

Settlement Restructuring for Enhanced Socio-Economic Development in Ushongo Local Government Area, Benue State, Nigeria.

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ABSTRACT

The study examined settlement restructuring for enhanced socio-economic development in Ushongo L.G.A., Benue State, Nigeria. The study was focused on the relationship between settlement size and infrastructure availability; the impacts of settlement size on service availability; factors responsible for the prevailing settlement pattern in the study area; and how the settlement pattern has impacted on the development of Ushongo L.G.A. The methods adopted for the collection of data was the questionnaire, direct field observation as well as inventory taking. Results obtained from the field were presented using descriptive statistics in the form of simple percentages as well as graphs. Nearest Neighbour Analysis was also computed to determine the extent of settlement dispersal in the study area. Result obtained showed that a disperse settlement pattern prevailed in the study area. The result further revealed that settlement size has a positive significant relationship with the available services in the selected settlement in Ushongo L.G.A. A nearly perfect correlation coefficient was obtained and found to be significant at a confidence level of 0.05. Findings also revealed that 36.6% of the respondents opined that government neglect as well as the absence of communal living (34.7%) were the major reasons for the slow rate of socio-economic development in the study area. The study recommended approaches to restructuring settlements aimed at promoting both population concentration and a hierarchical organisation of functions within specific chosen areas. The study therefore, concluded that, determined that there is a substantial relationship between development and, focal living. Consequently, the study recommended that people in Ushongo L.G.A should be encouraged to settle in large concentrations so as to meet the required service threshold needed to provide infrastructure for a better day-to-day life of the people in the study area.

Key Words: Settlement, Restructuring, Socio-economic, Development and service threshold

INTRODUCTION

Settlements, world over, be it rural or urban have become a permanent and important feature of all cultural landscapes. However, most rural settlement arrangements in developing countries have remained at the traditional level of organisation comprising hamlets, farmsteads and villages. These settlement patterns have deprived many rural areas and their inhabitants of meaningful development (Ortserga, 1988). This follows that these rural enclaves generally lack basic facilities like good roads, health care facilities, schools, and employment opportunities. The quality of life and the activities of all human beings within settlements are closely dependent on the availability of these basic facilities. Also, population change, demographic patterns including growth, structure and distribution of population are fundamental to rural settlement reorganization for an enhanced socio-economic development (United Nations, 1996).

Settlement restructuring denotes projects which a group of people move permanently or semi-permanently to occupy an area of unused or unutilised rural land under the guidance of an agency external to the settler community. Settlement restructuring aims to rejuvenate dispersed, abandoned and, idle rural settlements to improve the effectiveness and efficiency of functions and reconstruct suitable living spaces (Long, et al,

2012). Rural revitalisation is conducted in both developed and developing countries (Chen et al., 2022). Thereby, curtailing the primary problem of rural areas which is depopulation- that represent the disjuncture between the idyllic representation of rural life and the realities of everyday experience where people move to towns to escape poverty, isolation and lack of social mobility of the rural areas, hoping for better living conditions and, opportunities for advancement (Ellis and Biggs, 2001).

Several rural development programmes have been put forward by the Nigerian government since independence. Some of such programmes include the Directorate for Food Roads and Rural Infrastructure (DFRRI), Better Life for Rural Women (BLRW), National Poverty Eradication Programme (NAPEP) all of which are geared towards alleviating the sufferings of rural dwellers. The continuous depopulation of rural areas and the corresponding urban population increase are indications that the rural development policies and programmes of the Nigerian government may have failed (Alaci, 2006).

Several studies have also argued that the ongoing decline in rural population stems from a lack of employment opportunities, social interaction, and low standards of living, all of which can also be directly linked to inadequate infrastructure (Smith, 2007; Ward and Brown, 2009; Guangqing and Stephen, 2010; Johnson and Ifeoma, 2018). As the rural population dwindles, the vitality of most rural communities progressively diminishes, posing a significant challenge to sustainable rural development and regional sustainability. The observed poor rural infrastructural development seems to be linked with low population thresholds of settlements that can only attract infrastructural facilities with huge economic implication both on government and the private investors. This means that the challenges of rural development may not just be an issue of deliberate neglect by government or lack of funds, but also an issue of socio-economic viability which is associated with absence of viable population threshold in most rural communities (Alaci, 2006).

Settlement restructuring is viewed as an essential step to reducing rural poverty, deprivation, low social intercourse and providing an efficient spatial strategy to enhance development into a well-articulated and balanced hierarchical system. Rural revitalisation is a way of positively transforming rural areas for present and future generations to create vibrant rural areas that can attract and retain educated, employed, and healthy rural residents. Rural settlements are growing in some developed countries due to rural revitalisation movements (Alaci, 2006). This cannot be achieved in the study area as adequate and accurate information on the dynamics of settlement pattern and regrouping is not clearly understood. Also, the factors accounting for the existing pattern, its attendant effect on development of the study area and the right approach of settlement restructuring have not been investigated. The study will provide a clear and systematic picture of the evolution of rural settlements in the area and, serve as a scientific basis for redesigning the interaction between man and land in rural space to a new stage of rural rejuvenation. It is against this backdrop that this study seeks to propose an appropriate strategy of restructuring the settlement pattern in Ushongo Local Government Area for an enhanced socioeconomic development.

STATEMENT OF THE RESEARCH PROBLEM

Rural areas are key sectors in every nation's economy and their rapid development has gained attention of policy makers the World over. This is owing to the fact that, for urban areas to grow, their rural counterparts must equally develop. Moreover, urban and rural areas are interdependent economically, socially and environmentally. In order to promote the reasonable development of rural areas, countries around the world try to take different measures to guide the spatial layout of rural settlements (Li, Geng, Yue, Li, Huang, 2021).

In Ushongo Local Government Area of Benue State, Nigeria, the existing spatial arrangement of settlements indicates a dispersed pattern as evident in the scattered hamlets, farmsteads and small villages as it is common with the Tiv people of Benue state. Though, the exact organisation in terms of the number of

households per settlement in the study area has not been determined This does not permit for adequate provision of social amenities such as accessible roads, potable water, hospitals, schools, electricity and, telecommunication. It is therefore necessary for a restructuring of the existing settlement pattern. Mabogunje (1986) notes that, the absence of nucleated settlements is a characteristic of societies without tradition of central administration, individualised-decentralised living. This means that development cannot occur in a society where population is scattered all over its space as this arrangement denies such population the advantages of certain privileges enjoyed by a society that operates nucleated settlement pattern. To this end, the researchers observed that the relative backwardness of Ushongo local government area might be strongly linked to its present spatial arrangement. It is against this backdrop that the study seeks to ascertain the existing settlement organization and its infrastructural base with the view of recommending a settlement pattern restructuring that would enhance rural socio-economic development in the study area. Moreover, there is lack of empirical evidence on the pattern of settlement and its relationship development which is critical for settlement restructuring. Consequently, the study was aimed at examining the existing settlement pattern in Ushongo local government area with a view to recommending a settlement pattern restructuring that would enhance socio-economic development in the area. In achieving the aim, the study answered the following questions: What is the nature of the demographic characteristics of the population? What is the current settlement pattern in the study area? What is the relationship between settlement size and infrastructure development? What are the reasons for the present level of development and preferred settlement restructuring strategies?

