CHAPTER - X

CONCLUSION
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The study of the different aspects of Calcutta and its history of gradual development makes the fact clear that Calcutta needs careful changes in the infrastructural facilities together with awareness from all sections of urban consciousness.

The present thesis work tried to explain metropolitan environmental problems with a special emphasis on drainage status. The urban planning of the megacities turns into a complex affair as the metropolitan development involves rapid and largescale changes in all aspects of its infra-structure.

Calcutta city which gives shelter to a population of 43,99,819 persons on 185 sq.km. quite naturally now suffers from air, noise, water pollution as well as drainage problems. Urban planning strategies together with geomorphological layout are two other no less important factors beside the pressure of population that create environmental hazards and drainage congestion. Therefore, the present thesis tried to explain the geological set up with a thick impermeable mantle of clay all over southern Bengal of varying thickness. This fact is well represented by borehole reports from G.S.I. and three dimensional representation of succession of geological strata occuring below Calcutta.
The climate affects the drainage status in an indirect way since Calcutta receives about 1600 mm. of high concentrated rainfall within 2-3 months short duration. This seasonal, excessively heavy, occasional downpour puts the ageold combined sewerage system into jeopardy.

The physiographic layout is widely discussed with its wetland resources as they are directly linked with drainage problems. The slope of the land is away from the main river Hooghly on the western side to east and south-east towards the marshy land. The slope is too gentle, almost imperceptible, rising only to 5.0 m on the western side and falling to 3.0 m on eastern side. Most of Calcutta falls within 4.0 m to 5.0 m contour line. Flatness of the landscape together with saucer-shaped depressions accentuate the drainage congestion that clog the city during monsoon.

Various diagrams and data from authentic sources are presented in representing the present population rise specially the recent changes in the landuse pattern due to population explosion has been presented too.

The layout of age-old combined sewerage and drainage system, its present deterioration and ill-maintenance are well represented by various facts available from Calcutta Corporation and CMDA. The visual plates of
different parts of the entire canal system of various parts of the entire canal system are represented to prove the choked and silted up conditions of the surface canal system which fail to carry the heavy load of monsoon drainage water.

The metropolitan environmental problems are discussed and their possible remedies.

Thus, the present thesis assembled valuable opinions, research works and suggestions of eminent geologists, geographers, environmentalists, hydro-scientists and has reached the conclusion that a very active strategy of urban planning is to be adopted to save Calcutta from drowning in its own sewerage water and maintain a metropolitan environment suitable for the habitation of a population of nearly 44,000 thousand.

The city today shows a definite trend of eastward expansions. The Eastern Metropolitan Bypass (EMB) and its connectors have increased the accessibility of the area. The benefits of this high cost development include further encroachment of settlements in and around the highway thus making room for city expansions. The building of Salt Lake City on the eastern fringe of the Calcutta Metropolis seems to have set up a thrust towards eastward expansion that produced a chain effect in terms of more
expansion in that direction. It definitely makes significant departure from the earlier historical north-south growth direction and expansion.

As the Basic Development Plan acknowledged the metropolitan growth in fact has been occurring in areas of the most geographical constraints where the only lands available for development are mainly those rejected by earlier generations of Calcutta's inhabitants. Actual growth, without a comprehensive physical plan for development, was allowed following the traditional pattern of moving as short a distance away from the centre as possible to those places where land was available, ignoring the difficulties for providing adequate facilities for sewerage, drainage and water at reasonable cost due to the physical barrier. Therefore, the guiding principle of growth had been the proximity to the core city rather than the quality of land.

This pattern of eastward migration together with expansion in the further south may result in loss of wetlands, increase in air pollution, destroy of valuable ecosystem and waste treatment facilities and environmental deterioration on the whole. Reclamation and urban constructions cause major loss of drainage outfall basins. It will
minimise facilities for disposal of rainfall excess thus increasing health hazards. Reclamation of land will ultimately cause extinction of Dhapa system of Garbage disposal and will call for very costly treatment plants. Natural and artificial fisheries will cease to exist thus rich fish protein supply will be stopped together with vegetables. There will be a definite change in the occupational structure as primary sector livelihood (fisheries, farming etc.) will give place to tertiary sector problems. Control by land speculators to take over reclaimed land parcels at the cost of middle and lower economic classes will cause imbalance in the social order. (Plate 10.1, 10.2, 10.3, 10.4, 10.5, 10.6).

Therefore the most viable alternative for us will be to create new centres of a sufficiently high order to effectively counteract the gravitational pull of the Calcutta Metropolis.

The Uluberia-Bagnan area outside CMD is one of the most appropriate locations (Prabudha Nath Roy - Calcutta 300) for such a metro centre. It has several advantages. Anticipating development at Haldia, an expert committee has already prepared a project report ensuring the availability of potable water at the Uluberia point. Many downstream industries linked to the Haldia complex may conveniently be located at this area. Since this area is located outside the existing metropolitan area,
10.1 Peerless Hospital on the city's eastern limit.

