



Integrated Sustainable Development Of Kanchrapara Municipality Of N 24 Parganas, West Bengal

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Abstract:

Urban Morphology is the study of the human settlements and the process of their formation and transformation. The study mainly emphasized on the discussion of the spatial structure and characteristics of the metropolitan area, city or town by examine the patterns of its component part and the process of its development. Here also involve the analysis of physical structure at different scales as well as the patterns of movement, land use, ownership and occupation. Special attention is given to how the physical form of city changes through time.

Land is very important physical component in the urban morphology. Land is the basic natural resources which provides space and many raw materials for various development and other activities. But in the present context this component is use in a frequently manner due to increasing population.

To satisfy the objectives of this study, mainly descriptive statistics have been incorporated. Decadal growth rate, population density, sex ratio, work participation rate, literacy rate, satisfaction index and some others techniques have been used. Other hand, different types of relevant cartographic techniques and presentation have been applied.

Kanchrapara is a small municipal town, its distance 48 km. from Kolkata. Kanchrapara Municipality belongs to the Kolkata Metropolitan District Area (KMDA). It's situated in the Bizpur Police Station within the Barrackpore-I subdivision, under the North 24-Parganas in West Bengal

Keywords: Municipality, Sustainable, Development and Demography.

Introduction

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Land is very important physical component in the urban morphology. Land is the basic natural resources which provides space and many raw materials for various development and other activities. But in the present context this component is use in a frequently manner due to increasing population.

Simply, land use means the use of land. According to *Nanavati (1957)*, Land utilisation is the conversion of land from one major use to another general use. In the present days, previous global land use pattern is totally changed and ecosystem was also changed. Kanchrapara Municipality is not an exception area in this change.

Objectives

The main objectives of this study are-

- To identify the existing land use pattern.
- To compare the present land use pattern with past land use pattern.
- To highlight the causes of the increasing population in the study area as well as their effect on environment.
- To find out the major problems of the study area.
- To suggest the solution of the problems.

Methodology

Maps and diagrams are prepared on a computer environment by the use of some software like TNTmips 2013, Qgis 2.6.1, Google Earth, Adobe Photo Shop 7.0, Microsoft Office 2013, Picasa photo software etc. Area of the municipality is calculate by TNTmips2013 software. To satisfy the objectives of this study, mainly descriptive statistics have been incorporated. Decadal growth rate, population density, sex ratio, work participation rate, literacy rate, satisfaction index and some others techniques have been used. Other hand, different types of relevant cartographic techniques and presentation have been applied.

Study Area

The word of “Kanchrapara” derived from “Kanchra”, which means an edible plant and it was found in large amount, but now it’s extinct.

Kanchrapara is a small municipal town, its distance 48 km. from Kolkata. Kanchrapara Municipality belongs to the Kolkata Metropolitan District Area (KMDA). It’s situated in the Bizpur Police Station within the Barrackpore-I subdivision, under the North 24-Parganas in West Bengal. The town area is 9.07 Sq.km. and its latitudinal extension is 22°55’12”N to 22°57’36”N and longitudinal extension is 88°25’48”E to 88°27’36”E. Its elevation is 10 metre from mean sea level. It’s bounded by Gayeshpur Municipality to the East, Kampa – Chakla Gram Panchayet to the east and south-east, Bagerkhal to the north and Halisahar Municipality to the west. Eastern Railways area is also include in this municipality. (Fig. 1)

Historical Background of the Study Area

In the early historical period, geographically this area had been full of swamps, natural river rime, lake, low land, water bodies, some scattered type of village settlements which was surrounded by deep jungle. So, the area was unfit for the human habitation. It is the riverine island of the river Ganga. Here also exist the some dozen of the villages, such as Mallickerbag, Kanchanpalli or Kanchrapara, Bhabanipur, Ghoshpara Chandua and Kampa. In the year of 1903 A.D. Halisahar Municipality was established with Halisahar and Kanchrapara. Then the 1st October, 1917 A.D. Kanchrapara Municipality was separated with the area of 3.5Sq. miles and population of about 30000.

Then the development take place at a rapid pace and the natural ecosystem was effected by the human civilisation.

