

**COMPREHENSIVE  
ACTION PLAN (CAP)  
AND GRADED RESPONSE  
ACTION PLAN (GRAP) for  
HALDIA**

### **Comprehensive Action Plan (CAP)**

Against the backdrop of the challenges outlined in each sector, this pollution source-wise comprehensive action plan has been developed for industrial town of Haldia. Keeping in view the air pollution reduction targets in the city detailed strategies have been identified to indicate the nature, scale, scope and depth of action needed for effective reduction to make an impact overtime. In view of this instead of listing only broad action points, detailed indicators and action points have been included for all sectors to guide implementation.

This plan has integrated and built on the on-going action and action plans of the state government in each sector that are already underway, including measures identified for critically polluted area. Action plan has also been improved further based on emerging good practices. In several sectors good practices have emerged that need to be leveraged and aligned to meet the clean air objective. This creates a good template for upscaling and replication in other cities. This action plan has integrated all ongoing efforts to chart the roadmap.

Special care has been taken to ensure that sufficient indicators are included in the plan itself to indicate the nature and scope of the strategies outlined for each sector that are needed for implementation to make an effective impact. For instance, often it is not clear how different aspects of transportation and urban planning are linked with air pollution control. It is important to ensure that clean air action plan ensures convergence of planning for road building, public transport infrastructure and non-motorized transport planning to guarantee that people-oriented design are integrated all across to prevent lock in of pollution in the infrastructure itself. Similarly, action in renewable energy sector, urban forestry and a plethora of clean energy and industrial emissions management strategies have been integrated.

Alignment of inter-sectoral action will be critical to leverage the available resources of funding for maximum impact. In all sectors—transport, industry, power plants, construction industry, municipal solid waste management, air quality monitoring, road building and traffic management—budgetary resources have been earmarked for investment, or, investments from other private or bilateral sources are coming in. If these investments are better informed and aligned with this clean air action planning process and objective, significant change at a scale is possible.

This plan also opens up the opportunity for developing fiscal strategies based on polluter pay principle to generate additional resources for funding of the plan. For instance, in cities such as Delhi, fiscal measures such as environment compensation charge on trucks, diesel cars have helped create dedicated funds that are now being used for pollution control efforts. In areas where the action depends on private sector participation and investments the detailed guidelines under this plan can guide such investment. 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.

### **Graded Response Action Plan (GRAP)**

Based on the National Air Quality Index Graded Response Action Plan has been framed for daily response to air quality changes. This has predefined the set of measures to be taken for different air quality categories—satisfactory, moderate, poor, very poor, severe and emergency. Once notified these measures will come into force automatically. Available data shows that in most non-compliant cities, barring hotspot areas in industrial cities, the daily levels vary between moderate to poor; sometime touching the very poor level. The GRAP measures will be implemented accordingly. GRAP is also includes the advisory for people to take precaution for self-protection.

For proper implementation and oversight the high-powered committee will coordinate with the city level authorities in each six non-compliant cities for direction, compliance monitoring and reporting. Each concerned department in a city will appoint a high-level officer as a nodal official for coordination, implementation and periodic reporting.

**Comprehensive Action Plan: Short-, medium- and long-term measures** Source-wise clean air action plan and compliance strategy for Haldia to meet clean air standards. The following table indicates the short, medium- and long-term action along with agencies responsible.

## 1. AIR QUALITY MONITORING AND ASSESSMENT

S. no.	Action points	Agency responsible	Timeline	Financial Outlay
<b>Short-term priority action</b>				
1.1	As per the IS:5182 (Part 14), 2000 on Recommended minimum number of stations population-wise (Also mentioned in Guidelines for Ambient Air Quality Monitoring, CPCB, 200329). Haldia does fulfil the criteria of minimum number of real-time monitoring station (one) as well as four manual monitoring stations (according to Census 2011, the population of Haldia municipality is 2,00,827).  All twelve pollutants to be monitored for Haldia, special focus is needed on PM2.5 and ozone monitoring. Use air quality sensors at probable hotspots to complement air-quality monitoring (based on CPCB/ MoEF&CC guidelines).	Nodal agency: WestBengal State Pollution Control Board (WBPCB), Supported by Central Pollution Control Board (CPCB)	9 months	1.5 crore for replacement of existing old CAAQMS by new one
1.2	Use air quality information provided by satellite-based monitoring to complement ground-based air quality monitoring and also unmonitored areas. This is useful to identify agricultural burning/ forest fires, regional pollution etc that have impact on urban air quality. At present only traditional methods are used, that need to be upgraded	WBPCB, CPCB, IMD,	12 months	To be finalized
<b>Medium-term action</b>				
1.3	Develop capacity for pollution forecasting for implementation of graded response action plan. This will also require monitoring of weather dates and support from MOES, IMD, IITM, Pune. Programs like SAFAR may be expanded for the city.	MOES, IMD, IITM, Pune, Department of Environment, WBPCB supported by CPCB	18 months	To be finalized
1.4	Set up daily air quality public information dissemination system based on National Air Quality Index and health advisory. Further develop online reporting of daily and annual data for all pollutants and pollution forecasting on SPCB website. Set up system for dissemination of information to public through the SPCB website and local media. The SPCB website is to be updated regularly.	WBPCB, CPCB, IMD,	1 year	Regular activity
1.5	To conduct a source apportionment and emission inventory study, to capture source-wise contribution and seasonal variations in source contribution., also to assess regional impacts by setting up a mechanism to assess trans-boundary emissions. The carrying capacity measurements is to be carried out as well. The WBPCB is to select a relevant institution to commission the study.	WBPCB and Department of Environment	18 month	3 crore
1.6	Set up rural and peri-urban air quality monitoring to assess the airshed/ influence area, which will more than the current monitoring within the city limits. The National Clean Air Programme (NCAP) from the Union Ministry of Environment and Forest and Climate Change has recommended rural air quality monitoring.	WBPCB & CPCB	2 Year	1.6 crore

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S. no.	Action points	Agency responsible	Timeline	Financial Outlay
1.7	Assess application of low cost sensor based monitors in areas that are not being monitored to create baseline local data to area specific action	WBPCB & CPCB	1 year	To be finalized
<b>Long-term action</b>				

1.8	Research studies including detailed emission inventories and source apportionment, health impact studies, exposure impacts, carrying capacity assessment of airshed and regional impacts, hot spot assessments and other relevant studies may be undertaken to further refine inform the action plan: Government to support research works/scientific studies by academic/ research institutions. Expertise will be sought from various institutions to develop protocols for assessment of the research proposals.	WBPCB, DoE, WB State Council for Science and technology	2 years	1.5 crore
1.9	Database management for implementation of action plan: Data collection, sharing and analysis protocol must be set up for effective implementation of clean air action plan. Prepare detailed data protocol for systematic recording of emissions data from industries and other sources.	WBPCB, DoE in coordination with all relevant departments	1-2 years	Regular activity

