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ENVIRONMENTAL DYNAMICS AND THEIR INFLUENCE ON QUALITY OF LIFE IN WARRI SOUTH-WEST, DELTA STATE, NIGERIA

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Abstract: This study examined the relationship between environmental conditions and the quality of life of residents in Warri South-West, Delta State. A multi-stage random and systematic sampling technique was employed, with questionnaires administered across sixteen communities and interviews conducted with local chiefs in three wards to provide contextual insights. Data were analyzed using descriptive statistics, cross-tabulations, Analysis of Variance (ANOVA), and multiple regression techniques. Findings reveal a significant relationship between residents' environmental conditions and their quality of life. Socio-economic characteristics such as educational attainment, household size, and income were found to influence environmental conditions, while age and marital status showed no significant effect. The study highlights that poor environmental settings limit sustainable housing, especially in areas prone to recurrent environmental hazards. Recommendations include leveraging scheduled state environmental sanitation exercises for public enlightenment campaigns, emphasizing proper waste disposal, and discouraging the dumping of refuse in drains and along roadsides to improve environmental quality and residents' overall well-being.

Keywords: Environmental Conditions, Quality of Life, Warri South-West, Sustainable Housing, Waste Management

1. Introduction

Environmental issues as a fundamental condition facing unindustrialized nations, including Nigeria, can be regarded as mechanisms, which integrate into a physical structure, and distinct services, making a living in a certain area encouraging. This mirrors the amount the residents benefit from infrastructure in a particular community. However, environmental conditions are awful in many Nigerian cities (Mmom, 2003). In this case, WHO (2011) affirmed that about a 2.4billion population in the world are currently lacking adequate accessibility to environmental hygiene and therefore forced to dispose of excreta in unapproved or unhygienic conditions such as nearby bushes and rivers. A good number of these people are found in developing countries of the world, especially in Africa.

The impact of poor environmental conditions such as sanitation is a serious problem in Nigeria, thus leading to underdevelopment (Bello, 2007). In Nigeria, the adequate environmental condition has not been strictly adhered

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to, especially in the riverine areas, which are influenced by lack of basic amenities and poor hygienic behaviour (Ademiluyi & Odugbesan, 2010; Akpabio, 2012; Daramola & Olowoporoku, 2016) thus bring serious health consequences to the citizens. The living environment in the country is well polluted owing to social violation of citizens, which has, in turn, become a means for disaster in rural centres (Daramola & Olowoporoku, 2016).

Improved environmental conditions affect the widespread positive indicators of development. Thus, environmental condition is a conduit of quality of life improvement of individuals and contributors to the social, economic and physical development of the environment (Olowoporoku, 2013). Several types of research have shown that the occurrence of many related diseases are reduced when people have access to sanitary services and make consistent use of adequate sanitary installations (Mmon & Mmon 2011; Nwankwo, 2011; Luthi, 2012; Acheampong, 2010). According to WHO (2006), 24% of global diseases with high mortality ratio cause environmental exposures which can be averted. Nevertheless, most of these deaths can be prevented through adequately environmental practices.

Mmon and Mmon (2011) ascertain that contribution to the death of infants and children can be traced to poor environmental conditions shown in solid waste disposal, liquid waste and excreta, drainage cleanings such as personal, household and community hygiene. However, environmental quality has a direct effect on the lives of community residents because the environmental quality and the quality of life are two variables of the same equation. It can be strongly considered that quality living depends so much on the environmental quality one lives in. The concept, Quality of Life, represents basic conditions of life, including sufficient supply of food, provision of shelter, and security, as well as “life enrichers”, which are based on values of individuals, principles, desires and welfares. Assessing the quality of life means that quality is significant to the happy life of people, all living with a safe, caring and supportive local community and that maintaining and/or enhancing the things could add quality to people’s lives. This also infers making sure there is an improvement of the things that currently diminish from the quality of people's lives (Berman & Phillips, 2000).

The quality of life of people in developing countries, including Nigeria, is often charged to be lower than the expected standard (Zaid & Popoola, 2000). According to Human Development Index (HDI), Nigeria was ranked as 152 out of 187 countries and territories based on the standard of living in 2013.

