transport Department	6 months	Departmental funds

S. No.	Source	Action Points	Micro level action points	Present status	Agency responsible	Timeline	Budget
		system fitted in new vehicles with vehicle inspection.	on dash boards of vehicles. If the light is found on vehicles to be sent back for testing in authorized workshops. Additionally, PUC centres need to check if the OBD is functioning properly.				
3.7	Tail pipe emissions	Ensure availability of ammonia based urea for BS VI diesel vehicles	Ensure availability of the auto grade urea for the vehicles fitted with SCR system (selective catalytic reducing system) for NOx control in BS VI vehicles in coordination with the oil companies.	Steps will be taken to ensure availability of ammonia based urea in fuel stations as and when BS VI fuels available in the market.	Transport Department, Department of Civil Supplies and Oil companies	6 months	Nil
3.8	Tail pipe emissions	Penalising the visibly polluting vehicles	Remove/impose penalty/ challans, and launch extensive awareness drive against visibly polluting vehicles.	Traffic department is imposing and collecting the penalties from owners of visibly polluting vehicles.	Transport Department	Continuous	Nil
3.9	Tail pipe emissions	Set up modern centralized vehicle inspection centres for upgraded emissions	Ensure annual fitness and road worthiness tests for commercial vehicles and diesel vehicles are conducted in well-equipped centralised testing centres. These centres can cater to the region	Transport department is regularly conducting the fitness checks to phase out vehicles which are 15 years & above and or completing the 2,50,000 km	Transport Department	6 months	Departmental funds
3.10	Emissions from older vehicles	Green Tax And Vehicle labelling or sticker programme to phase out old vehicles	• Ensure measures to increase the green tax on petrol and diesel vehicles to encourage the LPG, CNG and battery operated vehicles. • Ensure phasing out of old vehicles with the help of color coded sticker programme and age linked road tax policy. • Set up scrapping infrastructure for scientific dismantling and disposal of old vehicles and material recovery as per the CPCB guidelines. Set up recycling units that are authorized with proper environmental guidelines and integrate the current informal scrapping units	The State Government has issued guidelines to exempt levy of green tax on vehicles operated by LPG, CNG, battery and solar power. Green tax need to be paid by Transport vehicles and Non-transport vehicles based on the age cap from the date of their registration.	Transport Department	6 months	Nil
3.11	**Freight Transport**						
3.11.1	Emissions from trucks	Diversion of truck traffic	• Rationalise movement pattern of heavy-duty trucks, and their routes and logistic infrastructure, spacing of warehouses/ wholesale marts etc, entry points and timing to reduce exposure levels	Two bypass pass through the city which help in diverting non destined traffic in city.	District and local administration, Municipal Corporation and PWD, NHAI	6 months	Nil

S. No.	Source	Action Points	Micro level action points	Present status	Agency responsible	Timeline	Budget
			• Provide truck rest areas/parks along national and state highways to prevent entry of trucks into cities during the day time or peak hours to continue. • Local trucks can shift to LNG/CNG • Use of off-peak passenger travel times to move freight and restrict the entry of heavy vehicles into cities during the day to continue.				
3.11.2	Emissions from trucks	Ensure fitness of trucks	• Ensure fitness and road worthiness of trucks and compliance to set standards. • Install weigh in motion bridges in all city entry points to control overloading	-	Transport Department	6 months	Departmental funds
3.12	**Fuel Quality and Clean Fuel standards**						
3.12.1	Poor fuel quality	Fuel quality testing to check adulteration	Ensure to create system to carry out regular/ periodic checks for fuel adulteration and monitoring the fuel quality through surprise fuel testing for all transport and non-transport fuels.	Department of Civil Supplies is ensuring the regular fuel checks through oil companies. Total 423 Retail Outlets were inspected and 524 Petrol & 580 Diesel samples were tested by Oil Industry Mobile Labs in 2019-20 in Andhra Pradesh.	MoPNG, Oil marketing companies, Department of Civil Supplies	Continuous	Departmental funds
3.12.2	Poor fuel quality	Emission control at Fuel Stations Install vapor recovery systems in fuel refueling outlets to reduce benzene and VOC emissions in cities.	Install vapour recovery systems in fuel outlets to reduce benzene and VOC emissions to comply with the Hon'ble NGT directions in respect of installation of stage I and Stage II vapour recovery system in all new retail outlets with capacity 300 KL MS per month in cities with population more than 1 lakh.	There is no monitoring system for VOC emissions in the city.	Department of Civil Supplies, Transport department, State Oil Coordinator	6 months	Nil
3.12.3	Poor fuel quality	Adopt favourable taxation policy for clean fuels	Reduce VAT and cess on CNG	-	Transport Department	6 months	Nil

