

EXECUTIVE SUMMARY

The Environmental Status Report of Mumbai 2002-2003 is submitted as per the provision of section 63 B of Mumbai Municipal Corporation (MMC) Act 1888.

Mumbai is located on the western seacoast of India at 18⁰53' N to 19⁰16' N latitude and 72⁰ E to 72⁰ 59' E longitude. It occupies an area of 437 sq.km. Mumbai experiences tropical savanna climate, it receives heavy southwest monsoon rainfall, measuring 1351mm in the year. On an average, the temperature ranges from 21.5⁰C to 35⁰C with marginal difference between summer and winter months, whereas relative humidity ranges between 47% to 86%.

City has rich natural resources like lakes, coastal water, forests, wetlands and mangroves. Vihar and Tulsi are fresh water lakes supplying drinking water whereas Powai Lake has non-potable water and is highly polluted due to silt and weeds as a result of natural and manmade activities. However, desilting work is undertaken by MCGM recently to clean the lake. Coastal water supports recreational and fishing activities.

Mumbai was the first City Corporation to adopt the concept of a development plan. The development plan envisages the concept of land use zoning for controlling development of public sites earmarked for providing civic and social amenities. To implement the development plan, some notable concepts (e.g. Transfer of development rights, accommodation reservations, slum re-development and urban renewal schemes) have been adopted by MCGM incorporating the participation of the citizens.

On an average 2910 MLD of treated water is supplied to the citizens of Mumbai. The quality of water is continuously monitored from source to the consumer end. Regular water samples are collected and tested in well-equipped laboratories to check the fitness for potable purpose. The total number of samples collected were 57,875 during the year, out of which 19 % were found to be contaminated. The incidence of contamination is highest in "L" ward (28.5%) and lowest in "R/N" ward (10.8%). Usually contamination complaints aggravate during monsoon season.

The proper and safe disposal of sewage is the prime responsibility of MCGM. The sewage pumping facility in the city has been divided into 7 service areas (zones) viz. Colaba, Worli, Bandra, Versova, Malad, Ghatkopar and Bhandup. The sewage from Colaba, Worli, Bandra is to be disposed into the sea through marine outfalls with capacity of 41.10 MLD, 756.90 MLD and 796.80 MLD respectively. The sewage from the neighbouring service areas is to be disposed into creeks after treatment in aerated lagoons. The work of aerated lagoon at Versova, Ghatkopar, and Bhandup is completed. The aerated lagoons reduce the BOD of wastewater by 75%-90% in 1.5 days. The discharge of wastewater along the coastline has polluted seawater at beaches, seafronts, coasts and creeks. As per the stipulations of Ministry of Environment and Forests, Government Of India (GOI), MCGM has carried out compensatory mangrove plantation on 40 hectare area, which is identified as suitable coastal area for mangrove plantation by BNHS.

The present Storm Water Drainage (SWD) system in the city is 70 year old and is about 480 km in length. It is capable of handling rain intensity of 25 mm per hour at low tide. There are 107 major out-falls in the city that drain into Arabian Sea directly, 4 at Mahim

Creek and 4 at Mahul creek. There are 29 out-falls in western suburbs draining directly into sea while 14 drain into Mithi river which ultimately joins Mahim creek. In eastern suburbs, 14 out-falls discharge into Thane creek while 6 discharge into Mahul creek. One of the heavily polluted storm water drains which is known as Mithi River is responsible for polluting Mahim creek.

BRIMSTOWAD is a project for the rehabilitation of city's SWD system. The major functions of the project are laying new drains to augment the carrying capacity of the existing drains, training of the watercourse, deepening and widening of nallas. This project will take 12 years to complete and will cost Rs. 616 Crores at 1992 price.

The garbage from all over Mumbai is collected and most of the garbage is disposed off at 3 dumping sites (namely Deonar, Mulund, and Gorai) by simple landfilling. The Deonar dumping ground is the largest, receiving 4573 MTPD of garbage and Gorai is the smallest receiving garbage of 965 MTPD. There are 5603 points in the city from where this garbage is collected. The garbage is disposed off by deploying of various types of vehicles.

MCGM has started night sweeping at 500 places such as railway stations, markets, VIP roads and hospitals. Power sweeping is carried out in zone-I on major/arterial roads. This concept is introduced for the first time in the country. Besides this at Juhu, Shivaji Park/Mahim, and Girgaon beach-cleaning work is also undertaken.

Biomedical waste is incinerated at GTB Hospital, Sewree. This facility takes care of the biomedical waste generated at the municipal medical institutions and also caters to the requirement of

the private institutions, which desire to treat their waste at this facility on payment basis.

The electric power is supplied by Brihanmumbai Electric Supply and Transport (BEST), an undertaking of MCGM, Bombay Suburban Electric Supply (BSES) and Maharashtra State Electricity Board (MSEB). In addition to this Tata Electric company (TEC) Ltd. also supplies bulk power to some industrial units.

The total length of roads in Mumbai is 1889 km. and is divided as city (506 km), Western suburbs (915 km) and Eastern suburbs (468 km). To ensure smooth flow of traffic, a project to construct 55 fly-over bridges in Mumbai was undertaken by Maharashtra State Government, of which 41 are already completed. MCGM has undertaken construction of 19 fly-over bridges, ROBs, FOBs and subways out of which 6 are completed. The construction of fly-over bridges has benefited in terms of savings in time and fuel and reduction of pollution.

