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Impact of Geomorphic Attributes on Rural Settlement Distribution: A Case Study of Baghmundi Block in Purulia District, West Bengal

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Abstract:

Studies of settlement types and patterns can proceed in two major ways, depending on the purpose of the study. One approach is to focus on the settlement types and patterns within a small area (village, town etc.) which may be called local or community settlement patterns. The other method takes as its subject the distribution of sites within a large geographical area (large city, district etc.) which may be termed regional or zonal settlement patterns. The settlement types, patterns and frequency of rural population dominated Baghmundi Block in Purulia District reflects the physical and cultural make up of the area. As the area is a part of Chotonagpur highland, the physical factors are most fascinating in conditioning the layout, type, pattern and size of settlement in Block and Gram Panchayet level also.

The present paper makes an attempt to describe the relationship between physical features and rural settlement distribution. For this, firstly, a detailed analysis of landform of the study area has been done on the basis of some selective geomorphic attributes i.e. Relative Relief, Average Slope, Dissection Index, Ruggedness Index and Drainage Density etc. secondly, study of population density and density of residential houses on GP level has been done and thirdly some scatter diagrams has been prepared to show the clear relationship between the geomorphic attributes and rural settlement frequency.

Keywords: Physical features, Gemorphic attributes, Scatter diagram, Settlement type, Settlement pattern.

1. Introduction

Purulia, the western most district of West Bengal, offers so much variety in its physical setting, its long recorded history and the cultural influences that have molded its society and institutions that it provides an exceptional laboratory for geographical study. The landscape of Ayodhya-Bagmundi range is in many ways unique. The human response in the form of establishment of settlement likewise presents interesting characteristics some of which this paper attempts to describe. The geomorphological analysis both qualitative and quantitative of any area exposes the various environmental attributes where human adjustment with the former has resulted into the development of the ultimate cultural landscape (Ahmed, 1958).

Hence all the concrete expression of humanized landscape including human habitations is thus correlated with the landform (Morphometric attributes of landform).

The settlement i.e., the place of habitation is one of the important aspects of study from the standpoint of planning and development of a region. Despite the enormous growth of settlements in different parts of the world during this century, research methods for the analysis of such settlements have developed in a rather haphazard way. The human landscape is dependent on physical landscape. These two have a close relation. The latter provides the space where the former is to be settled. In some areas, the natural phenomena (physical landscape) restrain habitation, occupation and communication and compel man to seek other favorable physical landscape. Thus for selecting a place of habitation man has to depend on physical landscape. To recognize rural settlements (Aurousseau, 1921) said that the 'section of the population that lives in the countryside and is engaged in primary occupation is rural'.

Therefore, a thorough and careful study of landform relating to the settlement is essential particularly in an agro-based economy. Settlement refers to 'the characteristic groupings of population into occupance units, together with the facilities in the form of houses and streets which serve the inhabitants' (Finch, 1951). Several physical and cultural factors have been proved influential in determining settlement type, pattern and density. Among these physical factors here some geomorphic attributes (slope, relative relief, dissection index, ruggedness index, drainage density etc.) have been taken into consideration for studying the role of them in determining the type and pattern of settlement distribution.

2. Objectives of the Study

The main objective of the present work is to analyze *the impact of geomorphic attributes on rural settlement distribution in Baghmundi CD Block, Purulia District*. A distinct relationship exists between geomorphic aspects and land utilization, although the type of relationship varies from one area to another. The geomorphic attributes, particularly drainage characteristics, surface elevation and forms, relief measures, slope morphology, soil properties, etc. play an important role in determining the distribution and pattern of rural settlement. The detailed objectives of the present study include the following:

- To study the geomorphic attributes (relative relief, ruggedness index, dissection index, slope and drainage density etc.) of the selected area.
- To assess the impact of geomorphic attributes on rural settlement distribution (settlement type and settlement pattern).
- To assess the impact of geomorphic attributes on rural settlement frequency.

2.1. Study Area

Purulia, the western most district of West Bengal, is located on the eastern slope of the Chotonagpur Plateau between 22°43'N to 23°42'N and 85°49'E to 86°54'E (Fig.1)

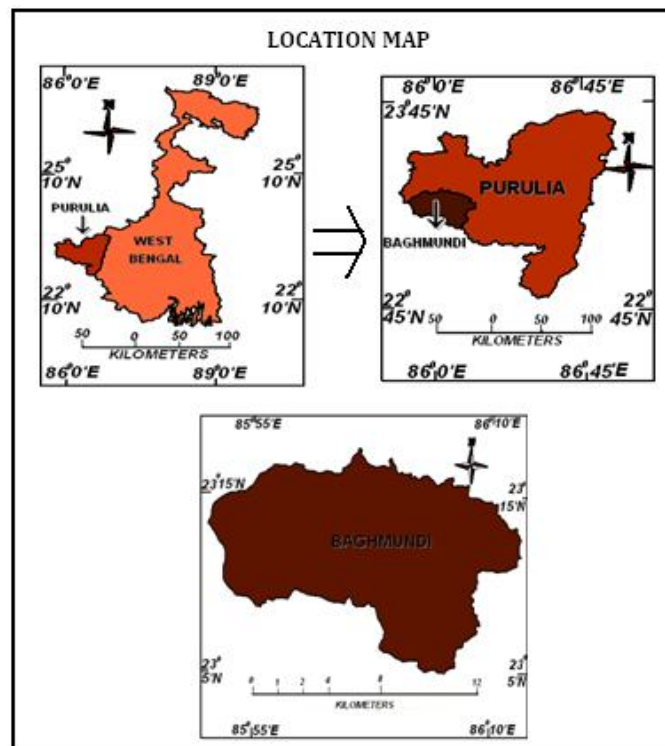


Figure 1

The district is bounded on the north by the Burdwan and Dhanbad Districts, on the east by Bankura, on the south by Midnapur and Singhbhum (Bihar) Districts and on the west by the Ranchi and Hazaribagh Districts of Jharkhand. Purulia formed a part of Manbhum District of Bihar, but has been included in West Bengal according to a programme of state boundary reorganization in 1956.

