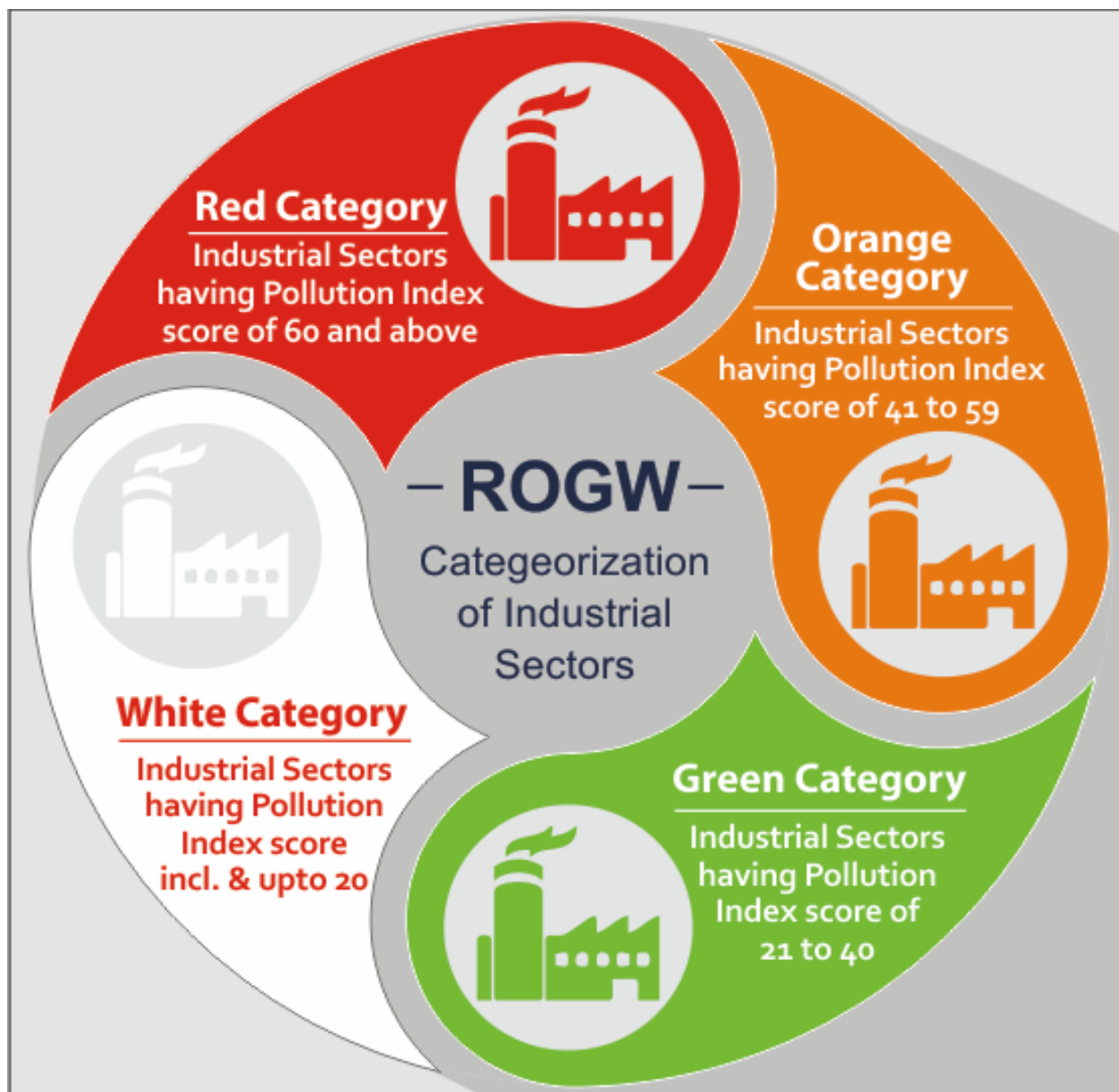


Action Plan For Critically Polluted Areas of Agra

COMPREHENSIVE ENVIRONMENTAL POLLUTION INDEX (CEPI)



U.P POLLUTION CONTROL BOARD, AGRA

1. Background

Central Pollution Control Board (CPCB) in collaboration with Indian Institute of Technology (IIT), Delhi had carried out comprehensive environmental assessment of 88 prominent industrial clusters during 2009-10 based on Comprehensive Environmental Pollution Index (CEPI) criteria. CEPI is a rational number between 0 and 100, assigned to a given location to characterize the environmental quality following the algorithm of source, pathway and receptor. Out of identified 88 prominent industrial clusters, 43 industrial clusters in 16 States having CEPI score of 70 and above are identified as Critically Polluted Industrial Clusters. Further, 32 industrial clusters with CEPI scores between 60 & 70 are categorized as severely polluted areas.

Subsequently, Ministry of Environment, Forest and Climate Change, GoI had imposed a temporary moratorium vide O. M. 13.01.2010 on consideration of developmental projects in critically polluted industrial cluster/areas including the projects in pipeline for Environmental Clearance. Thereafter, action plans for each of abovementioned critical clusters was submitted by Uttar Pradesh Pollution Control Board and implemented after approval of CPCB.

Since 2009-10, CPCB has been doing routine monitoring in industrial clusters identified under CEPI through third party and releasing amended CEPI scores on basis of results. Based on these monitoring results, CEPI score of Agra was calculated and details of same have been tabulated in Table :1

Table :1

S. No.	Year	CEPI Score
1	2009	76.48
2	2011	88.36
3	2013	68.71

Revised CEPI

With a concept to promote industrial development consistent with the environmental objectives and understanding the fact that the original concept and calculation of CEPI score was based on verticals where subjectivity was involved, in order to overcome the subjectivity, revised concept retaining the factors which can be measured/monitored precisely was drafted by CPCB in 2015 and finalized in 2016. The revised criteria for CEPI has been based on following principles:

Revised concept is prepared by eliminating the debatable factors but retaining the factors which can be measured precisely.

To develop the Comprehensive Environmental Pollution Index (CEPI) retaining the existing algorithm of Source, Pathway and Receptor.

- Develop the Revised CEPI considering the sources of pollution, real time observed values of the pollutants in the ambient air, surface water and ground water of the industrial cluster and health related statistics. The concept is based on the selection of 3 criteria pollutants for each of the environment components i.e. air, surface water and ground water which together indicate the well being of ambient environment.
 - Assessment of environmental quality of the area based on the concept of SNLF to which is a surrogate number representing the level of exposure (a function of percentage sample exceedance and Exceedance factor)
-

- Health related statistics to be based on health data available from major hospitals in the area.
The scoring format has also been restructured in Revised CEPI, same is detailed in Table: 2.

Table: 2

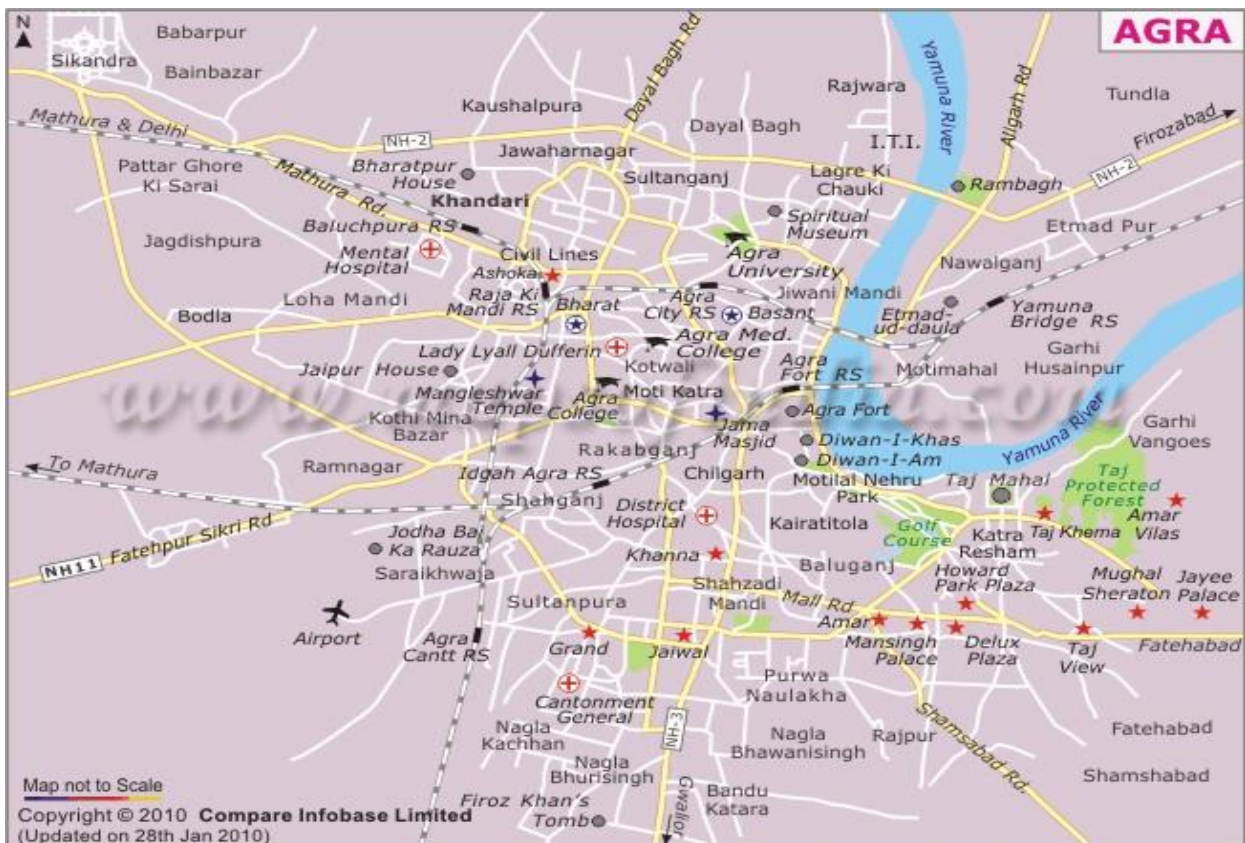
Component A	Scale of Industrial Activity	20 Marks
Component B	Status of ambient environmental quality (air/surface water/ground water)	50 Marks
Component C	Health related statistics	10 Marks
Component D	Compliance status of industries	20 Marks

Based on latest CEPI scores, there are total 13 Polluted industrial Areas (PIAs) in the State of Uttar Pradesh, out of which 9 are critically polluted Areas (CPAs) namely Mathura, Kanpur, Moradabad, Varanasi-Mirzapur, Bulandshahar-Khurja, Firozabad, Gajraula area, Agra, Ghaziabad and 4 are severely Polluted Area viz. Noida, Meerut, Aligarh, Singrauli (UP& MP). As mentioned above, CEPI score for Agra industrial clusters is 76.22 as per latest score.

