

Influence of the River Ganga on the Urban Process in Kolkata Metropolitan Area

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Abstract : *From the dawn of human civilization, rivers have been playing a significant role for the development of human settlement worldwide. The Kolkata Metropolitan Area (KMA) is no exception to this. It is located on the bank of river Hugli, the distributory of river Ganga at its lower course in India. In the medieval and early modern period it was the most important riverine trade route in eastern India when market based economy was started to develop. In the later phase Kolkata (erstwhile Calcutta) port and adjoining town was established. Afterwards, this port town expanded rapidly to become the metropolitan city of Kolkata, which was the national capital of British India till 1911 and became the main center of economic, cultural and political activities in the country.*

Following the partition and independence of India, a phenomenal change in the population distribution took place as a result of huge refugee influx from erstwhile East Pakistan, now Bangladesh. At that time river Hugli acted as a major barrier of migration flow between the eastern and western districts of KMA. Even today, effects of such immigration are reflected through population pressure differential on both the banks within KMA. Apart from that, the land use and morphology of this metropolis is also profoundly affected by the existence of river Hugli. The current study is an attempt to explore these all round influences of river Hugli on KMA.

Keywords: *colonies, population growth, urban crowding, commuters, refugee influx.*

I. Introduction

Kolkata Metropolitan Area (KMA) is one of the most important urban agglomeration in India. Though at present it ranks after Mumbai and Delhi metropolitan regions, in terms of population size, till 1991 it was the most populous metropolis. During the British rule in India, Kolkata (erstwhile Calcutta) was the national capital of undivided India till the end of 1911. But the history of development of this urban region dates back to the mid sixteenth century. Instead of Kolkata, there were some other urban and trade centers those initiated the development of this region. Kolkata and other trade centers were dependent on the river Hugli, the distributory of river Ganges at its lower course, for navigation. In the later phases of development of this metropolis, distribution of settlements, population concentration, land use pattern and transport lines, all have been profoundly affected by the presence of Hugli river. This paper examines such impacts on some specific aspects of the metropolis under study.

II. Study Area

The study area involves the present Kolkata Metropolitan Area, lying on the lower Ganga plain. The concept of KMA was first introduced by the Calcutta Metropolitan Planning Area (Use and Development of Land) Control Act 1965. Then the total area of KMA was found to be 1,380 sq. km. including 56 sq. km. of Hugli River component [1].

KMA passes through six districts of West Bengal, among them the city of Kolkata or Kolkata Municipal Corporation lies fully within KMA, located at the east bank of river Hugli. On the opposite side i.e. at the west bank of that river, Haora district is located, of which a stretch from Haora Municipal Corporation to Uluberia Municipality is lying within KMA. KMC is surrounded by North 24 Parganas at the northern end and South 24 Parganas at the southern end. Further northwards at the east bank of Hugli River the Kalyani sub-division of Nadia district is under KMA. On the other side of the river, the south-eastern segment of Hugli district extending up to Bansberia is also lying within the jurisdiction of KMA [2].



fig. 1

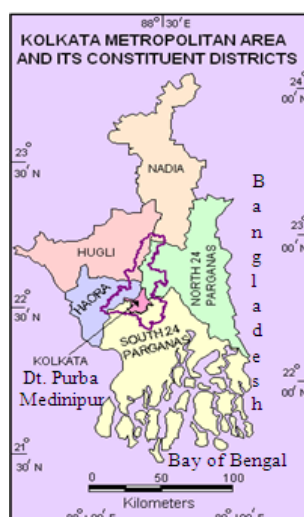


fig. 2

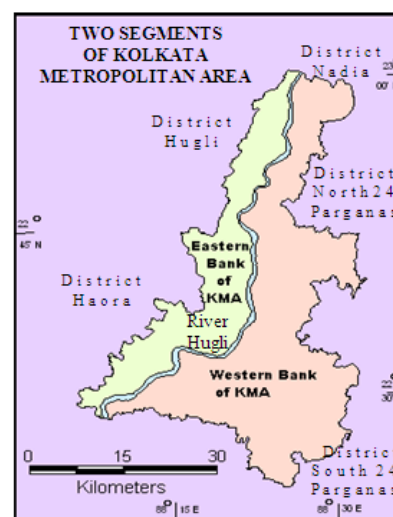


fig. 3

KMA is comprised of five different units [3].