The district consists of 17 police stations. Baghmundi is one of them. It is located between 23°5'N to 23°19'N and 85°53'E to 86°12'E. The headquarter of the Block is at Pathardih. This Block has a common boundary with as many as four other Blocks (Balarampur in East, Arsha and Jhalda-II in North, Jhalda-I in West) of Purulia District and the state of Jharkhand in the south. The jurisdiction area of the Block forms the lowest step to the Chotonagpur Plateau.

Physical setting (topography, drainage, climate, soil, natural vegetation) and cultural setting (population growth) of the area are as follows:

2.1.2. Physical Setting

Being a part of the Chotonagpur Plateau the general scenario of this area is undulating land with scattered low hills and dales. Northern and Eastern portion was fully covered with dense deciduous (dry) forest. Whole Matha and Ayodhya and some portion of Burda-Kalimati, Baghmundi and Sindri Gram Panchayet are covered by the jungle. Topographically north side of the Block is separated by the east-west water divide of Ayodhya Range from other Blocks like Arsha, Balarampur and Jhalda. River Subarnarekha separates the Block from the Jharkhand state in the west and Sankha River separates it from Balarampur Block in the east. Absolute Relief increases towards the west and the south marked by a line of sharply rising, but almost flat topped arches clothed in luxurious

vegetation. The texture of relief of the Purulia District is of two kinds. The eastern part of this truncated tongue, known as Ayodhya Pahar forms the main highland region of Purulia. It acts as a watershed between the Kasai and the Subarnarekha. Numerous small streams drain its western and southern slopes into the Subarnarekha and the northern and eastern slopes into the Kasai and the Kumari (Fig.2).

To the West and South of Ayodhya Pahar occur a number of residual hills, isolated and detached from the parent body. The 688 meter high Chamtu is the highest points on the southwest flank. Some of these prominences are wooded (such as the Kalimati palas forest on either side of the Baghmundi-Jargo road) and others bare of vegetation.

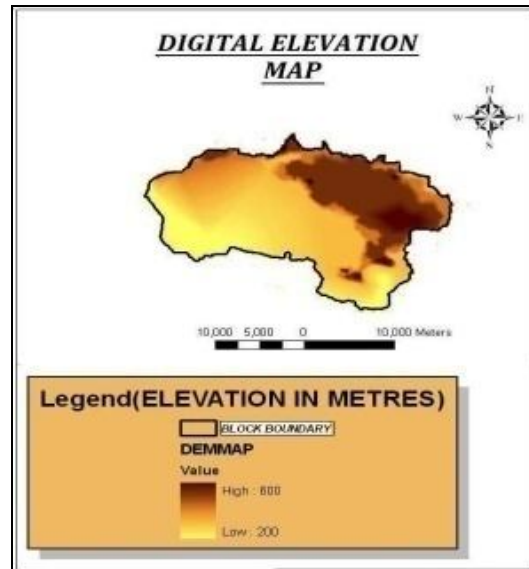


Figure 2

At the southern periphery of Baghmundi Hills, the prominent outliers within the district are the 377 meter-high Kadali Pahar and 348 meter-high Khaira Pahar. These hillocks, like the granite-gneiss hills of Baghmundi, have accordant summits and though isolated from each other, they occur as a belt on the degraded crest of the Kumari-Subarnarekha interfluvies. This crest line provides important rail and road link between Balarampur and Chandil across the border.

The important peaks on the main highland mass of Baghmundi-Ayodhya are the 580.5 meter high Gonja Pahar and the Gugui Pahar also 580.5 meter- high to the north-west where porphyritic granite-gneiss is the predominant rock. Poraschists and gneisses occur on the southern and south-eastern face of the Baghmundi scarps where Gorgaburu (677m.) and Karma hill (663m.) are highest peaks. The ridge encircling the high peneplain of Baghmundi-Ayodhya has an average altitude of 600 meter. The entire highland is veiled by a dense mixed forest with Sal tree predominating.

The left bank tributaries of the Subarnarekha in Purulia descend from the Ayodhya-Baghmundi hills. Among them the Karru, Sobha, and the Sanka nalas descending from the Baghmundi hills. Only these three streams in the entire district have built up small patches of alluvial plains most of which now lie outside the district. The tributaries of the Karru and the Sobha plunge down the Baghmundi scarps into deep gorges. These splendid waterfalls indicate the youthful stage of the rivers where they cross the zones of recent uplift. The magnificent 82 meter Baridih waterfalls (23°14'N & 86°02'E) and the 66 meter Baghmundi waterfalls (23°12'N & 86°05'E) are best known because of their easy accessibility from Baghmundi Police Station. Kumari Nadi flows through the eastern face of the Baghmundi uplands covered by dense forest (District Gazetteer, 1985).

Baghmundi is characterized by tropical dry sub-humid type of climate. Temperature goes below 10°C in winter months and above 40°C in summer months with average rainfall 1300 mm.

Because of the undulating nature of topography, the soil is generally gravelly lateritic. The soil is derived from the mica schist and is generally poor in physical properties and nutrient content. Many textural classes are met with, such as sandy loam, reddish loam, white or reddish stiff clay. The soils on an average show 0.04% nitrogen, 0.005% P₂O₅, 0.01% K₂O, and 5.5-7.2 PH. The maximum nitrogen being 0.087% and minimum 0.036%. The soil with low organic content and deficient in nitrogen, phosphate and potash, is acidic in nature.

Important plants of the area are Chalta, Bel, Sajina, Dumur, Neem, Mango, Kul, Benyan, Palas, Siris, Amra, Kadam etc.