1.1 AREA DETAILS

As per the CEPI assessment, following areas have been identified as critically/ severely polluted areas:-

- (1) Nunhai Industrial Estate
- (2) Foundry Nagar Industrial Area
- (3) UPSIDC, Sikandra Industrial Area



1.2 LOCATION

The city of Agra is in Uttar Pradesh, which is a state located in the northern part of India. It is located at a distance of about 200 kilometers from New Delhi, which is the capital city of the Indian Republic. In geographical terms, the exact location of the city of Agra is 27.18° north and 78.02° east.

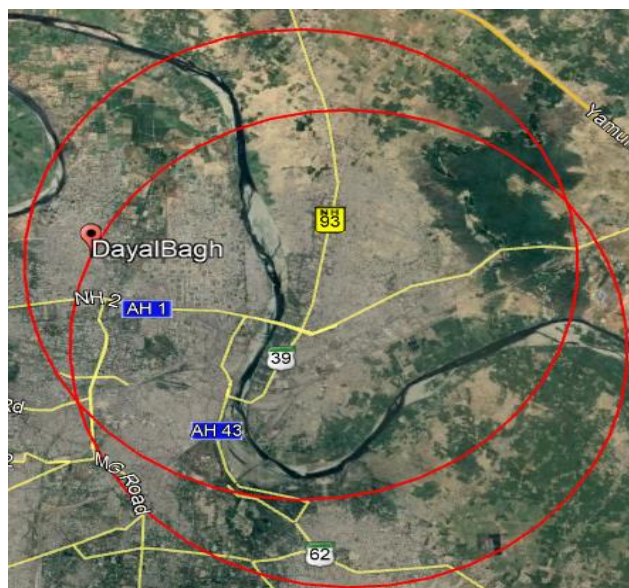
The city of Agra is built along the banks of the Yamuna, one of the premier rivers in the nation. The city is located at an average altitude of 171 meters or 561 feet above the sea level. The geography of Agra is such that it is surrounded by the city of Mathura on the northern side. To the south of Agra is Dhaulpur. Firozabad is located on the eastern side of the city of Agra. Fatehabad lies on the south-eastern side of Agra city. To the west of Agra lies Bharatpur. The city of Agra forms a part of the great northern plains.

On the basis of landmass, Agra is the third largest city in the state of Uttar Pradesh. The modern city of Agra was founded way back in the 16th century. It was founded by Sikandar Lodhi, who was a king of the Lodhi dynasty. Under the ruling of the Mughal dynasty, Agra was considered to be one of the most powerful and influential cities in India in the medieval period.

The coordinates of the industrial cluster boundary are as follows:

S.No	Name of Industrial Cluster	Direction	Latitude	Longitude
1	Nunhai Industrial Estate	East	27.20095	78.05426
		West	27.1979	78.04645
		North	27.20042	78.04824
		South	27.19827	78.05112
2	Foundry Nagar Industrial Area	East	27.21424	74.04342
		West	27.21552	78.03978
		North	27.22958	78.04652
		South	27.20956	78.04159
3	UPSIDC, Sikandra Industrial Area	East	27.21033	77.95199
		West	27.19821	77.92626
		North	27.22063	77.92836
		South	27.21373	77.91875

1.3 Digitized map showing geographical boundaries and Impact Zones



Nunhai and Foundry Industrial Area Impact Zone



Sikandra Industrial Area Impact Zone

1.4 **CEPI Score (Air, Water, Land and Total)**

Central Pollution Control Board in Collaboration with Fair Labs (an environmental monitoring agency) has worked out the Comprehensive Environmental Pollution Index CEPI Score and identified prominent industrial clusters, based on their CEPI Score. The study revealed that the Agra CEPI score is 76.22 and has been declared as 'Critically Polluted Industrial Clusters.' The CEPI score of Agra for Water, Air and Land are 66.88, 60.00 and 47.00 respectively and the overall score is 76.22 in the year 2018. The details are as following:-

S. No.	Sector	A1	A2	A	B1	B2	B3	B	C1	C2	C3	C	D	TOTAL
1	Water	2.75	2.5	6.875	10	30	10	50	-	-	-	10	0	66.88
2	Air	4.0	2.5	10	30	10	10	50	-	-	-	0	0	60.00
3	Ground water/Land	1.5	2.5	3.75	22.5	3.75	7.0	33.25	-	-	-	10	0	47.00

1. A1 - Presence of toxin
2. A2 - Scale of Industrial activities
3. A - (A1 x A2)
4. B1 - Ambient Pollutant Concentration
5. B2 - Evidence of adverse impact on people
6. B3 - Reliable evidence of adverse impact on eco-geological features.
7. B - (B1+B2+B3)

8. C1 - Number of people potentially affected within 2 km. radius from the industrial pollution source.
9. C2 - Level of exposure
10. C3 - Additional risk to sensitive receptors
11. C - (C1 x C2 + C3)
12. D - Additional high-risk element
13. CEPI = (A+B+C+D)

1.5 Baseline Status Of Sensitive Receptors:

Total population and sensitive receptors (hospitals, educational institutions, courts etc) residing in the area comprising geographical area of the cluster and its impact zone.

S. No	Population		Number of Hospitals		Number of Educational Institutions		Number of Courts		Other socially sensitive features	
	Within Cluster	Impact Zone	Within Cluster	Impact Zone	Within Cluster	Impact Zone	Within Cluster	Impact Zone	Within Cluster	Impact Zone
1	-	-	-	16	-	22	NIL	NIL	-	-

1.6 Eco-Geological Features:

Impact Zones [the area comprising of geographical area of the cluster and its impact zone (minimum 5 km)

1.6.1 Major water bodies(Rivers, Lakes, Ponds, etc.)

S. No.	Rivers		Lakes		Ponds	
	Within Cluster	Impact Zone	Within Cluster	Impact Zone	Within Cluster	Impact Zone
1	-	02	-	01	-	01

Rivers- (1) Yamuna River (2) River Karwan

Lake – Keetham Lake

Ponds- Pond of Taj Forest Block (Taj Nature Walk)

1.6.2 Ecological parks, sanctuaries, flora and fauna or any eco sensitive zones:

Given below is the list of ecologically sensitive zones within the impact zone of the CEPI areas along with their distance and direction from the area:

S. No.	Name of Industrial Cluster	List of environmentally sensitive zones	Number	Distance and direction
1	Nunhai Industrial Estate and	Nil	0	-
2	Foundry Nagar Industrial Area	Nil	0	-
3	Sikandra Industrial Area	Soor Sarovar Bird Sanctuary, near Runkata NH-19, Agra	1	5.5km North-West

1.6.3 Buildings or Monuments of historical/archaeological/religious importance

S. No.	Name of Industrial Cluster	List of Buildings or Monuments of historical/archaeological/religious importance's	Number	Distance and direction
1	Industrial Estate, Nunhai	(a) Itmad-ud-daula (b) Chini Ka Roza (c) Taj Mahal (d) Mehtab Bagh (e) Agra Fort	5	(a) 1km (West-South) (b) 1km (West-South) (c) 2.5Km (South) (d) 2.5Km(South) (e) 4.0Km (South-West)
2	Industrial Area, Foundry Nagar	RamBagh	1	500 Meter (North)
3	Industrial Area, Sikandra	Sikandara Tomb Mariam Tomb	2	2.0 Km(North) 2.0Km (North)

1.7 Industry classification: Density of industry (no. of industries per 10 sq.km area or fraction)

The total number of industries in the cluster is as listed below:

1.7.1 Highly Polluting Industries (17 CATEGORIES)

Scale Of Industries	Highly Polluting Industries		
	Air	Water	No. Of E-Waste/Hazardous Waste Generating Industries
Large	NIL	NIL	NIL
Medium	NIL	NIL	NIL
Total	NIL	NIL	NIL

1.7.2 Red Category Industries

Scale Of Industries	Highly Polluting Industries		
	Air	Water	No. Of E-Waste/Hazardous Waste Generating Industries
Large	00	00	NIL
Medium	02	02	02
Small	01	18	18
Total	03	20	20

1.7.3 Orange Category Industries

Scale Of Industries	Number of Industries		
	Air	Water	No. Of E-Waste/Hazardous Waste Generating Industries
Large	-	-	-
Medium	-	-	-
Small	151	12	03
Total	151	12	03

1.7.4 Green Category Industries

Scale Of Industries	Number of Industries		
	Air	Water	No. Of E-Waste/Hazardous Waste Generating Industries
Large	-	-	-
Medium	-	-	-
Small	423	4	13
Total	423	4	13

1.7.5 GROSSLY POLLUTING INDUSTRIES

Scale Of Industries	Highly Polluting Industries		
	Air	Water	No. Of E-Waste/Hazardous Waste Generating Industries
Large	-	-	-
Medium	02	02	01
Small	-	-	-
Total	02	02	01

2.0 Water Environment

2.1.1 Present Status of Water Environment Supported with Minimum One-Year Analytical Data

Sampling Points→ Parameters→ Years↓	U/S KAILASH GHAT, RIVER YAMUNA				U/S WATER WORKS, RIVER YAMUNA				D/S NEAR TAJ MAHAL, RIVER YAMUNA			
	pH	D.O (mg/l)	B.O.D (mg/l)	Coliforms MPN/100ml	pH	D.O (mg/l)	B.O.D (mg/l)	Coliforms MPN/100ml	pH	D.O (mg/l)	B.O.D (mg/l)	Coliforms MPN/100ml
2016	7.7	7.1	11.7	36417	7.7	6.5	14.3	57958	7.6	5.2	21.1	142333
2017	7.7	6.6	10.9	31000	7.6	6.1	13.4	48792	7.6	5.1	17.4	116000
2018	7.7	6.7	4.8	32208	7.7	6.0	11.9	54333	7.6	5.1	7	105792
2019	7.6	5.9	11.1	37917	7.6	5.4	13.2	60833	7.5	4.7	14.5	122750