Warri southwest can be classified as part of the developing world, and therefore, there is a dearth of human infrastructures. This situation has led to a poor standard of living and quality of life. Hence the purpose of this study is to examine the poor environmental condition and the quality of life in the study area.

2. Materials and Method

Study Area

The study area is located between Latitude 5° 15'N and 5° 20'N of the equator and Longitude 5° 05'E and 5° 47'E of the Greenwich meridian (See Fig. 1). The area is underlain by the Agbada Akata and Basin formations. It is made up of sedimentary rock types, and the terrain is about 4m above sea level. The area experiences the equatorial climate with a mean annual rainfall of about 3000mm with a mean temperature of 28°C and displays a maximum rainfall in the months of July and September, Iloeje (1981).

There has been a tremendous growth in the population of 116,651 from the population census figure of 2006 with a projected figure of 175,723 using the annual growth rate of 3.2% by 2019. The major occupation of the populace is fishing and subsistence farming. However, there has been a shift from these two occupations to oil exploration, and as a result, the youth has turned their attention to contract jobs in most of the oil companies located in the area.

Figure 1: Map of Warri South-West Showing, Some Major Communities Sampled Source: Ministry of Lands, Survey and Urban Development, Asaba (2010)

The direct delivery and retrieval method was employed in the administration of the instruments. Five research assistants were engaged to assist the researcher in the administration of the instrument in each of the 16 selected communities. The research assistants constituted indigenes of the communities selected. They were briefed on

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the purpose of the exercise and trained on how to assist the respondents in filling the questionnaire and in cases where respondents are not literate. An interpreter in the local language was used to mediate between the researcher and the respondents.

However, out of the Five hundred and twenty (520) copies of the questionnaire administered, only four hundred and eighty (480) copies were correctly filled and returned.

The data was displayed in tables and statistical diagrams, and percentages, mean, analysis of variance, and multiple regression were used to examine it.

3. Results and Discussion

The Socio-Economic Characteristics of Respondents in Warri South-West

This section of the results reports the socio-economic and demographic characteristics of the respondents that make up the 16 communities under study. Results for marital status and level of Education, age cohorts, occupations, income level and household sizes are presented.

Marital Status of Respondents

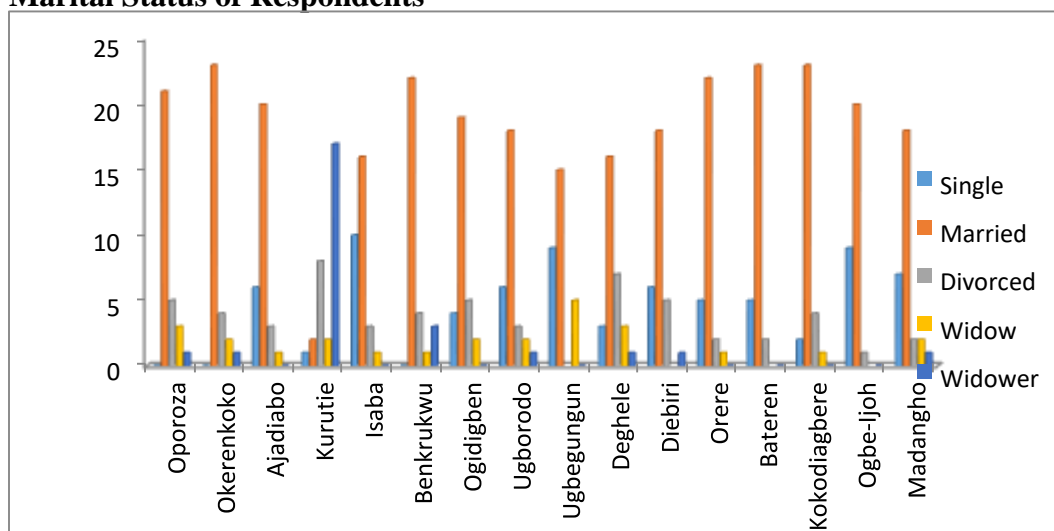


Figure 2: Marital Status of Respondents

Figure 2 presents the marital status of the respondents. It shows 15% are single respondents, 62% are married respondents, and 12% are divorced, while 6% and 5% of the respondents are widows and widowers, respectively. It is evident from the presentation that there are more married respondents in the entire study. This marital structure is expected to give a vivid view about housing and environmental quality in the study area as living together as a spouse in a particular environment could enhance an agreed view or perception about any given geographic environment, in this case, housing and environmental quality.

