

Conflicts in land and housing markets in Kolkata: Emergence of a divided city

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1. Research Background

The population of India in 2011 stands at 1.21 billion, of which 31.16% is urban, translating to around 377 million people living in urban India. In the last decade from 2001 to 2011, the urban population has grown by an estimated 90 million and the country's rate of urbanization has increased from 27.81% to 31.16% in the same period. Additionally, urban India had a total housing requirement of 26.53 million housing units in 2012, as estimated by Government sources. 99% of this housing pertains to the lower income groups of population. Government sources also estimate the total number of houses constructed in urban India as 14.34 million in the 10 years since 2002-2012. The housing gap is appalling and the dilemma of providing the basic need of shelter to an inordinately large segment of urban population unable to afford housing, is perhaps the biggest challenge of Indian cities.

In post-independence India, the decade of the 1950's saw construction of large planned townships developed by the State along with major employment hubs like factories and state capitals. These new towns were developed on land acquired by the 'Land Acquisition Act, 1894', which enabled the state to acquire land for public use. In the middle decades from the 60's to the 80's, most residential development was in the form of satellite towns around metropolitan cities and large urban extension areas. The progress of actually developing these residential townships was slow and sporadic, due to lack of public funds. The onus of providing urban infrastructure and housing in India had been solely on the Government in these years and the private sector had been totally excluded from the provision of urban services.

A change in the perspective of urban development in favor of a liberal system of governance and management is clearly discernable in India, as also several other developing countries since the mid-1980s. A recent work 'India's New Economic Policy- A Critical Analysis',¹ through a series of critical writings, discusses the developmental approach to understanding the growth scenario resulting from the introduction of a neoliberal approach to economic policy. The demographic explosion and infrastructure deficiencies in most cities and the inadequacy of the state and local governments to make adequate investments to alleviate this forced many countries including India to usher in programmes of globalization and 'structural reform'. Amitabh Kundu in his article 'Urban System in India'² discusses how these measures have been responsible for '*the segmentation of India's cities, the accentuation of intra-city inequalities, and a strengthening of the process of degenerated peripheralization.*'

The context of the quoted text, one among many other recent critiques on the effects of the opening up of the economy for the provision of urban services, forms the backdrop of this research. The impact of economic reforms and resulting urban management systems on urban morphology and structure of the city have been analysed through a case study of Kolkata, one of India's most populated cities. The emphasis has been on the emerging divide in the character of peripheral residential development of the metropolitan area of Kolkata.

2. The Research Structure

'Urban spatial structures are usually the unintended result of unforeseen consequences of policies and regulations that were designed without any spatial concerns.' - Alain Bertaud in 'The spatial organization of cities: Deliberate outcome or unforeseen consequence?'³

The present study uses the work of Alain Bertaud as a starting point of reference in understanding the dynamics of land markets and urban form. Several parameters of analyzing cities are identified by Bertaud and have been referred to for formulating the research framework for analyzing the land and housing markets of Kolkata Metropolitan area.

The present work has undertaken the following research tasks using appropriate tools for the purpose of analysis of land markets and urban form:

- i. Introducing the study area of Kolkata Metropolitan Area in the context of its suburbanization.
- ii. Reference to salient factors of Alain Bertaud's studies used as reference in this research.
- iii. Commentary on chronological density maps of the metropolitan area sourced from planning documents.
- iv. Interpretation of Landsat images to map the extent of built up area in the KMA area and identification of the predominant directions of suburban growth on a temporal scale.
- v. Commentary on the role of the Metropolitan Development Authority and other state parastatal agencies in developing organized housing and township projects in these suburban areas.
- vi. Commentary on the recent trend of private developer driven residential development in these growth corridors.
- vii. Interpreting time series data from archived Google Earth images to analyse the pattern and morphology of development in one of the selected suburban areas.
- viii. Plotting of land price gradient along various suburban corridors and correlating it to other factors affecting it.
- ix. Conclusions and learnings from the emerging pattern.

3. Land Markets and City Structure

A large body of work by Alain Bertaud discusses the impact of land prices on urban development and vice-versa, analyzing various cities across the world. It is interesting to note the variations in population densities in cities with different land price gradients. The classical Bid Rent theory which explains the dispersal of urban population in response to the price of land, fails in socialist states where no land markets exist (e.g. case of Moscow).