2.1.2 Water Bodies/Effluent Receiving Drains in the Area Important For Water Quality Monitoring

S. No.	Water Bodies	No. of drains discharging	Effluent discharge (MLD)
1	Nagar Nigam	90	278.60

2.1.3 Present Levels Of Pollutants In Water Bodies/Effluent Receiving Drains/Ground Water(Routine parameters, special parameters and water toxics relevant to the area in three categories – known carcinogens, probable carcinogens and other toxics)

S. No.	Date	Sampling Point	Parameters	Observed values(mg/l)	Standards
1	16.07.2018	U/S River Yamuna at Kailash Ghat	Total Chromium Copper Cadmium Lead Iron Nickel Zinc	N.D BDL N.D N.D 0.0101 0.041 0.061	-
2	16.07.2018	D/S River Yamuna near Tajmahal	Total Chromium Copper Cadmium Lead	N.D 0.046 0.022 N.D	-

			Iron	0.241	
			Nickel	0.061	
			Zinc	0.264	

**ND-Not Detected, BDL- Below Detection Limit

2.4 Predominant Sources Contributing To Various Pollutants

S. No.	Sources	Effluent discharge	Major Pollutants
	Metal Surface Treatment	0.038MLD from Electroplating Industries	pH Temperature Oil & grease Suspended solids Ammonical nitrogen (as N) Total residual chlorine (as Cl ₂) Nickel (as Ni) Zinc (as Zn) Chromium as Cr Hexavalent Total Copper (as Cu) Iron (as Fe)

2.5 Sources of Water Pollution

2.5.1 Industrial Pollution Sources

The drain wise and sector wise distribution of industries and their estimated treated effluent discharge and details of CETP is given in the tables below:

Summary of Industrial Units

S. No.	Drain	Type of Industry						Total Effluent Discharge (MLD)	
		* The Type of Industry may be changed as per local conditions							
		Sugar	Pulp & Paper	Distillery	Textile	Slaughter House	Others	Total	
1.		00	00	00	00	00	00	00	00

2.5.2 Domestic Pollution Sources

a) Details of Drains

Summary of Drains

S No.	District	No. of Drains	Type of Drains	Status of Drains			Sewage Discharge (MLD)			Total Discharge in the River (MLD)
			Domestic	Tapped	Untapped	Partially Tapped	Treated	Untreated	Total	
	Agra	90	86-Domestic 4-Mixed	16	61	13	220.75	57.85	278.60	57.85

b) **Details of Sewage Pollution Sources**

The details of Sewage Treatment Plants along with installed capacity, utilized capacity, operating agency and discharge point is given in the table below:-

Details of STPs

S.No.	Name of STP	Location		Installed Capacity (MLD)	Utilized Capacity (MLD)	Capacity Utilized (%)	Operating Govt. Agency	Discharge Drain
		Latitude	Longitude					
1.	Dhadhupura, Agra	27.1604030	708.070862	78 MLD	68.41	87.7	UASB	Yamuna River
2.	Budi ka Nagla, Agra	27.2259406	77.9947768	2.25 MLD	2.97	132	Oxidation Pond	Yamuna River
3.	Peelakhar, Agra	27.1989636	78.0590777	10 MLD	9.74	97.4	Oxidation Pond	Yamuna River
4.	Devri Road, (Bhimnagri), Agra	27.0934538	78.0293578	12 MLD	6.35	52.9	UASB	Terminal DY
5.	Jaganpur, Sikandarpur, Agra	27.2451240	77.9984511	14 MLD	13.39	95.6	UASB	Partially used for Irrigation & Partially to Yamuna River
6.	Sadarwan, Bichhpuri, Agra	27.1784189	77.9050032	40 MLD	18.73	46.8	UASB	Terminal DY
7.	Dhadhupura (New), Agra	27.1656300	78.0755874	24 MLD	18.91	78.8	UASB	Partially for Irrigation & rest to Yamuna River

S.No.	Name of STP	Location		Installed Capacity (MLD)	Utilized Capacity (MLD)	Capacity Utilized (%)	Operating Govt. Agency	Discharge Drain
		Latitude	Longitude					
8.	Sadarwan (Bichpuri) New	27.1784190	77.9050030	36 MLD	36	100	SBR	Terminal DY
9.	KalindiVihar, Agra	27.2210777	78.0668581	4.50 MLD	4.5	100	UASB	Through Karvan River into Yamuna River
10.	100 MLD STP near 78 MLD Dhadhupura, Agra	-	-	100 MLD (Proposed)	-	-	SBR	Yamuna River
11.	35 MLD STP near 10 MLD at Peelakhar, Agra	-	-	35 MLD (Proposed)	-	-	SBR	Yamuna River
12.	31 MLD STP near 14 MLD Jaganpur, Sikandarpur, Agra	-	-	31 MLD (Proposed)	-	-	SBR	Partially for Irrigation & rest to Yamuna
13.	10 MLD DSTP (D-centralized STP at different drains)	-	-	10 MLD (Proposed)	-	-	-	Yamuna River

DETAILS OF CETPs

S.No.	District	Name of CETP	Location		Installed Capacity (MLD)	Utilized Capacity (MLD)	Operating Govt. Agency/SPV	Discharge Drain
			Latitude	Longitude				
1.	Agra	Nil	-	-	-	-	-	-

2.5.3 Others Sources(Agricultural Runoff, Leachate from MSW Dump, Illegal Dump Sites etc.): NA

2.6 Impact on Surrounding Area(Outside the PIAs):On the water sources/drainage system of the area under consideration.

Agra city have well laid down drainage system with efficient water waste carrying capacity and more work on it is being done by local bodies in the surrounding areas of region. No ill-effect of pollutants in the surrounding area has been identified from CEPI region.

2.7 Details of Water Polluting Industries in the Area/ Cluster

S. No.	Name and Address	Product	Location		Type	Treatment Mechanism (ETP /CE TP)	Effluent Discharge (KLD)	Effluent Discharge Drain	Consent status	
			Latitude	Longitude					Air	Water
1.	Frigrifigoallana Pvt. Ltd owned by Modern Slaughter House Nagar Nigam Chhalesar,	Meat Processing/ Slaughter House	27°11' 57" N	78°6' 31" E	Medium	ETP	216	On Land	Yes	Yes

	Kuberpur, Agra									
2.	HMA Food Exports Pvt. Ltd. (Slaughter House) Plot No. 293-295 and 297, Kuberpur, Etmadpur, Agra	Slaughter House	27°11' 57" N	78°6' 31" E	Medium	ETP	500	On Land	Yes	Yes

2.8 Effluent Disposal Methods- Recipient Water Bodies etc.

Details of treatment facility, disposal means and receiving water bodies is as below:

S.No	Polluted Industrial Area	Domestic Sewage Treatment Facility	Industrial Effluent Treatment Facility	Receiving Water Body
1	Nunhai Industrial Estate , Agra	Peelakhar STP (10 MLD)	Individual ETPs	River Yamuna
2	Foundry Nagar Industrial Area	Peelakhar STP (10 MLD)	Individual ETPs	River Yamuna
3	Sikandra Industrial Area	Bichpuri STP (36 MLD & 40MLD)	Individual ETPs &STPs	Terminal DY

2.9 Quantification Of Wastewater Pollution Load And Relative Contribution By Different Sources viz Industrial/ Domestic

a) Industrial:

S. No.	Drain	Type of Industry							Total Effluent Discharge (MLD)	Pollution load (BOD in kg/day)
		* The Type of Industry may be changed as per local conditions								
		Sugar	Pulp & Paper	Distillery	Textile	Slaughter House	Others	Total		
1.	Peelakhar	NIL	NIL	NIL	NIL	NIL	Electroplating Units (18)	18	0.038	0.00046

b) Domestic:

S No.	No. of Drains	Type of Drains			Status of Drains			Industries		Sewage Discharge (MLD)			Pollution load (BOD in kg/day)
		Domes tic	Industri al	Mixed	Tapp ed	Unta pped	Partiall y Tapped	Numb er	Treated Effluent (MLD)	Treat ed	Untre ated	Total	
1.	90	86	0	4	16	61	13	18	0.038	-	-	-	0.00046

2.10 Action Plan for Compliance and Control of Pollution

2.10.1 Short Term Action Points (upto 1 year, including continuous activities)

Short Term Action Points (upto 1 year, including continuous activities)

Sr. No.	Action Points	Timeline	Responsible Agencies/ Stake Holders
2.10.1 a)	<p>Water Pollution</p> <ul style="list-style-type: none"> Industrial Source - Proposed Action Plan for effective control of Water Pollution: Regular effluent sample collection and analysis of Pollution Control System in Red, Orange & Green category Industries to be done to ensure strict compliance of prescribed effluent norms. Installation of energy meter, on line PH meter, automatic chemical dosing system, on line effluent quality & flow measurement (OCEMS) and installation of independent laboratory to monitor critical parameters like MLSS, SVI etc. and other inlet and outlet parameters of ETP for Large & Medium Industries Upgradation of ETP in existing water polluting units is to be done on case to case basis. Under the upgradation plan, suitable tertiary treatment methods are to be installed in a time bound manner in order to ensure that treated water is recycled/ reused to the maximum extend. 	<p>Frequency Red category- 3 months Orange category -6 months Green category -12 months (By UPPCB) & By Individual Industries as follows</p> <p>Ongoing</p> <p>Within 06 months.</p>	<p>UPPCB, Individual Industry</p> <p>Individual Industries (Large and Medium)</p> <p>Individual Industries.</p>
b)	<ul style="list-style-type: none"> Groundwater Pollution: Regular monitoring of Over Head Tanks supplying drinking water in the region and Rainy wells is proposed to be done by Regional Laboratory of State Pollution Control Board. Also, intensive surveys will be done to ensure that practice of reverse boring is not prevalent in the region. 	<p>Ongoing</p>	<p>Jal Nigam/ State Ground Water Authority</p>
c)	<ul style="list-style-type: none"> Domestic Waste Water (Sewage): Domestic sewage 		

	contributes to about 80% of Water pollution.		
	<ul style="list-style-type: none"> STPs are Operational 	Ongoing	UPPCB and Jal Nigam
	<ul style="list-style-type: none"> Combined Inspection of STPs by UPPCB and Jal Nigam 	Ongoing Process	UPPCB and Jal Nigam
	<ul style="list-style-type: none"> Upcoming High Rise Buildings, Commercial Project, Educational Institution, Multiplex, Town ship & Building Projects are major source of sewage generation and Municipal Solid Waste. Such projects must ensure setting up of STPs, recirculation of treated water for flushing/gardening regarding purpose & ensure compliance of the conditions of the Environment Clearance and NOC from PCB. 	Ongoing Process	Project proponent, Agra Development Authority & UPPCB.