4. Urban Mobility

S. No.	Source	Action Points	Micro level action points	Present status	Agency responsible	Timeline	Budget
4.1	**City Bus Service Improvement**						
4.1.1	Vehicular emissions	Ensure setting up of Public transport intra city bus services	• Implement intra-city bus services based on travel demand of city population. For a city size of Ongole, mini /midi buses can be used for operation • Service level benchmark of Ministry of Housing and Urban Affairs should be followed to decide fleet size and network for adequate city penetration • Implement phase wise requirement of bus fleet, transit infrastructures i.e. depots, terminals and bus queue shelters etc. • Ensure adoption of EV buses through FAME II and notified state EV Policy. • Use modern technologies like Global Positioning Device (GPS), Public Information System (PIS) etc. to manage the services, locate buses and also to make it more attractive to commuters. • Introduction of Electronic Ticketing Machine for ticketing purposes. It helps to record and manage trip details, number of users, and other trip characteristics of public transport users.	Presently, city does not have a dedicated bus service	Bus Transport Undertaking	1 - 2 years	Departmental Funds
4.2	**Intermediate Para Transit (Autos, Shared IPT, Taxis, and electric rickshaws)**						
4.2.1	Vehicular emissions	Regularization operation of IPT through registration and planning	• Implementation of IPT operation plan and IPT route network connecting residential areas to important nodes (transport nodes, shopping areas, or other areas with high footfall) • Implement well planned dedicated parking and pick-up and drop-off points for IPT • Shared IPT/Autos – specify route, fix fare and carrying capacity. These should be mostly provided to connect very high footfall areas for easy pick-up and drop-off • Install GPS in autos for monitoring	IPT system is un- organized.	RTO, Transport Department GoAP, Urban Local Bodies	1 – 2 Years	Departmental Funds

S. No.	Source	Action Points	Micro level action points	Present status	Agency responsible	Timeline	Budget
			• Plan and enforce safety standards for IPT vehicles for driver safety and safety in driving etc to improve service				
4.3	**Non-Motorized-Transport Network**						
4.3.1	Vehicular emissions	Build adequate street network that is walkable, cyclable and provides safe mobility for all road users	All major arterial and sub-arterial roads should be redesigned to have dedicated/protected space for walking, cycling. Earmark street vending activities with respect to complete street principles and universal accessibility *(For good street design, refer to Design Standards can be followed from Indian Road Congress (IRC): 103-2012, or improved draft IRC code on road design, or any other adopted standards and good practices. Street design Guidelines document in Delhi, published by UTTIPEC can also be considered as a base document for improved road design needs)*	The condition of existing footpath is poor which forces pedestrians to walk on the carriage way. Also, the roads lack zebra markings and other safety measures that increase accident risk.	Urban Local Bodies	1 year	Departmental Funds
4.4	**Traffic Management**						
4.4.1	Vehicular emissions	Enforcement and monitoring of traffic movement to prevent congestion and ensure road safety	• Ensure installation of traffic signals at all major junctions within the city. Levying and collection of hefty fines for traffic violation • Ensure removal of encroachments along the road stretches within the city • Explore use of Intelligent Transport Management System (ITMS) based monitoring for effectiveness and enforcement • Periodic safety audits of all the junctions within the city to ensure better planning, improvement and implementation.	The city has 9 road junctions and all are signalized. Total 241 CCTV Cameras are erected in main traffic centres and surveillance is made through a command control room.	Traffic Police and Urban Local Bodies	6 months	Departmental Funds
4.5	**Parking Management**						