MATERIALS AND METHODS

Study Area

Ushongo is located between latitude $6^{\circ} 30'N$ and $8^{\circ} 23'N$; and Longitude $7^{\circ} 00' E$ and $9^{\circ} 50' E$ (Figure 1 and 2). It has a nodal structure with intra- state and inter-state roads interconnecting the area. Ushongo local government is bounded in the North by Gboko and Buruku Local Government Areas and Katsina-Ala to the northeast. To the south by, Vandeikya Local Government, with Kwande and Konshisha Local Government Areas to East and West respectively (Figure 2). It covers an area of about 400sqkm. The major relief features in the area include Ushongo Hills and streams such as: Igor, Iyaav and Igbo with their sources taken from Ushongo hills.

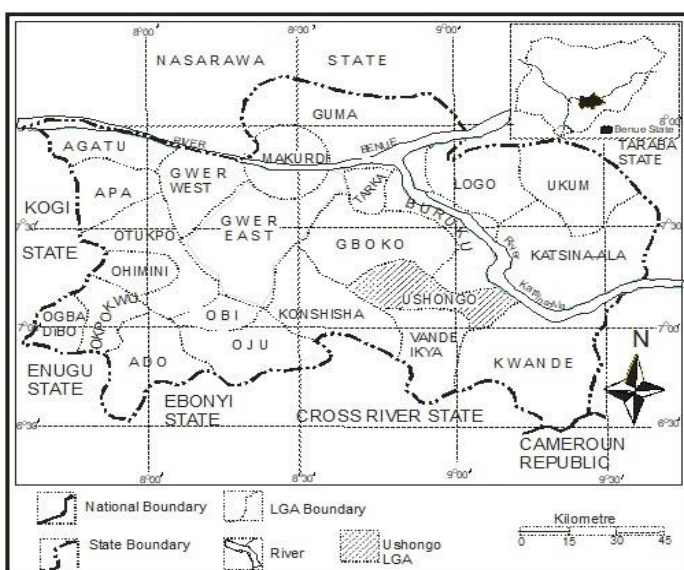


Figure 1: Benue State showing Ushongo Local Government Area

Source: Benue State Ministry of Lands and Survey, Makurdi (2017)

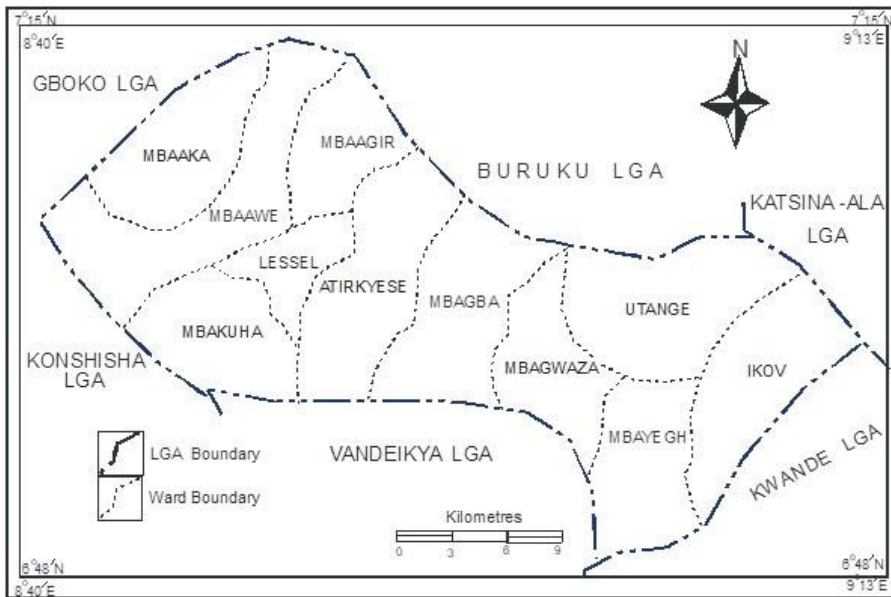


Figure 2: Ushongo Local Government showing council wards

Source: Benue State Ministry of Lands and Survey, Makurdi (2017)

The soils of Ushongo local government area are sandy, coarse in nature with some areas having loamy soils and alluvia soils which are found along the stream floodplains and its tributaries, with some traces of clay soils discovered near Igye stream in Atirkyese, reflecting the influence of a tropical continental climate marked by low to moderate seasonal rainfall and consistently high temperatures throughout the year. The rainfall type is convectional in nature with high intensity. Temperature is normally high throughout the year ranging from 28⁰C-35⁰C. The months of March and April record the highest temperatures. During the harmattan, there is a slight cooling effect especially during the nights in the months of December and January (Ndare, 2005).

According to 2006 National Population Census, Ushongo Local Government Area has a population of about 188,341. The local government is made up of 11 Council wards. The people are of the Tiv speaking tribe. The Mbagwa district which is the biggest district in the local government contains more than half of the population in the local government area. The people are predominantly farmers and engage in tree-cropping (citrus) form of agriculture. The settlement in the local government area is a scattered type of settlement with mostly farmsteads and hamlets. As farmers, the people of Ushongo live in small compounds near their farms within the vicinity of their paternal group (Ityo). The settlement pattern is largely dispersed with nucleated settlements in few locations. There are areas of low population density with less than 50 persons per sq.km as in the case of farmsteads while some are fairly populated with densities ranging from 150 persons to 400 making up hamlets and villages. Traditional affinity to kinship as well as the desire to expand ownership of land is the major reason for the dispersed nature of settlements.

METHODOLOGY

The study used questionnaire and inventory checklist as the major data collection tools. A sample size of 395 was determined using Taro Yamane's formula based on the study population of 188,341 (the population of Ushongo local government area according to National Population Census of 2006). The Yamane formula for determining the sample size is given by:

$$n = \frac{N}{(1 + N * e ^ 2)} \tag{1}$$

Where:

n = corrected sample size, N = population size, and e = Margin of error (MoE), $e = 0.05$ based on the research condition.

For the purpose of questionnaire administration, the sample size of 395 was distributed proportionately in the 10 selected settlements based on their relative settlement size using equation (2) (Daniel, 1999).

$$\frac{S}{N} \times \frac{n}{1} \quad (2)$$

Where, S = Population of a Council Ward; N = Total number of the households; and n = Total sample size 395 (derived from Taro Yamane).

The proportionate sample size method was not invented by a single individual but rather developed within the field of statistics as a methodology for sampling. It involves allocating sample sizes proportionately based on the size or representation of different groups within a population.

Systematic random sampling technique was used to select households for questionnaire administration and interview. In the study area, houses were not arranged into defined streets, rather there are randomly organized into clusters of compounds with a number of houses containing households. Therefore, compounds were first purposively selected, before the systematic selection of households at the interval of three houses apart within the selected compound. This is because households constituted the sampling units, while questionnaire were administered to household's heads. However, where household heads were not available at the time of visit, the available adults in such households were selected.

