Global Journal of Arts, Humanities and Social Sciences
Vol.8, No. 3, pp.50-61, March 2020
Published by *ECRTD-UK*
Print ISSN: 2052-6350(Print), Online ISSN: 2052-6369(Online)

INVESTIGATING THE EFFECTS OF URBANIZATION ON ENVIRONMENTAL DEGRADATION IN YENAGOA METROPOLIS, BAYELSA STATE, SOUTH-SOUTH NIGERIA

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ABSTRACT: *The study investigated the effect of urbanization on environmental degradation in Yenagoa metropolis, Bayelsa State. The concentric zone model provided the theoretical framework for this study. The correlational study design served as the study design, while probability and non-probability sampling techniques were used for the sampling procedures. Using Taro Yamane formula, the study sampled a total of 339 respondents. Data for the study was gathered through structured questionnaires. Data collected for the study was subjected to statistical analysis using percentages, frequency distributions table, pie chart, mean, binary logistics regression and Pearson correlation with the aid of Statistical Package for Social Sciences (SPSS) version 23.0. Based on analysis, the study concluded that rapid urbanization led to housing problem, flooding and poor sanitary conditions. Based on the findings, the study recommended quality housing structure, environmental sanitation and effective urban planning by Yenagoa Capital City Development Authority to prevent degradation of the environment.*

KEYWORDS*:* urbanization, environment, degradation, Yenagoa metropolis

INTRODUCTION

The boom in urbanization if not properly managed has implications for sustainable development (Freire, 1993). Thus, a careful analysis of the linkage between urbanization and environmental quality is imperative for designing appropriate sustainable development and climate change policies, as rapid surge in urbanization is expected to increase energy use with expansion in economic activities and, consequently, greater environmental pollution. According to Odiettie (1985), urbanization refers to the population shift from rural areas to urban areas, the gradual increase in the proportion of people living in urban areas, and the ways in which each society adapts to this change (Mba,1996). While concept of Environmental degradation is the deterioration of the environment through contamination of resources such as air, water and soil, it is not arguable that unabated destruction of ecosystems, habitat lead to pollution and extinction of wildlife which pose greater risk to city life. Merriam Webster Dictionary, (2006) defined Environmental degradation as any change or disturbance to the environment perceived to be deleterious or undesirable. Human activities and the environment are inter-related. This is because any activity of man is done in the environment and the resultant effect is either positive or negative to man. According to Uchegbu (1988), negative effects arise from man's economic and domestic activities. The analysis of the environmental dimension of urbanization in the country did not really emerge until the environmental revolution. The pioneering works of A. L. Mabogunje on

urbanization in the early 1960s laid the milestone for emerging urban/environmental issues in the country (Uchegbu, 1988).

The problems and challenges posed by the rapid urbanization in Yenagoa metropolis are immense. More easily observable and perhaps very frightening are the general human and environmental poverty, the declining quality of life and the under-utilized as well as the untapped wealth of human resources. Housing and associated facilities (such as water, electricity, waste disposal) are becoming grossly inadequate. Millions live in substandard environments called slums especially around Akenfa, Kpansia, Tombia, Obele areas which are reported to be den for criminal elements who are mostly unemployed and recourse to crime for survival. Juvenile delinquency and crime have become endemic in urban Yenagoa as a result of the gradual decline of traditional social values and the breakdown of family cohesiveness and community spirit that characterizes urban life (Smith, 1993). Moreover, the capacity of law enforcement institutions to prevent crime is increasingly hampered by technological and resource limitations (Verma, 1991). Onibokun, (1972) observed that Yenagoa metropolis is decaying without any programme of rehabilitation while new urban peripheries develop without planning or the necessary infrastructure. Intra-city mobility is greatly hampered by poor planning and inefficient land use with concerns about their impact on the environment. This offer a brilliant opportunity to investigate urbanization and land degradation nexus in Yenagoa Metropolis