## 2. INDUSTRIES

S. no.	Action points	Agency responsible	Timeline
<b>Short-term priority action</b>			
2.1	Implement of SOx and NOx standards notified by MOEF&CC on January 29, 2018 for 35 categories of industries in and around the city. Ensure compliance through regular testing & CEMS enabled monitoring. Identify the units that need to implement new standards	WBPCB	6 months
2.2	Implement existing standards for PM and ensure compliance through regular testing & CEMS enabled monitoring. Also take precautions for minimizing fugitive emissions through the preparation of a checklist for industrial zones and units, and regular inspection based on field survey and inventory exercise.	WBPCB, Department of Commerce, Industries and Enterprises, MSME	3 months
2.3	Exploring the scope of having a clean fuel policy and provide incentives for clean fuels for the state Identification of approved and non-approved fuels. Promotion of relatively cleaner fuels like gas (Coal Bed Methane from Dankuni Coal Complex) and electricity. Discourage fuels with very high sulphur and heavy metals like furnace oil, pet coke, tyre oil etc. (except where it is used as feedstock like cement). Assessment of need for a favourable taxation and pricing policy to make cleaner fuels more competitive, as currently there are no restrictions on fuels. Incentivize replacement of boilers and switch to cleaner fuels. Clean fuel strategy needed for smaller units that have no emission control measures	WBPCB, Department of Commerce, Industries and Enterprises, MSME	6 months
2.4	Identify the units that need to install CEMS. Implement Continuous Emission Monitoring System (CEMS) across all targeted and applicable polluting industry.  Ensure calibration and working of CEMS in all industries in the urban airshed or area of influence and provide information to monitoring agencies to take appropriate action.  Specify the mechanism for quality control and quality assurance of CEMS data and ensure that data is available online as per a specific format and the reported data is compared with applicable prescribed limits and not the older standards. Compliance checking to be enforced routinely to prevent tampering with the CEMS <sup>30</sup> .  This needs to be done for industrial sectors including petrochemicals, sponge iron and cement units, iron and steel industries and jute and rice mills.	WBPCB, Department of Commerce, Industries and Enterprises, MSME	6 months

S. no.	Action points	Agency responsible	Timeline
2.5	Identification of cumulative impact of industrial emissions and prescribe more stringent pollution control action for industries. Units which have high load should have industry specific upgradation in technology, emission control system and switch to clean fuels (as mentioned in BAT section)	WBPCB, Department of Commerce, Industries and Enterprises, MSME	6 months
2.6	Identification and implementation of fugitive emission control measures in ancillary units, material transfer and handling and emissions during industrial processes. Informal industrial units will require stringent monitoring. Hold quarterly inspections for the same.	WBPCB, Department of Commerce, Industries and Enterprises, MSME	6 months
2.7	Enforce restrictions on operations of intensively polluting industries within urban airshed zones during high pollution periods. Check for the status of Air Pollution Control devices for these units.	WBPCB, Department of Commerce, Industries and Enterprises, MSME	6 months
<b>Medium-term action</b>			
2.8	Strengthen the current siting policy for industries to be notified in future, in order to address Asansol-wide air quality issues. Further restrict expansion and diversification of polluting units. Enforce the current siting policy with utmost stringency	WBPCB, Department of Commerce, Industries and Enterprises, MSME	1 year
2.9	Prepare and implement local area action plan for pollution hotspots and strict enforcement of air pollution control measures in all industries, including those located in unauthorized areas. Build schedule for inspection of areas of concern and reporting.	WBPCB, Department of Commerce, Industries and Enterprises, MSME	1 year
2.10	Strengthen the current siting policy for industries to address area wise air quality problems. Restrict expansion and diversification of old polluting units that are near residential areas until robust pollution control devices have been installed and are routinely inspected.	WBPCB, Department of ICE and MSME	1 year
2.11	Training and awareness program for onsite emergency preparedness and environmental issues for industrial workers.	WBPCB, Department of ICE and MSME	1 year
2.12	Construction of paved roads around all major industrial estates. Installation of dust suppression system. Provision for water sprinkling and dust mitigation. As on date HDA has constructed 15Km of industrial paved road within the Municipality area and work for paving of 14Km road is in progress.	WBPCB, Department of ICE and MSME, HAD, Haldia Municipality.	1 year
2.13	Development of adequate green belt around all major industrial estates by planting at least 1000 saplings. Local Industries have been requested for plantation and an area of 5000 sqmt plantation has been covered by them. HDA has invited tender for plantation of 5000 saplings including its maintenance for 1 year.	WBPCB, Department of ICE and MSME, HDA	1 year
2.14	Inspection of bag filters wherever installed, replacement of older bag filters and overhauling of ESPs when applicable.	WBPCB, Department of ICE and MSME, HDA	1 year
2.15	Specific for petrochemical units: Installation of new desulphurization units, old heaters and burners to be replaced with low NOx burners, natural gas to be used as fuel in heaters to reduce stack emission. An inventory of petro	WBPCB, Department of ICE, petrochemical companies operating in the area	1-2 years

### 3. BRICK KILNS, HOT MIX PLANTS & STONE CRUSHERS

S. no.	Action points	Agency responsible	Timeline
<b>Short-term priority action</b>			
3.1	There are brick kilns in close vicinity of the city. Enforce restrictions on operations of brick kilns within urban airshed zones during high pollution periods; allow only those Brick kilns that comply with rectangular zigzag design with induced draft or those with improved technology. Initiate phasing out of traditional brick kilns	L&LR Department, WBPCB, Department of Commerce, Industries and Enterprises, MSME	6 months
3.2	Explore the scope of relocation of centralized hot mix plants to areas outside municipal boundaries, and ensure compliance with PM, NOx and SOx emission standards. Shut down small and mobile Hot Mix Plants	Haldia MC, WB PWD, NHA and other road operating agencies	Immediately

3.3	Convert all brick kilns to rectangular design zigzag technology—fromFCBT natural draft kilns to induced draft kilns with rectangular zigzagdesign.	L&LR Department, WBPCB, Department Commerce, Industries and Enterprises, MSME	1 year
3.4	Prescribe design specifications for improved kilns and ensure compliance checking. Ensure conversion has actually taken place. Ensure provision of infrastructure in terms of viewing platform an chimney emission testing point for compliance.	CPCB, MoEF&CC, WBPCB, Department of Commerce, Industries and Enterprises, MSME	1 year
3.5	Remove stone crushers that are close to the city; adopt stringent dust control measures and greening	Department of Commerce, Industries and Enterprises, MSME WBPCB	1 year
3.6	Establish a protocol for using cleaner fuels & technology for asphalt mixing and minimizing the number of hot-mix plants	MoRTH, MoEF&CC, AMC, WB PWD, NHA1 and other road operating agencies	2 year