The data collected was presented in Tables and expressed in percentages. While bar graphs and pie chart were also employed in data analysis in identifying factors responsible for the existing settlement pattern in the study area. In addition, Least Square regression analysis was used to measure the impact of settlement pattern (size) on socio-economic development proxied by the total number of available services in the selected settlement enclave. Pearson's Product Moment Correction analysis was also performed between total number of services in a settlement and the settlement size. The Least Square regression is expressed as:

$$y = mx + b \quad (3)$$

where: m = Slope or Gradient

b = the Y intercept

X = variable of interest

$$m = \frac{N \sum(xy) - \sum x \sum y}{N \sum(x^2) - (\sum x)^2} \quad (4)$$

$$b = \frac{\sum y - m \sum x}{N} \quad (5)$$

On the other hand, Pearson's Product Moment Correction analysis is given by:

$$r = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}} \quad (6)$$

Where:

- r = correlation coefficient
- x_i = values of the x-variable in a sample
- \bar{x} = mean of the values of the x-variable
- y_i = values of the y-variable in a sample
- \bar{y} = mean of the values of the y-variable

Nearest neighbour analysis examines the distances between each point and the closest point to it, and then compares these two expected values for a random sample of points from a CSR (complete spatial randomness) pattern. The formula is expressed as:

The mean nearest neighbor distance

$$\bar{d} = \frac{\sum_{i=1}^N d_i}{N} \tag{7}$$

Where N; is the number of points. d_i is the nearest neighbor distance for point i

RESULTS

Demographic Characteristics of Respondents

Demographic variables of the respondents include; sex, age, marital status, occupation, annual income as well as household size. Results obtained are presented in Tables 1 to 7.

Sex Distribution of Respondents

The result on the sex distribution shows that 78.7% of the respondents were male while the female accounted for 21.3%. Sex could have direct link with settlement restructuring and therefore it is, an important demographic attribute when it comes to socio-economic development particularly as it relates to infrastructure provision like health care and educational facilities in any settlement.

Table 1: Sex Distribution of Respondents

Sex	Frequency	Percentage (%)
Male	299	78.7
Female	81	21.3
Total	380	100

Source: Field Work, 2017.

Age Distribution of Respondents

Age distribution results show that 18-34 age brackets accounted for 47.1% of the respondents while, 35-50 age brackets accounted for 35.8% with 1-17 years accounting for 3.4% which was the least. The result show that, the age bracket which constitutes the working class (18-50 years) accounted for 82.9% of the respondents. Age factor tends to have a direct impact on the socio-economic development of inhabitants of any settlement irrespective of its size and pattern. This follows that a settlement with a high percentage of working class that are gainfully employed would have higher living standards and by implication have greater propensity to develop socially and economically. This suggests that since the study area has a higher percentage of working class (82.9%), the rate of socio-economic development could be accelerated in a well-structured settlement arrangement.

Table 2: Age Composition of Respondents

Age	Frequency	Percent
1-17	13	3.4
18-34	179	47.1
35-50	136	35.8
51-65	27	7.1
65 and above	25	6.6
Total	380	100.0

Source: Fieldwork, 2017.

Distribution of Respondents by marital status

Table 3 presents result on marital status of the respondents. The result shows that the married accounted for 55.0%. The result is followed by the same pattern across all the council wards as married respondents are consistently higher. In terms of settlement restructuring, marital status could play a significant role this is because, singles tend to be more flexible when it comes to relocating and this may favour a settlement restructuring better than a married population who have children and other dependants (Govert and Stijn, 2013). This suggests that the high percentage of married people found in the study may slow down the process of a settlement restructuring.

Table 3: Marital Status of Respondents in the Study Area

Marital status	Frequency	Percent
Not Stated	13	3.4
Single	158	41.6
Married	209	55.0
Total	380	100.0

Source: Fieldwork, 2017

Distribution of Respondents by Educational Attainment

The result on the level of educational attainment of the respondents as presented in table 4 shows that Ushongo LGA is made up of a population that is educated and enlightened as 94.4% of the respondents

acquired formal education (From primary to tertiary level). The results clearly shows that 30.0% had either a university degree or higher national diploma, while, 20% accounted for those with a secondary school education with 20% accounting for those with Ordinary National Diploma (OND) or Nigerian Certificate of Education (NCE). With the high level of education, it is expected that the process of settlement restructuring could be easier as the population is enlightened and are expected to understand the advantages of living in larger settlement concentrations, rather than small pockets of settlements. The findings further revealed that, there seems to exist a relationship between settlement size and the level of educational attainment in Ushongo LGA as evident on Table 4. For instance, out of 114 respondents that had B.Sc./HND, 105 respondents fall into settlement size of between 151 persons and above, while only 9 respondents came from settlement size of less than 150 persons respectively. This therefore suggests that larger settlements tend to attract higher educational institutions which could have accounted for the high level of educational attainment in settlement with larger population. This assertion is consistent with Christaller’s (1966) central place theory in the context of spatial organization. Christaller’s central place theory posits that settlements form a hierarchical spatial structure based on the centralisation of goods and services. Larger settlements serve as central places that provide a wider range of goods and services, attracting people from surrounding areas. These larger settlements tend to have more diverse economic activities and amenities, including educational institutions. In the context of educational attainment, larger settlements often have more resources and infrastructure to support higher education institutions such as universities, colleges, and research centres. As a result, people living in these larger settlements may have greater access to higher education opportunities, leading to higher levels of educational attainment compared to smaller settlements. At the other extreme, the findings also indicates that respondents with no formal education and those with only primary education are the majority in settlements with smaller size (below 151 persons), which further buttress the explanation given above.

Table 4: Level of Educational Attainment

Settlement Size	primary school	secondary school	OND/NCE	B.Sc./HND	No formal education completed	Total
<50	0	11	0	9	0	20
50-150	57	31	22	0	20	130
151-500	21	0	20	67	0	108
501-1000	0	22	24	22	0	68
>1000	11	12	10	16	5	54
Total/Percent	89(23.4)	76(20.0)	76(20.0)	114(30.0)	25(6.6)	380

Source: Field Work, 2017.

Distribution of Respondents by Occupation

The results on the occupation of respondents as shown in Table 5 shows that farming which accounted for 45.8% is the mainstay of the respondents in the study area. Next to farming is teaching which accounted for about 26.3% of the respondents, while hunting is the least occupation engaged by the inhabitants of Ushongo Local Government Area. This suggests that, the area is predominantly rural as farming is a typical occupation of rural dwellers. This is also an indication of the level of socio-economic development of the study area as the function of settlement changes with development. This follows that, the occupational variable is closely associated with settlement regrouping and its resultant socio-economic development of an area. This been that dispersal is closely linked with agricultural activities especially where the agriculture system is still extensively primitive as it has been observed in the study area. Farmers would require large

expanse of lands for their farming activities and may be hesitant to give into a restructuring of their settlement pattern in spite of its importance in enhancing socio-economic development in long term. This therefore means that the predominance of agriculture could slow down the settlement pattern restructuring in the area.

Also, in Table 5 the result shows that farming as an occupation is more concentrated in settlements with small population, while teaching is more visible in settlements that are larger in size. This suggests that settlement size influences the type of occupation of the residents. This follows that smaller settlements have more agricultural lands that support farming activities unlike the larger settlements with more functions that supports diverse occupational opportunities.

