

SPATIAL VARIATIONS IN URBAN LAND VALUE AND ITS DETERMINANTS: KURSEONG MUNICIPALITY

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Abstract

There has always been a demand for land due to its potential perspective for accommodation and making investment. With the process of rapid urbanization, land has become a scarce resource due to its limited availability especially in urban areas. The facts on urban land value, therefore, have become vital for town's economy and play a fundamental role in urban planning. The existing land value, its patterns and responsible factors for its variation are important for identifying the future urban development and envisaging probable changes. The present paper attempts to determine the variations in land value in different wards of Kurseong town and identify the factors influencing land values taking a number of indicators into consideration with the application of statistical techniques. After applying Karl Pearson's correlation coefficient method, the study reveals that a strong positive correlation exists between the land value and various urban facilities available in the town and population density in different wards. There is also a marked decrease in land value and percentage change in variation from the CBD towards the peripheral area.

Key Words: Urbanization, land value, land use, spatial variation, temporal variation.

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1. Introduction: With urbanization and associated process of economic development, there is an ever-increasing demand for land for constructing residential and commercial buildings. Due to its limited availability, land has become a scarce resource especially in urban areas. The land may be referred to as a property or a real estate, not including buildings or equipments that do not occur naturally. The Oxford dictionary defines land “as an area of ground especially in terms of its ownership or use.” Depending on the title, land ownership may also give the holder the rights to all natural resources on the land. In the traditional school of economics, land is considered a factor of production, along with labour and capital. As land is not a depreciable asset, opposed to almost any other asset, the value of the land increases over time depending upon the type of functions for which it has been put to.

Almost everywhere different kinds of land uses are associated with varying land values. Land value means its monetary worth i.e. the value of land in the market place. In other words, it is the measure of how much a plot of land and the improvements on it are worth especially in its sale. When a land owner pays taxes on his or her real estate, part of what is taxed is the value of land, in addition to whatever structures sit on it. However, different land regulations, complex registration processes and lack of data on land transactions, make it difficult to estimate the exact value of land, particularly in developing countries. Hence, the present study too focuses on the value of land alone and not the improvements on it due to limited information on land value trends especially the value of improvements on land over a period of time. The reason for the limited available information may be because in most of the developing countries, land has been considered to be a community property, or if privately owned, is so highly regarded as possession that seldom is ownership transferred.

2. Review of Literature: Worldwide literature works on urban land value have been carried out by the scholars with different approaches and perspectives in the past and at present. Topcu and Kubat (2009) have attempted to discuss the urban land values and the determining spatial factors affecting the urban land values in residential areas of Istanbul, a pioneer city of Turkey taking the structural variables both at dwelling and building level, the variables of neighbourhood unit, natural and built environment and the socio-economic characteristics of built environment into consideration. The spatial and environmental factors related to economic values have been

specifically examined using GIS database and statistical methods. Palekha (2006) has highlighted the complex influence of geographical factors upon the formation and behaviour of urban land value in urban settlements of Ukraine and has stressed on the significance of knowledge and information of land value in future town planning. Kolowe (2014) has analysed the factors affecting the urban housing values

in Rwanda in terms of structural, environmental and neighbourhood attributes. By applying different statistical techniques he found a strong and significant impact of environmental attributes on the well being of the urban residents and the land value as according to analysis the residents were willing to pay more to access attributes maximizing their utilities such as access to potable water, good sanitation, electrical connections etc. Similar works on urban land values and the associated factors have been carried out by Northam (1975), Balchin and Kieve (1988), Mahadevia and Bhatt (2002), Albouy and Ehrlich (2014), Kahraman and Kubat (2015), Gwamna, E. and Zahari (2015) to name a few.