2.10.2 Existing Infrastructure Facilities- Water quality monitoring network, ETPs, CETPs, sewerage treatment plant of industry (STPs), surface drainage system, effluent conveyance channels/ outfalls etc.

2.10.3 Technological Intervention

2.10.4.1 Inventorization of Prominent Industries with Technological Gaps

S. No	No. of Industries	Category	Pollution control measures installed (Y/N)
1	02	Slaughter Houses	yes
2	17	Electroplating	yes

2.10.4.2 Identification of Low Cost and Advanced Cleaner Technology for Pollution Control

S. No	Number of industries adopted cleaner technologies	Previous technologies	New technologies
1	02 Slaughter Houses adopted Zero liquid discharge technology	After treatment on land	Zero liquid discharge technology

2.10.5 Infrastructure Renewal if any required

2.10.5.1 Details of existing infrastructure facilities-

- The Nunhai industrial estate developed by Department of Industries, U.P and other two industrial areas eg. Foundry Nagar and Sikandra Industrial Area, I.A have been developed by the UPSIDA.
- The Infrastructural facilities in industrial areas have been provided by the concerned department.
- Infrastructure available for treatment of drinking water/sewage water in the region is regulated by the state government whereas, industrial effluents is treated by industries themselves as no CETP facility is available in the region.
- New building being constructed with in periphery of industrial area.

2.10.5.2 Need of up gradation of existing facilities –

Increase in population, upcoming High rise Buildings, Commercial Project, Educational Institution, Multiplexes, Township the load of sewage is to increasing, thus it is need of the hour to update the existing facilities. To achieve more better results of industrial effluent generated from Small/medium/big scale electroplating industries from conventional treatment technique to ion-exchange based technique within one year. Jal Nigam has already propose the New STPs of 166MLD capacity for Agra. Which has been approved by NMCG and under consideration at State Government.

Proposed STPs in Agra

- 166MLD CAPACITY STPs is Proposed by Jal Nigam up to the year 2035.
 - The master plan of city for providing complete sewerage system for the year 2040 requirement has been prepared and approved by State Govt. As per Master Plan STP of 300 MLD capacity are required for the year 2025.
 - Other 94 MLD STPs are proposed for future .
-

2.10.5.3 De-silting of water tanks, drains, culvert, etc. –

The details of drains in the PIAs have been furnished in earlier part of the report.

Due to unabated disposal of solid waste/plastic in the drains they are choked at most of the stretches. Thus, frequency of desilting has to be increased. Also, sludge removed from drains is often left unattended by the side of the drains, same should be lifted as soon as possible and if possible, sludge drying area should be made an integrated part of the drain.

2.10.5.4 Construction of lined drains/connections –

U.P. Jal Nigam & Nagar Nigam, Agra is regularly constructing lined drain and Sewer providing connections with in the city. Departments have already begun work on providing proper conveyance channel to carry waste water to treatment facilities and effluent out of it into the nearby water body.

2.10.5.5 Treatment and management of contaminated surface water bodies –

Treatment and management of contaminated surface water bodies is required, When all the drain should be tapped and connected with STPs.

2.10.5.6 Rejuvenation/ Management Plan for important eco-geological features-

Several scheme eg. rainwater harvesting, check dams, recharge pits, medhbandhi, wet land etc. projects are being implemented by the concerning departments as SGWB/ADA/Nagar Nigam/UPPCB/Minor Irrigation/Forest Department etc for recharging and diluting the salinity in ground water.

2.10.5.7 Comments on Carrying of effluent from industrial units located in non-industrial locations to CETP facilities by lined drains/ pipelines only and prevention of other disposal into city sewerage/ surface drainage

It should be ensured that no industrial unit operates in non-industrial area, if any such unit is identified appropriate action is to be taken against it by Development authorities, Department of Electricity with the help of District Administration. Thus, there is no need of drains/pipelines dedicated to such industries.

2.10.5.8 Installation of Gen-sets at CETPs –

CETP is not installed in Agra district. One CETP is proposed at Lakhanpur for small scale electroplating units. Public hearing has been done. The matter is pending at State Environmental Impact Assessment Authority. Presently no CETP is operational in Agra

2.10.6 Managerial and Financial aspects

2.10.6.1 Cost and time estimates:

The approximate cost to be incurred to improve the existing infrastructure, Drinking water and sanitation facility, MSW handling/collection infrastructure is to be assessed. Also, it would be appropriate to engage a third party for complete inventORIZATION of pollution sources and preparing a Pollutant Transfer Register for each of the identified PIAs. Project for same shall be prepared and required funding shall be worked out thereafter.

2.10.6.2 Identified private/ public sector potential investors and contribution/ obligation:

Appropriate agencies will be identified after finalization of action plan.

2.10.6.3 Government Budgetary support requirement

Finalized action plan will be submitted to the Government seeking financial support wherever necessary.

2.10.6.4 Hierarchical and structured managerial system for efficient implementation:

UPPCB in association with stakeholders at regional level will oversee the implementation of finalized action plan under the Chairmanship of District Magistrates.

2.10.7 Self monitoring systems industries (ETPs) etc.-

S. No.	Industries	Category	ETPs installed(Y/N)	Data linkages (Y/N)
1	Frigorifigo allana Pvt. Ltd owned by Modern Slaughter House Nagar Nigam Chhalesar, Kuberpur, Agra	Slaughter House/ Meat Processing	Yes	Yes
2	HMA Food Exports Pvt. Ltd. (Slaughter House) Plot No. 293-295 and 297, Kuberpur, Etmadpur, Agra	Slaughter House	Yes	Yes

2.8 MONITORING: SURFACE WATER, GROUND WATER

SURFACE WATER MONITORING STATIONS

#	Location/Station	Location Code	#	Location/Station	Location Code
1	U/S Kailash Ghat, River Yamuna, Agra	27.22417° 77.92111°	3	D/s Near Taj Mahal, River Yamuna, Agra	27.17611° 78.04417°
2	U/s Water Works, River Yamuna, Agra	27.20444° 78.03583°			

3.0 Air Environment

3.1 Present status of Air environment: supported with minimum one-year analytical data i.e. status of AQI for last 1 year.

Comparative presentation of AQI of District Agra along with concentration of gaseous as well as particulate matter has been presented in tables below.

MONTHLY AVERAGE VALUE OF AQI OF AGRA												
Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2019	332.41	231	160.22	140.9	134.06	113.13	67.48	70.82	46.89	103.51	172.06	137.38

3.1.1 Critical locations for air quality monitoring: Identification of critical locations for air quality monitoring

S. No.	Locations identified	Coordinates		Distance and direction
		Latitude	Longitude	
1.	Taj Mahal, Agra	27.17307	78.03388	
2.	Etmad-ud-daulah, Agra	27.16772	78.03589	
3.	Rambagh, Agra	27.20598	78.04148	
4.	Nunhai, Agra	27.20128	78.04422	
5.	Bodla (RO office building) residential area, Agra	27.19417	77.9625	
6.	Industrial area, Nunhai, Agra	27.19808	77.92637	
7.	ASI Operated AAQM station at Taj Mahal	27.16544	78.05452	
8.	(CAAQMS) at Nagar Nigam Building, Agra	27.18288	77.99682	

04 more Continuous Ambient Air Quality Monitoring Station are proposed for effective monitoring.

01 Manually Ambient Air Quality Monitoring Station are proposed in rural area for effective monitoring.

3.1.2 Present levels of pollutants in air:

Reports of routine parameters, special parameters and air toxic relevant to the area in three categories- known carcinogens probable carcinogen and other toxic

a) Ambient Air Quality Monitoring for following parameters:

i) SO₂, NO₂ , PM₁₀ , PM_{2.5}, Pb and other relevant parameter (for 24 hourly average monitoring values)

AAQM Data-2019 at CPCB Monitoring Station's Agra										
Monitoring Stations→	Industrial Estate, Nunhai (Industrial Area)					Regional Office Building, Bodla (Residential Area)				
Parameters →	SO₂	NO₂	PM_{2.5}	PM₁₀	SPM	SO₂	NO₂	PM_{2.5}	PM₁₀	SPM
Months↓										
Jan	4.4	25.4	-	319.0	609.0	4.4	24.6	-	313.0	569.0
Feb	5.6	27.2	-	217.0	446.0	5.1	26.7	-	204.0	389.0
Mar	5.2	31.8	-	214.0 3	431.8 8	4.5	23.9	-	163.8 0	331.2 8
Apr	3.9 7	30.1 5	-	308.0	536.1 1	3.8 2	20.0 1	-	191.7 5	477.6 2
May	5.9	30.0 1	-	231.0	515.0	4.9	18.0	-	195.0	390
June	4.6	23.3	-	183.0	555.5	4.3	19.8	-	151.6	355.6
July	4.5	24.3	-	202.0	410.0	3.4	17.9	-	132.0	337.0
Aug	4.7	20.6	32.0	70.3	135.4	3.9	15.8	24.0	64.2	116.8
Sept	3.7	12.4	52.0	91.4	130.5	3.2	10.7	39.0	68.0	107.0
Oct	5.6	38.4	154.0	260.0	515.0	4.2	26.4	139.0	181.0	320.0
Nov	5.0	37.0	214.0	300.0	512.0	3.7	21.8	180.0	255.0	341.0

Dec	9.1	34.8	226.0	278.0	408.0	5.0	24.8	205.0	236.0	338.0
Annual AVG	5.1 8	27.9 4	56.5	222.8 1	433.6 9	4.2 0	20.8 6	48.91	179.6 1	299.5 5
Note: all above monthly average values are in $\mu\text{g}/\text{m}^3$ 24hrly Average Standard: SO₂: 80$\mu\text{g}/\text{m}^3$, NO₂: 80$\mu\text{g}/\text{m}^3$, PM10: 100$\mu\text{g}/\text{m}^3$, PM2.5: 60$\mu\text{g}/\text{m}^3$ Annual average Standard: SO₂: 20$\mu\text{g}/\text{m}^3$, NO₂: 30$\mu\text{g}/\text{m}^3$, PM10: 60$\mu\text{g}/\text{m}^3$, PM2.5: 40$\mu\text{g}/\text{m}^3$										