2.1.3. Cultural Setting

Baghmundi covers an area of 427.9 sq.kms. According to the 2011 Census, there are 138 villages. Total population of the block is 1,35,579 and the significant fact is that the whole population is rural population. It was 1,12,448 in 2001. The density of population of Baghmundi Block is very low because this police station has very arid, hilly areas with scrub jungles and is very ill served by roadways and unconnected by railways. Soil is extremely poor and yield is low and all these factors have contributed towards keeping down the density of population. The total population of the Block in 1961 and 1971 were 61,131 and 69,749 respectively. Out of 138

villages 10 villages have only two figured population. Such as Bhursudi (12), Rabar (35), Alkusi (67), Harup (81), Harta (83) etc. Gobaria (9) and Bhursudi (12) village has recorded lowest number of population in the Block.

2.2. Sources of Information

- Topographical Sheet (Survey of India) No. 73E and 73I, Scale 1:2,50,000.
- Police Station map of Baghmundi in the Scale 1: 8000.
- District Census Handbook of Purulia-2001 & 2011.
- Basic details of Baghmundi Block from B.D.O Office of Baghmundi, Purulia.
- Physiographic data of Baghmundi Block from the office of Additional Directorate of Agriculture, Baghmundi, Purulia.

2.3. Methods

From the available SOI toposheets required Morphometric variables have been calculated and for this purpose the total area of Baghmundi Police Station has been divided into number of grids. Total number of grids is 87 and each grid covers an area of 9 sq.kms. MAP INFO 7.0 and ARC GIS 9.0 softwares have been used to digitize the Block boundary and preparing all maps and DEM (Digital Elevation Model). Besides, MS-EXCEL software has been used to tabulate and prepare all the Morphometric data and scatter diagram to show the relationship between geomorphic attributes and settlement frequency.

2.4. Analysis of Geomorphic Attributes

The objective of this paper is to highlight the impact of selected geomorphic attributes on rural settlement distribution (settlement type and pattern) and settlement frequency. The geomorphic attributes considered in the present context are average slope, relative relief, dissection index, ruggedness number and drainage density.

2.5. Relative Relief

Fig. 3 shows the amplitude of relief or simply the relative relief of the study area. The study area is showing the gradual increase of relief from the south-west corner to north and north-east corner. The relative relief reflecting the decreasing tendency towards the west and south-west corner of the Block. There is low relative relief (<100m.) in the same direction i.e. near Subarnarekha River.

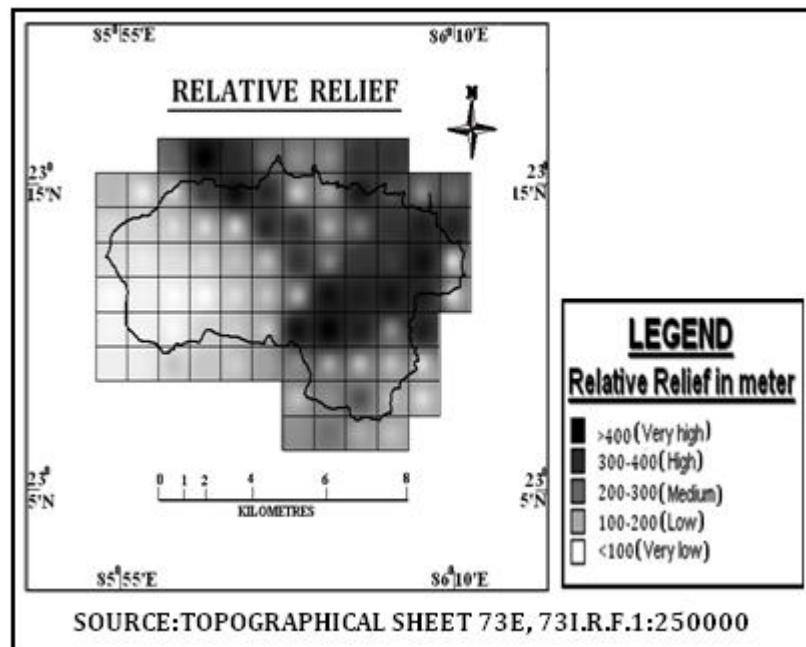


Figure 3

Thereafter it is increasing up to 300 meters at the middle of the Block as showing in the map and after that it crosses 400 meters of relative relief at the north-east and extreme eastern portion of the Block where Ayodhya Pahar and Mudali Reserved Forest is situated. And at the southern portion, Gorgaburu Pahar (676 meters) and Matha Protected Forest are located. Such type of distribution of relative relief is indicating that the area is part of Chotonagpur upland and the western portion of the Block is under the undulating topography and comparatively low relative relief because of Subarnarekha River. The right bank tributaries of the river like Sanka, Sobha and Karu drained the western and middle portion of this Block.

Relative Relief(meter)	Area in sq.kms.	% of area to total area	Categories
<100	62.89	14.72	Very low
100-200	65.89	15.43	Low
200-300	138.32	32.38	Moderate
300-400	147.35	34.50	High
>400	12.66	2.96	Very high

Table 1: Relative Relief (meter) categories and their areal distribution

From the Table-1 it is observed that almost 35% area of the Block is under high relative relief and only 15% area possesses <100 meter relative relief. It clearly signifies the highly undulating characteristics of the Block.

2.6. Dissection Index

Dissection Index (D.I.) is more significantly showing the amplitude of relief of the study area which was not satisfactorily shown in the case of Relative Relief map.

