# Revised Portions for **Asansol**

## 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 Asansol. 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. 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 city 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 (CAP): Short-, medium- and long-term measures**

*Source-wise clean air action plan and compliance strategy for Asansol to meet clean air standards. The following table indicates the short-, medium- and long-term action along with agencies responsible.*

## COMPREHENSIVE CLEAN AIR ACTION PLAN (CAP)

### 1. AIR QUALITY MONITORING AND ASSESSMENT

| Sl. no. | Action points | Agency responsible | Timeline | Financial out lay |
|---|---|---|---|---|
| **Short-term priority action** | | | | |
| 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) Asansol fulfills the criteria of minimum four monitoring stations. (According to Census 2011, the population of Asansol is 5,63,917).<br>The city has one real time and two manual monitoring stations. To fulfil the criteria, 2 CAAQMs and 1 Manual Station shall be installed.<br>Use air quality sensors at probable hotspots to complement air-quality monitoring (based onCPCB/ MoEF&CC guidelines) | Nodal agency: West Bengal State Pollution Control Board (WBPCB), Supported by Central Pollution Control Board (CPCB) | 9 months | 3 crore 10 lakh |
| 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. West Bengal State Pollution Control Board is imitating a study on satellite based assessment. | WBPCB, CPCB, IMD,<br>IITM, Pune, MoES | 6 months | To be finalized |
| **Medium-term action** | | | | |
| 1.3 | Develop capacity for pollution forecasting for implementation of graded response action plan. For e.g., introduction of SAFAR to Asansol. This will also require monitoring of weather data and prior support from MOES IMD | MOES, IMD, IITM, Pune, Department of Environment, WBPCBsupported by CPCB,IMD | 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 website (SPCB website) and local media. | WBPCB, CPCB, IMD | 1 year | Regular activity |
| 1.5 | To conduct a source apportionment and emission inventory study for the city, to capture source-wise contribution and seasonal variations in source contribution.Assessment of carrying capacity to be carried out as well. Additionally, the study must assess regional impacts by setting up a mechanism to assess emissions in the airshed. | WBPCB and Department of Environment | 18 months | 3 crore |
| 1.6 | Set up rural and peri-urban air quality monitoring to assess the airshed/ influence area. 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 years | 1.6 crore |

| | | | | |
|---|---|---|---|---|
| 1.7 | Assess application of low cost sensor based monitors in areas that are not being monitored to create baseline local data to inform local area action subject to approval of MOEF&CC about use of low cost sensor in AQM | WBPCB & CPCB | 1 year | To be finalized |
| 1.8 | Research studies including detailed inventories, health impact studies, exposure impacts, for the air shed 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<br>Expertise will be sought from various institutions to develop protocols for assessment of the research proposals. | WBPCB, DoE, CPCB, West Bengal State Council for Science and Technology | 2 years | 1.5 crore |
| 1.9 | Database management for implementation of action plan:<br>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 |
|---|---|---|---|
| **Short Term Priority Actions** | | | |
| 2.1 | Implement SOx and NOx standards notified by MOEF&CC on January 29, 2018 for 16 categories of industries in and around the city.<br>Ensure compliance through regular testing & CEMS enabled monitoring. Identify the industrial units that need to implement the new standards and implement. | WBPCB | 6 months |
| 2.2 | Implement existing standards for PM and ensure compliance through regular testing & CEMS enabled monitoring (See action 2.4). Also take precautions for minimizing fugitive emissions through the preparation of a checklist for industrial zones and units, for each specific type of industry. Carry out regular inspection | WBPCB, Department of, Industries Commerce and Enterprises Industries | 3 months |
| 2.3 | Have a clean fuel policy and provide incentives for clean fuels:<br>For this notify approved fuels. Promote relatively cleaner fuels like gas (Coal Bed Methane from Dankuni Coal Complex, natural gas when available) and electricity.<br><br>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). Need for a favourable taxation and pricing policy to make cleaner fuels more competitive<br><br>Incentivise replacement of boilers to switch to cleaner fuels. Clean fuel strategy needed for small and medium scale units with monmal or no emission control systems. Currently there is no restriction on fuels | WBPCB, Department Of Industries, Commerce and Enterprises, Ministry of Petroleum and natural Gas (MOPNG) | 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.<br><br>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.<br><br>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.<br>Compliance checking to be enforced routinely to prevent tampering with the CEMS[30].<br><br>This needs to be done for industrial sectors including sponge iron and cement units, iron and steel industries and jute and rice mills. | WBPCB, Department of Industries, Commerce and Enterprises | 6 months |