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Level of Education of Respondents

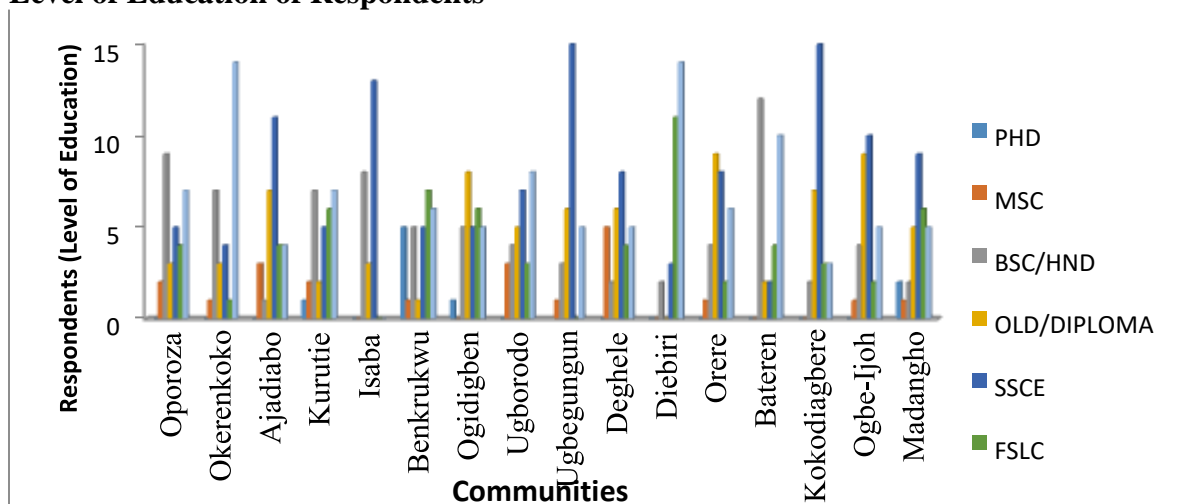


Figure 3: Level of Education of Respondents

Figure 3 indicates that the level of Education in the study area. From the figure, 2% of entire respondents are PhD holders, while 4.4% were M.Sc holders, BSc/HND holders were 7% of the entire respondents drawn from all 16 communities combined. However, 16% of the entire respondents were Ordinary Level Diploma graduates, while 26% of the entire respondents were SSCE holders. This group comprised people from all the communities. First School Leaving Certificate (FSLC) holders were 13% of the entire respondents. Meanwhile, 22% of the entire respondents do not have a formal education. The level of Education of respondents is above average as the number of respondents with secondary school education is high together with those with certificates, diplomas and degrees. This may impact the views of the respondents in terms of their score for the aesthetic value of their environment.

Age of Respondents

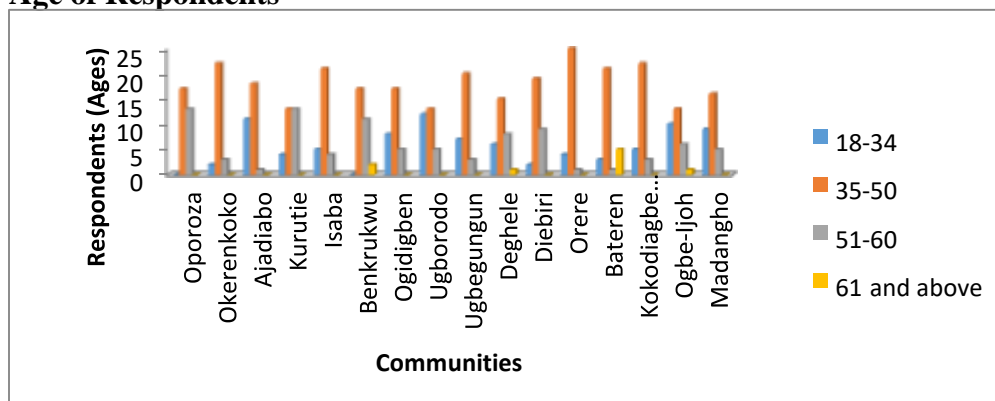


Figure 4: Age Cohorts of Respondents

Figure 4 shows the age cohorts of the respondents of the study. From the figure, 18.5% of the respondents are within the age cohort of 18-34 years. Meanwhile, 60.5% of the respondents are within the age cohorts of 35-50 years. 19% of the respondents are within the age cohort of 51-60 years, while 2% of the respondents are within

