

# IMPACT OF RURAL-URBAN-FRINGE OF INDIAN CITIES: A CASE STUDY OF RAJARHAT NEW TOWN AREA, WEST BENGAL, INDIA

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**ABSTRACT:** *Fringe belt is a dynamic area which fluctuates in span of time. It continues shifting outward from the city the diffusion of urban development in the surrounding area. From last 20years Rajarhat Newtown has been grown by planning way and many village mouza has shifted into township area. Previous fringe area has been shifted towards more interior village from city. One side, Rajarhat Newtown effects on shifted fringe area and other hand inner and outer fringe area have been affected to city region. But a rural urban fringe area mainly effected by city or town by modernisation, development, and good service to every inhabitant. It is found that the expansion of the city mainly towards the east, north-east and south-east and south direction especially depends on urban planning area. Here some of the methods have been examined which were used in the impact of rural-urban fringe of the different cities and towns of India and abroad.*

**Keywords:** *Rural Urban Fringe, Land Use, Demography, Social Environment, Economic Impact*

## I. INTRODUCTION:

The mixed characteristics zone of rural urban area is rural-urban fringe. The term rural-urban fringe was first used by T. L. Smith in 1937 to signify the discontinuous built-up area just outside the corporate limits of Louisiana City. Subsequently the concept 'rural-urban-fringe' was developed by Robin. J. Praor in 1968. The world rural-urban-fringe is constituted by the world's rural, urban fringe. Rural is a common world denoting world village or country side. Urban is used as related to cities and fringe is used as an outer edge or periphery area. Rural urban fringe is a complex zone a periphery of a growing urban area. Rural-urban fringe is a zone rather a boundary. Rural-urban fringe is a zone rather a boundary. In Indian scenario, M. Hossain (2007) explained that the rural-urban fringe is an area of mixed urban and rural population and land use, which begins at the point where agricultural land use appear near city and extended to the point where village have district urban land uses or where some persons, at least from village community commute to the city daily for work or other purpose. Rural-urban differentiation can be examined in several aspects, for examples, occupational differences, landuse difference, environmental differences, differences of house type and buildings, differences in the density of population, difference in social mobility and migration and differences in social interaction and stratification.

## II. LITERATURE REVIEW:

The study of the available literature reveals that most of studies regarding rural-urban fringe appeared during the period from the mid 1940s to the beginning of the 1960s, in which attention was mainly focused on the physical delimitation, identification and the defining features of the fringe. The term fringe was introduced by smith (1937) to describe built-up area just outside the corporate limit of the city "through the word, 'rurban' as synonymous to fringe was used by Gaplin as early as in 1915 for 'rural' land in process of conservation to 'urban'. Smith's definition was mainly concerned with demographic characteristics of the area; therefore, it presented a general rather than a specific conceptualization of the fringe. Later on, Salter, (1940), in his excellent study "The Rural-Urban Fringe" defined the fringe as a mixture of land uses that are related to farming and urban interest..... Rao (1970) in his paper " a rural community on the Delhi Metro Fringe" distinguished three kinds of situations of social change in the rural area resulting from urban influences (villages near an industrial town, village with a number of emigrants seeking for employment in far-off cities and villages of an expanding metropolitan city). Rao has shown in his study how the different social changes are case from Yadavapur then the fringe village found outside the built-up suburb of Delhi.

## III. SELECTION OF STUDY AREA:

To the agenda for research, the first effort has been set forth as the identification of the area. The area is extended between 22°21' N to 22°35' N latitude and between 88°17' E to 88°28' E longitude. It is bounded by Barrackpur-II CD block innorth-west, Barasat-II CD block in north, Bhangar-II in east, south-east and south portion of Saltlake city in west. This township covers an area of 28 sq km (11 sq mile) and is located in Barasat sadar division in north 24 parganas district, West Bengal.

Rajarhat is one of the most fertile areas of West Bengal. Leaving aside some region used for habitation, most of land had been producing three to four crops an area. This land was irrigated by the Keshtopur, Bagjola and three other canals adjacent to them. This fertile land was captured by Chief Minister of West Bengal Buddhadev Bhattacharya in 1990. Rural-urban- fringe area of Rajarhat New Town has been taken a new shape after changing land use of this area.

