Nagpur City
Air Pollution Control
Action Plan
ACTION PLAN FOR CONTROL OF AIR POLLUTION IN NON-ATTAINMENT CITIES OF MAHARASHTRA

NAGPUR

MAHARASHTRA POLLUTION CONTROL BOARD

KALPATARU POINT, 3rd Floor,
Sion-Matunga Scheme Rd. No.8,
Opp. Sion Circle, Sion (East),
Mumbai-400 022.
Action Plan to Control Air Pollution in Nagpur City

1. Preamble
   Nagpur is the winter capital, a sprawling metropolis, and the third largest city of the Indian state of Maharashtra after Mumbai and Pune. Nagpur is the 13th largest Indian city in terms of population. It has been proposed as one of the Smart Cities in Maharashtra. Nagpur has tropical savannah climate (Aw in Köppen climate classification) with dry conditions prevailing for most of the year. It receives about 163 mm of rainfall in June. The amount of rainfall is increased in July to 294 mm. Gradual decrease of rainfall has been observed from July to August (278 mm) and September (160 mm). The highest recorded daily rainfall was 304 mm on 14 July 1994. Summers are extremely hot, lasting from March to June, with May being the hottest month. Winter lasts from November to January, during which temperatures drop below 10 °C (50 °F). The highest recorded temperature in the city was 48 °C on 19 May 2015, while the lowest was 3.9 °C on 16 January 2016.

Month and Annual Air pollution data is as below

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### 2. Action Plan for Nagpur

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<th>(A) Source Group</th>
<th>(B) Control Option</th>
<th>(C) Expected reduction and impacts</th>
<th>(D) Technical Feasibility</th>
<th>(E) Requirement of financial resources</th>
<th>(F) Implementation period (Short/mid/long-term)</th>
<th>(G) Time target for implementation</th>
<th>(H) Responsible agency (ies)</th>
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<td>Vehicle emission</td>
<td>Launch extensive drives against polluting vehicles for ensuring strict compliance</td>
<td>It is reported that the existing polluting old &amp; under maintained vehicles viz., Two wheeler, Autos, cars, buses, trax, trucks etc approx form 10-15 percent of total vehicles. Pollution from these vehicles will get reduced by proper maintenance, etc. BSIV technology reduces the emission rates by over 20%, of the previous BSIII technology reduces the emission rates by over 20%, over the previous BSIII technology. The present annual vehicle emissions for PM2.5 is about 77 tons which may increase to 82 tons in 2022 (BAU). With mitigation measures like introduction of CNG/e-cars/hybrid vehicles/ green vehicles (about 10-15%) it would reduce to about 79 tons without Nagpur Metro. It would further decrease with operation of Metro.</td>
<td>Feasible</td>
<td>Approx. 10 crores (approx. cost for monitoring systems)</td>
<td>Short term</td>
<td>12-18 months</td>
<td>RTO, Smart city NMC</td>
<td>RTO to have portable monitors for PM and Gaseous air pollutants, random checking of polluting vehicles and take strict action against them to make maintenance compulsory. At present the vehicle manufacturers have to comply with the BSIV standards applicable to all since April, 2017</td>
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<td>Launch public awareness campaigns for vehicle emission control through proper vehicle maintenance, minimising use of personal vehicles, lane discipline etc., stopping of engines while idling in intersections</td>
<td>Drive less, Drive wise, Choose fuel efficient vehicles, Don't idle, Schedule transport vehicles movement, Use clean and efficient transport systems</td>
<td>Feasible</td>
<td>Approx. 50 lakhs for the year 2018-19 at 20-25 locations (for digital display boards)</td>
<td>Short term</td>
<td>12-18 months</td>
<td>Traffic Engineer, NMC/Smart City Adver</td>
<td>NMC buses, display boards at various traffic intersections to be used for the advertisement</td>
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<tr>
<td>iii</td>
<td>Prevent parking of vehicles at Non-designated areas. Identification of areas where space for more parking is required and developing parking facility</td>
<td>Display boards</td>
<td>Feasible</td>
<td>Approx. 20 crores for parking area development</td>
<td>Short term</td>
<td>12-18 months</td>
<td>Traffic Engineer, NMC/DCP Traffic</td>
<td>In addition to existing NMC parking facility it is proposed to develop parking lots in Dhanotoli and along Ramdaspet to Kachipura square. Similar parking facility to be developed in other congested areas.</td>
<td></td>
</tr>
<tr>
<td>iv</td>
<td>Vehicle emission</td>
<td>Initiate steps for retrofitting of particulate filters in Diesel vehicles</td>
<td>will reduce the overall Air Pollution Load</td>
<td>Should be technically checked for efficiency</td>
<td>Rs. 0.5-0.7 lakhs per unit</td>
<td>Long term</td>
<td>12-18 months</td>
<td>Policy making decision</td>
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<tr>
<td>v</td>
<td>Prepare action plan to check fuel adulteration and random monitoring of fuel quality data</td>
<td>will reduce the overall Air Pollution Load in City</td>
<td>Feasible</td>
<td>Survey and random checking work-Rs. 5-10 lakhs.</td>
<td><a href="http://urban.rajasthan.gov.in/content/dam/raj/udh/organizations/ruidp/Downloads/BSR/RUI">http://urban.rajasthan.gov.in/content/dam/raj/udh/organizations/ruidp/Downloads/BSR/RUI</a> DP%20ISO</td>
<td>Long term</td>
<td>12-18 months</td>
<td>Residency Deputy Collector (RDC), anti-adulteration cell, RTO</td>
<td></td>
</tr>
</tbody>
</table>

