

Changing Land Use and Environmental Degradation in the Wake of Growing Urban Population: A Study of the Metropolitan Cities of India

Key Words: *Land Use, Urbanization, Environmental Degradation, Migration, Vehicular Pollution, Water Pollution, Solid Waste Disposal, Slum, Sanitation etc.*

In this paper changing Land use and environmental degradation has been discussed in the context of growing urbanization in India with a special focus on the metropolitan cities by exploring the data from various sources like census, CPBC, NFHS-2 and also from different government organizations. The process of migration from rural to urban areas and specifically to the metropolitan cities accompanied by uncontrolled urbanization has caused environmental degradation which is manifested in worsening water quality, excessive air and noise pollution, and the problems of disposal of solid wastes and hazardous wastes.

Total urban population in India has increased more than ten times from 26 million in 1901 to 285 million in 2001 whereas total population has increased less than five times from 238 million to 1027 million from 1901 to 2001 respectively. In the same fashion the number of town had also increased from 1916 in 1901 to 2422 in 1951 and then to 4689 in 1991. About three-fold increase has been noticed for percentage of total urban population in Class-I city over the decades (1901 to 1991). While there was only one million plus city (Kolkata) in 1901 in India it became 23 in 1991 and currently it is 35 according to 2001 census. Total population also increased in the million plus cities from 1.51 million in 1901 to 70.7 million in 2001, almost a fifty fold increase.

The study also focuses about the slum situation in the metropolitan cities, which are a result of rapid urbanization. Slum population is a serious problem of mega-cities of India. Forty-one percent of the total slum population of India was residing in million plus city only. A large population of Mumbai, Kolkata and Delhi lives in slum, despite of several Government housing policies. A continuous increase has been found in the percentage of slum population over the last three decades in the four metropolitan cities of India among which Mumbai was highest.

The problem of solid wastes is a great concern in the metropolitan cities because the solid wastes are mainly non-degradable in nature, which can cause serious environmental health hazards if not treated carefully and in time. Mumbai generates the largest amount of Municipal solid waste in 1996, followed by Delhi and Kolkata. The volume of domestic wastewater generation was highest in the metropolitan city of Mumbai, which is 2228 ml/d followed by Kolkata (1383 ml/d) and Delhi (1270 ml/d). The generation of industrial wastewater was also highest in Mumbai.

Motor vehicles, which are the main source of vehicular pollution, are constantly increasing, a three-fold increase in the number motor vehicles has been found in India in the last decade. In Delhi one and half times increase in the number of vehicles has been found within six year (1991-96). Among all the vehicular emission loads, the amount of Carbon monoxide (CO) was found highest followed by Hydro Carbon and Nitrogen Oxide in all the three metro cities. The total amount of all type of vehicular emission load was found highest in the sky of Delhi (1046 tonnes /day) followed by Mumbai (660 tonnes /day) and Calcutta (294 tonnes /day) in 1994. In all the four metro cities SPM was found highest. The noise pollution was noticed above than

the prescribed standard in all the four metro cities. Kolkata experienced the highest noise pollution level in all the areas like residential, commercial, sensitive and Industrial in both day and night time. Mumbai was in better situation than Kolkata but worse than Delhi in respect of noise pollution in all areas.

The study also reveals the housing conditions in the metros of India. More than three people residing in a single room, is the condition for 56 percent of the population of Mumbai followed by 43 percent population of Kolkata, 30 percent population of Chennai and 25 percent population of Delhi. Further, five and more person residing in a room, a grave situation, was faced by 28 percent population of Mumbai followed by 17 percent of the population of Kolkata and about 10 percent population of Delhi and Chennai both. Also there is a acute shortage of piped drinking water in these metro cities except Mumbai. A substantial proportion of population is dependent on hand pump in Kolkata (35 percent) followed by Chennai (31 percent) and Delhi (13 percent) as a source of drinking water. Considering the methods of purification of drinking water, again it is a very much grim fact that half of the urban population of India does not purify water at all. In Kolkata three-fourth population do not purify drinking water by any method followed by Delhi (62 percent). The situation reveals the danger of diseases related to water born.

Looking at the sanitation condition of the metro cities it is apparent that almost universal flush toilet facility is available in Mumbai followed by 90 percent in Kolkata and 89 percent in Delhi. However, the matter-of-fact is that more than half of this facility is available in public place not in house premises in Mumbai. Kolkata and Delhi might have the similar situation. Again it is unfortunate that almost about nine percent population of Kolkata and Delhi uses pit toilet. Further what is the worst situation that nine percent of Chennai's populations do not have toilet facility at all followed by six percent in Delhi.

India's future is grave considering the rapidly growing urban population, overcrowding metro cities, its large requirement of energy and other resources, and the waste it generates. The quality of life in most of the urban places, especially in the metropolitan and mega cities is degrading. It is evident in the study that each and every environment and social parameters of the Indian mega-cities are very much deprived. There is an urgent need to tackle the problem in rational manner. Attention should be given to the need for improving urban strategies to enhance the quality of life of the resident of metro cities.