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Article

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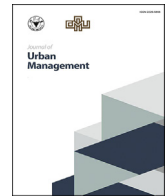
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Research Article

Exploring peri-urban dynamism in India: Evidence from Kolkata Metropolis

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ABSTRACT

Peri-urbanisation around metropolitan cities of India has been an emerging and apparent phenomenon in the last few decades. The peri-urban spaces, which are characterised by co-existence of urban and rural elements, are very dynamic in nature and undergoing continuous changes with regards to land use, population characteristics, and social systems. They are in fact considered as "regions of change". This paper tries to explore how do the processes of peri-urbanisation around cities instigate changes at the periphery of cities and what are the implications of these changes on the economic condition of peri-urban residents? It is observed that although the transitory spaces usually represent a spatial continuum between urban and rural counterparts, there are some instances where the continuum breaks. These spaces are experiencing rapid population growth, while stagnant or negative growth is observed in the urban core. Land use changes are very prominent in these transitional spaces as the built-up area is unprecedentedly increasing due to urban expansion. The study finds that peri-urbanisation brings unequal benefits for its residents; it opens new employment opportunities in emerging non-agricultural sectors, but at the same time it also aggravates gender disparity in work.

1. Introduction

Peri-urbanisation around metropolitan cities of India has been an emerging and apparent phenomenon in the last few decades. The peri-urban spaces are transitional areas between rural and urban habitats and are developed around cities due to rapid urbanisation and urban expansion (Shaw, 2005). The transitional spaces, which are characterised by co-existence of urban and rural features, are very dynamic in nature and undergoing continuous changes with regards to land use, population characteristics, and social systems (Narain, Anand, & Banerjee, 2013). These areas "expand and shrink geographically, 'eating' their way into the countryside, while they are swallowed by the expanding urban core area" and are in fact considered as "regions of change" (Schenk, 2005). They are transforming from rural to urban economies, thereby, what is peri-urban today might be a part of an extended urban body tomorrow and today's peri-urban was essentially rural in nature yesterday.

Understandably, peri-urban are the areas where both agricultural and non-agricultural land uses coexist together and the agricultural land is continuously getting transformed to non-agricultural uses due to rapid urban expansion. It is thus argued that "peri-urban is characterised by land use change" (Brook & Purushothaman, 2003). These areas are also going through a transition in social and institutional contexts as well, as Iaquina and Drescher (2000) observe peri-urban interfaces as the "areas of social compression or

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intensification” wherein “social forms and arrangements are created, modified and discarded”. Moreover, a large number of heterogeneous social groups live together in such interfaces with different and often “competing interests, practices and perceptions” (Allen, 2003).

Studies also found manifold changes in the economic condition of peri-urban areas attributable to urban development. These transitional spaces around cities emerge as new economic spaces attracting diversified industries and development activities due to their locational advantages, improved transport networks, and cheaper land (Shaw, 2005). Many industries, especially polluting industries from the urban core, are also relocated in these spaces to capitalise lenient environmental restrictions as Dupont (2005) found in the case of Delhi. Special Economic Zones (SEZ), information technology (IT) parks have come up in such peri-urban spaces; for instance, Rajiv Gandhi Technology Park in case of Chandigarh (Narain et al., 2013) and HITEC city at the periphery of Hyderabad city are classic examples for this (Kennedy, 2007). This phenomenon is common in all large cities of India.

The peri-urban spaces therefore offer greater job opportunities in emerging non-farm sectors, easy access to market, expansion of services and trade, and many other facilities arising out of close proximity to major market centres (Lanjouw, Quizon, & Sparrow, 2001; Mandere, Ness, & Anderberg, 2010; Tuyen, 2014). Because of these factors, peri-urban areas around cities have become attractive sites for migration both for the poor and the rich (Sridharan, 2011). However, the major reason for the migration of poor people is mainly the availability of economic opportunities while the congestion-free environment and availability of cheap land for investment are the main attractions for the migration of the richer sections. People consider the peri-urban areas as the best living places which “entitle them the benefits of both the urban and rural areas” (Mahavir, 2011). They can utilise some urban facilities along with rural lifestyle and cheaper land. Consequently, these transitional areas beyond the city boundaries experience phenomenal population growth owing to their dynamic nature, while the city core is more or less stagnating (Shaw, 2015). Therefore, the question arises how do the processes of peri-urbanisation around cities instigate changes at the periphery of cities and what are the implications of these changes on the economic condition of peri-urban residents? This paper attempts to explore these issues of peri-urbanisation in India, taking Kolkata metropolis as a case. The focus of this study is on the dynamic changes in peri-urban areas related to demographic and land use characteristics and their subsequent effects on employment structure.

Kolkata is the third largest urban agglomeration in India, after Mumbai and Delhi and the largest in eastern India. It is one of the oldest and greatest metropolises located on the banks of Hugli River with exceptional 14.2 million population as per Census of India, 2011. The metropolitan city has vibrant interactions with its huge hinterland extended over adjoining districts due to improved transport networks, highways and railways. Many people living in peri-urban areas commute to the city for work through sub-urban railways and the number of commuters and commuting distances have been increasing significantly over time in Kolkata (Basu & Dhar, 2012). It is reported that the main city of Kolkata (i.e. Kolkata Municipal Corporation [KMC]) has experienced negative growth rate of – 1.83 per cent over the last decade (2001–2011) whereas the peri-urban areas are continuously growing faster. This provides the rationale for the study undertaken in the present research.