| S. no. | Action points | Agency | Timeline |
|---|---|---|---|
| 2.5 | Identification of cumulative impact of industrial emissions such as total load from a specified area or a particular type of industry. Prescribe more stringent and specific pollution control action for each type of industry. For instance specific measures for sponge iron units and rice mills each. | WBPCB, Department of Industries, Commerce and Enterprises | 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. | WBPCB, Department of Industries, Commerce and Enterprises | 6 months |
| 2.7 | Enforce restrictions on operations of intensively polluting industries within urban airshed zones during high pollution periods. Upgrade all existing Air Pollution Control Devices to the newer and more efficient devices. | WBPCB, Department of Industries, Commerce and Enterprises | 6 months |
| **Medium-term action** | | | |

| S. no. | Action points | Agency responsible | Timeline |
|---|---|---|---|
| 2.8 | Strengthen the current siting policy for industries to be notified in future, in order to address Asansol-wide air quality issues. Exploring the scope of further restricting expansion and diversification of polluting units until air pollution control measures have been implemented. | WBPCB, Department of Industries, Commerce and Enterprises | 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 Industries, Commerce and Enterprises | 1 year |
| 2.10 | Training and Awareness Program for onsite emergency preparedness and environmental issues | WBPCB, Department Of Industries, Commerce and Enterprises | 1 year |
| 2.11 | Construction of paved roads around all major industrial belts and estates. Installation of dust suppression system. Provision for water sprinkling and dust mitigation | WBPCB, Department Of Industries, Commerce and Enterprises, ADDA | 1 year |
| 2.12 | Development of adequate greenbelt around all major industrial estates by planting 1000 saplings | WBPCB, Department Of Industries, Commerce and Enterprises, ADDA | 1 year |

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

| S. no. | Action points | Agency responsible | Timeline |
|---|---|---|---|
| 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 zig-zag design with induced draft or those with improved technology. Initiate phasing out of traditional brick kilns. | L&LR Department, WBPCB, Department of Department Of Industries, Commerce and Enterprises | 6 months |
| 3.2 | Relocate centralised Hot Mix Plants to areas outside Asansol boundaries, and ensure compliance with PM, NOx and SOx emission standards. Shut down small and mobile Hot Mix Plants | AMC, WB PWD, NHAI and other road operating agencies | Immediately |
| **Medium-term action** | | | |
| 3.3 | Convert all brick kilns to rectangular design zigzag technology–from FCBT natural draft kilns to induced draft kilns with rectangular zigzag Design. | L&LR Department, WBPCB, Department of Deapartment Of Industries, Commerce and Enterprises | 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 and Chimney emission testing point for compliance. | CPCB, MoEF&CC, WBPCB, Department Of Industries, Commerce and Enterprises | 1 years |
| 3.5 | Identification of stone crushers that are close to the city, if any; adopt stringent dust control measures and greening | District Administrations WBPCB, Department Of Industries, Commerce and Enterprises | 6 months |
| 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, NHAI and other road operating agencies | 2 year |

**ACTION ON POWER PLANTS**

| S No | Action points | Agency responsible | | |
|---|---|---|---|---|
| | Santaldih Thermal power Station – 500 MW<br>The power station has two units of 250 MW commissioned in 2007 and 2011 respectively. | WBPCB & WPDCL | 2021 | Power Station is operating at 75-90 per cent plant load factor. Plant comply with the particulate matter norms. Feasibility study under way to meet new norms. Water reduction measure and NOx control plan is unavailable in public domain. |
| | Step 1: Collect major milestone plan/Gantt chart for FGD installation, NOx 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, NOx control and measures to meet water norms | | By June 2020 | |
| | Step 4: Ensure civil works are completed | | By December 2020 | |
| | Step 5: Performance and guarantee (PG) Test for FGD be initiated | | By September 2021 | |
| | Step 4: Ensure civil works are completed | | 2021 | |
| | Step 5: Performance and guarantee (PG) Test for FGD be initiated | | By Feb 2020 | |
| **2** | Raghunathpur Thermal Power Station – 1,200 MW<br>The power station has two units of 600MW. The plant was commissioned recently. It has to meet the emission norms by 2022. | WBPCB & DVC | | Plant is operating at low plant load factor 40-60%. It is currently meeting PM norms, tender has been awarded for FGD, NOx implementation plan is unavailable in public domain. |
| | Step 1: Collect major milestone plan/Gantt chart for FGD installation, NOx 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 March 2020 | |
| | Step 3: Collect Bank guarantee, Engineering documents – for FGD, NOx control and measures to meet water norms | | By July 2020 | |
| | Step 4: Ensure civil works are completed | | by January 2021 | |
| | Step 5: Performance and guarantee (PG) Test for FGD be initiated | | by June 2022 | |
| Fugitive emissions | | | | |
| 1 | Coal Handling:<br>Issue modified consent condition and direct storage of coal in enclosed space.<br>Collect Bank guarantee and timeline from power station to implement measures to enclose coal handling area | WBPCB | By March 2020<br>By June 20, 2020 | |
| 2 | Fly ash management<br>Form a committee and set terms of reference (ToRs) for inspection and improve fly ash management and utilisation in the thermal power stations.<br>Allow only bulk container transport of fly ash – issue notice.<br>Inspect fly ash pond and roads leading to the pond, audit the need for any improvement in the fly ash pond structure.<br>Collect plans from power station to improve fly ash utilisation<br>Collect Bank guarantee and timeline from power station to implement measures<br>Form a committee and set terms of reference (ToRs) for inspection and improve fly ash management and utilisation in the thermal power stations.<br>Allow only bulk container transport of fly ash – issue notice.<br>Inspect fly ash pond and roads leading to the pond, audit the need for any improvement in the fly ash pond structure.<br>Collect plans from power station to improve | | By March 2020<br>By June 2020<br>By March 2020<br>By June 2020<br>By October 2020 | |

