Chapter-V

URBAN STRUCTURE OF KOLKATA CITY:
PROBLEMS AND PROSPECTS

5.1 INTRODUCTION:

Kolkata, as of today, provides a mixture of opportunities and problems. Environmental problems loom large over the city that raises issues in sustainability. Rapid urban growth has affected the population momentum and hence would prolong the unplanned urbanization and industrialization for quite sometime. This has resulted in acute air and noise pollution. Therefore, whereas the city core is affected by air and noise pollution, the fringe areas are affected by water contamination and frequent outbreak of epidemics. The slums and squatters provide another act of problems encountered by the city. Finally, as the city grapples to fit into the changing global scenario, it must be realized that an emphasis of developing the knowledge based skills and innovative character of the region must be enhanced and must be known to the world. It has been realized that Kolkata has the potentialities for knowledge-based development in the post-industrial society, being the music and literacy capital of India. Thus, only by following regional approach, which recognizes and integrates the importance and potential contribution of the city's knowledge base, including the informal sector of the economy, may this mega-city
progress. Local governments and other state government agencies provide traditionally urban amenities or infrastructures like water, sanitation, solid waste management and roads. The demand for urban amenities is being fuelled by both demographic pressure and rise in urban income. It is becoming increasingly clear that these services have failed to cope up with the rising demand and can significantly damper even the economic growth prospects of the country. In response to these developments, there is a growing concern regarding the paradoxical problem of inadequate resources available for infrastructure investments, combined with the inability of appropriate authorities to absorb any additional finance in variable manner. This reflects the low level of equilibrium trap in most of the in urban authorities trapped today, as evident by a low level of resources for urban infrastructure resulting in low level of services, leading to a low willingness of consumers to pay for these and hence low recovery. The low cost recovery limits the rate of returns of these investments and therefore, these are viewed as social investments. The low returns also make it difficult to mobilize additional resources for these critical investments.

5.2 PROBLEMS OF THE CITY:

Globally, urban areas are growing at an alarming pace. Industrialization, rise in population etc. is leading to acute constraints such as lowering of the quality of the environment resulting into
pollution of air, noise and water impacting upon health and welfare. Thus, Environmental Pollution is one of the major problems that the city of Kolkata continues to struggle with. Hence, Urban Greens is a necessity, which plays a pivotal role in improving urban environment.

5.2.1 Environmental Pollution:

According to Ansel Adams: “It is horrifying that we have to fight our own government to save the environment”. Pollution is no more a sensation today; it is one of the foregone outcomes of our civilization that we have started paying heavily for. Pollution and cities are further inter-related to a great extent in the sense that both have to live in non-escapable co-existence and may be the ultimatum of that so-called co-existence can be well found in our beloved city-Kolkata. Kolkata has been totally down with the overwhelming omnipresence of pollution—may it be air, water, gaseous, noise or odour! The world authorities have already identified the city as one of the worst victims of present day ecological disaster. Kolkata has distinctly earned the honor of ‘city of functioning chaos’ or ‘city of garbage’. In 1956, WTO (World Health Organization) has already rated Kolkata as one of ‘the dirtiest cities in the world’. Therefore, strict laws should be enforced for a greener Kolkata and to feel the pinch of Kolkata’s environmental degradation, pollution rules are to be taken seriously as called for clearing pollution from the very root. Alarming levels of air, water and noise pollution, thus continues to plague the citizens of Kolkata, with the authorities turning a blind eye to the problem, making Kolkata, “the pollution capital of India”.
MAP NO.13

KOLKATA: HEALTH CARE AND ENVIRONMENT

Source: NATMO, Kolkata
Fig. 5.1: The Atmosphere Population Scenario

Source: Pollution Rules over Calcutta by Anupam Haldar, 2008
Civic body, residents fight over garbage

Park is litter dump

SOUMEN BHATTACHARJEE

A park in Rajarhat-Gopalpur, the only patch of green in the unplanned urban pocket, is now a garbage dump.

Local residents blame the municipal authorities for the present state of the 2,000-sq-ft park, once frequented by the children and aged. “The sewage disposal squad of Rajarhat-Gopalpur municipality is regularly dumping garbage in the park,” said Arijit Basu, a resident of BC block.

But the vice-chairman of the municipality, Bhupati Sengupta, in whose ward (22) the park is located, alleges that it is the residents “who treat the park as a dump”.

He, however, admitted that the civic body had been lax in maintaining the park. The neglect is evident in the rusting swings and see-saws that now seldom draw the kids. “We have decided to revive the park,” said Sengupta.

Having “lost faith” in Sengupta, the residents of ward 22 and other adjacent wards have sought the municipal chairman’s intervention in revamping the green space.

“We have written to the chairman, as the local councilor is hardly taking any interest in the park,” said S.N. Chatterjee, a member of the BC block residents’ forum.

“The park was renovated in 2005. But after the general elections in 2006, the municipal authorities never bothered about it,” said a resident of BC block.