#### 4. ACTION TO REDUCE VEHICULAR EMISSIONS

S. no.	Action points	Agency responsible	Timeline
<b>Medium-term action</b>			
4.1	Emission and Fuel Quality for New Vehicles Ensure on-schedule implementation of BS VI fuel and emission standards on April 1, 2020. Ensure that only BS VI compliant vehicles are registered from this date. Supreme Court order of October 24,2018 has directed that no vehicle that is not BSVI compliant can be registered from April 1, 2020.The city is fully prepared to comply with the order of the Apex Court.	Transport department	Immediately
4.2	ALTERNATIVE CLEAN FUEL POLICY FOR VEHICLES		
<b>Medium-term action</b>			
4.2.1	Expand gaseous fuel programme: Move all auto rickshaws and local taxis and buses to run on CNG. Replace diesel three wheeler & taxi fleets with CNG fleet. Expand CNG refuelling infrastructure for delivery and use. Around 200 LPG driven Auto rickshaws operate at Haldia city. Depending on the availability of CNG, attempts will be taken to convert diesel operated taxi fleets either by replacement or by retro fitment.	Transport department, Department of Energy, MoPNG	1-2 years
4.2.2	Target medium- and short-term goals for electrification of new vehicles fleet in specific segments using a mixture of mandates and subsidies. e.g: <ul style="list-style-type: none"> <li>Seek to drive rapid adoption of Battery Electric Vehicles (BEVs) in a manner where they contribute to 25% of all new vehicle registrations by 2023.</li> <li>Provision of additional state subsidy for procurement of commercial electric vehicles</li> <li>100 per cent exemption of duty/tax on electricity tariff for an initial period of 5 years for EV manufacturers (vehicle and battery)</li> <li>Encourage retrofitting of auto-rickshaws to EV IPT</li> <li>Target provision of public and private EV charging stations as part of the state level EV policy.</li> <li>Design special tariff at commercially viable rates for charging stations to encourage and enable government agencies and private players to set up.</li> <li>Plan infrastructure and institutional framework for used battery processing, re-use, recycling and disposal.</li> <li>Introduce mandate-based incentives in the form of lower road taxes, motor vehicle taxes and registration charges, preferential licensing and permit system, modification of building by-laws, creation of low emissions zones, special parking provision etc</li> <li>Introduce provision for parking minimum in bye laws for new development to encourage EV adoption amongst user; subject to change in accordance with relevant future Government EV policy</li> </ul> <ul style="list-style-type: none"> <li>Identify and notify commercial areas with high footfalls and good public transport and goods transport connectivity to pedestrianize supported by zero emission battery-operated vehicles: Priority may be accorded to battery-operated para-transit as feeders and for last mile connectivity. Ensure organized deployment to reduce congestion.</li> <li>Designated parking spaces for commercial electric vehicles with exempted parking fees for EVs</li> <li>Legalize domestic charging of e-rickshaws: to control power theft due to illegal</li> </ul>	Transport department, Department of Power & NES, DHI, NITI Aayog	1 year

	charging and eradicate informal proliferation of units • Build on the policies of the central government—NEMMP  <b>FAME to make West Bengal a hub for electric mobility.</b> Under FAME-II Electric Buses are to be introduced in the city within the next one year. To facilitate rapid adoption of Battery Electric Vehicles in commercial segments, it is being contemplated to do away with Permit system and also exempting 100% of motor vehicles tax for initial 5 years		
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S. no.	Action points	Agency responsible	Timeline
4.2.3	Exploring the feasibility of generating biogas from waste and sewage to run buses in cities to be explored.	Transport Department, Department of Power & NES, oil marketing companies	1 year
4.3.4	Introduce favourable fiscal measures to promote clean fuels and vehicles and zero emissions vehicles. Tax relaxation in respect of Methanol/Ethanol fuelled motor vehicles is being contemplated.	Department of Transport, ICE and Finance	1 year
4.4	<b>EMISSION CONTROL MEASURES FROM ON-ROAD VEHICLES</b>		
<b>Short-term priority action</b>			
4.4.1	Plan and implement adequate number of PUC centre for emission testing of on-road vehicles. Strengthen periodic auditing and over-sight of PUC centres and calibration of equipment and third party checks. At present 12 PUC centres are operational in Haldia City	MoRTH, Transport Department	6 months to 1 year
4.4.2	Link PUC certificates with mandatory third-party insurance for vehicles to ensure 100 per cent compliance as per the Directives of the Hon'ble Supreme Court and the MoRTH notification. Ensure real-time updates for all WB registered vehicles with the VAHAN database for compliance. Develop a mechanism for ensuring that no vehicle is allowed to ply without valid PUC certificate. Any kind of transaction with respect to the motor vehicle done in e-Vahan is allowed only if the third party insurance is complied with	Transport Department, MoRTH	Immediately
<b>Medium-term action</b>			
4.4.3	Improve and enforce PUC programme: Ensure universal linking of PUC centres with remote server and eliminate manual intervention in PUC testing. This has been in effect since April 2019. Implement testing of all notified emissions parameters including Lambda testing for petrol cars as notified by MoRTH in 2004.	Transport Department	0 year
4.4.4	Upgrade in-use emissions testing for petrol and diesel vehicles by using additional methods of screening such as remote sensing. Expand existing pilot on use of remote sensing for monitoring of emissions from in-use vehicles in Kolkata to upgrade inspection of on-road vehicles. For Haldia, Tender process has been initiated for purchase of 2 more RSD devices..	MoRTH, ARAI, Transport Department	1 year
4.4.5	Advancement of the system: Integrate on-board diagnostic (OBD) system fitted in new vehicles with vehicle inspection. As per the MoRTH advisory PUC centres have to check malfunctioning indicator light 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. Also keeping in view that BSVI vehicles will roll from April 2020, there is need for system upgradation for more effective screening of on-road vehicles. It is recommended that remote sensing measurements of on-road emissions be introduced. Carry out training programs and auditing of PUC centres for preparedness for BS VI	Transport Department	6 months to 1 year
S no.	Action points	Agency responsible	Timeline
4.4.6	Enforcement of law against visibly polluting vehicles: remove them from road, impose penalty, and launch extensive awareness drive against polluting vehicles.	Transport Department, Traffic Police	1 year
4.4.7	Set up modern centralized vehicle inspection centres for upgraded emissions, fitness and road worthiness tests for commercial vehicles and diesel vehicles. One pilot project is under advanced stages of development at Behala, Kolkata. It is contemplated to develop another such automated vehicle testing centre at Nilgunge, Haldia and in Durgapur SBSTC premises.	Transport Department, MoRTH	1 year
4.5	Phase out old vehicles and vehicle scrappage policy: Phase out old vehicles with the help of age cap and age linked road tax policy. Set up scrapping infrastructure for scientific dismantling and disposal of old vehicles. Set up recycling units that are authorized with proper guidelines.	Transport Department, MoRTH, CPCB	1 year

4.6	Vehicle labelling or sticker programme: The July 26, 2018 directive of the Supreme Court has approved the MoRTH's Colour Coded HSRP Hologram Stickers. This programme to come into effect on 1 April 2019, across the country will require, each vehicle, both old and new to be provided with colour coded non-tamperable High Security Stickers, along with the number plates. At a later date, older and polluting vehicles may be discouraged in city centres or earmarked low emissions zones by using these stickers for identification of vehicles. The process of fitment and retro fitment of color coded High Security Number Plate(HSRP) with Hologram Stickers and tamper proof is being implemented since 1st April, 2016	Transport Department, MoRTH, Traffic Police	0 year
<b>Short-term action</b>			
4.7.1	Use of off-peak passenger travel times to move freight and restrict the entry of heavy vehicles into cities during the day to continue. Adopt freight master plan to organize freight movement and logistics.	District and local Administration, e.g. Urban Local Bodies	Within 6 months
4.7.2	Provide truck rest areas/parks along national and state highways to prevent entry of trucks into cities during peak hours. Use of off-peak passenger travel times to move freight and restrict the entry of heavy vehicles into cities during the day to continue	PWD, NHAI	Within 6 months
4.7.3	Introduce age and emission standards-based restrictions on the operations of commercial vehicles within the city. Install procedures and monitoring equipment to ensure better quality and more efficient vehicles operate on the roads.	NHAI, District and local administration	Within 6 months
4.7.4	Check overloading: Use weigh-in-motion bridges / machines (WIM) and Weigh bridges at entry points to the city to check the payload of commercial vehicles. As per the CMVR, a penalty of 10 times the applicable rate for overloaded vehicles is applicable. Two Weigh-in-Motion bridges have been made operational within KMA area.	District and local administration, Transport department, Traffic Police	Within 6 months
4.7.5	Create management systems for loading and unloading of goods in city areas. At present, there are a few existing major loading and unloading places in the city.	District and local administration, Transport department	6 months
4.7.6	Develop a Safe-to-Load programme to ensure fitness and road worthiness of trucks and compliance to set standards would be adopted and enforce. Important for industrial cities. Central Motor Vehicles Rules have specified Safe Axle Weight and Gross Vehicle Weight for different make and model of Goods Vehicles. Carriage of loads in excess of permissible ceiling comes under an enforceable offence.	Transport Department,	6 months
<b>Medium to long term action</b>			
4.7.7	Promote high capacity trucks for long-distance freight transport of mining material instead of smaller trucks	NHAI, District and local administration	Within 6 months
4.7.8	Diversion of truck traffic: Check feasibility of diversion of non-destined trucks into the city. Alternate routes need to be identified and improved to ensure that non-destined commercial traffic does not enter the city.	District and local administration, Transport department, Traffic Police	Within 6 months