S. No.	Source	Action Points	Micro level action points	Present status	Agency responsible	Timeline	Budget
4.5.1	Vehicular emissions	Implement city-wide Comprehensive Parking Policy and Parking Area Management Plans (PAMP) (Examples/Reference documents – Delhi parking Rules 2019, Punjab Parking Policy for Municipal towns of Punjab 2017)	• Physically identify, demarcate and delimit on-street and off-street parking areas in all municipal wards based on local area assessment • Ensure no parks and green spaces are converted into parking and all streets have at least one lane available all the time for free flow of traffic especially emergency vehicles. • Introduce strict fines for Illegal parking of vehicles in non-designated areas. • Introduce variable parking fees as per the location and time duration in all commercial and mixed use areas • In areas where both on-street and off-street parking is available, on-street parking charge should be higher than off-street parking charges • Wherever MLCP exists, it should be integrated with area level parking plan • On-street parking price should be higher than MLCP to maximize use of MLCP • Introduce residential parking permit for residential areas • Implement commuter information system on availability of parking spaces in off street parking facilities. • Identify streets for parking/night time parking of commercial vehicles	In the city there are no designated paid parking areas. As of now parking is free of charge. And Most of the city roads are encroached with haphazardly parked vehicles.	Urban Local Bodies	1 year	Departmental Funds

Adoption of Electric Mobility

S. No.	Source	Action Points	Micro level action points	Present status	Agency responsible	Timeline	Budget
4.6	**Adoption of Electric vehicles *(Implement the state's notified EV policy)*** *(As EV technology is new and continuously evolving, the ideas may change further to comply with most updated technology)*						
4.6.1	Vehicular emissions	Implementation of Electric Mobility policy notified by State	• Identify vehicle segment like IPT, buses, Two-wheelers – for targeted electrification • Ensure provision of required infrastructure	The electric vehicle policy is yet to be implemented.	Transport Department, Urban Local	1-2 year	Departmental Funds

S. No.	Source	Action Points	Micro level action points	Present status	Agency responsible	Timeline	Budget
		Government. Integrating EV Infrastructure to create EV ecosystem (*facilitate EV adoption through integrating EV in infrastructure changes through amendment in existing byelaws and regulations)*	like charging stations, maintenance depots/places, availability of spare parts, etc. • Amendment of Model building byelaws and state level building byelaws and design code to integrate these changes w.r.t electric vehicle ecosystem. • Introduce charging facilities at residential locations by installing a dedicated metering system in accordance with electricity and energy board • Implement based on ground assessment dedicated parking facilities or priority parking of electric vehicles in designated parking areas	The electric vehicles are not much in use and public awareness programmes needed to be planned.	Bodies, New and Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP).		
4.6.2	Battery waste	Management and Disposal of Batteries	• Develop and implement a policy for safe disposal of batteries after completion of their life time as per the Waste Management Rules, 2016 issued by MoEF & CC. • Notify the potential and authorised recycling facilities within the city	The electric vehicle policy is yet to be implemented.	APPCB, Transport Department, and New & Renewable Energy Development Corporation of Andhra Pradesh Ltd. (NREDCAP)	1 year	Nil
4.6.3	Vehicular emissions	Enhance EV adaptation in IPT segment which is an important mode of public transport	• Incentives/schemes to IPT owners to transition from ICE vehicles to EV such as road tax rebate, concession on charges, credit on transition to EV, etc. • Provide registration for e-rickshaws	-		2 years	Nil
4.6.4	Vehicular emissions	Priority parking for EV*(Provision of dedicated on-street parking spaces for commercial and personal electric vehicles)*	• Carry out inventory of area where dedicated EV parking is feasible • Implement incentives like waiver of parking fees for electric vehicle among others.	-	Transport Department, Urban Local Bodies, APERC	1 year	Nil

