

## **Eco Friendly Mobility for Clean Air**

Press Release \_ CSIR- NEERI and Mumbai First

Urbanization is the process of a population shift from rural areas to cities. During the last century, global populations have urbanized rapidly. Mumbai and the metropolitan region around it have been growing seamlessly in terms of population, infrastructural development and socio-economic standards. Day to day scenario of metro cities across India shows that the urbanization comes with its own challenges. Out of many problems, uncoordinated transportation is one of the main problems faced by urban population. CPCB has listed cities in India in which the RSPM levels are non-complaint with the NAAQS and has directed SPCBs to develop action plans and implement these to control air pollution in these cities. Seventeen such cities have been identified for the state of Maharashtra, and Mumbai is one of them. The identification of pollutant loads and to prepare the strategic action plan for controlling them is the need of the hour and for which the task was assigned to CSIR-NEERI by MPCB. Emissions inventory is the identification and quantification of various sources and to link them with the existing air quality levels measured at certain locations as well as to predict air quality for whole region. It helps in assessing the impact of nearly all sources in and around the region and also to evaluate the control strategies for certain emission sources.

There are many sources of particulate matter emission impacting the ambient air quality of the city of Mumbai; however the major ones are re-suspended dusts and vehicular source. In Mumbai city, PM is mainly contributed from road dust (Paved Rd. Dust 26.6%, Unpaved Rd. Dust 45.1%) followed by industrial sources (1.2%) and area sources (22.3%) and tailpipe emissions of vehicular sources contribute 4.78%. Some of these sources can have significant local impact on the ambient air quality for a shorter duration. Overall vehicular source contributes (4.78% out of the total emission load of all sources), out of which 3.3% per cent contribution from heavy duty vehicle is highest and 3 wheelers shares 1.1% of the total emission loads, followed by emission from 2 wheelers and Private owned vehicles. If we consider the line and re-suspension road dust, the per cent contribution of PM reaches up to 76.5%. Vehicle activity in the city has shown tremendous increase over a period of last 10 years. Vehicle kilometre travelled (VKT) for the city has been showing consistent increase; however, at some junctions the traffic congestion is so high that VKT rise is ironically not so drastic but emission due idling is high. The mobile (line) source emissions are not only dependent upon the number of vehicles registered but also on the actual number of plying on the roads, speed of movement and the conditions of vehicles. Taking into consideration that vehicular pollution is one of the major sources of air pollution and in the light of national effort to build 100 smart cities of which Mumbai and suburbs are a part, the transport system in the cities will have to be at the core of such renewal. Mumbai flows at a speed of 5 km/h speed, which cause excessive pollution, reduced mileage of vehicles and a loss of natural resources due to traffic jams. Various infrastructural projects are being developed across Mumbai, adding more to the congestion.

Over the past five years, the number of private vehicle ownership has grown multiple times across all over the country, especially in metro cities. In urban areas, low income public

mainly depends on the public transport systems. To overcome increasing fuel prices and operating costs losses, BEST (Brihanmumbai Electric Supply and Transport) revised the public bus fares several times in past few years i.e. increased by 167% in 7 years. Expert said that increase in bus fare reduces the ridership of transport services. Ridership data from 2010 to 2016 shows that the nearly 18% of BEST bus routes were scrapped due to poor occupancy. According to study conducted by NEERI, increase in bus fare leads to increase in use of private vehicles, wherein transportation comfort, time, accessibility point becomes the criteria for the sales of private vehicles increases, which ultimately becomes cause for air pollution. Other factor which contributes in air pollution is illegal parking of vehicle alongside roads. Parking takes considerable street space leading to the lowering of road capacity, hence speed will be reduced, and journey time and subsequently delays in reaching destination. The emission load from idling of vehicles is much higher when compared with moving traffic. Inadequate traffic system, narrow roads, Illegal parking, Improper lane management are the main causes for traffic congestion.

A very comprehensive set of options should be examined for the purpose of understanding the issue of urban air pollution reduction, such as Shifting of vehicles to CNG/LPG, banning of 15 year old vehicles, use of electric and hybrid vehicles as Intermediate Public Transport (IPT), Synchronisation of Traffic Signal, Stringent rules for inspection and maintenance of vehicles or implementation of IRC code in parking and road designs. Implementations are highly influenced not only by the idea of the improvement alone but also by the nature of the recommendations, fiscal and administrative barriers, effectiveness, implementing agencies and acceptance from large group of stakeholders. Prioritization should be driven by the comparative account of short term and long term impact. Low operating cost with high effectiveness, low cost with shorter implementation period shall be a better option when compared with high effectiveness with high costs or long implementation period. The benefits computed in the process will not only yield PM and NO<sub>x</sub> related pollution reduction but also co-benefits of other pollutants (SO<sub>x</sub>, VOCs, HC, CO etc.) reductions as well. One of the other major co-benefits of these options (adoption of mass transport, use of cleaner fuel, efficient combustion etc.) will provide large scale greenhouse gas reduction. The authorities responsible for the development of Metropolitan Region need to develop Integrated Environment Management Systems (IEMS). The goal of achieving a balanced development of the region through proper land use planning, strengthening of infrastructure facilities and formulates policies and programmes that help in preserving the environment for sustainable development.

While trying to understand the issue of Urban Air Pollution (in context of the MMR), Mumbai First, a think-tank that works in a Public-Private-Partnership (PPP) model, partnered with CSIR NEERI to conduct a panel discussion regarding the air quality in the MMR with stakeholders from the government, corporates, NGOs and citizens in an event titled, “Championing Cleaner Air and Cleaner Skies.” The take away from the event was the detailed understanding of the two main contributors to air pollution, which are 1) **Construction** and 2) **Transport and Mobility**. To better understand the role of each, we

organised a follow up event with CSIR NEERI to discuss the role of construction in declining air quality of MMR in an event entitled “Championing Smart Liveable Infra-solutions.”

With a better grasp on construction’s role, our next focus transport and mobility. Mumbai First and CSIR NEERI have teamed up with the Maharashtra Pollution Control Board (MPCB) to organise a one day conference called “Eco-Friendly Mobility for Clean Air” to further discuss the role of transport and mobility in the declining air quality of MMR as well as explore some innovative mitigation measures on Saturday, the 15<sup>th</sup> of June, 2019. We have a large number of speakers from key organisations including the MPCB, Tata Power, MMRDA, MMRCL, BEST, etc. This event, inaugurated by Honourable Minister of Environment (GoM) Shri Ramdas Kadam and Honourable Minister of State Environment (GoM) Shri Pravin Pote-Patil is MMR’s first step towards using Eco-Friendly Modes of Transport for Cleaner Air.