10.2 Wetlands area the lungs of city, generating oxygen.
10.3 Further widening of Eastern Metropolitan Bypass.

10.4 More culverts should be built for easy flow of surface drainage water.
10.5 Baishnabghata - Patuli housing complex.

10.6 Construction of E.M. Bypass creates better communication but arises drainage problems. Thus it presents the complexities of urban planning.
it is free from the embargo on industrial location within
the metropolis. A growth centre has already been located
here. The area is well connected to both N.H.6 and N.H.2
and is also accessible by the South-Eastern Railway.
It will be more conveniently accessible through the Kona
Expressway system and with the completion of the second
Hooghly Bridge the accessibility of the area has increased.
The location is in close proximity to the Falta Export
Processing zone and gets the advantage of two rivers,
Hooghly and Damadar, which will help setting up new indus-
tries, particularly for disposal of water after proper
treatment. As it is outside the physical continuity of
the city of Calcutta, it would not amount to an outgrowth
of the Calcutta Urban Agglomeration. On the otherhand,
its proximity to Calcutta may overcome possible disinclina-
tion on the part of the people to move away from the
city of Calcutta.

A second appropriate location will be between
Barasat and Barrackpur. It has great potential for deve-
lopment. Barasat is District Head Quarters of North 24
Parganas since 1987 and in close proximity to Bidhannagar,
which is growing fast with the shifting of Government
offices, construction of specialised hospitals, colleges
& universities together with international standard sports
complex. Kalyani, a satellite town, not far off, is endowed with infrastructural facilities of a high standard. Hence large and medium industries can very well be located there and employment opportunities can be created. Railway services have been extended to the city centre with a university in Kalyani. Kalyani, therefore, is infrastructurally a richly endowed city lying on the West of Barasat, Ground water resources are available in abundance and ensuring surface water supply from the Palta Water Works is a distinct possibility. Barrackpore, Kalyani, Barasat and Salt Lake constitute a system with strong possibilities to effectively challenge the magnetic attraction of Calcutta. (fig.10.0)

The development of Calcutta and its suburbs need to go through few strong disciplined actions. Preparation of landuse map identifying different geographical Geotechnical data requiring for planning is to be taken up immediately. Urgent need of contour survey is of utmost importance. Development plans in view of the T&CP Act, 1979 is to be taken up immediately considering the rapid environmental degradation of CMR. In cases, where there are necessities for framing Rules & Regulations in conformity with the different Acts, are to be framed without further delay. Environmental Planning Authority of the entire
LEGEND
- GOOD FOR DEVELOPMENT
- GOOD FOR LIMITED DEVELOPMENT
- MODERATELY GOOD FOR DEVELOPMENT
- PRESERVABLE / CONSERVABLE AREAS
- EXISTING SETTLEMENT AREAS

SOURCE:
Perspective Plan For Calcutta 2011
CMR is to be formed without delay to cover all the aspects. Enforcement of various central and State acts relating to Environmental protection are to be implemented with all possible seriousness, having stringent measures against violation. The CMC is too liberal with trade licences for any industrialist activity irrespective of its nature, hazardous industries are to be prevented from mushrooming in and around city proper. Industrial locations are to be properly identified and designed or a zoning system can be evolved for further industrialisation of the area. Water resources are to be utilised rationally for drinking and other important purposes. At the same time disposal of waste water should be assured. Possibilities of recycling and re-use of waste water is to be explored wherever possible. At the same time re-charging of aquifers are to be properly taken care of by the way of constant water management and monitoring. Water Treatment plants and distribution system should be controlled by local authority. A number of municipality and local body within CMR are not having adequate technical personal to manage the water supply and sanitation. Programmes for augmentation of sewerage and drainage pumping stations, repair and renovation of existing drainage conduits and intensive programme for maintenance are to be carried out. All the drainage canals are to be re-sectioned, to increase carrying capacity. Solid waste Management is to be re-
organised. New methods of disposal should also proceed side by side with the traditional process of dumping. Energy extractions, re-use of certain waste in proper form should be done as far as possible. Separate arrangements for disposal of waste from Hospitals, hotels, nursing homes etc. containing poisonous and organic matters, are to be scientifically controlled. Rigid enforcement of T & CP Act 1979 along with other central Acts should be prescribed for preservation of parks, playgrounds, open lands, wetlands, green belts etc. Stringent measures are also to be enforced in case of offenders violating the prescribed norms for maintenance of environment and eco-system. Boards and committees constituted as per provisions of different central and State Acts for looking after environmental affairs are to be strengthened and are to be made more functional. Extensive research works should be encouraged for establishing more basic data. Air pollution and water pollution should be given special attention. There should be a central body to monitor and guide the different functional organisations, departments, institutions etc. A mass awareness programme should be initiated at the state Government level to educate people at large. From the ecological and environmental point of view, the city of Calcutta, 300 years old, needs a minimum of 10% open space. This can be achieved by
reallocation of some conglomerate, the demolition of
derelict structures of insignificant architectural value and
strictest implementation of a rational land use plan.
Recent greeneries created at the heart of Calcutta prove
possibilities are always there if there is a strong will.

The problems of Calcutta are identified. The prob­
lems that are slowly degenerating the possible future
of Calcutta. Limitation is the ultimatum for all development
but Mechanical and strong managerial abilities can make
wonders at the same time, specially, when we are stepping
into the century 2000 A.D. So what we Calcuttans need
to-day is determination, effort and determination again
to make Calcutta not only habitable but to make us proud
inhabitants of Calcutta, a very special cultural city
and Bengal's pride.