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|---|---|---|---|---|
| | fly ash utilisation<br>Collect Bank guarantee and timeline from power station to implement measures | | | |
| Fuel quality imporvement | | | | |
| 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. | | | | |

## 4. ACTION TO REDUCE VEHICULAR EMISSIONS

| S. no. | Action points | Agency responsible | Timeline |
|---|---|---|---|
| **Medium-term action** | | | |
| 4.1 | Emission And Fuel Quality For New Vehicles<br>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. Fully prepared to comply the order of Hon'ble Apex Court | Transport department | 4 months |
| 4.2 | ALTERNATIVE CLEAN FUEL POLICY FOR VEHICLES | | |
| | **Medium term action** | | |
| **S. no.** | **Action points** | **Agency responsible** | **Timeline** |
| 4.2.1 | Assess the potential of expandingthe gaseous fuel programme: Enforce that all auto rickshaws and local taxis and buses to run on CNG/LPG (as applicable). Replace diesel three wheeler & taxi fleets with LPG/CNG/Electric fleet. Expand refuelling infrastructure for delivery and use. GAIL is expected to expand natural gas grid to West Bengal. Prepare roadmap be linked to that.<br>Around 569 CNG driven Auto rickshaws operate at Assansol 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 Deapartment Of Industries, Commerce and Enterprises Ministry of Petroleum and Natural Gas (MOPNG) | 1-2 years |
| 4.2.2 | Target Medium- and short-term goals for electrification of targeted fleet of new vehicles in specific segments using a mixture of mandates and subsidies. Eg. 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. Build on the policies of the central government - NEMMP & FAME to make West Bengal a hub for electric mobility.<br>Provision of additional state subsidy for procurement of commercial electric vehicles<br>100% Exemption of duty/tax on electricity tariff for an initial period of 5 years for EV manufacturers (vehicle and battery)<br>Encourage retrofitting of auto-rickshaws to EV IPT<br>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. | Transport department, Department of Poer&NES, Central policy guidance from DHI, NITI Aayog | 1 year |
| 4.2.3 | 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.<br>Ensure organized deployment to reduce congestion.<br>Designated parking spaces for commercial electric vehicles with exempted parking fees for EVs<br>Legalise domestic charging of e-rickshaws: to control power theft due to illegal charging and eradicate informal proliferation of units | Transport department, Department of Power&NES, Central policy guidance from DHI, NITI Aayog | 1 year |
| 4.2.4 | Explore the feasibility potential of generating biogas from waste and sewage to run buses in cities | Transport Department, Department of Power & NES, oil marketing companies | 1 year |
| 4.2.5 | Introduce favourable fiscal measures to promote clean fuels and vehicles and zero emissions vehicle such as reduction in road tax. (Ref: 4.2.2).Tax relaxation in respect of Methanol/Ethanol fuelled motor vehicles is being contemplated | Department of Transport, Power & NES and Finance | 1 year |

| S. no. | Action points | Agency responsible | Timeline |
|---|---|---|---|
| 4.3 | EMISSION CONTROL MEASURES FROM ON-ROAD VEHICLES | | |
| Short-term priority action | | | |
| 4.3.1 | Plan and implement adequate number of PUC centre for emissions testing of on-road vehicles. Strengthen periodic auditing and over- sight of PUC Centres, calibration of equipment and third party checks.<br>38 PUCC operational in Asansole city | MoRTH, Transport Department | Immediate |
| 4.3.2 | 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.<br>Develop a mechanism for ensuring that no vehicle is allowed to ply without valid PUC certificate.<br>*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* |
| 4.3.3 | Improve and enforce PUC programme: Ensure universal linking of PUC centres with remote server and eliminate manual intervention in PUC testing. Implement testing of all notified emissions parameters including Lambda testing for petrol cars as notified by MORTH in 2004. This has been effective since 1st April, 2019 | Transport Department | Immediate |
| 4.3.4 | 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. Currently being done for Kolkata and its suburb. Tender process has been initiated for purchase of 2 more RSD devices. | MoRTH, ARAI, Transport Department | 1 year |
| 4.3.5 | 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.<br>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 to check for preparedness for BSVI norms. | Transport Department | 6 months to 1 year |
| 4.3.6 | 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 | Action Started |
| 4.3.7 | 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, Barrackpore.and in Durgapur SBSTC premises. | Transport Department, MoRTH | 1 year |
| 4.3.8 | Explore the scope of phasing out old vehicles and develop a state 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 and integrate the current informal scrapping units. | Transport Department, MoRTH, CPCB | 2 year |

