AWARENESS OF THE IMPACT OF URBANISATION ON LAND USE CHANGE IN YENAGOA METROPOLIS, BAYELSA STATE, NIGERIA

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ABSTRACT: *Urbanisation is imminent especially in a city with high expectation of expanding due to its function as an administrative area in which Yenagoa is not exempted. This study therefore examined the knowledge and awareness of the residents on the impacts of urbanisation on land use change in Yenagoa Metropolis. Five hundred and sixty copies of the questionnaire were administered to elicit information on the perception of residents on the impacts of urbanisation on other land use types. Descriptive and inferential statistics were employed for the data analysis in the study. Findings showed that the majority perceived that population increase, job opportunities and infrastructural developments are the major factors responsible for the development in Yenagoa while increases in the cost of living, poor standard of living, and increase in crime are the challenges of development in Yenagoa. However, 39% of respondents agreed that forest was the highest land cover in the past 20 years while 60.2% agreed that the built-up area was the highest at present land cover. They concluded that the public is adequately aware of the effects of urbanisation on other land use types and there were no designed ways of getting out of the problem. It is therefore recommended among others that a campaign against deforestation should be encouraged and sensitizing people on the effects of improper land use change should also be established and maintained.*

KEYWORDS: *Urbanisation, land use/landcover, Development, Perception*

INTRODUCTION

Urbanisation is imminent, especially in a city with high expectations of expansion due to its function as an administrative area. As a result, the development has led to people from the built-up area intruding to other land use types but in different magnitudes in a given time. Empirical studies of such that can lead to quantification of the affected of each land use are highly needed in recent times to use geo-information technologies. Land use and land cover change analysis is one of the most precise techniques to understand how land was used in the past, the types of changes expected in the future as well as forces and processes behind the changes (Atubi *et al.*, 2018; Messay, 2011). The interaction between man and his environment has become increasingly complex and diverse, especially in natural resource exploitation and development. This results from a lack of information on land use and land cover. According to FAO (1996), the broad goal of managing land use and its change is to develop land resources in ways that capitalise on their local potential and suitability, avoid negative impacts and respond to present and future societal demand within the limits of carrying capacity of the local environment. More recently, the need for thoughtful and careful stewardship of land, together with more intensive use and management of its resources, has emerged as a major global concern. This has led to a re-evaluation of the need for information about the land, and the strategies and programmes that may provide it (Akintunde *et al.*, 2016; Zubair *et al.*, 2015). Land use planning is the science of organising various land uses such that economic, buildings roads, and other uses secure maximum economy and convenience, which would be conducive for the populace (Arokoyu & Adeyemo, 2002). Historically, only a quarter of the world's total population lived in urban places in 1950 (Davis, 1965). It is noted that the urbanisation of the developing world began to accelerate in the late twentieth century (Timberlake, 1987). The world's urbanisation since 1850 partly reflects a corresponding acceleration of world population growth, but urbanisation is not merely an increase in the average density of human settlement (Lowry, 1990). In 2008, the world crossed that long-awaited demographic watershed of half of the people living in urban areas. There is a significant likelihood of acceleration of the rising share of the world's urban population to 75 per cent by 2050, out-rightly higher than the mere 10 per cent in 1900, while the USA, Britain, and Germany have already surpassed 75 per cent and won't exceed 90 per cent by 2050. Newly industrializing countries like South Korea and Mexico, which were halfway urbanised at 50 per cent in 1950, are likely to pass 75 per cent by 2030. Going by such a trajectory, China will urbanise by 20 per cent in 1980 to over 60 per cent around 2030. China's urbanisation from the 1960s on reflects the global shift of the world's urban population from developed to developing countries, which will account for about 80 per cent of the world's urbanites by 2030, doubling from 40 per cent in 1950 (Soja & Kanai, 2007). In an urban environment, human-induced environmental changes are of concern today because of the deterioration of the environment and human health. The study of land use/land cover change is very important to have proper planning and utilisation of natural resources and their management. One of the critical concerns of the world today is land use/land cover changes because of the adverse consequences they have on weather and climate, surface run-off concerning erosion and flooding, ecological biodiversity, socio-economic and health and the general state of environmental degradation. This is largely because land cover has considerable control over bio-physical, bio-geophysical, bio-geochemical, and hydro-meteorological processes (Abubakar *et al.*, 2002).

Land use and land cover change have become a central component in current strategies for managing natural resources and monitoring environmental changes. Mmom *et al.* (2008) noted that the land use and land cover of a region is a reflection of the level of development in that region on the other hand, and the level of development influences land use and land cover of a region. Land cover is continually transformed by land use changes suggesting that land use is the cause of land cover change and the underlying demographic factors remain economic, technological and institutional (De Sherbiner, 2002). Land cover change is one of the most important variables of environmental change and represents the largest threat to ecological systems (Foody, 2003). The quest and strive toward industrialisation, technological innovations and the drive to modernism have resulted in modification and change in land use and land cover in a region. Remote Sensing (RS) and Geographic Information Systems (GIS) are now providing new tools for advanced ecosystem management, land use mapping and planning. The collection of remotely sensed data facilitates the synoptic analyses of Earth-system functions, patterning, and change at local, regional as well as at global scales over time (Lambin et al., 2001; Lambin et al, 2003). Such data provides an important link between intensive localised ecological research, regional, national and international conservation and management of biological diversity (Wilkie & Finn, 1996). There is a dearth of data on the perception studies towards the influence of urbanisation on other land use types. Therefore, the present study examined the perception studies towards the influence of urbanisation on other land use types in Yenagoa City, Bayelsa State, Nigeria.