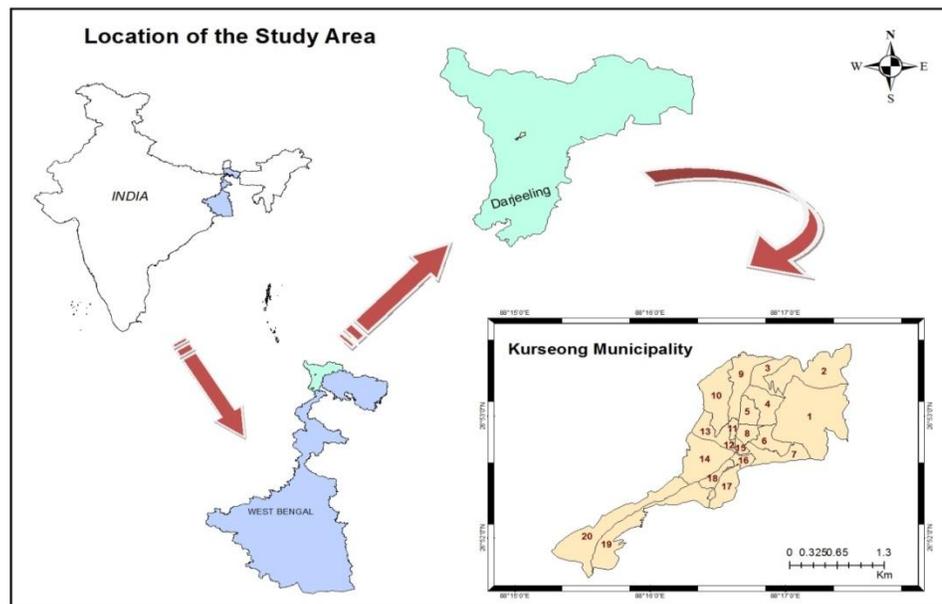
3. Objectives: The present study has been undertaken with the following specific objectives:

1. To analyse the spatial variation in land value pattern of different wards in Kurseong municipality.
2. To analyse the ward wise temporal variation in Kurseong town.
3. To mark the relationship between the land value and different other variables.

4. Data Base and Methodology: The study is based on primary and secondary data collected through intensive field survey and various government institutions respectively. The data thus obtained are analysed, displayed on maps at ward level to find out spatial variations, keeping in view the objectives of the study. Three different years i.e. 2003, 2010 and 2016 have been taken into consideration for an analysis of land values in Kurseong municipality. Different statistical techniques like Karl Pearson's correlation coefficient method have been used to analyse the relationship between land value and different other variables with the help of SPSS Version 23. Maps have been prepared with the help of G.I.S. software Global Mapper and Arc GIS.

5. Study Area: Kurseong town, the administrative headquarter of Kurseong subdivision is situated at 26°51'42"N to 26°53'36"N latitude and 88°15'12" E to 88°17'32" E longitudes in Darjeeling district of West Bengal. Kurseong was constituted as a Municipality in 1879. Before 1879, it was under the supervision of Darjeeling Municipality which was constituted in 1850. Later in 1880 this tiny Hamlet developed as a tourist destination for colonial authorities and a preferred place for a sanatorium, where the diseased would recuperate. It lies at a distance of about 48 km from Siliguri and 30 km from Darjeeling. Kurseong is situated on the southern slope of the Senchal-Mahaldiram range which radiates from the Ghoom ridge in the north in the Darjeeling Himalayas and gradually descends further down to the plains of the Terai. It has an elevation of 4864 feet (1482m) above sea level. Kurseong Municipality at present has an area of 7.50 sq.km and it consists of 20 wards. As per 2011 census the population density of Kurseong Municipality is 5659 per square kilometre. The name of the town is opined to have been derived from the Lepcha word "Kursonrip" meaning the small White Orchid which grows abundantly in and around Kurseong, thus Kurseong meaning "The Land of White Orchids."

Figure 1 Location of the study area



6. Analysis: Owing to rapid urbanization and continuous increase in population density in Kurseong Municipality, the land value too is increasing in recent years as experienced from the field survey and information collected from the secondary data sources. Not only the availability of residential land is becoming scarce day by day but the construction of multi-storeyed

apartments is observed everywhere. Land value can be considered in two contexts – a) Market value, which is the price of a land parcel negotiated at the time of the parcel and b) Assessed value, which is estimated worth of the parcel made by a competent private or public assessor (Northam, 1975). Attempts have been made here to keep balance between them as the true or market value of a parcel may be different from the assessed value.