**4.4 Freight Transportation**

| | Short-term action | | |
|---|---|---|---|
| **S,No,** | **Action Points** | **Agency Responsible** | **Timeline** |

| | | | |
|---|---|---|---|
| 4.5.1 | Use of off-peak passenger travel times to move freight and restrict the entry of<br>heavy vehicles into cities during the day to continue<br>Adopt freight master plan to organize freight movement and logistics. | District and local administratio n, Municipal Corporation | Within 6 month |
| 4.5.2 | Provide truck rest areas/parks along national and state highways to prevent<br>entry of trucks into cities during peak hours. Use of off-peak passenger travel<br>times to move freight and restrict the entry of heavy vehicles into cities during<br>the day to continue. Pave all roads to control fugitive dust | PWD, NHAI | Within 6 months |
| 4.5.3 | 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<br>roads. | NHAI, District and local administrat- tion | With- in 6 months |
| 4.5.4 | 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 for the city of Kolkata and the same is expected for Asansol. | District and local administratio n, Transport department, Traffic Police | With- in 6 months |
| 4.5.5 | Create management systems for loading and unloading of goods in city areas. | District and local ad- ministration, Transport department | 6 month |
| 4.5.6 | 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 Axel 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 month |
| **Medium to long term action** | | | |
| 4.5.7 | Promote high capacity trucks for long-distance freight transport of mining material instead of smaller trucks | NHAI, District and local administratio n | Within 6 months |
| 4.5.8 | 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 ad- ministration, Transport dept, Traffic Police | With- in 6 months |
| 4.5.9 | 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. This also allows scope of introducing environment pollution charge at the entry point. | District and local ad- ministration, Transport department, Traffic Police | 1 year |
| 4.5.10 | Develop urban freight consolidation centers in relation to location of ware-houses relative to suburban areas. | District and local ad- ministration, Transport department | 1 year |
| 4.5.11 | Prepare a freight master plan: Prepare a detailed logistic plan which includes detailed assessment of freight connectivity, requirement of dedicated fright<br>corridor and, allied freight infrastructure such as logistic park/ truck terminals, cold storage facilities, warehouses etc. | Transport Department, Railways | 1-3 year |
| 4.6 | Prepare an action plan to check fuel adulteration and carry out 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. | Transport, MVD, MoPNG, Oil marketing companies | 6 month |

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|---|---|---|---|
| 4.7 | EMISSION CONTROL AT REFUELING STATIONS<br>Install vapor recovery systems in fuel refueling 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 | 6 month |

## 5. URBAN MOBILITY

| Sr. No. | Action points | Agency responsible | Timeline |
|---|---|---|---|
| 5.1 | Public transport system | | |
| **Short term action** | | | |
| 5.1.1 | Improve the visibility of existing public transport system by installing Bus Post sign and Bus Queue Shelters in the city.<br><br>Approximately 500 Bus Post Sign and 150 Bus Queue Shelter needs to be installed for the convenience of the passengers. | AMC, Public Works Department (PWD), National Highway Authority of India (NHAI) | 6 months |
| **Medium-to long-term action** | | | |
| 5.1.2 | Introduce an organized public transport service connecting Asansol, Raniganj municipality and Durgapur of appropriate fleet size and desirable bus type replete with Global Positioning Device (GPS) and passenger Information System (PIS).<br><br>Approximately 250 buses shall be required in the first phase. (as per the thumb rule of the Ministry of Housing and Urban Affairs) | Asansol-Durgapur Development Authority (ADDA), AMC, PWD | 18 months |
| 5.1.3 | Designing the major interchange location in such a way that it helps in smooth transition of commuter from one mode to another mode (specifically, Bus & IPT integration). | AMC, PWD, NHAI | 18 months |
| 5.2 | Intermediate Para Transit (IPT) | | |
| **Short term action** | | | |
| 5.2.1 | Prepare an operational plan for IPT services for the city which shall include route details, operation period, no of IPT services allowed in each route, IPT parking area etc., standardize IPT fares and enforce the safety standards for IPT. | ADDA, DMC, Traffic Police, RTO-Transport Department | 6 months |
| 5.2.2 | Upgrade the infrastructure of existing MTS to provide better training experience of IPT drivers. At present at Asansol MTS within the city limits train IPT drivers. | RTO – Transport Department | 6 months |
| 5.2.3 | Earmarked all the existing and proposed IPT parking locations in separate colour code provided in the Road Marking Manual prepared by MoUD. Install a IPT sign post with Origin-Destination, no of IPT parking allowed, IPT operation timing. | ADDA, AMC, PWD | 6 months |
| 5.2.4 | Enforce IPT service providers to abide by latest fuel economy standards (i.e. Bharat Stage IV and upcoming Stage VI). | RTO, Traffic Police | 6 months |
| **Medium Term** | | | |
| 5.2.5 | Promote E-Rickshaws as feeder services to the proposed AUA bus services to facilitate first and last mile connectivity and to facilitate that designate e-rickshaw parking location adjacent to bus stops (wherever possible) | Bus SPV/ AMC | 1-3 years |
| 5.2.6 | Prepare a policy framework for future IPT development, with specific consideration on limiting no of IPT modes, restricting >15 yrs. Old vehicles to ply and detailed laydown steps for diesel to electric conversion. | State Govt./ AMC | 1-3 years |
| 5.3 | Adaptation of electric mobility | | |
| **Short term action** | | | |
| 5.3.1 | Prepare an incentive based (financial) electric rickshaw scheme over and above the incentives provided by State (if possible) for the quicker adaptation of electric mobility in the city. | AMC/ Regional Transport Authority | 6-12 months |
| 5.3.2 | Promote E-Rickshaws and electric auto-rickshaws as feeder services to the proposed AUA bus services to facilitate first and last mile connectivity. | Bus SPV/ AMC | 6 months |
| 5.3.3 | Prepare regulatory mechanism for provision of dedicated parking space for electric rickshaws/vehicles. | AMC | 1 year |