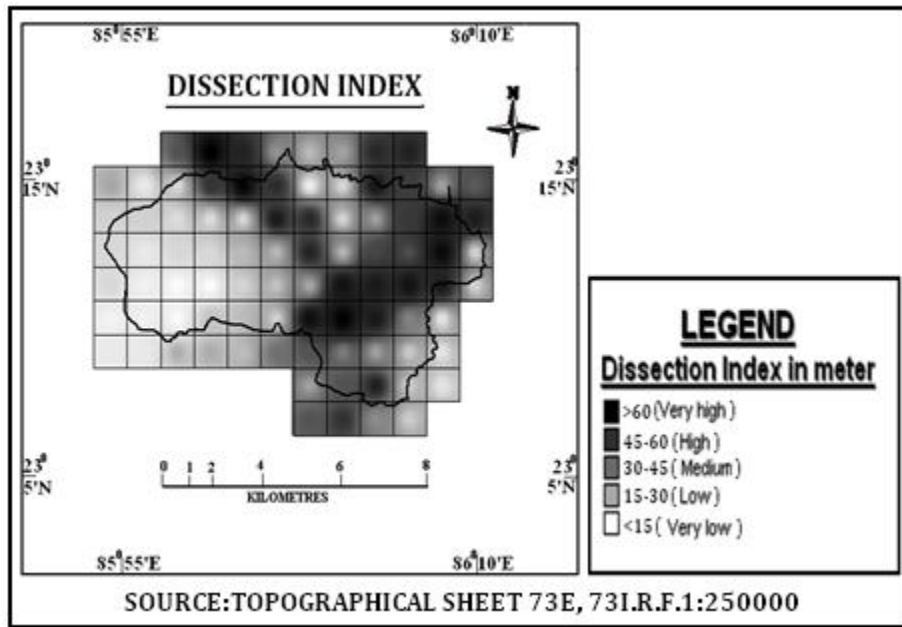


Figure 4

The relative relief map shows rough amplitude of relief specifically eastern and north-eastern portion comes under the high range of relative relief. Therefore, nobody can assess more accurately the relief of that particular area which can be done by D.I. map (Fig.4). The value of D.I. is more i.e., >60 meter at the eastern and north-eastern portion whereas, the extreme southern portion comes under the range of 15-30 meter. This means that this area although comes under the low relative relief as we observed before yet not high as like the northern and north-eastern portion.

Dissection Index (meter)	Area in sq.kms.	% of area	Categories
<15	39.24	9.17	Very low
15-30	84.77	19.81	Low
30-45	137.63	32.17	Moderate
45-60	155.14	36.26	High
>60	11.06	2.585	Very high

Table 2: Dissection Index (meter) Categories and their areal distribution

Due to the Subarnarekha River in the western portion of the Block, the value of D.I. is very low. Erosion by river reduces the surface elevation from the eastern to the western portion. The right bank tributaries of Subarnarekha and the left bank tributaries of the Kasai River play a vital role in erosion. The slope pattern, therefore, must be followed by the D.I. map i.e., the highest slope is found at the eastern, north-eastern and middle southern portion of the Block where Ayodhya, Gorgaburu, Gugul, Gonja, Karma hills are situated and gradually decreases towards the middle and western portion of the Block that is adjacent area of Subarnarekha River. **Table-2** shows that 36% area of the Block is highly dissected.

2.7. Ruggedness Index

In the previous exercises on Relative Relief and Dissection Index, it is found that Dissection Index gives more accurate picture and therefore interprets more specifically about the amplitude of relief. To make this interpretation more sound Ruggedness Index is another technique which gives the picture that in reality how much rugged the topography is. Therefore, the Ruggedness Index map shows that the north-eastern, extreme eastern and some quarters of southern portion of the Block are more rugged than the remaining area. Thus, it gives a better texture of relief in addition to the amplitude of relief which did not provide in the earlier two maps.

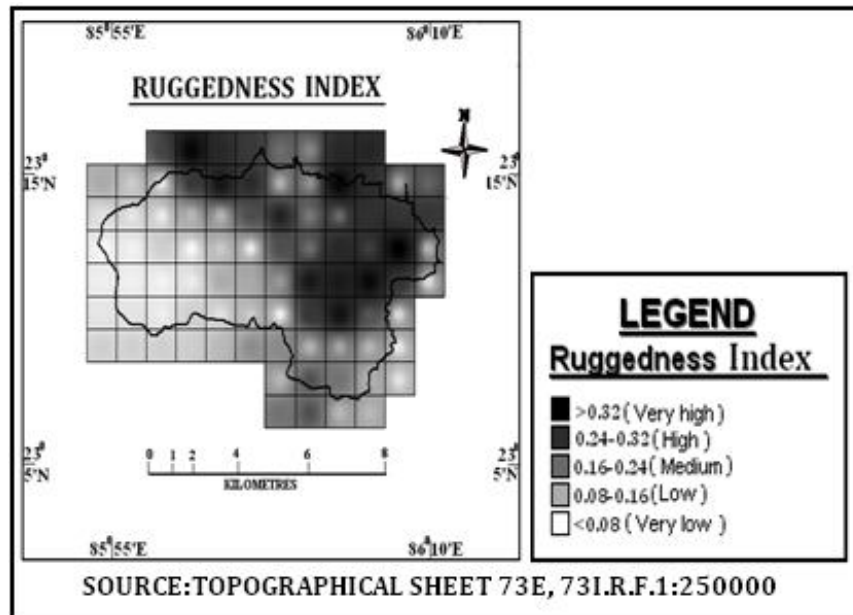


Figure 5

The entire western zones come under the very low rugged topography of <0.08 meter whereas it gradually increases from Middle West to the eastern portion. As the formula of Ruggedness Index incorporates the amplitude of relief and drainage density per unit area therefore drainage density provides a measure of ruggedness of relief in addition to the relative relief. The highest Ruggedness Index value >0.32 therefore indicates that there must have many ephemeral streams originated during the rainy season which erode the surface and makes the topography rugged.

Fig.5 shows the highest ruggedness index at the eastern portion of the Block where several left bank tributaries of Kasai River are flowing, which are all ephemeral in nature.