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the age cohorts above 60 years. With this pattern of the age distribution of the respondents in the active age cohorts, it is expected that they will generate the needed quality information about the housing and environmental quality of their dwelling.

Occupation of Respondents

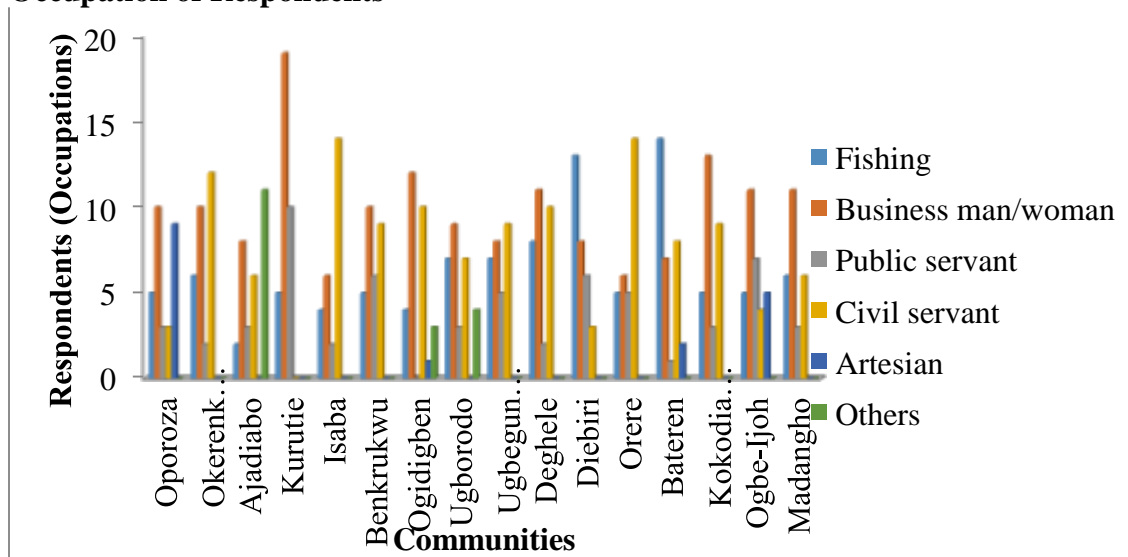


Figure 5: Occupation of Respondents

Figure 5 indicates that the occupation of the respondents in the study. From the figure, 21% of the respondents in all the communities are fishermen. Similarly, 33% of the respondents are businessmen/women, while 12.7% of the respondents are public servants. The number of respondents who are civil servants is 26%, while artisans are 3.5% of the respondents. Those in other occupations, such as students, farmers, etc., account for 3.8% of the entire respondents. From the result, it is evident that the bulk of the respondents are fishermen (21%) and businessmen/women (33%).

