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Urban Environment Management: A way to stop disaster

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Abstract: In India, since independence, the urban situation has been greatly dominated by the Government policies reflected through urban legislation, urban administration and urban finance. However, the lack of sufficient feedback as a decision support system greatly hampers urban policy making and its analysis. Hence arises the need of an academic interest to find out varied phases of policy formulation and implementation along with the urban growth factors. The present paper records and examines the pattern of management of environmental issues of Guwahati , the prime city of North East Region of India. The objective is to highlight the major areas of concern.

Key words: *population, open space, health , slums ,haphazard*

I. INTRODUCTION

Environmental issues in the city

Environment management in an urban area involves multidimensional issues. It depends on various aspects including the city's locally unique problems. The necessity of the subject can be understood from labeling it as the fourth revolution after agriculture, industrial and informatics[16]. Environmental management functions are always been the part of municipal functions in India. As observed by Charles Billand: In discussing issues of urban environment, it would be wrong to assume that city governments and other agencies in India have not been performing any environment management functions in the past[1] The present enlarged context of urban environment puts categorical emphasis on issues of environment management regarding water supply, land sanitation, industry, solid waste management, pollution control, transportation, congestion.

The urban condition in the city reveals very poor picture of environment management. It is evident from the already described ground realities in respect of water, drainage, garbage disposal, transportation and traffic situation, congestion in the urban structure. The locally unique condition like its physiographic features is a significant factor responsible for environment degradation in the city. The city based non-governmental organizations and environmental groups have drawn attention of the Government and the public towards it. Some of these organizations are – Green Movement, Naturalists Society, Aaranyak Nature Club, The Grahak Suraksha Santha, Save Guwahati, Build Guwahati.

The most pertinent issue is the protection of the hillocks in and around the city as they have been playing key role in maintaining the balance in the overall environment of the city. Large scale destruction of hillocks cause the problem of siltation and flash flood, affect the ground water reserve in the area. The problem of soil erosion and landslide is posing major threats to city's environment. The scale of encroachment on hills by the migrants to the city can be understood by a simple observation. Despite the District Administration's prohibition order on earth cutting the hills in and around Guwahati are showing the sign of depletion caused by the people. The total area under the hills declared as the reserve forests is 26.42 sq. km. and out of these a substantial area is gobbled up by households defacing the surface of the earth and clearance of vegetation. As indicated earlier destruction of drainage system by flashy run off and eroded soils from hills is the most crucial problem. Proper management of these would have turned them into city's aesthetic assets. As observed by Buch :To identify environmentally or aesthetically sensitive areas and to protect them, becomes and prime consideration of city planning[2.]

II. ENVIRONMENT-SENSITIVE AREAS

The City Master Plan-2025, has identified some highly vulnerable regions in and around the city as the environment sensitive zones. One of the most important among them is the hills and the forests. As has already been told, the hills and the vegetation cover on them play a very crucial role in maintaining the ecological balance in the city but due to high intensity of urbanization these areas are under tremendous pressure. Immediate conservation measures should be adopted in these areas with no further urban development and regulating strict norms against the encroachment activities.

The Brahmaputra river flowing at a stretch of 28.67 km within the city is yet another most significant environment-sensitive zones in Guwahati along with some of its tributaries that drains almost the entire city. Bharalu is a small stream rising from the southern range of the khasi hills that falls into the Brahmaputra

collecting a large part of the sewage disposed by the city. The other important natural water bodies in the city are the bills and wetlands. Guwahati had large areas under wetlands before the phase of this drastic urbanization which acted as the reservoirs to store the rain and flood waters maintaining a good balance. But majority of these wetlands have been encroached and concretized to satisfy the demands of urbanization in the city. At present very few such wetlands can be identified in Guwahati region that are active and alive. Dipar Bill is one such fresh water lake in the city that has been declared as a wetland of national importance and has also been proposed as a Bird Sanctuary in the Master Plan for Guwahati-2001. In the CMP-2025, it is proposed to develop the adjoining area connecting the National Highway as Capital Complex and the Bil area to form a natural reserve as extension of the Capital Complex. Some other important water bodies in the city are the Barsola and Sarusola bils, which are the two linear wetland located in the heart of the city; and the Narengi and Silsako bils situated in the Bondajan basin. However, the degeneration of the water bodies and the wetlands is a major crisis in Guwahati as it directly leads to the other associated problems like flash floods, water logging, siltation in wetlands and drains and the depletion of the flora and fauna.

The role of transport as an essential infrastructural sector in determining the trend and pace of city's development process cannot be ignored. But this sector is highly responsible for severe air pollution. In India it is estimated that vehicular emissions alone accounts for about 60% of the total pollution from all sources[3] The rate is much higher in the city, as disclosed by the Chairman of Pollution Control Board :More than 90% of the city's pollution is caused by vehicular emission everyday. More and more vehicles being fitted with diesel engine are much more harmful to the atmosphere than petrol engines.