This paper has been organised into seven sections. First section introduces the understanding and issues of peri-urban areas around cities along with a brief description of study area. The data sources from which relevant information has been gathered for this study is provided in the second section. The fourth section presents the complexities and processes related to identification of peri-urban areas. The fifth and sixth sections explore the dynamic changes in peri-urban areas of Kolkata metropolis in terms of demographic and land use characteristics, respectively. The effect of these changes on the economic condition of peri-urban residents has been highlighted in the seventh section. The last section summarises major findings and arguments of this paper and draws on the future scope of research.

2. Material and methods

2.1. Database

Census of India is the only source that provides comprehensive data at the village level in this country on a decadal basis. For this study, data related to population and workforce composition has been collected from the Primary Census Abstracts (PCA) of Census of India, 2001 and 2011 at the village level. Two satellite imageries of Landsat 2017 and Landsat 2000 collected from United States Geological Survey-Earth Explorer (USGS-EE) have also been analysed using Supervised Maximum Likelihood Method for land use land cover (LULC) classification. This has subsequently been superimposed on village boundary using ARC GIS-10.2.2 software to extract built-up area coverage at the village level.

2.2. Understanding and identifying the peri-urban areas

Peri-urban areas are in transition from rural to urban economies and having the characteristics of both rural (i.e. mostly agricultural) and urban (i.e. mostly non-agricultural) land uses (Adell, 1999). These transitional spaces, lying outside the municipal boundaries, acquire complexities and dynamism with time. However, there is no standard methodology for the delineation of such areas given their complex characteristics of rapid growth in population and spatial size, and their irregular and continuously evolving morphology (Pryor, 1969; Mondal & Sen, 2020). Various scholars have defined peri-urban areas differently in their studies—some apply the term to census towns (CTs) or small towns, which are in close proximity to the city (Shaw, 2005; Gowda et al., 2012), while others due to data constraint use the “districts around the metropolises” (Sen, 2016) or arbitrary “buffer zones” (Banu & Fazal, 2013). Brook & Purushothaman argue: “There is no single satisfactory definition of the peri-urban interface and different definitions are understood to apply in different circumstances. They may even change in the same location over time” (2003: p2).

Peri-urbanisation is a process of urban expansion emanating from the city core. Therefore, the areas close to the city tend to be more

affected by this process. With this understanding, the adjoining Community Development Blocks (often known as CD Blocks) of the surrounding districts of Kolkata metropolis, are selected for this study and further identification has been attempted at the village level (Fig. 1). There is a binary administrative system in India – urban areas governed by *Urban Local Bodies* (ULBs) and rural areas under the governance of *Gram Panchayat* (e.g. village council). Peri-urban spaces although look and feel like urban areas are governed by the *Gram Panchayat* given that the *Nagar Panchayat* precisely mandated as a separate governing body for transitional spaces by the 74th Constitutional Amendment (1992) has not been implemented in most states of India in general and West Bengal in particular (Shaw, 2005).

Unlike urban areas, there is no standard definition for peri-urban areas in India. Therefore, following the characteristics of peri-urban areas and given the data availability, this study incorporates three normative standards which have been used to identify the peri-urban areas, such as a) minimum population of 4000, b) at least 50 per cent male main working people engaged in non-agriculture activities, and c) a population density of 300 per square kilometre. These standards are somewhat lower compared to the criteria of Census definition for urban areas.¹ Though these cut-offs are ad-hoc in a sense, they facilitate in the identification of the potential transitory areas that fall between the rural and urban spaces. Notably, all three criteria are based on demographic and livelihood characteristics. Another important aspect of peri-urbanisation is the co-existence of urban and rural land uses and an increased extent of built-up area, which is a reflection of a progressive urban imprint. Built-up area is often used as synonymous with urban land use, therefore the coverage of built-up area has also been used as a necessary precondition for identifying transitional spaces. The cut-off for built-up area coverage is somewhat challenging, since unlike the Census criteria of urban areas, there is no pre-existing acceptable standard norm for this variable. To overcome this problem, after an analysis of the extent of built-up area in and around Kolkata metropolis, the average value of 10 per cent coverage has been considered as the normative standard for this study. This norm as used in this study is therefore city-specific and the average value could be different for different cities. The settlements (villages and settlements complying to Census criteria i.e. census towns), which fulfil the norms mentioned above and also secure more than 10 per cent built-up area coverage implying a mixed land use characteristics, have been identified as peri-urban areas. The reason behind the incorporation of census towns in this demarcation process is that although they are recognised as urban by the Census of India, are in reality administered by the *Gram Panchayat* like other rural areas (Shaw, 2005). Type of governing institutions, whether rural or urban bodies, is an important underlying characteristics for the development of any area as the rules and regulations, provision of services, planning process etc vary among these institutions.