6.1 Factors affecting urban land value

The factors affecting urban land value operate either individually or in a group. Land value varies according to the type of use, the location of the particular parcel and the associations related to it. Proximity to particular places or certain institutions may have a strengthening or weakening effect on land value depending upon the view point of the owner and the importance of the institutions or use. Therefore, in a broader sense, distance is an instrumental factor influencing urban land value like distance from the CBD, distance from the shopping centres, distance from transportation nodes etc. It is to be noted here that distance and land value are negatively related as the greater the distance from the town centre which possess all the urban amenities, lower the land value.

Haig (1926) and Alonso (1964) pointed out that the accessibility, space and transportation are important variables, in determining the value of a land parcel. However, there are other variables as well which affect the value of a given parcel and the use to which it is put such as soils and topography which may prevent or favour constructions and restrict or make favourable certain urban services such as water supply, sewerage lines, schools and recreational facilities. On the other hand, land value increases when demand for land exceeds the supply of available land or if a particular land parcel has its inherent value greater than the neighbouring areas. However, the physical variations would play less important role in shaping land values in the more intensely developed sections of the city as less extreme physical limitations can be overcome through modern technology.

The concept of urban land value is very closely related to the Central Business District (CBD). Most of the economists and theorists have accepted the view that CBD is the centre of maximum activities and greatest number of potential customers and it is tied to the other establishments in

the production process. Therefore the CBD has the highest land value with smooth declining gradients in all directions. Kurseong town is no exception. Here the CBD covers Haat/Gundri Bazar, Park Location, Burdwan Road, Hill Cart Road, Hammond Road and Pankhabari Road. The CBD comprises 87.4% of the total shops in the town. The land price is high in the CBD and its surrounding area which shows a smoothly declining trend with the increase in the distance from the CBD. Therefore, it is clear that the factor i.e. ‘the distance from the CBD’ is one of the most influencing factors in determining the urban land value in Kurseong town. If we consider the market values of recent time, marked variation can be observed among the different wards of Kurseong Municipality.

6.2 Spatial variation in land value

Depending upon the land value of 2016, the whole municipality area can be divided into five zones (Figure 2). For the purpose of discussion here, the first two and the last two types have been combined to form the areas of high and low land value respectively.

Table 1. Ward wise land value in Kurseong municipality, 2016

Wards	Land value per decimal (in Rupees)
1	119363
2	192727
3	276162
4	404040
5	570707
6	193939
7	426869
8	573131
9	624848
10	339798
11	701818
12	1012121

13	690707
14	584647
15	989899
16	677172
17	309899
18	425657
19	201616
20	160572

Source: www.wbregistration.gov.in

Table 2. Identification of wards based on land value (2016)

Land value (in Rupees)	Category	Wards	No. of wards	Percentage of wards
Below 3,00,000	Very low	I, II, III, VI, XIX, XX	4	30
3,00,000–4,70,000	Low	IV, VII, X, XVII, XVIII	3	25
4,70,000–6,40,000	Moderate	V, VIII, IX, XIV	4	20
6,40,000–8,10,000	High	XI, XIII, XVI	7	15
Above 8,10,000	Very high	XII, XV	2	10
Total			20	100

Source: Computed by the author

6.2.1 Areas of very high and high land value

In 2016, the market value of two wards (XII and XV) was more than Rs. 8, 10,000 per decimal. The reason for very high market land value is the maximum concentration of commercial activities and transportation network in the area. N.H. 55 and Darjeeling Himalayan Railway pass through the heart of the CBD. Most of the structures in the heart of the CBD are multi-storeyed of which ground floors have commercial usage whereas upper floors are utilized for

residential purposes. People are attracted to live in this area due to its nearness to every urban facility available in and around this centre such as hospital, motor stand, railway station, community hall, libraries, banks, ATM counters, various government offices and educational institutions. Along the Pankhabari Road, Hill Cart Road, J.M. Goenka (Bank) Road, Park Location and in and around the junction of Burdwan Road and Dow Hill Road some big apartments have come up. The demand of apartments is very high in these areas and as the land value is very high, the promoters take large sum of money from the buyers. Therefore, the price of the apartments in these areas is related to the high land value which is a consequence of high demand.

About 15% of the total wards (XI, XIII and XVI) have high land value ranging from 6, 40,000 to 8, 10,000 per decimal because of its proximity to the CBD. Most of these wards have high population density. Again the demand for land in these areas is due to the location of important government offices, educational institutions and shops.