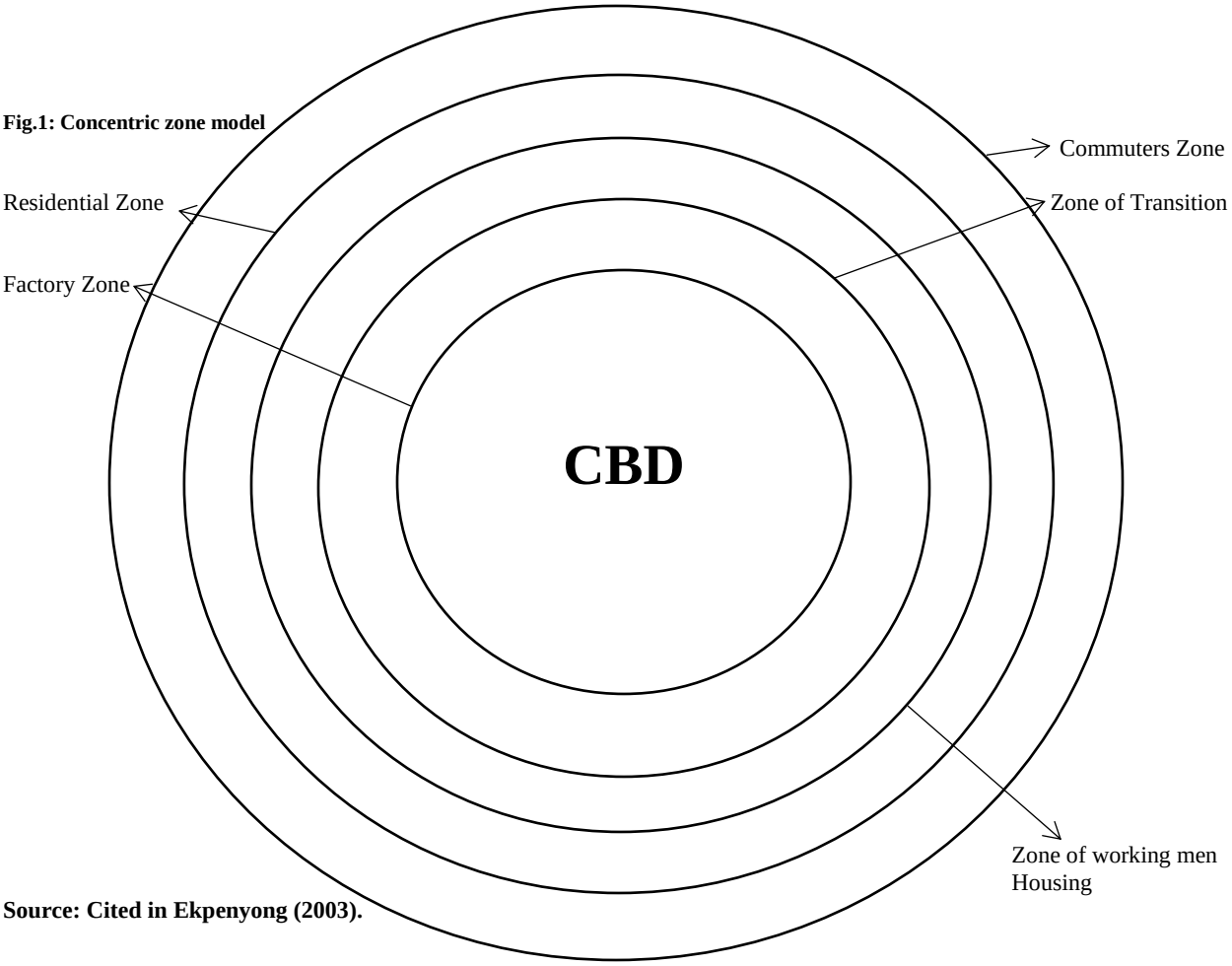
THEORETICAL FRAMEWORK

To provide a theoretical background to this work, the study shall anchor its argument on the concentric zone model of the Chicago School.