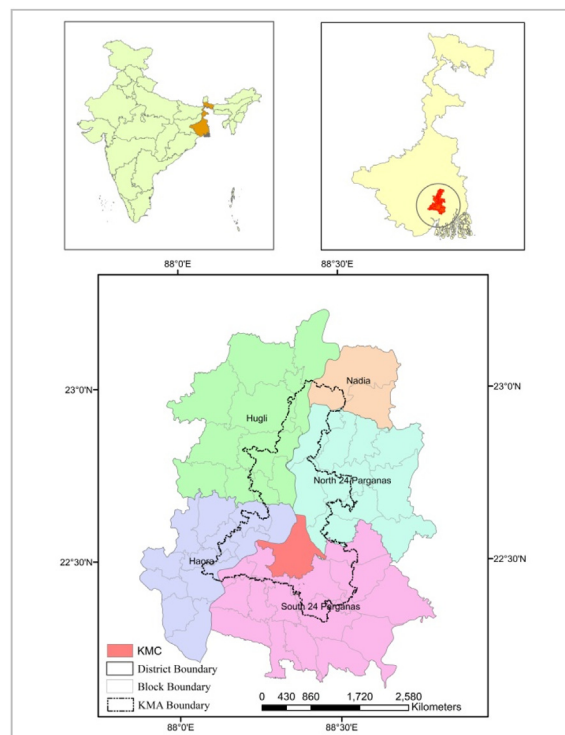


Fig. 1. Kolkata metropolis and surrounding CD blocks.

Source: Prepared by the authors.

¹ Census of India defines urban area as “all places with a municipality, corporation, cantonment board or notified town area committee, etc.” or “all other places which satisfied the following criteria: i) A minimum population of 5000; ii) At least 75 per cent of the male main working population engaged in non-agricultural pursuits, and iii) A density of population of at least 400 persons per sq. km”.

It is observed that although a huge area surrounds the Kolkata Metropolis, only 196 settlements are considered as peri-urban spaces. From this analysis, the transitional spaces have been categorised into two groups: peri-urban category-1 (PU:C1), i.e. settlements fulfilling the Census criteria of urban and cover more than 10 per cent built-up area and peri-urban category-2 (PU:C2) including the villages fulfilling all three criteria and also with more than 10 per cent built-up area (Fig. 2). It has to be understood that the former peri-urban spaces (140) are comparatively more developed and influenced by the urban expansion than the latter category (56) (Table 1). These transitional spaces are mostly located near the city of Kolkata though some are found to be located at outskirts without following a concentric pattern. In this study, the dynamism of peri-urban areas has been analysed in comparison with urban core and rural areas. Therefore, all the 47 Urban Local Bodies (ULBs) located within Kolkata Metropolitan Area (KMA) are considered as urban core; and the areas which are neither ULBs nor peri-urban are treated as rural.

3. Results and discussion

3.1. Population dynamics in peri-urban Kolkata

3.1.1. Population growth

In the first half of the twentieth century, population growth of the cities in India was largely concentrated within the municipal boundaries. Contrary to the western situation, “much of the population growth and migration to cities has been accommodated by crowding more and more people into existing urban areas rather than by expansion of cities into suburbs and fringe areas” in India (Brush, 1977). However, this trend of population absorption in cities has changed in last few decades and the changes have been more apparent in large metropolitan cities (Shaw, 2005). This is reflected in the growth of large cities not only in terms of population but also in terms of their spatial coverage i.e. lateral spread.

The spatial expansion of Kolkata metropolis has been very significant over the period of time and can be captured by the phenomenal population growth in its peri-urban areas. In this study, the urban core, which includes the 47 Urban Local Bodies (ULB) in the Kolkata Metropolitan Area (KMA), shows an average decadal population growth of 4.39 per cent only (Table 2). It is very surprising to note that the city of Kolkata (KMC) like other 13 ULBs experience negative growth of population (– 1.83 per cent) over the last decade, in sharp contrast with the decadal growth rate of 3.93 per cent from 1991 to 2001. The negative growth in the “city of joy” can be traced back to 1980s when some inner wards of KMC started to lose population and this trend has spread consequently to other areas in next decades (Shaw, 2015).

Although the central areas of several large cities in India are gradually stagnating or have started to lose population, the peri-urban areas continue to gain a phenomenal population growth (Shaw, 2015). The peri-urban areas around Kolkata report rapid growth of

