

Japan- India second Business Seminar

Contribution to sustainable Development
Goals (SDG's) - In environment

Presentation by
Dr.V.M.Motghare , Joint Director
Maharashtra Pollution Control Board

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MoU between MPCB and Osaka City Environment Bureau in the field of Environment Conservation and Energy

Objective as per MOU

Improvement of environment conservation and rationalization of energy use in Maharashtra state.

- Main Effects Concentrated by Maharashtra -
 1. Urban air quality monitoring and improvement .
 2. Urban mobility – Promoting converting of Petrol/Diesel Vehicles to Electric ,CNG& Micro Mobility .
 3. To improve Performance of coal power plants
 4. Promoting industries for utilization of cleaner Fuel
 5. Utilization of fly ash for building material as green building.
 6. Industry pollution control of different sectors- cement, steel, sponge iron, coal mining

Brief overview of activities by MAHARASHTRA POLLUTION CONTROL BOARD

Various Activities undertaken for Improvement of Air Quality in Maharashtra

- Board monitoring Ambient Air Quality under National Ambient Air Quality Monitoring Program (NAMP) across Maharashtra at 114 locations for three parameters (SO_2 , NO_2 and PM_{10})
- Continuous Ambient Air Quality Monitoring Stations (CAAQMS) at 23 locations for monitoring 08 number of parameters as per National Ambient Air Quality Standards (NAAQS) , 2009 notification. and another 47 CAAQMS will be operated By March-2022 .
- Central Pollution Control Board (CPCB) has identified 18 non-attainment cities in Maharashtra with respect to Particulate matter(PM_{10}) concentration exceeding prescribed norms of 60 mg/m^3 .
- Board has developed Action Plan for 18 non - attainment cities which are approved by CPCB)
- Board is implementing National Clean Air Program (NCAP) for improvement of Air Quality in Urban areas in a time bound period. NCAP aims to reduce dust concentration up to 30% by 2024.
- Noise monitoring during festival period (Diwali and Ganesh) at selected locations 158 and 132 respectively to assess impact of noise levels due to festival celebrations

- Board has carried-out Noise Mapping of 27 Municipal Corporations.
- CPCB declared 09 industrial clusters under Comprehensive Environmental Pollution Index (CEPI). Board prepared short term and long-term action plan & under implementation
- Sensor based air quality monitoring by Board at major locations in Mumbai city.
- **SODAR** (Sound Detection And Ranging – a form of remote sensing device) set up in Mumbai by Board, to determine the height of the Atmospheric Boundary layer (ABL) and turbulence in the atmosphere.
- First Pollution Control Board in the country having set the SODAR device.
- Study to determine the vertical dispersion of the pollutants using DRONES.

Future Plans / Investments for abatement of Air pollution

- Board has planned to install 126 nos. of additional ambient air quality monitoring stations (AAQMS).
- Another 47 CAAQMS will be operated by march-2022 .
- Creation of state-of-art Air care centre at all the major regional offices of the Board.
- Source Apportionment and Emission Inventory studies of Non-Attainment cities under NCAP is ongoing.
- Carrying capacity studies in the CEPI Industrial areas.
- Implementation of National Clean Air Programme (NCAP) throughout the State.
- Thus, Board serves a possible investment destination for global investors and all the concerned stakeholders.

Improvement of air Quality – Extenuation to control air emission to all cities

- **Promotion of CNG in city** -The 3-wheeler auto rickshaws running on petrol and diesel are given a subsidy for to convert to CNG.
- **Public Transport Buses**
- **Bicycle Master plan for all city**
- **Promoting renewable energy sources** -provides tax benefits to such properties who adopt to solar, vermicompost and rainwater harvesting.
- **Air pollution control systems installed in crematorium** -All the existing crematoriums are fitted with pollution control devices which are water scrubber based system.& also covering into gas/Electric base
- **Green Cover**
- **Monitoring stations –CAAQMS**

Other measures planned for improving urban air quality



Towards the path of sustainable development

I. Actions planned for dust mitigation:

- Introduce mechanized road sweeping machines
- Creation of green buffers along the traffic corridors
- Introduce water fountains for major traffic intersections
- Maintain pothole free roads
- Greening of open areas, gardens, community places
- Steps for blacktopping/ pavement of roads.

II. Actions planned for industries & others:

- Ensure strict action against industrial units not complying with standard.
- Launch action plan for switching over to natural gas/ cleaner fuel by industries.
- Ensure brick kilns are not operated within Municipal Corporation limits.
- Ensure adequate APC system installed for stone crushers.
- Ensure operating and maintenance of APC system installed at industries.
- Establish standard operating procedure to provide quick and effective response to complaints.