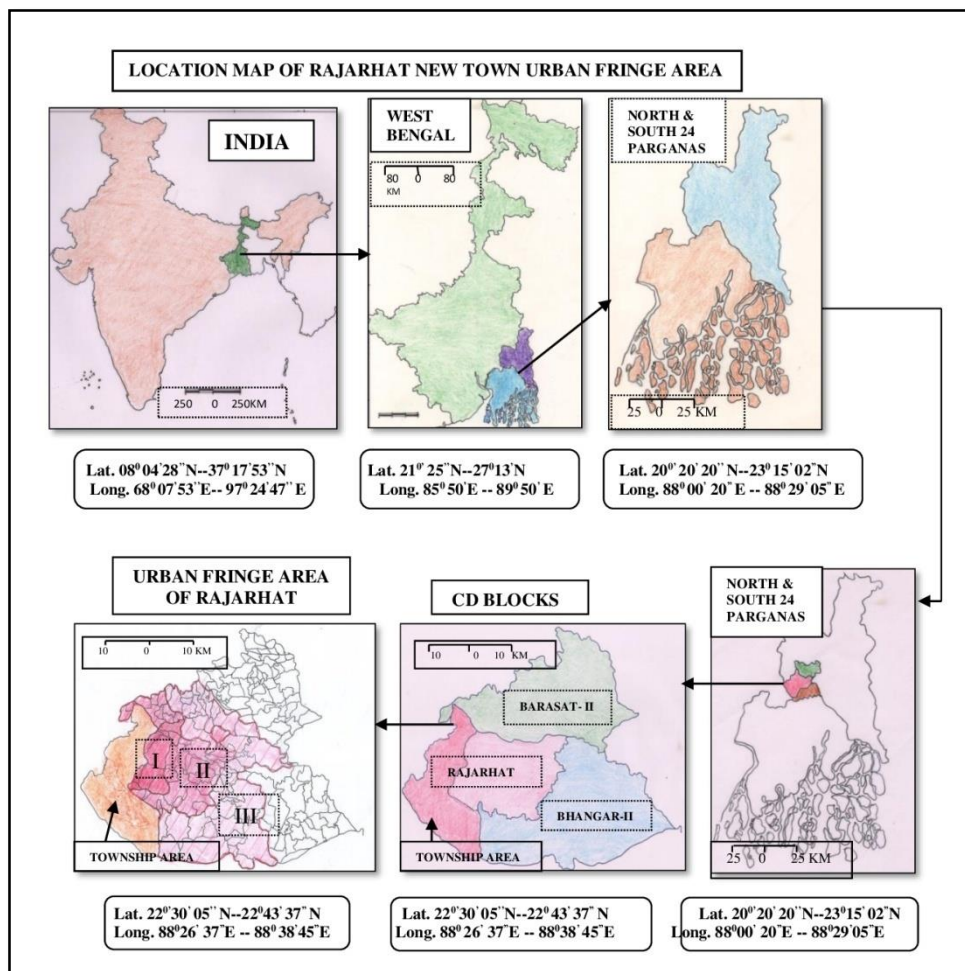


Fig.-1: Location map of study area.

Source: Orient Longman, Google Map and District Census Handbook, North & South Twenty Four Parganas-2011

#### IV. OBJECTIVE:

- i. To identify the changing land use pattern of study area.
- ii. To identify the difference of socio- economic structure of rural urban fringe area.
- iii. To delineate the political influence and social amenities of study area.

#### V. METHODOLOGY:

Methodology refers to a set of principles and processes by which aims and objectives are perceived. It is a technique which is followed to prove a hypothesis. To fulfil the objectives of study a sound methodology has been devised to study demographical and occupational structures, land use variables, socio-economic transformations, accessibility variables and political influences of Rajarhat New Town and adjacent villages.

The secondary data have been borrowed from various government and semi government offices of districts, panchayet office (tehsil) and block level. The census data and other records are used to get more authentications and to present demographic and economic structure. Information on land use is taken from existing maps, remote sensing maps and field mapping as well as from agricultural land records by mouza map; newspaper articles and reported detail about the situation in the research area also used and will be frequently cited in the text. On other hand primary data is collected through personal field work.

#### VI. LAND USE:

Human use of land resources five rise to "land use" which varies with the purpose it serves, whether they are food production, provision of shelter, recreation, extraction and processing materials, and soon, as well as the bio-physical characteristics of land itself. Hence land use is being shaped under the influence of two broad set of forces-human needs and environmental features and processes. Neither one of these forces stays still; they are in a constant state of flux as change is the quintessence of life especially in urban area where concentration of human being is highest.

Land covers denote the physical and biotic character of the land surface and are studied largely by natural scientist (Meyer and Truner, 1992). Land use is a synthesis of physical, chemical and biological system and processes on the one hand and human or social process and behaviour on the other (singh, 1991). The natural features and manmade constructions which occur on the earth's surface counts as land cover while as the land use is the manner in which human beings employ the land and its resources (Lambin et al.,2001).

Worldwide , the level of urbanisation is rapidly increasing and metropolitan areas are going fast, creating extensive land use changes and urban spatial expansion, in 2005, a total billion of 3.2 billion people were urban dwellers, accounting for 48.7% of world population United Nation Population Division (2005). Population growth is particularly rapid in the urban areas of developing countries.

Rajarhat Newtown is the new planning city of West Bengal near Kolkata. The rural urban fringe of the city covers an area of 131.56 sq km with a population 4, 49,743persons in2011(Indian census). The rural-urban fringe area of Rajarhat Newtown area covers in a plain region and mainly extended north, north-east, east, south-east and south direction of Rajarhat Newtown.