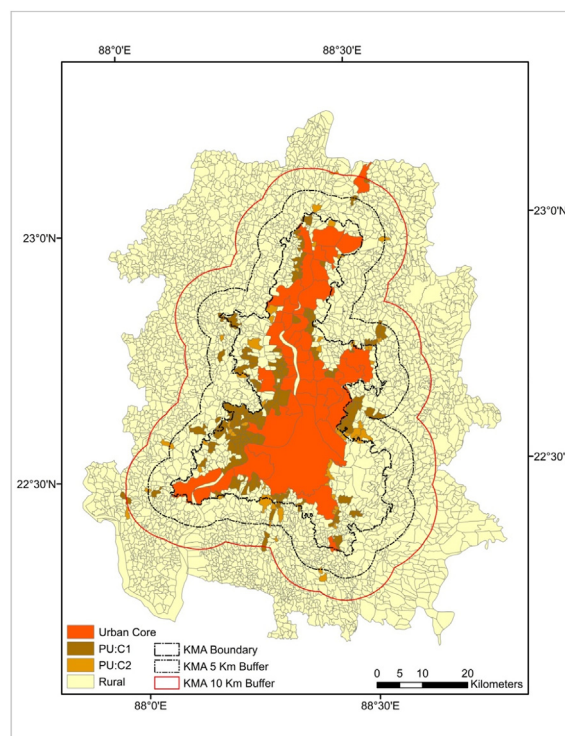


Fig. 2. Peri-urban areas around Kolkata metropolis.

Source: Prepared by the authors.

Table 1
Peri-urban areas around Kolkata metropolis.

Area	Buffer Zone	Total Number	Peri-urban (PU)	PU to Total (%)	Zone to Total (%)	
Peri-Urban Area	PU:C1	Inner Zone	196	119	60.71	54.14
		Intermediate Zone	62	16	25.81	17.13
		Outer Zone	104	5	4.81	28.73
		Total	362	140	38.67	100.00
	PU:C2	Inner Zone	87	41	47.13	25.22
		Intermediate Zone	84	11	13.10	24.35
		Outer Zone	174	4	2.30	50.43
Total	345	56	16.23	100.00		
Rural Area	Inner Zone	442			11.67	
	Intermediate Zone	782			20.65	
	Outer Zone	2414			63.74	
	Total	3638			100.00	

Source: Computed by the authors

Note: PU – Peri-urban, The figures are number of PU areas and villages in different categories.

Table 2
Population dynamics in peri-urban Kolkata, 2001 – 2011

Area	Population		Population (%)		Population Growth	Population Density		
	2011	2001	2011	2001	2001-11 (%)	2011	2001	
Urban Core	13379546	12817290	52.69	55.51	4.39	13884	13386	
Peri-urban	PU:C1	1718838	1400387	6.77	6.06	22.74	5620	4581
	PU:C2	307956	228489	1.21	0.99	34.78	2898	2150
Rural	9987480	8644513	39.33	37.44	15.54	1670	1446	
Total	25393820	23090679	100	100	-	-	-	

Source: Computed by the authors

population with an average of 24.43 per cent decadal rate. Among the transitional areas, the peri-urban category–2, i.e. the villages, which fulfil all three criteria, experience the highest growth of population (34.78 per cent) followed by the PU: C1 (e.g., settlements fulfilling census criteria) with 22.74 per cent. Even, the population growth rate in rural areas is found to be higher (15.74 per cent) than the urban core. Sita and Bhagat 2007 in a study of 35 metropolitan cities also observe that the population growth of urban agglomeration i.e. “a continuous urban spread comprising a town/city and its adjoining outgrowths” is much faster than the city proper thereby indicating the nature of peri-urbanisation around the large cities in India.

As far as absolute numbers are concerned, although the population size in urban core has increased from 12.81 million to 13.37 million over the decade, the share of population has decreased by 3 percentage points. As expected, this population is absorbed by the peri-urban spaces as percentage of population in PUIs has gone up to 7.98 per cent from 7.05 per cent.

3.1.2. Population density

Despite the fact that the rural to urban migration in India is mostly attributed to the rural push factors rather than the urban pull factors, cities especially the large ones have always been the attraction points for better opportunities – employment facilities, education and health services, administrative services, and overall a better quality of life (Bhagat, 2010; Sridhar, Reddy, & Srinath, 2010). Therefore, population density in cities continues to rise. In this case, as high as 13,884 persons live per square kilometre in the urban core of Kolkata, but what is striking here is that the magnitude of increment from the last decade is very minimal by 498 persons only (Table 2). Interestingly, the peri-urban areas of Kolkata show a rapidly increasing trend of population density over the last decade. The transitional areas report quite high density (5620 and 2898 persons per sq km in PU:C1 and PU:C2 respectively) with an increase by 1039 and 748 persons over the decade signifying that the peri-urban areas continue to grow at a faster rate while the urban core is losing its population base. This is because of the fact that the urban core is almost saturated and overcrowded on limited land, whilst the peri-urban areas nearer to the city are emerging as alternative spaces with improved transport networks facilitating the peri-urban residents to live in a better environmental setting with cheaper land and lower taxation systems and easily commutable to the city for work. Basu and Dhar 2012 observe: “With continuing growth of the outer fringes of the city, the numbers of daily commuters and commuting distances have also increased markedly in Kolkata and other large Indian cities”. This is not only the case with Kolkata, but also in other large cities in India, such as Mumbai, Delhi, Chennai, Bangalore, and Hyderabad (Shaw, 2015).