Ruggedness Index (meter)	Area in sq.kms.	% of area	Categories
<0.08	60.41	14.13	Very low
0.08-0.16	132.89	31.08	Low
0.16-0.24	91.50	21.40	Moderate
0.24-0.32	133.67	31.27	High
>0.32	9.04	2.11	Very high

Table 3: Ruggedness Index (meter) categories and their areal distribution

Table-3 shows the consistent relationship between ruggedness index and average slope of the area.

2.8. Average Slope

The average slope map (Fig.6) is directly bearing the imprints of earlier relative relief map. The northern and north-eastern portion of the Block have recorded highest degree of slope i.e., >12° and 9°-12° because of the presence of Ayodhya Pahar, Pangada Pahar (620m.), Gorgaburu Pahar (677m.), Gugul Pahar (574m.), Gonja Pahar (575m.), Karma hill (663m.) etc. The slope is gradually decreasing towards the middle and north-west to western portion.

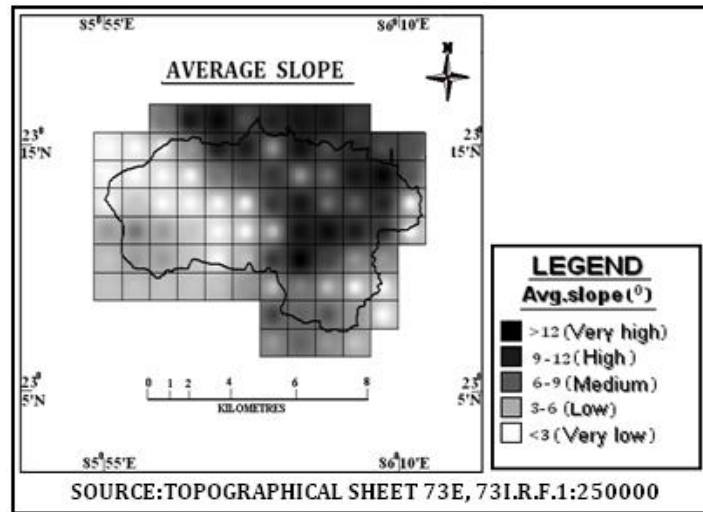


Figure 6

The River Subarnarekha and its right bank tributaries Sobha, Sankha and Karru Nadi are situated in the western portion of the Block. So, the degree of slope is very low here i.e., $<3^\circ$. Naturally, the settlement frequency is higher in this portion in comparison to northern and north-eastern portion of the Baghmundi Block. It clearly depicts how physical features influence the habitational facilities of the inhabitants.

Average Slope($^\circ$)	Area in sq.kms.	% of area	Categories
$<3^\circ$	92.49	21.64	Very low
$3^\circ-6^\circ$	38.93	9.10	Low
$6^\circ-9^\circ$	122.65	28.69	Moderate
$9^\circ-12^\circ$	149.55	34.99	High
$>12^\circ$	23.82	5.57	Very high

Table 4: Average Slope Categories and their areal distribution

Table-4 shows that 35% area of the Block is highly sloping and 6% area is under very steep gradient.

2.9. Drainage Density

Drainage plays a vital role in determining the location of human habitation. It is not only a primary source of fulfilling the daily needs of people but also directly affects the main source of livelihood i.e., cultivation. As it is already stated that here the status of soil is poor that affects the productivity rate drastically. Side by side Purulia is an established draught-prone area because maximum numbers of streams remain non-perennial in nature throughout the year except the rainy season. Otherwise many big rivers have passed through this area viz. Subarnarekha, Kasai etc.

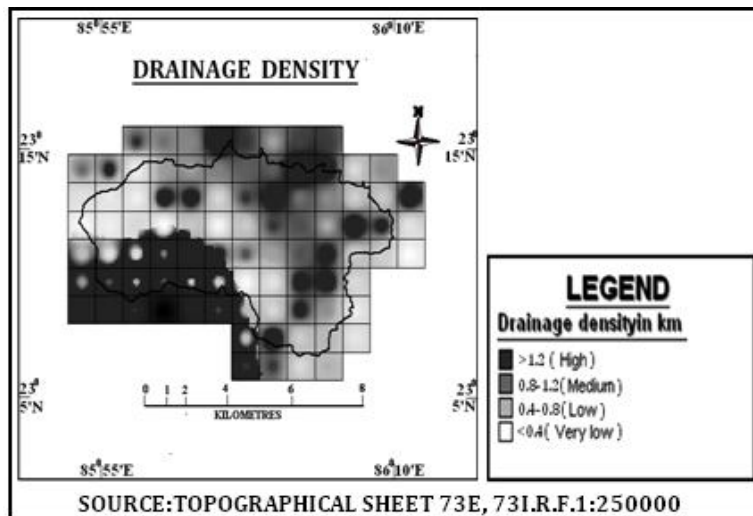


Figure 7

Fig.7 shows the highest drainage density in the adjacent or surrounding area of the River Subarnarekha where its right bank tributaries with their distributaries are flowing i.e., Karru, Sankha and Sobha Nadi. So, here the length of the streams/ unit area is high and it facilitates the the scope of establishment of human habitation which directly influence the frequency of settlement.

Drainage Density (km)	Area in sq.kms.	% of area	Categories
<0.4	6.7	1.57	Very low
0.4-0.8	155.27	36.34	Low
0.8-1.2	145.97	34.17	Moderate
>1.2	119.79	28.04	High

Table 5: Drainage Density (km) categories and their areal distribution

Table-5 is clearly showing the low drainage density of the area. 36% area of the Block is under the low drainage density and 28% is under the high density but it is already stated that maximum streams remain non-perennial in nature and susceptible to flash-flood during the monsoon period.

2.10. Settlement Types and Patterns

The area appears to be a moderately settled one. About 30% of the total area in the plateau proper with state forest has very less number of populations. The frequency of settlement is relatively higher over the floodplains of the tributaries of the Subarnarekha River.