Table – 1: Composition of KMA

Sl. No.	Census Designation	Numbers	Area in sq. Km.
1	Municipal corporations	03	271.31
2	Municipalities	38	615.49
3	Non - Municipal Urban Units	77	200.10
4	Out Growths	16	18.19
5	Rural Area	445	746.32
	Total KMA	----	1,851.41

Source: KMDA, 2011

III. Objectives

River Ganga is the life line of so many urban centers of the country for a long period. It is also true in case of the current study area. This study progresses with the following objectives:

- to assess the historical importance of river Hugli in the development of this metropolis
- to investigate the impact of the river on urban processes of KMA
- to illustrate the control of the river on the population distribution within KMA, especially the case of immigrants

IV. Methodology

It is impossible to explore the interdependence of this urban region and river Hugli without a proper investigation of available literatures and past records. Such sources of information have been examined properly to come across the truth behind the impact of river on urbanization process of KMA. Various census data have been compiled to explain the spatial variation of the population concentration and migration on both the banks of River Hugli within the constituent districts of this metropolis. The spatial pattern of such distribution has been presented through maps and diagrams.

V. Initiation of Urbanisation in KMA on both the Banks of River Hugli

The Europeans initiated the urbanisation process in the study area in the mid sixteenth century. Among the European immigrants the **Portuguese** were the first to visit and settle in this region. In 1535 they settled in a village named *Saptagram* located on the western bank of river Hugli. It was the beginning for the Europeans to enter the native markets of Bengal along the lower course of Hugli River side. By the beginning of the 17th century they had the Bengal trade in their hands.

The **Danish** colonies in India were founded by the Danish East India Company which was active from the 17th to the 19th centuries. The colonies included Serampore located within present-day KMA. They were also interested in making Serampore a charming, elegant, attractive tourist resort. It gradually became a well-protected town and the maintenance of its law and order was also well organised.

The **Dutch** East India Company established trading posts on various parts along the coast. In 1615 they entered into Bengal for the purpose of trading.

In 1635 the Dutch East India Company established a settlement at Chinsurah, a few miles south of Bandel. Salt, muslin, opium and different spices were the major trade items.

In 1687 the **French** commander Deslandes started business at Bandel in Hugli district. It is famous for its handloom products. Hindus of different castes, Muslims, Europeans and Armenians inhabited there. In course of time Chandannagar occupied the top most position among all foreign settlements of Bengal in trade and commerce. It maintained trade relations with various places like Basra, the main port of Iraq; Pegu, a port city located in the coast of Red Sea and different commercial places of China and Tibet. In those days Chandannagar was a bigger centre of commerce than Calcutta (now Kolkata).

Armenians settled in Chinsurah (present Chuchurah) and flourished as businessmen during the 17th and 18th centuries. When it lost its commercial importance, the Armenians transferred their businesses to Calcutta (now Kolkata) towards the end of the 18th century. In 1697 they built a Church there. This is the second oldest Church in West Bengal.

But the metro core of present KMA, the Kolkata (earlier Calcutta) city was developed by the **British** a little later than the other towns as mentioned earlier. In 1690, Job Charnok, an agent of the East India Company chose this place for a British trade settlement [4]. By 1699 Calcutta became a separate presidency (administrative unit) accountable to London. The riparian trade-based European colonies like Chinsurah, Hugli, Serampore, Chandannagar etc. were started to develop from the early sixteenth century and all of them continued their status as important settlement and commercial centers which lie under the jurisdiction of present KMA.

In 1772 a military barrack was constructed at Barrackpur. It is believed that, the name of the place owes its origin to the word barrack [5]. It was the country residence or suburban weekend retreat of then Viceroy of Bengal. But the original momentum for the development of Hugli River side was initiated with the establishment of Calcutta port and city by the British rulers. Soon it became the centre of all administrative and socio-economic activities in India. The city was a centre of the British East India Company's opium trade during the late 18th and 19th century [6]. Till 1911 it was the national capital of British ruled undivided India.

Thus, in the early days on this metropolitan region, different colonial powers helped to develop various market places on the bank of River Hugli. In the later phase, those market based settlements became new urban centers. Still now, these old centers are the important growth centers of the present metropolis. Gradually, the Portuguese, the Danish, the Dutch, the French, the Armenians, the British – all attempted to establish their business in different pockets as mentioned above. Some of them succeeded and some failed, as there was a tough competition among the in-migrants to grasp the economic and political supremacy. Finally the region under study had become an epitome of European culture.