Land use pattern (in Villages)									
Zone	Dist. from Rajarhat	Area under agricultural uses		Area under non-agricultural uses		Cultivable waste		Forest	
		Area in Hectare	In %	Area in Hectare	In %	Area in Hectare	In %	Area in Hectare	In %
I.	<5 km	7.5	10.55	63.6	89.45	00	00	00	00
II.	5-10 km	3539.8	51.42	3201.5	46.52	140.3	2.03	2.1	0.03
III.	> 10 km	8883.7	71.63	3313.2	26.71	205	1.66	00	00

Table 1: Land use pattern of villages in fringe area  
Source: Census of India, 2011

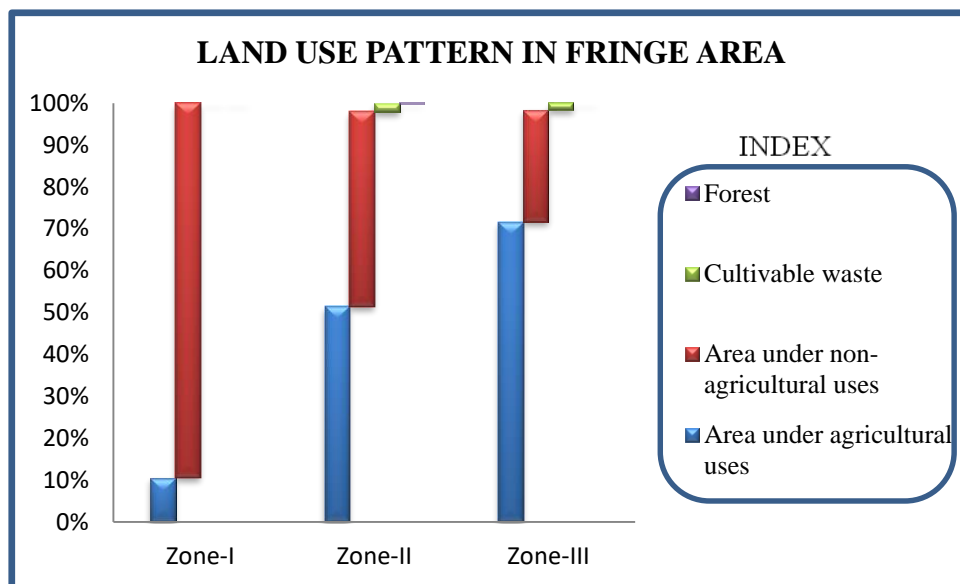


Fig.-2: Land use pattern of fringe area  
Source: Table no. 1

**Zone-I (<5km):**

The rural area is 10.55% covered by cultivated land and 89.45% covered by non agricultural uses. Only one village of Rajarhat CD block is located in zone- I. There are maximum areas are used in commercial and residential purpose from last two decade land has been changed from agricultural activities to non-agricultural purposes.

In zone-I, three census town (2011) are the located, which are all under Rajarhat CD block. There are maximum land, near about 99% of total land are used in residential, commercial, open space, ecopark, market and shopping complex, roads etc purpose. Only 1% land used agriculture purpose.

**Zone-II (5-10km):**

Zone-II is supplier area of Rajarhat Newtown area. 54.42% of total land (3539.8 hectare) are used in agricultural purpose, 46.52% is used in non-agricultural purpose. Different small factories are located here. Some government and private agencies have taken land by using land requisition policy, 2.03% and 0.03% of total lands are covered by cultivable waste and forest area respectively.

Seven census towns are included in zone –II, six town is in Rajarhat CD block and only one town is located under Barasat-II CD block. There are near about 95% of total area are used in non-agricultural purpose and remaining part of lands are used in agricultural purposes.

**Zone-III (>10 km):**

Zone- III is outer rural-urban fringe area of Rajarhat Newtown. This area is called the agricultural production zone; there is no census town in area. 77.63% of land (8883.7 hectare) are used agricultural used, 26.71% of land used in non-agricultural purposed and remaining 1.66% of land is used in cultivable waste.

Vegetables, Cereals, Pulses, Fruits, Sugarcane, Oil seeds, Jute, Fish are practiced at all time in a year.

**VII. OCCUPATIONAL STRUCTURE:**

One of the important attributes on which the impact of a city may be markedly discernible in the occupational structure of the cities seems to be changing their character more conspicuously than those situated away from it. Higher percentages of non-agricultural worker force in inner fringe area. The land use patterns have been changed due to urban planning and extension. Maximum percentages of non-agricultural worker live in the outer fringe area.