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Income Level of Respondents

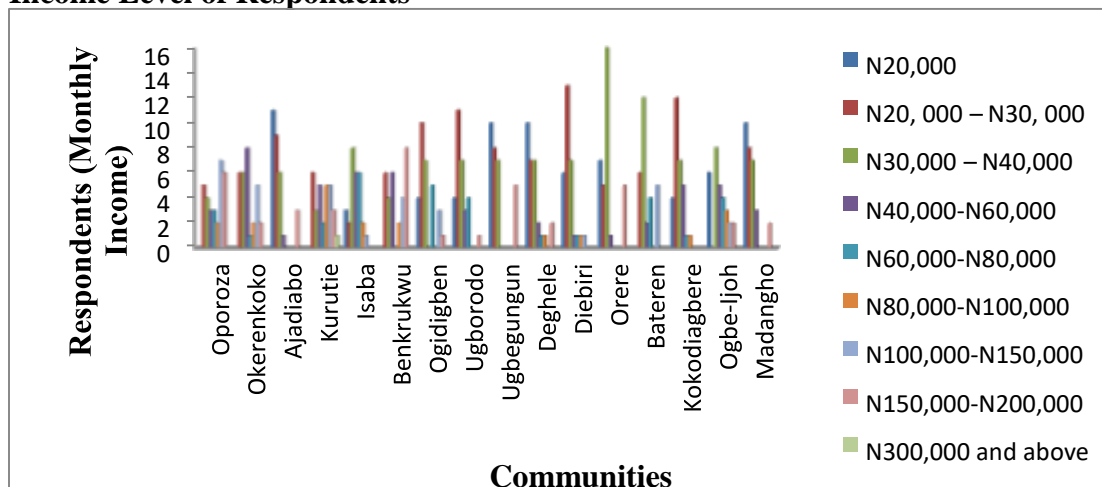


Figure 6: The Income Level of Respondents

Figure 6 reveals that the income level of respondents in the study. From the figure, 15.6% of the entire respondents earn a monthly income of ₦20,000. Within the income level of ₦20,000 to ₦30,000 are 23.7% of the respondents. 24.1% of the respondent are within the income level of ₦30,000 to ₦40,000. In the income level of ₦40,000 to ₦60,000 are 10.4% of the respondents. There are 7% of the respondents within the income level of ₦60,000 to ₦80,000 in the entire community. Within the income level of ₦80,000 to ₦100,000, there are 4% of the respondents. While there are 7% of the entire respondents within the income level of ₦100,000 to ₦150,000, there are 8% of the respondents within the income level of ₦150,000 to ₦200,000. The number of respondents in the income level of ₦300,000 and above is low, with one person 0.2% indicating that income level. On a comparative basis, respondents from Oporoza, Benikrukru and Orere communities have the highest income levels.

Household Size of Respondents

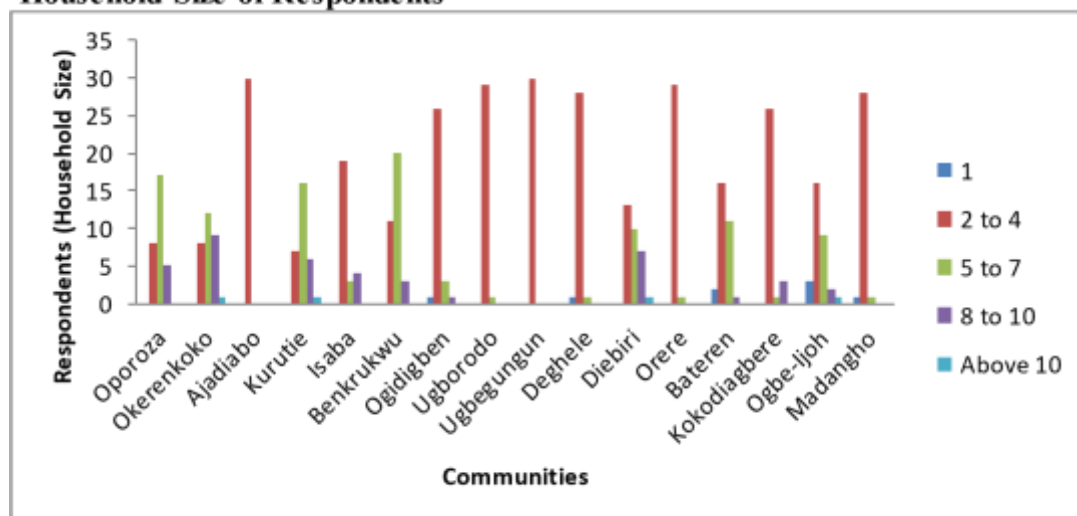


Figure 7: Household Size of Respondents

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Figure 7 shows the household size in the different communities studied. From the figure, 1.7% of the respondents are in the category of one (1) person household, while 66.9% are in the category of 2-4 person households. Also, 22% of the respondents are in the category of households of 5-7 persons, while 8.5% of the respondents are in the category of households of 8-10 persons. However, only 0.9% of the respondents were from households of above ten (10) persons. From the result presented, there are more persons in households of 24 persons, which make up about 70% of the entire respondents. The implication of the result is that the study area is comprised of medium size households with the better and more enhanced aesthetic value of their housing and residential environment.