S. no.	Action points	Agency responsible	Timeline
4.7.9	Radio frequency identification tag RFID based toll or entry tax collection: install RFID based toll collection system also link it with VAHAN database. This will enable lesser congestion on toll gates, also by using this technology vehicle identification by vintage, emission norm compliance etc. will be easier. Delhi at present has implemented RFID in 13 entry points and restricts more than 10 years old trucks into the city. Durgapur can adopt such measures. DEVELOPMENT AUTHORITIES can adopt such measures to make toll collection cashless and regulate entry based on age. This also allows scope of introducing environment pollution charge at the entry point.	District and local administration, Transport department, Traffic Police	1 year
4.7.10	Develop urban freight consolidation centers in relation to location of warehouses relative to suburban areas.	District and local administration, Transport department	1 year



4.7.11	Prepare a freight master plan: Prepare a detailed logistic plan which includes detailed assessment of freight connectivity, requirement of dedicated freight corridor and, allied freight infrastructure such as logistic park/ truck terminals, cold storage facilities, warehouses etc.	Transport Department, Railways	1-3 year
4.8	Fuel quality testing to check adulteration Prepare an action plan to check fuel adulteration and random monitoring of fuel quality data. To ensure that periodic routine and surprise fuel testing is done for all transport and non-transport fuels. For this an action plan need to be prepared in consultation with oil companies and ministry of petroleum and natural gas.	MoPNG, Oil marketing companies	6 months
4.9	Install vapour recovery systems in fuel refuelling outlets to reduce benzene and VOC emissions in cities. CPCB has issued direction for installation of stage I and Stage II vapor recovery system in all retail outlets with capacity 3000 kiloliter and more in 46 million plus cities by December 2017. Retail outlets across the city should comply with this.	Transport department, State Oil Coordinator	1 year

## 5. URBAN MOBILITY

Sr. no.	Action points	Agency responsible	Timeline
5.1	PUBLIC TRANSPORT SYSTEM		
<b>Short-term action</b>			
5.1.1	Improve the visibility of existing public transport system by installing Bus Post sign and Bus Queue Shelters in the city.	WBTC, Haldia Municipality	6 months
<b>Medium-to long-term action</b>			
5.1.2	Strengthen the city bus for connectivity to Haldia. Augmenting city bus services(frequency, routes, buses) through demand assessment and rationalisation	West Bengal Transport Corporation	18 months
5.1.3	Facilitating Multi-modal integration at major transit locations to ensure smoother transition between modes.  At present Auto/E-rickshaws operate to provide last mile connectivity from nearest bus nodes, rail heads etc.  However, there is a need to identify a few transit modes in the city and organise the existing informal services by infrastructure integration (i.e. provision of spaces/bays/exact location) for better movement	Haldia Municipality, WBTC, NBSTC, Eastern Railway, Kolkata Metro Rail Corporation Ltd., RTO(PVD), Traffic Police	18 months
5.1.4	To strengthen and prioritise movement of public transport over other modes, Bus priority measures should be taken on major intersections. Intersections should be identified and the ones on major arterials should be prioritised earlier. Moreover major arterials roads with adequate available width should have bus priority lanes too	Transport Department, WBTC, NBSTC, Traffic Police, Haldia Municipality	1 year
5.2	INTERMEDIATE PARA TRANSIT (IPT)		
<b>Short-term action</b>			
5.2.1	IPT in the region operates on route permit and fixed fares. There are earmarked parking arrangements at interchange points/major junctions.  Additionally, there should be terminal points and pick up/drop off nodes identified for IPT services in around existing major public transport services (Bus/rail) such that it becomes an organised service and compliments major modes. IPT services is lower in the pyramid of mobility options and hence larger in volume and thus is the requirement of several smaller nodes in operation.	Transport Department, Traffic Police, Haldia Municipality, RTO (PVD)	6 months
5.2.2	Facilitate IPT driver training, standard licensing procedures and safety measures in operation  At present, Driving license for e- rickshaw is allowed only after 10 days training.	RTO (PVD), Transport Department, Traffic Police	6 months
5.2.3	Enforce IPT service providers to abide by latest fuel economy standards (i.e. Bharat Stage IV and upcoming Stage VI).  Auto registration is allowed on compliance of latest emission standards.  There should be training on importance of using unadulterated fuel, its effects and impacts on society as a part of registration and annual fitness checks.	RTO (PVD), Transport Department, Traffic Police	
5.2.4	E-rickshaw plying in the city should also follow standard process of registering, followed by driving training and safety in operation  At present there are 80 E-rickshaws in the city	RTO, Transport, Traffic Police,	6 months

Sr. no.	Action points	Agency responsible	Timeline
<b>Medium term action</b>			
5.2.5	Prepare a policy framework for future IPT development, with specific consideration on regulating numbers of IPT modes, restricting vehicles more than 15 years old from plying and laying down detailed steps for diesel to electric conversion.	DEVELOPMENT AUTHORITIES, RTO(PVD)	1-3 years
5.3	ADOPTATION OF ELECTRIC MOBILITY		
<b>Short term action</b>			
5.3.1	Prepare an incentive based (financial) electric rickshaw scheme for the quicker adaptation of electric mobility in the city. - Incentive on de-registering ICE based IPT (Auto) and adopting E-rickshaw	DEVELOPMENT AUTHORITIES, Transport Department, RTO(PVD)	6-12 months
5.3.2	Promote E-Rickshaws and electric auto-rickshaws as feeder services to the bus services to facilitate first and last mile connectivity by - Provision of parking/ terminal points etc. - Faster registration process at RTO - Conversion of existing ICE based IPT (Auto) to E-rickshaw	Transport Department, WBTC, Haldia Municipality, RTO(PVD)	6 months
<b>Medium Term</b>			
5.3.3	Prepare regulatory mechanism for provision of dedicated parking space for electric rickshaws/vehicles.	DEVELOPMENT AUTHORITIES, Transport Department, Haldia Municipality, Port Authority	1 year
5.3.4	Take initiative to develop electric ecosystem such as charging infrastructure, better tariff regime etc.	DEVELOPMENT AUTHORITIES/ Electricity Supply agencies, Transport	1 year
5.4	ROAD DESIGN		
<b>Medium to long term action</b>			
5.4.1	Non-motorized transport and safe access		
5.4.1.1	Prepare and implement plans for developing an NMT network. This should include following action: • Pedestrian infrastructure shall be designed based on the Indian Road Congress (IRC): 103-2012 • Target specific lengths of footpaths to be completed in a phased manner and cover the entire city. • Upgrade pedestrian crossing at least every 250 m, with pedestrian signals and signages. These should preferably be at grade. • Identify network to develop cycle tracks • Make safety audit of walking infrastructure mandatory. • Provide roadside public docking space for bicycles. • Make encroachment of NMT lanes punishable offence under the current provision of law. • Dedicated municipal budget shall be made for making streets safe. Reference: Indian Road Congress (IRC): 103-2012	DEVELOPMENT AUTHORITIES, Haldia Municipality, PWD	1-3 years
5.5	MULTI-UTILITY ZONES (MUZ)		
5.5.1	Taking cognizance of the proposed land use map for Haldia Municipality, MUZ is recommended on existing as well as proposed major and minor arterial roads. It will help in organizing centralized development of activities along the G.T. road. All the stationary elements on the street shall be organized in a dedicated space which results in obstruction free streets. This should include the following elements. • It shall have dedicated space provision for bus stops, tree plantation, street furniture, auto Rickshaw stands, parking, hawkers, public toilets, information kiosks, underground and overhead utility services like electricity, water, telephone, gas etc. • Space provision for all the street elements shall have to be done by activity mapping, surveys and stake holder consultations. • A minimum width of 1.8 m shall be maintained for MUZ.  Reference: Urban Street Design Guidelines Unified Traffic and Transportation Infrastructure (Planning & Engineering) Centre prepared by Delhi Development Authority.	Development Authorities, Haldia Municipality, PWD	1-3 years
5.6	COMPACT CITY DEVELOPMENT SHALL BE ADOPTED TO REDUCE DISTANCES AND IMPROVE ACCESS		
<b>Medium- to long-term action</b>			
5.6.1	Compact urban form to create higher density along major corridors to shorten travel distances, discourage usage of personal vehicles and hence reduce carbon footprints	Development Authorities, Haldia Municipality, Transport	12 months
5.6.2	In new development areas (low density or urban sprawl), facilitate adequate transport connectivity to enhance accessibility to major centres (jobs, education, commercial etc). Enhancing accessibility in compact development will reduce distance and in turn discourage adoption of cars and encourage usage of sustainable	Development Authorities, Haldia Municipality, Transport	12 months