AAQM Data-2019 at CPCB Monitoring Station's Agra										
Monitoring Stations→	Tajmahal					Itmad-ud-daulah				
Parameters→	SO₂	NO₂	PM2.5	PM10	SPM	SO₂	NO₂	PM2.5	PM10	SPM
Months↓										
Jan	5	26	191	267	366	5	20	208	302	479
Feb	5	18	122	164	285	5	25	122	162	319
Mar	6	20	74	143	271	5	28	82	175	349
Apr	5	18	64	168	354	4	26	81	81	440
May	5	17	64	168	370	5	26	82	168	429
June	5	14	42	120	312	5	23	-	132	358
July	5	12	32	52	127	4	23	-	44	140
Aug	6	13	26	32	71	5	16	35	52	99
Sept	4	10	25	33	67	5	22	37	42	107
Oct	6	23	115	158	284	4	35	134	146	303
Nov	6	29	195	231	374	9	44	227	278	468
Dec	7	26	198	238	322	5	38	233	283	379
Annual AVG	5	19	96	148	267	5	27	124	155	323
Monitoring Stations→	Rambagh					Nunhai				
Parameters→	SO₂	NO₂	PM2.5	PM10	SPM	SO₂	NO₂	PM2.5	PM10	SPM
Months↓										
Jan	5	24	178	228	422	4	27	-	336	670
Feb	4	28	120	159	246	6	28	-	226	466
Mar	5	24	72	157	298	5	35	102	221	468
Apr	4	27	85	220	446	4	30	96	322	373
May	5	33	77	233	481	6	28	82	228	510
June	5	23	58	170	401	5	23	64	191	414
July	4	18	47	78	200	4	19	47	85	227

Aug	5	15	30	45	123	5	20	34	53	145
Sept	5	14	35	40	96	4	12	41	44	132
Oct	4	22	97	131	258	6	40	176	264	532
Nov	4	27	-	247	411	5	39	241	284	568
Dec	8	25	216	228	309	9	34	233	298	448
Annual AVG	5	23	92	161	308	5	28	112	213	413

Note: all above monthly average values are in $\mu\text{g}/\text{m}^3$

24hrly Average Standard: SO_2 : $80\mu\text{g}/\text{m}^3$, NO_2 : $80\mu\text{g}/\text{m}^3$, PM_{10} : $100\mu\text{g}/\text{m}^3$, $\text{PM}_{2.5}$: $60\mu\text{g}/\text{m}^3$

Annual average Standard: SO_2 : $20\mu\text{g}/\text{m}^3$, NO_2 : $30\mu\text{g}/\text{m}^3$, PM_{10} : $60\mu\text{g}/\text{m}^3$, $\text{PM}_{2.5}$: $40\mu\text{g}/\text{m}^3$

ii) O_3 , CO, Benzene, Arsenic, Nickel and other relevant parameter

Eecotech Monitoring Station, U.P.P.C.B., AGRA 2019											
Month	CO	SO ₂	NO	NO ₂	NO _x	PM 10	PM 2.5	O ₃	Benzene	Toluene	Xylene
Unit	mg/m ³	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$	$\mu\text{g}/\text{m}^3$
JAN,19	1.05	10.8	39.3	55.8	125.0	*	178	11.9	1.07	3.76	2.53
FEB,19	0.86	11.9	18.5	36.9	66.5	*	111	21.6	5.90	7.77	1.18
MAR,19	0.62	8.2	15.5	33.6	49.1	*	79	14.7	9.60	10.27	0.94
APR,19	0.63	9.8	16.6	36.8	59.4	*	70	14.8	7.98	12.33	1.67
MAY,19	0.69	12.4	16.8	39.9	62.5	*	67	42.7	8.60	13.92	1.49
JUN,19	0.67	9.3	11.6	27.3	43.1	*	59	36.8	4.40	7.25	1.24
JUL,19	0.58	8.0	15.9	21.0	43.2	*	37	13.0	1.85	4.18	0.94
AUG,19	0.55	12.2	20.7	20.5	37.4	*	39	14.1	2.18	4.56	1.01
SEP,19	0.47	20.0	26.6	19.2	31.8	*	27	13.9	3.04	11.56	1.07
OCT,19	1.01	14.8	41.4	35.7	52.7	*	56	21.6	7.07	29.06	3.45
NOV,19	1.31	15.7	41.7	53.0	62.2	*	81	18.2	6.90	31.34	4.66
DEC,19	1.19	18.0	35.9	60.4	61.3	*	71	8.9	6.40	23.93	3.93
AVG	0.80	12.6	25.0	36.7	57.9	*	73	19.4	5.42	13.33	2.01

3.1.3 Predominant sources contributing to various pollutants

S. No	Sources	Percent contribution	Main Pollutants
1.	Vehicular emission	-	SO₂, NO_x, PM 2.5
2.	Road Dust	-	PM 2.5, PM 10
3.	Solid Waste Burning	-	PM 2.5, PM 10, CO
4.	Industrial emission	-	SPM, NO_x

3.2 Sources of air pollution: viz industrial, domestic (coal an biomass burning), natural and transport and heavy earth movers

Source apportionment study for Agra with regards to various sources in the region has been awarded to IIT-Kanpur, which is likely to be completed by October, 2020.

3.3 Air Polluting Industries in the area/ cluster

S. No	Name of Cluster	Number of Air Polluting industries	Direction	Coordinates		Distance and direction
				Latitude	Longitude	
1	Nunhai Industrial Estate, Agra	25	East	27.20095	78.05426	-
			West	27.1979	78.04645	-
			North	27.20042	78.04824	-
			South	27.19827	78.05112	-
2	Foundry Nagar Industrial Area, Agra	53	East	27.21424	74.04342	-
			West	27.21552	78.03978	-
			North	27.22958	78.04652	-
			South	27.20956	78.04159	-
3	Sikandra Industrial Area, Agra	02	East	27.21033	77.95199	-
			West	27.19821	77.92626	-
			North	27.22063	77.92836	-
			South	27.21373	77.91875	-

3.4 Impact of activities of nearby area as the CEPI Area

The Ambient air quality of the area is depends on various factors in the air shed. No specific study with regards to impact of specific CEPI area on nearby areas outside the PIAs has been carried out.

3.5 Quantification of the air pollution load and relative contribution by different sources(If done from reputed institution)

S. No.	Air Pollution Sources	Category	Pollution Load	Percentage
1	-	-	-	-
2	-	-	-	-

Source apportionment study for Agra with regards to various sources in the region has been awarded to IIT-Kanpur, which is likely to be completed by October, 2020.

3.6 Action plan for compliance and control of pollution

Short Term Action Points (upto 1 year, including continuous activities)			Responsible

Sr. No.	Action Points	Timeline	Agencies/ Stake Holders
3.6 a)	<ul style="list-style-type: none"> • Air Pollution Industrial: Detailed Inventory of total air polluting industries in the region. • Proposed Action Plan for effective control of Air Pollution: Regular Monitoring of Air Pollution Control System with a use of (OCEMS) in large and medium Industries in order to ensure strict compliance of prescribed Norms. 	Stack Monitoring of Large & Medium scale units every 06 months and once in a Year for SSI units. (By UPPCB & by individual Industries)	UPPCB & Individual Industries.
Long Term Action Points (more than 1 year)			
Sr. No.	Action Points	Timeline	Responsible Agencies/ Stake Holders
b)	<ul style="list-style-type: none"> • Clean fuel for vehicles: Sufficient number of CNG stations should be provided to ensure continuous and enough supply of clean fuel. Phasing out of old diesel commercial vehicles is being done as per policy. 	01 year / As per plan submitted by Gas Agencies.	RTO & Gas Companies
c)	<ul style="list-style-type: none"> • Installation of Ambient Air Quality Monitoring Stations: At present manual AAQM Stations are operational but new AAQM continuous AAQM Stations need to be set up for Ambient Air Quality in critical Industrial Zones. 	1 Year	UPPCB and CPCB
d)	<ul style="list-style-type: none"> • Display of AAQMS data: On line display of AAQMS data at two different locations in the area need to be under taken by Industries Association and UPPCB 	1.5 Years	Industries /UPPCB & CPCB
e)	<ul style="list-style-type: none"> • Cleaner Fuel for Industrial Uses: No industry should be operational with fossil fuel like coal/coke / wood /LDO/HSD etc., as it emits SPM, SO₂ and other pollutants. Natural Gas is being supplied by Gail Gas Ltd/Green Gas Limited, as per Hon'ble Supreme Court order dt.30.12.1996 in WP(C)-13381/1984 (M.C Mehta Vs Union of India & Ors.), 	Ongoing	UPPCB & District Administration
f)	<ul style="list-style-type: none"> • Use of Cleaner fuel: Time frame to be chalked out by RTO for conversion of all Commercial vehicles such as Auto, 	01 Year	Transport Department in consultation with

	Bus & Auto into CNG.		Oil & Gas Companies
g)	<ul style="list-style-type: none"> Development of Green Belt: Develop Green belt up to 40% of the total area. 	Ongoing	Dept. of Industries /Forest Dept. & Concerned Industries

3.6.1 Existing infrastructure facilities- Ambient Air Quality Monitoring Network

Number of manual AQ monitoring station	Number of CAAQMS	Total Monitoring station
07	01	08

	Location/Station	Location Code	#	Location/Station	Location Code
1	Taj Mahal , Agra operated by CPCB (Sensitive Area)	A1	3	Rambagh, Agra operated by CPCB (Sensitive area)	A3
2	Etmad-ud-daulah, Agra operated by CPCB (Sensitive Area)	A2	4	Nunhai, Agra operated by CPCB (Industrial area)	A4
5	Nunhai Agra operated by UPPCB (Industrial area)	A5	6	Bodla (RO office building) Agra operated by UPPCB (Residential area)	A6
7	AAQM station at Taj Mahal Operated ASI (Sensitive Area)	A7	8	(CAAQMS) at Nagar Nigam Building, Agra (commercial area)	A8

3.6.2 Pollution control measure installed by the individual sources of pollution

S. No.	Pollution Sources	Category	APCS installed(Y/N)
1	Induction and Cupola Furnaces	Orange/Small	Yes
2	Boiler in dairy & Slaughter Houses	Red/Orange/Medium/Small	Yes (Based on natural gas)

3.6.3 Technological intervention

3.6.3.1 Inventorization of prominent industries with technological gap

S. No.	Industries	Category	APCS installed(Y/N)
1	Cupola Furnace	Small	Yes
2	Induction Furnace	Small	Yes

3.6.3.2 Identification of low cost and advanced cleaner technology for air pollution control

3.6.3.3 Introduction and switch over to cleaner fuel

S. No.	Number of industries adopted cleaner fuel technologies	Previous fuel	New fuel
1	All	Coke &Coal /Diesel/Wood	Natural Gas

3.6.4 Need of infrastructure renovation

3.6.4.1 Development of roads: Identification of damaged roads which needs repairment and maintenance:

S. No.	Identified damaged roads	Length	Remarks
1	-	-	-

3.6.5 Impact on CEPI score after installation/ commissioning of fully fledged air pollution control systems

CEPI scores assessed by Central Pollution Control Board has shown a decreasing trend in Air, Water and Land CEPI. Scores shall be evaluated on regular basis to assess impact of installation of APCS and other control measures taken.

