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## Assessment of Living Environment: An Analysis of Kolkata Slums

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### ABSTRACT

*The present existence of slums is a reality which cannot be denied. More than one million people live in slum areas without access to basic needs; adequate sanitation, water supply, durable housing, adequate living space and secure tenure. The lives in the slums of Kolkata are matchless as the city itself is matchless among the other metropolitan cities of India. Pressure of population and high price rise make the lives of people in the slums very difficult. There are approximately 7000 notified and un-notified slums in and around Kolkata. Studies of living environment are becoming more relevant for inclusive growth of society and country. This paper presents and discusses primary data from a survey of 200 households of different slums of Kolkata. The study attempts to examine the quality of the living environment in slums of Kolkata. For determining the quality of the living environment in slums, composite and standard deviation techniques have been used.*

**Keywords:** Environments, slums, standard deviation, living space, sanitation

### INTRODUCTION

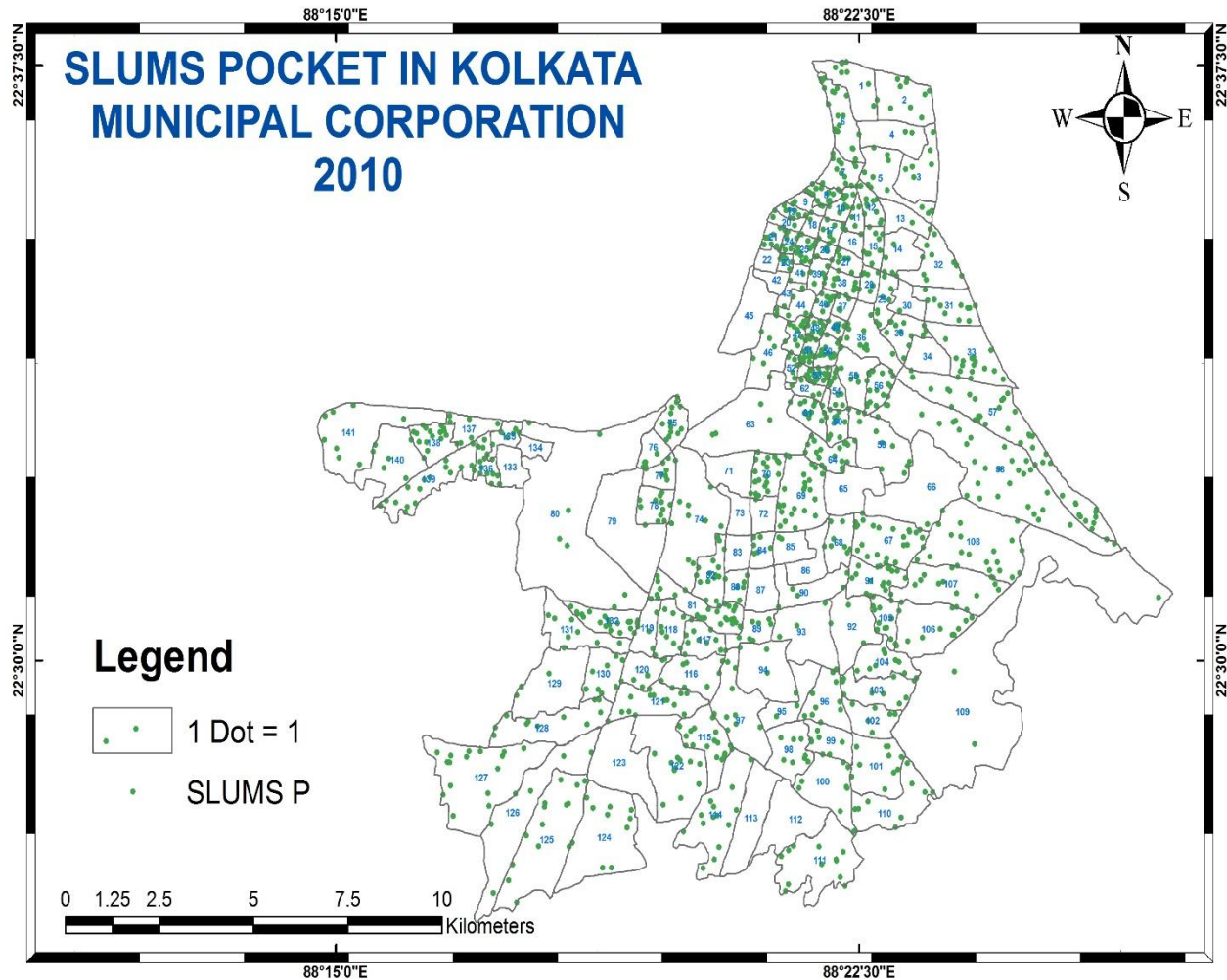
Slums are densely populated and neglected parts of cities where housing and living conditions are exceptionally poor. Varying in nature, from central city tenements to spontaneous squatter settlements at the edge of cities, slums are the product of unplanned urbanization and are responsible for degrading the quality of living environments for their residents (UN Habitat 2003).