The Concentric Zone Model

This model was propounded by Ernest Burgess in 1925. This model views a city as a series of concentric circular areas, expanding outward from the center of the city, with various “zones” invading adjacent zones. According to Ekpenyong (2003), Burgess noted the tendency for most cities to spread like ripples on a pond with each zone inhabited by a particular ‘class’ of people as thus:

Fig.1: Concentric zone model



Source: Cited in Ekpenyong (2003).

According to Burgess (1925), the above concentric spatial model represents thus:

Zone One: The first zone represents the central business district (CBD). This is the heart of the city. It is characterized by industrial/commercial activities. There is noise pollution due to the concentration or clustering of economic activities. This area is very busy during the day, considering the influx of city dwellers in search of green pastures. Hence, traffic situation arises due to the increasing number of people that commutes to this zone during the early hours of the day.

Zone Two: This refers to zone of transition. It is next to the central business district. It surrounds the city center, it is composed of formerly wealthy homes divided into cheap apartments for new immigrants' population; this zone also houses small manufacturers, pawn shops and other marginal businesses. Within Yenagoa metropolis, Tombia, Kpansia, Akenfa and Obele areas are reference point.

However, it should be emphasized that this zone lacks social order as it is in a constant state of flux due to increasing immigrants. According to Ekpenyong (2003), it is seen as the area with the least opportunity to stabilize, the area of greatest human demoralization and the most likely to breed crime and deviance.

Zone Three: This consist of zone of working men housing. This area is the where non-skilled and semi-skilled labourers reside. This area also witnesses transportation problem due to the increasing number of inhabitants that returns from the central business district at night.
Zone Four: This area refers to the residential zone. It holds the wealthy homes, white collar workers and shopping centers.
Zone Five: This refers to the commuter's zone. It is quite during the day and busy at night. It contains the estate of the upper class (in the exurbs) and the suburbs.

METHODOLOGY

Co-relational design provided the basis in determining the co-relational effect of urbanization on environmental degradation. The study population consists of both males and females in Yenagoa. According to the report presented by the National Population Commission (2006), the total population for both sexes is put at 352,285. Since the population of study is a finite one, this research work applied the Taro Yamane formula for sample size determination which returned a sample size of 339.

The probability and non-probability sampling technique was adopted for this study. Firstly, the simple random sampling technique was used to sample six communities out of the sixty-two (62) communities that make-up research locale, which are; Agudama, Amarata, Kpansia, Biogbolo, Yenegwe and Tombia. This was done by writing out the names of the sixty-two (62) communities in Yenagoa metropolis on small sheet of folded papers. Six (6) respondents were asked to select one randomly. This was done until the 6^{th} community was selected. At the point of contacting the individual respondents within the selected communities, accidental sampling technique was used to sample respondents who were meet by chance.

On the basis of data collection, the study adopted the triangulation method. The data used for this study was obtained from both primary and secondary sources. The secondary data used to conduct this study were sourced from textbooks, journals, internet sources, encyclopaedia, dictionaries etc. Essentially, the secondary data was used to develop a proper conceptual, theoretical background and framework for this study. For primary data, structured questionnaire (close ended) was adopted. It comprises both negative and positive questions structured based on the four-point Likert-scale measurement which was used to measure opinions. Corroboratively, the criterion mean becomes 2.50.
Also, a non-participant observation method aided the researcher while trying to determine the physical impact of urbanization on environmental degradation. The questionnaire was divided into three (3) broad categories. The first category (A) was made up of the socio-demographic data of the respondents, namely; sex, age group, educational qualification, community, occupation and religion. Section (B) measured urbanization, while section (C) measured environmental degradation. Cronbach Alpha was used to determine the reliability of the instrument. Data collected from the field where analysed with frequencies, percentages, pie charts, binary logistics regression and Pearson correlation statistics with the aid of Statistical Package for Social Sciences (SPSS) version 23.0.