Up to some extent light motor vehicle & auto rickshaw are presently running on petrol & LPG dual combination. To reduce the impact of air pollution by public transport vehicles the use of CNG, battery operated system, EV, Rickshaw are the options which will be implemented in future step by step.

Checking fuel adulteration with coordination of anti-adulteration cell which is a continuous process.
| vi | Vehicle emission | Prepare action plan for widening of road and improvement of Infrastructure for decongestion of Roads. Development of bicycle tracks along roads to promote use of cycles. Separate bicycle tracks will ensure safe cycling along busy roads and will result in increase use of bicycles. | The existing development of concrete roads about 50 roads will reduce the congestion on existing roads thereby reducing the vehicular emissions. Effective implementation of parking policy should be done. | Feasible | Survey/ maintenance work-Rs. 5-10 lakhs, pothole maintenance-Rs. 10000 approx. based on the size | Short term | 12-18 months | Executive Engineer, NMC, Chief Engineer, PWD, Project Director, National Highways Authority, Nagpur (NHAI) | Total 26.26 km length concrete roads are being developed in Phase I, 155.42 km length will be developed in Phase 2 (work order already placed) and 41.22 km length will be developed in Phase 3 (at placing work order stage) in Nagpur. |
Nagpur city is increasing due to enormous construction of roads and metro. After this construction, the widening of existing roads, Metro and other activities as per the parking and mobility plan, the vehicular emissions will be reduced.