Table 5: Occupation Distribution of Respondents in Ushongo

Settlement Size/Occupation	Not stated	Farming	Hunting	Trading	Teaching	Civil Servant	Total
<50	0	0	0	11	0	9	20
50-150	17	85	6	0	22	0	130
151-500	12	21	0	0	64	11	108
501-1000	0	46	11	11	0	0	68
>1000	4	22	4	4	14	6	54
Total	33	174	21	26	100	26	380

Source:Field Work, 2017

Distribution of Respondents by Annual Income

The gross average annual household income of respondents is presented in Table 6. The result shows that majority of respondents fall largely within low-income bracket as 38.2% earn between N50,000.00-N100,000.00 per annum as their gross earning which mainly come from their farming activities since they are predominantly farmers. About 34.2% earn less than N50,000.00 gross income per year. This suggests that the ability of the respondents to access certain infrastructural facilities could be limited in the light of their low earnings. This underscores the need for settlement restructuring so as to boost aggregate demand for critical infrastructure like portable water, healthcare facilities, and schools among others which are fundamental to accelerating socio-economic development to any people.

One striking aspect of the result as presented on Table 6 is that, no resident of settlement size of between 1-500 persons earned above N151,000.00 per year on average. Also, for all the settlement sizes, the gross annual income tends to be concentrated around between N50,000.00 – N150,000.00 per annum on average. The low-income level here may be connected with their main occupation which is farming that is largely subsistent in nature, thereby inhibiting the ability of the residents to access the limited infrastructure available to them. On the other hand, larger settlements have wider range of services and functions that provide them more opportunities to earn higher income.

Table 6: Annual Income of Respondents in the Study Area

Settlement Size	Annual Income in Naira					Total
	Not stated	<50,000	50,000-100,000	101,001-150,000	151,000 and above	
<50	0	11	9	0	0	20
50-150	14	48	57	11	0	130
151-500	0	54	34	20	0	108

501-1000	0	0	22	11	35	68
>1000	2	17	23	9	3	54
Total	16	130	145	51	38	380

Source: Field Work, 2017

Distribution of Respondents by Household Size

The results on the household size of respondents as presented in Table 7 show that the household size of 10 persons and above per household accounted for 46.6%, which indicated a large household size in the study area. This may be related to the fact that the area is predominantly a farming region which is labour intensive. Thus, there is the need to have large families to provide the required manpower for farming activities. Large household size in the face of low household incomes could inadvertently reduce the standard of living of people and slow down its socio-economic progress. Similarly, large household size could also inhibit the idea of settlement restructuring as it becomes difficult to move large households into a new location as a measure to increase service thresholds for infrastructural development. The result of the average settlement size in the study area as shown in table 8 indicate that 34.2% of the respondents live in settlements with 50-150 persons (hamlets) this is followed by 28.4% which represents 151-500 persons with just 17.9% and 14.2% accounting for those living in settlements with populations of 501- 1000 and above 1000 respectively. The result therefore clearly reveals that settlements in the study area have far below the required thresholds for attracting major infrastructure needed for everyday life and in turn enhance socio-economic development in the study area. This further underscores the need for settlement restructuring as a means for enhancing socio-economic development. For example, a settlement with a population of 150 falls short of meeting Guanwardena’s prescribed service threshold for dry zones, which stipulates at least 260 persons for even a primary school function. The result also suggests that the large families do not translate into large settlements which are capable of propelling socio-economic development in the study area.

Table 7: Household Size of Respondents

Household	Frequency	Percentage (%)
1-3	27	7.1
4-6	76	20.0
7-9	100	26.3
10 and above	177	46.6
Total	380	100.0

Source: Field Work, 2017

Current Settlement Pattern in Ushongo Local Government Area

In determining the settlement pattern in Ushongo local government area the study investigated the size of settlements and the average distance between settlements. The sizes of settlements in Ushongo local government area like other parts of Tivland are small and continuously disintegrating for different reasons which include the death of the family head, agricultural prosperity and, proximity to farmlands so as to reduce distance to farms and protect crops against wild animals. Settlements that qualify as large villages or small-towns are almost absent in the study area (table 8). It is evident from the results that 34.2% are hamlets and 28.4% are small villages. These types of settlements are a direct result of population size, functions and cultural factors as evident in plate 1 which represents typical settlement size in the study area.

Ushongo Local Government Area with a population of 188,341(2006 Census) and land area of 400sq km, a

bulk of its population is widely dispersed as most of its population is made up of pockets of population found in farmsteads and small villages. This type of settlement arrangement is seen to be detrimental and is seen to have slowed down the economic progress of Ushongo Local Government Area.

Table 4.8: Settlement Size in the Study Area

	Frequency	Percent
Valid <50	20	5.3
50-150	130	34.2
151-500	108	28.4
501-1000	68	17.9
>1000	54	14.2
Total	380	100.0

Source:Field Work, 2017



Plate 1: Typical Settlement type in Ushongo LGA(Source: Taken by the author, 2017)

The result on the distance between settlement and nearest one is presented in Table 9. The measure of distance between settlements is used to indicate settlement pattern as either dispersed or nucleated. The distance between one settlement and its nearest neighbour also provides information on population density as sparsely, moderately or densely populated. Results obtained clearly shows that the sparse population density observed is as a result of the disperse nature of settlements. The findings indicate a clear inverse correlation between settlement size and proximity to the nearest settlement. Larger settlements tend to be closer to others, whereas smaller ones are typically farther away. This trend is exemplified by the data in Table 9, where settlements with 50-150 persons had a mean distance of 102 against a range of 3-6km, while those with fewer than 50 persons recorded the highest distance, exceeding 6km, to the nearest settlement.

Table 4.9: Distance between Settlement and the nearest one (in Km)

Settlement Size	Distance b/w your settlement and the nearest one (in Km)					%
	<1Km	1-3Km	3-6Km	6Km and above	Total	
<50	0	0	9	11	20	18.7
50-150	17	11	102	0	130	26.3
151-500	22	44	42	0	108	51
501-1000	22	33	13	0	68	51.6
>1000	10	12	30	2	54	3.4
Total/(%)	71(18.7)	100(26.3)	196(51.6)	13(3.4)	380	100

Source: Field Work, 2017

Agricultural activities and settlement Pattern Ushongo LGA

The findings showed that farming accounted for 45.8% of the total population of Ushongo local government area (Table 4.5). The results on the distance between settlements and farms as well as the average farm size are presented in Table 10. The result shows that 44.5% of the respondents cover an average distance of less than 0.5km between their settlements and farms, 23.4% of the respondents live in settlements that are 0.5km-1km away from their farms, while only 10% of the respondents have to cover a distance of 5km and above to go their farms. This result clearly shows that settlements in the study area are located in close proximity to farms which could be connected to the fact that farm is the major means of livelihood in the study area and could equally be part of the traditional reason that defines settlement pattern in Ushongo local government area. Similarly, the result on the farm size as presented in Table 11 showed that extensive farming system as opposed to intensive farming is the common practice in the study area as 32.4% of the respondents have farms that cover 3-4 hectares of land. This is closely followed by 28.7% with 1-2 hectares of land. Field observation suggests that the main reason that may have accounted for extensive farming could be the availability of land and the use of crude farming implements and perhaps low yield per hectare. Also, the dispersed nature of settlements in this area coupled with low competition for land could equally have encouraged large farm sizes.

Furthermore, the findings shows that smaller settlements tend to cover shorter distances to their farms which actually explains why they migrated to where agricultural lands are available at a reduced distance, which equally accounted for the dispersed nature of the settlement in the study area.