6.2.2 Areas of moderate land value

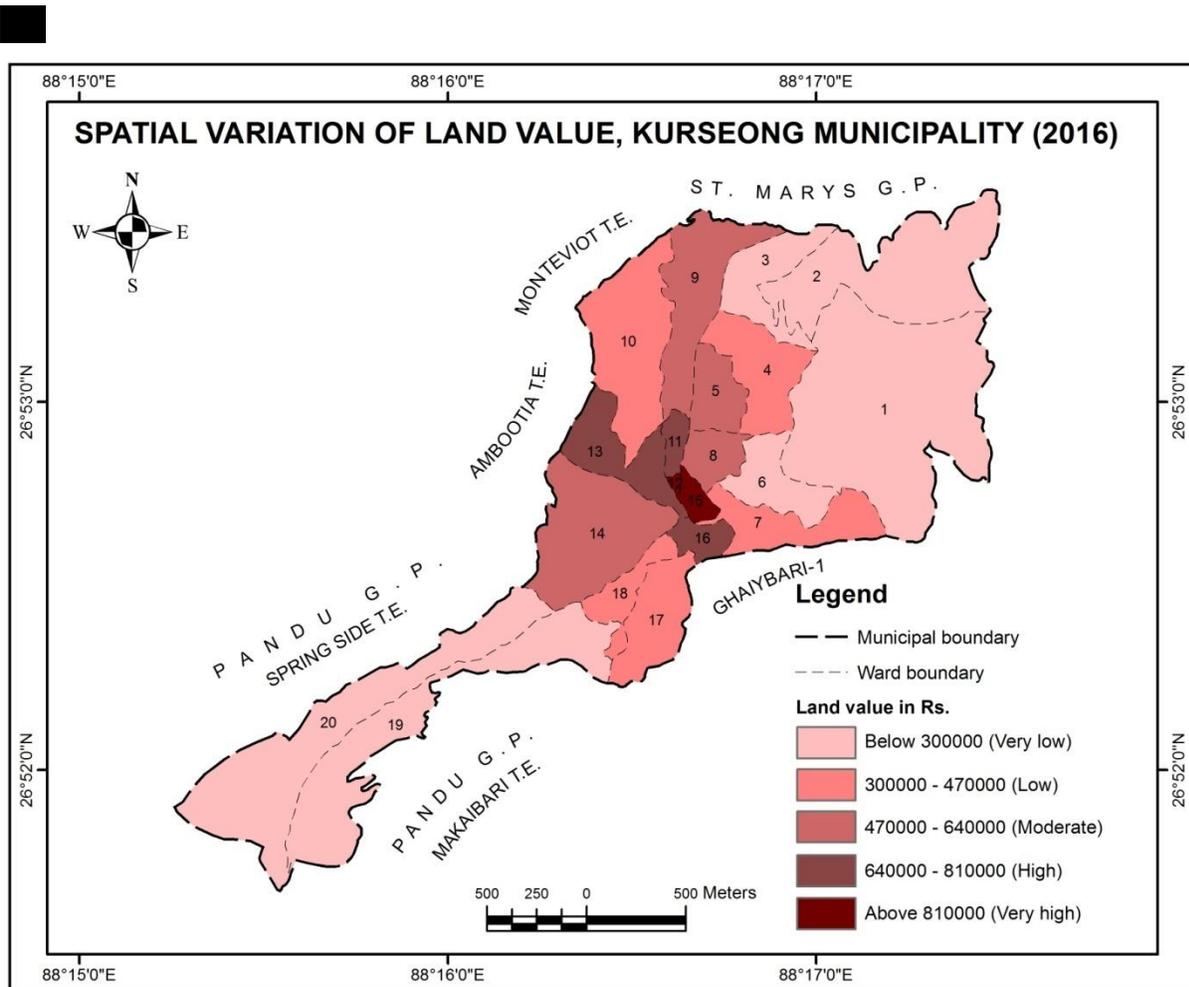
About 20% of the total wards (V, VIII, IX and XIV) come under this category. Some government and private educational institutions and government offices are located in these wards. Educational institutions include government schools like Scot's Mission Girls Higher Secondary School and private schools like Bethany School, Daisies School and Dawn Boarding School. Important government establishments include All India Radio, Construction Board Office (Kurseong Engineering Division), DIB (Directorate of Intelligence Bureau), Fire Brigade, Municipality Office, P H E Office, SDPO Office, PWD Office to name a few. Therefore, these wards though located away from the CBD have moderate land value ranging from Rs. 4, 70,000 – 6, 40,000 per decimal.