The total number of vehicles in Mumbai is 11,65,782 showing a growth rate of 5.8% over previous year. The rate of growth of vehicles in western suburbs and eastern suburbs is comparatively higher than in city area and vehicular density in Mumbai city is approximately 696 vehicles per km. On the basis of fuel consumption, air pollution load due to auto exhaust is found to be 662 MTPD comprising of SO₂, NO₂, CO, SPM & Hydrocarbons. To assess the impact of auto exhaust emission at traffic junctions, air quality is monitored with the help of automatic monitors installed in a mobile-van. The concentration levels of NO₂, RSP & CO have exceeded the air quality standards promulgated by CPCB. Transport Dept. of Govt. of Maharashtra have detected nearly

7866 cases of violation of pollution laws and recovered the penalty from defaulters. They have also introduced the concept of "No PUC, No Fuel" for vehicles.

The slums exist on Municipal, State Government, MHADA, Central Government & Private lands. The maximum slum population is on the municipal lands where as maximum slum pockets 415 are on government land. Several efforts are being made jointly by various agencies to improve the lot of the slum dwellers who comprise more than 55% of the city's population of 11.9 million. At present, there are 1,25,322 authorized huts out of which 1,13,736 are residential and 11,586 numbers are commercial. MCGM charges some nominal fees of Rs.20 per month as compensation from kuccha huts and Rs.22/- per month from pucca huts.

MCGM monitors ambient air quality at 6 monitoring sites throughout Mumbai. Air quality of certain gaseous pollutants and particulate matter is evaluated and compared with standards prescribed by CPCB. As per annual standards, air quality levels of SO₂ & Lead are within limits, however NO₂ levels have exceeded at Khar and Maravali, whereas SPM levels have exceeded the standards at all the sites. On comparing the levels with 24 hrs standards, it is observed that highest percentage exceeding the CPCB standard for parameters SO₂, NO₂, SPM and Lead at Worli (8%), Maravali (56%), Maravli (83%) and Maravali(3%) respectively.

Generally air pollution levels are low during monsoon and high during winter seasons. The phenomenon of seasonal fluctuation is attributed to meteorological conditions, such as predominant wind direction, turbulence and frequency of inversion, rains, etc. This has multiple effects. Dispersion of pollutants is fast due to high

turbulence and washing down of pollution due to rains. On the other hand, accumulation of air pollutants occurs due to frequency of inversion and stable conditions in the winter. The configuration of Mumbai is such that industries are located in north/north-eastern part. The predominant wind direction is south/south-west in monsoon and north/north-east in winter. Stable atmospheric conditions & predominant wind direction in winter cause high pollution levels in Mumbai.

Air pollution index comprising of three air pollutants namely SO₂, NO₂, & SPM ranges from 19% to 207% for ambient air monitoring sites. The maximum polluted sites are found to be Maravli and Khar. The noise levels are monitored all over Mumbai. The levels of noise are measured in decibels (dB) and compared with standard. They are exceeding the standards in practically all the zones and all the categories.

To study the land and soil of Mumbai, National Remote Sensing Agency, Hyderabad, was requested to evaluate the satellite images of Greater Mumbai area for the year 1996, 1997, 1998 with thematic maps and brief report on wet lands, vegetation, mangrove, forest covers and other land use cover details. The study revealed that mangrove vegetation along the creek has increased its canopy, which suggests a positive conservation step. Under the tree plantation programme, Garden department has carried out the plantation of 13,800 trees on various roads, open spaces and playgrounds, and also distributed 52,404 saplings to the citizens of Mumbai during year.

Some marginal changes are observed in the spatial distribution of the wetland categories like lakes/tanks, marshy/mud flats, creeks,

which can be seasonal in nature. The major bodies in the study area are the lakes of Tulsi, Vihar and Powai besides the numerous creeks.

The city of Mumbai has total 31,780 industries/factories which are paying air pollution fees under section 390 of MMC Act 1888 on the basis of Horse Power of the connected load. About 12,429 industries/factories are located in the city and 19,351 industries/factories are located in suburbs. The industrial emission load of air pollutants is 67 MTPD. The total air pollution load is 751.64 MTPD. As per Maharashtra Pollution Control Board there are 20811 industries responsible for water pollution out of which 9630 industries have been granted consents. The quantity of effluent generated is 834 MLD. 6077 industries have provided effluent treatment. Industries which generate hazardous waste has to take permission from MPCB for collection/storage/transport/disposal of hazardous waste handling rules of Government Of India under schedule-I and schedule-I amended on 6-1-2001.

The MCGM's health infrastructure in eastern and extended suburbs consists of 3 major hospitals and one dental hospital. It has 16 peripheral hospitals, 5 hospitals for specialized treatment such as ENT, Tuberculosis, Leprosy, etc., 25 Maternity Homes, 162 dispensaries and 173 health posts. The MCGM provides 11,432 hospitals beds including maternity beds. On an average, 21,200 out patients are treated every day in the hospitals and dispensaries run by MCGM. The birth rate in Mumbai is 15.08/1000 population and death rate is 6.89/1000 population for year 2002-2003. The AIDS programme has been undertaken by MCGM with the help of State Government. It has started massive campaign with assistance from World Health Organization (WHO) and World Bank. There were 2139 notified cases of AIDS and 150 deaths.

Urban environmental problems contribute to the day-to-day struggle for existence faced by the people of the city. Some population groups bear most of the effects of environmental problems e.g. children, women, slum and pavement dwellers, workers in small and large-scale industries, handicapped and elderly people.

It is noticed that infants and children are at greater risk of dying from many environment-related diseases like diarrhoea, cholera and respiratory tract infections. Besides women in urban areas are faced with problems such as poor housing, overcrowding and inadequate water supply. Poor sanitation and primitive cooking arrangements all contribute to a stressful environment. Some of the most common environment related occupational diseases are byssinosis, pesticide poisoning, noise induced hearing losses and skin diseases. Active participation of the citizens is therefore needed to abate pollution and improve the quality of life in the city.