VI. The East-West Divide in KMA

6.1 Development of Urban Bodies

River Hugli flows through the middle of this metropolitan area with a north-south direction, dividing it into east-west segments. It is true, the existence of this river is the most important component, as this provided the national and international accessibility to this riparian area having connection with distant places of hinterland through arteries of river. At the same time, it helped to create an east-west divide in KMA, not only geographically, but this divide is reflected in its urbanisation process, too.

To understand that influence, development of various urban bodies in different time spans have been studied taking into account their east-west distribution.

In the **first half of nineteenth century** there were only two urban centers in this region (Fig. 5a). Serampore was the first municipality to be established in 1842. The other one was Calcutta. Though Calcutta

DISTRIBUTION OF COLONIES ALONG THE RIVER HUGLI WITHIN KMA

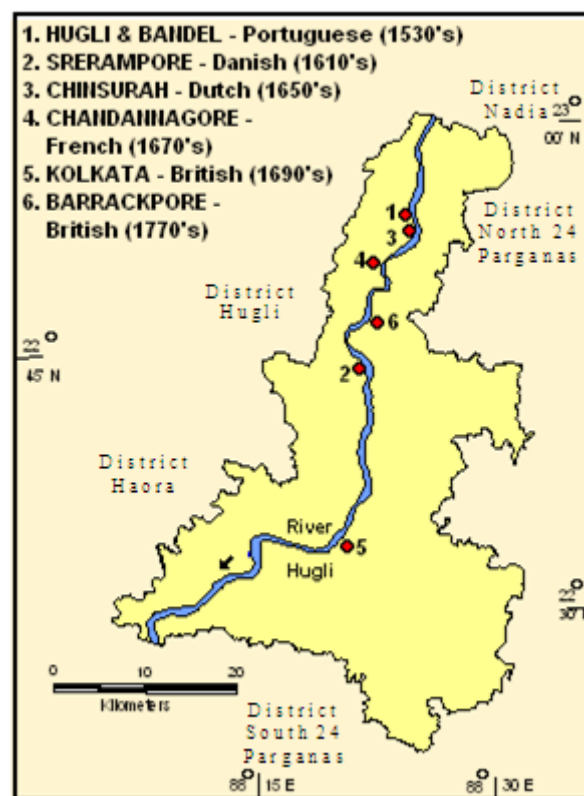


fig. 4

Source: Compiled by the author

Municipal Consolidation Act. was passed in 1876, its municipal affairs were initiated since 1793, through a Lottery Committee.

During the **second half of nineteenth century** as many as 20 municipalities were established in this region. Among them 15 were located on the eastern bank and five on the western bank of river Hugli (Fig. 5b). The urban units located on the eastern bank of river Hugli are Baruipur, Naihati, Garuliya, North Barrackpore, Khardah, Baranagar Barasat, North Dum Dum, South DumDum, Rajpur-Sonarpur, Titagarh, Bhatpara, Kamarhati, Budge Budge and Panihati. On the opposite western bank Haora, Hugli, Baidyabati, Bhadreswar and Bansberia were developed. Since that phase expansion of urban bodies on the eastern part of the region gained momentum and the process of urbanisation was accelerated.

In the **first half of twentieth century** eight new municipalities were established as a whole. Among them five were on the eastern bank while rest of three were on the western part of KMA. Halisahar, Barrackpur, Kachrapara Dum Dum and Pujali were the east bank municipalities; whereas Konnagar, Rishra and Champadani were developed on the western part of the metropolitan area.

In the final stage, i.e., **second half of twentieth century** a total of 11 urban bodies were set up in this metropolitan area. The New municipalities on the east bank were New Barrackpore, Bidhannagar, Maheshtala,