Table 10: Distance between Settlement and Farm (in Km)

Settlement Size	Distance b/w settlement and farm (in KM)					Total
	<0.5km	0.5km-1km	2km-4km	5km-7km	>8km	
<50	0	9	0	11	0	20
50-150	37	31	20	20	22	130
151-500	75	12	21	0	0	108
501-1000	35	22	0	0	11	68
>1000	22	15	7	5	5	54
Total/(%)	169(44.47)	89 (23.42)	48(12.63)	36(9.48)	38(10.00)	380

Source: Field Work 2017.

Table 11: Size of farm (in hectares)

Settlement Size	Size of farm (in hectares)				Total
	>1	1-2	3-4	5 and above	
<50	0	0	0	20	20
50-150	17	80	22	11	130
151-500	32	11	65	0	108
501-1000	33	0	22	13	68
>1000	14	18	14	8	54
Total	96(25.3)	109(28.7)	123(32.7)	52(13.7)	380

Source: Fieldwork 2017

Relationship between Settlement Size and Infrastructure

From data in Table12, 42.1% of the educational facilities available in the study area are predominantly nursery and primary schools which can also be explained in the terms of absence of thresholds which depicts population size whether in qualitative or quantitative terms. This depicts the relative backwardness as pockets of populations cannot provide the needed thresholds to attract higher institutions such as colleges and universities.

Table 12: Educational facilities in your settlement

Settlement Size	Educational facilities in your settlement				Total
	no response	Nursery/Primary School	Secondary School	College	
<50	0	11	0	9	20
50-150	40	62	28	0	130
151-500	21	43	44	0	108
501-1000	0	22	22	24	68
>1000	12	22	14	6	54
Total/(%)	73(19.2)	160 (42.1)	108(28.4)	39(10.3)	380

Source: Fieldwork 2017



Plate 2: Primary School at Antyu, Mbakaa council Ward (Source: Taken by the author, 2017)

The proximity to school can be also used to measure the level of enlightenment of the population and thus its development. It can be seen that 39.5% of the population have access to educational facilities within their settlements as it is seen to access the schools within 30mins of walking distance while 33.9% have access to educational facility within 30mins-1hour of walking distance which are mostly the nursery and primary schools (Figure 3), this gives a clear picture of low level of higher education and further explains the high rate of farming occupation despite having a high rate of a working population.

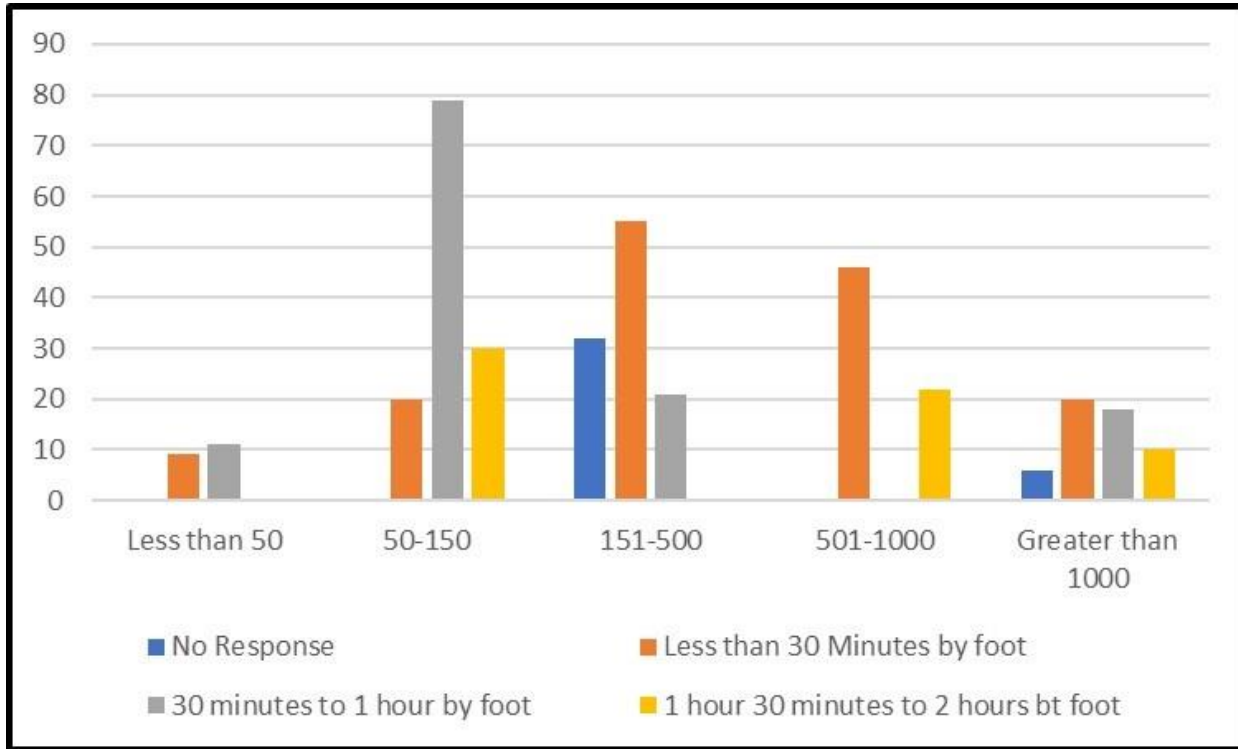


Figure 3: Proximity of Settlements to School and Settlement size

The result on the health facilities as presented in Figure 4 indicates that clinics and dispensaries accounted for 46.3% and 30.3% respectively. This result shows that primary health care facilities were the dominant health care institutions in the study area which suggest that the residents of these areas are highly limited in terms of quality health care delivery and the range of health care services available to settlements in the study area. This result agreed with field observation that the health facilities here are not equipped with modern health facilities which further inhibit accessibility to quality healthcare services. This is clearly evident in the result presented in Figure 3 in which 55.00% opined that they have no access to modern health facilities. The result on the proximity of settlements to dispensary/clinics/hospitals which is also an indicator of physical accessibility (Table 13) shows that 37.9% of the respondents have to walk for between 30mins-1hours to access health services in Ushongo local government area, 35.3% have to spend less than 30mins to get to a dispensary, clinic, or hospital. This result therefore shows that these health facilities are either located within these settlements, which is an indicator of the fact that these settlements are serviced with healthcare facilities even though they are largely primary healthcare services.

In terms of the relationship that exists between settlement size and health facilities in the study area, the result on Figure 4 shows that smaller settlements of between 50 – 500 persons benefit more from dispensary services, while, larger settlements have more clinics. This occurrence suggests that settlement size influences the location of healthcare facilities in the study area. This therefore implies that, larger settlements could attract higher and perhaps better healthcare centres like secondary and tertiary healthcare facilities. Generally, in Ushongo Local Government Area, the larger population do not have any meaningful access to health facilities as shown by the result in Figures 4 and 5.