MATERIALS AND METHODS

The study was carried out in Yenagoa City, Bayelsa State, Nigeria. The study area lies along latitudes between 4º 48′ 00″ North and 5º 24′ 10″East; and longitudes between 6º 12′ 00″E and 6º 39′ 30″E (Figure 1). It is bounded by Rivers State on the North and East, Delta State on the North West and West, Ogbia LGA on the South East and Southern Ijaw on the Southwest. Yenagoa LGA has a population of 352,285 by 1996 estimate. The climate of Yenagoa LGA is an equatorial type of climate. Rainfall occurs generally every month of the year. The mean monthly temperature is 25ºC to 31ºC. The hottest months are December to April. The difference between the wet season and dry season on temperature is about 2ºC. Relative humidity is high throughout the year and decreases slightly during the dry season.

Yenagoa LGA is located within the lower delta plain believed to have been formed during the Holocene of the quaternary period by the accumulation of sedimentary deposits. The major geological characteristic of the state is sedimentary alluvium. The entire state is formed by abandoned beach ridges and due to many tributaries of the River Niger in this plain, considerable geological changes still abound. Generally, Yenagoa is a lowland state with an elevation between 3m and 7m above mean sea level and is characterised by flood plains. The net features such as lagoons are dominant relief features in the study area. Yenagoa LGA is drained with many rivers and creeks among which are Epie Creek, Nun River, Orashi River, and Ekole Creek.
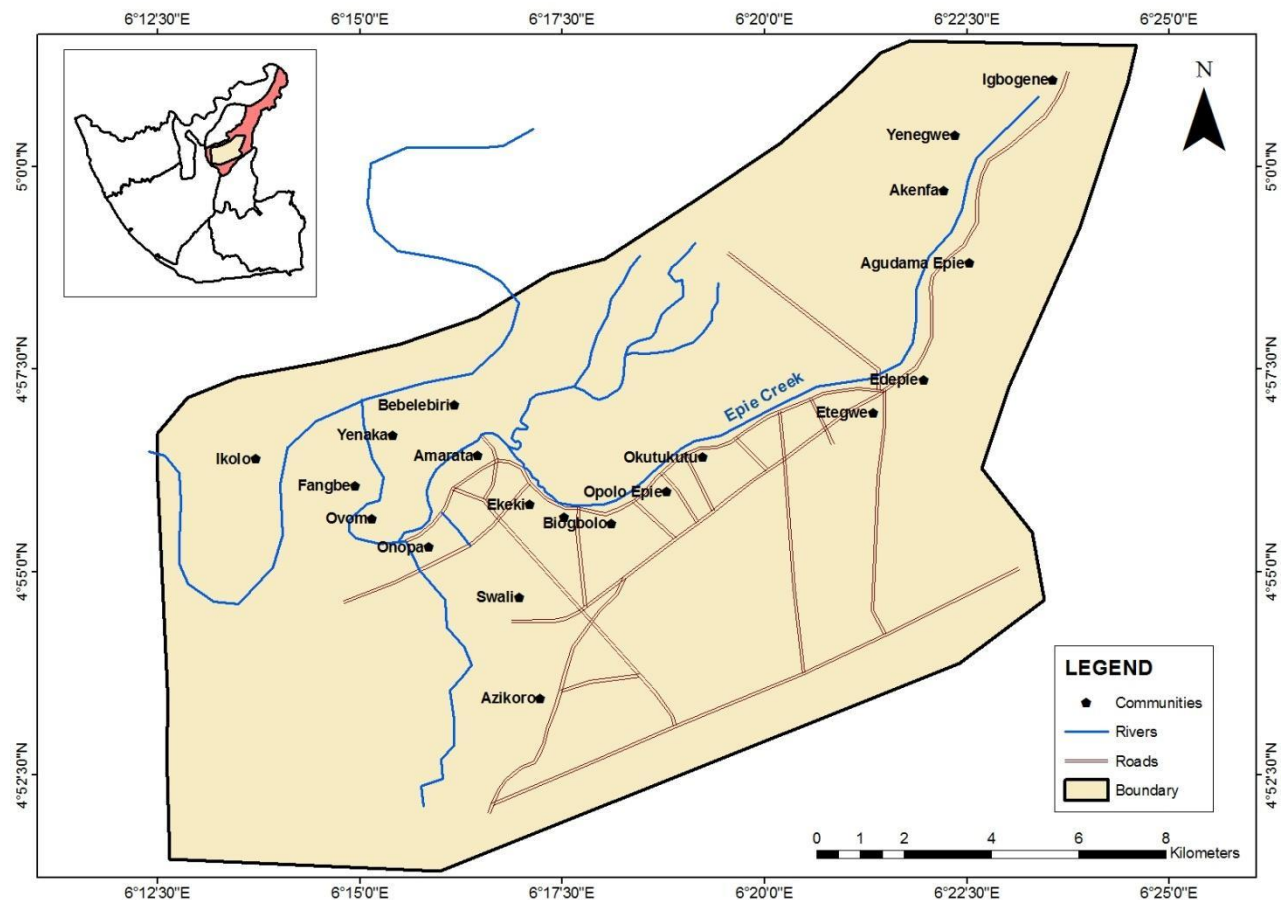
Figure 1: Map of Yenagoa Metropolis