3.1.3. Does the distance from the city matter in peri-urbanisation?

For further exploration of population dynamics, the area is divided into three zones based on distance from the city such as inner zone i.e. within KMA, intermediate zone – KMA to 5 kms buffer and outer zone – outside the 5 kms buffer (Fig. 2). If one observes the population growth in the peri-urban areas of Kolkata metropolis, can find a clear spatial pattern where the peri-urban areas closer to the city core are observing higher population growth than the areas located on the outskirts. Table 3 reveals that the peri-urban areas located within the inner zone are reported to have higher population growth (24.89 per cent) over the last decade, while the areas in the intermediate and outer zones report comparatively slower growth (22.73 per cent and 18.57 per cent respectively). With respect to absolute population size, more than 86 per cent peri-urban population is concentrated in the inner zone and the corresponding share goes down to as low as 10 per cent in the intermediate and 3 per cent for the outer zone. This pattern is evident due to the fact that the immediate interfaces nearer to the city are more influenced by peri-urbanisation, while the effect decreases outwards. Population density also follows a similar pattern.

3.2. Land use land cover dynamics

Land use land cover (LULC) pattern in the peri-urban landscape is very complex and dynamic than any other areas. These areas receive the spill over effects of urbanisation emanating from the city and are going through a transformation from rural to urban economies and so does the land utilisation which is evident in all large metro cities in India. Using satellite imageries of two different periods (2000 and 2017), an attempt has been made to understand the changes over time.

As seen in Figs. 3 and 4, the built-up area is the most dominant type of land use in the urban core, which remains evident over the period of time. As far as the peri-urban area is concerned, the land use change is very prominent in the last decade. The built-up area is observed to be rapidly increasing in these spaces. The built-up area was 37.5 sq. kms only constituting 9.6 per cent of total area in 2000, but this increases to a high of 110.5 sq. kms comprising 28.5 per cent area with a phenomenal growth of 195 per cent in 2017. The expansion of built-up area in PUI is facilitated at the cost of vegetation and agricultural land. Conversion of agricultural land to non-agricultural purposes is a continuous phenomenon in the transitional interfaces due to emerging residential, commercial, and other non-agricultural activities. In addition, the uninterrupted population pressure accelerates the conversion rate. This mostly happens along the transport corridors and the lands that are located adjacent to the city are more prone to this conversion.

3.3. Employment characteristics of peri-urban areas

3.3.1. Occupational structure

Peri-urbanisation and spatial expansion of cities stimulate changes in livelihood scenario of peri-urban areas (Narain et al., 2013). Decentralisation of production system from the urban core to the periphery facilitated by cheap land and labour, better infrastructure facilities, and improved transport networks trigger employment opportunities in the emerging non-agricultural sectors (Tacoli, 2003). It is found that the work participation rate (WPR) across the regions is increasing over the decade though at a marginal rate (Table 3). However, this increment in WPR is quite faster in peri-urban interfaces compared to the urban and rural areas over the decade, due to industrial expansion in these interfaces.

WPR counts the people who are engaged in work without considering the variation among different categories of workers i.e. main and marginal workers. Majority of the workers across the board – urban, peri-urban and rural – are main workers and the share in urban core is slightly higher than other areas. Another important aspect of occupational structure is an increasing trend of marginalisation of work over the decade in all areas. It is the rural area that reports maximum number of people engaged in marginal work in 2011 (23.5 per cent), followed by peri-urban (13.9 per cent) and urban core (11.1). However, the magnitude of marginalisation (i.e. increase in marginal workers) from 2001 to 2011 differs; the highest being in the urban core with 3.96 per cent increase in marginal workers over the last decade, while the figure is 3.02 per cent in rural areas and only 1.55 per cent in the peri-urban interfaces.

It is therefore understood that the peri-urban areas represent an economic continuum in the spatial context between the urban core and the rural areas with respect to WPR, share of main workers, and share of marginal workers (Table 4). In general, it might be stated that the peri-urban areas enjoy the urban effects in terms of economic benefits due to the peri-urbanisation around the cities. In a study

Table 3
Population dynamics by distance zone, 2001–2011

Area	Buffer Zone	Population		Population (%)		Population Growth	Population Density	
		2011	2001	2011	2001	2001-11 (%)	2011	2001
Peri-urban	Inner Zone	1745823	1397906	86.14	85.82	24.89	5176	4147
	Intermediate Zone	209738	170893	10.35	10.49	22.73	3683	3001
	Outer Zone	71233	60077	3.51	3.69	18.57	3986	3362
	Total	2026794	1628876	100	100	24.43	4918	3954
Rural	Inner Zone	1902935	1625023	19.05	18.8	17.1	1975	1686
	Intermediate Zone	2276811	1976486	22.8	22.86	15.19	1719	1492
	Outer Zone	5807734	5043004	58.15	58.34	15.16	1573	1367
	Total	9987480	8644513	100	100	15.54	1670	1446

Source: Computed by the authors.