5. Waste Management

S. No.	Source	Action Points	Micro level Action points	Present Status	Agency responsible	Timeline	Budget
5.1	Municipal Solid Waste	Ensure Implementation of Solid Waste Management Rules, 2016 notified by MoEF & CC.	• Implement a plan for collection and management of waste based on the quantity of solid waste collected daily. Quantify waste stream for each municipality and peri urban areas to plan infrastructure for collection and recycling. • Implement household level segregation, segregated transport, recycling facilities and composting facilities • Ensure GPS tracking of waste collection and transportation vehicles to dump yards and mobile spot check squads for enforcement. • Implement a plan to monitor garbage burning within city limits through sanitation team. • Levy and collect hefty fines from the violator's viz., dumping of solid waste in open areas or unauthorised places, burning of solid waste/ biomass and other waste. • Stringent implementation of amended by laws and collect fine from the violators • Mapping of all waste dumping grounds in the region as well as mobile spot check squads for enforcement.	The Ongole Municipal Corporation has issued a circular to implement Solid Waste Management Rules, 2016 in city limits. Regular inspection is done by Ward Sanitation and environment secretaries to control open burning of solid waste. Garbage burning is significantly under control.	Municipal Corporation, Office of the District Magistrate	6 months	Nil
5.2	Municipal Solid Waste	Management of Dumping yards and treatment facilities	• Plan to convert the scientific land fill at Guttikondavaripalem, Division No 9 into processing facility to ensure further processing of municipal solid waste. • The processing facility should be planned and grounded in a time bound manner to avoid further open dumping of the collected solid waste • Ensure safety measures and management at dump yard to avoid spontaneous fire at the site. Use landfill management techniques based on CPCB guidelines.	The solid waste collected from the household is being dumped at the Guttikondavaripalem scientific landfill site (around 21%). Rest is being treated by different mechanisms such as vermi composting etc Water facility is provided to arrest the fire in emergency situations.	Municipal Corporation, Office of the District Magistrate	1 Year	Departmental Funds.

S. No.	Source	Action Points	Micro level Action points	Present Status	Agency responsible	Timeline	Budget
5.3	Municipal Solid Waste	Zero landfill policy	• Adopt roadmap for zero landfill policy by promoting decentralized waste segregation, reuse and recycling	About 44 per cent of dry waste treated by MRF system etc and 66 per cent of wet waste is processed by Vermi composting and bulk generators. Guttikondavaripalem is the landfill site and is monitored for spontaneous fire.	Municipal Corporation, APPCB	1 Year	Departmental funds
5.4	Solid Waste	Control of burning of biomass and crop reside and	• Ensure proper collection of horticulture/ garden waste (bio-mass) from parks and open areas and its disposal through composting within the premises. • Ensure ban on burning of agriculture waste and crop residue and its implementation.	Extensive programmes were launched by agriculture department like Polambadi & Polam pilustondi, for creating awarenss in Farming Community not to burn agricultural waste/ Stubbles	Agriculture Department, MA & UD	6 months	Departmental Funds.
5.5	Municipal Solid Waste	Installation of waste to energy plant.	• Ensure to avoid installation of Waste to Energy plant if the city is having an efficient waste segregation system in place. • If required develop a proper plan with strong siting policy to locate the Waste to Energy plant away from habitation and sensitive areas including neighbourhoods of low-income groups. • Ensure stringent emission norms and real time monitoring of the emissions data through CEMS; Use of state-of-the-art technology and provide real time emissions data to APPCB.	No waste to energy plant is located either within the Ongole city or Prakasam district.	Municipal Corporation, Office of the District Magistrate and APPCB	1 year	Departmental funds
5.6	Incinerators	Siting policy and CEMS	Develop a siting policy for biomedical incinerators. Implement CEMS for incinerators and provide data on emissions on an open platform progressively.	CPCB siting guidelines are in force and no incinerators planned at this stage	APPCB	1 year	Departmental funds
5.7	Construction and Demolition waste	Ensure implementation of Construction & Demolition Waste Management Rules, 2016 and its subsequent amendments.	• Provide a C&D waste management facility for segregation and disposal of collected waste from the construction sites across the city. • The Waste Management Plan should be combined with building permits and made compulsory before any	Around 8 TPD of C&D waste is being generated and there is no recycling plant as of now. No scientific processing of waste is happening.	Municipal Corporation & APPCB	6 months	Departmental funds