This study employed the use of both primary and secondary data. The primary data included the use of questionnaire and personal interview to elicit information on the factors influencing the change of other land use to urbanisation, modes of changes and challenges posed by the change to urbanisation in Yenagoa metropolis. Secondary data included the population data of communities comprising Yenagoa metropolis of 1991 and 2006 from the Bayelsa State Population Commission and Rivers State Population Commission and land use/land cover-related issues from relevant literature, journals, magazines, and newspaper.

The questionnaire was administered to households in the entire communities within Yenagoa metropolis. The study employed the use of a purposive sampling technique by involving all the twenty eight communities in Yenagoa metropolis. An average of two hundred households was gotten in each community with which 10% were taken as the sampled population for the study. As a result, twenty copies of questionnaire were administered to residents in each community using random sampling technique. Thus, the total number of questionnaire distributed was five hundred and sixty (560).

Descriptive statistics was employed in form of frequencies and percentages while inferential statistics was employed to test the hypothesis which states that there is no significant variation in the awareness of urban development and land use/land cover change with respect to socio-economic characteristics of residents.

Administration and retrieval analysis of questionnaire

Table 1 shows the adminstration and retrieval analysis of questionnaire across the study communities of Yenagoa metropolis. It is observed that the total percentage of retrieved questionnaire was 89.64% while the minimum retrieved was 70% in Yenegwe.

Table 1. Distributed and retrieved questionnaire from study locations

SN	Communities	Administered	Retrieved	Percentage of the retrieved questionnaire (%)
1	Akenfa	20	20	100
2	Yenizue Epie	20	18	90
3	Biogbolo Epie	20	17	85
4	Swali	20	19	95
5	Etegwe	20	18	90
6	Ovom	20	18	90
7	Ikolo	20	18	90
8	Opoo	20	18	90
9	Yeneka	20	18	90
10	Agbura	20	20	100
11	Yenegwe	20	14	70
12	Agudama	20	18	90
13	Yenagoa	20	17	85
14	Onopa	20	17	85
15	Akenpai	20	19	95
16	Obogoro	20	18	90
17	Famgbe	20	18	90
18	Kpansia Epie	20	19	95
19	Ogu	20	19	95
20	Okutukutu	20	18	90
21	Azikoro	20	18	90
22	Okaka	20	18	90
23	Akaba	20	18	90
24	Edepie	20	17	85
25	Ekeki	20	17	85
26	Amaratha	20	17	85
27	Yenebebeli	20	18	90
28	Igbogene	20	18	90
Total		560	502	89.64

Socio-economic characteristics of respondents

Table 2 presents the socio-economic characteristics of respondents in Yenagoa metropolis whereby it was discovered that 65.1% of total respondents were males and 34.9% were females. In terms of age of respondents, it was shown that 28.3% of respondents were between 20 and 29 years, 50.4% were between 30 and 49 years, 15.9% were between 50 and 65 years while 4.4% were above 65 years. The analysis shows that majority of the

respondents were within the working age bracket. The marital status of the residents shows that 27.5% were single, 58.4% were married, 6.0% were divorced while 2.4% were widowed and 4.2% were separated. Considering the household size, 46.4% of total respondents had a household size between 2 and 5 persons, 23.9% had between 6 and 8 persons while 10.8% had between 9 and 11 persons, 5.6% had between 12 and 15 persons and 4.6% had above 15 persons as the household size. The educational status of respondents reveals that 6.8% had no formal education, 6.4% had primary education, 31.3% had secondary education while 54.8% had tertiary education. This analysis shows that more than 90% of respondents can read and write. In terms of employment status, 39.8% were civil servants, 17.7% engaged in trading and commerce while 9.4% were farmers, 3.0% practiced fishing, 3.4% were industrial worker, 3.0% were artisan and 19.1% were unemployed. The analysis on household income of respondents shows that 24.7% of total respondents had income between #0 and #20,000, 34.5% had between #21,000 and #40,000, 12.4% had monthly income between #41,000 and #60,000, 10.6% had between #61,000 and #80,000 while 12.5% had monthly income above #80,000. This shows that more than 50% of respondents had monthly income of #40,000 and below.