“We badly need the park, as there is no other open space in this unplanned settlement. Buildings are coming up everywhere, with scant regard to town planning norms. Unlike Salt Lake, there is no rule here to keep an open space in every block,” said Chatterjee.

The situations in metropolises like Mumbai, Kolkata, Chennai, Delhi, Bangalore etc. is becoming worse year by year. Thus, urbanization and its allied processes such as rapid industrialization, energy production, commercialization and an increase in the number of motorized vehicles have made a profound impact on the environment of the metropolitan cities of India.

1. Air Pollution:

Kolkata even as the West Bengal Government is engaged in frantic efforts to phase out old vehicles, green activities claim that Kolkata is fast heading towards disaster due to abnormally high air pollution levels and needs a strong action plan to combat the menace. A study released by the Centre of Science and Environment (CSE) - a New Delhi -based organization, revealed that the annual average of Kolkata’s repairable suspended particulate matter exceeded the national standards in 2007 by 1.4 times, and the trend is continuing. The carcinogenic benzene levels in Kolkata were found in winter of 2006-2007 to be as high as 36 micrograms per cubic meter, while the national draft ambient air standard proposed a limit of 5 gm/cubic mt. as annual average. According to the World Bank statistics, the pollution caused by diesel fuel (65%-vehicular population: 99%-commercial vehicles are diesel run) to the city air was more than 2.7 times than Delhi and 2.5 times of that in Mumbai.
Cough Calcutta: foul fumes maim & claim

Vehicular pollution is to blame for most health problems that plague the Calcutta. The authorities have done nothing to tackle the crisis. Metro changes the Budhadeb Bhattacharya government with culpable homicide (sometimes amounting to murder)...

EYES
What? Exhaust fumes and suspended particulate matter (SPM) cause eyes to sting and burn, go watery or dry and damage vision. "The cornea and conjunctiva are the most vulnerable parts of the eye. Constant exposure to exhaust fumes can lead to chronic and allergic conjunctivitis, preamption dry eyes and even blindness," said ophthalmologist AabiJit Sen.

Dry eyes in adults is commonly blamed on the computer screens, but exhaust fumes of street fuming the secretion of tears is the prime culprit.

Safety measure: Wash eyes with clean water (drinking water if possible) after exposure to vehicular pollution. Wear sunglasses. Use artificial tears for dry eyes.

NOSE & THROAT
What? Constant exposure to smoke and dust pollution causes chronic throat and nasal allergies. "Chronic allergies can cause severe infections in throat and nose, and even loss of voice," warned Anibhabh Sen Gupta, an ENT surgeon of SSKM Hospital.

Safety measure: Wear a mask provides some protection. Gargle with lukewarm water every morning.

LUNGS
What? Chronic irritation and inflammation of the airways are caused by sustained exposure to pollution. "Over the years, this may cause bronchial narrowing leading to chronic cough, infections and eventual shortness of breath," said pulmonologist Ashok Sen Gupta.

Safety measure: Wearing a mask and undergoing periodic health checkups can help in the city of cough.

CANCER
What? The steady rise in cases of cancer of lung and throat over the past five years is linked to the rising air pollution count.

"Carbon monoxide and toxic hydrogen are the main factors causing lung and throat cancers," said endocrinologist Santhosh Mondal, who runs a clinic.

"Constant inhalation of toxic gases cause changes in the lining of the bronchial airways, which in turn lead to malignancies," explained. Safety measure: Shift to a city where the government values human health and air.
Thus, automobile emission is reportedly responsible for more than half of the air pollution load in Kolkata. At Shyambazar in north Kolkata and Behala Chowrasta in the south, SPM levels are 200pg/m3 and 224 pg/m3 respectively. An earlier study indicates that more than 1/3rd of all vehicles in Kolkata produce beyond permissible limit. The highest polluting group is taxis of which more than 50% violate emission norms. Trucks as group occupy the second place with 39.2% violations. Violations in respect of private cars are 32.6% while the same for mini bus, auto rickshaws and Government vehicles are of the orders of 20%.

As a result of high level of air pollution in Kolkata, it has upstaged Delhi as the air pollution capital of India, accounting per more deaths (18 persons per one lakh people) due to lung cancer and heart attack than Delhi (13 persons per one lakh people). Some 70% of the people in the city of Kolkata suffer from respiratory disorders caused by air pollution. Children mainly suffer from breathing difficulties like asthma while elderly people are victims of lung cancer.

The air pollution level is increasing in pace with the rapid increase in vehicular population and because of the ageing fleet of buses, which need to be discarded. Other sources of air pollution includes industrial emission in different manufacturing process, viz in meteorological plants, chemical plants, refineries, thermal power plants, mineral production and so on.
Chapter V

Urban Structure of Kolkata City: A Geographical Analysis

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In general, the urban areas are subjected to air pollution to the extent of about 60% total pollution load by automobile transport system. Stressing on a few measures to battle air pollution, CSEC (Centre of Science and Environment) study suggested that the vehicles converted to cleaner LPG fuel. Other preventive measures involve area planning, efficient engine design and grade of the fuel etc.