S. No.	Source	Action Points	Micro level Action points	Present Status	Agency responsible	Timeline	Budget
			construction/demolition/remodeling activity by the bulk waste generators. • Adopt and implement dust control measures for all types of construction - buildings and infrastructure. • Undertake control measures for fugitive emissions from material handling, conveying, and screening operations through water sprinkling, curtains, barriers, and dust suppression units. Introduce steeper penalties for non-compliance in all construction sites. • The preventive measures as mentioned in CPCB guidelinesiv. Construction agencies to be made liable. Impose penalty for non-compliance.				
5.8	Construction and Demolition waste	Zoning of construction activities	Enforce restrictions on construction activities within urban airshed zones during high pollution period	Guidelines were issued by the Municipal Corporation in line with the C&D Waste Management Rules, 2016 with respect to the dust generation and its management at the construction sites.	Municipal Corporations	6 months	Departmental funds
5.9	Construction and Demolition waste	Notify rules to segregate construction and demolition waste in accordance to the C&D waste management rules notified in 2016 by CPCB.	Provide a network of decentralized C&D waste segregation and collection sites across the city. For material handling, construction and demolition, it should be obligatory on part of the developers to provide evidence of debris on-site recycling and/or disposal at designated sites.	A notification was issued by Municipal Corporation, Ongole for handling of C&D waste within the city limits.	Municipal Corporations	1-2 years	Departmental funds
5.10	Construction and Demolition waste	Set up facilities to recycle construction and demolition waste	Quantify C&D waste generation from both building and infrastructure construction. Mandate certain percentage of the material for new construction to be recycled construction waste. Implement provision of Central regulations for construction and demolition waste management rules of 2016.	-	District and local administration, Municipal Corporation, APPCB	1-2 years	Departmental funds

6. Household emissions and other miscellaneous sources

S. No.	Source	Action Points	Micro level Action points	Present Status	Agency responsible	Timeline	Budget
6.1	Renewable Energy Policy and Household Emissions	Maximum access of LPG by low-income neighbourhoods, as well as roadside eateries/dhabas/ restaurants etc.	• A targeted programme towards 100 percent coverage of LPG supply to all the households and commercial activities like road site eateries/ dhabas/ restaurants, etc. • Mandate and link commercial license to clean fuels. • Create schemes like PMUY for low turnover eateries to access LPG	As of Q1 of 2020-21 total 1.38 Crs LPG Connections are released in Andhra Pradesh which is 110% penetration of HHs as per 2011 Census. Additionally, Non-Domestic LPG connections are released by Oil Companies on continuous basis.	Department of Civil Supplies and Oil Companies	1 Year	Departmental Funds.
6.2	Gensets	Control of emissions from Diesel Generator (DG) sets.	• Ensure all the DG sets are meeting the emission norms and provided with acoustic enclosures. • Ensure power supply of 24/7 in the city to prevent usage of alternate power generating equipment. • Curtail use of DG sets in social events by providing temporary electric connections • Explore rooftop solar programme to reduce dependence on DG sets. • Ensure to obtain power connection prior to construction of large construction projects to avoid use of DG sets.	There is no or rare power cut in all over the state of Andhra Pradesh. In Prakasam district the power is being generated from renewable source like solar. There are 50 roof top solar system installed in Ongole and approximately 2434.5 KW power is generated from solar energy.	APPCB, APTRANSCO, APGENCO	Immediate	Departmental funds
6.3	Multiple Sources	Public Awareness Campaign	• Organizing the continuous public awareness campaigns engaging the schools, colleges and other academic institutions. • Organizing deeper public engagement and forums for public consultation for public understanding of the nature of solutions needed to address the complex problem of sustainable industrial development and urban mobility.	-	APPCB in collaboration with a local Civic Society Organization	6 months	Departmental Funds.
6.4	Others	Public Grievance Redressal Portal (PGRP)	• An online portal need to be created to register the complaints by public on air pollution along with a supervisory mechanism for its disposal at time bound manner.	A PGRP system has been established in the APPCB website and concerned officers are attending the complaints lodged by the public.	APPCB and other concerned departments.	6 months	Departmental Funds.

S. No.	Source	Action Points	Micro level Action points	Present Status	Agency responsible	Timeline	Budget
			• Ensure to publicize about the online portal and its usage to all the citizens for deeper and better improvements. • Create a a portal or a citizen's charter on APPCB website				
6.5	Others	Urban Green and Forests	• At least 15 – 20 % of the area in new development projects in urban areas should be developed as green cover. • Urban planning to provide for green roofs and vertical greens linked to infrastructure development. Green walling with plantations around dust generators and also to be dust barriers to be integrated with the Urban forestry and forest policy.	There is no notified green area in Ongole but approx. 10 percent of the city is under green cover and it will be maintained	Forest Department, Municipal corporations	1 year	Departmental Funds.
6.6	Episodic events: All kinds of fires, leakages and explosions	Use satellite-based monitoring and on-ground enforcement to control such episodes.	• An online platform needs to be developed to integrate the meteorological and air quality data of the city for prompt and immediate actions from the emergency response system/ disaster management authority.	Andhra Pradesh State Disaster Management Authority is in the process of developing an online system for emergency situations.	APSDMA and APPCB	1 Year	Departmental Funds.
6.7	Seasonal/ Episodic events	Firecrackers during festival season	Ensure to regulate and control usage of fire crackers including restrictions on timing as per the Supreme Court and CPCB and PESO guidelines.	During Diwali festival PESO is taking steps to observe the safety like awareness programmes in public interest through print and electronic media, providing licenses for sale of the local fireworks and regular inspections to the ensure only licensed vendors are selling the crackers.	District and local administration, Police Department, APPCB, RWAs, Supported by Chief Controller of Explosives, Petroleum and Explosive Safety Organization (PESO)	Immediate	Departmental Funds.