III. Actions planned for C & D Activities:

- Control dust pollution at construction sites through appropriate cover
- Set up of C&D waste processing facility. Promote C&D waste processing units like pavement block manufacturing.
- Undertake control measures for fugitive emission control

IV. Actions planned for bakeries & crematorium:

- Use of LPG in bakeries, hotels and "dhabas"
- To discourage use of conventional wood
- Encouraging use of Electric/ gas-based crematoriums.
- Installation of Pollution Control equipment's at the existing wood – based crematoriums.

V. Actions planned for Air Quality Monitoring & Strengthening:

- At Urban Agglomerations, 5 laboratories viz. Navi Mumbai Central Lab, Pune, Nasik, Nagpur, Aurangabad may be considered for **upgradation/modernization of air laboratories** to meet the statutory monitoring and analysis and research & development challenges in the field of Air pollution.

Initiatives regarding Mobility Electric Vehicle

Maharashtra Electric Vehicle (EV) Policy 2021-

Vision-

- The policy envisions to support adoption of sustainable and clean mobility solutions in Maharashtra
- Policy aims to transform Maharashtra into a leading state in terms of adoption of electric vehicles in the country and emerge as one of the leading manufacturing and investment hubs for the EV ecosystem globally

Mission-

- To bring a transition in Maharashtra's transportation ecosystem by creating demand for the purchase and use of EVs through **demand-side initiatives**
- To stimulate EV manufacturing through **supply-side initiatives** that aim to attract investment, facilitate establishment of manufacturing units, and encourage production of EVs and EV components including batteries and electric vehicle supply equipment

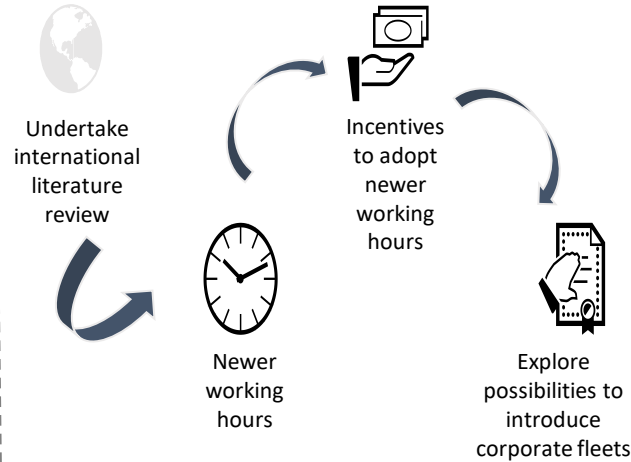
Initiative for Congested Business Areas

CHALLENGES



- ▶ Increasing number of vehicles per household
- ▶ Similar working hours of the corporates
- ▶ Increasing vehicular density
- ▶ Overcrowding in public transport modes as well as last-mile connectivity challenge from public transport
- ▶ Ensuring employee safety and well-being, statistics reveal on an average 9 people are killed daily in train-related accidents in Mumbai

SOLUTION



Output

- ▶ **STAGGERED WORKING HOURS**
- ▶ **Congestion management**
- ▶ **Carbon emission reduction**
- ▶ **Better mobility**

IMPACT

▶ Expected change in Baseline Values

Change in fuel cost ▶ 30%

Change in CO₂ Emission ▶ 29%

Peak PM rate ▶ 38%

Change in total PM ▶ 30%

Change in CO rate ▶ 43%

Change in total CO ▶ 34%



Deployment of Electric Micro- Mobility

Need for electric micro-mobility

- ▶ Provide a eco-friendly means for mobility
- ▶ Relieve traffic congestion and efficient parking management
- ▶ Improve first- and last-mile connectivity to enhance public transport usage
- ▶ Road safety

Objectives of the MPCB study

- ▶ Provide a proof of concept for electric 2-wheeler deployment in Maharashtra
- ▶ Develop scalable business models to ensure mass adoption
- ▶ Develop replicable implementation strategies to ensure mass adoption

Cities selected

- ▶ **Pune:** A metro city bustling working class and student population
- ▶ **Nagpur:** A non-metro city which is hub of economic activity in Maharashtra
- ▶ **Mumbai-** Capital city of Maharashtra
- ▶

Approach

- ▶ Site identification through extensive primary and secondary research
- ▶ Establishing partnerships with state govt. entities, mobility solution providers (such as Yulu, Bounce), corporates (such as TCS), educational institutes (such as VNIT) and local entrepreneurs
- ▶ Yulu and Bounce will take care of charging infrastructure issue for their assets.