**Table-5.1: POLLUTION CONCENTRATION IN AMBIENT AIR OF KOLKATA:**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Time Weighed Average</th>
<th>Concentration In Ambient Air</th>
<th>Sensitive Area</th>
<th>Industrial Area</th>
<th>Residential, Rural &amp; other Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repairable Particulate Matter (RPM) size less than 10.</td>
<td>Annual</td>
<td></td>
<td>50g/m3</td>
<td>120g/m3</td>
<td>60g/m3</td>
</tr>
<tr>
<td></td>
<td>24 hours</td>
<td></td>
<td>75g/m3</td>
<td>150g/m3</td>
<td>100g/m3</td>
</tr>
<tr>
<td>Lead(pb)</td>
<td>Annual</td>
<td></td>
<td>0.5g/m3</td>
<td>1.0g/m3</td>
<td>0.75g/m3</td>
</tr>
<tr>
<td></td>
<td>24 hours</td>
<td></td>
<td>0.75g/m3</td>
<td>1.5g/m3</td>
<td>1.00g/m3</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>Annual</td>
<td></td>
<td>1.0g/m3</td>
<td>5.0g/m3</td>
<td>2.0g/m3</td>
</tr>
<tr>
<td></td>
<td>24 hours</td>
<td></td>
<td>2.0g/m3</td>
<td>10.0g/m</td>
<td>4.0g/m3</td>
</tr>
</tbody>
</table>

*Source: Pollution Rules over Calcutta by Anupam Haldar, 2008*
Water Pollution:

What Lord Byron said long ago, may become most timely calculation to all Calcuttans: “Till taught by pain, men really know not what good water’s worth”. In Kolkata, every citizen has given the share of 300 gallons of water per day, but half of this share is of polluted one. The metropolitan region suffers from clean water and from flooding, in periodic cycles, depending on the climax, topography and health of the river Hooghly. The Hooghly, are tributary of the Ganges, flows through the Kolkata Metropolitan Area, is the main source of portable water, is highly polluted. The industrial and domestic wastewater discharged into the river is the main source of pollution. It was estimated that 1400 million liters of sewage and 200million liters of industrial effluents were discharged everyday into the river. For supply of portable water, in areas not within reach for the riverside treatments plants, extraction of ground water is done through wells, as municipal supply. Ground water is also drawn in large volume for agriculture; such practice has resulted in depletion of water table and arsenic contamination in tapped aquifer, thus rendering this source as unsuitable for municipal water supply. Absence of sewage disposal systems in the unplanned settlements caused pollution of streams and rivers. According to the PCB, the quality of water at several places in the Hooghly is far below acceptable standards. S per example, the quality of water at Dakhineswar, were thousands of devotees bath daily while the CPCB recommended that the number of calliform bacteria should not be more than 500/100 mc for outdoor bathing, figure stands at alarming 110,000 in Dakhineswar.
Survey report predicts water supply to township will not be able to meet the demand next summer.

Some recommendations made by SEBRECA:

- Increase supply of surface water from the surface treatment plant.
- Improve water supply from the underground reservoirs.
- Increase capacity of the water tanks.

Source: The Times of India, Kolkata, Thursday, April 3, 2008.
As a result of high level of damage in the quality of portable water, the water scarcity is increasing day-by-day causing water pollution. Use of untreated water is responsible for a large percentage of waterborne diseases like cholera, typhoid and hepatitis. It is reported that 15 out of 1000 children born in the state die before the age of 5 from diarrhea caused by drinking polluted water. Thus, the success for sustainable water resource development depends on abatement of pollution with participatory governance and education. For water quality, determination sample collection points at 12 different locations of river Hooghly have been selected by W.B.P.C.B. The PCB has also arranged water quality analysis for Subhas Sarovar, Rabindra Saravar and some other selected water bodies in Kolkata. Determination of water quality of different irrigational canals and sewage canals is also envisaged.

Pic. No.17

*Drinking water condition*
### TABLE-5.2: HEALTH EFFECTS OF THE TOXIC INGREDIENTS OF THE DRINKING WATER IN KOLKATA:

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Safe Limit (mg/L)</th>
<th>Harmful concentration (mg/L)</th>
<th>Notable health effects</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic</td>
<td>0.05</td>
<td>Above 2/3</td>
<td>Skin eythrema, Pigmentation, Gastro intestinal and neurological disorder</td>
<td>May contain in drinking water.</td>
</tr>
<tr>
<td>Lead</td>
<td>0.10</td>
<td>High Dose</td>
<td>Chronic Lead toxicity, Loss of appetite, fatigue, and anemia.</td>
<td>Risk comes in drinking water from lead pipes.</td>
</tr>
<tr>
<td>Fluoride</td>
<td>1.05</td>
<td>Above optimum dose (8-20)</td>
<td>Causes dental flurosis in young children, bones changes from long-term exposure. A crippling of flurosis</td>
<td>Found in all general waters.</td>
</tr>
<tr>
<td>Nitrate</td>
<td>100 (of NH3)</td>
<td>------</td>
<td>Blood disorder in infants may cause gastric cancer</td>
<td>Principal ground water polluted</td>
</tr>
<tr>
<td>Iron</td>
<td>0.1</td>
<td>------</td>
<td>Gives astringent taste to water. High dose Causes vomiting and or linear damage.</td>
<td>In small dose, it is nutrient.</td>
</tr>
</tbody>
</table>

*Source*: Pollution Rules over Calcutta by Anupam Haldar, 2008
Noise Pollution:

The Compendium of Environmental Statistics, released by the Central Statistical Organization, states that noise levels in most metros – even in the residential and the designated ‘silence zone’ - have reached levels above the prescribed ambient noise standards.

Table: 5.3: NATIONAL AMBIENT STANDARDS:

<table>
<thead>
<tr>
<th>Area Class</th>
<th>Day Time (Decibels)</th>
<th>Night Time (Decibels)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>55</td>
<td>45</td>
</tr>
<tr>
<td>Commercial</td>
<td>65</td>
<td>55</td>
</tr>
<tr>
<td>Industrial</td>
<td>75</td>
<td>70</td>
</tr>
<tr>
<td>Silence Zone</td>
<td>50</td>
<td>40</td>
</tr>
</tbody>
</table>


Day Time (6.00 a.m to 9.00 p.m-15 hrs); Night Time (9.00 p.m to 6.00 p.m-9 hrs).

Noise pollution is highest in Kolkata, both during the day and night. Noise levels in Kolkata’s residential areas are much higher than in other metros, i.e. in residential areas, while the CPCB has prescribed an ambient noise standard of 55 Leqb B (A) during the day (between 6.00 a.m. to 9.00 p.m.), the noise level in Kolkata is 79 units, while in Mumbai it is 70 units, Chennai 66 units, Bangalore 67 units.

A number of agencies and institutions have monitored noise within Kolkata Metropolitan Area. This is presented in the table below:
Table-5.4: SUMMARY OF AMBIENT NOISE LEVELS AT TRAFFIC INTERACTIONS BY ZONES:

<table>
<thead>
<tr>
<th>Zone</th>
<th>Leq 24</th>
<th>Maximum (Day)</th>
<th>Minimum (Night)</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Kolkata</td>
<td>83.72</td>
<td>87.54</td>
<td>82.06</td>
</tr>
<tr>
<td>Central Kolkata</td>
<td>84.74</td>
<td>88.55</td>
<td>82.47</td>
</tr>
<tr>
<td>North Kolkata</td>
<td>89.70</td>
<td>94.18</td>
<td>87.98</td>
</tr>
<tr>
<td>Standard(commercial)</td>
<td>65.00</td>
<td>55.00</td>
<td></td>
</tr>
</tbody>
</table>

Source: Calcutta Pollution Control Board, 2010.

The result of the studies conducted in Kolkata indicates that the average ambient noise level in residential, commercial, industrial zones as well as silence zone exceeded the prescribed limit both during day and night. In the silence zone, the noise level reached as high as 79 db (A) and 65 db (A) during day and night as against the limit of 50 db (A) and 40 db (A). Thus from the data available, Kolkata is seen as the noisiest city of the world.

Although no data is available to highlight the impact of high level of noise on public health in Kolkata area, but information provided by ENT specialist and psychiatrists indicate an upward level of cases reporting hear loss, psychotic mental disorder, anxiety etc.

**Instruments of Regulation:** The Environmental Protection Act 1983 is a major law for regulatory control of noise level. Vehicular noise levels are prescribed by Indian Standard (IS 3028) for different categories of vehicles.
MAP NO.14

KOLKATA POLLUTION ZONING

Source: KMDA (Kolkata Metropolitan Development Authority, 2009).
In addition, provisions for abatement of noise pollution have been made in Municipal Corporation Act, Motor Vehicle Act and Police Act and Rules, in West Bengal. The application of Public Interest Litigation Act by citizens seeking redress from the High Court and action taken by WBPCB and Police Department during 1996 clearly showed that noise level during normal and especially during festival period could positively be controlled by enforcement authorities. Atmospheric pollution in Kolkata has greatly increased since the early 1950’s. Factories, motor vehicles and thermal generating stations, which burn coal, are primary causes of this pollution. In the hierarchy of controls, pollution prevention and waste minimization are more desirable than pollution control. Therefore, to achieve free and safe environment- it needs a comprehensive programme involving the local bodies.

‘Kolkata Greens’- A Necessity:

India’s Nobel Laureate, Rabindranath Tagore had said- “trees are earth’s endless effort that speak to the listening heavens”.