DEVELOPMENT OF URBAN LOCAL BODIES WITHIN KMA

FIRST HALF OF NINETEENTH CENTURY

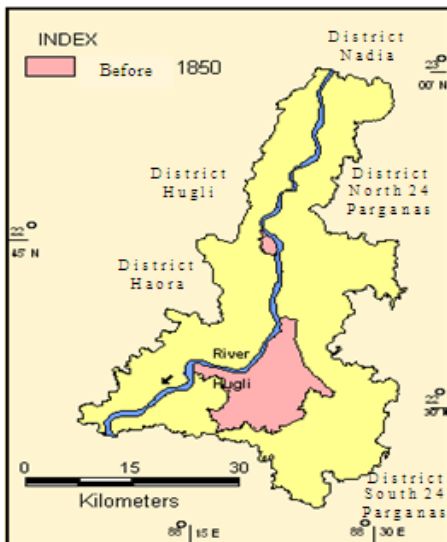


Fig. 5a *Source: Compiled by the author*

SECOND HALF OF NINETEENTH CENTURY

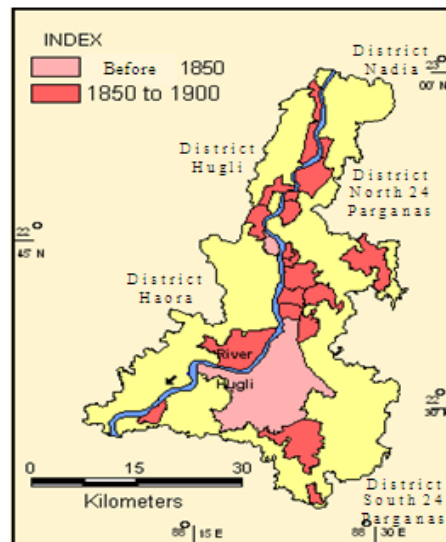


Fig. 5b *Source: Compiled by the author*

FIRST HALF OF TWENTIETH CENTURY

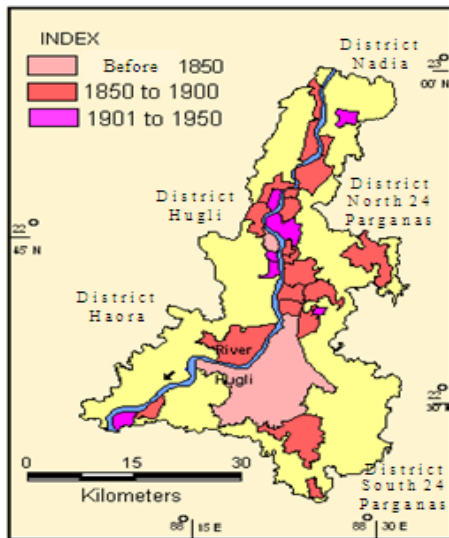


fig. 5c *Source: Compiled by the author*

SECOND HALF OF TWENTIETH CENTURY

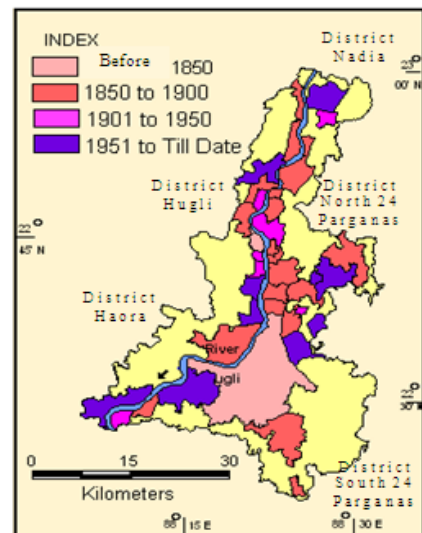


fig. 5d *Source: Compiled by the author*

Madhyamgram, Rajarhat Gopalpur, Kalyani and Gayeshpur. Many of them were emerged because of refugee influx after partition of Bengal. The newly formed urban bodies of the western bank were Chandannagar Municipal Corporation, Uttarpara-Kotrung, Ulluberia and Bally municipalities.

From the above discussion, it is quite evident that, over the last two centuries the eastern part of this metropolitan area has experienced a more rapid rate of urbanisation, compared to its counterpart.

Rajarhat New Town came up in the first decade of twenty first century again on the eastern bank of River Hugli.

6.2 Growth of Urban Population

This east-west divide in KMA is further supported by the analysis of urban population growth within KMA. To understand the process of urbanisation, urban population growth has been analysed separately for the eastern and western parts of this metropolitan area.