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| 5.3.4 | Take initiative to develop electric ecosystem such as charging infrastructure, better tariff regime etc. | AMC/ Electricity department | 1 year |
| 5.4 | Road Design | | |
| **Medium to long term** | | | |
| 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:<br>•Pedestrian infrastructure shall be designed based on the Indian Road Congress (IRC): 103-2012.<br>•Target specific lengths of footpaths to be completed in a phased manner and cover the entire city.<br>•Upgrade pedestrian crossing at least every 250 m, with pedestrian signals and signages. These should preferably be at grade.<br>•Identify network to develop cycle tracks<br>•Make safety audit of walking infrastructure mandatory.<br>•Provide roadside public docking space for bicycles.<br>•Make encroachment of NMT lanes punishable offence under the current provision of law.<br>•Dedicated municipal budget shall be made for making streets safe.<br>*Reference: Indian Road Congress: 103 -2012.* | ADDA, AMC, PWD | 1-3 years |
| 5.4.2 | Multi-Utility Zones (MUZ) | | |
| 5.4.2.1 | Taking cognizance of the proposed land use map for AMC, MUZ is recommended on existing as well as proposed major and minor arterial roads. It will help in bifurcating 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.<br>•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.<br>•Space provision for all the street elements shall have to be done by activity mapping, surveys and stake holder consultations.<br>•A minimum width of 1.8 m shall be maintained for MUZ.<br>*Reference: Urban Street Design Guidelines Unified Traffic and Transportation Infrastructure (Planning & Engineering) Centre prepared by Delhi Development Authority.* | ADDA, AMC, PWD | 1-3 years |
| 5.5 | Taking cognizance of the proposed land use plan for the AMC, compact city development shall be adopted to reduce distances and improve access | ADDA, AMC, PWD | 3 years |
| **Medium-to long-term action** | | | |
| 5.5.1 | Adopt compact urban form code to create high density, mixed-use, mixed-income development and high-density accessible streets to reduce travel distances and emissions | ADDA, AMC | 12 months |
| 5.5.2 | In low density areas as well as new development and urban sprawl maximize densities with good transport connectivity, in order to facilitate maximum number of people walking or cycling, or use NMT or feeder services easily to access public transport. | ADDA, AMC | 12 months |
| 5.5.3 | Enable a balanced mix of jobs and housing along bus corridors coupled with caps on parking supply, higher housing affordability through design and technology options, and improved efficiency and equity in the resulting developments. Design these spaces with adequate green spaces and high-density street network | ADDA, AMC | 12 months |
| 5.6 | Maintenance and Management of Parking Places Rules: Implement Parking Area Management Plan (PAMP) for all delineated neighbourhoodsand land uses for demarcation of all types of legal parking spaces for all modes as well as essential street amenities – on-street, off-street and multi-level parking facilities, vending zones, multi-modal integration facilities, green open spaces along with the allied traffic and pedestrian/ NMT circulation plans, signage plans and pricing strategy. PAMPs to be prepared in consultation with local stakeholders, planning bodies/departments. This should include among others: | | |
| **Short-term action** | | | |
| 5.6.1 | Demarcate the emergency vehicle route on all public roads within the neighbourhood. Demarcate on ground wherever legal on-street parking is being provided for based on the local area plan. | ADDA, AMC | 6 months |
| 5.6.2 | Ensure no parks and green areas are converted to parking | ADDA, AMC | 6 months |
| 5.6.3 | 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. | ADDA, AMC | |
| 5.6.4 | 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 Asansol | ADDA, AMC | 6 months |
| 5.6.5 | 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. | ADDA, AMC | 6 months |
| **Medium- to long-term action** | | | |
| 5.6.6 | 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 | ADDA, AMC | 1-3 years |
| 5.6.7 | Penalty for illegal/wrong parking esp. parking within the emergency lanes and non-designated areas to be prohibitive. | ADDA, AMC | 1-3 years |