Employment Status

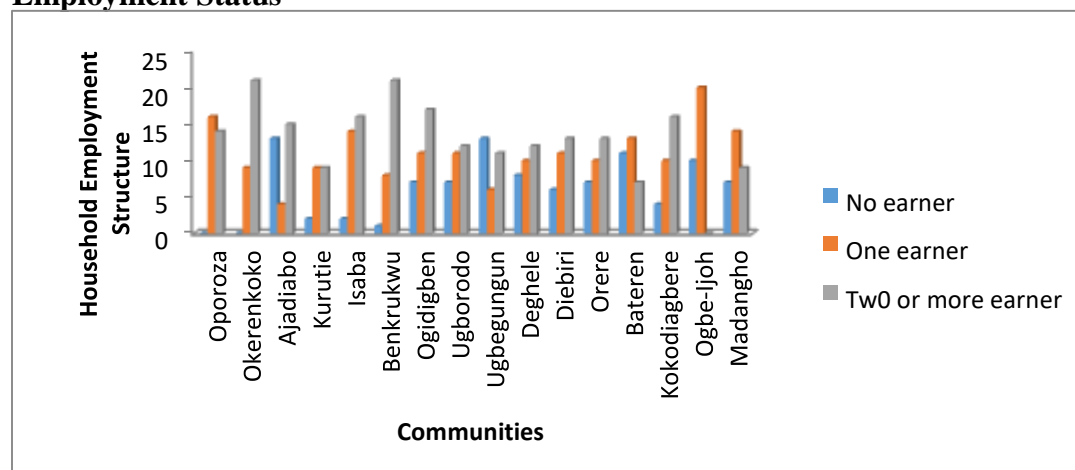


Figure 8: Employment Structure of Respondents Households

Figure 8 shows the employment structure of communities in the study. The figure shows that 20.4% of the respondents are unemployed, while 36.7% of the respondents are earner households (only one person employed/working), and 43% of the respondents are two or more earner (two or more people employed and working). The result indicates that the households with two or more people employed are more, and this is closely followed by households with only one person employed. The number of people employed in a particular household is expected to have a positive effect on the income status, type of housing lived in and "food security", which may impact on household's housing and the environmental quality.

The Residential Environmental Conditions in Warri South –West

This section of the study presents results on the residential environmental quality of the neighbourhood. These consist of the quality of the residential environment, the conditions of the road network, conditions of drainages network, waste disposal and sources of electricity.

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Qualities of Residential Environment