6.2.3 Areas of low and very low land value

When we gradually move away from the CBD, the price of the land becomes low ranging between Rs. 3, 00,000 – 4, 70,000 per decimal in wards IV, VII, X, XVII and XVIII. Further, wards in the peripheral area (I, II, III, XIX and XX) and ward VI with steep unsuitable slope for

construction which lack the required facilities record land value less than Rs. 3, 00,000 per decimal. These wards have moderate to low population density.

Figure 2 Spatial variation of land value, Kurseong Municipality (2016)



6.3 Temporal variation in land value

Table 3 shows the land value in different wards of Kurseong Municipality for three different years viz. 2003, 2010 and 2016. It is interesting to note that different urban land value scenario can be observed in 2003 and 2010.

Table 3 Ward wise Land Value in Kurseong Municipality

Wards	Land value per decimal (in Rupees)		
	2003	2010	2016*
1	36,000	70,000	119363
2	45,000	80,000	192727
3	45,000	1,50,000	276162
4	45,000	80,000	404040
5	52,000	1,75,000	570707
6	45,000	1,20,000	193939
7	82,000	1,60,000	426869
8	70,000	1,50,000	573131
9	1,28,000	2,50,000	624848
10	82,000	1,60,000	339798
11	1,02,000	2,00,000	701818
12	2,00,000	3,25,000	1012121
13	90,000	2,05,000	690707
14	80,000	1,65,000	584647
15	1,80,000	3,50,000	989899
16	62,000	1,20,000	677172
17	77,000	1,50,000	309899
18	80,000	1,50,000	425657
19	45,000	80,000	201616
20	70,000	1,05,000	160572

Source: Office of the Additional District Sub- registrar, Kurseong

*www.wbregistration.gov.in

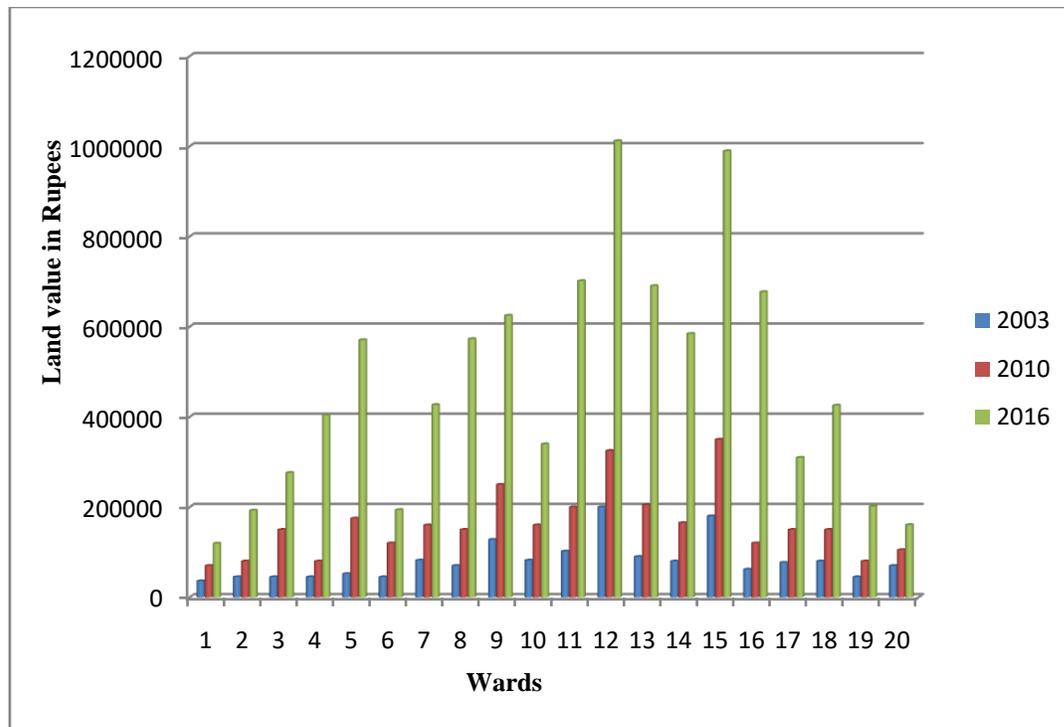
The following table shows the distribution of different wards of Kurseong Municipality based on land value.