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| 5.6.8 | 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. | ADDA, AMC | 1-3 years |
| 5.6.9 | Earmark a part of parking revenue for local area improvement that includes footpaths, public amenities and parking facilities within the PAMP area | ADDA, AMC | 1-3 years |
| 5.6.10 | Introduce residential parking permit for regular parkers for use of public parking space and these may be monitored | ADDA, AMC | 1-3 years |
| 5.6.11 | 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. | ADDA, AMC | 1-3 years |
| 5.6.12 | 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 | ADDA, AMC | 1-3 years |
| 5.6.13 | Plan and implement parking provision for buses, commercial vehicles and IPT-NMT modes, and for the differently-abled. | ADDA, AMC | 1-3 years |
| 5.6.14 | Parking charges should be optimal and ensure that at least 85 per cent of the available parking spaces are occupied during peak time. About 15% of parking spaces can be vacant and available at any time to encourage short term parkers. | ADDA, AMC | 1-3 years |
| 5.6.15 | Introduce and further upgrade variable time-based pricing, as per market demand. Coordinated off-street and on-street / surface pricing in commercial and residential areas, and parking permits in residential areas. Parking should be charged as per duration, location in city and size of the vehicle. Parking rates (even if differential) should be applied to the entire PMAP area and not to a few streets. | ADDA, AMC | 1-3 years |
| 5.6.16 | 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. | ADDA, DMC | |
| 5.7 | Traffic management | | |
| 5.7.1 | Conduct independent/third party audit of geometry of all city roads and intersections and provide specific solutions. | Traffic Police | |
| 5.7.2 | Conduct audit of all intersections and install functional traffic signals at all major intersections. | Traffic Police | |
| 5.7.3 | Enforce lane driving through heavy fining | Traffic Police | |

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| **Medium-to long-term action plan** | | | |
| 5.7.4 | Prepare Traffic Impact Assessment (TIA) guidelines and permit new developments based on the formulated TIA guidelines. Prepare traffic management plan for special days such as during Durga Puja festival/ during urban flood situation. | Transport/Traffic Police/ ADDA<br>Traffic Police/ ADDA | 1 year<br>1 year |
| 5.8.1 | Permit new developments based on the impact of traffic on the surrounding transport infrastructure and neighbourhoods. | AMC/ SEIAA | 1-3 years |
| 5.8.2 | Make necessary infrastructure augmentations based on traffic impact assessments and levy costs to the developer, if needed and possible. | AMC, Traffic police | 1-3 years |
| 5.9 | Financing of urban transport | | |
| **Medium-to long-term action** | | | |
| 5.9.1 | 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, AMC | 1-3 years |
| 5.9.2 | Rationalization and reallocation of funds from road capacity augmentation projects towards public transit systems and complete streets | Transport Department | 1-2 years |
| 5.9.3 | 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, AMC | 1-3 years |
| 5.10 | Data on urban commute | | |
| **Medium-to long-term action** | | | |
| 5.10.1 | 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, AMC | 1-3 years |

## 6. GENERATOR SETS

| S. no. | Action points | Agency responsible | Timeline |
|---|---|---|---|
| Short-term priority action | | | |
| 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. | WBPCB, Asansol Municipal Corporation, Police | 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, Municipal Corporation, Electricity supply agency | 6 months |
| Medium-term action | | | |
| 6.3 | Alternate power systems should be promoted in cell towers, and use of DG sets discouraged | Department of Power & NES, 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 year |

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

| S. no. | Action points | Agency responsible | Timeline |
|---|---|---|---|
| **Short-term priority action** | | | |
| 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 | Municipal Corporation, Development Authority, Resident | 6 months |
| 7.2 | To assess and implement requisite infrastructure for ensuring 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.<br>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. | Welfare Associations, WBPCB, | 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 | | 6 months |
| 7.4 | Use of satellite based monitoring as well as mobile spot check squads for enforcement | Municipal Corporation, 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. | | |
| 7.6 | Adopt roadmap for zero landfill policy to promote decentralized waste segregation, reuse and recycling | | |

| | | | |
|---|---|---|---|
| 7.7 | With good decentralised and segregated waste management system in place to 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. | Municipal Corporation, Metropolitan Development Authority, RWAs, State Police Department, WBPCB | 6 months |