RESULTS /FINDINGS

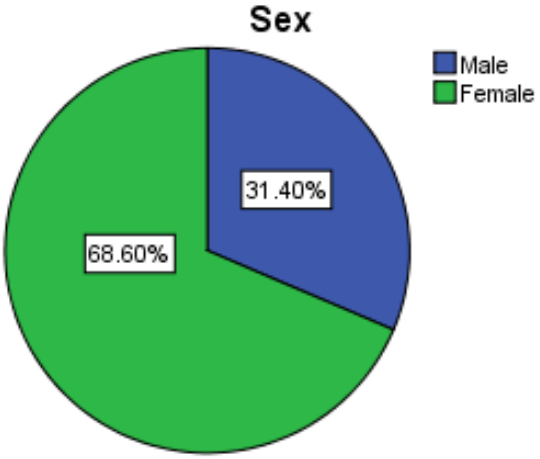
This section is concerned with the presentation and analyses of data derived from field study using questionnaire. The data are presented in frequency distribution tables, and pie charts. As earlier stated in the methodology, the study was carried out in six randomly selected communities in Yenagoa metropolis, Bayelsa State. Copies of questionnaire was administered to three hundred and thirty-nine (339) respondents which is the sample size representing the study population. Out of this lot, two hundred and seven (207) copies of questionnaire representing (61.1%) were returned and found valid, while one hundred and thirty-two (132) copies of questionnaire representing (38.9%) were not retrieved. Therefore, analysis of the study was based on the 207(61.1%) copies of questionnaire retrieved and found valid for the study.

Table1: Percentage distribution of the socio-economic characteristics of respondents

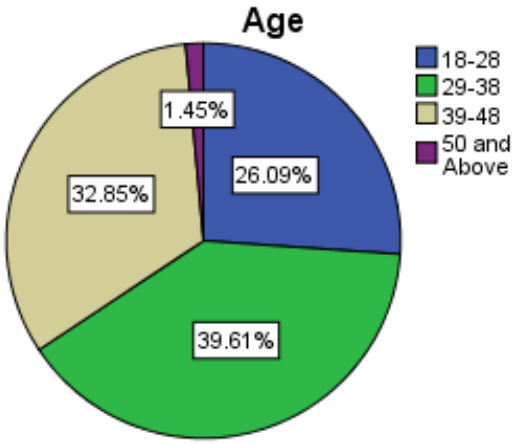
Variable	Frequency =207	Percentage	Mean	Median
Sex:			**1.6860**	2.0000
Male	65	31.4		
Female	142	68.6		
Age:			**2.0966**	2.0000
18-28	54	26.1		
29-38	82	39.6		
39-48	68	32.9		
50 and Above	3	1.4		
Academic Qualification:			**3.4589**	4.0000
No formal education	5	2.4		
Primary	23	11.1		
Secondary	51	24.6		
Tertiary	128	61.8		
Religion:			**1.4155**	1.0000
Christianity	133	64.3		
Muslim	62	30.0		
African Traditional Religion	12	5.8		
Occupation:			**2.8116**	3.0000
Fishing/Farming/Hunting	28	13.5		
Civil Servant	35	16.9		
Unemployed	99	47.8		
Trading	38	18.4		
Others	7	3.4		
Community:			**2.7295**	2.0000
Agudama	103	49.8		
Amarata	20	9.7		
Kpansia	10	4.8		
Biogbolo	9	4.3		
Yenegwe	34	16.4		
Tombia	31	15.0		

Source: Field Work

Table 1. above shows the socio-demographic distribution of respondents. Analysis shows that 65(31.4%) of respondents are male while 142(68.6%) are female. Based on this, it evident that female represents the overwhelming majority in the study.



The next variable reveals the age of respondents. According to table 1., 54(26.1%) of urbanites fell within the age limit of 18-28 years, 82(39.6%) fell within the age bracket of 29-38 years, 68(32.9%) of urban dwellers fell within the age limit of 39-48 years while 3(1.4%) of urbanites fell within the age bracket of 50 years and above. Based on the analysis, majority of respondents 82(39.6%) fell within the age bracket of 29-38 years.