In the paper quoted above, Bertaud puts forward the argument that in the case of large metropolitan cities, the urban spatial structure is the possible cause of labour market's consolidation or fragmentation. He further states that any shape whose effect would be to fragment labour markets would not be viable in the long run. He argues that a viable type of urban structure should therefore allow complete labour mobility within a metropolitan area. Households, whatever their location within the metropolitan area, should be able to reach within a reasonable time (say less than 1 hour) all the locations where jobs are offered.

Traditionally, the monocentric city has been the model most widely used to analyse the spatial organization of cities. The works of Alonso (1964), Muth (1969), and Mills (1972) on density gradients in metropolitan areas are based on the hypothesis of a monocentric city.

Over the years, the structure of many cities departed from the mono-centric model as many trip-generating activities were spread in clusters over a wide area outside the traditional CBD. It may be observed that large cities are not born polycentric; they evolve in that direction with various circumstances accelerating the mutation.

Another important factor highlighted by Bertaud is that a polycentric city is not an aggregation of self-sufficient 'urban villages', with a self-sufficient community growing around each cluster of employment, as planners often like to believe and propagate, as this urban structure contradicts the only valid reason of the existence of large metropolises: the increasing returns obtained from large integrated labour markets. The urban village concept is the ultimate fragmentation of the urban labour market. He argues, that in reality, all polycentric cities function very much in the same way as a monocentric city: jobs wherever they are, attract people from all over the city. The only difference is in trip distribution, as trips tend to show a wide dispersion of origin and destination, appearing almost random.

The correlation between the polycentric city model and urban land values establishes that **'for a given point in the city, the shorter the sum of trips to all potential destinations, the higher should be the value of land.'** Thus, polycentric cities also have a negatively sloped density gradient, like mono-centric cities, but not necessarily centred at the CBD but on the geometric centre of gravity of the urbanized area. The slope of the gradient should also be flatter, as is observed in distinctly polycentric cities like Los Angeles and Atlanta.

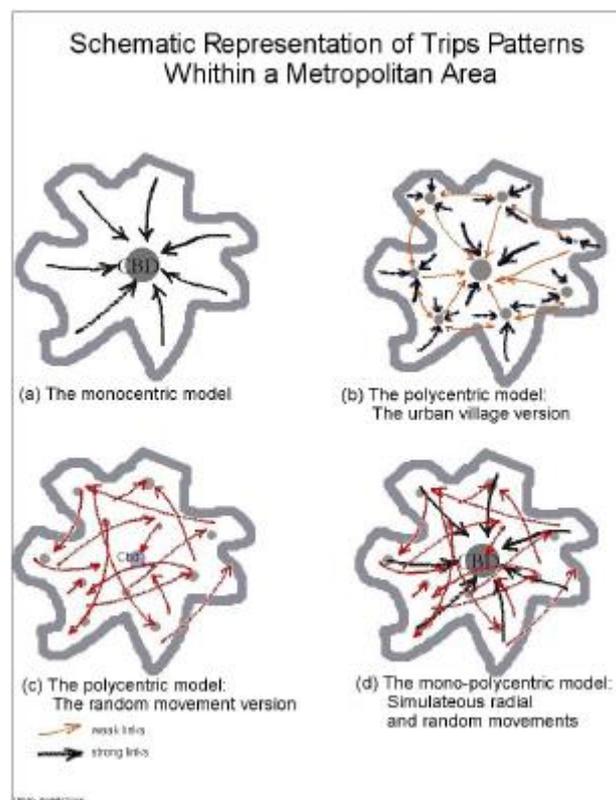


Figure 1: Pattern of daily trips Source: Alain Bertaud

The other significant aspect discussed by Bertaud is the consumption of land in urban areas, which is measured by the densities of cities. Density is often measured as population divided by an administrative boundary. Bertaud argues that this measure of density is not very useful as municipal limits may include a large amount of vacant land, water bodies etc. **'The only meaningful measure of density is to divide population by the built up area consumed by urban activities.'**

The density profile of a city shows the distribution of population within a metropolitan area. In the large majority of cities, the profile of density from the centre point is a negatively sloped exponential curve, predicted by the model developed by Alonso, Mills and Muth.