Key outcomes

- ▶ Successful deployment of electric 2-Wheelers in Pune and Nagpur
- ▶ Replicable partnership strategies with clear-cut roles and responsibilities for stakeholder involved
- ▶ Reliable implementation strategies for deployment across Maharashtra

Policy Objectives and Targets

Primary objective:

Accelerate adoption of EVs such that they contribute to **10% of new vehicle registrations by 2025**

Other important objectives:

- Achieve **25%** electrification of **public transport and last-mile delivery** in 5 targeted* UAs* by 2025
- Convert 15% of **MSRTC's existing bus** fleet to electric by 2025
- Make Maharashtra the country's top producer of BEVs in India, in terms of annual production capacity
- Target establishment of at least one Gigafactory for manufacturing of ACC batteries in Maharashtra
- Promote R&D, innovation, and skill development across the EV ecosystem in the state
- Policy to be applicable for all vehicles (2W, 3W, 4W)
- Main Highways to be EV ready- Plan for – first Mumbai local transport converted to EV bus, now for Pune and Nagpur and so on..

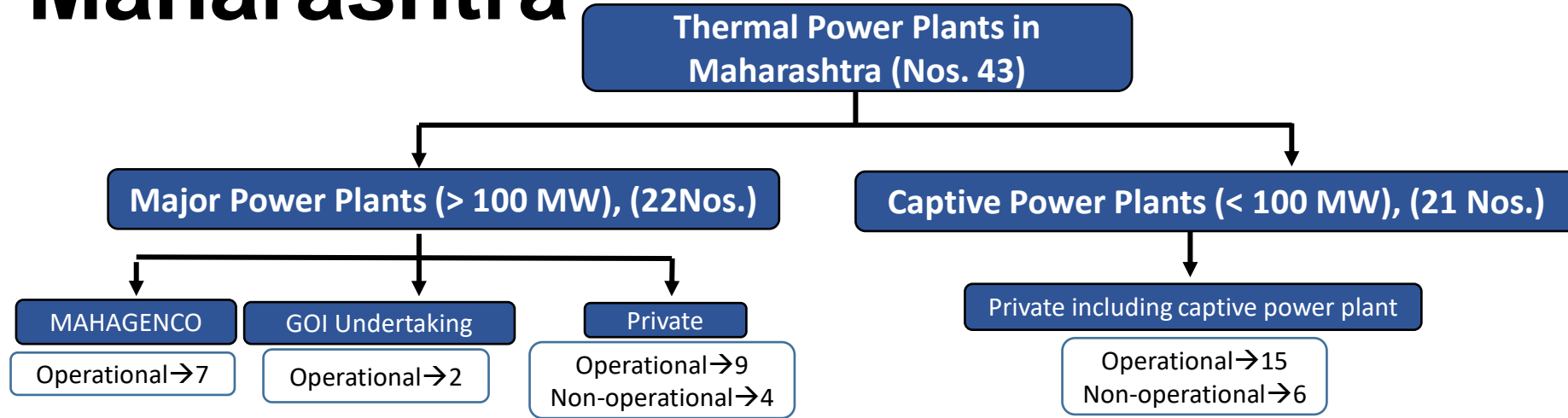
Public transportation -EV Transition Plane of Maharashtra State -EV Buses and Public Chargers

Sr. No.	City	Existing Bus Fleet (As per data from respective ULBs)	Expected Bus Fleet based on Criteria (A)	Proposed Additional EV Fleet Req. (A)	Proposed PCS Req. (B)
		I	II	(II – I)	IV
1	Mumbai	4800	7,465	2,665	622
2	Navi Mumbai	600	672	72	56
3	Thane	450	1,045	595	87
4	Kalyan Dombivali	141	748	607	62
5	Pune & Pimpri Chinchwad	2431	2,896	465	156
6	Nagpur	438	1,443	1,005	120
7	Nashik	52	892	840	74
8	Aurangabad	100	705	605	59
9	Vasai Virar	150	733	583	61
	Total	9,162	16,599	7,437	1,297