Table 2. Socio-economic characteristics of respondents

Gender	Frequency	Percentage (%)
Male	327	65.1
Female	175	34.9
Total	502	100.0
Age (Years)	**Frequency**	**Percentage (%)**
No response	5	1.0
20-29	142	28.3
30-49	253	50.4
50-65	80	15.9
Above 65	22	4.4
Total	502	100.0
Marital Status	**Frequency**	**Percentage (%)**
No response	8	1.6
Single	138	27.5
Married	293	58.4
Divorced	30	6.0
Widowed	12	2.4
Separated	21	4.2
Total	502	100.0
Household Size	**Frequency**	**Percentage (%)**
No response	44	8.8
2-5 persons	233	46.4
6-8 persons	120	23.9
9-11 persons	54	10.8
12-15 persons	28	5.6
Above 15 persons	23	4.6
Total	502	100.0
Education Status	**Frequency**	**Percentage (%)**
No response	4	0.8

No formal education	34	6.8
Primary education	32	6.4
Secondary education	157	31.3
Higher education	275	54.8
Total	502	100.0
Employment Types	**Frequency**	**Percentage (%)**
No response	23	4.6
Civil service	200	39.8
Trading and Commerce	89	17.7
Farming	47	9.4
Fishing	15	3.0
Industrial worker	17	3.4
Artisan	15	3.0
Unemployed	96	19.1
Total	502	100.0
Household Income (Naira)	**Frequency**	**Percentage (%)**
No response	27	5.4
0-20,000	124	24.7
21,000-40,000	173	34.5
41,000-60,000	62	12.4
61,000-80,000	53	10.6
Above 80,000	63	12.5
Total	502	100.0

Source: Researcher's analysis, 2015

Awareness of development

Table 3 shows the number of years individual had spent and awareness of the development in Yenagoa metropolis. It was discovered that 4.6% of total respondents had spent 0-5 years, 13.7% had spent 6-10 years, 22.9% had spent 11-15 years while 35.3%, 10.4% and 10.0% had spent 16-20 years, 21-25 years and 26-30 years respectively. In addition, 3.2% had spent above 30 years. This analysis confirms that more than 80% of respondents may understand the changes over time in terms of development in Yenagoa metropolis. In terms of development (urbanisation) in Yenagoa metropolis, 81.1% of respondents agreed that there was development since they have been living in Yenagoa while 9.2% disagreed and 6.2% were not sure if there was any development. The analysis on the magnitude of the development reveals that 11.2% of respondents claimed that the development was high, 40% agreed on moderate development while 34.9% claimed that the development was low.

Table 3. Number of years spent and awareness of development in Yenagoa metropolis

Number of years spent in Yenagoa	Frequency	Percentage (%)
0-5	23	4.6
6-10	69	13.7
11-15	115	22.9
16-20	177	35.3
21-25	52	10.4
26-30	50	10.0
Above 30	16	3.2
Total	502	100.0
Awareness of development	**Frequency**	**Percentage (%)**
No response	18	3.6
Yes	407	81.1
No	46	9.2
Not sure	31	6.2
Total	502	100.0
Magnitude of development	**Frequency**	**Percentage (%)**
No response	37	7.4
High	56	11.2
Moderate	201	40.0
Low	175	34.9
None	33	6.6
Total	502	100.0

Awareness of urbanisation in Yenagoa Metropolis

Table 4 presents the respondents' view on the increase in the built up area in Yenagoa Metropolis. It was observed that 87.5% of respondents agreed that there was increase in urbanisation while 9.4% disagreed.

Table 4. Urbanisation in Yenagoa Metropolis

Increase in built up area	Frequency	Percent
No response	16	3.2
Yes	439	87.5
No	47	9.4
Total	502	100.0

Factors responsible for the development

Table 5 shows the factors influencing the development in Yenagoa metropolis. It was observed that 42% of respondents agreed on population increase as the cause of development in Yenagoa metropolis, 12.2% agreed on job opportunities, 8.8% assurance of security, 13.5% infrastructural development while 5.4% of respondents agreed that low cost of living was the cause and 2.8% agreed on environmental suitability.

Table 5. Factors influencing development in Yenagoa metropolis

Factors	Frequency	Percentage (%)
No response	62	12.4
Population increase	211	42.0
Job opportunities	61	12.2
Assurance of security	44	8.8
Infrastructural development	68	13.5
Low cost of living	27	5.4
Environmental suitability	14	2.8
Others	15	3.0
Total	502	100.0

Challenges of development in Yenagoa metropolis

The problems of development in Yenagoa metropolis is highlighted in Table 5 whereby 12.2% of respondents agreed that the development has led to poor and inadequate health facilities, 14.5% agreed on the increase of crime, 9.6% agreed on overcrowding of homes while 2.4% agreed on soil erosion. In addition, 5% of respondents agreed on flooding as a result of development, 22.1%, 14.9% and 6.2% agreed on increase in the cost of living, poor standard of living and environmental pollution as the effects of development in Yenagoa metropolis.

Table 6. Challenges of development

Challenges of development	Frequency	Percentage (%)
No response	62	12.4
Poor and inadequate health facilities	61	12.2
Increase in crime	73	14.5
Overcrowding of homes	48	9.6
Soil erosion	12	2.4
Flooding	25	5.0
Increase in the cost of living	111	22.1
Poor standard of living	75	14.9
Environmental pollution	31	6.2
Others	4	.8
Total	502	100.0

Awareness on government policy to guide the use of land

Table 7 presents the awareness of. It was shown that 69.9% of total respondents agreed that there were government policy that guides the use of the land while 25.5% disagreed. In terms of the rate of government policy implementation, 11.2% of respondents agreed that it was highly frequent, 27.7% agreed that the policies were moderately frequent while 31.7% agreed that the policies were lowly frequent and 16.9% claimed that there was no frequency.