Also, the next variable shows the academic qualification of respondents. Table 1. shows that 5(2.4%) of respondents had no formal education at the time of the study, 23(11.1%) attended primary school, 51(24.6%) attended secondary school. Also, 128(61.8%) of respondents had tertiary qualification. Corroboratively, it is clear that majority of 128(61.8%) of respondents had tertiary qualifications.

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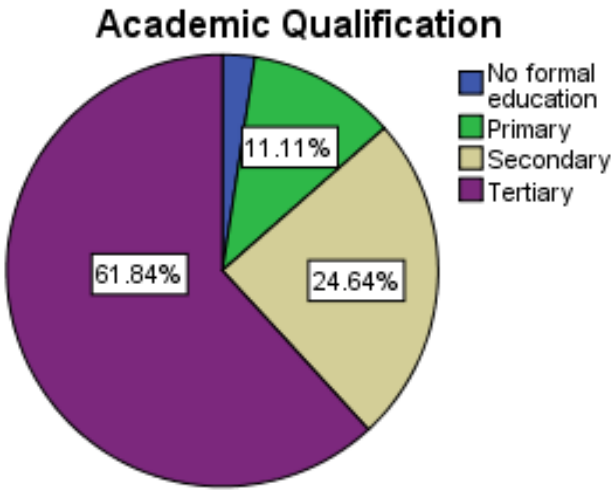
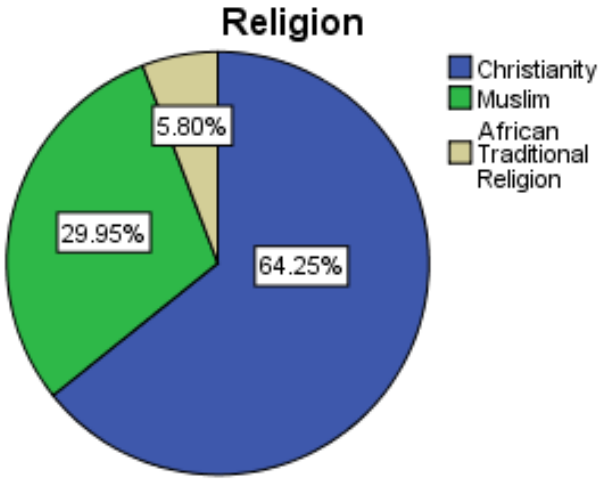
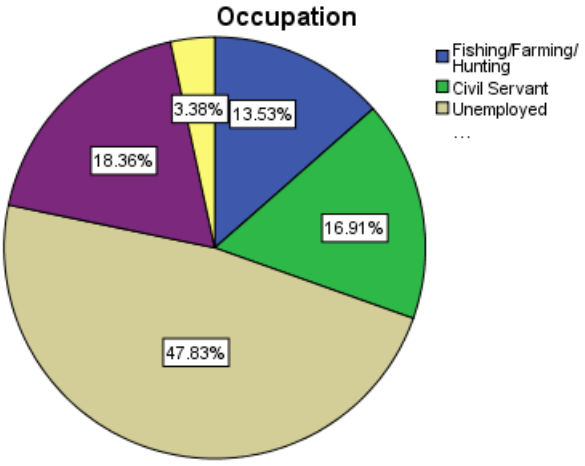


According to table 1. above, 133(64.3%) of respondents are Christians, 62(30.0%) are Muslims while 12(5.8%) of respondents practice African Traditional Religion.



On the basis of occupation, table 1. above shows that 28(13.5%) of respondents engage in fishing/farming/hunting, 35(16.9%) of urbanities are civil servants, 99(47.8%) of respondents are unemployed, 38(18.4%) are traders while 7(3.4%) engage in others occupations during the period of study.



Finally, the next variable shows the distribution of respondents across communities. According to table 1., 103(49/8%) of respondents resided at Agudama, 20(9.7%) of urbanities where located at Amarata, 10(4.8%) of respondents where sampled at Biogbolo, 34(16.4%) of urban dwellers resided at Yenegwe while 31(15.0%) of respondents resided at Tombia during the period of study.