a. Graded Response Action Plan (GRAP) proposed for Ongole City

The proposed Graded Response Action Plan is meant to be temporary measures for duration of smog episodes and is implemented according to the severity of the daily air pollution levels. Once the levels come down and stabilize, measures are withdrawn. The objective of the GRAP is to prevent pollution from getting worse when adverse weather conditions trap and spike pollution.

The proposed GRAP includes set of measures to be implemented with greater vigor and stringency to prevent and avoid high level of air pollution in cities. This is linked to the national air quality index that categorizes daily air quality as good, satisfactory, moderate, poor, very poor, severe, and emergency. All actions suggested for each category are cumulative and add up to the level of emergency as air quality worsens. For implementation of GRAP, the scientific Task Force under APPCB will advise the District Level monitoring committee on the daily pollution levels and forecasting based on real time monitoring. Accordingly, the Committee may issue notices to the city authorities to implement the pre-defined action. Each implementing department will appoint a nodal officer to facilitate implementation. The action notified for moderate and poor categories that are largely about stringent enforcement in different sectors can become default action for continuous implementation throughout the year. Additional measures meant for very poor and severe may be notified which such situation develops especially during calm and inversion conditions.

This will require daily air quality data reporting on the SPCB website and public dissemination system on air quality and health alert.

Graded Response Action Plan (GRAP) for Reducing Air Pollution in Non-attainment Cities of Andhra Pradesh

Moderate to poor **Poor - When PM2.5 levels are between 91-120 µg/m3 or PM10 levels are between 251-350 µg/m^3** **Moderate - When PM2.5 is between 61-90 µg/m^3 or PM10 is between 101-250 µg/m^3**	
Action to be taken	**Agency responsible**
Stringently enforce/stop garbage burning in landfills and other places and impose heavy fines on person responsible	Municipal Corporations
Close/stringently enforce all pollution control regulations in brick kilns and industries	State Pollution Control Board
Stringently enforce pollution control in thermal power plants through Pollution Control Board monitoring	State Pollution Control Board
Do periodic mechanized sweeping on roads particularly in roads with heavy traffic and water sprinkling every two days	Municipal Corporations, Traffic Police, PWD
Strict vigilance and no tolerance for visible emissions – stop plying of visibly polluting vehicles by impounding or heavy fine	Department of Transport Traffic Police
Stringently enforce rules for dust control in construction activities and close non-compliant sites	District Administration, Police
Deploy traffic police for smooth traffic flow at identified vulnerable areas	Traffic Police
Divert non-destined truck traffic	Municipal Corporations, Traffic Police
Strictly enforce Supreme Court orders on firecrackers	SPCB, District Administration in consultation with Chief Controller of Explosives, Petroleum and Explosive Safety Organization (PESO); Police
Ensure fly ash ponds are watered every alternate day during summer months (March-May)	Plant in charge of Power Plants
Information dissemination, social media, mobile Apps should be used to inform people about the pollution levels, contact details of control room, enable them to report polluting activities/sources to the concerned authorities, and actions that will be taken by government based on the level of pollution.	State Pollution Control Board District Administration

Very Poor When PM2.5 levels are between 121-250 µg/m3 or PM10 levels are between 351-430 µg/m3	
Action to be taken	**Agency responsible**
Control use of diesel generator sets by improving electricity supply	State Pollution Control Boards
Restrict parking and enhance parking fee by 3-4 times in commercial areas to reduce usage of personal vehicles	Municipal Corporations
Augment public transport services by increasing frequency and ensure adequate para transit services	Department of Transport State Transport Corporation
Stop use of coal/firewood in hotels and open eateries	Municipal Corporations
Alert in newspapers/TV to advise people with respiratory and cardiac problems to avoid polluted areas and restrict outdoor movement.	State Pollution Control Board