A related aspect, relevant to most developing nations including India is the effect of urban spatial structure on the welfare of the urban poor. In India, where the poor cannot afford individual means of transport, dense monocentric cities are more favourable as they reduce travel distance to work place and allow a more efficient network of public transport. However, land is usually much more expensive in dense monocentric cities and the urban poor can afford much less land. This leads to creation of inner city slums within the core of the town, where the urban poor occupy sub-grade buildings and live in a poor quality of environment. This is not the focus of the present research, and the thrust shifts to the urban poor who choose to stay in suburban locations far from their work place. The problem in most Indian cities is the absence of public transport to the peripheral locations of the city. The urban poor thus concentrate in pockets serviced by suburban rail, if and when present, and is able to get affordable living units at lower prices. Hence the development of the earlier mentioned band of development in the Kolkata Metropolitan Area along the suburban rail networks.

Thus it can be concluded that in accordance with the classical Bid Rent Theory, each income group will adjust its consumption of land, and hence density, according to the tradeoff between the two vital factors of (i) distance to work and (ii) floor space consumption.

Bertaud further illustrates through a case example that many land use regulations have the effect of segregating the poor in areas which might not be the best for their welfare. Excerpts from the theoretical example are quoted below.

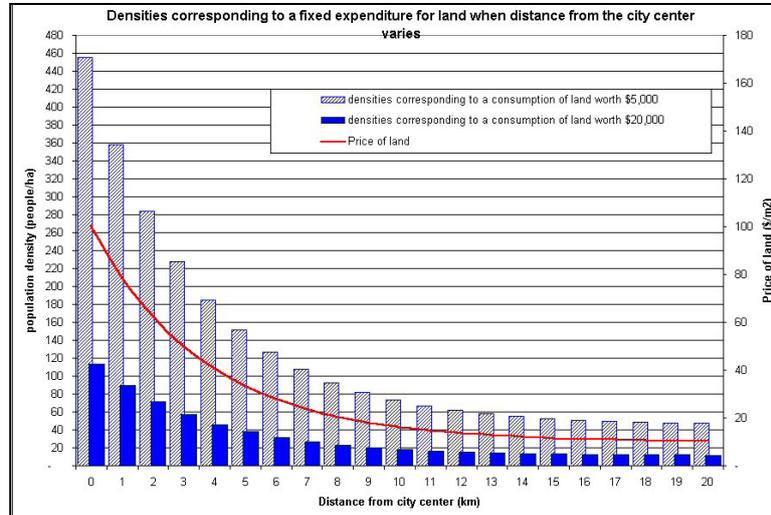


Figure 2: Affordable density by two income groups with distance from the city centre.
Source: Beratud Research

The figure above illustrates that at the same distance from the city centre, the lower income group can afford lesser built space and hence has a higher density, whereas the higher income group can afford more land and built area, and has lesser density, to achieve the average bid rent price of land at that distance.

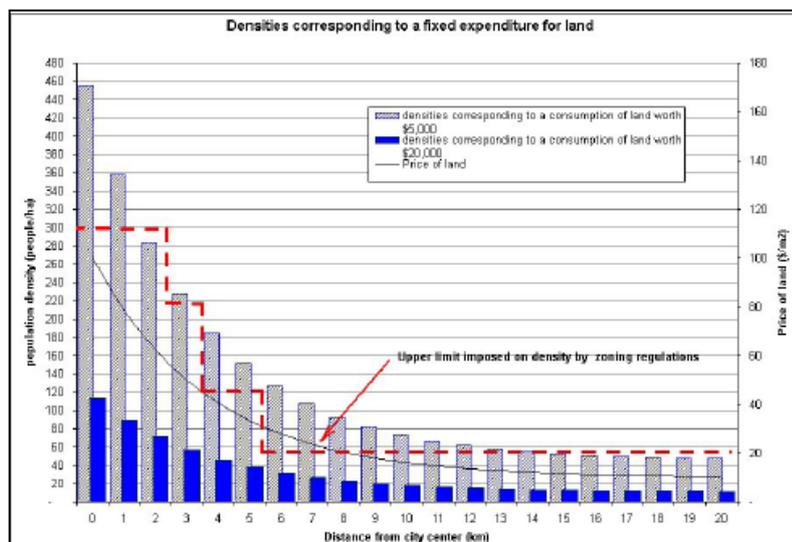


Figure 3: Zoning Restrictions and Affordable densities. Source: Beratud Research

While implementing zoning regulations, most cities set an upper limit for the densities of each zone. The dotted line in red superimposed on the theoretical maximum density graph of the two earlier discussed income groups shows the relation between the permissible density of a zone and the respective income group's affordable density. It is seen that apart from the areas at 3-4 km from the city centre, the lower income group can afford the zoning density only after 14 km distance from the city centre.