Table 4 Identification of wards based on land value (2003 and 2010)

2003				
Land value (in Rupees)	Category	Wards	No. of wards	Percentage of wards
Below 66,000	Very low	I, II, III, IV, V, VI, XVI, XIX	8	40
66,000 – 96,000	Low	VII, VIII, X, XIII, XIV, XVII, XVIII, XX	8	40
96,000 – 1,26,000	Moderate	XI	1	5
1,26,000 – 1,56,000	High	IX	1	5
Above 1,56,000	Very high	XII, XV	2	10
Total			20	100
2010				
Below 1,20,000	Very low	I, II, IV, XIX, XX	5	25
1,20,000 – 1,70,000	Low	III, VI, VII, VIII, X, XIV, XVI, XVII, XVIII	9	45
1,70,000 – 2,20,000	Moderate	V, XI, XIII,	3	15
2,20,000 – 2,70,000	High	IX	1	5
Above 2,70,000	Very high	XII, XV	2	10
Total			20	100

Source: Computed by the author

Figure 2 Ward wise variations in land value (2003, 2010 and 2016)



The land value of different wards of Kurseong town in 2003, 2010 and 2016 (Figure 2) reveals more or less same pattern in the distribution of wards and land value zoning, but a marked variation is observed in the amount of land price. The land value ranged from Rs. 36, 000 to 2, 00,000 in 2003, Rs. 70,000 to 3, 50,000 in 2010 and Rs. 1, 19,000 to 10, 12,000 per decimal in 2016. On the other hand, the land value of the CBD area was more than Rs.1, 70,000 and more than Rs. 3, 20,000 per decimal in 2003 and in 2010 respectively. Further, within a span of six years the land value of CBD became more than 9, 00,000 per decimal in 2016.

6.4 Changing trend in land value

The table 5 shows that the total percentage of variation in land value was 108.85% during 2003 – 2010, 193.82% during 2010 - 2016 and 499.41% 2003 – 2016.

Table 5 Ward wise change in percentage in land value, Kurseong Municipality

Wards	Change in percent		
	2003-2010	2010-2016	2003 - 2016
1	94.44	70.52	231.56
2	77.78	140.91	328.28
3	233.33	84.11	513.69
4	77.78	405.05	797.87
5	236.54	226.12	997.51
6	166.67	61.62	330.98
7	95.12	166.79	420.57
8	114.29	282.09	718.76
9	95.31	149.94	388.16
10	95.12	112.37	314.39
11	96.08	250.91	588.06
12	62.50	211.42	406.06
13	127.78	236.93	667.45
14	106.25	254.33	630.81
15	94.44	182.83	449.94
16	93.55	464.31	992.21
17	94.81	106.60	302.47
18	87.50	183.77	432.07
19	77.78	152.02	348.04
20	50.00	52.93	129.39
Total	108.85	193.82	499.41

Source: Computed by the author

Table 6 Identification of wards based on change in percent in land value (2003 - 2016)

Change in percent	Category	Wards	No. of wards	Percentage of wards
< 290	Low	I, XX	2	10
290 – 450	Moderate	II, VI, VII, IX, X, XII, XV, XVII, XVIII, XIX	10	50
450 – 610	Moderately high	III, XI	2	10
610 – 770	High	VIII, XIII, XIV	3	15
> 770	Very high	IV, V, XVI	3	15
Total			20	100.00