Occupational Structure (in Villages)									
Zone	Dist. from Rajarhat	Cultivator		Agricultural labour		Household industry labour		Other worker	
		No	In %	No	In %	No	In %	No	In %
I.	<5 km	11	1.89	03	0.52	03	0.52	565	97.07
II.	5-10 km	2054	7.44	1993	7.22	892	3.24	22656	82.10
III.	> 10 km	13333	25.04	12310	23.12	1667	3.13	25939	48.71

Zone	Dist. from Rajarhat	Agricultural worker		Non-agricultural worker	
		No	In %	No	In %
I.	<5 km	14	2.24	568	97.59
II.	5-10 km	4047	14.66	23548	85.34
III.	> 10 km	25643	48.16	27606	51.84

Table 2: Occupational structure of villages in fringe area

Source: Census of India, 2011

Occupational Structure (in Census Town)									
Zone	Dist. from Rajarhat	Cultivator		Agricultural labour		Household industry labour		Other worker	
		No	In %	No	In %	No	In %	No	In %
I.	<5 km	33	.20	81	.49	442	2.68	15904	96.63
II.	5-10 km	361	1.86	621	3.20	595	3.07	17803	91.87
III.	> 10 km	No town formed according to census, 2011							

Zone	Dist. from Rajarhat	Agricultural worker		Non-agricultural worker	
		No	In %	No	In %
I.	<5 km	114	0.69	16343	99.31
II.	5-10 km	982	5.06	18478	94.94
III.	> 10 km	No town formed according to census, 2011			

Table 3: Occupational structure of towns in fringe area

Source: Census of India, 2011

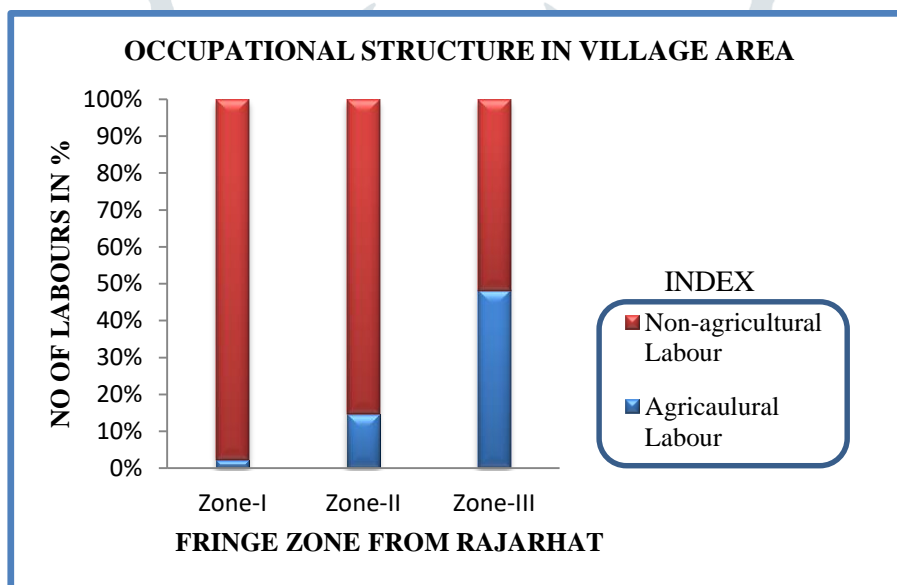


Fig.-3: Land use pattern of fringe area

Source: Table no. 2

In the villages of inner fringe area (Zone-I) of Rajarhat Newtown 2.24% of agricultural worker who are belongs in 1.89% as cultivators and 0.52% as agricultural labour. Maximum people are engaged in non agricultural works, who are 97.59% as non agricultural workers of total workers engaged mainly as labour of household industry (0.52%) and other professional work (97.07%). In the villages of near inner fringe area (Zone-II), comparatively non-agricultural workers are decreased than zone –I and 85.34% of total workers, non-agricultural labours are engaged in household industry (3.34%) and other professional workers is 82.10%. Remaining 14.66% of total are engaged in agricultural works and some of them (7.44%) are cultivator and others (7.22%) are agricultural labours. In the villages of outer fringe area (Zone-III), workers are engaged in agricultural works, and similarly non-agricultural works. 48.16% of total are engaged in agricultural work and 51.84% workers are engaged in non agricultural workers. There are cultivators is 25.04% and agricultural labour is 23.12% in agricultural labours. Most of workers of non agricultural are engaged in other professional works (48.71%) and some of them are engaged in household industry (3.13%). These people live in areas with the orbit of cities which are classified as outer fringe area of city but they are not engaged in farming. This particular group is composed of the persons engaged in household and manufacturing, construction, trade-commerce, transport, storage, communication and in other services.

**VIII.ECONOMIC SERVICE:**

**a) Commuter Zone:**

The surrounding area of Rajarhat Newtown is intimately associated with the city Rajarhat provides the rural population the possibilities for earning their livelihood apart from medical, trade and educational facilities. A city may lose its status and function of being a regional core area, if the commuting practice ceases to exist. The works and students from the surrounding villages come to the city in the morning to earn their livelihood and to achieve education and return to their homes in the evening. Several thousand of people come to Rajarhat from

surrounding areas to work in factories, small scale industries to attend their different administrative service like Tehsil office, block office, health office, schools, colleges and cinemas etc. and return to their home on same day. Thousands of students come to their schools and colleges and go back their origin on same day by auto, bus and hire car etc.