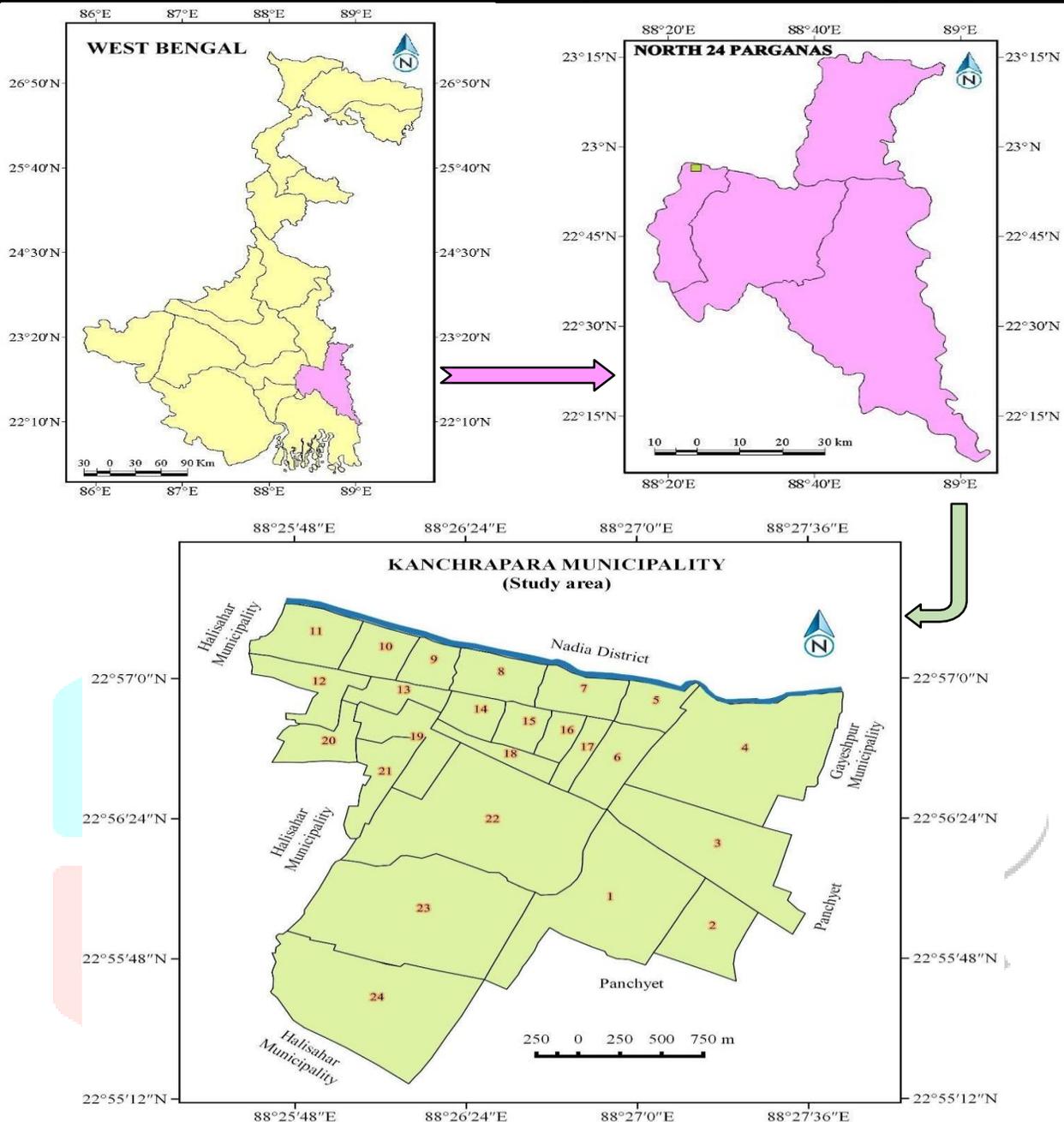


Figure: 1. Location Map of the Study area

Result and Discussion

Land Use Modification:

In the present context land use pattern is totally changed in worldwide, Kanchrapara Municipality’s area is not out of that change and population are play an important role in this change. Here try to show the spatial change of study area through the time with two maps.

In the map of 1947, its clearly understood that the Kanchrapara Municipality’s area was fully covered by the vegetation cover, some areas under the marshy land, many number of water bodies e.g. Ponds, Bill (*according to local name Mathura Bill*) were also located, some scattered settlement area and roads were found this time. And in the previous of that time Railway Locomotive Shop was established (1863A.D.). As a result some railway’s quarters were made in railways area for their employees. Total municipality area

was

9.07 sq.km. Based on the previous land use map (1947), some land use patterns are identify like water bodies area and vacant land were occupied 1.194777881 sq.km. (16%) and 0.100783392 sq.km. (1%) respectively. Agricultural land area was 0.075288281 sq.km. (1%). Railway workshop and marshy land were covered 0.579526308 sq.km. (8%) and 0.432576218 sq.km. (6%) respectively. Settlement area and defence area was also covered 1.496239417 sq.km. (19%) and 0.091838046 (1%). Mainly this time vegetation was the dominated land use factors of the study area, amount of vegetation area was 3.725725457 sq.km. (48%). (Table No. 1 and Figure: 2 &3)