The slums of Kolkata can be divided into three parts, the first one is almost 150 years old and is located in the heart of the city which is associated with the early urbanization of the city. Second parts were created during the 1940s and 1950s due to rapid rural to urban migration. Those people located themselves around industrial sites and near infra-structural arteries. The third part came into being during the time of partition of India and later during the formation of Bangladesh. They illegally occupied vast urban lands and areas along roads and canals. In Kolkata Municipal Corporation total slum population is 14,09,721 of which 52.54% are male and 47.45% are female which contribute 31.35 percent of the total population of Kolkata. The decadal growth rate of slum population is 5.08 in 2011. According to KMC report 2001, there were about 2011 registered and 3500 unregistered slums existing in all the 141 wards within 15 boroughs under KMC. In Kolkata slums are primarily classified into two categories: (a) registered or authorized or notified (mainly bastis) and (b) unregistered or unauthorized (mainly squatters).

The magnitude of slum population demanding attention has enlarged from about 33.1 million in 1985, to over 35 million in the early 90s and to over 40 million in 2001 (Mallick, 2001). The

rapid growth of slums and squatter settlements has largely contributed to the social, economic and environmental problems in urban areas. The various philosophies which can be adopted for development, particularly human development are highly correlated with quality of life (Singh, 2009).

Fig: 1 Population of slums



## METHODOLOGY

The study is based on secondary as well as primary data. Secondary data are collected from Census and District statistical handbook. Primary data are collected through an interview schedule by field survey of 200 households of randomly selected slums (Brace Bridge Road, E M Bye pass Kalkapur 10 /13 Bechulal Road, 39/8 15 UpenBenerjee Road) in Kolkata in the month of April, 2016. For determining the Quality of living environment in slums Composite Index and Standard Deviation techniques have been used. To calculate the composite index 8 variables were chosen to determine QLE. Statistically each variable was powered with X1, X2 etc. Reasonable weight ages was assigned to each variable. Composite Scores of all variable are taken as X value and Mean value is calculated. After that SD value is calculated.

## OBJECTIVE

The study was undertaken with following objectives:

1. To determine and examine the Quality of living of environment of different slums of Kolkata.
2. To examine the consequences of socio-economic and environment that affect the living environment of slums.
3. To suggest inclusive measures to urban planning for improve the Quality of living environment in slums.

## STUDY AREA

Kolkata earlier known as Calcutta, is the capital of the state of west Bengal in India. It cover an area of 1851 sq.km with population of 14.72 million as per census 2001. However, the study of Kolkata in this paper is limited to only the Kolkata Municipal Corporation (KMC), the more urbanized heart of KMA due to paucity of available data for the entire KMA .With an area of 185 sq.km, the KMC is divided into 15 borough and 141 wards. It is located on the eastern part of India at 22°28'N to 22°58'N latitude to 88°10'E to 88°27'E longitude spread on the north south direction along the east bank of Hoogly River. The elevation of KMC area ranges from 1.5 to 9.0m above mean sea level. It has a tropical wet dry climate with annual mean temperature and rainfall is 26.8°C and 1600mm respectively. This area is mostly cover by alluvial types of soil. The KMC has total population is 4486679 person, of which 2362662 are male and 2124017 are female. The decadal growth rate is -1.66 with average density is 24306. Sex ratio is 908 and average literacy rate is 86.31%. The population are mostly belong to Hindu and Muslim community.

## RESULT AND DISCUSSION

One in six urban Indians lives in slum housing that is cramped, poorly ventilated, unclean and unfit for human habitation. The situation is also worst in urban areas of developing country, where one quarter of housing units are flimsy structure. The type of houses basically depends upon the geographical environment as well as economic and social structure of the people (Sahay, 2006). A disgraceful picture exist in sample region, where all of the sample slums dominated by semi-permanent and flimsy housing structure. Out of total sampled surveyed 61 per cent houses have permanent structure, 24.5 per cent have flimsy and remaining 14.5 per cent have permanent structure. EM Bye pass and Bchulal Road slums had more permanent house than other two slums whereas highest concentration of flimsy structure houses found in Brace Bridge Roadslums.