GROWTH OF URBAN POPULATION ON BOTH THE BANKS OF RIVER HUGLI WITHIN KMA

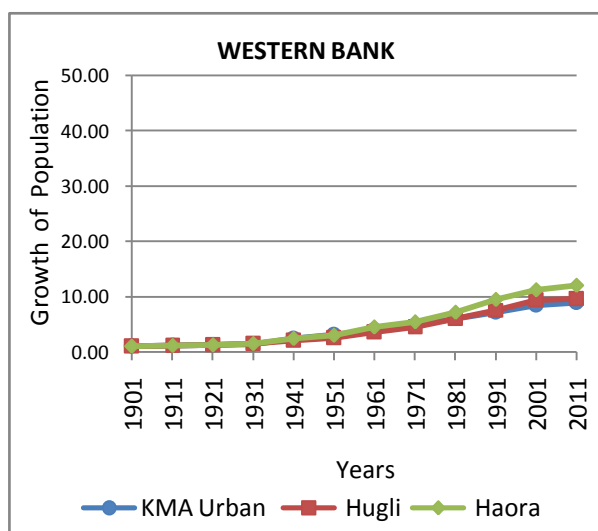


Fig. 6a

Data Source: Census of India

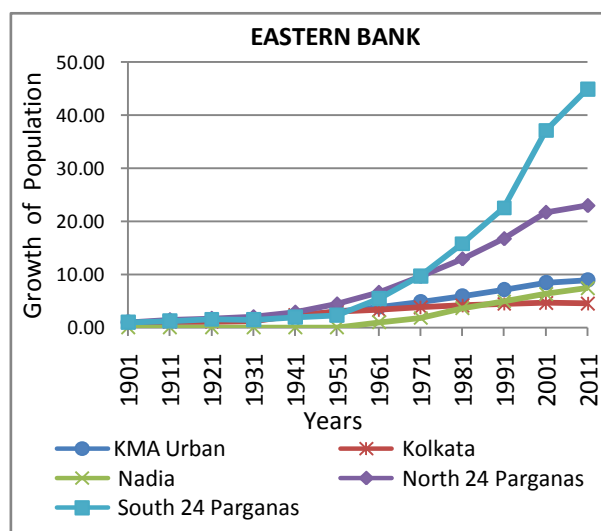


Fig. 6b

Data Source: Census of India

With the base year as 1901, it has been observed that, the urban bodies of western part of KMA exhibit a much lower rate of population growth in comparison to its eastern part. Within a time span of 110 years, ranging between 1901 and 2011 urban population of KMA has been increased to 8.93 times. But different urban units of KMA depicts variation in urban population growth. The least growth has been recorded in Kolkata Municipal Corporation area (4.54 times) in last 11 decades. But the other urban bodies of the eastern bank of KMA exhibits a high rate of urban population growth; like in the district of North 24 Parganas 22.97 times, in Nadia 7.41 times and in South 24 Parganas 44.92 times, which is the highest among all urban bodies of KMA (Fig. 6b). On the contrary, the western part of the metropolitan area has been showing a much sluggish rate so far urban population growth is concerned. Urban bodies of KMA constituent Hugli and Haora show a population growth of 9.61 and 12.06 times respectively (Fig. 6a).

6.3 Urban Crowding

For a proper understanding of population pressure on both the sections of KMA, Crowding Index Values (CIV) have been calculated based on census data of urban bodies of KMA for last 12 census years, i.e. 1901 to 2011. A high value of CIV denotes heavy population pressure in the city under study [7]. Urban population of each constituent districts of KMA has been divided by total population of KMA to find out the CIV of each individual constituent part of this metropolitan area. When those CIV are compared for the constituent districts on both banks of river Hugli, the tremendous pressure of urban population on the eastern bank is evident once again. Crowding in the KMA part of Hugli and Haora increased from 11.14 and 13.11 respectively in 1901 to only 15.26 and 17.99 in 2011. In contrast, the condition of the opposite part of KMA is quite different. Here the CIV of KMA part of North and South 24 Parganas has increased significantly, especially in case of the former constituent part. Crowding was increased from 13.40 in 1901 to 51.36 in 2011 in