Severe When PM2.5 levels are above 250 µg/m^3 or PM10 levels are above 430 µg/m^3	
Action to be taken	**Agency responsible**
Close brick kilns, Hot Mix plants, Stone Crushers and other highly polluting units or as applicable locally	State Pollution Control Board District Administration Police
Shut down / minimize operation of coal based polluting industrial units and plants, if emissions are found to be beyond permissible limit; Allow plants on cleaner fuels like natural gas, electricity etc.	State Pollution Control Boards
Intensify public transport services. Introduce differential rates to encourage off-peak travel.	Transport Department State Transport Corporations
Increase frequency of mechanized cleaning of road and sprinkling of water on roads. Identify road stretches with high dust generation.	All road owning agencies including Municipal Corporations, Public Works Department and National Highway Authority of India
Restrict movement of trucks inside the coal field mine areas	State pollution control board, Department of Steel and mine

Severe + or Emergency When PM2.5 levels cross 300 µg/m3 or PM10 levels cross 500 µg/m3 (or 5 times above the standard) or persist for 48 hrs or more.	
Action to be taken	**Agency responsible**
Stop entry of diesel truck traffic into city (except essential commodities)	Traffic Police Municipal Corporations
Stop construction activities	Pollution Control Board Municipal Corporations
Introduce some form of vehicle restraint measures for private vehicles based on license plate numbers (odd/even scheme) or introduce low emissions zones in the city to stop entry of polluting vehicles (old and ageing and polluting diesel vehicles etc).	Transport Department Traffic Police
State Pollution Control Board Task Force to take decision on any additional steps including shutting of schools	SPCB

Action to be taken by public

While the National Air Quality Index (AQI) and health advisory will inform people about the dangers of exposure, people are also expected to take precautionary measures to protect themselves. Suggested actions by public are listed below:

Level according to AQI	Action
Very poor, severe	Those suffering from heart diseases, asthma, and other respiratory disease may consider avoiding undue and prolonged exposure
	Schools to suspend all outdoor activities and sport events
	Report visible emissions from vehicles, industries, power plants, garbage burning, and other non-compliances to the respective control rooms
	Do not use diesel and kerosene generators
	Maintain vehicles properly (PUC certificate, replace car air filter,

Level according to AQI	Action
	maintain right tire pressure)
	Minimize unnecessary travel, use public transport & avoid using private vehicles

b. Monitoring Mechanism for Implementation

As per the directions of the Hon'ble National Green Tribunal, dated 08.10.2018, the Air Quality Monitoring Committee (AQMC) with six members has been constituted by the Govt. of Andhra Pradesh, vide G.O. Rt. No. 167, dated 14.11.2018 for the preparation of Action Plans. The Committee, as directed will function under the overall supervision coordination of Principle Secretary, Environment. This will further be supervised by Chief Secretary by ensuring intra sectorial coordination.

MoEF & CC vide its Letter No. D.O.No. Q-16017/12/2019-CPA Dated: 24.04.2019, requested to constitute three committees at state level for effective implementation of NCAP. Accordingly Govt. of Andhra Pradesh, vide G.O. Rt. No. 46, dated 11.06.2020 has constituted three committees namely **Steering Committee**: Headed by the Chief Secretary, **Monitoring Committee:** Head of the Departments and **Implementation Committee:** District Head/ In-charge for effective implementation of NCAP to control air pollution in the 13 Non-attainment cities and towns of Andhra Pradesh.

These Action Plans will further be communicated to all the stakeholders for compliance for control of ambient air quality in Ongole city. Regular meetings will be convened by Implementation Committee to ensure implementation of the action plans at District level and the Compliance of the Action Plan points by the concerned stakeholder departments will be reviewed at regular intervals by the Principal Secretary, Environment & the Chief Secretary, Government of Andhra Pradesh.