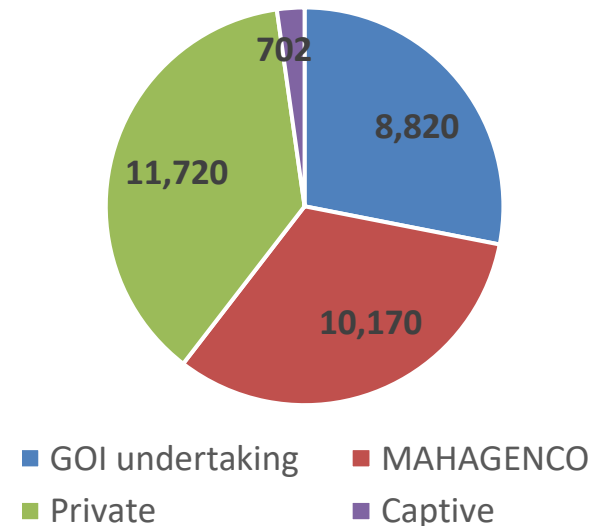
A - 0.6 buses per 1000 Population

B - 50 Chargers/ Million Population

Power Generation Capacity : Maharashtra



Ownership	Total power generation capacity (MW)
Major (> 100 MW)	30,710
GOI undertaking	8,820
MAHAGENCO	10,170
Private	11,720
Minor (< 100 MW)	702
Private	702
Grand Total	31,412



MoEF&CC emission norms and its implementation to power plant

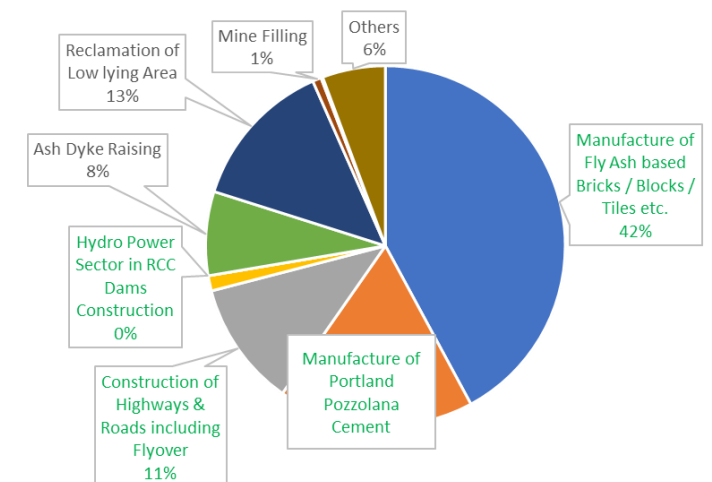
- MoEF&CC emission norms published in 2015 and its implementation ongoing
- For Particulate matter emission control, ESP made mandatory- Majority of coal power plants complying
- For Sulphur dioxide emission control, Flue gas desulphurization (FGD plant) mandated
- Maharashtra power plants at various stages of the process of installation

Utilisation of Fly Ash: Maharashtra

- Locking of huge amount of land due to disposal of fly ash .
- Typically 1/4th of land for Indian coal based power plant required for ash disposal (~200 ha for 1000 MW plant)
- **As per 2021 Notification, only 0.1 ha/MW land permitted for emergency/ temporary ash pond**
- Maharashtra generated around **23.8 million** tonnes of fly ash in 2020-21, around **116%*** i.e. **27.5 million utilized** for various purposes.
 - Total No.s of Thermal Power Station: 43
 - Total No.s of Thermal Power Station in operation: 32 (18 numbers of stand alone & 14 captive)
- Maharashtra state is **leading** in the flyash utilization for green construction materials such as bricks, cement, construction of flyovers & roads etc.
- Legacy ash from ash ponds also being utilized now



Maharashtra - 27 million tonnes flyash use



Efforts to improve environmental performance-

Ash utilization and disposal

- Disposal of Bottom ash at Abandoned earth quarry and developed following regime.
- Meeting with miners and ash generator- Mahagenco to identify avenues (such as abandoned coal and other mines, stone quarries) for ash disposal

Water consumption

- Most Plants achieved specific water consumption norms laid down by MoEFCC.
- Directions issued by MPCB to these plants to submit proposed action plan for compliance of specific Water consumption standards laid down by MoEF & CC.

Bank Guarantee Regime for compliance with environmental norms

To control pollution from Thermal Power Plant, use of bank Guarantee regime and imposed to industry while granting consent.