Table 6. Government policy to guide the use of land

Is there any government policy to guide the use of land	Frequency	Percentage (%)
No response	23	4.6
Yes	351	69.9
No	128	25.5
Total	502	100.0
Rate of policy implementation	**Frequency**	**Percentage (%)**
No response	63	12.5
Highly frequent	56	11.2
Moderately frequent	139	27.7
Lowly frequent	159	31.7
No frequency	85	16.9
Total	502	100.0

Awareness on the highest land use and land cover change in Yenagoa Metropolis

Table 7 shows the individuals' perception on the land use and land cover in Yenagoa Metropolis. For the highest land cover in the last 20 years, 39.0% of respondents agreed that forest was highest, 9.6% claimed water body, 15.3% agreed fresh water swamp while 11.4% perceived built up area. In addition, 6.6% agreed that arable/agriculture was the highest land cover, 3.2% and 3.0% claimed that the highest land use and land cover was flood plain and oil palm plantation respectively. However, the highest land use and land cover at present was observed by 11.2% of respondents as forest cover, 6.4% agreed on water body, 4.8% perceived fresh water swamp while 60.2% agreed on built up area. 2.8% each agreed on arable agriculture flood plain while 1.0% claimed oil palm plantation was the highest land use and land cover in Yenagoa Metropolis at present. Furthermore, reasons were given by respondents on the present land use and land cover in Yenagoa Metropolis. It was observed that 10.8% of respondents agreed that the present land cover may be due to the support from the government policy while 9.2% agreed on the increase of food supply for family and sale. In addition, 49.8% of respondents agreed on building/construction because of the presence of infrastructural development, 11.2% agreed on immigration of people into Yenagoa metropolis while 4.4% agreed that the present land cover may be due to the presence of high cost of living.

Table 7. land use and land cover change in Yenagoa Metropolis

Highest land cover in the last 20 years	Frequency	Percentage (%)
No response	56	11.2
Forest	196	39.0
Water body	48	9.6
Fresh water swamp	77	15.3
Built up area	57	11.4
Arable/Agriculture	33	6.6
Flood plain	16	3.2
Oil Palm plantation	15	3.0
Others	4	0.8
Total	502	100.0
Highest present land cover	**Frequency**	**Percentage (%)**
No response	48	9.6
Forest	56	11.2
Water body	32	6.4
Fresh water swamp	24	4.8
Built up area	302	60.2
Arable/Agriculture	14	2.8
Flood plain	14	2.8
Oil Palm plantation	5	1.0
Others	7	1.4
Total	502	100.0
Reason for the present land cover	**Frequency**	**Percentage (%)**
No response	62	12.4
Support from the government policy	54	10.8
To increase the food supply for family and sale	46	9.2
Decreasing the rate of soil degradation	12	2.4
Building/Construction because of the presence of infrastructural development	250	49.8
Immigration	56	11.2
High cost of living	22	4.4
Total	502	100.0

Socio-economic characteristics and awareness of land use change and urban development in Yenagoa Metropolis

Awareness of land use change and urban development among age groups

It is revealed in Table 8 that 116 out of 142 in the age bracket between 20 and 29 years were aware of the development in Yenagoa metropolis while 201, 64, and 21 of age brackets between 30 and 49 years, 50 and 65 years and above 65 years respectively were aware of the development in Yenagoa metropolis. This indicates that majority across the age groups had the knowledge of development in the study area. In terms of awareness of the increase in the built up area among the age groups, it is revealed in Table 9 that 125, 222 and 68 respondents in age groups 20-29 years, 30-49 years and 50-65 years respectively were aware of the increase in the built up area land use in Yenagoa metropolis. In addition, 20 out of 21 respondents in age group above 65 years were also aware of the increase in the built up area in Yenagoa metropolis. Table 10 presents the awareness of the highest land use type in the last 20 years among age groups whereby it is discovered that majority in all the age groups were aware that forest cover was the highest land use type in Yenagoa metropolis as 59, 97, 28 and 11 respondents of the total respondents in age groups of 20-29 years, 30-49 years, 50-65 years and above 65 years respectively were aware that forest land use was the highest in the last 20 years. Table 11 shows the awareness of the highest land use type at present among the age groups whereby it is discovered that 83, 165, 40 and 13 of the total respondents in age bracket of 20-29 years, 30-49 years, 50-65 years and above 65 years respectively were aware that built up area was the highest land use type at present. This shows that majority had the knowledge that the rate of the expansion of built up area in Yenagoa metropolis at present was higher than other land use.