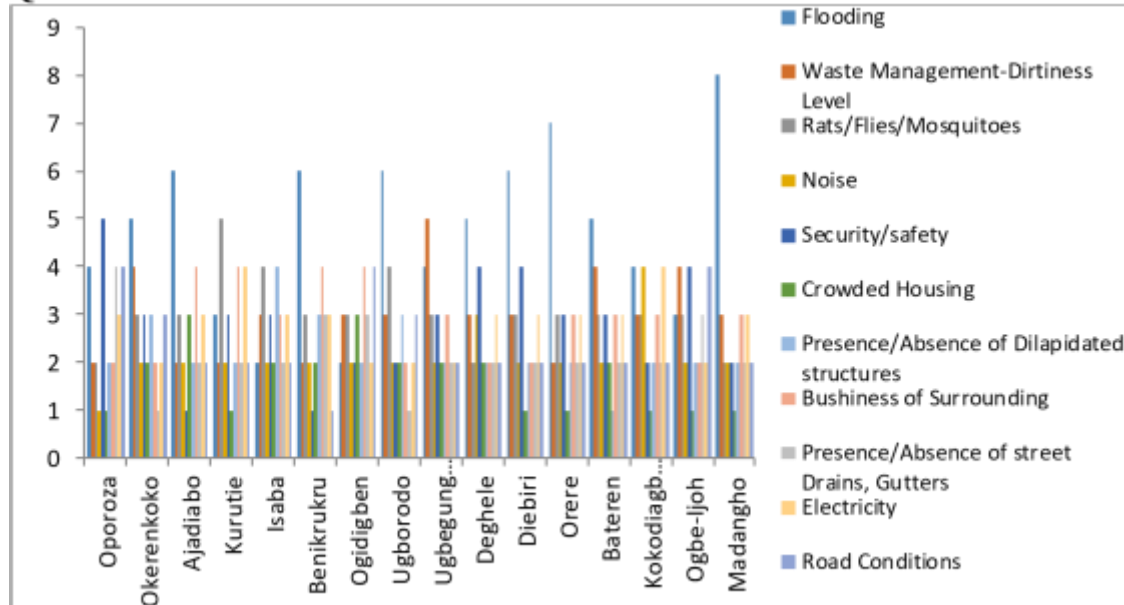


Figure 9: The Quality of Residential Environment in Warri South-West

A good quality environment gives a sense of satisfaction to inhabitants by physical or social characteristics. From the figure, flooding is indicated to be a prominent challenge in Madangho (10.5%), Orere (9.2%) as well as in Ajadiabo, Benikrukru, Ugborodo and Diebiri at 7.9% each. Waste Management-Dirtiness of the environment is indicated to be common in Ugbegungun (10.4%) and in Okerenkoko, Bateren and Ogbe-Ijoh communities at 8.3% each. Rats/Flies/Mosquitoes infestation is indicated to be common in Kurutie, Isaba and Ugborodo at 10.4%, 8.2% and 8.2% levels, respectively. Noise is indicated to be common in Kokodiagbene and Deghele at 11.8% and 8.8%, respectively. Security/safety concerns are indicated to be high in Oporoza at 11.1% and in Deghele, Diebiri and Ogbe-Ijoh at 8.9%, respectively. Crowded housing is indicated to be high in Ajadiabo and Ogidigben at 11.1% each, respectively. The presence of dilapidated structures is indicated to be more in Isaba at 11.1%, while Bushiness of Surrounding is indicated to be common in Ajadiabo, Kurutie, Benikrukru and Ogidigben at 8.7%, respectively. Electricity concern is indicated to be more in Kurutie and Kokodiagbene at 8.9%, respectively. Road Conditions are bad for Oporoza, Ogidigben and Ogbe-Ijoh at 10.3% each and closely followed by Okerenkoko and Ugborodo at 7.7% each, respectively. Since these communities are located in a riverine environment of the Niger Delta, the views of the respondents on flooding correlates with recent events that occurred in this area during the rainy season of each year. Since the year 2012, rainfall-induced inundation of the Niger Delta region of Nigeria has become alarming as people have been ejected from their ancestral homes and made to live in internally displaced persons (IDP) camps, a makeshift arrangement by the government to cushion the effects of flooding disasters on the citizenry. Earlier, Ahianba *et al.* (2005) analyzed the characteristics of environmental degeneration as follows: inadequate basic infrastructural amenities, substandard housing, overcrowding, poor ventilation in homes and workplaces, and noncompliance with building bye-laws and regulations.