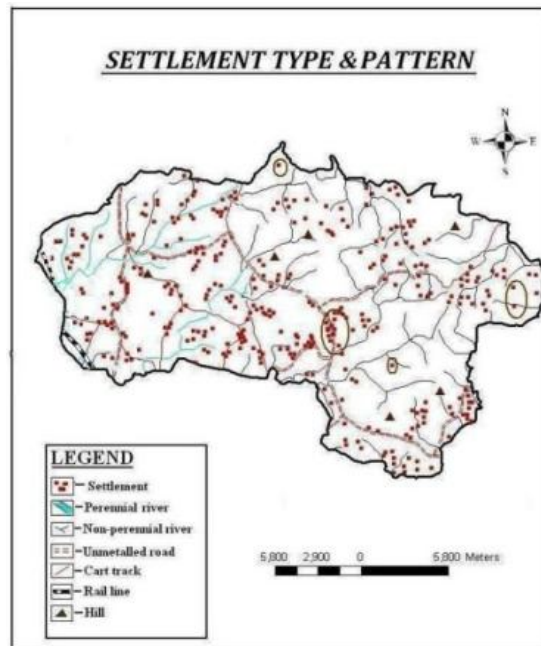


Figure 8

Due to highly undulating and rugged topography the whole district recorded low population density in West Bengal just after Darjeeling. Among 17 police stations of Purulia, Baghmundi is very less populated. Density of population is 317 persons/sq.kms which is much lower than the district's average density of population i.e. 468 persons/sq.kms.

Fig.8 shows the types and patterns of settlement and its site and situation. Maximum settlements are found in the western, middle most and south-western part of the Block where Tunturi-suisa, Sarengdih, Sindri and Birgram Gram Panchayets are located. *Semi-compact* or *fragmented* type of settlement concentrations have formed in the whole Block mainly in the western portion where tributaries of Subarnarekha River are passing. Maximum hills are located in the north, north-eastern, and southern portion of the Block which are covered by Burda-Kalimati, Ayodhya, and Matha Gram Panchayets. The small patches in fig.8 clearly show the dispersed type of settlement. Settlements have mainly occupied such sites as floodplains, forest clearings, piedmont area, and low hill summit and so on. Settlements have also come up based on situations like transport lines, transport nodes etc.

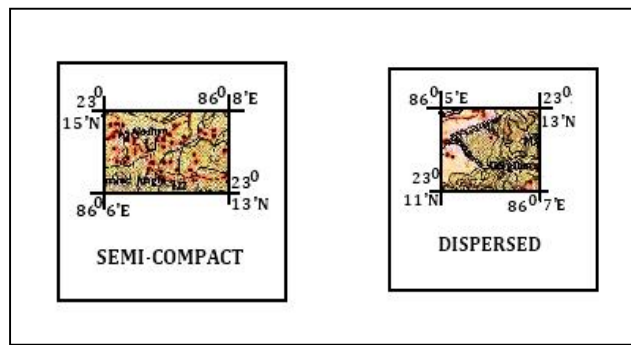


Figure 8a: Types of Settlement

Settlements are commonly small in size and linear and polygonal in geometric pattern. Spectacular linearity has been formed based on transport lines and river bank outlines. A really semi-compacted, dispersed and isolated type of settlement is the most common feature. Dispersed agglomerations have been noted in the Ayodhya Gram Panchayet.

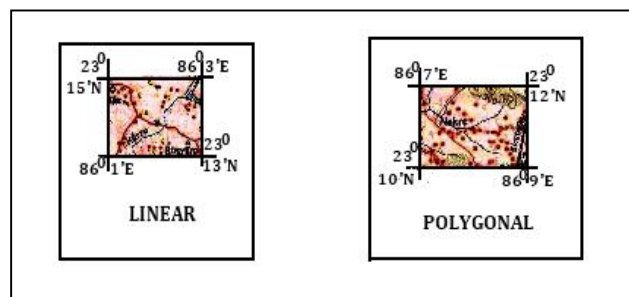


Figure 8b: Patterns of Settlement
Source: 73E and 73I (1: 2,50,000)

Settlements are totally rural based on agriculture and other extractive occupations. Baghmundi has some administrative functions with a post office and a police station. Sikarabad is a nearby market place located on a graveled motor-able road and is connected by metalled road with tribal based villages Bhursudi and Gobria. Besides cart track and unmetalled road linear type of settlements and in the junction of perennial river and road polygonal shaped settlements have been formed. Therefore, the above figure clearly depicts the site and situation of the settlement (Perennial River, Non-perennial River, roadway, railway, hills etc.).

2.11. Settlement Frequency

The whole Block is sparsely populated. The northern and eastern hilly terrains have very low settlement frequency and western, middle portion of the Block has recorded moderately high settlement frequency in comparison to the other portion. The frequency of settlements increases with the decrease in ground slope and relative relief. It is also higher near the perennial rivers and at places where the water table is shallow. From the viewpoint of situations, transport and communications have proved to be the most important in the growth of settlements. Excepting the restricted and protected parts, settlements have grown up at convenient locations emphasizing once again the capability of man's adjustment to the available local environmental conditions (Fig.9).