Sl. No.	Types of commuter	No.	In %
1.	Employee and Labours	930	51
2.	Students	237	13
3.	Businessman	584	32
4.	Others	73	04

Table 4: Occupational structure of villages in fringe area

Source: Field Survey, April 2018

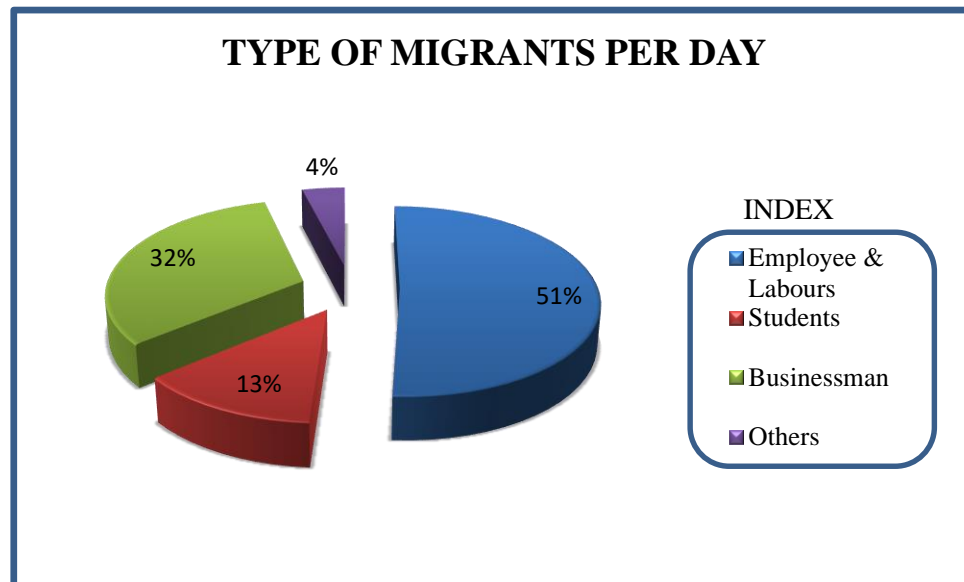


Fig.-4: Land use pattern of fringe area

Source: Table no. 4

Hundred of persons come daily from Thakdari, Mahisgot, Tarulia, Kadampukur, Dharsamoktarpur, Jagadisapur, Khamar, Kalaberia, Mahammadpur, Chakpukuria, Baligari, Chhapna, Patharghata, Panapukuria, Badomachhi, Bhangar etc. and return home daily. The commuter zone is extended to a distance about 10-25 km in north, east and south direction around Rajarhat Newtown. Approximately 51% employee and labours, 13% students 32% businessman and 4% others persons are migrated daily from fringe area.

#### b) Vegetable Supply Zone:

Vegetable gardening is widely prevalent in the surrounding area of Rajarhat Newtown. Vegetables are supplied from surrounding area through wholesale markets i.e. Polerhat, Haroa, Bhangar. Rajarhat get perishable vegetables from 81 villages. These villages mark a zone-II and zone-III as fringe area of Rajarhat Newtown. Some important villages for the supply of green vegetables are Thakdari, Chakpachuria, Patharghata, Sikharpur, Nawabad, Hudarait, Hadia, Tona, Joynagar, Pithapukuria, Kulberia, Jojra, Kayemba etc. Some perishable vegetables like cauliflower, cabbage, Brinjal, Bitter Gourd, Pumpkin, Chilly, Ladies finger, Beetroot, Carrot, Beans, Cucumber, Peas, Radish, Sweet Potato, Mango etc are abundantly supplied to Rajarhat Newtown area.

#### c) Fish Supply Zone:

Fish is famous and popular food as Bengalee food culture and fresh fish supply establishes one of the strong functional links between city and its peripheral area. Fish is by far the most import perishable commodity which is produced in fringe area for the city market. Rajarhat Newtown has large demand for fish and its supplied from surrounding area by daily wise. Fish supplied area belongs to some of East Calcutta wet land area and Haroa CD Block area. Main wholesale fish markets i.e. Haroa, Kharibari are supplied to small market. The fish supply region of the city is extended to a distance about 10-25 km from Rajarhat Newtown. Main fish supplied villages are Chakpachuria, Patharghata, Moberepur, Jojra, Kachua, Hatghacha, Hadia etc. The important fish i.e. Rahu, Catla, Bata, Tangra, Mrigal, Talapia etc are supplied to Rajarhat Newtown from peripheral zone.