Electricity is one of the parameter which reflect the quality of living environment in slum areas. Regarding this parameter it is found that 74% of sample households in slums used electricity, while 26% household used kerosene as a source of lighting. It is also observed during the field visit that a small proportion of household had no legal connection. More than 80 per cent

household has connected with electricity in EM Bye pass kalikapur while slum households in Bechulal Road has lowest connection with electricity.

Regarding this as a parameter of the measurement of quality of life, it has observed that Kerosene oil has used as a source of major fuel in the most slum dwellers in all the four slums area. LPG is used by the about 30 per cent of the sample household. Though much of them have not got LPG connection, they use the small cylinders of 2 kg and 4 kg which are brought from local market. Due to lack of space in the house a little proportion of households used tradition chula.

Access to safe water is essential for quality of life. The sample survey highlighted that 67.5 per cent households used Corporation tap for drinking water while residents of slum areas use water of hand pump, while 32.5 per cent used tube well for their potable drinking water. However, it is maintained by majority of households that long hour of waiting in the long queue and frequent quarrel with other others family is a day to day feature in their life.

According to WHO, nearly two-thirds of urban population in developing countries do not have adequate sanitation - they lack a flush toilet, a sanitary latrine, or a pit that can be covered over. It is not only important for healthy living but also ensuring a non-polluted environment. The majority of sampled households had poor sewage disposal facility. The condition of Brace Bridge and Bechulal Road is very worst where more than 60 per cent of sample households had poor sewage facility.

Domestic wastes form the bulk of all sources of solid waste which include organic and non-organic materials, polyphone bag, and variety of plastic bottle, glass etc. Disposal of fecal matter also included the main ingredients of solid waste. The study reveals that 30.5 per cent households of slum dwellers dispose garbage in pit, 16.00 per cent have no particular place of dispose. About 53.00 per cent slum dwellers household take it to the collection point where it remain uncollected, the risk to health from the existence of these sites is potentially high as the waste can remain uncollected from long times. Particularly during rainy season, run off and high humid condition increase the health hazards. Open dumping garbage serve as a breeding ground for diseases vector such as flies, mosquito's cockroach's rat and other pets. High rick of spreading diseases like typhoid, cholera, dysentery, yellow fever, plague and dengue fever may not be ruled out.

The slums present the worst forms of health conditions. Their deplorable environmental and economic conditions result in malnutrition among children. Infant as well as maternal mortality rates were very high in the slums. Due to poor hygiene conditions people died of hepatitis, encephalitis, typhoid and rabies. The incidence of respiratory diseases like fever, viral infection, tuberculosis, skin diseases, diseases of the kidney and urinal diseases were high in the slums (Kundu, 2003). Around half the urban population in developing countries is suffering from one or more of the diseases associated with inadequate provision of water and sanitation (DFID, 2001). So medical facility is a significant parameter of measurement of quality of living environment in slums. More than 40 per cent people prefer cog doctor for their clinic because it is easily available within in the slums. The conditions of medical facility in UpenBanarjee Road is something better than others three slums.

Education is one of the important indirect variables affecting socio-economic and demographic (fertility, mortality, marriage, migration) behavior as well as participation in the labor force of a

population. The slums are generally educationally backward. Due to their poverty, majority of the slum dwellers are unable to take the educational facility. The highest percentage of literacy rate (68%) found in in Bchulal Road whereas lowest percentage of illiteracy rate (48%) found in Brace Bridge Road.