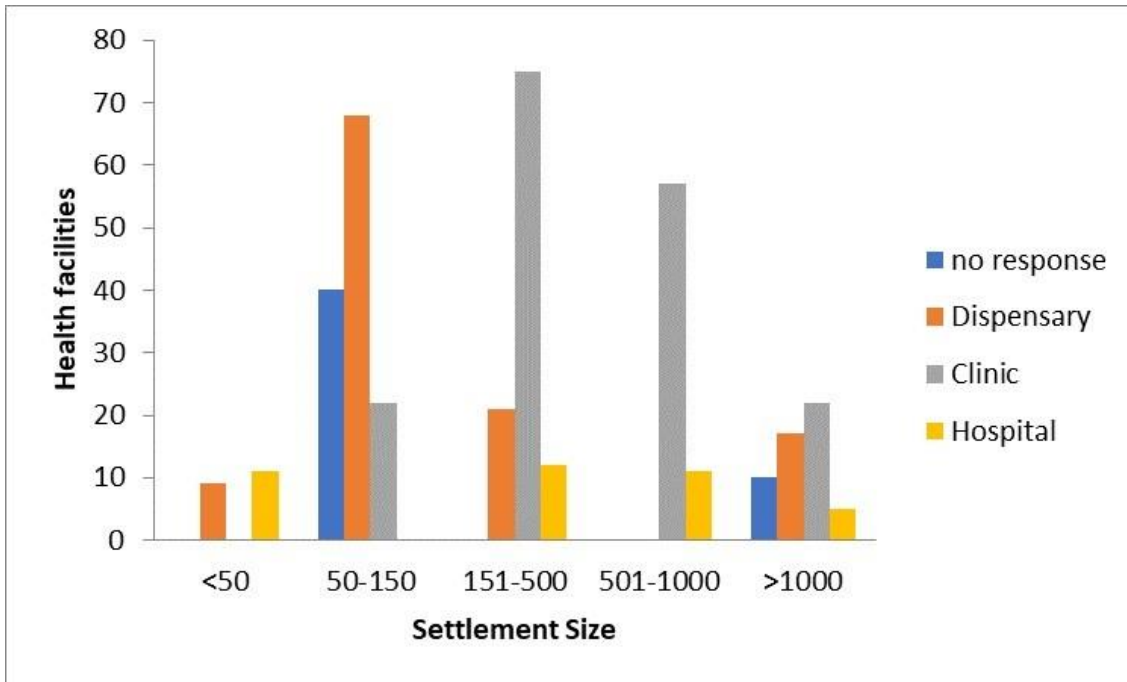


Figure 4: Health facility in your settlement

Most of the health facilities that can be found in the study area are dispensaries (Plate 3) which have the highest percentage of 46.3% within an average walking distance of 30mins -1hour while,35.3% have access at 1-2hours of walking. This too is a direct result of lack of service thresholds needed to set up the necessary medical facility in the study area. From the result obtained, it can be seen that 40.5% of the population live in isolated farmsteads making it too expensive for government or private individuals to set up health facilities for the inhabitants. Areas where these dispensaries are located are mostly at the council ward headquarters and along transport routes where a few concentrations are evident.

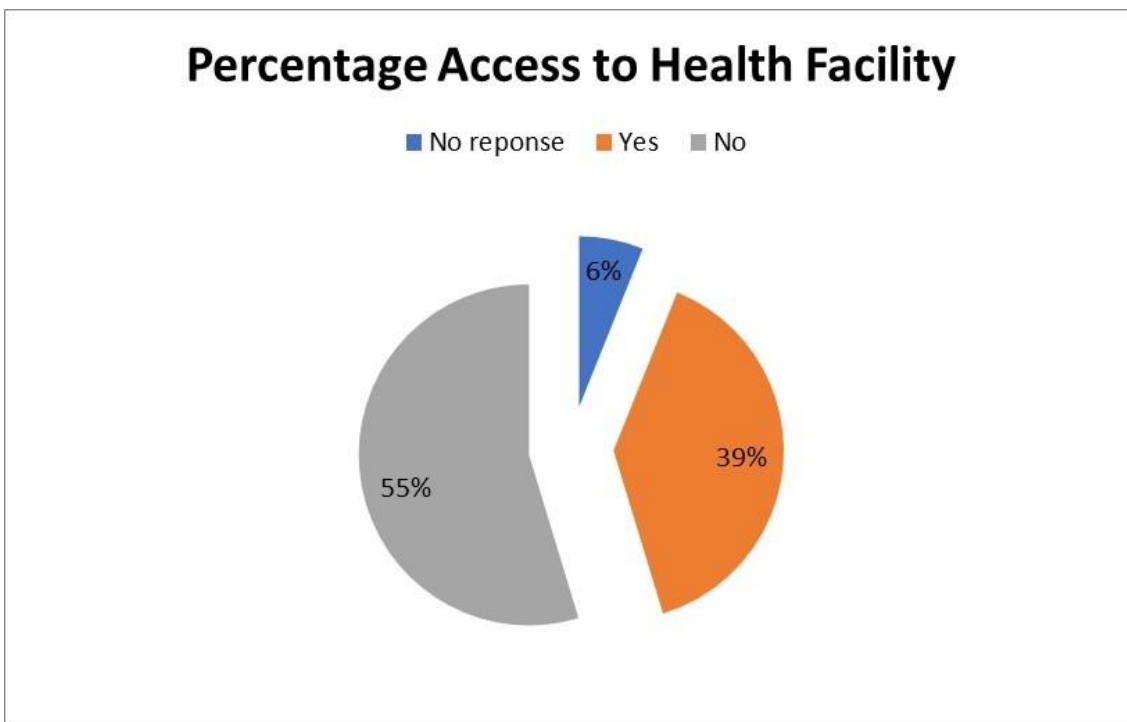


Figure 5: Access to modern health facility

Table 13: Proximity of settlement to Health Facility (dispensary/clinic/hospital)

		Frequency	Percent
Valid	Less than 30 minutes by walking	134	35.3
	30 minutes – 1 hour by walking	144	37.9
	1-2 hours by walking	51	13.4
	2 hours and above by walking	51	13.4
	Total	380	100.0

Source: Field Work, 2017



Plate 3: Dispensary at Jumbo, Mbakaa Council Ward.(Source: Taken by the author, 2017)

The result of the primary water supply source(s) is presented on Table 14. The result reveals that hand-dug wells, comprising 48.4%, are the primary source of water supply for domestic purposes. Boreholes, constituting 19.2%, serve as the predominant source of potable water, particularly in settlements with notable population concentrations. This result therefore suggests that water availability is not a major determinant of the existing settlement pattern in the study area, unlike in the past where settlements were located close to water sources such as streams and rivers. This probably explained why there is no clear link between settlement size and the main source of water supply based on the information presented on Table 14 as hand-dug well remained the major water source irrespective of the size of settlements. Nevertheless, table14 also revealed that smaller settlement size of between 50 – 500 also relied to a larger extent on water from stream which constitute the second major water sources.

In the study area, boreholes can be drilled anywhere as long as there are sufficient funds available. Consequently, the availability of water sources may not impede the restructuring of settlements; instead, consolidating settlements to create larger enclaves could draw greater investment in water projects due to the potential to reach minimum population thresholds required for their establishment.

Table 14: Main Source of Water Supply

Settlement Size	Main source of water supply					Total
	no response	Stream	River	hand – dug well	borehole	
<50	0	0	9	11	0	20
50-150	0	40	11	59	20	130
151-500	21	23	0	20	44	108
501-1000	0	0	0	68	0	68
>1000	2	11	6	26	9	54
Total/(%)	23(6.1)	74(19.5)	26(6.8)	184(48.4)	73(19.2)	380

Source: Field Work, 2017.