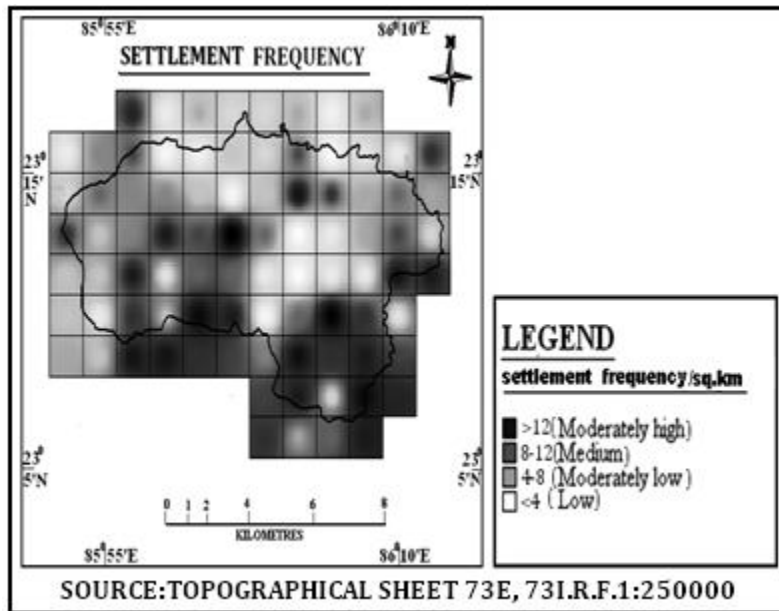


Figure 9

Settlement Frequency	Area in sq.kms.	% of area	Categories
<4	145.97	34.17	Low
4-8	155.27	36.34	Moderately low
8-12	119.79	28.04	Medium
>12	6.7	1.57	Moderately high

Table-6: Settlement Frequency categories and their areal distribution

Table-6 shows that about 34% of the total area has a frequency of <4 settlements/sq.km., 36% 4-8 settlements/sq.km and only 2% area has >12 settlements/sq.km.

2.12. Population Density

It has been calculated by using this formula- Total number of population/Total Area in sq.km. The Baghmundi Block consists of 8 Gram Panchayets. These are Tunturi-Suisa, Burda-Kalimati, Birgram, Sindri, Sarengdih, Matha, Ayodhya and Baghmundi. The population density map has been prepared on the basis of total number of population in each Gram Panchayet /total area of the Gram Panchayat.

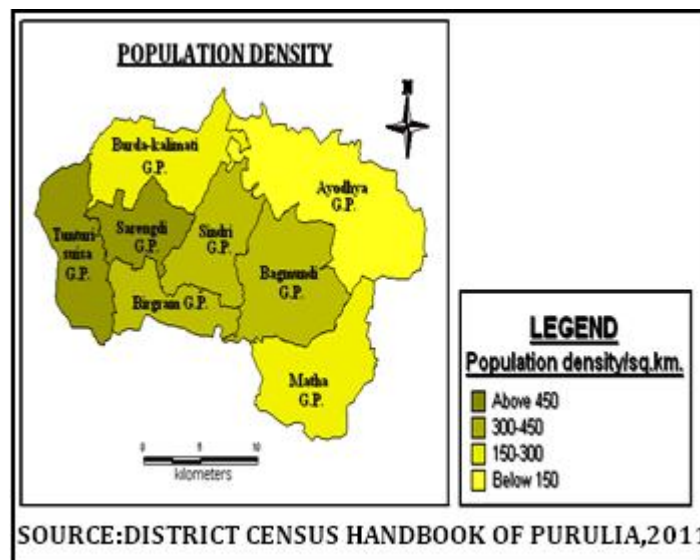


Figure 10

Among 8 GPs Ayodhya occupies largest area, i.e. 102.554 sq.kms but recorded lowest population density i.e. 112 persons/sq. km. because of the presence of several hills and rugged terrain. This hilly terrain produces worst transport network, unproductive agricultural tract, infertile soil etc. Therefore, only some major tribal groups who are sustaining their livelihoods by collecting forest woods and honey are residing in the Ayodhya and Matha GPs dominated by protected forest. Only Tunturi-Suisa and Sarengdih G.P. has recorded maximum population density i.e. >450 persons/sq.kms. because of the presence of the favourable sites (floodplains of the tributaries of Subarnarekha River –Karru, Sankha, Sobha Nadi etc.) and comparatively lower slope and relative relief. Sarengdih G.P. covers only 30.54 sq.km area of the Block but possesses largest population density i.e. 553 persons/sq.km., which is much higher than the population density of the district i.e. 468 persons/sq.km (Fig.10).

Therefore, the influence of geomorphic attributes is the main cause of such type of unequal population distribution within the Block and even in the district also.

2.13. Density of Residential Houses

Already it has been stated in settlement frequency that with increasing ground slope, relative relief, ruggedness number and dissection index, frequency of settlement gradually decreasing. The map of density of residential houses GP-wise will provide a much clear picture in this regard (Fig. 11).

