CHAPTER - VII

METROPOLITAN ENVIRONMENT AND RELATED PROBLEMS
Calcutta City rushed through a rapid growth of urbanisation within a very short span of time and reached its maturity much before the time predicted. Excessive population growth, mainly due to migration, exerted its pressure on all aspects of city environment and caused its deterioration.

WATER SUPPLY

The water drawn from Hooghly and purified at Palta was supposed to supply 60 gallons of safe potable water per day. The water source in Hooghly was becoming scarce due to gradual shift of flow in the East towards Padma and salinity level rose from 380 ppm in 1936 to 2,480 ppm by 1959, bacterial load has increased alarmingly due to industrial effluents thrown in the river water. About 25 million gallons per day of ground water is fed into Calcutta water system by deep tubewells. But cesspools and other effluents generally drain into ground water horizons and thus cause out break of Cholera and Typhoid. The city expansion increase impermeable surface and hinders infiltration into ground water. The unplanned tapping of groundwater in a basin area has already caused the water table below the line at least by 1-2 metres. The urbanisation in Southern
and eastern strips of the city depend heavily on ground water but the water resource being brackish and possessing excessive amount of iron creates another problem. Above all, water remains a scarce commodity.

In 1982, CMDA pointed out that bacterial load at intake point of Hooghly water supply is increasing alarming when only 270 mgd was being withdrawn as against 700 mgd projected for 2001 A.D. The discharge at the turn of the century was estimated at 420 mgd contributing to 1.6 million pound of biochemical oxygen demand (BOD) a day. The CMDA in its report urged upon creation of an independent water and air management system for CMD area to save the area from impending "Ecological disaster." The water works at Palta, built in 1866, had an area of 480 acres, is located 32 km north of Calcutta city. Though once quite effective with its large sedimentation tanks is now being adversely affected by surrounding human encroachment. The sedimentation tanks have become obsolete. The testing procedure of water at water works before chlorinated and supplied to Tala reservoir is primitive. The whole system needs financial backing for modernisation.

The supply of unfiltered water amount 50 to 70 Million Gallons per day through the street hydrants and is being
used by slum dwellers and poorer section of people but according to experts of the Central Water Pollution Control Board, this water is unfit for any use. Both the quantitative and qualitative aspects of water supply in Calcutta remain far from satisfactory. This can further be substantiated by the data available in the Report on Health and Socio-Economic Survey in Calcutta Metropolitan Area (1983) (based on data available between November 1976 and September 1979) which indicated a high percentage of non-immunised people against such diseases as Cholera (96.8%), typhoid (97.5%), diphtheria (94.7%), whooping cough (94.9%), tetanus (95.3%), polio (99.2%) and tuberculosis (96.3%). The percentage of persons suffering from different diseases on an average day amount to be the highest in the case of gastroenteric diseases (11%); Above data indicates to some extent, the effect of 'unfit' water in our human body system and its possible hazards that can cause epidemic to non-immunised population. This problem cannot be considered as just a municipal problem since it has a definite inter-relation with urban ecological profile. The possible subsidence of soil due to unplanned tapping of ground water and effect of drinking water quality on human health are both indices used for determining a broad spectrum of ecological conditions. Quantitatively the basic target of supplying 50-60 gallons of water per person per day cannot be fitted with any urban ecological model specially in tropical environment (fig. 7.0)
AIR POLLUTION

Smoke from the factories and domestic ovens combine with exhaust of vehicles make a significant contribution towards polluting Calcutta's atmosphere. In fact, statistics show that the smoke from the industries is 396 tonnes, that from vehicles is 350 tonnes and contribution of household ovens is 126 tonnes. The par capita dust generated is 0.25 to 0.35 kg per day. The threat posed on Calcutta's atmosphere can be well understood by the following facts:

1. Calcutta's atmosphere has high content of carbon monoxide and this is rising to the permissible limit of 40 ppm.

2. H₂S is nearing the permissible limit of 20 ppm.

3. S0₂ has already crossed the permissible limit of 50 ppm.

4. Suspended particles is often twice the safe limit.

As per WERI's survey, industry's contribution to air pollution is high through presence of suspended particles, the areas most affected being Tollygunge and BBD Bag. Generally low wind velocity cause suspended particles to stay on and accumulates in skyscrapers which break the wind velocity. The pressure of large quantity of suspended
particles might cause the rain to be polluted. High relative humidity causes SMOG to form and remain floating in Calcutta's air layer. (Plate 7.1)

**SOLID WASTE**

Industrial, commercial and domestic activities in the area gives rise to significant quantum of solid waste. Calcutta Corporation area at present (1985) generated 2,000 tonnes of garbage per day. The refuse generated in the Calcutta City area has the following composition in percentage by weight:

1. Garbage - 16.053
2. Hay and straw - 6.312
3. Coconut shell pieces - 4.969
4. Paper - 3.173
5. Ignited Coals - 8.083
6. Rags - 3.602
7. Ash and earth - 33.585
8. Earth - 6.649
9. Bones - 0.40
10. Stone - 1.333
11. Iron and metal - 0.6624
12. Leather - 0.8624
13. Polythene/Plastic - 0.6546
14. Glass - 0.0795
15. Leaves - 13.052 (Plate 7.2)

In Calcutta area the refuse is collected from 500 collection points and disposed at two major sites located in the low lying areas around Dhapa and Bantala. A number of low lying areas in Tollygunge and South Suburban areas are also in use. A compost plant at Dhapa handles about 125 to 150 tonnes of refuse per day to produce 50 tonnes of compost. Most of these waste disposal grounds are going to get filled up soon. (Plate 7.3)
7.1 City air getting polluted by small fertilizer plants.