Generally, the result of the inventory of the available services in the study area as presented on Figures 6 and 7 clearly show the relationship between settlement size and the number of services present in those settlements which by implication indicate the level of development. The result shows that there is at least a school in all the sampled settlements where the inventory took place and that schools are equally more in number than other infrastructure available (figure 6). This is followed by healthcare facilities, while power and motorable roads follow the same trend as evident on figure 6. More importantly, the result indicates a positive relationship between settlement size and the number of available services located in those settlements. This implies that the larger the settlement size, the higher the number of services that were available to the residents. This result therefore underscores the need for settlement regrouping so as to improve the population threshold that would support the location of bigger infrastructure and social services for the overall development of Ushongo LGA whilst; improving the human settlement overall.

Further analysis of the link between settlement size and the number of available services as presented on Figure 6 indicate a significant positive relationship with high regression coefficient of 0.979. This implies that the increase in the number of available services with the settlement size did not occur by chance and that larger settlements possess great capacity to attract and sustain more and perhaps bigger infrastructural facilities in the study area. Again, this assertion resulting from the findings of this study is aligns with Christaller’s Central place model.

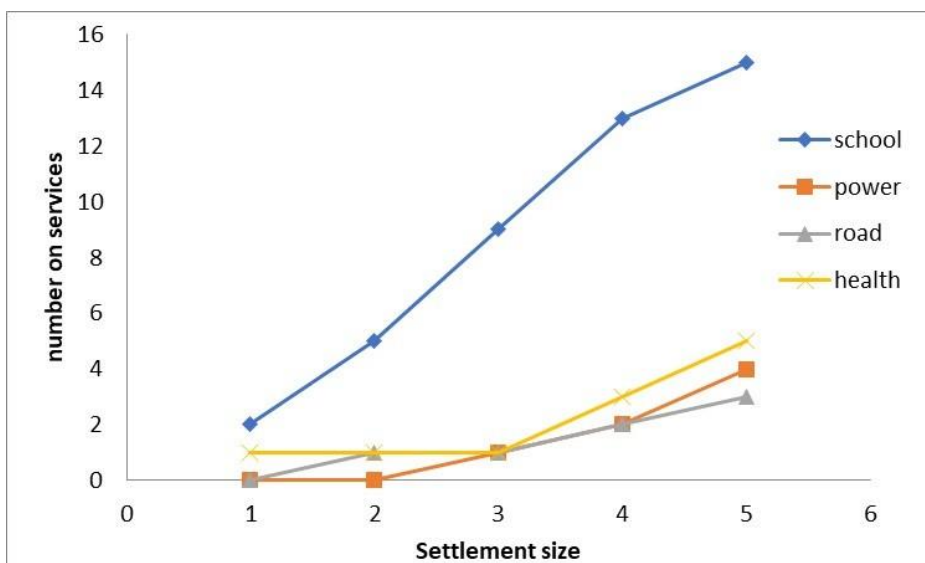


Figure 6: Settlement Size and the number of individual services available (Author’s Field Work, 2017)

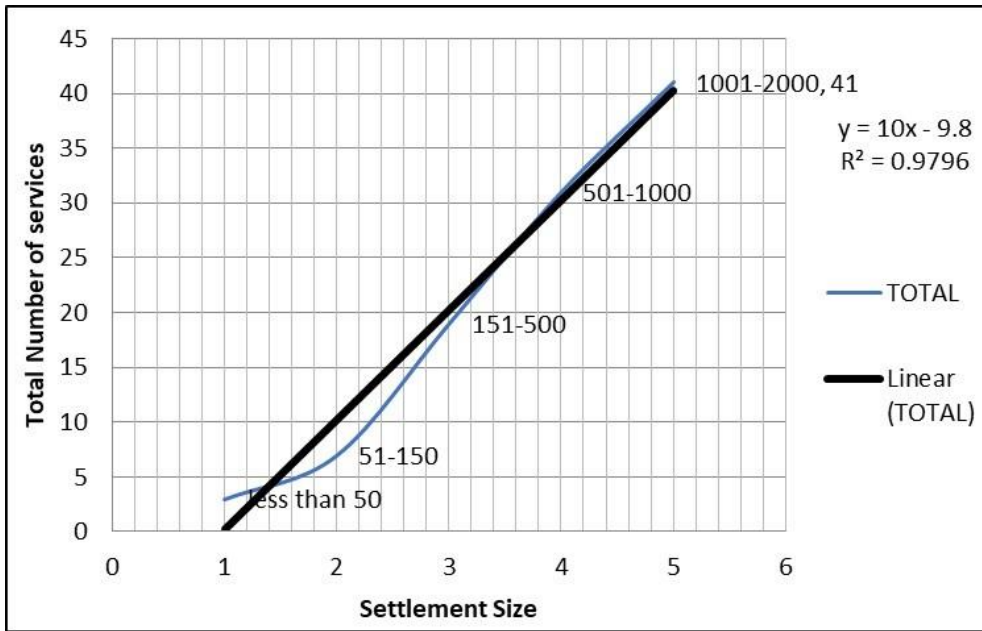


Figure 7: Settlement Size and the total number of services available (Author’s Field Work, 2017)

Reasons for the present level of development and preferred settlement restructuring strategies

With respect to reasons for the relative backwardness of Ushongo Local Government Area, the findings on Table 15 indicates that 36.6% of the inhabitants blamed its slow development process to government neglect while, 34.7% believed that it was due to the absence of communal living which is a direct cause of a disperse settlement pattern. The under-developed nature of Ushongo Local Government Area might not have been its settlement pattern alone but, it can be said to have been an inhibiting factor too. Therefore, spatial reconstruction of the rural settlements of Ushongo Local Government Area is critical to its sustainable development of any form. As dispersed settlement distribution in traditional agricultural regions tend to have under-developed economies, industrialisation, and tertiary industries characterised by low urbanisation rates.

Table 15: Reasons for slow development of Ushongo LGA

Reason for Slowdown	Frequency	Percentage (%)
The pattern of it settlement	109	28.7
Absent of communal living	132	34.7
Government neglect	139	36.6
Total	380	100.0

Source: Field Work, 2017.

Furthermore, the striking finding is the fact that only 28.7% of the respondents ascribed the slow socio-economic development pace to the nature and pattern of settlement in the study area. However, there seems to be a connection between settlement pattern and communal living. This follows that, the more nucleated settlements are, the more likelihood of evolving communal life. On the other hand, the more isolated they are, the higher the tendency for settlements to work individually which could inhibit the process of a restructuring. More fundamental implication of this result is the fact that if the residents of the study area do not consider the present dispersed settlement pattern as an obstacle to socio-economic development, they are most likely not going to consider restructuring idea of settlement agglomeration important in the study area.

The findings on the preferred settlement restructuring strategies as shown in Table 16 revealed that 48.2% of the respondents are favourably disposed to the idea of restructuring strategy based on smaller settlements merging with other smaller ones to create larger settlement enclaves capable of attracting development in terms of social and physical infrastructure. Worthy of note is the fact that considerable percentage (29.2%), preferred relocated or location of critical functions in already viable settlements to further boost their threshold to attract more development and perhaps will in turn cause the nearby less viable settlements to merge with them. The minority viewpoint favoured restructuring settlements along their clan divisions, aiming to promote communal living, potentially resulting in increased settlement clustering within the study area.

Table 16: Settlement restructuring Strategies for Socio-economic development of Ushongo LGA

Strategies/Activities	Frequency	Percentage (%)
Settlement should be regrouped according to clans	86	22.6
Smaller settlements should be merged with other smaller ones	183	48.2
Functions should be moved to settlements with viable thresholds	111	29.2
Total	380	100.0

Source: Field Work, 2017.