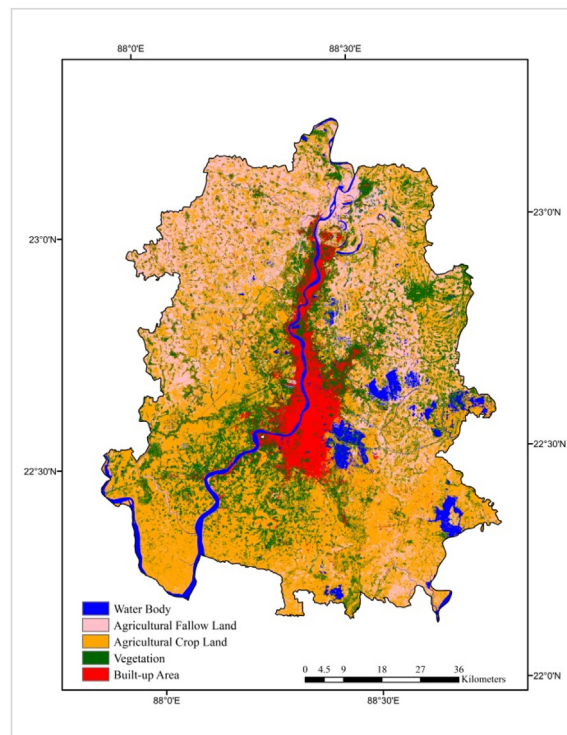


Fig. 3. LULC in Kolkata metropolitan, 2000.
Source: Prepared by the authors.

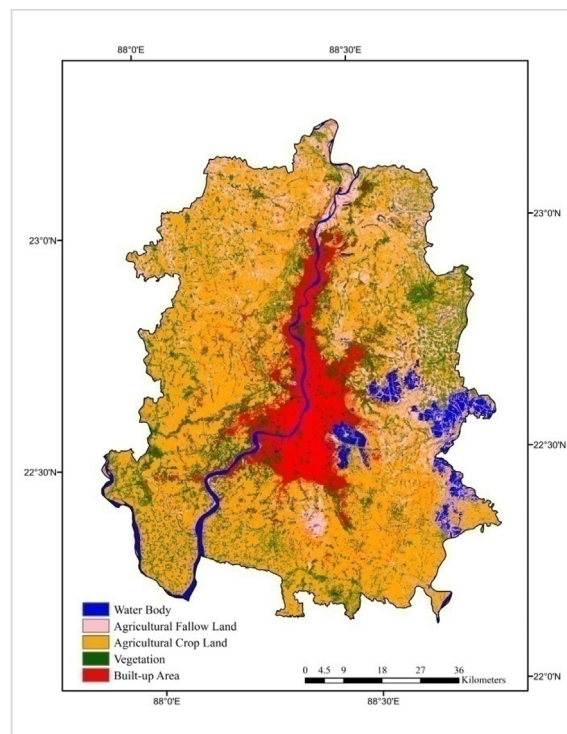


Fig. 4. LULC in Kolkata metropolitan, 2017.
Source: Prepared by the authors.

Table 4
Occupational structure in peri-urban Kolkata, 2001–2011

Area	WPR (%)		Main Worker (%)		Marginal Worker (%)		
	2011	2001	2011	2001	2011	2001	
Urban Core	37.14	34.79	88.9	92.83	11.1	7.17	
Peri-Urban	PU:C1	37.48	33.31	86.58	87.92	13.42	12.08
	PU:C2	36.26	32.39	83.08	85.71	16.92	14.29
Rural Area	37.02	33.84	76.55	79.57	23.45	20.43	

Source: Computed by the authors.

Table 5
Work participation across gender in Kolkata metropolis, 2001–2011.

Area	2011			2001			
	Male WPR (%)	Female WPR (%)	Disparity of WPR	Male WPR (%)	Female WPR (%)	Disparity of WPR	
Total Worker (Main and Marginal Work)							
Urban Core	58.14	14.70	0.25	55.59	10.88	0.20	
Peri-Urban	PU:C1	59.45	14.54	0.24	54.63	10.34	0.19
	PU:C2	58.53	13.07	0.22	53.40	10.14	0.19
Rural Area	58.90	14.16	0.24	54.05	12.60	0.23	
Main Worker							
Urban Core	92.20	74.94	0.81	94.37	83.77	0.89	
Peri-Urban	PU:C1	90.76	68.76	0.76	91.13	69.64	0.76
	PU:C2	87.25	63.6	0.73	89.33	65.48	0.73
Rural Area	82.07	52.55	0.64	85.52	52.75	0.62	

Source: Computed by the authors.

Note: Disparity of WPR- Ratio of Female WPR to Male WPR

of six large metro cities in India, [Sen \(2016\)](#), after elaborating the economic conditions of peri-urban regions using various indicators, such as monthly per capita expenditure, workers employed in the organised sector, and wages, also finds such spatial continuum. Surprisingly, with reference to the increasing trend of marginalisation of work, the spatial continuum breaks and the peri-urban areas resist this marginalisation process. The possible reason could be the emergence of diverse economic activities in these interfaces as peri-urbanisation opens up a wide range of economic activities starting from farming, animal husbandry, and small industries to large-scale industries and IT sectors ([Tacoli, 2003](#); [Narain et al., 2013](#)).