Table No. 1: Previous Land Use Categories

| Land use Categories | Area in sq. km. | Area in % |
|---------------------------------|-----------------|-----------|
| Water Bodies | 1.194777881 | 16 |
| Vegetation Cover | 3.725725457 | 48 |
| Vacant Land | 0.100783392 | 1 |
| Agricultural Land | 0.075288281 | 1 |
| Settlement Area | 1.496239417 | 19 |
| Defence Area | 0.091838046 | 1 |
| Railway Workshop | 0.579526308 | 8 |
| Marshy Land | 0.432576218 | 6 |
| Total area(without roads width) | 7.696755 | 100 |

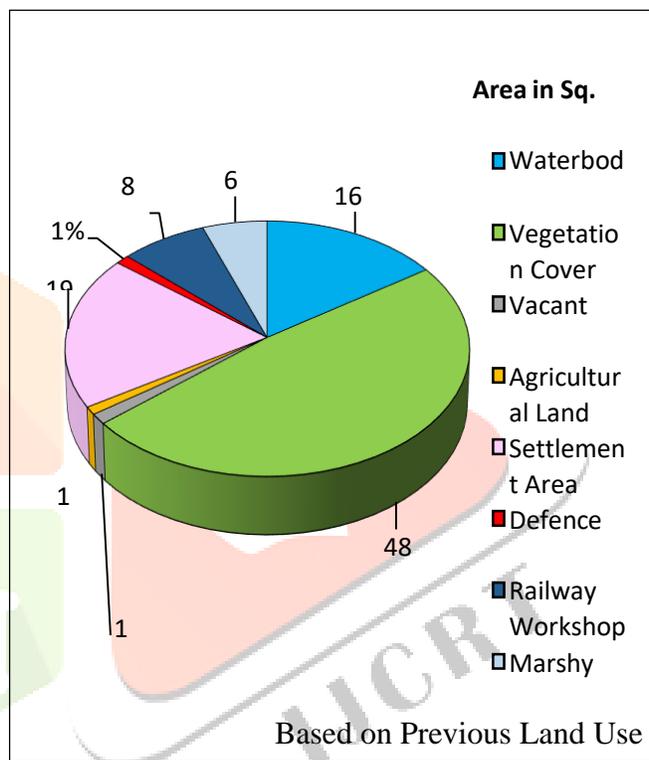


Figure: 2. Previous Land Use Categories, 1947

But in the present days municipality’s land use scenario is fully changed. Almost all the open places were encroached for human settlements. All the area along the Kavi Guru Rabindra Path was occupied for the residential, institutional and commercial purposes as well as the railways area (ward number 1, 2,3,4,22,23 and 24).Total area of the study area is 9.07sq.km.

Water bodies’ area occupy 0.545731154 sq.km. (7% of total area). Scattered vegetation cover area and vacant land area occupy 0.644777033 sq.km. (9% of total area) and 0.605951493 sq.km. (8% of total area) respectively. Agricultural land is cover 0.07484112 sq. km. (1% of total area). Defence area is cover 0.062208924sq.km. (1% of total area). Settlement area and railway workshop are also occupies 5.03197857 sq.km. (66% of total area) and 0.63083742 sq.km. (8% of total area) respectively. (Table No. 3, Figure: 4 & 6)

Table no. 2 Present Land Use Categories

| Land use Categories | Area in sq. km. | Area in % |
|----------------------------------|-----------------|-----------|
| | 0.5457311547 | 7 |
| Vegetation Cover | 0.6447770339 | 9 |
| Vacant Land | 0.6059514938 | 8 |
| Agricultural Land | 0.07484112 | 1 |
| Settlement Area | 5.03197857 | 66 |
| Defence Area | 0.0622089241 | 1 |
| Railway Workshop | 0.6308317428 | 8 |
| Total area (without roads width) | 7.596320036 | 100 |