## 8. COMMON BIOMEDICAL TREATMENT FACILITY

| S. no. | Action points | Agency responsible | Timeline |
|---|---|---|---|
| **Short-term priority action** | | | |
| 8.1 | Implement emission norms for incinerators and examine the feasibility of less polluting alternatives in compliance to Biomedical waste treatment rules. | WBPCB, Municipal Corporation; 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 Municipal Corporation | 6 months |

## 9. COOKING FUELS AND OPEN EATERIES

| S. no. | Action points | Agency responsible | Timeline |
|---|---|---|---|
| 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. Man- date and link commercial license to clean fuels. | Deaprtment of Power & NES , municipal corporation, urban local bodies | 1-2 years |

## 10. ROAD DUST

| S. no. | Action points | Agency responsible | Timeline |
|---|---|---|---|
| **Short-term action** | | | |
| 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 |
| **Medium- to long-term actions** | | | |
| 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. | Municipal corporation, 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. | Asansol Municipal Corporation, local bodies, RWAs | 1-2 years |

| S. no. | Action points | Agency responsible | Timeline |
|---|---|---|---|
| 10.6 | Enforcement of air pollution control in concrete batching (use of water spray and wind breakers, bag filter at silos and enclosures, hoods, curtainsetc.) 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 andsoft paving) with vegetative barriers. Mandate restoration according to theguidelines after the completion of all infrastructure projects. | | 1-2 years |

## 11. CONSTRUCTION DUST

| S. no. | Action points | Agency responsible | Timeline |
|---|---|---|---|
| Short-term action | | | |
| 11.1 | Adopt and implement dust control measures for all types of construction - buildings and infrastructure. The preventive measures as mentioned in CPCB guidelines. Construction agencies to be made liable. Impose penalty for non-compliance. | Municipal corporation | 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. Needs enforcement. | Municipal corporations/ Urban Local Bodies | 6 months |
| 11.3 | Intensify surveillance on construction activities within urban airshed zones during high pollution period | Municipal corporation WBPCB | 6 months |
| Medium- to long-term action | | | |
| 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. | Municipal corporation | 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. | Municipal corporation | 1-2 years |
| 11.6 | Set up facilities to recycle construction and demolition waste. Man- date 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, Municipal corporation | 1-2 years |

## 12. EPISODIC EVENTS

| S. no. | Action points | Agency responsible | Timeline |
|---|---|---|---|
| 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. | WBPCB, Department of Agriculture and allied departments And 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 |
|---|---|---|---|
| **Medium- to long-term action** | | | |
| 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 plans 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. | Department of Power & NES, WBREDA, 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. | Department of Power & NES, WBREDA, 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. | Department of power/ energy, WBREDA, 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 | Department of Power & NES, WBREDA, 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. | Department of Power & NES, WBREDA, District and local administration | 1-2 years |
| 13.6 | Setup a Solar Command Centre (CCC) within the WBREDA thats provides guidance, facilitate redressals and acts as a watchdog for solar rooftop adoption, especially tracking progress under schemes and mandates (including Renewable purchase obligation). | Department of Power & NES, WBREDA, District and local administration | 1-2 years |

## 14. URBAN GREENS AND FORESTS

| S. no. | Action points | Agency responsible | Timeline |
|---|---|---|---|
| **Medium-term action** | | | |
| 14.1 | Avenue plantation along roads with more traffic.<br>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.<br>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. | Forest, ADDA, AMC, PWD, NHAI | 1 year |

## 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.<br>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 | WBPCB,<br>District and local administration | Ongoing |

## 17. MINING

| S.no. | Action Points | Agency responsible | Timeline |
|---|---|---|---|
| **Short-term action** | | | |
| 17.1 | Establishment of Continuous Ambient Air Quality Monitoring Stations | ECL,West Bengal Industrial Development Corporation (WBIDC), WBPCB and other MA | 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. | ECL,West Bengal Industrial Development Corporation (WBIDC), WBPCB and other MA | 6 months |
| 17.3 | Dust suppression system- sprinkling of hydrophilic solvents so that water can be attracted and dust can be suppressed. Chemicals such asvCaCl, MgCl2, sodium silicate can be used as wetting agents | ECL,West Bengal Industrial Development Corporation (WBIDC), WBPCB and other MA | 6 months |
| 17.4 | Constant electronic surveillance to enforce water sprinkling | ECL, West Bengal Industrial Development Corporation (WBIDC), WBPCB and other MA | 6 months |
| 17.5 | All the transportation roads, either temporary or permanent in natureshould be blacktopped/ concreted with proper drainage facility. | ECL,West Bengal Industrial Development Corporation (WBIDC), WBPCB and other MA | 6 months |
| 17.6 | Provide wind-barriers along the coal-transport road, wherever, the transport road is within 500 m of any habitation area. | ECL West Bengal Industrial Development Corporation (WBIDC), WBPCB and other MA | 6 months |
| 17.7 | Installation of Closed Conveying Systems for transport of coal from pit head to railway siding. | ECL,West Bengal Industrial Development Corporation (WBIDC), WBPCB and other MA | 6 months |