Table 8. Awareness of development among age groups

| Age (Years) | Awareness of development since you have been living here | | | | Total |
	No response	Yes	No	Not sure	
No response	0	5	0	0	5
20-29	5	116	14	7	142
30-49	9	201	24	19	253
50-65	4	64	7	5	80
Above 65	0	21	1	0	22
Total	18	407	46	31	502

Table 9. Awareness of the increase of built up area among age groups

Age (Years)	Do you think built up area is increasing			Total
	No response	Yes	No	
No response	0	4	1	5
20-29	5	125	12	142
30-49	9	222	22	253
50-65	1	68	11	80
Above 65	1	20	1	22
Total	16	439	47	502

Table 10. Awareness of the highest land use type in the last 20 years among age groups

Age (Years)	Nature of land cover here in the last 20 years									Total
	No response	Forest	Water body	Fresh water swamp	Built up area	Arable/Agriculture	Flood plain	Oil Palm plantation	Others	
No response	2	1	0	1	1	0	0	0	0	5
20-29	15	59	14	20	15	13	2	3	1	142
30-49	22	97	27	41	31	10	12	11	2	253
50-65	15	28	6	9	9	9	2	1	1	80
Above 65	2	11	1	6	1	1	0	0	0	22
Total	56	196	48	77	57	33	16	15	4	502

Table 11 Awareness of the highest land use/land cover at present among age groups

Age (Years)	Present landcover									Total
	No response	Forest	Water body	Fresh water swamp	Built up area	Arable/Agriculture	Flood plain	Oil Palm plantation	Others	
No response	2	1	1	0	1	0	0	0	0	5
20-29	11	15	11	9	83	5	3	2	3	142
30-49	19	28	14	10	165	5	8	3	1	253
50-65	15	9	5	4	40	1	3	0	3	80
Above 65	1	3	1	1	13	3	0	0	0	22
Total	48	56	32	24	302	14	14	5	7	502

Awareness of land use change and urban development among different educational status

It is revealed in Table 12 that 25, 23, 121 and 235 of total respondents of no formal education, primary education, secondary education and higher education respectively were aware of the development since they have been living in Yenagoa metropolis. The analysis shows that respondents of higher education had more knowledge of the development. Table 13 shows the awareness of the increase of built up area among different educational status

whereby it is revealed that 28, 25, 133, 251 of total respondents of no formal education, primary education, secondary education and higher education respectively were aware of the increase of the built up area in Yenagoa metropolis. Table 14 revealed that majority in the each education status were aware that forest land use was the highest land use in the last 20 years as 13, 9, 68, and 106 of total respondents of no formal education, primary education, secondary education and higher education respectively agreed to the statement. Table 15 shows that majority in each educational status agreed that built up area was the highest land use type in Yenagoa metropolis at present as the analysis reveals that 17 of total respondents of no formal education, 15 of respondents with primary education, 107 with secondary education and 162 with higher education agreed to the statement.

Table 12. Awareness of development among different educational status

Educational Status	Are aware of any development since you have been living here				Total
	No response	Yes	No	Not sure	
No response	0	3	1	0	4
No formal	1	25	3	5	34
Primary education	4	23	2	3	32
Secondary education	1	121	23	12	157
Higher education	12	235	17	11	275
Total	18	407	46	31	502

Table 13. Awareness of the increase of built up area among different educational status

Educational Status	Do you think built up area is increasing			Total
	No response	Yes	No	
No response	0	2	2	4
No formal	0	28	6	34
Primary education	1	25	6	32
Secondary education	7	133	17	157
Higher education	8	251	16	275
Total	16	439	47	502

Table 14. Awareness of the highest land use type in the last 20 years among different educational status

Education al Status	Nature of land cover here in the last 20 years									Total
	No respons e	Forest	Wate r body	Fresh water swamp	Built up area	Arable/ Agricul ture	Flood plain	Oil Palm plantation	Others	
No response	3	0	1	0	0	0	0	0	0	4
No formal	8	13	1	5	3	2	1	1	0	34
Primary education	10	9	2	3	1	4	1	1	1	32
Secondary education	10	68	11	28	17	8	1	12	2	157
Higher education	25	106	33	41	36	19	13	1	1	275
Total	56	196	48	77	57	33	16	15	4	502

Table 15. Awareness of the highest land use at present among different educational status

Educational Status	Present landcover									Total
	No response	Forest	Water body	Fresh water swamp	Built up area	Arable/ Agricult ure	Flood plain	Oil Palm plantation	Others	
No response	2	0	0	0	1	0	0	1	0	4
No formal	6	3	1	2	17	4	1	0	0	34
Primary education	11	4	0	1	15	1	0	0	0	32
Secondary education	11	15	7	6	107	3	1	4	3	157
Higher education	18	34	24	15	162	6	12	0	4	275
Total	48	56	32	24	302	14	14	5	7	502

Awareness of land use/land cover change among different income levels

The awareness of development among different income levels is shown in Table 16 and it is discovered that 92 of the respondents within the income levels below #21,000, 143 of the respondents between #21,000 and #40,000, 52 of the respondents between #41,000 and #60,000, 46 of the respondents between #61,000 and #80,000 and 55 of the respondents above #80,000 agreed to the fact that there was development in Yenagoa metropolis.