As urban development proceeds on the world stage let its journey proceed in partnership with its green space.

Key recommendations:

1. The individual green assets (plants on terrace, terrace garden, indoor plants, and private garden/lawns) must be encouraged and enhanced in a large scale in the built up city area. Detailed
Environmental policy must be formulated and implemented for the household level.

2. The maintenance of parks and gardens should receive much more attention from the citizens themselves. Apart from residents, students from educational institutions in the neighborhood may be truly encouraged to play an active role in the maintenance of the green space.

3. Data of the number of trees felled and the location and reason for doing so may be made available to all citizens on a regular basis from a common platform like the media. This would make them aware of the loss and inspire them to contribute for the regeneration of the same.

Thus, enhancement and protection of the visible green assets with the aid of geospatial tools, enhanced community involvement and holistic urban planning will stabilize the beneficiary role of urban green space of Kolkata on urban environment.
5.2.2 Crime in the City of Kolkata:

In his extraordinary essay in The Little Magazine, Volume vii issue 3 & 4 titled Poverty, War and Peace, Professor Amartya Sen writes- “The simple thesis linking poverty with violence, is not only comprised by doubtful ethical use, it also, as it happens, riddled with epistemic problems. The claim that poverty is responsible for group violence is empirically much too crude both because the linkage of poverty and violence is far from universally observed, and because there are other social factors that are also associated with poverty and violence”. He also said that Kolkata is not only one of the poorest cities- and indeed, in the world- it so happens that it is also has a very low crime rate. Indeed, in serious crimes, the poor city of Kolkata has the lowest incidence among all the Indian Cities (including all the 35 cities that are counted in the category) is 2.7 per 100,000 people- 2.9 for Delhi. The rate is 0.3 in Kolkata. It also applies to crime against women, the incidence of which is very substantially lower in Kolkata that in all other major cities in India. It also emerges that while Kolkata is by a long margin the city with the lowest homicide rate in India. It is important to remember that the low crime rate does not make those nasty problems of eradication of poverty in Kolkata, go away. It is heartening to see that Kolkata is perhaps the safest city in India to live in. Nevertheless, the recent spurts of violence in Kolkata and Nandigram prove otherwise. We have seen, truck loads of people leave their land and come to Kolkata for safety although they had no job, or the knowledge or assurance as to where their next meal was going to come from.
Just do it on street illegal

Welcome to the city of street illegal — others’ envy and our pride.

Where would you find an administration willing to do it on street illegal, not only condone but encourage you to do whatever you want, be it through official sanction like the new, “improved” hawker policy or by simply turning a blind eye to every violation in the book? Hawkers on the pavement, begged motorists on the road, traffic- stopper rallies at the city centre, and public- toilet issues are a few of the illegal things about Calcutta that have acquired the de facto stamp of legality over the years.

Legalise traffic violations: The city’s traffic congestion — apart from the few Pujas when police show us that if they want they can — is bad enough, so why not a few legalising common traffic violations like jumping signals? It would surely be welcomed by everyone, legal or not. It would also help Laburist and ruling party politicians to include the formalisation of sending a clique in the hawker- related votes.

And when the government comes up with such a law, let it be that.

Legalise jaywalking: The right to cross the road wherever and whenever is the Calcutta’s birthright. Just raise your hand, step on the approaching vehicle in its lane, give the driver a dirty- Harry stare. Two years ago and can surely have the Supreme Court blaze as well. Fire safety is important but think about all those people who stand in line to keep their homes and shops if the government carries out the threat to demolish all illegal floors.

Legalise illegal floors: The city’s illegal floors were the trend- setters two years ago and can surely have the Supreme Court blaze as well. Fire safety is important but think about all those people who stand in line to keep their homes and shops if the government carries out the threat to demolish all illegal floors in town.

We suggest that the government instead strengthen municipal regulations that enable illegal floors to be added any time.

The government may also consider giving renters special

friendly conscience pricking him. He was never happy with the small, low- rent houses. The low- cost- conscious Calcuttan can then go back to enjoying his Rs 6 ride on a two-stroke auto without his environment-friendly conscience pricking him. He was never happy with the small, low- rent houses.

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Can we rely in culture? Can we say fundamentally, Bengalis are non-violent people? We cannot because; Kolkata has a mix of different peoples in almost every locality. Can we say that since, Bengalis are more into education and even those in business fail miserably in the face of Marwari’s and bhaiyas in Kolkata who really the business community in Kolkata, the incidence of violence is are few and far between? Or shall we say, that with increasing wealth, violence increases simultaneously?

The Changing Face of Crime in the City of Kolkata:

“The streets are a market place where permissible consumables, regular pleasures and illegitimate services are made available within the same cities. Crammed together in this cardboard space, both the laboring poor and the poor criminals look to each other for help and sustenance. The border between crime and backbreaking toil is blurred among the city’s underclass. Crime is quite often seen as a one-shot activity to make a little money on the sly- a moonlighting of sorts”.