The vehicular emission survey conducted by Pollution Control Board, Assam in the city showed that the engine conditions of most of the 4 and 1/3 wheeler vehicles were not satisfactory resulting in pollution by automobile emissions. Out of 80 numbers of petrol driven 4 wheelers surveyed by the Board only 25%, and out of 112 numbers of 2/3 wheelers 78% had good engine conditions. It is pertinent to note that the Board's jurisdiction over control of vehicular emission is limited. The District Transport Authority's concern is needed in solving the problem. The Assam Pollution Control Board has been repeatedly attracting the attention of authorities concerned and the public in this regard.

In the context of environmental management in the city we select two crucial areas for study, one the provision for open space and second, environmental improvement of urban slums.

III. OPEN SPACE IN GUWAHATI CITY

In the process of rapid urbanisation the thrust for land for residential and other functional purposes tend to set aside the need of certain qualitative aspects of urban development such as provision for open areas, places for play and recreation. The sound management of these areas can qualitatively improve the city's environment. In this regard, a distinction should be made between the natural and open spaces. The hills and forest, river and tanks, wetlands and swamps, riverine land and grass land and waterlogged areas are the natural open spaces in the city. Apparently these are the physical constraints on development process. They not only restrict city's expansion but also affect its functional efficiency. The parks and recreational spaces enhance the quality of urban environment. The management of former need strategic policy on a wider scale whereas the later demand intensive planning and maintenance. The area wise variation of open spaces indicate the diverse topographic characteristic as forest, waste lands, riverine sand and tanks are unevenly distributed all over the city.

The Brahmaputra river lying on the north of the city offer ample scope for planning a 'recreation zone' with facilities for play land games and cultural activities on the river bank in the background of an enchanting beauty of the hills and the river. The urban planning organisation duly recognized the need of specialized recreational spaces with varied interests for a regional centre like Guwahati in the Master Plan. City Park along Mahatma Gandhi Road (riverside road) was specifically proposed and any other use of the area was prohibited. The area remained under unauthorized occupation for many years. The concentration of barges of Inland Water Transport and other private agencies and their commercial activities disturbed the aesthetic and visual impact of the area. During 1980s the thought of beautification of the area was seriously taken by the District Administration, the Marwary Trust Foundation, a community organisation and the Assam Tourism Department. They took the initiative in the development of two spacious parks in the areas. One, the Sankardeva Udyan and the other Mahabir Park. However, the utilization of the river bank still remains a major issue in respect of developing recreational areas in the city.

The previous Master Plan of the city proposes allocation of 1,430 hectare of land for parks and playground in the city for the year 2001. It constitutes 8.97 percentage to the total developed area. The land use survey of the T&C.P. revealed that only 26.79 hectare of land was under parks and recreational areas. It was only 0.43% to the total development area.

The size of the existing parks ranges from 0.13 hectare to 2.50 hectare. The conditions of the parks were not all satisfactory. The maintaining authorities are changed according to the schemes prepared by authority. However, since the constitution of Guwahati Metropolitan Development Authority, it is maintaining

major city parks. The G.M.D.A. is facing financial loss as the maintenance cost of these parks was raised since it took over the charge of development and maintenance of these parks. The GMDA has already approached some corporate houses for financial assistance for the maintenance of these parks[4]

The sports activities are concentrated on the Nehru Stadium, Maligaon Railway Stadium Judge Field, Sonaram Field, Latasil field, New Field and Union Field. Nehru Stadium with a capacity for 40,000 people and 5.7 hectares of land is the biggest stadium of the entire N.E.R. However, the State Government's apathy has turned this dream organisation of the Region into a dying institution. The state Zoo-cum-Botanical Garden is a major recreational centre catering to the entire Region.

The parks and recreational centre's in the city suffer from certain drawbacks. They are not in conformity with the natural features of the city. Only the location of State Zoo gives a natural atmosphere for the specified purpose. The maintenance of the parks is very poor and therefore these areas serve no significant purpose. Only in Panbazar area the size and therefore these areas serve no significant purpose. Only in Panbazar area the size and maintenance of the parks attract people. All the parks are situated in the main areas under the Corporation. The GMA, outside the GMC area has little provision for parks and recreational center. Recently, the GMDA has built a huge park in Zoo Road area which serves important purposes of open space. However, as the area is prone to frequent flood construction of a huge tank, like the Dighalipukhuri in the old city, would have served a solution to the problem of water-logging.