Thus, the effect of Zoning regulations often further moves the lower income groups to distant locations. In absence of good public transport, these people tend to find alternate locations in close proximity to the city core and set up informal housing. This leads to the creation of slums and squatters in the city and leaves the periphery as fragmented low density fringes having a transitory character of the semi-urban-rural.

In the backdrop of these theoretical discussions on land and housing dynamics, the Kolkata Metropolitan Area is analysed as a case study and a commentary on its own unique characteristics is developed.

4. The growth of the suburbs of Kolkata Metropolitan Area

Kolkata Metropolitan Area (KMA) is estimated to house a population of about 17 million people in 2011, of which only about 4.5 million live within the city core whose administrative boundary is the city Corporation. The 17 million people are distributed over 1851.41 sq.km. of Kolkata Metropolitan Area, achieving an overall density of about 9000 persons per sq.km. The decadal growth rate of KMA has been constant, hovering around 21-22% for the three decades between 1961 and 1991. There has been a decline in population growth to about 16% for the decade of 1991-2001. During the same period, the decadal growth rate of Kolkata Municipal Corporation (KMC) has progressively declined from 12.39% in 1961-71 to 3.93% in 1991-2001.⁴ This clearly corroborates the fact that KMC has reached its saturation limits and the future growth of the metropolis would continue in the suburbs.

The general pattern of settlements within the Kolkata Metropolitan Area (KMA) suggests a strong linear bias along the river Hooghly, which serves as the central spine of the metropolis. The north – south development axis has been strong, reducing in intensity as the distance from the nucleus of KMC increases. In the east west direction, the cross section of development has historically shown a decline in the density of development from the river outwards, gradually merging with the rural development in the hinterland.