<p>| Steps for Promoting electric, Battery operated vehicles. | At present 100 e-cars and 65 e-rickshaws are running in Nagpur and reducing 0.05 kg/d of PM load in air | Feasible | About 95 crores for introduction of about 700 CNG/E-taxis/buses etc. by 2022 | Mid-term | 12-24 months | RTO, Nagpur | Already initiated electric fleet of 200 electric vehicles, including taxis, buses, e-rickshaw and autos in Nagpur since last 1 year. To promote electric fleet, GoM waived VAT, road tax, and registration for all electric vehicles in the state. |
| x | Vehicle emission | Synchronize Traffic movements/Introduce Intelligent Traffic systems for Lane Driving | would streamline the traffic movement and reduce emissions | Feasible | Rs. 10 lakhs per traffic intersection Ref. <a href="https://parade.com/19072/marilyn-vossavant/what-would-traffic-light-synchronization-cost/">https://parade.com/19072/marilyn-vossavant/what-would-traffic-light-synchronization-cost/</a> | Mid-term | 12-24 months | DCP traffic EE (Smart city) | Intelligent CCTV surveillance and automated Traffic Management systems already installed at traffic intersections | NMC, RTO, Nagpur | Plan to install weighing check post for heavy goods carrying vehicles has to carried out consultation with Regional Transport office. |</p>
<table>
<thead>
<tr>
<th>SC</th>
<th>S-1</th>
<th>Installation of Remote Sensor based PUC systems,</th>
<th>Will reduce the pollution from highly polluting vehicles. The machines installed on roads will perform real time insitu emission scan and will identify high emitters. The machine will also scan number plate and send notice for enforcement of rules. This technique is extensively used in China, Hongkong, Pune Kolkata</th>
<th>Feasible. To be checked with specific study</th>
<th>Rs 2.5 Crs/ machine Ref. Swachhindia.ndtv.com</th>
<th>Long term</th>
<th>60 months</th>
<th>Transpo rt Commis isoner GoM MPCB, DCP Traffic, NEERI RTO</th>
<th>POLICY MAKING DECISION (The installation of Remote Sensor RFID based PUC systems is proposed under consultation of Transport Commissioner agency will take the expertise of CSIR-NEERI for its installation, Geo Tagging of Locations for its implementation and monitoring)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC</td>
<td>S-2</td>
<td>Sulphur reduction in diesel</td>
<td>Same as Above</td>
<td></td>
<td>Long term</td>
<td>60 months</td>
<td>GoI, GoM</td>
<td>POLICY MAKING DECISION</td>
<td>In a major step in spreading the use of green energy, India's first electric vehicle (EV) charging station was started by Indian Oil company. It is proposed that to substantially increase</td>
</tr>
<tr>
<td>SC</td>
<td></td>
<td>Introduction of new technology vehicles</td>
<td>Same as Above</td>
<td>Feasible. To be checked with specific study</td>
<td></td>
<td>Long term</td>
<td>60 months</td>
<td>RTO, Transport Dept. NMC</td>
<td></td>
</tr>
<tr>
<td>SC S-3</td>
<td>Vehicle emission</td>
<td>Provide good public transport system</td>
<td>Increase in public transport fleet will result in less use of personal vehicles thereby reduce the pollution load</td>
<td>Feasible</td>
<td>approx. 5 crores (for introduction of 20 new buses for public transport)</td>
<td>Long term</td>
<td>60 months</td>
<td>Maha Metro Rail Corporation Ltd, Nagpur Transport Dept, NMC RTO, MSRTC</td>
<td>Present 202 standard buses, 150 midi buses and 25 Ethanol A.C. green buses are on-road. 25 Ethanol A.C. green buses and 35 midi buses are proposed for increasing the capacity of bus transport system. The Metro rail construction is ongoing which consists of 41.7 km metro length with 40 stations and 19 Feeder Bus Routes covering 160 Km length</td>
</tr>
<tr>
<td>SC S-5</td>
<td>Alternative fuels</td>
<td>Will significantly reduce the emissions on the city roads</td>
<td>Feasible</td>
<td>Long term</td>
<td>60 months</td>
<td>Ministry of Roads Transport &amp; National Highways</td>
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<tr>
<td>SC S-6</td>
<td>Implementation of BS-VI norms</td>
<td>Will significantly reduce the emissions on the city roads</td>
<td>Feasible</td>
<td>Long term</td>
<td>60 months</td>
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<tr>
<td>SC S-7</td>
<td>Hybrid Vehicles</td>
<td>Will significantly reduce the emissions on the city roads</td>
<td>Feasible</td>
<td>Long term</td>
<td>60 months</td>
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<tr>
<td>SC S-8</td>
<td>Vehicle emission</td>
<td>OE-CNG for new public transport buses</td>
<td>Will significantly reduce the emissions on the city roads</td>
<td>Feasible</td>
<td>Long term</td>
<td>60 months</td>
<td>Ministry of Road Transport &amp; National Highways</td>
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</tr>
</tbody>
</table>

Already 100 electric taxis introduced by OLA and 65 e-rickshaws are on-road.