IV. ENVIRONMENTAL IMPROVEMENT OF SLUM AREAS IN THE CITY

Proliferation of urban slum is a characteristic feature of India's migration urbanization system[21]. This indicates massive poverty induced migration from stagnated villages to towns and cities. The T&C.P. Organization of Assam offers following explanation on the growth of slum:

Slums are the settlement of urban poor. As the demographic pressure on towns and cities grows, the needs of urban infrastructures and services also increase. This very problem is further compounded by increasing concentration of poor in the towns and cities.

The carrying capacity of the urban local bodies in respect of urban amenities and services thus decline. As a result, some areas of towns and cities are being deprived of basic civic amenities and these overcrowded under serviced areas of urban conglomeration, thus turned into slum. These settlements i.e. slum pockets lay their very nature need minimum basic services like adequate water supply, hygienic sanitation, scientific drains, electricity, housing etc. in order to improve the environmental conditions of the town/city as a whole.[5]

In the city of Guwahati growth of slum pockets was a result of concentration of beggars, sweepers, cobblers, street vendors, rickshaw and cart-pullers and day-labourers in certain distinct areas of the city. There areas were river bank from Bharalumukh to Uzanbazar, below the over bridges and areas along the railway lines. However the District Administration takes initiative in driving out such concentration from river bank and in areas below the overbridge from time to time.Large-scale encroachment on Railway land is an usual phenomenon. The railway authorities carry out eviction drives, N.F. Railway authorities disclosed that nearly 60 hectares of railway land is under encroachment in the greater Guwahati. However a simple observation of the railway tracks that go right through the city proves this estimate as a conservative one. The District Administration and the railway authority must carry out joint operations with specific plan to prevent the encroachers from grabbing the land again and again. The areas near railway tracks can be termed as lucrative zone for unauthorized occupation and it demands preventive measures.

The Government of India launched the programme of Environmental Improvement of Urban Slum (E.I.U.S.) under point number 15 of the 20 point programme. The Union Ministry of Urban Affairs and Employment is the nodal ministry in this regard. Under this programme the Govt. of India's schemes for slum improvement are implemented in the states. In Assam the T&C.P. acted as the nodal organization for implementation of measures for improvement of slum. In this category not preventive or eviction drivers are initiated, but positive steps are taken for the betterment of urban poor. In 1977-78, 17 slums were identified by the T&C.P. Deptt. Among them 7 were bigger and prominent and 10 were smaller slums. In 1978 the total number of slum dwellers was estimated to be 30,670 which rose to 62.500 in 1981. It was 12% of the total city dwellers.

The town & Country Planning initiated developmental works like construction of drains, improvement and widening of roads, street lightening etc. The schemes were carried on through the Guwahati Municipal Corporation under E.I.U.S. programme. The smallest slum pocket, Rajabari Harijan Colony Uzanbazar had an area of 5.00 sq. km. with 689 number of population. Hedayatpur slum pocket had 3298 number of population only in 8.08 sq.km. in the central area of the city. A T&C.P. survey made in the city during the year 1992 excluded 7 slums from the list of previously 17 slum pockets. The report prepared by the T&CP District Office – Guwahati in the year 1992 showed that total population of the slum areas was 27,922 of whom 16,955 were males and 10,967 were females. Since 1970s haphazard mushrooming of industrial units, market places and new settlements have made Guwahati a congested city with problems of transportation, water supply, electricity and

environmental degradation posing serious health hazards. At the same time, there, is a rapid burgeoning of slum clusters in the city and in the peri-urban areas.

The dwelling units in slum areas, mostly unauthorized occupation of government land in the adjoining hilly regions, are built of thatch and they break down during the wind storm months of April-May and again during the heavy monsoons (June-August). The uneven terrain in these areas makes reach difficult. Particularly striking is the absence of water supply and medical facilities. In the plain areas, the slums are distinguished by congested poorly built shelters occupying low-lying land. These areas have near-permanent clogging of drains due to excessive siltation, and lack proper sanitary and drinking water facilities. Some of these slums have primary health centers in their vicinity but these seldom function and when they do, they operate for two or three hours in the morning when most of the slum dwellers are out working.

The present scenario reveals the following facts:

- No documentation of slum population. Existing figures are ad hoc, culled out of voters list;
- Areas like hilly areas not included in census
- Guwahati Municipal Corporation does not have proper infrastructure for health services in the slums
- No evidence of specific organization focusing on urban health problems, including UNDP funded Urban Basic Services Project in the outreach areas visited
- Under utilization of existing public infrastructure
- Acute seasonal problems – outreach particularly difficult during monsoon season. Physical access to many areas a huge problem during heavy rains,
- 75% migrant/floating population – compliance difficult
- Tribal women – particularly vulnerable to diseases
- Most people suspicious of programs– related to promoted health measures.