Sr. no.	Action points	Agency responsible	Timeline
	modes (Bus, Cycle, NMT, walk) to transit nodes		
5.6.3	Ensure mixed land use development along mobility corridors	Development Authorities, Haldia Municipality, Transport	12 months
5.6.4	Introduce Parking maximum to discourage usage of cars	Development Authorities, Haldia Municipality, Transport	12 months
5.6.5	Ensure high-density street network and interconnected green spaces to encourage walkability in new development areas	Development Authorities, Haldia Municipality, Transport	12 months
5.7	<b>MAINTENANCE AND MANAGEMENT OF PARKING PLACES RULES</b>		
	Implement Parking Area Management Plan (PAMP) as a demand management tool. PAMP will demarcate legal parking area(on-street and off-street), cap parking and also prevent illegal parking. PAMPs to be prepared in consultation with local stakeholders, planning bodies/departments. PAMP should include the following parameters among others:		
<b>Short Term Action</b>			
5.7.1	Demarcate the emergency vehicle route on all public roads within the neighborhood. Demarcate on ground wherever legal on-street parking is being provided for based on the local area plan.	Development Authorities, Haldia Municipality, Transport Department	6 months
5.7.2	Ensure no parks and green areas are converted to parking	Development Authorities, Haldia Municipality, Transport Department	6 months
5.7.3	Where shared Multilevel Parking facility is provided demarcate ingress-egress plan and ensure that no major disruption occurs on main thoroughfare traffic. Also indicate pedestrian circulation plan.	Development Authorities, Haldia Municipality, Transport Department	6 months
5.7.4	Eliminate free parking and introduce effective variable parking charges based on duration of parking and 'user pay' principle as per the National Urban Transport Policy. Kolkata has imposed differential parking charges at 11 locations. Similar measures can be undertaken in Haldia.	Development Authorities, Haldia Municipality, Transport Department	6 months
5.7.5	Do not allow gross-cost basis annual or monthly lump sum payment for parking in commercial areas. Annual passes allow unlimited use and do not reduce demand.	Development Authorities, Haldia Municipality, Transport Department	6 months
<b>Medium to long term Action</b>			
5.7.6	Physically demarcate legal parking areas. Equip them with metering systems, proper signage, IT for information on parking availability to reduce cruising time and on-street management.	Development Authorities, Haldia Municipality, Transport Department	6 months
5.7.7	Develop a methodology for parking pricing in residential areas and other major trip attracting areas (CBD, commercial, institutional etc.) in order to discourage misuse of urban land and reduce inflated parking demand - Pricing should encourage usage of designated parking spaces - Rationalise usage of on-street parking - Rationalise short term vs long term parking	Development Authorities, Haldia Municipality, Transport Department	1-3 years
5.7.8	Penalty for illegal/wrong parking esp. parking within the emergency lanes and non-designated areas to be prohibitive.	Development Authorities, Haldia Municipality, Transport Department	1-3 years
5.7.9	Bundle existing / planned public parking facilities and on-street and off-street parking (including multi-level) facilities for management by a single agency/ operator. New stand-alone parking only sites are mostly not required since parking is permitted in all use zones.	Development Authorities, Haldia Municipality, Transport Department	1-3 years
5.7.10	Multilevel parking structure shall be equipped with smart technology such as real time information on vacant parking slots, smart meters etc. Various smart cities in India such as Jaipur and Bhopal are developing smart multilevel parking facilities.	Development Authorities, Haldia Municipality, Transport Department	5 years
5.7.11	Earmark a part of parking revenue for local area improvement that includes footpaths, public amenities and parking facilities within the PAMP area.	Development Authorities, Haldia Municipality, Transport Department	1-3 years
5.7.12	Introduce residential parking permit for regular parkers for use of public parking space and these may be monitored.	Development Authorities, Haldia Municipality, Transport Department	1-3 years
5.7.13	In order to optimize utilization of land, ensure that in all new projects (e.g. commercial, institutional, housing, etc.), at least 50% of the available parking spaces is made available for shared parking facility.	Development Authorities, Haldia Municipality, Transport Department	1-3 years
5.7.14	Ensure in the parking contractual agreement that the revenue sharing model is dynamic and flexible, allowing for flexibility in charging and varied usage and rates of the parking spaces; specify the investment that Contractor will have to make for up gradation of the PAMP area including metering, ITS application for commuter information, signage	Development Authorities, Haldia Municipality, Transport Department	1-3 years
5.7.15	Plan and implement parking provision for buses, commercial vehicles and IPT-NMT modes, and for the differently abled.	Development Authorities, Haldia Municipality, Transport Department	1-3 years
5.8	<b>TRAFFIC MANAGEMENT</b>		
<b>Short-term action</b>			
5.8.1	Conduct a third party/ independent audit of geometry of all city roads and intersections and provide specific solutions.	Traffic Police	6 months