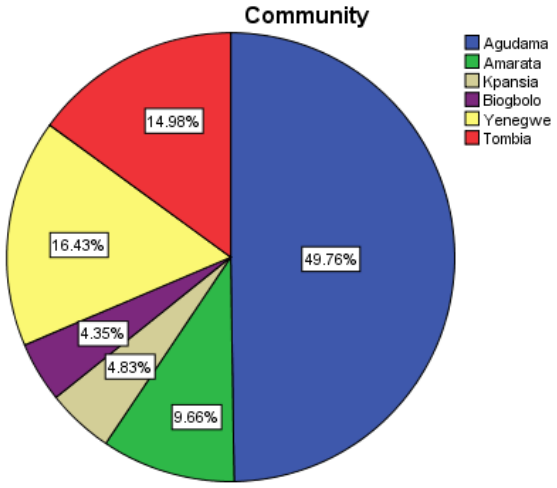


Table 2: Mean Distribution of Urbanization in Yenagoa Metropolis

Variables	Agudama N=103	Amarata N=20	Kpansia N=10	Biogbolo N=9	Yenegwe N=34	Tombia N=31	Mean	Remark
There is increasing population in city compared to 10 years ago							2.6	**Accept**
More inhabitants are forced to live in uncompleted buildings in the city.							3.3	**Accept**
Yenagoa city is characterized by rapid growth in population size.							3.4	**Accept**
There are batcher houses for those who could not afford to live in limited brick house.							3.5	**Accept**
Social amenities like hospital is overwhelmed by population growth.							3.5	**Accept**

Critical Mean = 2.50

Table 2 above, shows responses on the basis of urbanization in Yenagoa metropolis. Analysis shows that there is increasing population in the city compared to 10 years ago with a corresponding mean score of 2.6. In the same vein, a mean score of 3.3 affirm that more city dwellers now live in uncompleted buildings. Also, a mean score of 3.4 corroborated that Yenagoa city in recent times is characterized rapid growth in population density. This corroborate a mean score of 3.5, indicating that residents who could not afford house rent in the city live in batcher houses. A mean score of 3.5 shows that hospitals are overcrowded.

Table 3: Mean Distribution of Land Degradation in Yenagoa Metropolis

Variables	Agudama N=103	Amarata N=20	Kpansia N=10	Biogbolo N=9	Yenegwe N=34	Tombia N=31	Mean	Remark
Noise pollution is increasing on daily basis in Yenagoa environs							2.7	**Accept**
There is increasing demand for doctors now compared to 10 years ago							3.0	**Accept**
High prevalence of poor sanitary condition among city dwellers							3.0	**Accept**
Insufficient housing to accommodate increasing population.							3.1	**Accept**
Major streets in Yenagoa city is littered with refuse dumps.							3.3	**Accept**

Critical Mean = 2.50

The above table (3) shows the response of city dwellers on the basis of land degradation in Yenagoa metropolis. Specifically, a mean score of 2.7 indicated that noise pollution is increasing on daily basis in Yenagoa environs. Also, a mean score of 3.0 shows the increasing demand of medical doctors by teeming patients. Furthermore, an affirmative mean score of 3.0 shows the poor sanitary condition among city dwellers. Lastly, a mean score of 3.3 shows that major streets

in Yenagoa metropolis is littered with refuse dump. This has led to the blockage of drainage, increasing the risk of urban flooding in the research locale.

Hypotheses Testing

$H0_1$: There is no significant relationship between socio-demographic of city dwellers and urbanization.