RECOMMENDATIONS

The current spatial arrangement in the study area as evident from result presented has established scattered, small, and hollow settlement pattern which therefore requires emergency corrective measures to galvanise any form of development. Also, based on the findings of this study, two possible forms of settlement restructuring hold high tendency of achieving huge success. They are:

1. Concentration of population in a particular location; and
2. A hierarchical arrangement of functions aimed at promoting spatial restructuring in the study area.

The first option of settlement restructuring as proposed above will encourage concentration of central settlements or merging of settlements of concentrating functions which is consistent with the work of (Mao 2017). Ushongo local government area is divided into major districts namely; Mbagwa and Mata districts which are further divided into respective council wards making up its traditional organisation. This follows that settlement agglomeration/regrouping in line with these age-long traditional enclaves could ensure high propensity for success than the restructuring that does not factor in this traditional/kindred divides that are geopolitically recognised as districts and council wards. One of the advantages of this restructuring strategy is that it will foster communal living as people tend to be more comfortable living with their close relatives than “strangers”. The major means of livelihood which is farming can be preserved and guaranteed in spite of physical displacement of smaller settlements. This again is consistent with the argument of Chambers (1993), arguing “that rural development should identify and emphasize the priorities of small farmers rather than the priorities of development practitioners and researchers”. In other words, any settlement reorganisation project should put first the farmers’ interest, if it desires to achieve any form of success.

The second strategy which is the hierarchical arrangement of functions is equally viable and could achieve high measure of success if implemented in the study area. It will also address the problem of inadequate infrastructure and slow socio-economic growth, and given the problems associated with relocating human population; of what settlements to be relocated; and where to relocate these settlements to, the study proposes a hierarchical arrangement of functions that would serve as growth centres capable of attracting

human population that will meet the threshold requirement for infrastructural development. The implementation of the recommendations should prioritize the enhancement of services and the protection of farmers' rights, while also aiming to achieve prosperity and sustainability in the study area. This entails restructuring settlements into a hierarchical system, wherein a chosen set of settlements with potential for growth, job creation, and infrastructure development become focal points of varying hierarchies. For instance, Lessel as the local government headquarters could represent the first order settlement due to its administrative, commercial and educational functions, while Council ward headquarters could constitute the second order settlement owing to their cultural and commercial functions. The third order settlement could be settlements with major market centres.

Furthermore, centres which provide equal access to infrastructure and build a well organised system thereby creating an improved day to day life in Ushongo local government area. The implementation of a restructuring should not be enforced through administrative fiat as was the case in Tanzania as this can lead to lowering productivity as farmers become less interested in doing anything. A core objective for why it is imperative to reconstruct a rational spatial pattern of rural settlement into a well organised village-town system, build central villages is; so as to optimise production as well as enhance rural growth. This reorganisation will curtail the problem of continuous fragmentation of settlements thereby ameliorating the problems associated with hollow and, small settlements such as social cohesion and polarisation.

CONCLUSION

The study concludes that the wide dispersion of settlement in the study area cannot propel development in the study area. Dispersion of settlement can be seen as a direct cause of low land efficiency, which thereby creates settlement pattern/s that is based primarily on the independent choice of farmers where, farmers scatter all over the landscape to enable them have greater access to farmlands to match urban demand for food. It is also evident from field findings that, areas that are hard hit by this under-development are settlements that are small such as areas with farmsteads and hamlets. As their populations are too small to intercept and internalise any form of development due to the absence of population thresholds needed to attract services.

REFERENCES

1. Alaci, D.S.A (2006). Infrastructural facilities and rural transformation in Bassa Local Area Kogi State” Being a paper delivered at the 49th Annual Conference of the Association of Nigerian Geographers July 31-2nd August at Yola Federal University of Technology.
2. Chambers, R. and Conway, G. (1992). Sustainable Rural Livelihoods: Practical Concepts for the 21st IDS Discussions Paper 296, Brighton Institute for Development Studies.
3. Chen, K., Tian, G., Tian, Z., Ren, Y., Liang, W. (2022). Evaluation of the Coupled and Coordinated Relationship between Agricultural Modernization and Regional Economic Development under the Rural Revitalization Strategy. *Agronomy*, 12, 990. <https://doi.org/10.3390/agronomy12050990>
4. Christaller, W. (1966). *Central Places in Southern Germany*, translated by C.Baskin, Englewood Cliffs, N.J Prentice-Hall IFPRI
5. Daniel W. W. (1999). *Biostatistics: A Foundation for Analysis in the Health* 7th edition. New York: John Wiley & Sons.
6. Ellis, F. and Biggs, S. (2001). Evolving Themes in Rural development 1950s-2000s, *Development Policy Revie.* 19(4): 437-448.
7. Govert B. and Stijn, V. D. (2013). The impact of changes in the marital status on return migration of family migrants, *Journal of Population Economics* 27(4) 961-997, DOI: 10.1007/s00148-013-0495-3
8. Guangqing, C. and Stephen, J. V., (2010). “Population Change and Its Driving Factors in Rural, Suburban, and Urban Areas of Wisconsin, USA, 1970–2000”, *International Journal of Population Research*, vol. 2011, 1-14 <https://doi.org/10.1155/2011/856534>

9. Johnson, K.E, and Ifeoma, U. (2018). Rural development as a panacea for rural–urban migration in Nigeria. *Art Human Open Acc J.* 2018;2(5):241-244. DOI: 15406/ahoaj.2018.02.00065
10. Li K, Geng H, Yue L, Li K and Huang L(2021) Spatial Differentiation Characteristics and Driving Mechanism of Rural Settlements Transformation in the Metropolis: A Case Study of Pudong District, Shanghai. *Environ. Sci.* 9:755207.doi: 10.3389/fenvs.2021.755207
11. Long, H. L., Li, Y. R., Liu, Y. S. et al., (2012). Accelerated Restructuring in Rural China fueled by “Increasing vs decreasing balance” Land-Use Policy for Dealing with Hollowed Village. *Land Use Policy.* 29: 11-22.
12. Mabogunje, A.L. (1986). “Organising Nigeria’s Space Economy for Development”, A Paper presented at the 29th Annual Conference of the Nigerian Geographical Association, Ahmadu Bello University, Zaria.
13. Mao, Y.; Liu, Y.; Wang, H.; Tang, W.; Kong, X. A (2017). Spatial-Territorial Reorganization Model of Rural Settlements Based on Graph Theory and Genetic Optimization. *Sustainability*, 9, 1370.
14. Ortserga, D.S. (1988). Reorganising The Existing Settlement Pattern for rapid rural Development in Makurdi Local Government Area of Benue State. An unpublished Msc dissertation Ahmadu Bello University Zaria, Kaduna, Nigeria.
15. Smith, D. (2007). “The changing faces of rural populations: “(re)fixing the gaze” or “eyes wide shut”?” *Journal of Rural Studies*, vol. 23, no. 3, pp. 275–282.
16. United Nations (1996): The Habitat Agenda: Sustainable human settlement development in the urbanizing World. In gathering a body of global agreements. A United Nations Document: Retrieved from <http://www.un.document.net/ha-4c.htm> on 24-05-2016
17. Ward, N. and Brown, D. L. (2009). “Placing the rural in regional development,” *Regional Studies*, vol. 43, no. 10, pp. 1237–1244, 2009