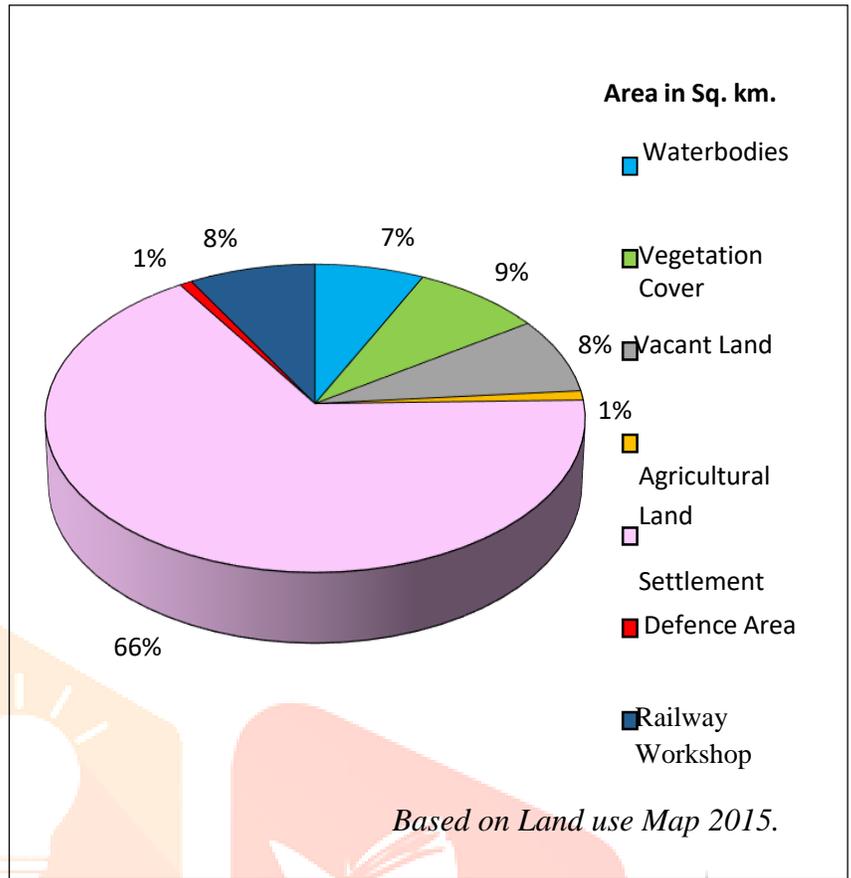


Figure: 4. Present Land Use Categories, 2015

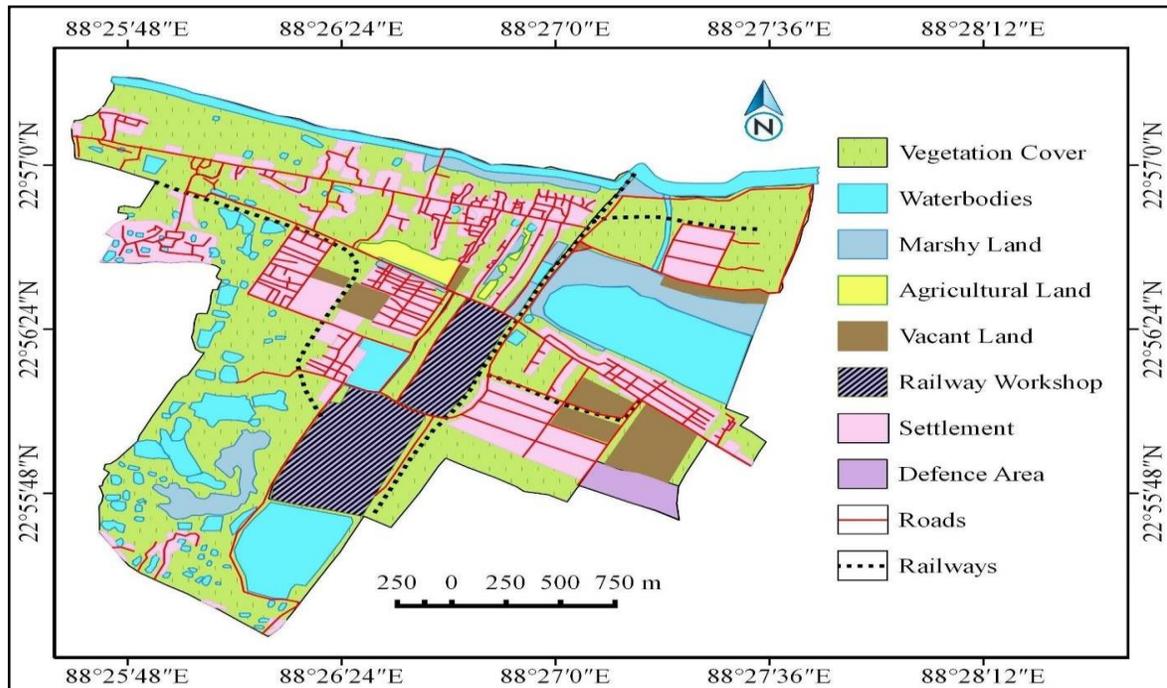


Figure: 4. Land Use and Land Cover Map (1947) of Kanchrapara Municipality

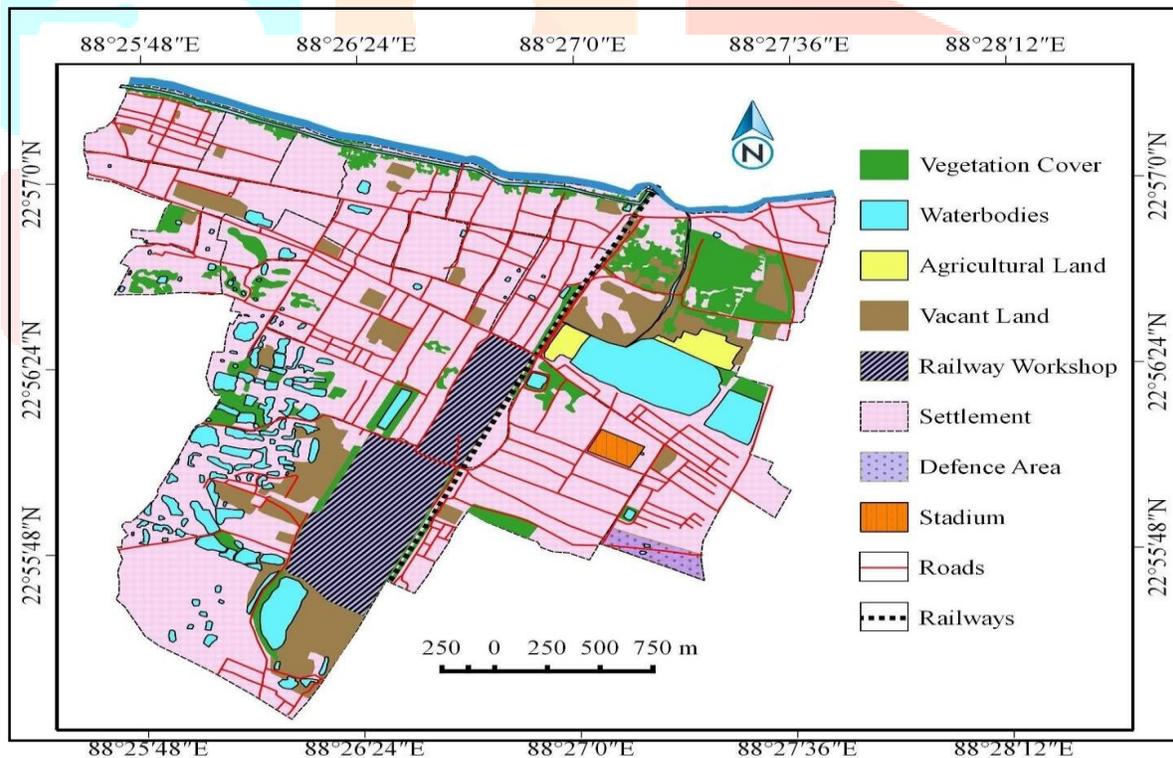


Figure: 5. Present Land Use and Land Cover Map of Kanchrapara Municipality

Population

Population is a very important component of the area. But when the population is exceeded over carrying capacity of the area then it becomes a retarding factor. Kanchrapara Municipality area's population is rapidly increase in several decades. In the municipality's establishment time its population was about

30000 (according to municipality report). After the partition of Bengal its population was swelled up and reached to 56668 (according to municipal report).