Source: Computed by the author

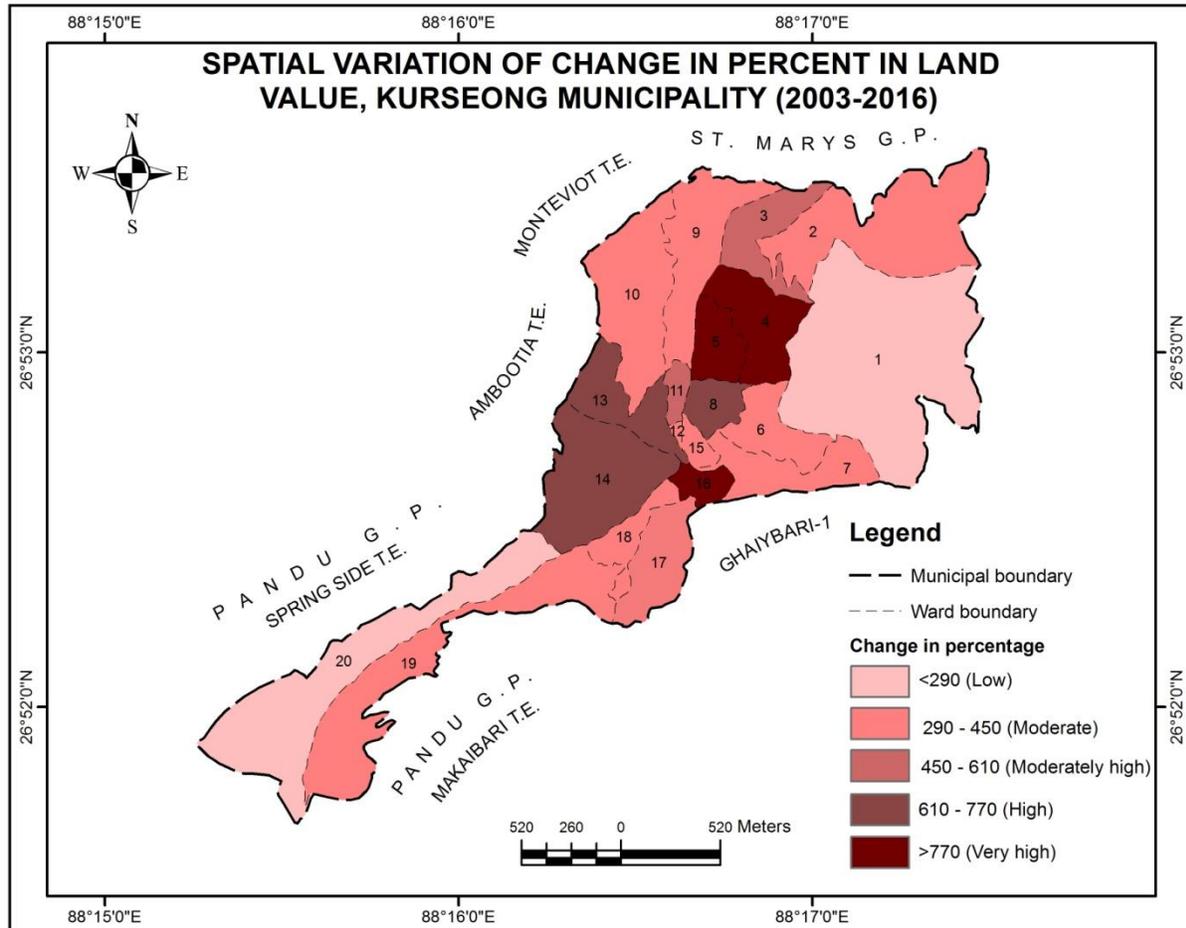
During 2003 – 2016 low percentage of variation, less than 250% is found in wards I and XX. Ward I with more than 40% of its area under reserved forest and ward XX with more than 50% of its area under tea garden and government land lie in the peripheral area of the town and lack most of the urban facilities available in the CBD.

There are twelve wards which fall under the category of moderate and moderately high percentage of variation. Some of these wards like II, III, IX and X, most part of which were tea garden areas previously, were later used for settlements and some are located in the CBD or close to it like wards XI, XII, XV and XVIII. Wards VI, VII, XVII and XIX being landslide prone areas are characterised by steep slope and lack proper road facilities.