Sr. no.	Action points	Agency responsible	Timeline
5.8.2	Conduct audit of all intersections and install functional traffic signals at all major intersections.	Traffic Police	6 months
5.8.3	Enforce lane driving through heavy fining	Traffic Police	6 months
<b>Medium-to long-term action plan</b>			
5.8.4	Prepare Traffic Impact Assessment (TIA) guidelines and permit new developments based on the formulated TIA guidelines.	Traffic Police/ DEVELOPMENT AUTHORITIES	1 year
5.8.5	Prepare traffic management plan for special days, i.e. during Durga Puja festival/ during urban flood situation.	Traffic Police, DEVELOPMENT AUTHORITIES, Haldia Municipality	1 year
5.9	TRAFFIC IMPACT ASSESSMENT		
<b>Medium-to long-term action plan</b>			
5.9.1	Permit new developments based on the impact of traffic on the surrounding transport infrastructure and neighborhoods.	Haldia Municipality/ SEIAA	1-3 years
5.9.2	Make necessary infrastructure augmentations based on traffic impact assessments and levy costs to the developer, if needed and possible.	Haldia Municipality, Traffic police	1-3 years
5.10	FINANCING OF URBAN TRANSPORT		
<b>Medium-to long-term action plan</b>			
5.10.1	Create dedicated and ring-fenced urban transport fund for meeting Urban Transport needs by adopting innovative financial instruments to mobilize local resources including land value capture and polluter pay principle and resources from private participation	Transport Department, Haldia Municipality	1-3 years
5.10.2	Rationalization and reallocation of funds from road capacity augmentation projects towards public transit systems and complete streets	Transport Department	1-2 years
5.10.3	Encourage involvement of the private sector in activities such as operation and maintenance of road infrastructure, parking facilities, vehicle testing and certification facilities, repair facilities, construction and management of terminal facilities among others. Regulatory monitoring will be required for quality control, quality assurance and performance guarantee. The private sector will be involved in providing public transport services, but under well- structured procurement contracts along with strong supervision of their service level and compliance strategy.	Transport Department, Haldia Municipality	1-3 years
5.11	DATA ON URBAN COMMUTE		
<b>Medium-to long-term action plan</b>			
5.11.1	Regular update of the database and information would be one of the important tasks. This will require standardization of database for recording of travel and transport related activities to be able to assess travel activities -- generation of daily number of trips, nature of travel demand, and share of different travel modes, average trip distance, and changes in modal share.	Transport Department, Haldia Municipality	1-3 years

## 6. GENERATOR SETS

S. no.	Action points	Agency responsible	Timeline
<b>Short-term priority action</b>			
6.1	Ensure that only those DG sets that meet the standards in terms of emission or design of chimneys/ exhaust and acoustic enclosures also verify and check whether design specifications are followed or not thereafter the genset to be allowed to operate.	Police, WBPCB, Haldia Municipality	6 months
6.2	Curtail use of DG sets in social events by providing temporary electric connections. Also restrict use of DG sets during high pollution episodes.	WBPCB, and Haldia Municipality	6 months
<b>Medium-term action</b>			
6.3	Alternate power systems should be promoted in cell towers, and use of DG sets discouraged	Department of power and NES, Power Distribution Companies	1 year
6.4	Leverage roof top solar programme to reduce dependence on DG sets		1 year
6.5	Ensure access to quality electricity supply		1-2 years

## 7. OPEN BURNING (INCLUDING SOLID WASTE AND AGRICULTURAL RESIDUES)

S. no.	Action points	Agency responsible	Timeline
<b>Short-term priority action</b>			
7.1	Enforce a complete ban on garbage burning in the entire region. Evolve a monitoring mechanism for this. Take stringent action against open burning of biomass, leaves, tyres etc. to control such activities. West Bengal Solid Waste Management Limited provides the service of garbage collection from specific points.	Haldia Municipality, Development Authority, Resident Welfare Associations, WBPCB,	6 months
7.2	Ensure proper collection of horticulture waste (biomass) and composting-cum-gardening approach; municipal zonal offices should be responsible for controlling burning of leaves and garbage on roads / parks. All horticulture agencies should have compost pits in parks. Implement strong public outreach programme to promote household and community based composting systems (composting pits, shredders etc.). There are large open grounds, and houses with compounds in the city with considerable tree cover that cause extensive leaf litter. Open burning of leaves must stop. West Bengal Solid Waste Management Limited provides the service of garbage collection from specific points.		6 months
7.3	Decentralized waste management for hotels, apartments, institutions as per Solid Waste Management Rules, 2016. Implement provisions of Solid Waste Management Rules 2016 to implement penal provisions to spot fine on waste burning. Strictly ban open burning of hazardous industrial waste. West Bengal Solid Waste Management Limited provides the service of garbage collection from specific points.		6 months
7.4	Use of satellite based monitoring as well as mobile spot check squads for enforcement in case burning is spotted.	Haldia Municipality, Metropolitan Development Authority, RWAs, State Police Department, WBPCB	6 months
7.5	Proper management of landfill sites at Kalipahari to prevent spontaneous fire. Further dumping of waste at open landfill sites should be restricted. Currently being managed by the municipality.		
7.6	Adopt roadmap for zero landfill policy to promote decentralized waste segregation, reuse and recycling		
7.7	With good decentralized and segregated waste management system in place, waste-to-energy plants will not be needed in the city. In case any location requires such plant, strong siting policy should be adopted to keep it away from habitation including neighbourhoods of low income groups. Strict implementation of emissions norms; use of state-of-the-art technology and provide real time emissions data to SPCB.	Haldia Municipality, Metropolitan Development Authority, RWAs, State Police Department, WBPCB	6 months

## 8. COMMON BIOMEDICAL TREATMENT FACILITY

S. no.	Action points	Agency responsible	Timeline
<b>Short-term priority action</b>			
8.1	Implement emission norms for incinerators and examine the feasibility of less polluting alternatives in compliance to Biomedical waste treatment rules.	WBPCB, Haldia Municipality, incinerator facility operators	6 months
8.2	Implement CEMS for incinerators and provide data on emissions on an open platform progressively.		6 months
8.3	Develop a siting policy for biomedical incinerators.	WBPCB, Supported by Haldia Municipality.	6 months

## 9. COOKING FUELS AND OPEN EATERIES

S. no.	Action points	Agency responsible	Timeline
<b>Medium to long term action</b>			
9.1	A targeted programme to be implemented for 100 per cent coverage of households by distribution of LPG/PNG in all non-compliant cities.	Department of Power & NES, District and local administration	1-2 years
9.2	In low-income neighborhoods, as well as roadside eateries/dhabas/ restaurants etc. promote and give access to LPG and electricity. Mandate and link commercial license to clean fuels.	Dept. of Power & NES, Municipality, urban localbodies	1-2 years

## 10. ROAD DUST

S. no.	Action points	Agency responsible	Timeline
<b>Short-term action</b>			
10.1	Sprinkling of recycled water (without compromising other uses); introduce water fountains at major traffic intersections, wherever feasible. Adopt dust control measures for dug up areas. .	District and local administration, PWD, Road owning agencies	6 months
10.2	Phase-in mechanical / vacuum-based street sweeping wherever feasible; introduce wet / mechanized vacuum sweeping of roads		6 months
<b>Medium- to long-term actions</b>			
10.3	Implement truck loading guidelines; use of appropriate enclosures for haul trucks; gravel paving for all haul routes.	Department of Transport, Traffic Police	1-2 years
10.4	Maintain pothole-free roads for free flow of traffic to reduce emissions and dust.	Municipality, District and local administration	1-2 years
10.5	Increase green cover in the region. Undertake greening of open areas, gardens, community places, schools and housing societies. HAD has taken initiatives to ensure greening of open areas.	Municipality, local bodies, RWAs	1-2 years
10.6	Enforcement of air pollution control in concrete batching (use of water spray and wind breakers, bag filter at silos and enclosures, hoods, curtains etc.) or use clean alternative technologies	WBPCB, Road Owning Agencies, Department of industries	1-2 years
10.7	Adopt street design guidelines for paving of roads and footpaths (hard and soft paving) with vegetative barriers. Mandate restoration according to the guidelines after the completion of all infrastructure projects.		1-2 years