POLICY DECISION
Partial conversion of Polluting Auto Rickshaws with CNG/Gas engines/kits may be implemented.
<table>
<thead>
<tr>
<th>SC-S-9</th>
<th>Ethanol blending (E10-10% blend)</th>
<th>Will reduce the emissions if found to be better than the conventional fuels</th>
<th>emission reduction efficacy of proposed fuels to be checked</th>
<th>Ks. 1.20 cr. per bus</th>
<th>Ref: <a href="https://timesofindia.indiatimes.com/city/nagpur/Ethanol-bus-eco-friendly-not-pocket-friendly/articleshow/46602245.cms">https://timesofindia.indiatimes.com/city/nagpur/Ethanol-bus-eco-friendly-not-pocket-friendly/articleshow/46602245.cms</a></th>
<th>Long term</th>
<th>60 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC-S-10</td>
<td>Bio-diesel (BS/B10:5-10% blend)</td>
<td>Will reduce the emissions if found to be better than the conventional fuels</td>
<td>same as above</td>
<td></td>
<td></td>
<td>Long term</td>
<td>60 months</td>
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<tr>
<td>SC-S-11</td>
<td>Retro-fitment of Diesel Oxidation Catalyst (DOC) in 4-Wheeler public transport (BS-II and BS-III)</td>
<td>Will significantly reduce the emissions on the city roads</td>
<td>To be checked with specific study</td>
<td></td>
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<td>Long term</td>
<td>60 months</td>
</tr>
<tr>
<td>SC-S-12</td>
<td>Retro-fitment of Diesel Particulate Filter in 4-wheeler public transport (BS-III city buses)</td>
<td>Will significantly reduce the emissions on the city roads</td>
<td>To be checked with specific study</td>
<td></td>
<td></td>
<td>Long term</td>
<td>60 months</td>
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</table>

**Policy Making Decision**

25 Ethanol A.C. green buses are proposed for increasing the capacity of bus transport system. However, comparison of these fuels with conventional fuels with respect to their environmental benefits should be done.

Same as above

**Policy Making Decision**

Catalytic converter and particulate trap may be provided to existing polluting vehicles after checking technical feasibility.
<table>
<thead>
<tr>
<th>SC S-13</th>
<th>Vehicle emission</th>
<th>Inspection/maintenance to all BSII &amp; BSIII commercial vehicles</th>
<th>Will significantly reduce the emissions on the city roads</th>
<th>Feasible</th>
<th>Long term</th>
<th>60 months</th>
<th>RTO + MSRTC</th>
<th>POLICY MAKING DECISION</th>
<th>Buses and heavy vehicles more than 15 years old are still plying. The transport department to undertake a drive to check the fitness of such vehicles.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC S-14</td>
<td>Vehicle emission</td>
<td>Restrict commercial vehicle entering city by having ring roads.</td>
<td>Already existing</td>
<td>practice to be continued</td>
<td>Long term</td>
<td>60 months</td>
<td>DCP traffic Project Director, NHAI</td>
<td>Already ring roads are constructed</td>
<td></td>
</tr>
<tr>
<td>SC S-15</td>
<td>Resuspension</td>
<td>Prepare plan for creation of green buffers along the Traffic corridors. The total road length in city is 3465 km, of which 213 km is partially paved/unpaved. The present annual PM2.5 emissions is 1.5 tons which will decrease after paving.</td>
<td>The green buffers will act as air pollution sinks and reduce the pollution load</td>
<td>feasible</td>
<td>Approx. 1500 crores (including paving of 213 km unpaved roads and maintenance of existing roads)</td>
<td>Mid term</td>
<td>12-24 months</td>
<td>Garden deptt. NMC, NEERI, MPCB, Garden Deptt. NIT</td>
<td>Partially done. 16758.53 sq.m. green buffers at road dividers, channelizer, traffic islands and on both sides of the roads were developed. This work may be extended to other highly polluted roads</td>
</tr>
<tr>
<td>(ii)</td>
<td>Maintain Pothole Free Roads for Free flow Traffic</td>
<td>Will reduce pollution load</td>
<td>feasible</td>
<td>As per the requirement</td>
<td>Mid term</td>
<td>12-24 months</td>
<td>EE (Hot Mix Plant) NMC, Nagpur, NIT Nagpur</td>
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The NMC's hot mix department collected data of potholes from 10 zones for repairing the craters and bad surface layers in coming days. As per the report, there were 1,377 potholes of which 736 were repaired and only 641 remaining.