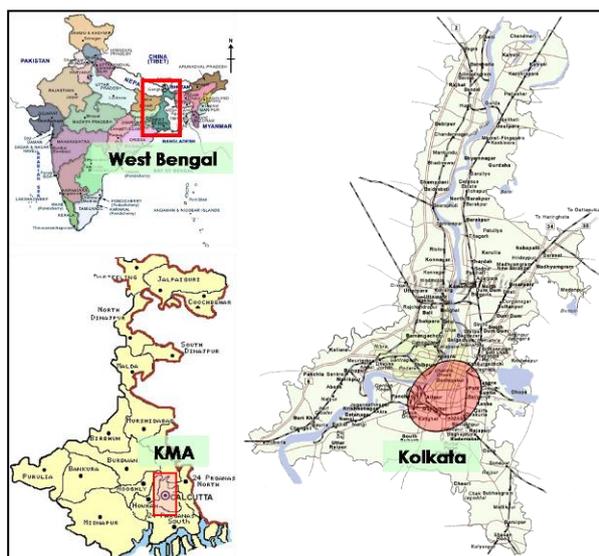


Figure 4: Location and delineation of KMA

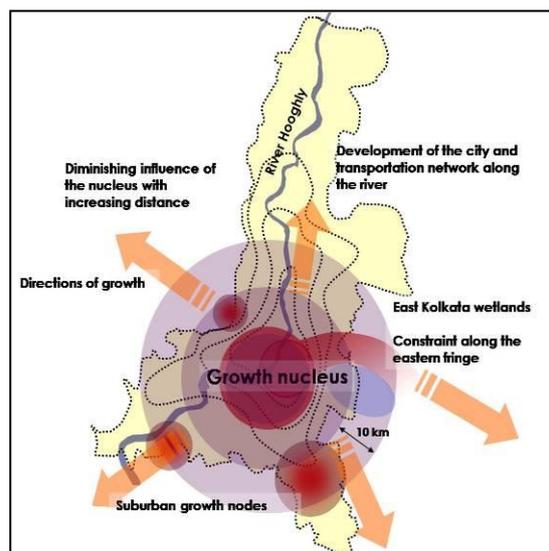


Figure 5: Growth directions of KMA

The Government of West Bengal, the state whose capital is Kolkata, in 1991, discusses the development of Kolkata (erstwhile Calcutta) in a volume 'Calcutta's Urban Future: Agonies from the past and prospects for the Future'. In one of the essays, Monidip Chatterjee explains the pattern of suburbanisation and urban sprawl.⁵ The evolution of isolated settlements within the metropolitan area to a continuous band of development over the years was propelled by the introduction of a fairly large network of suburban railway lines, which is a usual suburban growth phenomenon. However, the morphology of these fringe areas is described as 'rural land being divided into small plots for building creating the most effective breeding ground for future urban chaos'. Chatterjee also clearly observes that 'the metropolitan fringe provides a welcome refuge for the vast number of urban poor who are gradually pushed out of the old and established urban core of Calcutta.'

It is worth noting that the phenomenon mentioned in the preceding section was common till the 1990's. Post liberalisation of the Indian economy, with the advent of private developers in the residential supply market, large integrated residential development was mobilised by the developers. Land for such large township-like developments could be found only at the urban fringe and rarely in brown field sites within the city Corporation limits. Thus, the urban poor who used to be pushed out of the city core towards the urban fringes, now had to compete, even for fringe land, with developers, whose paying capacity was much higher and development interest quite different.

5. Correlating the Theoretical Framework of Housing and Urban Land Markets to the context of Kolkata

This research work analyses the Kolkata Metropolitan Area on various parameters which have been discussed in the preceding section on theoretical framework, and attempts to interpret the findings.

5.1 Density Pattern

The Plan Document for KMA, 'Vision 2025, Perspective plan of KMA: 2025' has been referred to as the source of data on densities in various parts of the Metropolitan Area. It is noteworthy that KMA spreading over 1851 sq. km comprises of three city corporations including Kolkata Municipal Corporation, and house about 39% of the population. There are 38 municipal towns, housing about 45% of the population and 77 census towns housing around 7% of the KMA population. A vast chunk of land in KMA is rural (40.31%) but house only 9% of the total population. Given this heterogeneous composition of the Metropolitan

area, it is imperative to understand the variation in densities in the different parts of the metropolitan area.

Density in persons/ha

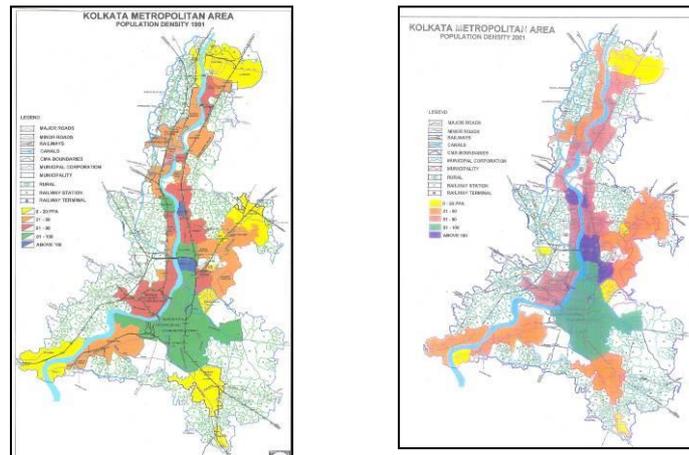


Figure 6: Densities in KMA in 1991 and 2001

The above figure represents the densities in the various urban entities within the KMA. It is seen that in a decade, many of the peripheral urban entities, particularly on the eastern and south eastern fringes have shown an increase in density from around 0-50 persons per hectare, which is the lowest density, to densities of 51-125 persons per hectare. All peripheral locations have shown an increase in density to the next higher range in the decade of 1991 to 2001. It is interesting to note that the large core area of KMA, which is the Kolkata Municipal Corporation area, has shown no change in density and remains dense but stagnant at 201-250 persons per hectare density.