## 11. CONSTRUCTION DUST

S. no.	Action points	Agency responsible	Timeline
<b>Short-term action</b>			
11.1	Adopt and implement dust control measures for all types of construction - buildings and infrastructure. The preventive measures as mentioned in CPCB guidelines <sup>22</sup> . Construction agencies to be made liable. Impose penalty for non-compliance.	Municipality	6 months
11.2	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. Haldia Municipality to ensure for private and commercial building.	Municipality/ Urban Local Bodies	6 months
11.3	Intensify surveillance on construction activities within urban airshed zones during high pollution period	Municipality and WBPCB	6 months
<b>Medium- to long-term action</b>			
11.4	Notify rules to segregate construction and demolition waste. Provide a network of decentralized C&D waste segregation and collection sites across the city.	Municipality	1-2 years
11.5	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.	Municipality	1-2 years
11.6	Set up facilities to recycle construction and demolition waste. 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 2016. Set up facilities for recycling of C&D waste	District and local administration, Municipality	1-2 years

## 12. EPISODIC EVENTS

S. no.	Action points	Agency responsible	Timeline
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12.1	Measures to control forest fires/biomass/crop residue burning: Use satellite based monitoring and on-ground enforcement to control such burning episodes. So an assessment needs to be carried out to identify the reasons and kind of technological and fiscal measures needed to curtail the fires. This is part of regional action.	Agriculture and allied Department, District and local administration	Ongoing
12.2	Firecrackers: regulate and control its usage including restrictions on timing as per the Supreme Court and CPCB and PESO guidelines.	District and local administration, Police Department, WBPCB, RWAs, Supported by Chief Controller of Explosives, Petroleum and Explosive Safety Organization (PESO)	Ongoing

### (13) RENEWABLE ENERGY

S. no.	Action points	Agency responsible	Timeline
<b>Medium- to long-term action</b>			
13.1	West Bengal has solar energy policy. As per the policy, it is mandatory for all housing societies having a total contract demand of 500 KW to install solar rooftop systems to meet at least 1.5 percent of their total electrical load. This should be further strengthened and implemented. This should be linked with transition from diesel genset to solar power, also the electric public transport can be linked with solar power plan to shift to zero emission target. Identify and target institutional/industrial and residential consumers for faster adoption. Identify open areas in the city where solar power generation is possible.	WBREDA, Department of Power & NES, District and local administration	1-2 years
13.2	WB RE policy requires commercial and industrial establishments with more than 1.5 MW of contract demand, to install solar rooftop systems to meet at least 2 per cent of their total electrical load. This should be further strengthened and implemented. This should be linked with transition from diesel genset to solar power. Identification of the mandated entities to encourage adoption through awareness camps and introduce relevant penalties in case of non-compliance.	WBREDA, Department of Power & NES, District and local administration	1-2 years
13.3	Introduce a stand-alone scheme for state run institutions - schools, colleges, hospitals etc. that meet the criteria and facilitate their adoption through a state tender; the tenders must be based on the aggregated demand and must occur at defined intervals to ensure developer participation.	WBREDA, Department of Power & NES, District and local administration	1-2 years
13.4	Facilitate uptake of solar PV on existing residential households and commercial establishments (for example - where there is a lack of rooftop space or single grid-connection for multiple houses) by introducing encouraging regulatory measures such as virtual and group metering	WBREDA, Department of Power & NES, District and local administration	1-2 years
13.5	Introduce an online portal, where prosumers can apply for solar rooftop, interact with installers and track the installation process [to check delays at discom and SNA's end] - inspections, grid connection and subsidy disbursal.	WBREDA, Department of Power & NES, District and local administration	1-2 years
13.6	Setup a Solar Command Centre (CCC) within the WBREDA that provides guidance, facilitate redressals and acts as a watchdog for solar rooftop adoption, especially tracking progress under schemes and mandates (including Renewable purchase obligation).	WBREDA, Department of Power & NES, District and local administration	1-2 years

### 14. URBAN GREENS AND FORESTS

S. no.	Action points	Agency responsible	Timeline
<b>Medium-term action</b>			

14.1	<p>Avenue plantation along roads with more traffic.</p> <p>Urban planning to integrate urban greens (parks, district forests etc.) and urban forests in the Master Plans of the cities and all infrastructure development and urban redevelopment projects. At least 15-20 percent of the new urban redevelopment projects should be set aside for urban green and tree 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. HDA has developed 03 No new parks with green coverings.</p> <p>Plan for green roof and vertical greens are being taken up. Haldia Mcpl may take necessary action for enforcement of creation of greens on roof top and green walling for private and commercial buildings</p>	Forest Department, HDA, NHAI, PWD, Haldia Municipality	1 year
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## 15. IMPROVE TRAINING AND CAPACITY

S. no.	Action points	Agency responsible	Timeline
15.1	Training and skill development will be required of public officials and other public functionaries for planning and management and execution of the plan. This will also require extensive capacity building in all sectors and infrastructure planning.	West Bengal State Council for Science and Technology, Department of Personnel and Training, District and local administration	Ongoing

## 16. NEED FOR PUBLIC AWARENESS AND COOPERATION

S. no.	Action points	Agency responsible	Timeline
16.1	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. Formation of a public grievance redressal portal for redressal of public complaints on air pollution along with a supervisory mechanism for its disposal at time bound manner	West Bengal State Council for Science and Technology, WBPCB, District and local administration	Ongoing

## 17. MINING

S.no.	Action Points	Agency responsible	Timeline
<b>Short-term action</b>			
17.1	Establishment of Continuous Ambient Air Quality Monitoring Stations	West Bengal Industrial Development Corporation (WBIDC), WBPCB, ICE, MSME	6 months
17.2	Covering of trucks even for internal transport of coal in coalfields area. Implement measures for effective dust suppression during mining and allied activities such as crushing, loading, unloading blasting etc.	West Bengal Industrial Development Corporation (WBIDC), WBPCB	6 months
17.3	Dust suppression system- sprinkling of hydrophilic solvents so that water can be attracted and dust can be suppressed. Chemicals such as CaCl <sub>2</sub> , MgCl <sub>2</sub> , sodium silicate can be used as wetting agents	West Bengal Industrial Development Corporation (WBIDC), WBPCB	6 months
17.4	Constant electronic surveillance to enforce water sprinkling	West Bengal Industrial Development Corporation (WBIDC), WBPCB	6 months
17.5	All the transportation roads, either temporary or permanent in nature should be blacktopped/concreted with proper drainage facility.	West Bengal Industrial Development Corporation (WBIDC), WBPCB	6 months



17.6	Provide wind-barriers along the coal-transport road, wherever, the transport road is within 500 m of any habitation area.	West Bengal Industrial Development Corporation (WBIDC), WBPCB	6 months
17.7	Installation of Closed Conveying Systems for transport of coal from pithead to railway siding.	West Bengal Industrial Development Corporation (WBIDC), WBPCB	6 months
17.8	Provisions of Vertical Greenery System for Coal Stockyards	West Bengal Industrial Development Corporation (WBIDC), WBPCB	6 months