<table>
<thead>
<tr>
<th>(iii)</th>
<th>Resuspension</th>
<th>Introduce water fountains at Major Traffic intersection, wherever feasible.</th>
<th>Will reduce pollution load</th>
<th>Feasible</th>
<th>Approx. 40 lakhs (for 20 water fountains)</th>
<th>Mid term</th>
<th>12-24 months</th>
<th>EE (Construction) Traffic Dept. NMC</th>
</tr>
</thead>
</table>

The water fountains may be installed at the spaces near traffic lights where space is not available at the centre of the road.
<p>| (iv) | Greening of open areas, garden, community places, schools and housing societies. | Will reduce pollution load | Feasible | Approx. 2.5 crores for development of green areas in 10 zones. Rs. 4.5 crores for garden development (demanded in Amrut mission) | Mid-term | 12-24 months | Garden deptt. NMC / Garden Deptt. NIT Educati on Deptt. NMC | Total 95 gardens are developed in city with 126.46 Acres area. Total 22 new gardens are proposed in the city out of which under Amrut mission, development of new 8 gardens with an area of 62.46 acres is going on and 14 gardens to be developed under Chief Minister's special fund. Total 32671 trees were planted in 2017-18 and 25000 trees are proposed to be planted in the year 2018-19 |
| (v) | Blacktopping of metalled Roads including pavement of Road shoulders | Will reduce pollution load | Feasible | Long term | 12-24 months | NMC, NIT | Majority of the metalled roads have blacktopping |</p>
<table>
<thead>
<tr>
<th>SC S-1</th>
<th>Wall to Wall paving (brick)</th>
<th>Will reduce pollution load</th>
<th>Feasible</th>
<th>Rs. 100 per sq. ft Ref: <a href="https://www.indiamart.com/prod-detail/natural-stone-wall-bricks-16478046533.html">https://www.indiamart.com/prod-detail/natural-stone-wall-bricks-16478046533.html</a></th>
<th>Long term</th>
<th>12-24 months</th>
<th>C... Engineer, NMC</th>
<th>Already done for majority of the roads and ongoing for the present roads under construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC S-2</td>
<td>Road design improvement</td>
<td>More Concrete Roads are made in city with planning of over 50% main roads to be concretized. Total 51 major roads with length of 67.43km is being covered under the project. HDM4 model for performance of concrete roads/pavements etc over vehicle emissions to be studied</td>
<td>Will reduce pollution load</td>
<td>Feasible</td>
<td>Already covered above</td>
<td>Long term</td>
<td>12-24 months</td>
<td>City Engineer, NMC</td>
</tr>
<tr>
<td>Phase</td>
<td>Action</td>
<td>Feasibility</td>
<td>Timeline</td>
<td>Duration</td>
<td>Responsible Person</td>
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<tr>
<td>Solid Waste</td>
<td>Increase capacity of waste to energy project. Presently, 1150 TPD solid waste is generated in the city. Assuming 41% of unmanaged waste is burnt, so releasing 773 kg/yr PM2.5 emissions.</td>
<td>Feasible</td>
<td>Mid-term</td>
<td>12 months</td>
<td>H.O. N.M.C. Punjab</td>
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<td>Regular check and control, of burning of Municipal Solid waste</td>
<td>Will reduce the air emissions</td>
<td>Feasible</td>
<td></td>
<td>Short term</td>
<td>12 Months</td>
<td>H.O. (S) NMC Nagpur</td>
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<td>(ii)</td>
<td></td>
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<td></td>
<td>Pix Transmission, manufacturer of industrial belts, has been entirely running on steam totally produced using agro-waste for the last two years.</td>
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<tr>
<td>(iii)</td>
<td></td>
<td>Proper collection of Horticulture waste and its disposal following composting-cum-gardening approach</td>
<td>Will reduce the air emissions</td>
<td>Feasible</td>
<td></td>
<td>Short term</td>
<td>12 Months</td>
<td>Health Officer (S) Garden Suptd., NMC Nagpur</td>
</tr>
<tr>
<td>(iv)</td>
<td></td>
<td>Solid waste management/Biomass/trash burning, landfill waste burning</td>
<td>Ensure ban on burning of agricultural waste and crop residues and its implementatio n.</td>
<td>Will reduce the air emissions</td>
<td>Feasible</td>
<td>Long term</td>
<td>12-18 Months</td>
<td>Health Officer (S) Garden Suptd., NMC Nagpur</td>
</tr>
<tr>
<td>SC S-1</td>
<td></td>
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<td></td>
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<td></td>
<td>Health Officer (S) Garden Suptd., NMC Nagpur</td>
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<tr>
<td></td>
<td>Industry</td>
<td>Identification of Brick Kiln and their regular monitoring including use of designated fuel and closure of unauthorized units. About 130 kilns of which 25 (Fixed concrete chimney wala) and 75 (Metal chimney wala)</td>
<td>Will reduce the air emissions</td>
<td>Feasible</td>
<td>MPCB to undertake</td>
<td>Short term</td>
<td>12 Months</td>
<td>Revenue Dept, RDC, MPCM</td>
</tr>
<tr>
<td>(ii)</td>
<td>Conversion of natural draft brick kilns to induced draft</td>
<td>Will significantly reduce the emissions</td>
<td>The quantification of reduction in emissions should be done by monitoring emissions prior and after the conversion feasibility to be checked</td>
<td>Rs. 3 x 5 Lakhs Approx. per unit...Ref: <a href="https://shaktifoundation.in/wp-content/uploads/2018/01/Zig-Zag-Kilns-A-Design-Manual-English-2017-1.pdf">https://shaktifoundation.in/wp-content/uploads/2018/01/Zig-Zag-Kilns-A-Design-Manual-English-2017-1.pdf</a></td>
<td>Long term</td>
<td>60 Months</td>
<td></td>
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<tr>
<td>(iii)</td>
<td>Action against non-complying industrial units</td>
<td>Will significantly reduce the emissions</td>
<td>Not needed</td>
<td>MPCI to undertake</td>
<td>Short term</td>
<td>12 Months</td>
<td></td>
<td></td>
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<tr>
<td>SC S-1</td>
<td>Industry</td>
<td>Sulphur reduction in fuel</td>
<td>Will significantly reduce the SO2 emissions</td>
<td>To be checked with specific study</td>
<td>Policy decision</td>
<td>Short term</td>
<td>12-18 Months</td>
<td></td>
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<tr>
<td>SC S-2</td>
<td>Improved Combustion technology</td>
<td>Will significantly reduce the emissions</td>
<td>To be checked with specific study</td>
<td>Industry to undertake</td>
<td>Short term</td>
<td>12-18 Months</td>
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</tbody>
</table>