Table 17 shows that 113 of the respondents within the income levels below #21,000, 155 of the respondents between #21,000 and #40,000, 55 of the respondents between #41,000 and #60,000, 45 of the respondents between #61,000 and #80,000 and 51 of the respondents above #80,000 agreed to the fact that there was increase in the built up area in Yenagoa metropolis. The awareness of the highest land use type in the last 20 years among different

income levels is shown in Table 18 and it is discovered that 46 of the respondents within the income levels below #21,000, 76 of the respondents between #21,000 and #40,000, 22 of the respondents between #41,000 and #60,000, 19 of the respondents between #61,000 and #80,000 and 26 of the respondents above #80,000 agreed that forest cover was the highest land use in the last 20 years. Table 19 shows the awareness of the highest land use type at present among different income levels and it is revealed that 77 of the respondents within the income levels below #21,000, 114 of the respondents between #21,000 and #40,000, 39 of the respondents between #41,000 and #60,000, 31 of the respondents between #61,000 and #80,000 and 30 of the respondents above #80,000 agreed that built up area was the highest land use type at present in Yenagoa metropolis.

Table 16. Awareness of development among different income levels

Household Monthly Income	Are aware of any development since you have been living here				Total
	No response	Yes	No	Not sure	
No response	5	19	1	2	27
Below #21,000	4	92	19	9	124
#21,000-#40,000	4	143	14	12	173
#41,000-#60,000	1	52	7	2	62
#61,000-#80,000	1	46	2	4	53
Above #80,000	3	55	3	2	63
Total	18	407	46	31	502

Table 17. Awareness of the increase of built up area among different income levels

Household Monthly Income	Do you think built up area is increasing			Total
	No response	Yes	No	
No response	7	20	0	27
Below #21,000	1	113	10	124
#21,000-#40,000	2	155	16	173
#41,000-#60,000	1	55	6	62
#61,000-#80,000	3	45	5	53
Above #80,000	2	51	10	63
Total	16	439	47	502

Table 20. Awareness of the highest land use type in the last 20 years among different income levels

Household Monthly Income	Nature of land cover here in the last 20 years									Total
	No response	Forest	Water body	Fresh water swamp	Built up area	Arable/Agriculture	Flood plain	Oil Palm plantation	Others	
No response	11	7	2	3	3	0	0	1	0	27
Below #21,000	11	46	14	22	13	8	0	10	0	124
#21,000-#40,000	12	76	13	37	15	11	5	1	3	173
#41,000-#60,000	4	22	12	10	7	3	1	3	0	62
#61,000-#80,000	5	19	5	0	13	3	7	0	1	53
Above #80,000	13	26	2	5	6	8	3	0	0	63
Total	56	196	48	77	57	33	16	15	4	502

Table 19. Awareness of the highest land use type at present among different income levels

Household Monthly Income	Present landcover									Total
	No response	Forest	Water body	Fresh water swamp	Built up area	Arable/Agriculture	Flood plain	Oil Palm plantation	Others	
No response	10	2	1	3	11	0	0	0	0	27
Below #21,000	8	18	6	9	77	0	1	2	3	124
#21,000-#40,000	11	15	7	8	114	13	2	1	2	173
#41,000-#60,000	3	8	7	1	39	1	1	1	1	62
#61,000-#80,000	4	6	3	2	31	0	6	0	1	53
Above #80,000	12	7	8	1	30	0	4	1	0	63
Total	48	56	32	24	302	14	14	5	7	502

Variation in the awareness of land use/land cover and urban development in Yenagoa Metropolis

Table 20, Table 23 and Table 24 present the chi square analysis on awareness of land use change and urban development among age groups, educational status and household monthly income respectively. However, the analysis reveals that awareness of the increase in built up area among different age group was (X^2=4.552 p=0.804), awareness of development among different age group (X^2=6.143; p=0.909), awareness of the highest land use in the last 20 years among different age group (X^2=33.099 p=0.413) and awareness of the highest present land use among different age group (X^2=41.725; p=0.117). The analysis reveals that the p values were higher than 0.05, thus the null hypothesis was accepted saying that there is no significant variation in the awareness of land use change and urban development among different ages in Yenagoa metropolis. Moreover, the chi square analysis reveals that awareness of the increase in built up area among different educational status was (X^2=20.339; p=0.009), awareness of development among different educational status (X^2=29.758; p=0.003), awareness of the highest land use in the last 20 years among different educational status (X^2=78.871; p=0.000) and awareness of the highest present land use among different educational status (X^2=94.585; p=0.000). Since the p values of the analyses were lower than 0.05, alternative hypothesis was accepted stating that there is significant variation of the awareness of land use change and urban development while the null hypothesis was rejected.

Finally, the chi square analysis reveals that awareness of the increase in built up area among different household income was (X^2=56.547; p=0.000), awareness of development among different household income (X^2=32.659; p=0.005), awareness of the highest land use in the last 20 years among different household income (X^2=120.168; p=0.000) and awareness of the highest present land use among different household income (X^2=101.586; p=0.000). Since the p values of the analyses were lower than 0.05, alternative hypothesis was accepted which stated that there is significant variation of the awareness of land use change and urban development while the null hypothesis was rejected.