Ash utilization

- Obtained action plans for utilization of fly ash (including pond ash) for all operating TPS in Maharashtra till end life of each power plants
- Monitoring it on monthly basis

Industrial pollution- Cement Industry

- **Environmental issues associated with cement industries-**

1. Air Emissions including dust
2. Waste water
3. Solid Waste Generation
4. Noise
5. Vibration
6. Energy consumptions and Fuels
7. Exploitation of natural resources for raw materials

CO2 Emission

- The cement industry produces about 5% of global man-made CO2 emissions, of which 50% is from the chemical process, and 40% from burning fuel.
- Total CO2 emission per tone of Cement ranges from 0.85 to 1.15 tons.
- ❑ The approximate contribution of each of the CO2 source are
 1. Calcinations: 50 – 55 %
 2. Fuel Consumption : 40 -50 %
 3. Electricity: 0-10%

Net Carbon Zero

- Carbon sequestration options
- Feasibility for the same to be carried out
- C-Reduction
 - Waste Fuel Utilization
 - Waste Heat Recovery
 - Automation for Efficient Applications
 - Feasibility for voluntary targets of C reductions

Use of Alternative Fuel

Waste fuel	CV	Moisture
Coal	6450	5-10%
Waste oil	7200	-
Solvent	3500 – 8300	-
Animal meal	3800	10%
Plastics	4800	5-10%

- Feasibility of Use of alternative fuels as substitution up to 30% initially % 75% maximum by 2030
- Pre-Calcliner alternative fuels such as saw dust, textile pellets, shredded oil filters, Sewage Sludge & others
- Policy for use of MSW related RDF / others as a trade off
- Use of Waste Extracts such as methanol, ethanol & Acetone (Especially from Recycling of Printing Inks)
- Cellulose fiber, polypropylene, photographic film, paper & packaging wastes that cannot be recycled, low chlorine plastics, automobile sludge, oil scum, tank sludge, etc. @ pre-defined specification.

Need to consider Rule 9 Applicability



SOURCES OF AIR POLLUTION IN STEEL PLANTS

Primary Sources

- Pelletization plant
- DRI Unit
- Coke Oven
- Arc Furnace
- Blast Furnace
- Calcinating kiln
- Sinter Plant
- Material Handling

Secondary Sources

- Roads
- Loading and unloading operations
- Storage – Raw material and products

Sr. No.	Consent Conditions / EC Conditions
1.	To achieve source emissions standard – 50 mg/Nm ³
2.	To carry out APC performance audit report
3.	Connectivity of CAAQMS to MPCB & CPCB server
4.	To achieve National ambient air quality.
5	PP shall curtail pickling activity till full-fledge up-gradation of ARP inplace.

Sr. No.	Directions
1.	Dust collection system such as bag filters at CHP of coke oven plant within one month.
2.	Internal road leading to coke oven plant shall be concreted
3.	Dust collection system to each raw material transfer point conveyor belt of CHP.
4.	Industry shall upgrade de-dusting system of coke oven battery section.
5	Secondary pollution control system shall be installed to control aur emission
6	Pre-treatment to imported scrap , scientific disposal of dolo char ,

Coal Mining

- Coal mines concentrated in Central Maharashtra
- **MPCB has directed coal mining industries for following measures-**
 - Transportation of coal in covered railway wagon upto final destination.
 - Timeline for setting and commissioning of coal washeries by WCL.
 - Dust suppression system in coal mines along the coal transportation roads and coal handling plants.
 - Tarring of internal roads.
 - Covering of coal transportation trucks by mechanically covered system.
 - Monitoring of critical parameters of EC and consent conditions with its status and timeline compliance.
 - Development of model mine.



Conclusions (Urban Air Quality)

1. Implementation of National Clean Air Program (NCAP) for improvement of Air Quality- Japan can cooperate with India for improving urban public transport, integrated transport system, last mile connectivity etc.
2. Ambient air quality monitoring & Noise monitoring- Japan can share the advanced monitoring technologies used by the country
3. Monitoring of pollution in CEPI area – MPCB needs to have reliable monitoring technology from Japan, for industries to effectively act as regulatory body
4. Maharashtra Electric Vehicle policy 2021 and its implementation- Need to collaborate with Japan for efficient electric mobility sources, batteries and faster charging infrastructure
5. Technologies for renewable energy sources such as solar panels, wind turbines, green hydrogen, nano-digital technologies, natural gas sources etc. can be shared between Japan and India.

Conclusions (Industrial sector)

6. Highly polluting industries from India need to have advanced pollution control systems from Japan, for example,
 1. Coal power plants- Needs to have advanced emission control technology for particulate matter and SO_x control such as Flue gas desulphurization technology (FGD), innovative technologies for improving pond ash utilization
 2. Cement industries – Advanced technologies can be obtained from Japan to reduce CO₂ emissions and fuel consumptions by use of alternate fuels
 3. Integrated steel plant and sponge iron plant – Advanced technology may be desired from Japan for reduction of secondary emissions
 4. Coal Mining – India and Japan can team up to reduce fugitive emissions by implementation of various advanced technologies such as nozzle sprays, foggers, mist sprays etc.; Coal handling plants and storeyards

Thank You...