3.6.6 Managerial and financial aspects- cost and time estimates

3.6.6.1 Cost and time estimates: Details of cost estimated for any infrastructure renewal related works, if any.

3.6.6.2 Identified private sector potential investors and their contribution/ obligations: If any, investment from private sector potential investors please provides details.- NIL

3.6.6.3 Government budgetary support requirement

S. No.	Amount of budget allocated to CEPI area	Remarks
1	NIL	NIL

3.6.6.4 Hierarchical and structured managerial system for efficient implementation

3.6.7 Self monitoring system in industries (stacks, APCDs)

S. No.	Industries	Category	APCS/APCDs installed(Y/N)
1	Frigrifigo allana Pvt. Ltd owned by Modern Slaughter House Nagar Nigam Chhalesar, Kuberpur, Agra	Slaughter House(Red)	Yes
2	HMA Food Exports Pvt. Ltd. (Slaughter House) Plot No. 293-295 and 297, Kuberpur, Etmadpur, Agra	Slaughter House(Red)	Yes
3	JRR waste management pvt ltd, 670, Village-Dharera, Kuberpur, Etmadpur, Agra	CBWTF(Red)	Yes

3.6.8 Data linkages to SPCB/ CPCB (OCEMS)

S. No.	Industries	Category	Data linkage (Y/N)
1	Frigrifigo allana Pvt. Ltd owned by Modern Slaughter House Nagar Nigam Chhalesar, Kuberpur, Agra	Slaughter House(Red)	Yes
2	HMA Food Exports Pvt. Ltd. (Slaughter House) Plot No. 293-295 and 297, Kuberpur, Etmadpur, Agra	Slaughter House(Red)	Yes
3	JRR waste management pvt ltd, 670, Village-Dharera, Kuberpur, Etmadpur, Agra	CBWTF(Red)	Yes

3.6.9 AAQM Status of District

S. No.	NAME AND ADDRESS OF THE INDUSTRY	PHONE NUMBER	NUMBER OF AAQM INSTALLED	PARAMETERS MONITORED
1	NIL	-	-	PM ₁₀ , SO ₂ , NO _x & CO
				PM _{2.5} , PM ₁₀ , SO ₂ , NO _x , CO, Ammonia, Benzene, Ozone
2	NIL	-	-	PM _{2.5} , PM ₁₀ , SO ₂ , NO _x , CO, Ammonia, Benzene, Ozone
3	NIL	-	-	PM _{2.5} , PM ₁₀ , SO ₂ , NO _x , CO, Ammonia, Benzene, Ozone
4	NIL	-	-	PM _{2.5} , PM ₁₀ , SO ₂ , NO _x , CO, Ammonia, Benzene, Ozone, Toluene, Xylene, Humidity, Raingauge, Temperature, Solar Radiation, Wind Speed and Direction

4. Land Environment(Soil and ground water)

4.1 Soil contamination

4.1.1 Present status of land environment supported with minimum one-year data:

Test regarding soil contamination is not being carried out by State Board. Data regarding contamination not available.

4.1.2 Critical locations for land/soil pollution assessment and ground water monitoring

No critical location for land/soil pollution has been identified in Agra city. Ground water quality is being assessed at various points in industrial areas. The locations are as below:-

1. Industrial Area, Foundry Nagar, Agra.
2. UPSIDC, Sikandra Site-A,B,C & EPIP, Agra
3. Industrial Estate-Nunhai, Agra

4.1.3 Present levels of pollutants in land / soil and ground water (routine parameters, special parameters and water toxics relevant to the area in three categories- non carcinogens, probable carcinogens and other toxics)

Test regarding soil contamination is not being carried out by State Board. Data regarding contamination not available

4.1.4 Predominant sources contributing to or poisoning danger of pollution of land and ground water such as hazardous/ toxic waste or chemical dumps/ storage etc.

S. No.	Sources	Percent contribution	Main Pollutants
1	Electroplating industries in industrial areas.	-	Nickel, Chrome etc.
2	MSW dumping at Kuberpur	-	Leach ate

4.1.4 Sources of soil contamination

As per 4.1.4. Test regarding soil contamination is not being carried out by State Board. Data regarding contamination not available.

4.1.5. Types of existing pollution:

As per 4.1.4

4.1.6. Remedies for abatement, treatment and restoration of normal soil quality: Please provide details and treatment methods adopted

Plan for treatment of legacy waste under progress. Specific plan for abatement, treatment and restoration of soil quality shall be carried out through expert third party institutes if required.

4.2 Ground water contamination

4.2.1. Present status /quality of ground water

S. No.	Cluster	Months (2019)	Present status								Condition
			F	T.Cr	Cu	Cd	Pb	Fe	Ni	Zn	
1	Industrial Area, Foundry Nagar, Agra	30.11.2019	1.256	0.0716	0.0252	0.0174	ND	0.318	0.0542	0.0546	-
2	UPSIDC, Sikandra Site-A,B,C & EPIP, Agra	30.11.2019	0.339	0.0182	0.0056	0.005	ND	0.113	0.0058	0.0068	-
3	Industrial Estate-Nunhai, Agra	30.11.2019	1.326	0.0814	0.0312	0.0276	ND	0.1752	0.105	2.4	-

4.2.2. Source identification (Existing sources of Ground water pollution)

S. No.	Sources identified	Coordinates		Distance and direction
		Latitude	Longitude	
	NIL	NIL	NIL	NIL

4.2.3. Ground water quality monitoring program

S. No.	Sampling Locations	Coordinates		Frequency	Parameters tested
		Latitude	Longitude		
1	Submersible at Sikandra Factory Owners Association Office Compound, Agra	27.21033	77.95199	Yearly	F, T.Cr, Cu, Cd, Pb Fe, Ni, Zn
2	PPDC office Compound, Foundry Nagar, Agra	27.21424	74.04342	Yearly	F, T.Cr, Cu, Cd, Pb Fe, Ni, Zn
3.	JDI office, Nunhai, Agra	27.21033	77.95199	Yearly	F, T.Cr, Cu, Cd, Pb Fe, Ni, Zn

4.2.4. Action plan for control of pollution including cost/ time aspects

Short Term Action Points (up to 1 year, including continuous activities)			
Sr. No.	Action Points	Timeline	Responsible Agencies/ Stake Holders
4.2.4 a)	Land Pollution Proper Storage & Disposal of Hazardous Waste & Solid Waste.	To send waste every 03/04 months	Individual Industry
Long Term Action Points (more than 1 year)			
Sr. No.	Action Points	Timeline	Responsible Agencies/ Stake Holders
4.2.4 b)	<ul style="list-style-type: none"> Land Pollution Soil Testing: Soil testing in all 3 industrial clusters of Agra is proposed to be done for different metals like Pb, Cr, Cu, Fe etc. twice a year through recognize laboratory. 	01 Year	UPPCB

4.2.5. Treatment and management of contaminated ground water bodies etc:

Management of ground water level in the region is achieved by implementing rain water harvesting in industries in all the clusters. In future, it is also proposed to implement rain water harvesting in residential areas as well with the help of authorities concerned. This will help not only in maintaining ground water levels but also reduce the problem faced due to heavy run off during rains.

4.2.6. Impact on CEPI Score after abatement of pollution:

Proper management of groundwater in the region will help in lowering the overall CEPI score as it will have positive impact on A1, B2, B3, C1, C2, C3 and D.

4.3 Solid Waste Generation and Management:

4.3.1. Waste Classification and Quantification

UPPCB has classified wastes according to the Rules and Notifications and quantified each category. However, the work of inventorization of different types of non-hazardous waste generated in the core & impact zone of the study area will be carried within the time frame as per action plan. All three identified cluster falls under the jurisdiction of Municipal Corporation Agra. It is the responsibility of Municipal Corporation, Agra for disposing the solid waste scientifically. The industrial non-hazardous solid waste is disposed to respective recyclers.

4.3.1.1. Hazardous Waste

S. No.	Source	Quantity (MT)/Annum
1.	Agra Chains Pvt. Ltd. 14,133, Industrial area; Nunhai, Agra	0.64
2.	Agra Machine tools Pvt. Ltd.,132, Industrial Area, Nunhai Agra	0.24
3.	Agrawal Industries (Old address, Katra Wazir Khan, Agra) E-65, Foundry Nagar, Agra	0.018
4.	AJANTA RAAJ PROTEINS LTD Village Manikpura, Agra-Bah Road, Agra	0.05
5.	AtulDeepwell Hand Pumps, Atul Compound, Industrial area; Nunhai, Agra	0.2
6.	BenaraUdyog Pvt. Ltd., Bodla Road, Agra	0.3
7.	Bharat Chains manufacturing company 99, Industrial Estate, Nunhai, Agra	0.3
8.	Crown Chain , 147, Industrial area; Nunhai, Agra	0.3
9.	ENKAY EXPORT INDIA LIMITED C-94, C-133 TO C-138, EPIP, SHASTRIPURAM,AGRA	2.33
10.	Gupta plating Works (Old name-Tulsi Ram Chain Factory), 8 New Adarsh Nagar, Balkeshwar Agra.	0
11.	Hindustan Media Ventures Ltd, 660/2, Sikandra, Shastripuram Crossing, Agra	0.95