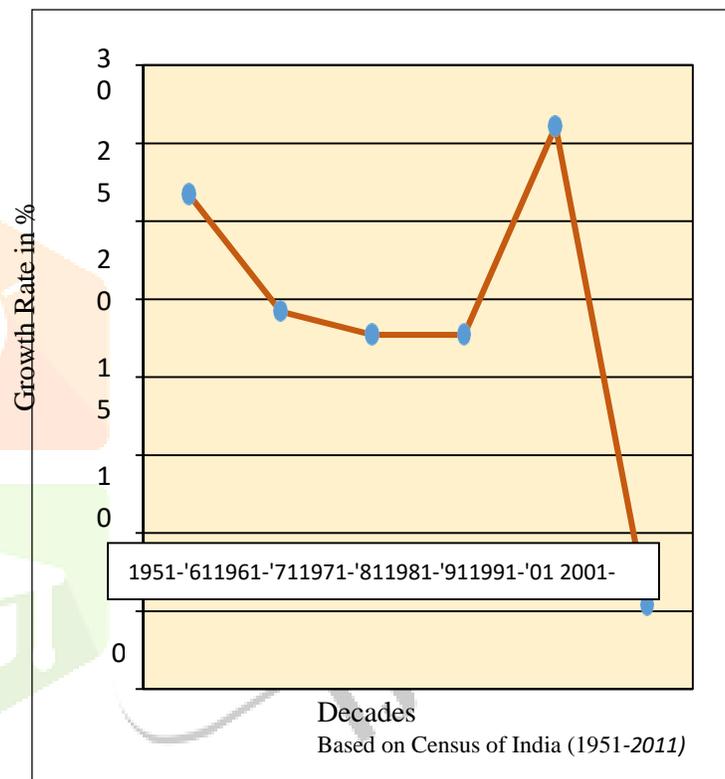
Decadal Growth Rate

Based on (Census of India 1951-2011 and Municipality report) the total population, population growth rate is also changed. In the decades of 1951- 1961 population growth rate was 21.70%, then its fall in the three decades like 1961-1971 (14.21%), 1971-1981 (12.73%) and 1981-1991 (12.72%). In the decade of 1991-2001 population growth rate is again increased and its percentage is 26.07. But according to the Census of India 2011 Kanchrapara Municipality's decadal growth rate (2001-2011) is decreased (-4.63%). (Table No. 3 and **Figure: 6**)

Table No. 3: Decadal Growth Rate

| Decades | Growth Rate in % |
|-----------|------------------|
| 1951-1961 | 21.70 |
| 1961-1971 | 14.21 |
| 1971-1981 | 12.73 |
| 1981-1991 | 12.72 |
| 1991-2001 | 26.07 |
| 2001-2011 | -4.63 |

Based on Census of India (1951-2011)



Population Density:

In the year of 1971, its total population was 78768, then it's increased to 88798 in 1981. Again its population was also increased 100094 and 126191 through the years of 1991 and 2001 respectively. But according to the Census of India 2011, Kanchrapara Municipality area's total population was decrease and the amount of the total population was 120345. So, year wise population density was also changed. (Table No. 5 & Appendix. A. 1 and Figure: 4 & 7)

Table No. 5: Year Wise Population Density

| Year | Total Population | Area of the municipality | Population Density per sq.km. |
|------|------------------|--------------------------|-------------------------------|
| 1971 | 78768 | 9.07 | 8684.454245 |
| 1981 | 88798 | 9.07 | 9790.297685 |
| 1991 | 100094 | 9.07 | 11035.72216 |
| 2001 | 126191 | 9.07 | 13913.00992 |
| 2011 | 120345 | 9.07 | 13268.46748 |

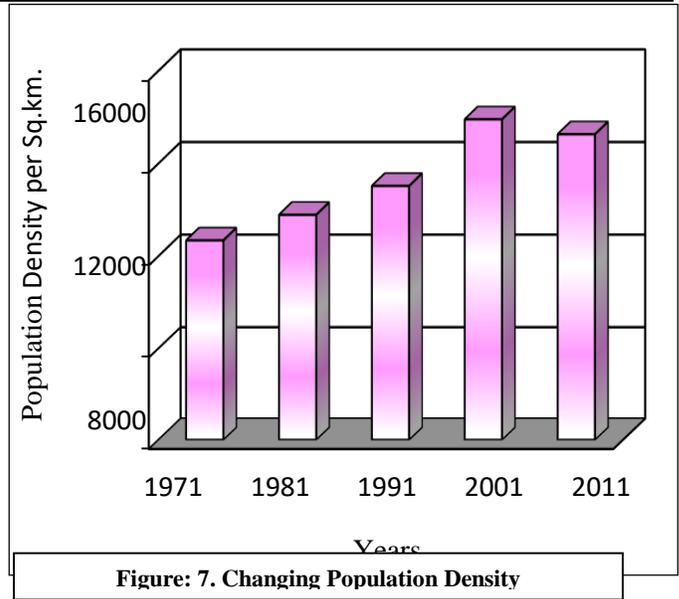
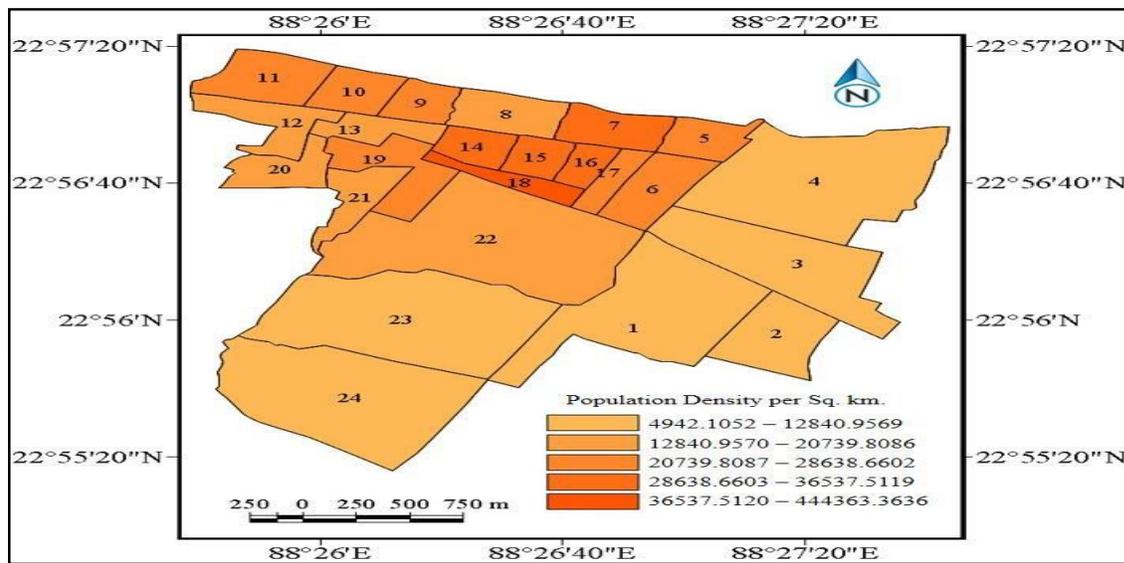