The research, in line with Bertaud’s methods, has computed the density of people on urban built up areas, through image interpretation of LANDSAT images. Three LANDSAT images of 30 meter resolution were used at decadal intervals for around two decades, with the dates of image acquisition being 11 Nov. 1989, 24 Feb. 2002 and 19 Feb. 2009. A Multispectral 7 band (MSS) IMAGE was used to detect the built up areas within KMA boundary. Linear features (roads and railways) were traced and verified using Google Earth imagery.

The KMA boundary was superimposed from drawings made available by KMDA. Taking the existing CBD as centre, concentric rings at 5 km distance are mapped to have a quick reference of the extent of the city’s built up area in different suburban growth directions. The yellow lines traced on the image depict the extent of urban built up area as interpreted from the image.

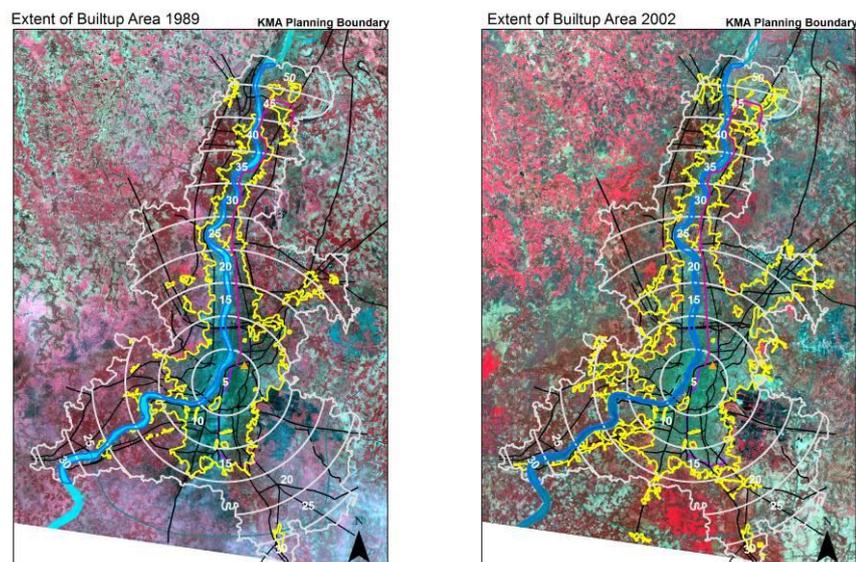
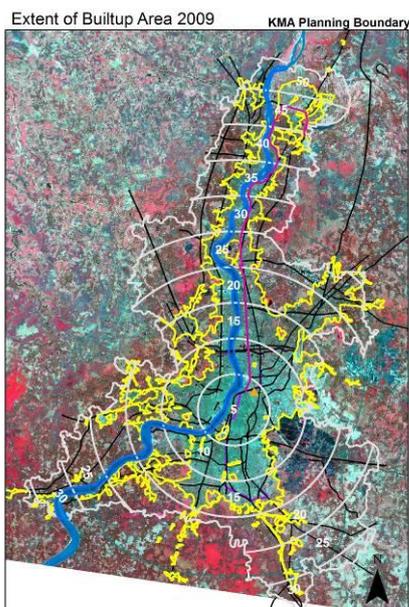


Figure 7a, b, c: LANDSAT image interpretation of Built up area in KMA for 1989, 2002 and 2009.



The key observations which can be interpreted from the images are as follows:

- i. The geometry of the KMA region shows the CBD and the centre of gravity being towards the southern side. The delineated Metropolitan area stretches upto 45 km to the north boundary and barely 15 km to the south boundary.
- ii. Growth in the eastern and south eastern fringes has been significant in the decade 1989 to 2002.
- iii. In the last decade of 2002 to 2009, the settlements have grown southward along two major spines and gone beyond the delineated metropolitan area limit.
- iv. It is evident, that even though the Metropolitan Planning Area has more land on the northward side, with increasing distance from the CBD, the development rate is much slower and restricted to the river edge. The south however has been growing at a faster pace due to its proximity to the CBD with built development even showing signs of going beyond the delineated Planning Area boundary.
- v. The southern and eastern part also has a robust road network along which the development has taken place, in contrast to the north and west, where the suburban rail is the main commuter mode, also explaining a more rigid controlled form of development.