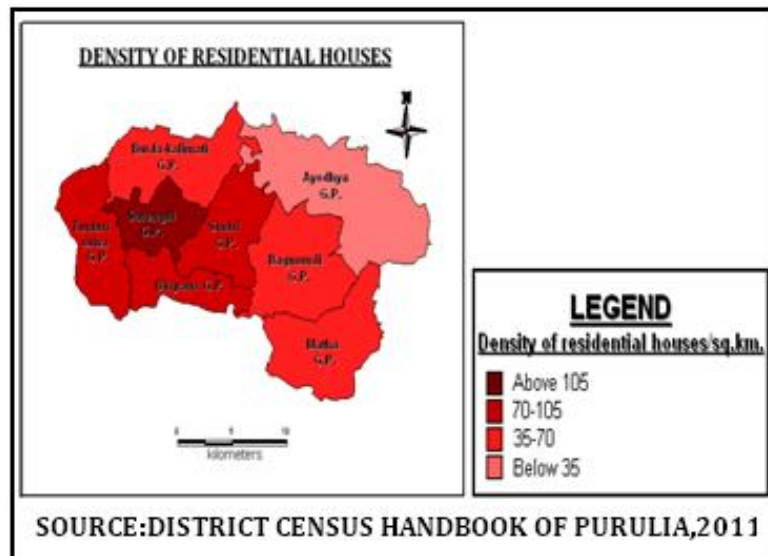


Figure 11

Among 8 GPs, Sarengdih covers only 30.54 sq.km area, but covers >105 residential houses/sq.kms. Baghmundi is a fully rural area and has total 27,508 rural households. Ayodhya G.P. has only 2326 households where Tunturi-Suisa, Birgram and Sindri has 4886, 2797 ND 3572 households respectively. Maximum portion of the Ayodhya, Matha and Burda-Kalimati G.P. is devoid of population because of rugged terrain, dense forest cover, poor transportation facility and lack of occupation. It is very expensive to make the rugged, hilly terrain a suitable habitation place. Therefore, due to such hindrances two or three mouzas under Ayodhya G.P. are turned into uninhabited area and Harup (J.L.No.13), Harta (J.L.No.14), Bhursudi (J.L.No. 25), Alkushi (J.L.No.82), Gobia (J.L.No. 118), & Banshidi (J.L.No. 141) have only 18, 16, 2, 13, 2, and 11 households respectively.

2.14. Correlation between Geomorphic Attributes and Settlement Frequency

In the present context, some scatter diagrams have been prepared to show the correlation between the geomorphic attributes (relative relief, average slope, ruggedness index, dissection index and drainage density) and settlement frequency.

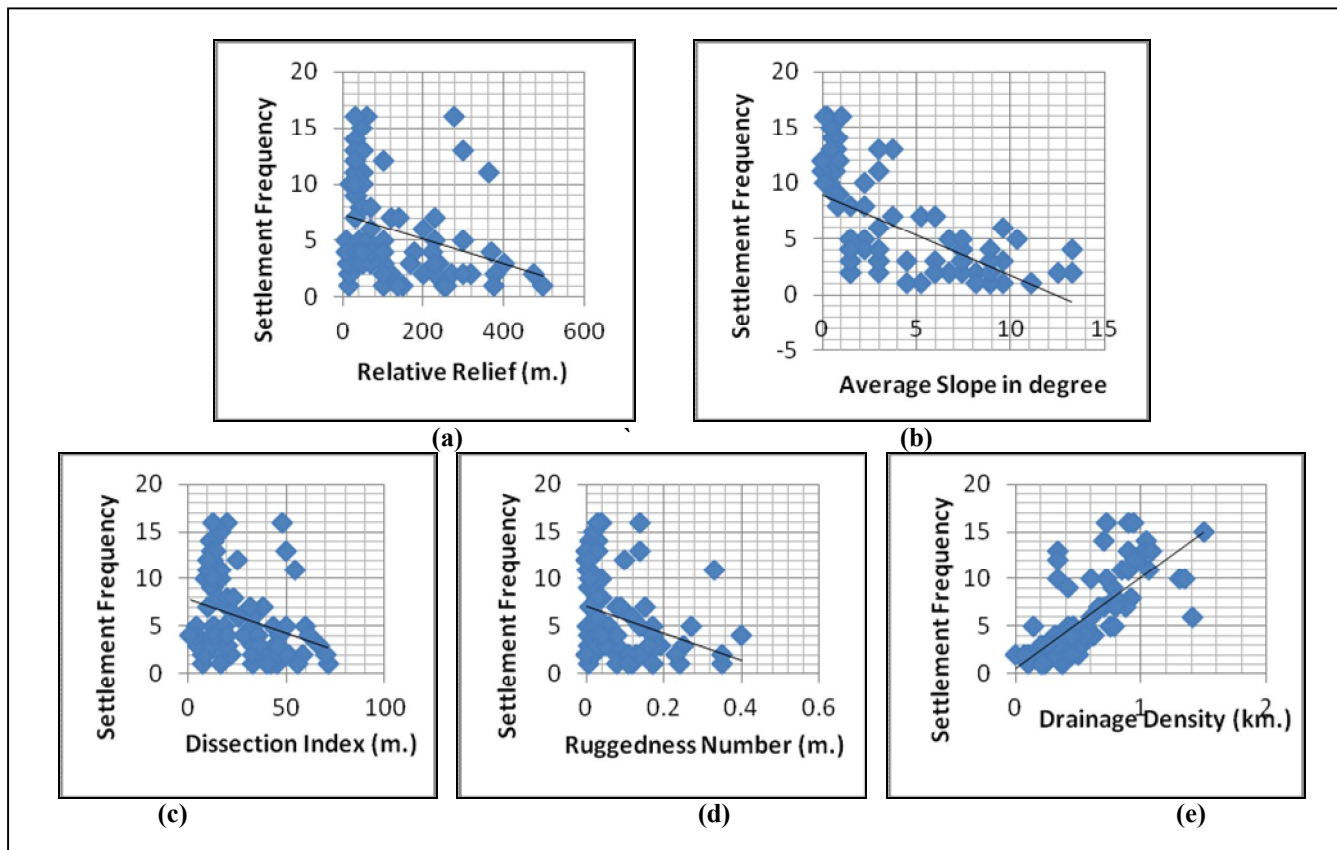


Figure 12 (a,b,c,d,e)

All the figures (Fig.12 a,b,c,d,e) are showing the negative correlation between the geomorphic attributes and settlement frequency except drainage density. The correlation values between relative relief and settlement frequency is -0.31 , dissection index and settlement frequency is -0.30 , ruggedness number and settlement frequency is -0.30 , average slope and settlement frequency is -0.61 , drainage density and settlement frequency is 0.73 . It clearly justifies the correlation between nature of the topography and the character of settlements.

3. Conclusion

Before establishing a habitation some general information regarding the area are always being considered by the inhabitants i.e. the nature of the area, climatic characteristics, availability of water, fertility of soil, transport facilities and availability of opportunities for fulfilling the daily needs and scope of earning livelihoods. But from the above discussions it can be clearly concluded that above all physical set up of an area has the main controlling power over the establishment of human habitation.

4. References

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