### LEVELS OF QUALITY OF LIVING ENVIRONMENT OF SLUMS

To define the level of quality of living Environments of Slums, a measurable analysis of data has been done. Totals of all the variables have been taken. A composite score has been calculated by adding up the total of all the variables for different slums separately. The mean value of composite score is **14.74** with standard deviation = **1.226**

Table: 1 Selected Variables for Quality of Living environment of slum dwellers of Kolkata and their X value

Variables	Parameters	Indicators	Weightage value	Brace Bridge Road		E M Bye Pass Kalkapur		10,13 Bechu Lal Road		39,8,15 UpenBen erjee Road	
				% of HH	X value	% of HH	X value	% of HH	X value	% of HH	X value
X1	Housing Condition	Permanent	3	10	0.3	20	0.6	20	0.6	8	0.24
		Semi-Permanent	2	60	1.2	52	1.04	62	1.24	70	1.4
		flimsy	1	30	0.3	28	0.28	18	0.18	22	0.22
X2	Source of Lighting	Electricity	2	70	1.4	82	1.68	68	1.36	76	1.52
		Kerosene	1	30	0.3	18	0.18	32	0.32	24	0.24
X3	Type of Cooking fuel	LPG	3	30	0.9	40	1.2	20	0.6	35	1.05
		Kerosene Stove	2	50	1	50	1	50	1	55	1.1
		Traditional Chula	1	20	0.2	10	0.1	30	0.3	20	0.2
X4	Type of Access Drinking water	Municipal tap	2	72	1.44	80	1.6	48	0.96	70	1.4
		Tube well	1	28	0.28	20	0.2	52	0.52	30	0.3
X5	Sewage Disposal facility	Average	2	56	1.12	36	0.72	40	0.8	55	1.1
		Poor	1	44	0.44	64	0.64	60	0.6	45	0.4

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X6	Disposal of Garbage	fixed Place	3	28	0.8 4	30	0.9	24	0.7 2	40	1.2
		Pit	2	60	1.2	50	1	64	1.2 8	40	0.8
		Other Area	1	12	0.1 2	20	0.2	12	0.1 2	20	0.2
X7	Medical facility	Government Hospital	3	42	1.2 6	45	1.3 5	40	1.2	50	1.5
		Private Clinic	2	52	1.0 4	44	0.8 8	40	0.8	45	0.9
		Other Area	1	6	0.0 6	11	0.1 1	20	0.2	5	0.0 5
X8	Education	Literates	2	52	1.4	60	1.2	65	1.3	68	1.3 6
		Illiterates	1	48	0.4 8	40	0.4	35	0.3 5	32	0.3 2

Table: 2 Composite Score

Name Of Slums	X1	X2	X3	X4	X5	X6	X7	X8	X	X-X	(X-X) <sup>2</sup>
Brace Bridge Road	1.8	1.7	2.1	1.7	2	2.16	2.36	1.5	15.32	0.58	0.336
Em Bye Pass Kalkapur	1.92	1.86	3.2	1.8	1.36	2.1	2.34	1.6	16.18	1.46	2.131
10,13,Bechu Lal Road	2.02	1.68	1.9	1.48	1.4	2.12	1.3	1.65	13.55	-1.17	1.368
39,8,15upen Benerjee Road	1.88	1.76	2.35	1.72	1.55	2.2	2.45	1.00	13.91	-0.81	0.656
<b>Total</b>									<b>58.96</b>		<b>4.491</b>

Table: 3 Levels of Quality of Living Environment in Slums of Kolkata

Level of Living Environment	Statistical Value	Composite Score	Name of Slums
Good	SD +2	15.94 - 17.17	E M Bye Pass Kalkapur
Medium	SD +	14.74 - 15.94	Brace Bridge Road
Poor	SD -	13.49 - 14.74	10,13 Bechulal Road
Very Poor	SD -2	12.26 - 3.49	39,8,15 UpenBenerjee Road

The measurement of data is fully justified and four level of quality of living environments have appeared. The EM Bye Pass Kalikapur slum adores a good quality of living environment. The Brace Bridge Road slums have medium quality of living environment and the conditions of these

slums are better than Bachulal Road and Open Banerjee Road slums. Some basic facilities such as drinking water facility, housing conditions are better than other slums. The Bechulal Road slum has low quality of living environment. The basic amenities and facilities are very poor in this slum. The situation is foulest in Open Banerjee Road slum. The medical facility and drinking water facility are inadequate in this slum. Though four levels of quality of life have been achieved, the condition of slums is very poor.

## CONCLUSION AND SUGGESTION

From this study it has concluded that low and very low quality living environment exists in the slums of Kolkata. The housing, literacy and medical facilities are poor, the lack of proper waste disposal facility and poor sewage system leading to pollution and health related problems which affect the socio-economic setup of the city. For this, there is a need of strengthening the role of Government, NGO's and private sector for inclusive planning in slum areas. Finally, there is a need of holistic work to understand the above mention issues at city level as well as to analyze linkage among proliferation of slums.

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