3.3.2. Gendered nature of work participation

Gender perspective of work in the peri-urban regions is also interesting. Understandably, the peri-urban areas around the large cities in the developing world have been emerging as new economic spaces that reflect the spatial clustering of agricultural as well as the non-agricultural activities, diversified employment opportunities, sometimes with higher wage rates. This often could be beneficial for women who can join the labour market more easily ([Hart, 1996](#)), but there are also cases from India where women have generally been excluded from the benefits of the expanded economic opportunities ([Paul & Raju, 2014](#); [Sen, 2016](#)). As studies suggest that “women are often known to stay back in agriculture in the rural peri-urban zones, while the male migrants commute or migrate to join the labour pool in the urban centres” ([Iaquinta & Drescher, 2000](#)). Additionally, gender discrimination in wages is very common in the Indian labour market.

[Table 5](#) provides some commonly observed trends about the work participation of male and female across the locations over the last decade. It is observed that the male WPR is always higher than the female WPR in all locations and has been increasing at a higher rate than that of the female in the peri-urban and rural areas, while the rate is slightly slower in case of the urban core. Interestingly, the difference between the overall WPR (main and marginal worker) and the WPR of main worker is higher in case of females compared to male counterpart across the board and across time, thereby pointing to high level of marginalisation of female work. The plausible reason for higher marginalisation of female work is more participation in domestic and extra-domestic activities, so they are not available for work throughout the year and only can manage some marginal work. This seems to be true irrespective of locations.

However, female work participation in peri-urban areas especially category-2 is lower than that of urban core or rural areas for the overall workers, which remained intact over the years. Similarly, the disparities of WPR between male and female in peri-urban spaces are also higher than the urban and rural counterparts and the pattern continues over the decade.² It has been stated that the barriers to women's entry to the job market are greater than the men and this seems even more stringent in the peri-urban areas because of the

² Disparity of WPR between male and female is estimated by the ratio of female WPR and male WPR. Lower the ratio indicates higher amount of disparity of work between male and female and vice versa (Viewed from [Sen, 2016](#)).

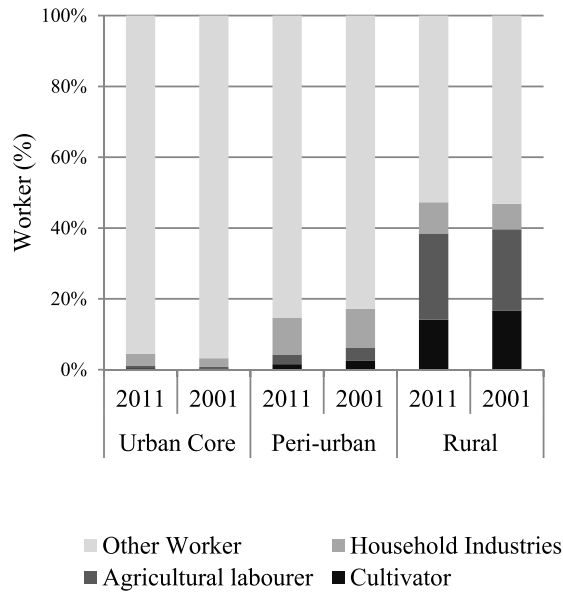


Fig. 5. Workforce composition of main worker, 2001 - 11.
Source: Prepared by the authors

transient nature of work of men of the household and smaller household size (Sen, 2016). However, in case of the female WPR and gender disparity of main worker, the peri-urban represents a spatial continuum between urban and rural areas.

3.3.3. Changing work composition in transitional spaces

The Census of India earlier used to provide a detailed nine-fold industrial classification of employment pattern for each settlement (i.e. village and town) but 2001 onwards it only gives data on four-fold classification – cultivator, agricultural labourer, household industry worker, and other worker under two broad heads of main and marginal workers. Depending on the available resources and opportunities, the urban and rural areas have different employment pattern. Fig. 3 reveals that in urban core of Kolkata metropolis, most

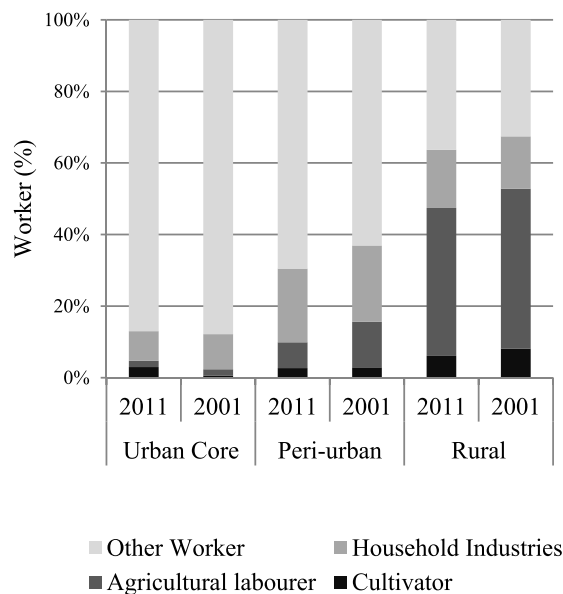


Fig. 6. Workforce composition of marginal worker, 2001 - 11.
Source: Prepared by the authors

of the main workers (more than 95 per cent) are engaged in other work including public servants, privates jobs etc, while the rural areas are directly or indirectly dependent on agriculture and the peri-urban areas show a pattern in between the two. In these interfaces, some are still engaged in agriculture and a significant proportion of labour force are now shifting to non-agricultural activities because of its transitional character from rural to urban economy.