MEMBER SECRETARY

Annexure I - Ongole City: Ambient Air quality monitoring data - PM10 Values

2014															
S. No.	Stations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual average	Standard
1	Sri Nilayam, Sambasiva Nagar, Ongole	58	58	59	68	69	68	68	65	60	59	58	69	**63**	**60**
2015															
S. No.	Stations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual average	Standard
1	Sri Nilayam, Sambasiva Nagar, Ongole	68	65	65	69	68	68	67	68	67	65	65	65	**67**	**60**
2016															
S. No.	Stations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual average	Standard
1	Sri Nilayam, Sambasiva Nagar, Ongole	65	67	67	68	65	66	64	66	65	65	64	64	**65**	**60**
2017															
S. No.	Stations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual average	Standard
1	Sri Nilayam, Sambasiva Nagar, Ongole	64	65	66	65	66	65	65	65	64	69	63	63	**65**	**60**
2018															
S. No.	Stations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual average	Standard
1	Sri Nilayam, Sambasiva Nagar, Ongole	63	64	63	61	63	64	66	63	74	68	70	66	**65**	**60**
2	Prakasam Milk Produce Company, Ongole	Monitoring was not started								68	66	68	66	**67**	
3	Municipal Office, Ongole	Monitoring was not started								69	66	70	65	**68**	
4	APIIC, Administrative Office, Growth Centre, Gundlapalli, Maddipadu, Prakasam	Monitoring was not started								64	65	67	63	**65**	
	City Average	**63**	**64**	**63**	**61**	**63**	**64**	**66**	**63**	**69**	**66**	**69**	**65**	**65**	
2019															
S. No.	Stations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual average	Standard
1	Sri Nilayam, Sambasiva Nagar, Ongole	66	66	66	66	66	66	66	60	59	62	61	61	64	**60**
2	Prakasam Milk Produce Company, Ongole	61	58	66	66	46	52	52	57	57	58	57	58	57	

3	Municipal Office, Ongole	62	61	70	68	51	59	54	56	57	62	59	61	60	
4	APIIC, Administrative Office, Growth Centre, Gundlapalli, Maddipadu, Prakasam	61	57	63	61	49	59	52	55	56	58	56	58	57	
	City Average	**63**	**61**	**66**	**65**	**53**	**59**	**56**	**57**	**57**	**60**	**58**	**60**	**60**	

2020

S. No.	Stations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual average	Standard
1	Sri Nilayam, Sambasiva Nagar, Ongole	61	67	74	No data	41	42	38	42	50	52	53	59	53	60
2	Prakasam Milk Produce Company, Ongole	58	63	69		32	40	35	36	45	49	49	57	48	
3	Municipal Office, Ongole	58	67	71		34	41	37	38	45	49	49	53	49	
4	APIIC, Administrative Office, Growth Centre, Gundlapalli, Maddipadu, Prakasam	57	67	66		34	39	39	39	43	49	46	54	48	
	City Average	**59**	**66**	**70**		**35**	**41**	**37**	**39**	**46**	**50**	**49**	**56**	**50**	

Annexure II - Air Quality monitoring in the region

Andhra Pradesh Pollution Control Board (APPCB) is the regulatory body to oversee all air pollution activities all over the state. As per the provisions of the Air (Prevention and Control of Pollution) Act, 1981, APPCB is monitoring ambient air quality in cities and important towns including district headquarters of the State of Andhra Pradesh. Details of the cities and towns monitored for ambient air quality are as follows:

Table 8: Number of monitoring stations across Andhra Pradesh

S. No.	City/town	NAMP	SAAQM	CAAQMS	Total
1	Visakhapatnam	9	1	2	12
2	Vijayawada	9	---	1	10
3	Guntur	4	---	---	4
4	Vizianagaram	4	1	---	5
5	Kakinada	4	---	---	4
6	Rajamahendravaram	4	---	1	5
7	Eluru	4	---	---	4
8	Srikakulam	4	---	---	4
9	Ongole	4	---	---	4
10	Nellore	4	---	---	4
11	Tirupati	4	---	1	5
12	Tirumala	1	---	1	2
13	Chittoor	4	---	---	4
14	Anantapur	4	---	---	4
15	Kurnool	4	---	---	4
16	Yerraguntla	1	---	---	1
17	Eluru	4	---	---	4
18	Amaravati	---	---	1	1
	Total	**72**	**2**	**7**	**81**

Source: APPCB, 2020
Note: NAMP – National Ambient Monitoring Program; CAAQMS: Continuous Ambient Air Quality Monitoring Station; SAAQMS: State Ambient Air Quality Monitoring Program

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