7.2 Growth of industries within city limits pollute metropolitan environments.
The problem with solid waste now is to handle it from its point of discharge in such a way so as to have minimum interaction with the land and water and safely dump them in areas appointed. With the progressive urbanisation and consequent spreading of residential colonies, the disposal sites are slowly being used for construction purposes. (Plate 7.4)

FOUL SMELL

Foul smell prevades at spots of accumulation of solid waste and is most offending at spots like Tāngra-Topsia area where effluents of the tanneries and garbage dump jointly generate a foul smell which is extremely difficult to tolerate. Another area is in the vicinity of Beliaghata Canal.

NOISE POLLUTION

Noise from motor cars, buses, trains, aeroplanes, factory machineries, generators and even the mere murmur of 4.5 millions people constitutes noise pollution.

LACK OF OPEN SPACES AND GREENERIES:

Calcutta has only 6.07 Sq.Km. open space related to greenary. Out of this the Maidan accounts for 3.035 Sq.Km. Manicktala and Tollygunge lake cover 1.82 sq.km. and all
7.3 Solid wastes Pick-up points pollute the residential areas.

7.4 Solid wastes, strewn on the drains, block the flow of surface drainage water.
the major parks together about 1.21 Sq.Km. In Calcutta
the per Capita open space is 1.06 Sq.Km. and this is
extremely low as compared to London with per capita open
space of 23.26 Sq.Km. Moscow has about 24 times of greenery
than Calcutta and is less congested.

These figures reflect an essential dimension of urban
ecology. The acute scarcity of open-space along with
an (total park area in CMC is 1.30 Sq.km. or 1.5%) alarm­
ingly low percentage of parks creates a sense of lack
of ethical and aesthetic values. The role that the greenery
can play in purifying the highest polluted urban air
in the country, besides releasing the feeling of urban
tension and creation of concern for nature-conservation,
have long been forgotten by planners. Even BDP did not
clearly specify any design for urban greening in the
CMD area. (Plate 7.5)

SEWERAGE & DRAINAGE

The underground sewerage system which is more than 100 years
old is now showing signs of lack of hydraulic deficiencies.
The whole system with its main and lateral branches suffers
from siltation. Excessive waterlogging in parts of the
city emphasise the need for alternative arrangements in
some areas prone to water logging. The canal system which
is linked to the underground conduit system is continuously
7.5 Modern ownership flats are constructed at the cost of these vast water recourses.

7.6 The drainage canals being desilted.
neglected over the years. Even when Calcutta urban Development Programme (CUDP) was initiated in the early 70's the canal did not get proper attention until phase III of the CUDP. As a result the silted up canals have reduced capacity of carrying the sewerage water. (fig.7.1)

Currently only 50% of the city's population and 27% of its area have sewerage and drainage facilities, Rs.118 crores (A CMDA Report 1986) have been allotted for removal of waterlogging in city system. A separate primary collection system for sewerage and drainage in the Kashipur-Chitpur area (Rs.5.67 crores) is claimed to have lessened drainage congestion in an area inhabited by 0.1 million people. Another scheme of sewering unsewered pockets in Beliaghata, Narkeldanga, Kiddirpur, Munshirgunge, Watgunge, Padmapukur Road etc. (Rs.9.42 crores), about 0.2 million people are expected to get better environmental conditions. A similar north-east Tollygunge drainage scheme (Rs.12.66 crores) has also been implemented. It is now been realised by the concerned authorities that the schemes involving improvement of Beliaghata, Kestopur, Bagjola Khal (Rs.6.45 crores) and improvement of Tolly's Nullah (Rs.1.92 crores) should get top priority otherwise the canal system is bound to become ineffective. However, the overall picture still remains grim as the city continues to suffer from waterlogging during any monsoon with showers lasting for a few hours. (Plate 7.6, 7.7)
Fig 7.1. Major Waterlogging Prone areas of Calcutta.

7.7 The water of drainage canal needs proper treatment without which beds of canals get silted up.

7.8 Natural receptacles of surface drainage are shrinking due to construction of residential complexes.
The present condition of the sewerage and drainage system is alarming as the domestic as well as industrial effluents are continually increasing. Of all the environmental problems that affect the metropolitan environment of Calcutta city, the drainage problem is the most difficult to handle, as it is widely connected with the geographical setting as well as urban planning. The fact that open receptacles in the form of wetlands is being occupied by developmental schemes is very much apparent from the construction work going on the eastern fringes of the city with great enthusiasm. Therefore, the problem of drainage is to be given special emphasis in this study as it requires an analysis of the physical setting, morphological constraints as well as the urban planning. (Plate 7.8)

Therefore, water and land both should be given equal emphasis in making justified use of land. It is relevant to mention the view of Bernard Srank expressed in his article (Yearbook of Agriculture 1995, ed. D. R. Coates, 1972) that people cannot reach the highest standard of well-being unless there is judicious use of land and water, so land, water and people go together. Urban Planners of Calcutta city should keep this view in mind in order to make a proper land use system that maintains the ecological balance of the metropolitan environment.
Reference