Majority of the slum population comprise daily wage earners (construction workers, domestic help, rickshaw pullers and vegetable vendors). Almost 75% of this population residing in the plain areas is migrants (from Bangladesh, Bengal and Bihar). They are a shifting population which makes it particularly difficult to ensure sustained compliance to health services. Almost 60% of the slums in the peri-urban, hilly areas are inhabited by tribal groups.

According to an obsevation, almost 72 % deliveries in these slum areas were conducted at home. Immunization rates were particularly poor. Only 43% children in the city in the age group 1-2 years were covered with complete doses of immunization and in slum areas total coverage was only 31%. Almost 40% of children were without a single dose of vaccination. There was a conspicuous lack of medical services for these people.

The main thrust of the programs envisaged under the, slum improvement therefore, must be designed to address gaps in service delivery by providing appropriate services to improve maternal and child health in these slum areas.

Table : 1 An overview of the approximate ethnic composition of each slum

1	Itabhatta	Bengali Muslim, Bengali Hindu
2	Harijan colony (Fatasil Ambari)	Biharis, Bengali, Assamese
3	Garchuk	Tribal - Bodo, Karbi, Garo
4	Datalpara	Mixed – Bodo, Karbi, Assamese non-tribal
5	Kotabari	Mixed – Bodo, Karbi, immigrant Muslim, Assamese
6	Gansehpara	Mixed population- tribal, non-tribal
7	Nepali basti	Bihari, Nepali, Assamese, Bengali
8	Udal Bakra (Suhash Colony)	Bengali
9	Dhirenpara	Muslim, other mixed populations
10	Jyotikuchi	Mixed: Tribal, non-tribal **(**Assamese, Bengali Bihari)
11	Adagudam	Bihari, Assamese, Bengali
12	Dakhingaon	Manipuri
13	Deosotal (Meghalaya-Assam border)	Tribal
14	Betkuchi	Tribal (Karbi), Assamese non-tribal

Source : T&CP, Guwahati

The infrastructural facilities of the slum areas are not satisfactory. The T&CP survey reveals that the housing conditions of the slum pockets are deplorable as the houses are unplanned and there is no adequate air and light. More than half of the houses do not have a strong structure. In the Harijan Colonies there are R.C.C. structures built by G.M.C. but due to lack of maintenance and renovation pose a threat to the occupants. The existing roads, drainage and sanitation systems need proper improvement schemes for better environmental conditions. T&CP Deptt. suggest installation of deep tube well in each slum pockets as water supply is not adequate in these areas. It observed that 60% of the slum dwellers collect water from road side municipal tapes, 10% have their own tapes and the rest 30% get water from sources like tube well or ring well. The dearth of recreational facilities in the areas is quite distinct. Moreover in the absence of government lands is the slum areas the provision for such social benefits are difficult to make.

With the increase of population in the city more areas have been acquired by people for habitation creating poor environmental condition in many areas. The EIUS programme under the T&CP accordingly has been extended to more areas. The Table – 2 shows number of households in the 17 number of pockets identified in 1977-78 and the newly identified 11 numbers of pockets. The pockets have been extended with increase in number of household then in 1992. In the T&CP Report prepared in 1996 the total number of households of the 21 numbers of slums in the city has been shown as 10, 213. The low sex ratio is a continuous feature and indicates the impact of migratory population on growth of slum in the city.

Table : 2 Number of households in the slums

Sl. No	Name of the Slum Pocket	Total No. of Households	Sl. No.	Name of the Slum Pocket	Total No. of Households
1	Rajabari	235	12	Paltanbazar Harijanbasti	365
2	Athgaon	577	13	Gandhibasti	298
3	Manipuribasti	568	14	Bimala Nagar	412
4	Fatasil Harijan Colony	624	15	Kumarpara	503
5	Bishnupur	637	16	Dhirenpara	620
6	Tokobari	599	17	Barnachal Madhuban	160
7	Marisali Solapur Harijanbasti	418	18	Hatigaon Sijubari	1580
8	Islampur Hedayatpur	858	19	Birubari	
9	Kacharibasti	511	20	Gauhati University Harijan Colony	372
10	Lakhtokia	378	21	Krishna Nagar	212
11	Santipur (West)	450		Total	10,213

Source : T&CP, Guwahati

V. CONCLUSION

The cities in developing countries need special attention in the matters of urban poor residing in slums. In our context there is sufficient scope to address the issue before it takes a serious turn. Urban exclusion process is going to pose a serious threat to the idea of inclusive growth in subsequent generation of urban development policy. In Guwahati the rapid flow of population is creating a threat to the growth process which is highly sensitive for protection of its physiographic setting.

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