 MPCB: Hingna, Koradi, Kharaparkhed, Butibori, Kalmeshwar road
 Direction as Proposed Direction 01 no. and Show Cause Notice 05 nos.

Policy matter) MPCI, RDC
(FGD system)2) Policy Decision

Revenue Dept. RDC
<table>
<thead>
<tr>
<th>SC S-3</th>
<th>Efficacy of use of solar power in Industries and other control measures needs to be studied</th>
<th>All difficulties due to the emissions</th>
<th>To be checked with specific study</th>
<th>12-18 Months</th>
<th>Rev. by Dept. RDC</th>
<th>Alternative option for use of biogas/other renewable solid fuels such as MSW briquettes etc. may be probed for co-firing in LSI, MSI along with control measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC S-4</td>
<td>Promoting cleaner industries</td>
<td>Will significantly reduce the emissions</td>
<td>feasible</td>
<td>Short term</td>
<td>12-18 Months</td>
<td>ADTP, NMC</td>
</tr>
<tr>
<td>SC S-5</td>
<td>Industry</td>
<td>Location specific Emission reduction</td>
<td>Will significantly reduce the emissions</td>
<td>feasible</td>
<td>Short term</td>
<td>H.O. (S) NMC Nagpur Joint Director Org. Indus., Office of Director, Indus., Nagpur Div., Nagpur</td>
</tr>
<tr>
<td>SC S-6</td>
<td>Fugitive emission control</td>
<td>Will significantly reduce the emissions</td>
<td>feasible</td>
<td>Short term</td>
<td>12-18 Months</td>
<td>Major Large Scale industries have internal tar road &amp; sprinkler system for vehicular movement. Transportation is done in closed containers for raw material, by-products, products etc.</td>
</tr>
</tbody>
</table>