Although the occupational pattern of the main worker across the board by and large remains almost same over the decade from 2001 to 2011, a significant change is observed in peri-urban interfaces where the share of cultivator and agricultural labourer has declined in 2011 and the corresponding figure for other worker has increased (Fig. 5). The reasons behind this change could be twofolds; conversion of agricultural land to non-agricultural activities due to spatial expansion of the cities and subsequent loss of agricultural livelihood on the one hand; and the emergence of diverse employment opportunities in these transitional areas on the other. The occupational pattern of marginal worker is also similar to that of main worker, nonetheless the peri-urban areas reflect a sharp decline in share of agricultural labourer in 2011 (5 percentage points) and a rapid increment of other worker thereby pointing towards the emerging short-term job opportunities in non-agricultural sectors in the transitional spaces (Fig. 6).

4. Conclusion

This paper has analysed the dynamic changes at city's periphery triggered by the processes of peri-urbanisation and their subsequent economic effects. The conceptual understanding and methodological complexities for identification of peri-urban spaces which are in transition from rural to urban economies are also illustrated. These spaces come up as new landscape where urban-rural links are redefined due to the growing interaction between the city and the rural hinterland. They are very dynamic, as what is peri-urban today would be part of the urban tomorrow, thereby posing serious challenges before the policy makers and planners to manage these spaces. However, there is neither any clear definition nor any standard methodology available for delineation of transitional areas. The method used in this study could potentially facilitate to identify the peri-urban areas, since some of these indicators encapsulate processes of change. Another important strength of this method is the "scale factor", the identification has been done at a micro level – village level. Thus, this method is able to capture micro level nuances not observed in other studies.

In this study, it is observed that the peri-urban spaces in general perception represent a spatial continuum between urban and rural counterparts. Although the peri-urban areas of Kolkata by and large maintain this spatial continuum between the rural and urban, there are some cases where the continuum breaks. The transitional areas of this metropolis are experiencing rapid population growth while the urban core is more or less stagnating or losing population. The main city of Kolkata is in fact reports negative growth over the last decade. The results of this study are consistent with the findings of other large cities of India as well (Shaw, 2005; Narain Anand, & Banerjee, 2013). Further, the inner peri-urban interfaces are growing faster than that of the intermediate or outer areas because of the distance factor as the effect of urban expansion decreases with increasing distance from the city core (Kundu, Pradhan, & Subramanian, 2002). Land use changes are also very prominent; built-up area is unprecedentedly rising in due course of time and more lands are being used for non-agricultural purposes following urban expansion. Therefore, the statement by Brook and Purushothaman (2003) that "peri-urban is characterised by land use change" seems quite appropriate in this study.

The changes of demographic and land use characteristics in peri-urban areas of Kolkata also have subsequent impacts on the economic condition. The increasing WPR and declining marginalisation of work in the transient areas indicate the emergence of diversified employment opportunities in non-agricultural sectors in peri-urban spaces. Similarly, the non-farm activities are increasing given that of outflow of farm land and subsequent loss of agricultural livelihood in such interfaces. However, the disparities in WPR between male and female in these peri-urban areas remain higher compared to the urban and rural areas which reflect the unequal opportunities for women brought by the processes of peri-urbanisation. This has also been examined by other studies as the barriers to women's entry to job market are greater than men and seems to be more preventive in the peri-urban areas because of the transient nature of work involving men of the household and smaller household size in peri-urban areas. It is also found that unemployed women seeking or available for jobs in such areas are greater than the men in all age groups (Sen, 2016).

From the above analysis, it is therefore observed that the peri-urban areas of cities are emerging as new economic spaces which have become attraction points to the industries and other commercial activities because of their locational advantage, cheap land and labour, and lenient regulations due to fuzzy governance structure (Tacoli, 2003; Narain et al., 2013; Sen, John, & Priya, 2018). However, the processes of peri-urbanisation are characterised by unequal opportunities and challenges. Although peri-urbanisation around cities instigates higher population growth and economic benefits at city's periphery by providing diversified employment opportunities in the emerging non-agricultural sector, but at the same time it also aggravates gender disparity in work. Hence the questions needs to be further investigated – are the inequalities and the changes therein in terms of employment sharper in the peri-urban areas compared to the urban core and rural areas? How do the processes of urban peri-urbanisation shape inequalities in peri-urban spaces of cities? Whether new forms of inequalities are emerging in peri-urban interfaces, not observed in other regions? This study also extends valuable insights for the stakeholders involved in the planning process. On the face of the complexities of dynamic peri-urban spaces, planning initiatives and targeted interventions of livelihood opportunities of population sub-groups are therefore required along with the provision of basic amenities and infrastructure.

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