| | | | |
|---|---|---|---|
| 17.8 | Provisions of Vertical Greenery System for Coal Stockyards | ECL, West Bengal Industrial Corporation (WBIDC), WBPCB and other MA | 6 months |
| 17.9 | Maintain pot hole-free roads for free flow of traffic to reduceemissions and dust. | West Bengal Industrial Development Corporation (WBIDC), WBPCB and other MA | 6 months |
| 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 and other MA | 1 year |
| 17.11 | Commissioning of adequate number of silo loading facility at railwaysidings to achieve minimum 80% rail dispatch of coal through siloloading. | West Bengal Industrial Development Corporation (WBIDC), WBPCB and other MA | 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 area should be implemented. | West Bengal Industrial Development Corporation (WBIDC), WBPCB and other MA | 1 year |

**MA: Mining agency**

**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:**

## Draft 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.

| **Moderate to poor**<br>**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** | |
|---|---|
| **Action to be taken** | **Agency responsible** |
| Stringently enforce/stop garbage burning in landfills and other places and impose heavy fines on person responsible | Municipal Corporations |
| Close/stringently enforce all pollution control regulations in brick kilns and industries | State Pollution Control Board |

| | |
|---|---|
| Stringently enforce pollution control in thermal power plants through Pollution Control Board monitoring | State Pollution Control Board |
| Do periodic mechanized sweeping on roads particularly in roads with heavy traffic and water sprinkling every two days | Municipal Corporations Traffic Police<br>PWD |
| Strict vigilance and no tolerance for visible emissions – stop plying of visibly polluting vehicles by impounding or heavy fine | Department of Transport Traffic Police |
| Stringently enforce rules for dust control in construction activities and close non-compliant sites | District Administration, Police |
| Deploy traffic police for smooth traffic flow at identified vulnerable areas | Traffic Police |
| Divert non-destined truck traffic | Municipal Corporations Traffic Police |
| Strictly enforce Supreme Court orders on firecrackers | SPCB, District Administration in consultation with Chief Controller of Explosives, Petroleum and Explosive Safety Organization (PESO); Police |
| Ensure fly ash ponds are watered every alternate day during summer months (March-May) | Plant in charge of Power Plants |
| Information dissemination, social media, mobile Apps should be used to inform people about the pollution levels, contact details of control room, enable them to report polluting activities/sources to the concerned authorities, and actions that will be taken by government based on the level of pollution. | State Pollution Control Board<br>District Administration |

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

| **Severe**<br>**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<br>District Administration<br>Police |

| | |
|---|---|
| Shut down / minimize operation of coal based polluting industrial units and plants, if emissions are found to be beyond permissible limit; Allow plants on cleaner fuels like natural gas, electricity etc. | State Pollution Control Boards |
| Intensify public transport services. Introduce differential rates to encourage off-peak travel. | Transport Department<br>State Transport Corporations |
| Increase frequency of mechanized cleaning of road and sprinkling of water on roads. Identify road stretches with high dust generation. | All road owning agencies including Municipal Corporations, Public Works Department and National Highway Authority of India |
| Restrict movement of trucks inside the coal field mine areas | State pollution control board, Department of Steel and mine |

| **Severe + or Emergency**<br>**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.** | |
|---|---|
| **Action to be taken** | **Agency responsible** |
| Stop entry of diesel truck traffic into city (except essential commodities) | Traffic Police<br>Municipal Corporations |
| Stop construction activities | Pollution Control Board<br>Municipal Corporations |
| 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<br>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 precau- tionary 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 |

## INSTITUTIONAL MECHANISM FOR IMPLEMENTATION

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 if situation demands

Proposed Composition of District Level Monitoring Committee:

| **District Collector/ District Magistrate** | **Chairman** |
|---|---|
| Sub-divisional Magistrate of District Head Quarter | Member Secretary |
| 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 academician 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 |

*Population is for the municipal corporation
Earlier Kolkata had 5 real time monitoring stations, now it has increased to 7.
Source: As prescribed by CPCB

**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<br>2-Residential/ Commercial | 1-Residential | 4 |
| 5,00,000- <10,00,000 | 1-Background<br>2-Residential/ Commercial | 1-Residential<br>1-Traffic dominant area<br>1- Commercial | 6 |
| 10,00,000- <50,00,000 | 1-Background<br>2-Residential/ Commercial | 2-Residential<br>1-Traffic dominant area<br>1- Commercial<br>1-Industrial area | 8 |
| ≥50,00,000 | 1-Background in upwind direction<br>1-Background in down wind direction<br>2-Residential/ Commercial | 4-Residential<br>3-Traffic dominant area<br>3- Commercial<br>2-Industrial area | 16 |