Table 4: Socio-Demographics Characteristics* Urbanization

Variables in the Equation									
		B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	Sex	-16.270	4066.960	.000	1	.997	.000	.000	.
	Age	.485	.529	.840	1	**.003**	1.624	.576	4.582
	Education	1.028	.826	1.548	1	**.022**	2.795	.553	14.116
	Religion	-3.388	.929	13.291	1	.144	.034	.005	.209
	Occupation	-1.274	.872	2.135	1	**.000**	.280	.051	1.544
	Community	-.205	.209	.957	1	.328	.815	.541	1.228
	Constant	41.694	8133.920	.000	1	.996	128021451 860571290 0.000		

a. Variable(s) entered on step 1: Sex, Age, Academic, Religion, Occupation, Community.
Source: Field Work

In the above hypothesis, the socio-demographic characteristics of urbanites were analyzed using the Binary Logistics Regression to determine whether socio-demographic characteristics play a role in urbanization. From table 4. above, sex with 0.997, Age with **0.003**, Education with **0.022**, Religion with 0.144, Occupation with 0.000, Community with 0.328. Gleaning through the aforementioned data, it is glaring that age, education and occupation is statistically significant thus plays a role in urbanization.

$H0_2$: There is no significant relationship between urbanization and Environmental Degradation

Table 5: Correlations of Urbanization* Environmental Degradation

		Urbanization	Environmental Degradation
Urbanization	Pearson Correlation	1	.175
	Sig. (2-tailed)		.000
	N	207	207
Environmental Degradation	Pearson Correlation	.175	1
	Sig. (2-tailed)	.000	
	N	207	207

Source: Field Work.

According to table 5 above, the Pearson correlation coefficient revealed a value at **0.175** while the critical value is at p< **0.000**. This shows that the relationship between both variables is statistically significant. However, since the point of significance is less than **0.05**, we shall reject the null hypothesis which states that 'there is no co-relationship between urbanization and environmental degradation and accept the alternate hypothesis which states that there is a relationship between urbanization and environmental degradation.

DISCUSSION

Findings from the study shows that, industrialization (movement of Industry/Company) into the Yenagoa, modernization and social change as well as commercialization (buying and selling) are all causes of urbanization in Yenagoa Metropolis. This finding corroborates the submission of UN (2014) that industrialization and commercialization as well as other related variables contribute to rural-urban migration.

Also, it was found that urbanization results to scarcity in housing. The data analysis also indicated that increased unemployment opportunity leading to poverty and over population were also effects of urbanization in Yenagoa Metropolis. This finding lends support to UN (2014) position that overcrowding, unemployment and housing problems constitute challenges of population explosion among others. Furthermore, analysis shows that indiscriminate waste disposal, indiscriminate building of houses, gases emitted from vehicles as well as chemical effluents from industries are all causes of environmental degradation in Yenagoa Metropolis. The finding shares views with UN (2014) that exhaust gases from factories and auto-emission as well as wastes from human and industries negatively impact our environment.

Furthermore, the findings revealed that environmental degradation results to recurrent flooding in Yenagoa Metropolis, Increase in death toll, outbreak of diseases and water and air pollution in the area. This is in tandem with UN (2014) submission that environmental degradation has been a major contributor to death rates and global disease outbreak in developing countries.
And lastly, analysis shows that there is a positive relationship between urbanization and environmental degradation in Yenagoa metropolis.

CONCLUSIONS

The study concluded that the causes of urbanization are search for greener pasture (employment opportunities), industrialization, modernization, social change, commercialization which have negative effect such as traffic congestion, poor sanitary condition, proliferation of refuse dups, increase in crime, leading to poverty, overcrowding in the metropolis. Also, environmental degradation is caused by indiscriminate building of houses, indiscriminate waste disposal and exhaust gases from factory as well as chemical effluents from industries with such effects on residents as urban flooding, disease outbreak and increased death toll. Hence, there is a significant relationship between urbanization and environmental degradation.

RECOMMENDATIONS

Rural-Urban drift should be checked in Yenagoa Metropolis to reduce the extent of population explosion and its attendant consequences. Government should extend development programmes to rural areas to reduce the influx of rural dwellers into Yenagoa. Yenagoa Capital City Development Authority (YCCDA) should ensure effective urban planning to reduce the incidence of urban flooding in the metropolis.

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