Figure: 7. Changing Population Density



Based on Census of India (1951-2011)

Figure: 8. Ward Wise Population Density, 2021

Responsible Factors for Increasing Population

There are many factors which are responsible for increasing population in Kanchrapara Municipality. One such very important factor is the natural growth of urban population which includes migration of population from rural to urban or urban to urban areas. Other factors are –

Railway Locomotive Workshop

In the year of 1863, Kanchrapara Locomotive Workshop was established under the Kanchrapara Municipality area, which area occupies some ward of the municipality. Wards number are 1, 2,3,4,22,23 and 24. Railway Workshop is an important industry under the Central Government. For the recruitment of Railway’s job many peoples are coming here. Other hands Railways Authority give the quater facility for their employees. As a result here population will be increased. Mainly this migrated people are coming from outside (Bihar, Uttar Pradesh, Orissa, Jharkhand) or inside of the West Bengal.

Well Transport Network

According to the municipality information, total road network is 160.20 kilometre. And the roads patterns are diagonally, triangular, parallel and perpendicular. Main roads of municipality's is Kavi Guru Rabindra Path which is located in the west to east direction and the Kanchrapara-Haringhata roads also situated in the north-west to south-west direction and many roads are also here which is connect the total area as a net. (Figure:9)

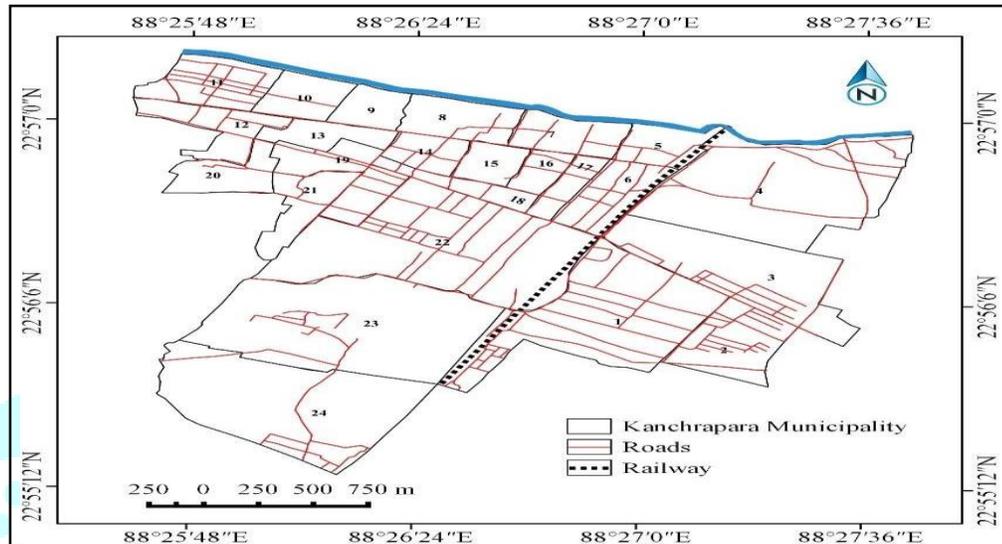


Figure:9 . Roads and Railway

Well Drainage Network

According to the municipality's information total drainage network is 81.97 kilometre. All drains are made by brick, sand and cement. Municipality's drainage disposal system is good. So, the drains are always clean. But which wards is belong to the railways area, that area's drains are maintained by railway authority. (Figure: 19)