STATUS OF CROWDING IN KOLKATA METROPOLITAN AREA

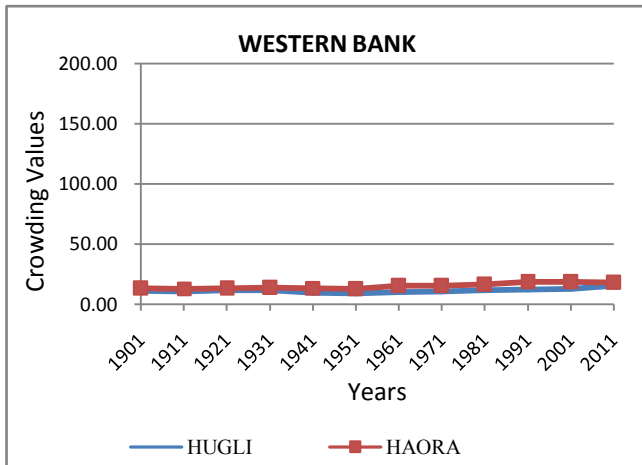


Fig. 7a

Data Source: Census of India

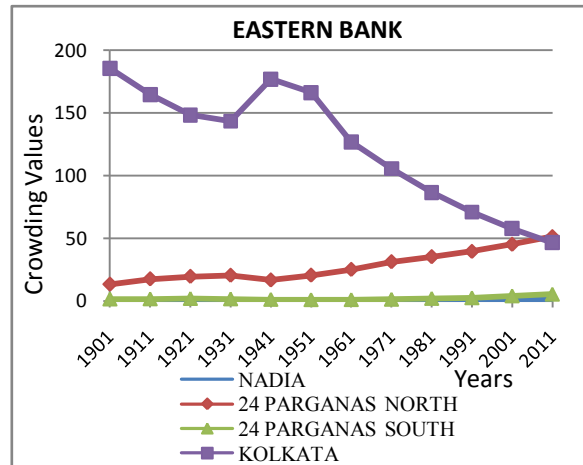


Fig. 7b

Data Source: Census of India

the KMA part of North 24 Parganas, which is the most crowded region within KMA. KMA part of Nadia is the least crowded region compared to others. That is because, only a small part of that district is under KMA. there is a planned town named Kalyani and a Notified Area named Gayespur, the two most distant towns of KMA. Both of them are relatively sparsely populated than the other parts of this wide urban field. The most striking feature is the rapid drop in crowding of Kolkata Municipal Corporation (KMC) area, which is the metro core of KMA. Since the independence and partition of India in 1947 crowding of KMC is rapidly declining and this trend still persists. In 2011 the CIV of KMC was 46.61, though it is still the second highest among all constituent parts of KMA, but this value is all time lowest for KMC, which is the only district having negative growth rate in West Bengal for the first time in 2011 census. That indicates the further decline in crowding in this metro core. Though KMC at present holds a population of almost 4.5 million, gradually importance of the other KMA constituent districts is increasing with extension of urban facilities towards the peripheral regions of KMA from its core.

Such a high population growth and crowding on the eastern bank of river Hugli within the KMA is mainly due to the location of Kolkata port and city in this side. As mentioned earlier, the river acted here as a

DISTRIBUTION OF REFUGEES IN RURAL AND URBAN AREAS IN KOLKATA METROPOLITAN AREA

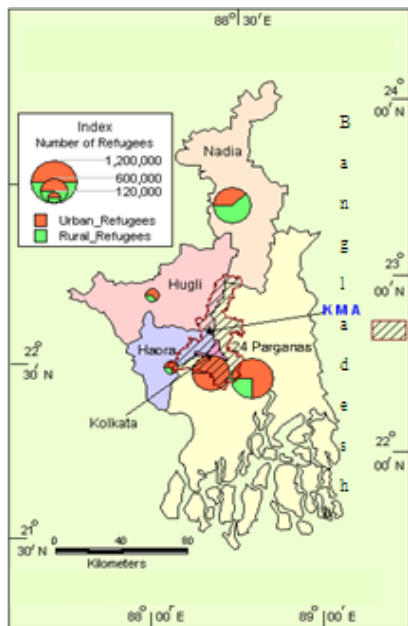


Fig. 8

Source: Refugee Relief and Rehabilitation Department, 1974 Govt. of West Bengal

mean of national and international transportation in this region. Apart from that, the port and city of Kolkata being located on this side, this attracted the labour force, entrepreneurs, capital investment, and all other facilities on the eastern bank of the river within KMA. Though the history of emergence of many urban centers located on the western bank of river Hugli dates back to the period earlier than that of Kolkata, major thrust on urban expansion as well as development was given by the British rulers on Kolkata and its surrounding regions. Kolkata was the national capital of British India till 1911. Still now it is said to be the cultural capital of independent India. So, its political, cultural and economic significance from historical past has made this a suitable place to live and work. But, this suitability of urban growth did not spread on the western bank of river Hugli so much. That river Hugli here acted as a barrier to the process of 'backwash' towards the distant places located over the opposite side of the river in the KMA constituent parts of Haora and Hugli.