Table 20. Chi square analysis of the awareness of land use change and urban development among different age groups

Age and awareness of increase in the built up area	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.552	8	0.804
Likelihood Ratio	4.754	8	0.783
Linear-by-Linear Association	0.186	1	0.666
N of Valid Cases	502		
Age and awareness of development	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.143	12	0.909
Likelihood Ratio	9.237	12	0.683
Linear-by-Linear Association	0.079	1	0.779
N of Valid Cases	502		
Age and awareness of the highest land use 20 years ago	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	33.099	32	0.413

	Value	df	Asymp. Sig. (2-sided)
Likelihood Ratio	33.814	32	0.380
Linear-by-Linear Association	0.085	1	0.770
N of Valid Cases	502		
Age and awareness of the highest present land use	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	41.725	32	0.117
Likelihood Ratio	35.997	32	0.287
Linear-by-Linear Association	0.139	1	0.709
N of Valid Cases	502		

Table 21. Chi square analysis of the awareness of land use change and urban development among different educational status

Educational status and awareness of the increase in the built up area	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20.339	8	0.009
Likelihood Ratio	17.343	8	0.027
Linear-by-Linear Association	12.094	1	0.001
N of Valid Cases	502		
Educational status and awareness of the development	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	29.758	12	0.003
Likelihood Ratio	27.616	12	0.006
Linear-by-Linear Association	7.552	1	0.006
N of Valid Cases	502		
Educational status and awareness of the highest of land use in the last 20 years	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	78.871	32	0.000
Likelihood Ratio	71.531	32	0.000
Linear-by-Linear Association	1.737	1	0.188
N of Valid Cases	502		
Educational and awareness of the highest present land use	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	94.585	32	0.000
Likelihood Ratio	68.234	32	0.000
Linear-by-Linear Association	3.035	1	0.081
N of Valid Cases	502		

Table 22. Chi square analysis of the awareness of land use change and urban development among different household monthly income

Household monthly income and awareness of the increase in the built up area	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	56.547	10	0.000
Likelihood Ratio	33.487	10	0.000
Linear-by-Linear Association	5.901	1	0.015
N of Valid Cases	502		
Household monthly income and awareness of development	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	32.659	15	0.005
Likelihood Ratio	25.105	15	0.049
Linear-by-Linear Association	1.819	1	0.177
N of Valid Cases	502		
Household monthly income and awareness of the highest land use in the last 20 years	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	120.168	40	0.000
Likelihood Ratio	118.698	40	0.000
Linear-by-Linear Association	.243	1	0.622
N of Valid Cases	502		
House monthly income and awareness of the highest present land cover	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	101.586	40	0.000
Likelihood Ratio	91.322	40	0.000
Linear-by-Linear Association	.000	1	0.993
N of Valid Cases	502		

Suggestions to reduce the problem caused by urbanisation

Table 23 presents the suggestions to reduce the problem caused by urbanisation in Yenagoa Metropolis. It was revealed that 39.8% of respondents suggested enacting and implementation of government policy retraining individuals of illegal construction, 10.0% agreed on educating residents on illegal acquisition of virgin land, 7.0% agreed on giving awareness on the problems associated with deforestation while 10.2% agreed that people can be sensitized on the effects of improper land use change. In addition, 14.1% perceived on improving the standard of living of individual while 3.4% each agreed on improving the security and improving the level of food security in the area.

Table 23. Suggestions to reduce the problems of urbanisation

Suggestions	Frequency	Percentage (%)
No response	61	12.2
Enacting and implementation of government policy retraining individuals of illegal construction	200	39.8
Educating residents on illegal acquisition of virgin land	50	10.0
Awareness on the problems associated with deforestation	35	7.0
Sensitizing people on the effects of improper land use change	51	10.2
Improving the standard of living of individual	71	14.1
Improving the security	17	3.4
Improving the level of food security in the area	17	3.4
Total	502	100.0

DISCUSSION OF FINDINGS

The awareness of development in Yenagoa Metropolis was high and the magnitude of development seemed to be moderate and low while 87.5% of respondents agreed that there was increase in urbanisation in Yenagoa metropolis. This is possible because of certain development that residents can observe within their neighbourhood especially those that had been living in that neighbourhood for long time. Among all factors given, population increase stood out of others as 42% of respondents agreed that it was the main cause of urbanisation in Yenagoa metropolis. This is possible because it is the people the drive the wheel of development through their various activities (Amakiri, 2005). Other important factors included the infrastructural development and job opportunities. According Geist et al (2006), it is now widely accepted that multiple factors in synergetic interactions dominate land-change processes and that these causal clusters vary across regions and time.

CONCLUSION AND RECOMMENDATIONS

The study has shown the perception of the public towards the effects of urbanisation on other land use type in Yenagoa City and that people are adequately aware of the situation but there was no designed ways of getting out of the problem. Based on the findings, the study recommended that enacting and implementation of government policy restraining individuals of illegal construction should be adopted, educating individuals on illegal acquisition of thick forest should be done and periodic assessment of land use change to discover the trend of change and to foresee the possible land use change in future should be encouraged

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