S.no.	Action Points	Agency responsible	Timeline
17.9	Maintain pot hole-free roads for free flow of traffic to reduce emissions and dust.	West Bengal Industrial Development Corporation (WBIDC), WBPCB	6 months
<b>Medium to long-term action</b>			
17.10	Deployment of adequate number of surface miners. The surface miners are usually fitted with built dust suppression system and eliminates, drilling, blasting and sizing coal.	West Bengal Industrial Development Corporation (WBIDC), WBPCB	1 year
17.11	Commissioning of adequate number of silo loading facility at railway sidings to achieve minimum 80 per cent rail dispatch of coal through silo loading.	West Bengal Industrial Development Corporation (WBIDC), WBPCB	1 year
17.12	Dust extraction system—This includes network of suction heads and ducting connected to wet wall cyclone for separating dust from the air stream. Air outlet of cyclone collectors will have to be connected, so as to discharge clean air to atmosphere and collected dust from the cyclone shall be disposed off suitably. All related provision of the SPCB action plan for critically polluted areas should be implemented.	West Bengal Industrial Development Corporation (WBIDC), WBPCB	1 year

## 18. Thermal Power Plants

S. No.	Action points	Agency responsible	Timeline	Current Status
18.1	<b>Haldia Thermal power Station – 600 MW</b> The power station has two units of 300 MW commissioned in 2015.	WBPCB	2022	Power Station is operating at 85-90 per cent plant load factor. No information is available in the public domain on PM levels, water reduction measure, and NO <sub>x</sub> control. Feasibility study under way to meet new norms.
	Step 1: Collect major milestone plan/Gantt chart for FGD installation, NO <sub>x</sub> control and measures to meet water norms		By Feb 2020	
	Step 2: Prepare action plan for monitoring at relevant intervals, issue notice to collect a suitable bank guarantee amount – 1 per cent of the project cost		By June 2020	
	Step 3: Collect Bank guarantee, Engineering documents – for FGD, NO <sub>x</sub> control and measures to meet water norms		By October 2020	
	Step 4: Ensure civil works are completed		By June 2021	
	Step 5: Performance and guarantee (PG) Test for FGD be initiated		By June 2022	
<b>FUGITIVE EMISSIONS</b>				

S. No.	Action points	Agency responsible	Timeline	Current Status
18.2	<b>Coal Handling:</b> A. Issue modified consent condition and direct storage of coal in enclosed space. B. Collect Bank guarantee and timeline from power station to implement measures to enclose coal handling area	WBPCB	A.By March 2020 B.By June 2020	
18.3	Fly ash management A. Form a committee and set terms of reference (ToRs) for inspection and improve fly ash management and utilisation in the thermal power stations. Allow only bulk container transport of fly ash – issue notice. B. Inspect fly ash pond and roads leading to the pond, audit the need for any improvement in the fly ash pond structure. Collect plans from power station to improve fly ash utilisation C. Collect Bank guarantee and timeline from power station to implement measures	WBPCB	A.By March 2020 B.By June 2020 C.By October 2020	
<b>FUEL QUALITY IMPROVEMENT</b>				
	Advice use of low sulphur coal (coal with sulphur content less than 0.2 per cent), co-firing of coal with biomass. On availability of natural gas switch-over coal-based power stations to natural gas-based power stations.			

A draft graded response action plan has also been prepared which shall be finalized as and when the air quality forecasting is available and the emission sources are ranked on basis of SA study. In addition, the finalization of GRAP also requires the reconciliation with IMD forecasted data on air quality. It is already noted that the observed air quality is grossly different from the IMD forecasts. This draft plan is attached only as a specimen, which may also need further refining based on SA study and current year's experiences on air quality management:

### GRADED RESPONSE ACTION PLAN (GRAP) FOR REDUCING AIR POLLUTION IN NON-ATTAINMENT CITIES OF WEST BENGAL

The proposed graded measure approach for each pollution source according to the Air Quality Index (AQI) categories includes appropriate measures for each level of pollution (PM10 / PM2.5). While the comprehensive clean air action plan must be implemented round the year, the GRAP measures are meant to be temporary measures for duration of smog episodes and are implemented according to the severity of the 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. A GRAP has been prepared, which may be implemented as and when required and when severe conditions are forecasted.

The proposed GRAP includes set of measures to be implemented with greater vigour and stringency to prevent and avoid high level of air pollution in cities. This is linked to the national air quality index that categorises 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 WBPCB 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

<b><u>Moderate to poor</u></b>	
<b>Poor - When PM2.5 levels are between 91-120 microgramme per cum or PM10 levels are between 251-350 microgramme per cum; Moderate - When PM2.5 is between 61-90 microgramme per cum or PM10 is between 101-250 microgramme per cum</b>	
<b>Action to be taken</b>	<b>Agency responsible</b>
Stringently enforce/stop garbage burning in landfills and other places and impose heavy fines on person responsible	Urban Local Bodies
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	Urban Local Bodies, 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	Urban Local Bodies, 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

<b>Very Poor</b> When PM2.5 levels are between 121-250 microgramme per cum or PM10 levels are between 351-430 microgramme per cum	
<b>Action to be taken</b>	<b>Agency responsible</b>
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	Urban Local Bodies
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	Urban Local Bodies
Alert in newspapers/TV to advise people with respiratory and cardiac patients to avoid polluted areas and restrict outdoor movement.	State Pollution Control Board

<b>Severe</b> When PM2.5 levels are above 250 microgramme per cum or PM10 levels are above 430 microgramme per cum

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 the emission 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 Urban Local Bodies, 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

<b>Severe + or Emergency</b>	
<b>When PM2.5 levels cross 300 microgramme per cum or PM10 levels cross 500 microgramme per cum (or 5 times above the standard) or persist for 48 hrs or more.</b>	
Action to be taken	Agency responsible
Stop entry of diesel truck traffic into city (except essential commodities)	Traffic Police Urban Local Bodies
Stop construction activities	Pollution ControlBoard, Urban Local Bodies
Introduce some form of vehicle restraint measures for private vehicles based on license plate numbers, 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	

**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 and emergency	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, maintain right tyre pressure)
	Minimize unnecessary travel, use public transport & avoid using private vehicles

**Air Quality Monitoring network design criteria**

Population (Census 2011)	Minimum No. of manual station under NAMP	Minimum no of proposed CAAQMS	Total
1,00,000- < 5,00,000	1-Background 2-Residential/ Commercial	1-Residential	4
5,00,000- <10,00,000	1-Background 2-Residential/ Commercial	1-Residential 1-Traffic dominant area 1- Commercial	6
10,00,000- <50,00,000	1-Background 2-Residential/ Commercial	2-Residential 1-Traffic dominant area 1- Commercial 1-Industrial area	8
≥50,00,000	1-Background in upwind direction 1-Background in down wind direction 2-Residential/ Commercial	4-Residential 3-Traffic dominant area 3- Commercial 2-Industrial area	16

### **INSTITUTIONAL MECHANISM FOR GRAP IMPLEMENTATION for GRAP**

In order to implement and monitor progress of the proposed actions, a district level monitoring committee is proposed, which will also provide for the institutional mechanism for implementation. The committee may co-opt members as and when required. Proposed composition of District Level Monitoring for GRAP:

<b>District Collector/ District Magistrate</b>	<b>Chairman</b>
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Sub-divisional Magistrate of District Head Quarter	Member Secretary
Chairman, Haldia Municipality	Member
Superintendent of Police	Member
Regional officer of WB-PCB	Member
Representative of leading NGOs working on environment related issues (nominated by Chairman)	Member
Regional officer from Transport Department	Member
CEO, Asansol Durgapur Development Authority (ADDA)	Member
One academicians from the field of environment (nominated by Chairman)	Member
Regional Officer from WB Industrial Development Corporation	Member
Nominated Official from WBREDA	Member
All RTOs of the district	Member(s)
Nominated Official from Forest Department	Member