12.	HMA Food Export Pvt Limited, Plot No-293,295,297, Kuberpur Agra	5
13.	Hotel (ITC Mughal) MugalShereton, Fethabad Road, Agra	0.42
14.	Hotel Taj View, Fatehabad Road, Agra	0.32
15.	Indian Oil Corporation Air Force Station, Agra, Kheriya	12
16.	IOCL Bulk Depot, Etmadpur, Agra.	4
17.	Jai Durga Electroplaters, 135A-II, Industrial Area, Nunhai, Agra (Old Name-Madan Lal Agarwal Nickle Plant) 50/74, ShivdasaniNagra, Sahganj, Agra	0.18
18.	Khandelwal Industries Enterprises, 72-80, I.E, Nunhai, Agra	3
19.	Kundan Chains, Freeganj, Agra	0.18
20.	Kundan Leathers Pvt Ltd, B34,35, EPIP Shastripuram, Sikandra, Agra	6
21.	LAMBA FOOTWEAR INDUSTRIES KHASRA NO-238 239, ARTONI, SIKANDRA, AGRA	3.4
22.	M.L Chain 21, Industrial Estate, nunhai, Agra.	0.18
23.	M/s Stonemen Crafts India Pvt. Ltd. A-128,129,130 EPIP UPSIDC, Induatrial Area, Shastripuram, Sikandra, Agra	0.2
24.	M/s Stonemen Crafts India Pvt. Ltd. A-21,22, EPIP Upsidc, Induatrial Area, Shastripuram, Sikandra, Agra	0.2
25.	M/s Stonemen Crafts India Pvt. Ltd. A-24,25 EPIP UPSIDC, Induatrial Area, Shastripuram, Sikandra, Agra	0.2
26.	Manish Trading Corporation, 12/160C, Nunhai, Agra	0.2
27.	METRO AND METRO 5/170 , HALWAI KI BAGICHI, MATHURA ROAD, AGRA	8.64
28.	NUOVA SHOES khasra 432,Mauza Gailana ,Asopa Hospital Road Agra	1.908
29.	Oriental Pathways Agra PvtLtd,Korai Toll Plaza, Kiraoli, Agra	0.2
30.	PRAKASH METAL HOUSE 39/223-224, KARWAN, LOHAMANDI, AGRA	0.031
31.	R.S. chain & company behind of PoliwalFoundry, Rambag, Agra.	0.18
32.	Radha Chains Company Pvt. Ltd., 9, 10, Industrial area; Nunhai, Agra	0.5
33.	Rajni Chains, 167, Industrial area; Nunhai, Agra	0.3
34.	S.K. Udyog, 22/2B Gangeshwar campous, Motilal Nehru road, Agra	0.3
35.	Seema Oil Mills, Foundry Nagar, Agra.	12

36.	Shree Ji, Chains, 114, Industrial Estate, Nunhai, Agr (Perthavi Nath Railway Fatak, Nagla Perthavi Nath, Shahganj) Agra	0.3
37.	Shristi Chains, 168-B Industrial estate, Nunihai, Agra	0.24
38.	SUNNY MOTORS PVT LTD PLOT NO-632, ARTONI, AGRA Tehsil :Agra District :AGRA	2
39.	Tej Shoe Tech, 10th-11th Mile Stone, Agra Mathura Road, Artoni, Agra	0.8
40.	Vecmat Packaging, U.P.S.I.D.C, Sikandra Industrial Area, Agra	0.2
41.	Wallmart India Pvt. A-1, Site-A Industrial Area, Chalesar, Agra	0.65
42.	Wallmart India Pvt. A-1, Site-A Industrial Area, Sikandra, Agra	0.6
	TOTAL	69.657

4.3.1.2 Bio-Medical Waste

S. No.	No. of CBWTF	Quantity	Authorization
	1	1700kg (Approx)	Valid upto 2023

4.3.1.3 Electronic Waste

S. No.	No. of Electronic waste treatment facility	Quantity (MT/Annum)	Authorization
1.	M/s S.R Metcast India (P) Ltd, 11.8 Km, Agra Mathura Road, Agra	600	Valid upto 02.08.2022
2.	M/s Shree Mahaveerji Trading company, 30/127, Chippitola, Agra	3000	Not Valid Presently
3.	M/s Prakash Metal House, 39/223, Karwan, Lohamandi, Agra	1500	Valid upto 02.08.2022

4.3.1.4 Municipal Solid Waste/ Domestic Waste/ Sludge From STPs/ETPs/CETPs and Other Industrial Sources

S. No.	Type of Pollution Sources	% OF Waste Generated
1.	Municipal Solid Waste	712MTD

2.	Sludge from STPs	55 M ³ /day
3.	Sludge from ETPs	25.849 MTD
4.	Sludge from CETPs	NIL

4.3.1.5 Plastic Waste

Sr. No.	No. of Plastic waste Processing facility	Quantity	Authorization	Compliance status
1	01 (Material Recovery Facility of NWMS-120TPD)	120TPD	Not Valid	-

4.3.1.6 Construction and Demolition Waste

S. No.	No. of C&D waste Processing facility	Quantity	Authorization	Compliance status
1	NIL	-	-	-

4.3.1.7 Quantification Of Waste And Relative Contribution From Different Source

S. No.	Pollution source	Type of Wastes	Relative Contribution
1.	Households	Solid Waste	712TPD=87.3%
2.	Industrial	Hazardous Waste	61.857TPD =7.6%
3.	Hospitals	Bio-Medical Waste	1.7TPD=0.21%
4.	Construction Activities	C&D Waste	40TPD=4.9%

4.3.2. Identification of Waste Minimization and Waste Exchange Options:

Looking at the growing amount of solid waste due to rise in population, increase in number of industries, upcoming high rise localities and malls, and the pressure on current waste handling infrastructure will be immense in future. In order to maintain equilibrium with this growth it is important that more research is done on probable waste exchange and minimization programs in which industries, corporate houses, residential welfare associations and government bodies responsible for waste management can work in sync with each other and cope up with growing pressure.

It is also advisable that waste hierarchy (Reduce, Reuse, Recover, Recycle) is implemented in industries on a large scale and a MoU be signed by industries which can sustain symbiotically, i.e. waste material of one industry shall be taken up by another

industry using it as a raw material. This understanding between industries will reduce the overall waste coming out of industries.

UPPCB has also prepared a “Waste to Wealth” directory having details of all the waste in Uttar Pradesh which may be used elsewhere.

4.3.3. Reduction/Reuse/ Recovery/ Recycle Options in the Co-Processing of Waste:

As mentioned elsewhere, due to presence of industries of different types, waste characteristics and processes in same region/area/cluster co-processing of waste is not viable to industries as they need to manage the waste on their site till transportation. However, with advent of technology and new waste treatment processes whereby wastes of different types can be handled simultaneously co-processing option shall be looked into. For best results it is advisable, that a separate unit be setup in regions where industries can register themselves for willingly incorporating Reduce, Reuse, Recover, Recycle in their processes and get their site inspected for the same by experts. Based on the report the industry should incorporate the necessary infrastructural, operational and functional changes over a period of time to do co-processing of their own waste in their process. Once successful this can be implemented between different industries and clusters in following phases.

4.3.4. Infrastructure Facilities:

4.3.4.1. Existing TSDF/Incineration Facilities Including Capacities

Presently, there is no TSDF facility in the Agra. Industries generating hazardous waste have been directed to become a member of TSDF facilities at Kanpur Dehat. These are the only two TSDF facilities in the state as of now and are managed by M/s Ramky Enviro Engineers group and M/s Bharat Oil and Waste Management Ltd.

One waste recycling unit M/s Seema Oil is operational in Foundry Nagar industrial Area of Agra.

4.3.4.2. Present Status / Performance and Need up Gradation Of Existing Facilities Including Enhancement Of Capacities:

Agra Nagar Nigam is managing the regular cleaning of the city area. Landfil Site & Composting Plant of 750 TPD at Kuberpur, Agra has been established by Agra Nagar Nigam. But since one year the treatment facility is not operational. Total quantity collected waste of 770 TPD is disposed by land filling.

1. Treatment And Management Of Contaminated Waste Disposal Sites Etc:

These sites are being and in future will be managed by private players who have expertise in landfill siting and handling, it is their responsibility to ensure the management of their site so that there are no issues with wastes dumped on site after the site is exhausted. However, the site is also monitored by State Pollution Control Board from time to time in order to ensure that there is no degradation in quality of ground water from leachate from these sites.

2. Impact On CEPI Score After Proper Management Of Solid Waste:

Apart from proposed landfill sites, authorities have taken an initiative and build different waste collection centres in various sectors of the region. Waste from nearby localities is collected and managed in these centres before being sent to the waste dumping site, also it is proposed that in future projects must ensure setting up of in house MSW disposal facilities as per MSW Rules & ensure compliance of the conditions of the Environment Clearance and NOC from UPPCB. In order to curb solid waste pollution in industries they have to be directed to properly store, handle and dispose hazardous and their MSW within the campus till it is not sent to TSDF so that it does not create litter in surrounding areas. Implementation of proposed actions shall result in lowering of CEPI due to reduction in the values of A1, B1, B2, B3, C1, C2, D due to reduction in air, water and land pollution issues related with waste storage, handling and disposal.

5. PPP Model

5.1 Identification of project proposals (for both the options i.e technology intervention and infrastructure renewal) for implementation under the PPP mode under the Action Plan.

After finalization of action plan private participation will be explored.

6. Other infrastructural Renewal measures:

6.1. Green belts

- Large scale plantation drives have been carried out in the State of U.P./Likewise in Agra 37,50,407 saplings were planted in a single day in the year 2020-21. Besides this plantation by concerned authorities and private players are carried out from time to time.

6.2. Development of Industrial Estate(s)

- Presently no new Industrial Estate/Area has been identified by department of industries, UPSIDA and Agra development Authority in Agra.

6.3. Development/shifting of industries

- Many electroplating, Petha and Shoe industries operational in residential areas have either been shifted to or in process of shifting to industrial areas/conforming zone. The matter of land identification, allocation and shifting of units is related to Development Authority. Agra is famous for footwear and Petha industries. Some imitation jewellery is also being manufactured in the city. Leather footwear and leather products fall under Green category and finished leather goods, conversion of finished goods without wet process like leather stitching, upper, shoe laces etc fall under White category of industries. Most of these units are basically Cottage units. Potential shoe units are already operational either in industrial areas or in conforming land use.
- Agra Petha units operational at different places in Agra are in the process of shifting to a designated area i.e. Kalindi Vihar, which is being monitored by district administration. There is an issue of non-availability of soft water, which is under consideration at concerned department. District Administration is trying for availability of Ganga water for this area. As soon as it is sorted out, most of the Petha units will shift themselves to this area. However, the District administration is continuously taking action by carrying regular drive against the Petha units running with coal as fuel in residential areas. That a leather park for footwear industries has also been proposed by UPSIDA at Kiraoli, Agra.