“The street shanties and slums have their own CEOs-sardars and dada’s-to run the day to day administration, like the allotment of space to families, governing the entry of new arrivals, adjudicating in disputes, distribution of assignments to the inhabitants, and so on. They also have a parallel cultural lifestyle that vies with that of their upper class neighbors.”
“A new type of Bengali upper class has emerged over the last few decades, comprised of businessman, building contractors, land mafia, politicians and bureaucrats. Their easy access to and exploitation of financial, administrative and political power has to a large extent determined the growth of organized crime in Kolkata society today.”

“Thus, Kolkata offers an interesting example of causality of contraries. On the other hand, the abundance of wealth in the hands of section of the rich is inducing them to invest it in newer and newer illegitimate avenues to accumulate more wealth that is displayed in conspicuous consumption.”

“But a new generation of criminals has emerged from among this under-class who has learnt to make use of a political system that has to depend on crime and corruption for its maintenance. Unlike the conventional gangs of house-breakers or purse snatchers of the traditional Kolkata underworld, these new gangs have found different occupations by establishing links with the political machinery that engineers the present ‘economic boom’ in Kolkata”. Crime has finally come out of the sewers to gain acceptance in Kolkata’s bhadralok society, and bring together the two divisions once known as the White and Black Towns.
5.3 PROSPECTS OF THE CITY:

It is a curious and a unique habit of the Bengali bhadralok to take refuge in the words of Rabindranath Tagore, whenever the former is confronted with a particularly emotional quandary. Tata’s may have pulled out their ‘small-car’ project from Bengal for reasons beyond our control but Bengal’s industrial juggernaut is on the rolls. However, the current global economic downturn has slowed down the process of industrial development in the state to some extent in the recent months, but still ‘Bengal’ remains on the top of the radar of global and domestic investors. Truth is, West Bengal envisages a balanced development of all sectors of the economy. It aims at harmonizing traditional and sunrise sectors, indigenous and modern technology and labor-intensive and knowledge-based industries. This strategy is expected to help the state reduce the dependency on agriculture, add value to the primary sector products and augment revenue sources. There is a conscious effort to channel public investments into the primary sector. Private investments, on the other hand, are expected to play a leading role in the secondary and tertiary sectors. The following analysis shows the development and prospects of the city in the different segments identified:

Pic. No.18

The improved Roads that leads to Kolkata’s Development
5.3.1: Physical Infrastructure:

Today city’s road have been widened and concretized. Intra-state highways are being given a never-before super expressway look. Flyovers at busy traffic intersections within Kolkata have come up at very fast pace. The city roads are much cleaner today compared to what they were few years back. Traffic congestion is now a thing of the past. It is much more disciplined and fast. In addition, to cap it all the state administration is much more pro-active and supportive to the needs of the private investors.

5.3.2: Doing Business in Bengal (Kolkata):

Industrially friendly pro-active policies, easy availability of land, huge pool of technically sound skilled manpower, various central government and state funded assistance schemes are among the key strengths of Kolkata. With generation capacity in reserve and more capacity under execution and planned, the state is in position to cater to the projected demand of new industrial units.

5.3.3: Thrust Areas:

The state government has identified the thrust areas like manufacturing industries, food processing industries, IT and IT infrastructure, automobile sector etc.

a) Manufacturing Industries: In the last one decade, several small, medium-sized and even large steel making units have come up
in the state. The fact is that investments are being made in all segments of the steel value chain. There are even steel intermediary companies that have decided to set up shop in the state.

b) Food Processing Industries: Bengal is one of the leading producers of agriculture products and so there is tremendous potential for setting up agro-based industries in the states and its cities.

c) IT & IT Industries: Kolkata has changed a lot during the last 10 years. It is true that the state started late in Information Technology, but during the last 10 years Kolkata has changed its status from late starter to ultimate destination.

5.3.4: Investments:

Earlier, Foreign Direct Investments (FDI) used to be one of the most hated words in Bengal. However, today, it has been successful in attracting the largest Japanese FDI in the country. The calendar year 2009 indicated the highest quantum of investments in recent times; it is approximately Rs.7100 cores and may go up by few notches once the data are finally complied.

5.3.5: Human Resource:

The state has a long tradition of intellectual excellence and is home to some of the reputed educational and research institutes like
IIT Kharagpur, IIM- Calcutta, Indian Statistical Institute and Bose Institute besides, Calcutta and Jadavpur University. This pool of highly talented specialist is likely in the coming years to lead to a Knowledge Process Outsourcing (KPO) Industry. The KPO developments will not be confined to scientific areas alone. Already, beginnings are being made in KPO in areas like legal, accounting, taxation, equity research, insurance, logistics, design, and animation and so on.