The extent of builtup area and the computed density on built land are shown in the following table:

Year	1989	2002	2009
Population of KMA (in Millions)	12.64*	14.72*	17*
Urban Built up Area (in Sq. km)	461	704	738
Population Density on built up area in Persons/sq.km	27,418	20,909	23,035

*Population numbers used here are the ones available from the closest Census enumeration years of 1991, 2001 and 2011.

Thus the density of people on built area is as high as 23,000 persons per sq.km as against the figure of 9000 persons per sq.km when overall density of KMA is computed for the same population.

The burdens on the development corridors in the suburban areas can be understood, as the growth in the city corporation area has been stagnant. The rural hinterland does see sporadic development, but it is the urban peripheries which bear the burden of these extraordinary density figures.

5.2 Residential Development and Land markets

An analysis of the pattern of development in recent years shows significant development on some transport corridors in the south and south eastern periphery. The land price gradient on all these corridors and the nature of residential development along them form a part of a larger research. In this paper, some cases have been documented to give an overview of the transformations taking place at the fringes.

The phenomenon of urban development in all the peripheral corridors can be broadly classified into three types of development:

- i. Land conversion of agricultural land to residential use followed by subdivision into small plots for individual residential development. Land prices are low compared to core city areas for the two reasons of distant location with poor accessibility to city and absence of planned infrastructure (drains, sewer lines, electricity etc.).
- ii. Organised residential townships developed by the Government agencies- the metropolitan development authority, state housing boards being the major players. These developments would bring with them infrastructure development in phases and the accessibility of the entire area would increase. Being welfare projects, the mix of plots and housing units would include all income groups and work on the principle of cross subsidy to ensure availability of plots to the lower income groups of population as well. While the drawback of this model was the slow rate of progress, the benefits to the city's population were many, and most of the organized housing was developed in this way till the early 1990's.
- iii. In recent years, post liberalization, the private sector has been included as an actor in the urban development process. These developments work on a maximum profit basis. Thus they situate themselves in places of lowest land cost and with basic trunk infrastructure and then create islands of gated communities predominantly for the middle and upper segments of the population. These developments disrupt the socio-economic profile of the surroundings as they usually come up in low income suburbs. The residents usually have their own transport and hence do not need to interact with the immediate community at all. All amenities are provided within the gated community and they are isolated paradise islands. These islands create social divides and increase the land values in the surroundings, without giving any direct benefits.

6. Character of the Peripheral Residential Development in Kolkata

The change in morphology in one area surrounding these large residential developments in the fringe areas has been documented through archived images of Google Earth.

Case Study: East Kolkata Township- a large area developed by Kolkata Metropolitan Development Authority (KMDA).

Year of project initiation: 1976 Year of completion: Developed in phases from 1990s.

Total project Area: 315 hectares (approx.) Distance from CBD: 7 to 10 km on Eastern Fringe

Figure 8 a. East Kolkata Township in 2002.

- Government institutional group housing projects completed.
- Large number of vacant land parcels
- Surrounding area on eastern periphery rural in character with sporadic loosely strung development

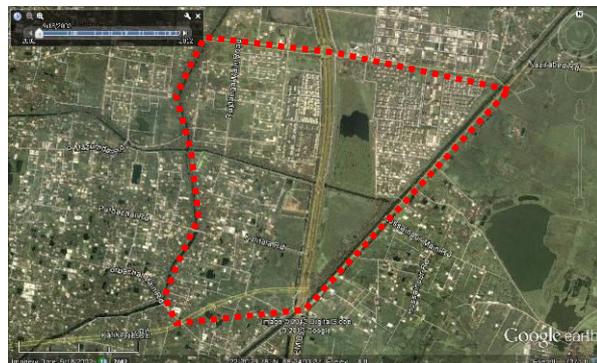


Figure 8 b. East Kolkata Township in 2009.