### IX. DEMOGRAPHY:

#### a) Population Density:

The density of population is the most significant factors to evaluate the city influence on its fringe area. Wehrwein (1942) has delineated the fringe of Indian polis city on population density variable, for example not exceeding 388 inhabitants per sq.km. The rural population both skilled and unskilled is pushed into the city for employment, education and other utility service but cannot afford to pay for high rent and is supposed to reside in the periphery at a commutable distance.

The population density therefore in the surrounding village of the gets increased population density of the village area is 3023 person per sq km. It is noted that, only one village and three small towns are located in area. The average population density of towns area is 9484 person per sq km. Maximum area of inner fringe is used residential area, residents can arrive to Rajarhat Newtown within 30 minutes by bus and auto services.

Average population density of village population in area is 2471 person per sq km within 5 km from Rajarhat Newtown. Seven census towns are located in area where the average population density is 4023 person per sq km.

Average population density is decreased; only 1883 person per sq km reside in outer fringe area. No towns has not grown up, maximum lands are used in agricultural and picicultural purposes.

<b>Demography (in villages)</b>			
1. Population density			
Zone	Distance from Rajarhat	Categories	Population density Person/ sq km
I.	<5 km	Inner fringe area	3023
II.	5-10 km	Near inner fringe area	2471
III.	> 10 km	Outer fringe area	1883
2. Literacy rate			
Zone	Distance from Rajarhat	Categories	Literacy rate
I.	<5 km	Inner fringe area	86.39 %
II.	5-10 km	Near inner fringe area	70.28 %
III.	> 10 km	Outer fringe area	69.78
3. Sex composition			
Zone	Distance from Rajarhat	Categories	Sex composition (per 1000 Male)
I.	<5 km	Inner fringe area	1016
II.	5-10 km	Near inner fringe area	966
III.	> 10 km	Outer fringe area	953
<b>Demography (in towns)</b>			
1. Population density			
Zone	Distance from Rajarhat	Categories	Population density Person/ sq km
I.	<5 km	Inner fringe area	9484
II.	5-10 km	Near inner fringe area	4023
III.	> 10 km	Outer fringe area	No town formed
2. Literacy rate			
Zone	Distance from Rajarhat	Categories	Literacy rate
I.	<5 km	Inner fringe area	82.63%
II.	5-10 km	Near inner fringe area	82.94%
III.	> 10 km	Outer fringe area	No town formed
3. Sex Composition			
Zone	Distance from Rajarhat	Categories	Sex composition (per 1000 Male)
I.	<5 km	Inner fringe area	940
II.	5-10 km	Near inner fringe area	954
III.	> 10 km	Outer fringe area	No town formed

Table 5: Occupational structure of villages in fringe area  
Source: Census of India, 2011

#### **b) Literacy Rate:**

It is general observation that people living in the villagers near the city will be more literate than the far away villages. The highly educated society affecting and the traditional and old living style of the villages. The surrounding area is gradually changing in literacy pattern of all groups.

The average literacy rate is 86.39% in inner fringe area which is located within 5 km from Rajarhat Newtown, and the average literacy rates are 70.28% and 69.28% is in nearest inner fringe area and outer fringe area respectively. Literacy rate of an area depends on distance from city like Rajarhat Newtown.

Ten census towns are located in near city region, there are very least count difference is seen between inner fringe and near inner fringe area.

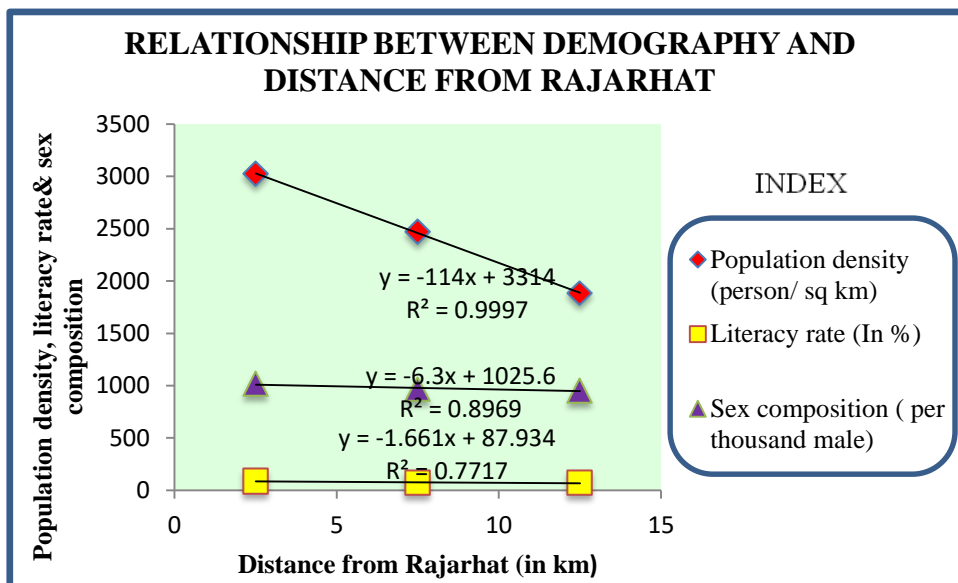


Fig.-5: Relationship between demography and distance from town.