6.4 Refugee Influx

Migration played an important role, to increase the population concentration and crowding in the area under study. River Hugli in the initial phase played a crucial role by providing the way for the Europeans to come, trade, settle and develop the native villages as a market place at first and then convert them to towns. But rapid increase in population was followed by the partition of India, as well as that of Bengal while attaining the independence. Newly created state of erstwhile East Pakistan, now Bangladesh is located in close proximity to the east of KMA. Since 1946, before and after the

partition, a mass influx of refugees was experienced in KMA. Most of these refugees did not cross the river Hugli to settle in districts of Haora and Hugli. They preferred mostly the urban locations in and around Kolkata, perhaps to have better and easy opportunity of livelihood and access to corridor to power. Hence, a large number of Bengali refugees mainly Hindus by religion settled on the eastern part of KMA (Fig. 8). All the constituent districts of KMA, except Nadia received refugees in the urban peripheries. Volume of refugees were also very high in Kolkata, 24 Parganas and Nadia (then was not divided as north and south 24 Parganas) compared to their western counter part.

Such a fact is also evident if one analyses the distribution of refugee colonies in the study area on both the banks of River Hugli (Fig. 9). Majority of the refugees came to the east bank of river Hugli within KMA, just after the partition of Bengal upto 1950 and settled in there. In the municipalities of South Dum Dum (32 colonies), Panihati (12 colonies) and Tollygunge Police Station areas (38 colonies) most of the refugee colonies were concentrated. The rural and urban colonies in the east bank of river Hugli were 38 and 68 respectively. There were 211 urban and 80 rural refugee colonies out of a total of 291. The pre-1950 squatters' colonies dominate over the post 1950 squatters' colonies in terms of their numbers, both in rural and urban locations.

On the contrary, a total of only 47 Government sponsored colonies were developed on the western bank of Hugli river within KMA. Among them, 13 are urban and 34 are rural in nature, of which 12 are found in the jurisdiction of Chinsurah police station. In this part of KMA the pre-1950 squatter colonies are only four in number, of which two are urban and two are rural. That indicates the tendency of the refugees to settle in the easily available low lying vacant vested lands on the east bank side of KMA during the pre-1950 phase. But in the 1950s, the new immigrants found that almost all the vacant lands in the districts of 24 Parganas, Nadia and city of Kolkata were almost occupied. Then they had no option but to cross the river and settle on the west bank side of the River Hugli. That is why, in the post 1950 period the number of squatters' colonies was increased to four in rural and 32 in urban peripheral areas. Most of them are found in the Haora Corporation and Bally municipal areas. Various small scale industries of this region acted as a pull factor.

**DISTRIBUTION OF REFUGEE COLONIES
ON BOTH BANKS OF RIVER HUGLI WITHIN KMA**

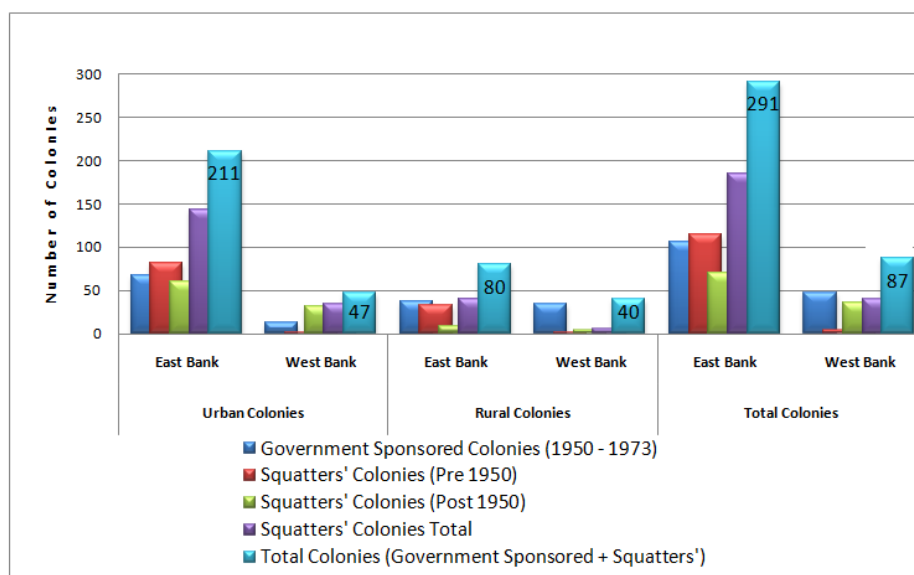


Fig. 9

Data Source: Refugee Relief and Rehabilitation Department. Govt of West Bengal. 1974