5.3.6: Housing and Real Estate:

Today, the housing sector is one of the most sought after sectors in the state. West Bengal Housing Infrastructure Development Corporation (HIDCO) had already generated 6,600 dwelling units in New Town at Rajarhat. It would accommodate about 10 lakh population including 2.5 lakh floating population on the basis of about 2 lakh dwelling units to be created therein. Apart from this, Department of Urban Development, Kolkata Metropolitan Development Authority (KMDA) and Kolkata Municipal Corporation (KMC) have formed Joint Venture Companies in the housing sector. Besides, several city based private promoters like the
Bengal Ambuja Realty, Fort Group South City consortium, the Calcutta Metropolitan Group, Surekha Group and others are developing several mega housing and township projects in different parts of the state.

**5.3.7: Education:**

Kolkata has excellent educational facilities at the primary, secondary and tertiary levels with some of the countries top schools and colleges, 3 Universities, 6 engineering colleges and 4 medical colleges.

**5.3.8: Healthcare:**

Several modern hospitals and nursing homes in the heart of the city provide quality health care, mainly set up recently under private initiative. Apollo Gleneagles Hospital, CMRI, BM Birla Heart Research Institute, Fortis Hospital, Woodlands Hospital and Rabindranath Tagore Institute of Cardiac diseases, are all located in the city. Blood Banks and ambulance services are conveniently available. All localities have their own polyclinics and 24-hour chemists.
5.3.9: Hospitality and Travel:

The ‘industrial resurgence’ and the growth of IT sector have naturally increased corporate and leisure travel to and from the city. International airlines, which until recently paid little attention to the city have now started taking Kolkata seriously. Several International airline companies have either started operations from the city or increased their frequency.

The Airport Authority of India has taken up a massive plan to renovate and modernize the Netaji Subhas International Airport in the city. The hospitality industry too has shown signs of growth. Two new five-star deluxe properties have come up in the city in the last couple of years. Several mid-sized ‘Business’ hotels have come up in the city. The growth of the retail sector is highest in the state.

5.3.10: Culture of the City:

Kolkata has long been known for its literary, artistic and revolutionary heritage. Kolkata was the birthplace of modern Indian literary and artistic thought. Kolkatans tend to have a special appreciation for art and literature; its tradition of welcoming new talents has made it a “city of furious creative energy”. For these reasons, Kolkata has often been dubbed as the “Cultural Capital of India”. The city has a tradition of political graffiti depicting everything from outrageous slander to witty banter and limericks, caricatures to propaganda. Kolkata has many buildings adorned with Gothic,
Baroque, Roman Oriental and Indo-Islamic motifs. Established in 1814, the Indian Museum is the oldest museum in Asia and the National Library of India. Is India’s leading public library. Academy of Fine Arts and other art galleries hold regularly art exhibition. The city has a tradition of dramas in the form of Jatra (a kind of folk theatre), theatres and group theatres. Durga Puja is the most important and the most glamorous event in Kolkata. Some of the cultural festivals are Kolkata’s Book Fair, Kolkata’s Film Festival and National Theatre festival. The city is also noted for its appreciation of Indian classical music as well as Bengali folk music such as Baul. In the 19th and 20th century, Bengali literature was modernized in the works of authors such as Bamkim Chandra Chattopadhaya, Michael Madhusudan Dutta, Rabindranath Tagore, Kaji Nazrul Islam and Sarath Chandra Chattopadhaya.

Much is happening in the Eats today, but still remains to be done. The doors to the world are now open.

In this new environment West Bengal, can find its destiny and become the gateway to the East and Kolkata with its main center of attraction.
5.4 URBAN STRUCTURE OF KOLKATA AND THE MULTIPLE NUCLEI THEORY:

For a well over a century, demographers, sociologists and geographers have been trying to understand the spatial structure of human communities influenced by changing transportation and communication technology and growing or declining population, particularly the nature of the centre or centre’s of large metropolitan communities, focusing attention on the nucleus or possible ‘multiple nuclei’ of these areas (Harris and Ullman, 1945). A metropolitan area encompasses those persons and activities intensely “interrelated and integrated with reference to daily requirements” by virtue of their diversity or differences (Hawley, 1950). A metropolitan area performs significant coordinating functions through specialization, usually requiring sufficient population and infrastructure size (Hawley, 1950). According to Hawley (1950), although there may be many subentries within a metropolitan area; “the network of interdependencies in which the several centers of a communal complex are enmeshed, the largest or major centre forms the core (or nucleus). Concentrated there are communication agencies, financial and legal services, and the administrative officers of political, recreational, religious and other services as well as of industry and commerce”. The major or primary nucleus as well as all other nuclei of the metropolitan area is integral aspects of the metropolitan concept i.e. the urban structure of a city. With the population and the areal growth of metropolitan areas over
time, many secondary nuclei have developed, perhaps overtaking the original dominant nucleus. The **Multiple Nuclei Theory** has the advantage of flexibility since it can be applied to most large cities in the world both in the developed and developing regions. As compared to both the **Concentric Zone Theory** and the **Sector Theory**, which is based on the assumptions that the city developed around a single centre, the Multiple Nuclei Theory argues that there may be existing several subsidiary centers and each such centre may act as a growth pole for development. Around such nuclei, land uses that are related or functionally linked will cluster. Thus, in this way a multiple nucleated pattern may develop.