Source: Table no. 5

**c) Sex composition:**

The sex ratio (female/1000 males), another demographic variable, generally sex ratio is higher of near city region than periphery region of city. Educational status, socio-economic conditions and modern facilities and awareness are controlled their sex ratio of inner fringe and periphery region of city.

This rule has been maintained to rural-urban fringe area. There are sex ratio is 1016 female per 1000 males population in the village population of inner fringe area (<5 km from Rajarhat Newtown). Similarly the sex ratio is decreased to depend on distance from main city. Sex composition is 953 female per 1000 males in outer fringe area which located far way from Rajarhat Newtown.

But sex compositions of town areas are taken opposite direction of village population. Sex ratio of towns in near city region (inner fringe area) is decreased than near inner fringe area. There are very least difference between two area, sex ratio are 940 and 954 and inner fringe area and near inner fringe area respectively.

**X. TRANSPORT AND COMMUNICATION:**

Availability of transport and communication in villages of fringe area reflects its level of development and future prospects. It is very difficult to access all transport and communication facilities; but only essential once have been considered i.e. Bus services, Auto/ moderate auto services and internet cafes services.

Zone	Dist. from Rajarhat	Bus service		Auto/Modified auto service		Internet Cafes		Total village in Separated Zone
		No	In %	No	In %	No	In %	
I.	<5 km	01	100.00	01	100.00	00	00	01
II.	5-10 km	15	45.00	21	64.00	05	15.00	33
III.	> 10 km	21	37.00	31	54.00	05	9.00	57

Table 6: Occupational structure of villages in fringe area

Source: Census of India, 2011

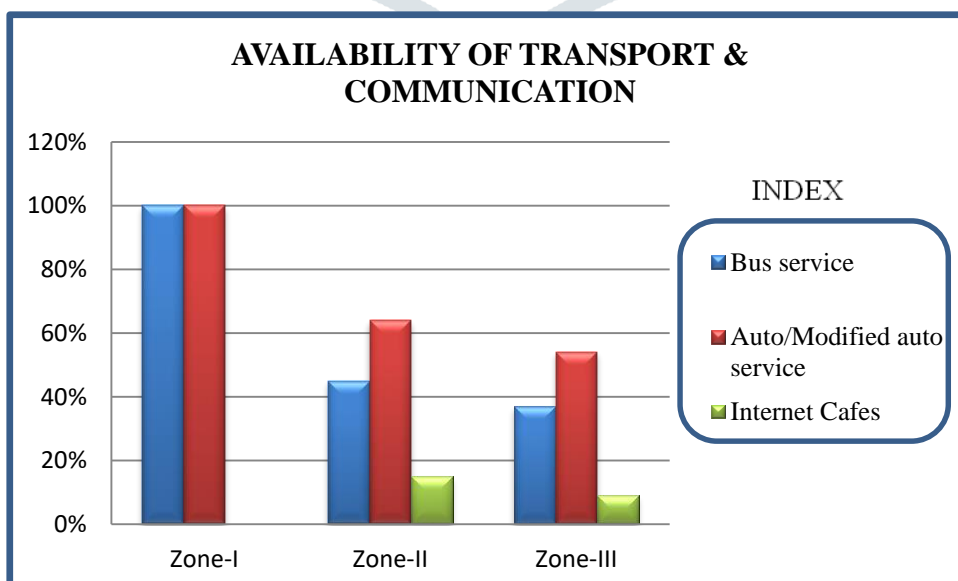


Fig.-6: Transport and communication availability of fringe area

Source: Table no. 6

In village of inner fringe area bus and auto services are available, but there are no internet cafes services, people go near small town area for getting cafes services. In the villages of near inner fringe area 45% of village access the bus services and 64% of villages access the auto services and 15% of villages get the internet cafes facilities. In the villages of outer fringe area, there are 37% of villages’ access bus services, 54% of villages’ access auto services and only 9% of villages get internet cafes facilities. So transport and communication facilities are decreased to depend on distance from centre of main city region.

**XI. EDUCATIONAL INSTITUTION FACILITIES:**

Education is the mirror of a society, literacy rate and education status depends on availability of educational institution. Rural areas are very neglected than urban area; there is no sufficient education institution set-up. Children of village areas always are tried to get a good environment for education.