As the Government sponsored colonies were planned to disperse the refugee concentration in the metropolis, the western bank possessed a total of 47 such colonies in comparison to 153 Government sponsored colonies on the eastern bank. There was a little intension among the refugees to settle on the western part. It is evident from the total figures of the squatters' colonies on the east and west bank on the river Hugli, which are 185 and 40 respectively. In total there are as many as 291 colonies recorded on the east bank whereas on the west bank it declines to only 87. As the immigration flow continues for a long time, in order to provide shelter to refugees various types of colonies were developed out of the Government initiatives and among them most were located on the eastern part of the metropolis [8].

6.5 Commutation by train

Rise of sub-urban train passengers has been taken as an indicator of unbalanced growth of urbanisation in KMA, as development in rapid communication system is one of the important infrastructures of urban growth. If the east and west banks of the river Hugli are considered, it has already been stated that, rise of population is much higher in the eastern side. As a result, commutation by train is also much higher on the eastern half than its western counterpart. Only in the last decade sub-urban passenger flow on the western bank has risen from 280 million in 2000-01 to 379 million in 2009-10 and on the eastern bank these figures at the same frame of time are 313 to 591 million respectively [9]. Influx of more refugees and further infiltration from Bangladesh and concentration of non-Bengali population in North and South 24 Parganas are much higher than

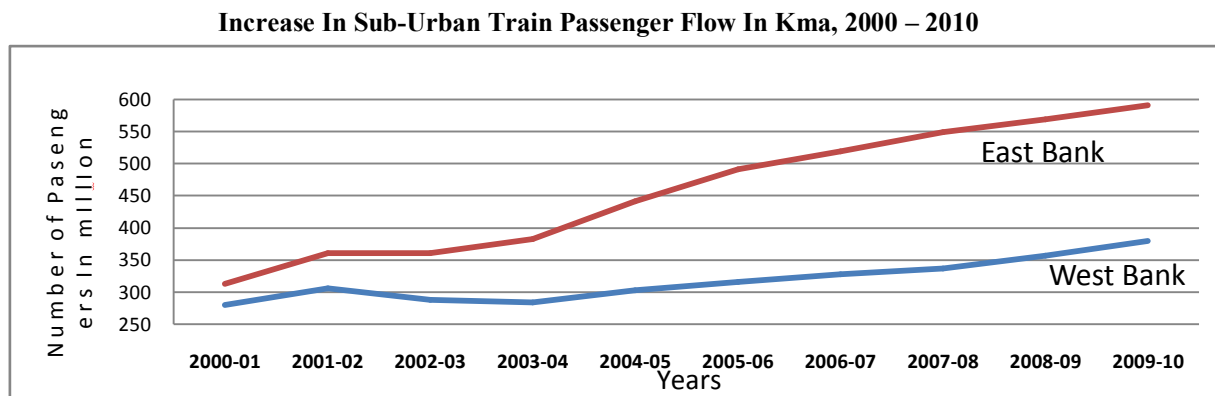


Fig. 10

Source: CPRO, E. and S. E. Railway, Govt. of India

that in Haora and Hugli. That is the reason for such high volume of commuters' movement on the eastern bank of River Hugli in KMA (Fig. 10).

VII. Conclusion

For centuries, river Hugli, the distributory of Ganga, has been acting as a beneficial as well as controlling factor for the study area in many ways, like -

- During the pre - independence period, the river acted as an approach track (water way), through which the European colonies were established.
- The city of Kolkata, along with its port, located on the eastern bank of river Hugli, gradually gained more importance than other urban centers in the study area. Hence, the eastern part of the metropolis flourished more rapidly than the western part of KMA.
- After independence of India, that River Hugli acted as a barrier to refugee influx in the metropolitan area. Hence, refugee concentration is higher on the eastern bank of the river Hugli within KMA, due to non-existence of any natural barrier between their place of origin (Bangladesh) and destination (eastern part of KMA).
- Consequently, urban population growth, urban crowding, refugee influx as well as the volume of commutation remained high in the eastern part of KMA.

Hence, it may be concluded that, the river Ganga has played a significant role not only for the development of this metropolis, but for its further expansion and shaping.

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