The percentage of variation in land value was high and very high, more than 610% in six wards. Among these, wards IV, V and XVI record a rise of more than 770% in land value. The reason behind the very high percentage of variation in ward IV is the motorable road, earlier partially constructed has been completed during 2008 – 2009, thus making it comfortably accessible to the inner parts of the ward. Another reason is the growing popularity of Himali Boarding School which has become one of the best boarding schools in West Bengal. Many areas in ward V, on the other hand were previously a tea garden area. Later when the tea garden was closed due to various factors, this vast stretch of land was sold to the local inhabitants by the tea garden owner

who later moved to other parts of the country. As the demand for land was very high, the price of the land also increased annually at a tremendous

Figure 3 Spatial variation of change in percent in land value, Kurseong Municipality (2003-2016)



rate. Ward XVI with very steep slope was also earlier inaccessible as the ward could be reached only by steep walkways but after the construction of a new road in 2010, the ward came up with many new constructions. Other wards with high percentage of variation are wards VIII, XIII and XIV. These areas lie closer to the CBD area, where too the demand for land is high.

Thus, a marked variation is observed in change in percentage of land value during 2003 - 2016 in the areas closer to CBD and those which were previously covered by the tea gardens. This is mainly due to the rapid development in the residential areas in the former case and availability of larger open space at an affordable price in the form of tea gardens and consequent high demand

for land in the latter. The rapid development of residential areas in the wards lying closer to the CBD is closely associated with the fact that the business class possessing commercial establishments in the CBD area prefer to settle at a walking distance from their place of work. On the other hand, the change in land value in other areas is mainly due to the rural – urban migration. A large number of people from the adjacent areas like Mirik, Tindharia, Ghayabari, Sonada, Sittong etc. have come to these areas for better educational opportunities. The result is high demand of land which has led to increase in land value.

6.5 Relationship between land value and other variables

Rapid urbanization and continuous increase in population density in Kurseong Municipality has resulted in tremendous increase in land value in recent years. For a parametric measure of relationship between land value (dependent/*Y* variable) of 2016 and a number of independent variables (independent/*X* variable) namely population density (X_1), medical shops (X_2), public library (X_3), hotels and lodges (X_4), restaurants (X_5), petrol pump (X_6), banks (X_7), ATM counters (X_8) and shops (X_9) in different wards, Karl Pearson's correlation coefficient method has been applied.

Table 7 Relationship between land value and other variables

	Population density (X_1)	Medical shops (X_2)	Public library (X_3)	Hotels & lodges (X_4)	Restaurants (X_5)
Land value	0.577**	0.791**	0.689**	0.621**	0.727**
	Petrol pump (X_6)	Banks (X_7)	ATM counters (X_8)	Shops (X_9)	
Land value	0.485*	0.656**	0.623**	0.800**	

Source: Computed and compiled by the researcher

** Correlation is significant at the 0.01 level

*Correlation is significant at the 0.05 level

The bivariate analysis indicates that the land value in Kurseong municipality is strongly positively correlated with most of the urban amenities available in the town. The 'r' value for land value and shops and with that of medical shops are 0.800 and 0.791 respectively. Similarly the 'r' value for land value and restaurants is 0.727, land value and public library is 0.689, land

value and banks is 0.656, land value and ATM counters is 0.623, land value and hotels and lodges is 0.621 and land value and population density is 0.577. Thus, a strong positive correlation exists between the land value and the above mentioned urban amenities in Kurseong municipality at 99% level of significance. Similarly a moderate positive correlation exists between the land value and petrol pump at 90% level of significance. The analysis clearly denotes that the occurrence of shops and medical shops are important variables that have a strong impact on the value of a land parcel. Equally influential is the accessibility to other factors such as public library, banks, ATM counters, hotels and lodges and population density in determining the value of a land parcel in Kurseong town. More intensely developed sections of the study area with high population density and more concentration of urban amenities exhibit high land value.

7. Conclusion: Rapid urbanization, population growth, increase in population density and consequent increase in land under different functions in Kurseong Municipality have resulted into a sharp increase in land value in recent years. Distance has played an instrumental role in influencing urban land value in Kurseong town. A strong positive correlation exists between the land value and numerous urban facilities and population density in different wards. Centrally located wards with very high population density comprising the CBD and those surrounding it with high population density, possessing all the available urban facilities exhibit very high land value. On the other hand, wards located at a distant from the CBD with low population density lacking in most of the urban facilities exhibit low land value. The land value in 2003, 2010 and 2016 reveals more or less same pattern in the distribution of wards and land value zoning, but a marked variation is observed in the amount of land value. The trend of land value and percentage change in variation is high especially in the CBD which decreases towards the peripheral area and this trend will likely to continue in future too.

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