- Most vacant plots developed.
- Private developers and joint venture companies have developed many gated housing colonies, largely for the middle and upper income groups.
- Many institutions developed on commercial plots

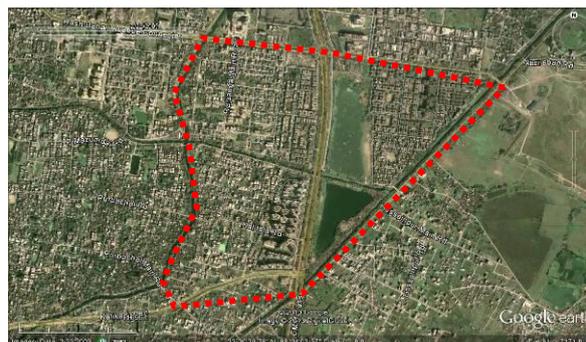


Figure 8 c. East Kolkata Township in 2012

- East Kolkata Township has almost totally developed as a major residential suburb with public transport, schools, hospitals and other social amenities.
- Areas on the east beyond the township area have shown escalated growth, as lower and middle income plotted developments, benefitting from the locational proximity to East Kolkata Township



Property prices in this area were collected from various real estate broker firms and published market scans were referred to obtain old data. The prices of the development in this zone are as follows:

	2002	2009	2012
Typology wise rates in East Kolkata Township and its surroundings	Sale rate in INR/sft	Sale rate in INR/sft	Sale rate in INR/sft
Housing Complexes	1500-1600	3000-3500	5000-7000
Stand alone apartments	1300-1400	2200-2800	4500-5000
Apartments one block behind	1100-1200	1800-2000	3500-4500

- The rate of escalation in housing complexes from 2002 to 2009 was at an average annual rate of around 16%, whereas for the period of 2009-12, the annual rate of appreciation has been around 33%.
- In case of the stand alone apartments, the appreciation in the earlier time span was in the range of 14% annually, and in the next span it was around 26% annually.
- In case of the apartment blocks one block behind, the appreciation was less than 10% annually in the first few years. In the second phase, the appreciation has been the highest in the range of 40% annually.

These observations are significant in revealing the transformation which takes place outside the planned development. With the East Kolkata Township saturated and complete with amenities, the price of residential units around escalate, as they are in high demand due to their proximity to all amenities. The rental rates here are even higher and the people having older houses are seen to renovate them to utilize the full FAR, to capitalize the rental potential.

It is interesting to note that around the late 1980's and early 90's, at the time of introduction of the neoliberal policies, a large private development was sanctioned by the State

Government a block beyond the East Kolkata Township. This township was a high end development meant as a second home for non-resident Indians (NRI) wishing to have a house in their homeland. The 65 acre township is being developed by a consortium of six developers and the land was obtained on lease from the State Government around 2006-2008, at a lease rent of 233 million INR, which was a paltry sum of 3.5 million per acre. Around the same time, other smaller land parcels were transacted in the neighbourhood of the project at around 5.5 million INR per acre. The project has 6 high end residential towers of 75 stories each and is currently being marketed at a price of INR 8000-8500/sq.ft. of built space.

It is ironic that the government in its role as developer had been just and fair and the projects developed by the Government had served the purpose of providing shelter to all. With the change in role of the government, from developer to facilitator, the Government has interpreted its role only as a land broker, leaving the onus of provision of housing solely to the private sector. In such circumstances, in developing countries like India, where the higher income groups also had few products on the shelf to choose from, the private developers would prefer to make huge profits and cater to the highest income group alone.

7. Emergence of a Divided City: causes and consequences

The conflict which arises is in the competition for precious land in the same fringe areas, as documented in the above mentioned case study. In the earlier stages of socialist development, normal market forces would push the lower income residents to the fringes, with Government giving infrastructure at later stages. Post liberalization of the economy, the demand for land in the fringes has increased, with developers seeking to develop high end residential enclaves in these areas, to minimize on cost of land and thereby maximize profits. This distorts the classic bid-rent curve of land prices, and generates smaller peaks at the periphery as well. The fallacy of this entire development is the increasing gap in housing for the lower income groups. Where are they living? How are they affording for urban housing? The creation of informal settlements in more prime locations and creation of slums in dilapidated inner city areas is a distinct possibility, thereby removing the lower income population from the formal housing markets. Along with it is the process of creation of 'reverse ghettos' of opulence amidst the seas of lower income sprawl at the fringes.

To conclude in the words of Amitabh Kundu,⁷ 'a switch over from planning to free market, therefore, has not given any impetus to urban growth'....'This has only helped institutionalize disparity and strengthen the process of segmentation of the cities into rich and poor colonies'.

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