The Multiple Nuclei Theory is most applicable to conurbations where minor towns that have been engulfed by major ones continue to function as secondary foci within the resulting agglomerations. Multiple Nuclei Theory is also found in many colonial cities. This type of city structure is typically represented by **Kolkata**, among other cities of the world.

The general development pattern of settlements within Kolkata Metropolitan Area (KMA), which accounts for more than 1,785 sq km including Kolkata City (197.54 sq km), suggests a strong linear bias along the river Hughli that has served as the spine of this metropolis. Of course, there is a slight variation to this north-south development wherever development has followed railway alignment.
There are subtle variations in the levels of development: these can be divided into 3 broad categories on the basis of physical characteristics alone. First, the core area, or the relatively compactly built-up zone; Second, the intermediate band or the inner periphery zone; and Third, the outer periphery, which is predominantly undeveloped rural land.

The core area has a high percentage of old pucca buildings, and whatever municipal services are available within the KMA are mostly limited to this zone. Slums are familiar feature. Trade, commerce and industry are all concentrated within this core (CBD). The urban problem is acute here and the attention of urban planners has largely confined to this core. While the two municipal administration units of Kolkata and Haora constitute the land core, the other municipalities, or at latest those wards lying between the river and the rail tracks, constitute the extended core of Metropolitan Area. In fact, isolated settlements sprang up in the KMA at different times along the banks of the river in response to religion, commerce and administrative requirements.

From the administrative point of view, the metropolitan periphery consists of vast areas under panchayat, which account for no less than 50% of the metropolitan area. Within this zone, there are two noticeable development patterns. One may called the inner periphery or metropolitan fringe, which is that twilight zone where the
transformation of rural into urban settlement is constantly taking place without conforming to any urban development norms.

In the metropolitan fringe, rural land is being divided into small plots for building and this is the most effective breeding ground for future urban chaos. It is through this process that a crisis of unprecedented magnitude is taking shape on the urban frontier. Every day the urban sprawl is being extended further into the heart of the rural hinterland. This means a few scattered huts or half-finished buildings right in the middle of paddy fields; settlements loosely connected to the main urban concentration, whose inhabitants depend on the urban centre as their primary source of livelihood. Unless this trend is arrested in time, it will eventually engulf the whole Metropolitan District and frustrate attempts of an orderly urban development.

The phenomenon of ‘urban sprawl’ with all its characteristics can be clearly seen in the metropolitan fringe areas. While high prices and exorbitant rents in the core encourage migration from the core to the periphery, there is attraction of small homestead plots to suit every pocket. Thus, the metropolitan fringe provides a suitable place for the vast numbers of urban poor who are gradually pushed out of the old and established urban core of Kolkata.

A map of the city reveals that the densely built up urban areas exist mainly along the N-S transit corridors on both the banks. A cross-
sectional view depicts that the intensity of spatial development extends up to 2-3 miles from the riverbank in the east and west direction, beyond which the population density is low and urban development is of a sub-standard quality. The only exception to this general pattern of linearity are the cities of Kolkata and Haora where growth has bulged over a wider area around the strong metropolitan centre acting as the Central Business District (CBD).

Today, with the rapid increase in population, human settlements have been extending continuously over the marshes and the low-lying areas, in a sporadic manner. This has been causing a tremendous problem in infrastructure construction programmes of the metropolis generally and its drainage system particularly.

It would be evident that Kolkata today, is not merely, what its own municipal administrative jurisdiction indicates. The beginning might have been on a modest scale of a poly nuclear type of development, but has now merged into a gigantic sprawl giving rise to a conurbation causing a spatial explosion beyond control, hence justifying itself with the structure of a multiple nuclei model of city development.
Chapter V

Urban Structure of Kolkata City: A Geographical Analysis

MAP NO. 15
SUPERIMPOSED MULTIPLE NUCLEI MODEL ON KOLKATA'S URBAN STRUCTURE

Key [Multiple Nuclei Model]

1. CBD
2. Whole sale light manufacturing
3. Low class residential
4. Medium class residential
5. High class residential
6. Heavy Manufacturing
7. Outlying business district
8. Residential suburb
9. Industrial suburb
Chapter-V References:

Boone : City and Environment.


Dey Barun : Enquiry on the Distribution of Public Education and Health Services in West Bengal.


Pollution of Kolkata – Articles Data

Pollution Rules over Calcutta- Anupam Halder.


Singh (Savindra) : Environmental Geography (Rep. 2009).

Singh, Pollution to Purity of Environment (2005).

Verma : Air Pollution and Plant Growth.