7. Specific Schemes:

7.1. GIS-GPS System for pollution sources monitoring

- At present there is no such system for pollution sources monitoring. The possibility will be explored.

7.2. Hydro- geological fracturing for water bodies rejuvenation

- Hydro-geological survey by technical agency is recommended to be carried out in all the industrial area pre monsoon and post monsoon to have a detailed groundwater report and for identification of point source..

7.3. In-situ remediation of sewage

- State has formulated a policy for management of Sewage, Fecal and Septage. Same is being implemented for ex-situ and in-situ management of domestic waste water.

7.4. Utilization of MSW inert by gas based brick kilns

- Presently all the brick kilns are coal based and remotely stationed even scattered also. Possibility will be explored if feasible.

7.5. Co- processing of wastes in cements industries

No Cement industry is situated in the District.

8. Public awareness and training programs

- District Administration, Nagar Nigam and UPPCB are conducting both public awareness & training programs in the field of environment management for the stakeholders in co-ordination with industries, NGOs educational Institutes & other Government departments. Public awareness and training programs are also proposed under. NCAP program of MoEF & CC through various partners.

9. Overall impact on installation/commissioning of pollution control equipment/ measures on the CEPI score

Water Pollution

- Although all the industries in the industrial clusters have installed ETPs for treatment of industrial effluent, modification and switching on the latest technologies w.r.t Effluent treatment Plants is recommended to bring down the CEPI scores. Following measures will reduce the pollution load being added by the discharge of treated effluent into the drains
- Water intensive units should be promoted to reuse the treated water in the process wherever feasible.
- Strict enforcement to close down illegal industries operating in residential areas.

Air Pollution

All medium and small scale air polluting industries have installed OCEMS for monitoring of emissions from the chimney. Following

- All the air polluting industries are based on either electricity or natural gas. No industry is being permitted on the fossil fuel in the Agra city.
- Strict enforcement to close down illegal industries operating in residential areas.

10. Assessment of techno-economic feasibility pollution control system in clusters of small/medium scale industries

Study of techno-economical feasibility of pollution control systems in clusters of small/medium scale industries has not been carried out. It will be proposed for future.

11. Efforts shall be made to encourage use of Bio-compost and Bio-fertilizers along with the chemical fertilizers in the state to minimize the unutilized

chemical fertilizers runoff into the natural water resources from agriculture fields (through Govt. Policy)

To ensure the implementation of above mentioned point is proposed to be implemented through Agriculture department.

12. Summary of proposed action points

12.1 Short Term Action Point (Upto one year, including continuous activities)

Sr. No.	Action Points	Timeline	Responsible Agencies/ Stake Holders
12.1 a)	<p>Water Pollution</p> <ul style="list-style-type: none"> Industrial Source - Proposed Action Plan for effective control of Water Pollution: Regular effluent sample collection and analysis of Pollution Control System in Red & Orange category Industries to be done to ensure strict compliance of prescribed Norms. 	<p><u>Frequency</u> Red category- 6 months Orange category - 1 year</p>	UPPCB/ Individual Industry
b)	<ul style="list-style-type: none"> Installation of energy meter, on line PH meter, automatic chemical dosing system, online continuous effluent and emission monitoring system (OCEEMS) and establishment of independent laboratory to monitor critical parameters like MLSS, SVI etc. and other inlet and outlet parameters of ETP for Large & Medium Industries 	1 year	Individual Industries (Large and Medium)
c)	<ul style="list-style-type: none"> Up gradation of ETP in existing water polluting units is to be done on case to case basis. Under the up gradation plan, suitable tertiary treatment methods are to be installed in a time bound manner in order to ensure that treated water is recycled/ reused to the maximum extent. 	1 year	Individual Industries.
d)	<ul style="list-style-type: none"> Ground water Pollution: Regular monitoring is proposed to be done by Regional Laboratory of State Pollution Control Board. Also, intensive surveys will be done to ensure that practice of reverse boring is not prevalent in the region. 	Ongoing	UPPCB/ State Ground Water Authority
e)	<ul style="list-style-type: none"> Domestic Waste Water (Sewage): 		

	Domestic sewage contributes to about 80% of Water pollution.		
	<ul style="list-style-type: none"> • STPs are Operational 	Ongoing	UPPCB and Jal Nigam
	<ul style="list-style-type: none"> • Combined Inspection of STPs by UPPCB and Jal Nigam 	Ongoing Process	UPPCB and Jal Nigam
	<ul style="list-style-type: none"> • Upcoming High Rise Buildings, Commercial Project, Educational Institution, Multiplex, Town ship & Building Projects are major source of sewage generation and Municipal Solid Waste. Such projects must ensure setting up of STPs, recirculation of treated water for flushing/gardening regarding purpose & ensure compliance of the conditions of the Environment Clearance and NOC from PCB. 	Ongoing Process	Project proponent, Agra Development Authority & UPPCB.
f)	<ul style="list-style-type: none"> • Inventorization of Air Polluting Industries: 	Ongoing Process	UPPCB & Industrial Association
g)	<ul style="list-style-type: none"> • Proposed Action Plan for effective control of Air Pollution: Regular Monitoring of Pollution Control System in Industries. 	Stack Monitoring of Large & Medium units every 06 months and once in a Year for SSI units. (By UPPCB & by individual Industries)	UPPCB & Individual Industries.
h)	<ul style="list-style-type: none"> • Illegal setup of Industrial activities: Regular drives are to be carried out by Pollution control board and District Administration to identify and seal illegally operating industrial activities. 	Combined drives every 6 months by UPPCB & District Administration.	UPPCB and District Admn.
i)	<ul style="list-style-type: none"> • UPPCL to ensure: that electric connection is not sanctioned in favor of such industries which are not in conforming area. 	Within 01 month	UPPCL and Udyog Bandhu
j)	<ul style="list-style-type: none"> • Monitoring of D.G Sets: Inventorization 	06 Months.	

	<p>of Old D.G. Sets in Industrial clusters and Commercial set ups including Multiplexes / Shopping Malls/ Educational Institution within or near industrial areas to be done by UPPCB.</p> <p>I. Post inventorization remedial action with respect to air and noise pollution from likely sources shall be taken against defaulters.</p> <p>II. Installation of Acoustic Enclosure with adequate stack height in Old D G Sets to be ensured.</p>	<p>Ongoing</p> <p>9 months</p>	<p>UPPCB</p>
k)	<ul style="list-style-type: none"> • Noise Monitoring: Board is procuring real time noise monitoring system. This will be installed in Commercial, Residential, Industrial and Sensitive Zones of the Region. 	<p>Ongoing</p>	<p>UPPCB</p>
l)	<ul style="list-style-type: none"> • Land Pollution: Proper Storage & Disposal of Hazardous Waste & Solid Waste: 	<p>To send waste every 03/04 months to TSDF</p>	<p>Individual Industry/ UPPCB</p>
m)	<ul style="list-style-type: none"> • Bio-Medical Waste Disposal: member of authorized Common BMW Treatment Facilities Regular Inspection and monitoring of Hospitals / Nursing Homes has to be done within 5 Km radius of industrial area. 	<p>Inspection of Big Hospitals Every 06 months & Small Hospitals every 12 Months by UPPCB.</p>	<p>UPPCB</p>

12.2 Long Term Action Points (More than 1 year)

Sr. No.	Action Points	Timeline	Responsible Agencies/ Stake Holders
12.2 n)	<ul style="list-style-type: none"> • Water Pollution Industrial Pollution: Adoption of Cleaner Technology to reduce quantity of waste water, Promotion for recycle after treatment for large and medium water intensive industries. Strategies regarding cleaner technologies in 	<p>Within 01 Years.</p>	<p>Individual Industries UPPCB &</p>

	industries are to be conducted in a time bound manner. Also recycling of the process water is being done as part of cleaner technologies.	(By Industries)	Individual Industries
o)	<ul style="list-style-type: none"> Cleaning of major open drains carrying domestic sewage. 	Ongoing	ULBs/UPSIDA
p)	<ul style="list-style-type: none"> Groundwater Pollution: Ground water study may be carried out in all Industrial Clusters. 	1 Year.	UPPCB & Designated Agencies.
q)	<ul style="list-style-type: none"> Cleaner Fuel for Industrial Uses: No industry should be operational with fossil fuel like coal/coke / wood /LDO/HSD etc., as it emits SPM, SO₂ and other pollutants. Natural Gas is being supplied by Gail Gas Ltd/Green Gas Limited, as per Hon'ble Supreme Court order dt.30.12.1996 in WP(C)-13381/1984 (M.C Mehta Vs Union of India & Ors.), 	Ongoing	UPPCB & District Administration
r)	<ul style="list-style-type: none"> Clean fuel for vehicles: Sufficient number of CNG stations should be provided to ensure continuous and enough supply of clean fuel. Phasing out of old diesel commercial vehicles is being done as per policy. 	01 year / As per plan submitted by Gas Agencies.	RTO & Gas Companies
s)	<ul style="list-style-type: none"> Development of Green Belt: Develop Green belt up to 40% of the total area. 	Ongoing	Dept. of Industries /Forest Dept. & Concerned Industries
t)	<ul style="list-style-type: none"> Land Pollution Soil Testing: Soil testing in all 3 industrial clusters of Agra is proposed to be done for different metals like Pb, Cr, Cu, Fe etc. twice a year through recognize laboratory. 	01 Year	UPPCB
u)	<ul style="list-style-type: none"> Study of impact on Human Health of Water & Air Pollutants 		IITR (Earlier ITRC) / Health Department
v)	<ul style="list-style-type: none"> Municipal solid waste Disposal: Municipal corporation Authority should develop proper MSW facility as per MSW Rules at Proper site. Quantification of MSW Site selection for MSW disposal Strategy for 		Project

	<p>implementation / setting up of integrated facility for MSW to be decided in consultation with local civic authority and implementation to be done in time bound manner.</p> <p>Upcoming High Rise Buildings, Commercial Project, Educational Institution, Multiplexes, Town ship & Building Projects are major source of Municipal Solid Waste. Such projects must ensure setting up of in house MSW disposal facilities like organic waste convertor as per MSW Rules & ensure compliance of the conditions of the Environment Clearance and NOC from PCB</p>	<p>Every 3 months</p>	<p>proponent to give compliance report to UPPCB.</p>
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