23
<p>| SC S-9 | Installation/upgradation of air pollution control systems | Will significantly reduce the emissions | To be checked with specific study | Approx. Rs. 50-100 lakhs by industry for APC systems &amp; housekeeping | Short term | 12-18 Months | H.O. (S) NMC Joint Director, Industries, Office of Directorates Industries Nagpur Division, Nagpur | Probing studies for reduction of gaseous emissions |</p>
<table>
<thead>
<tr>
<th>SC S-10</th>
<th>Industry</th>
<th>Regular audit of stack emissions for QA/QC</th>
<th>Will significantly reduce the emissions</th>
<th>Feasible</th>
<th>Rs.10-20 lakhs per industry</th>
<th>Short term</th>
<th>12-18 Months</th>
<th>H.O. (S) NMC Joint Director, Industries, Office of Directorates Industries Nagpur Division, Nagpur</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 (i)</td>
<td>Construction and Demolition Activities</td>
<td>Enforcement of construction &amp; demolition rules, implementation of measures for control of emissions during activity</td>
<td>Will significantly reduce the emissions</td>
<td>Feasible</td>
<td>NMC/PWD/Metro etc to undertake as per CPCB norms</td>
<td>Short term</td>
<td>12-18 Months</td>
<td>ADTP, NMC NIT, MPCB, Nagpur Metro</td>
</tr>
<tr>
<td>SCSS</td>
<td>Control measures for fugitive emissions from material handling, conveying and screening operations through water sprinkling, curtains, barriers and suppression units.</td>
<td>Will significantly reduce the emissions</td>
<td>Feasible</td>
<td>NMC/PWD/Metro etc. to undertake as per CPCB norms</td>
<td>Short term</td>
<td>12-18 Months</td>
<td>ADTP, NMC</td>
<td>MPCB HQ issued direction on 12/03/2018 for implementation and compliance of Construction and Demolition Waste Management Rules 2016.</td>
</tr>
<tr>
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</tr>
<tr>
<td>SCS-1</td>
<td>Better construction practices with PM reduction of 50%</td>
<td>Will significantly reduce the emissions</td>
<td>Feasible</td>
<td>NMC/PWD/Metro etc. to undertake as per CPCB norms</td>
<td>Short term</td>
<td>12-18 Months</td>
<td>ADTP, NMC, MPCB</td>
<td></td>
</tr>
<tr>
<td>SCS-2</td>
<td>Banning of operation of Brick kilns in city area</td>
<td>Will significantly reduce the emissions</td>
<td>Feasible</td>
<td></td>
<td>Short term</td>
<td>12-18 Months</td>
<td>Revenue RDC</td>
<td>Already banned</td>
</tr>
<tr>
<td>SC S-3</td>
<td>Ensure carriage of construction material in closed/covered Vessels</td>
<td>Will significantly reduce the emissions</td>
<td>Depending on state or local By-laws, member of corporation can organize regional co-operations according to their specific needs. Through the corporation, public and private decision makers can be brought together to consider a regional strategy in the direction of MPCB. If regionalization seems promising, the corporation can then plan and implement the program.</td>
<td>Rs. 1 lakhs per vehicles</td>
<td>Short term</td>
<td>12-18 Months</td>
<td>RTO</td>
<td>MPCB HQ issued direction on 12/03/2018 for implementation and compliance of Construction and Demolition Waste Management Rules 2016.</td>
</tr>
<tr>
<td></td>
<td>SC S-1</td>
<td>Domestic fuel burning</td>
<td>Shift to LPG from solid fuel &amp; kerosene for domestic applications</td>
<td>Will reduce emissions significantly</td>
<td>Feasible</td>
<td>Ujjawala scheme in operation (Rs. 200 per cyl. Refilling)</td>
<td>Short term</td>
<td>12-18 Months</td>
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</tr>
<tr>
<td></td>
<td>SC S-2</td>
<td>Better cook-stove designs</td>
<td></td>
<td>Will reduce emissions significantly</td>
<td>Feasible</td>
<td>Rs. 2000 per stove (for residential purpose) MNRE</td>
<td>Short term</td>
<td>12-18 Months</td>
</tr>
<tr>
<td>8 (i)</td>
<td>DG sets</td>
<td>Monitoring of DG sets and action against violations</td>
<td></td>
<td>Will reduce emissions significantly</td>
<td>Feasible</td>
<td>Rs. 2 lakhs survey work</td>
<td>Short term</td>
<td>12-18 Months</td>
</tr>
<tr>
<td></td>
<td>SC S-1</td>
<td>Reduction in DG set operation /Uninterrupted power supply</td>
<td></td>
<td>Will reduce emissions significantly</td>
<td>Feasible</td>
<td>15 KVA (NG based)-3.7 lakhs, 100 KVA (NG based)-14 lakhs Ref. <a href="https://dir.indiamart.com/impcat/natural-gas-generators.html">https://dir.indiamart.com/impcat/natural-gas-generators.html</a></td>
<td>Short term</td>
<td>12-18 Months</td>
</tr>
</tbody>
</table>