Institutional and Commercial Facilities

Due to the institutional and commercial facilities many peoples are lived here. According to the municipality's information, here the number of Primary School is 47, Junior High School number is 2, Highschool number is 12 and one College is also situated. Locally Kanchrapara is a famous town for its commercial market. Because many types of shops are developed here like grocery, cloths, stationary, hardware etc. Many banks are developed here namely State Bank of India (SBI), United Bank of India, Union Cooperative Bank, Punjab National Bank, Allahabad Bank and Bank of Baroda. (Figure: 20)

Availability of Water

Many water tanks are established under the municipal area. Municipality is supply daily 3 times of water for household purposes. The times are 4:00 a.m.-7:00a.m., 11:30a.m.-12:30 p.m. and 5:00 p.m- 6:00p.m. In the summer seasons water times are increase by municipality. And many water tanks with taps are also build up on the roads side. Other hands according to the municipality's information, here situated 30deep

tube wells and 302 hand tube wells. (Figure: 10)

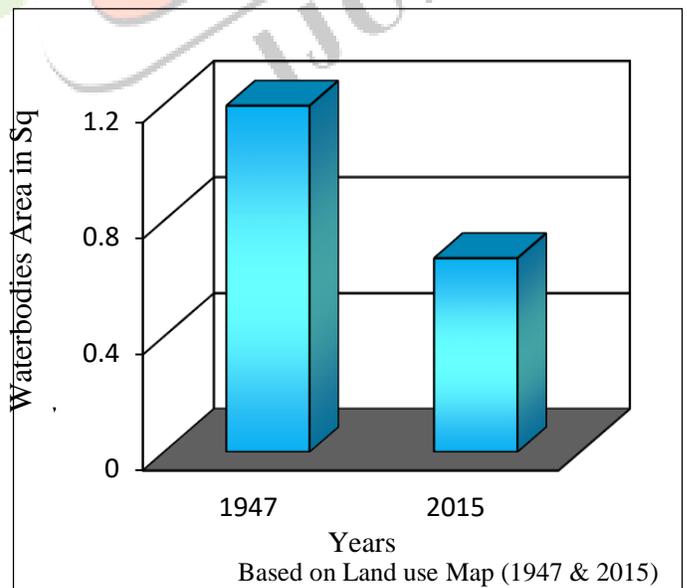
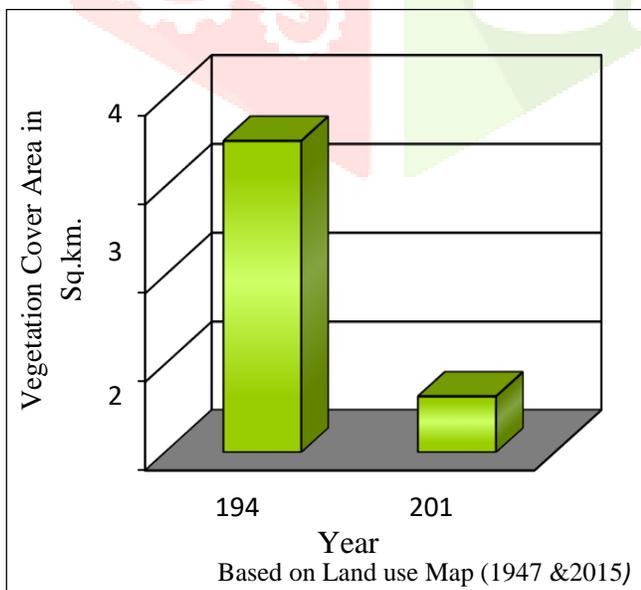
Number of In-Migrated Families

Figure: 10. In-Migrants Families

Alteration of Ecosystem

Today it is very easy to understand that municipality area is changed. Because, present ecosystem is totally alternate of the past time. In the year of 1947, mostly vegetation was fully covered the area (48%) but in the present days residential and commercial area (66%) is totally cover the area. So a huge amount of trees are cut down by humans. As a result many important trees are not found. On the other hand many water bodies area (16%) found in the year of 1947, but in the present context rapidly increase the settlement area. Due to this cause many water bodies area (7%) reduced. This reduction water body's area will lead to decrease in the supply of water for commercial or non-commercial purposes. It will also hamper the aesthetic beauty of nature and many types of water animals also effected.

(Figure: 11 and 12)



Conclusion

In the concluding section it can be said that Kanchrapara is a small municipal town which flourished due to the Railway Locomotive Shop and different type of commercial sector. Depend on these factors many people are lived here. But population growth rate of this area is fluctuated. Although the Kanchrapara is an unplanned city but its contribution is remarkable in the KMDA area. And it also shows that the land use pattern is changed by the population through time.

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