Educational institution (in Village)											
Zone	Dist. from Rajarhat	Pre primary		Primary		Upper Primary+ Secondary		Higher Secondary		College	
		No	In %	No	In %	No	In %	No	In %	No	In %
I.	<5 km	02	28.58	01	14.28	02	28.58	01	14.28	01	14.28
II.	5-10 km	52	43.33	44	36.67	19	15.83	05	4.17	00	00
III.	> 10 km	119	42.5	104	37.14	45	16.07	10	3.57	2	.72

Table 7: Occupational structure of villages in fringe area  
Source: Census of India, 2011

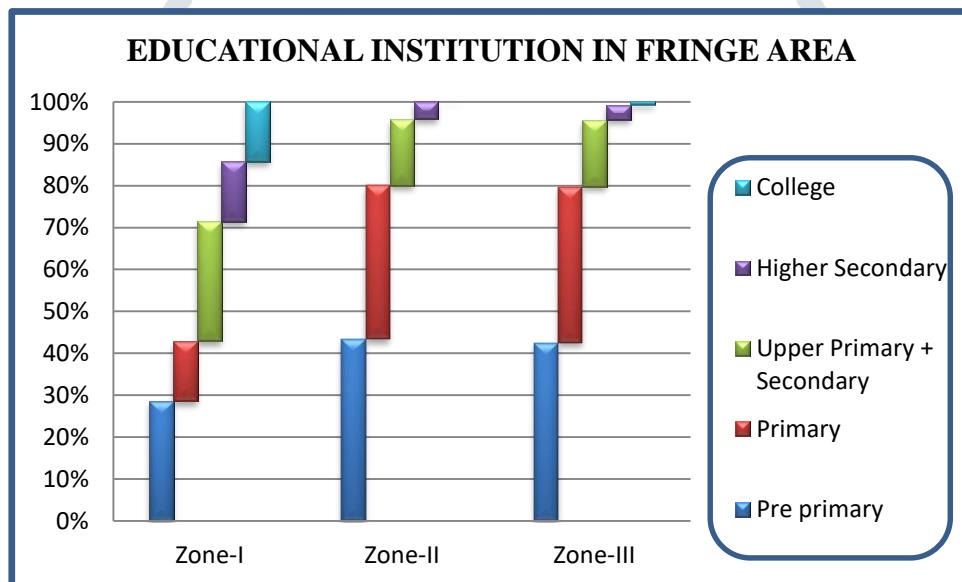


Fig.-7: Educational facilities of fringe area  
Source: Table no. 7

In the villages of inner fringe area 28.58% as pre primary, 14.28% as primary, 28.58% as upper primary and secondary 14.28% as higher secondary schools and 14.28% as colleges are available. In the villages of near inner fringe area, 43.33% as pre primary, 36.67% as primary, 15.83% as upper primary and secondary, and 4.17% as higher secondary schools are available but there is no service of higher education facilities. In the villages of outer fringe area, 42.5% as pre primary, 37.14% as primary, 16.07% as upper primary and secondary 3.57% of higher secondary schools and only 0.72% as colleges is set-up in the large area. There are all facilities are available in census town area which is within 5 km and 5-10 km from Rajarhat Newtown area. But distribution of different educational institutions depends on population density and distance from main city region.

There are some census town are located within 5 km and 5-10 km from Rajarhat Newtown area there all type of educational facilities are available.

**XII. MAIN FINDINGS:**

1. Population density has been varied basis on distance from city core area.
2. Modern facilities are provided near city area and the nearest fringe area more influenced by city environment.
3. Outer fringe area which is located at 10-15 km distance from city play role of main supplied area i.e. Panapulluria Hudarait, Akandakeshari, Gobra, Jojra, Dharmatala, Pachuria, Swastayan Gachhi etc. of city.
4. Occupation pattern has been changed basis on distance from city area.
5. Land use patterns are affected by extension of city. It does not depend only the distance from city region but also depends on road connection and accessibility.
6. Land use pattern does not proof of Von Thunen Model, rather other cultural factors i.e. religion, case etc effects on fringe area.



**XIII. SUGGESTIONS:**

1. All area have not changed by distance rules from city region some inhabitants should be changed their attitude from traditional values.
2. Rajarhat Newtown has newly formed astown; govt. should be taken steps to complete different projects and should provide more facilities to urban inhabitants.
3. Many of people should know the urban ecology of Rajarhat Newtown as home city of their locality.
4. Many projects of Rajarhat Newtown are running, so should be increased awareness and prospects of new city to people of fringe area.
5. Lands are captured by some private and govt. authorities for future planning, so this land should be utilised immediately. When the land would be taken own positive characteristics which will be impacted on its fringe area.

**XIV. CONCLUSION:**

The community is a dynamic organism constantly changing in a variety of ways to meet new needs and conditions. The greatest change in the urban communities is perhaps a result of growth itself. The fringe area of Rajarhat Newtown as city region has been divided into three zones i.e. Zone-I (0-5km), Zone-II (5-10 km) and Zone-III (10-15 km). These area are modifying by day to day, after city extension, value is increased and has improved transport and communication into interior region of villages. The rural-urban fringe area is the most transitional area between a city and traditional village area. So fringe area of Rajarhat Newtown is following this rule as ideal city.

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