Identified DG sets in LSI and MSI and others to strictly implement consent rules to ensure fuel quality usage and emissions control norms. Random checks/3rd party audit to be followed.
<table>
<thead>
<tr>
<th>No</th>
<th>Option</th>
<th>Description</th>
<th>Feasible</th>
<th>Short Term Requirement</th>
<th>Long Term Requirement</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Crematoria</td>
<td>Use of electric/gas crematoria should be promoted</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Use of briquettes instead of wood</td>
<td></td>
<td></td>
<td>Presently, there are 13 crematoriums in city emitting around 52 tons/yr of PM2.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Promote use of briquettes instead of wood to reduce emissions significantly</td>
<td></td>
<td></td>
<td>Presently, around 13679 and 546 bodies are burnt with wood and briquettes respectively,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Development of green areas along crematorium</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Will reduce transport of emissions in vicinity significantly</td>
<td></td>
<td></td>
<td>Launch extensive awareness drive against polluting vehicles;</td>
</tr>
<tr>
<td>No.</td>
<td>Item</td>
<td>Details</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>1</td>
<td>Waste water treatment plant Bhandewadi</td>
<td>Reduce emissions of foul gases and other pollutants from the running as well as stagnant sewage</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Feasible</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ensure strict action against visibly polluting vehicles</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Immediate</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Column No (D) needs to be filled in consultation with NEERI & MPCB

Column no (E) Needs to be filled with concerned Finance Officer

MLD wastewater is treated. 130 MLD treated wastewater being supplied to MAHAGENCO O for 3 x 660 MW power generation. Proposed work: to prevent pollution in Nag river, installation of 1500 km long sewer collection system and development of 82 MLD wastewater treatment plant. Total 115 MLD capacity wastewater treatment units at Hudkeshwar and Chikhlikhurd, Nagpur.
3. Monitoring Mechanism for Implementation

The aforesaid action plan shall be implemented by Maharashtra State Pollution Control Board with coordination of concern departments/stakeholders.

4. Implementation status

The Chief Secretary, Govt. of Maharashtra to convene the meetings with different concerned departments and direct for compliance of directions for implementation of air quality of Amravati. The Principal Secretary, Environment and Forest, Govt. of Maharashtra to also convene the meeting for follow up of the aforesaid directions. The Maharashtra Pollution control Board continuously conducted the meetings with all stakeholders for preparation of comprehensive action plan for city and its implementation.