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Condition of Road Network

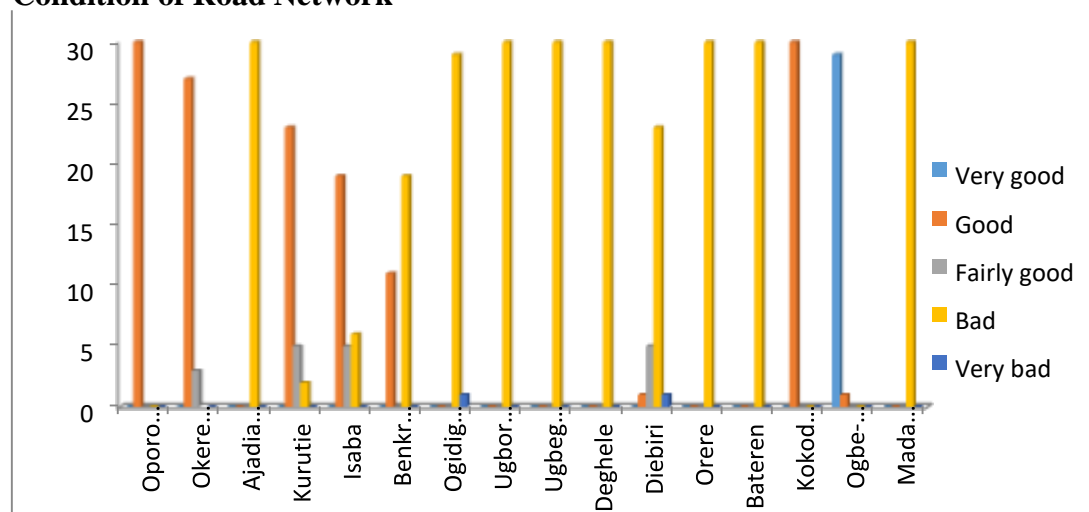


Figure 10: Condition of Road Network

Figure 10 shows the conditions of the road network in the 16 communities under study. The result shows the respondents' rating of the road networks. Six per cent (6%) of respondents indicated that the road network is very good, and this is prominent amongst respondents of the Ogbe-Ijoh community. However, 30% of the respondents, especially in Kokodiagbene, Oporoza, Okerenkoko, Kurutie and Isaba, indicated that their road network is good. However, 3.6%, 60% and 0.4% of the respondents indicated that the road network is fairly good, bad and very bad, respectively. From the result, a greater proportion of the respondents indicated that the road network in the communities is bad.

Waste Disposal Methods of Respondents

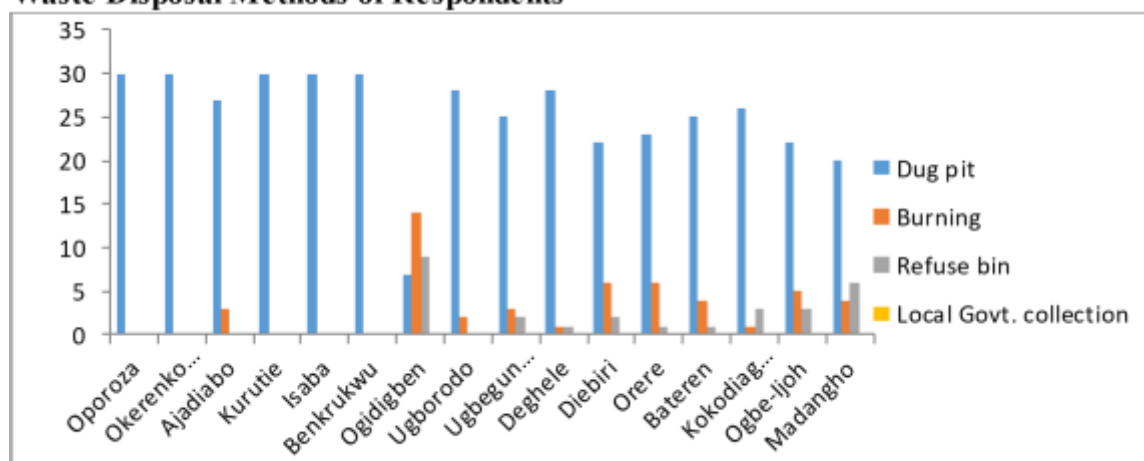


Figure 11: Waste Disposal method employed in Warri South-West

Figure 11 shows the waste disposal practices in the 16 communities. The result shows that 85% of the respondents use dug pits for their waste disposal, while 10.2% dispose of their waste by burning. However, 5.8% of the respondents utilize refuse bins for their waste disposal. The local government, from the respondent's view, does not assist in waste disposal in the communities. From the figure above, the dug pit is the most used method of

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waste disposal. This has its own implications on the aesthetic value of the environment and neighbourhood as degradable and non-degradable waste are dumped into the pit and later constitutes environmental challenges.³ Moreso, 5.8% of the respondents indicated that they utilize refuse bins for their waste disposal. The local government authorities, from the respondent's view, does not assist in waste disposal in the communities. From the figure above, the dug pit is the most used method of waste disposal. This has its own implications on the aesthetic value of the environment and neighbourhood as degradable and non-degradable waste are dumped into the pit and later constitutes environmental challenges to soil nutrients. This agrees with Owoeye and Omole (2012) which suggested that inappropriate wastes management has made the societal fabric of many rural centres in Nigeria very unsightly.

Condition of Drainage

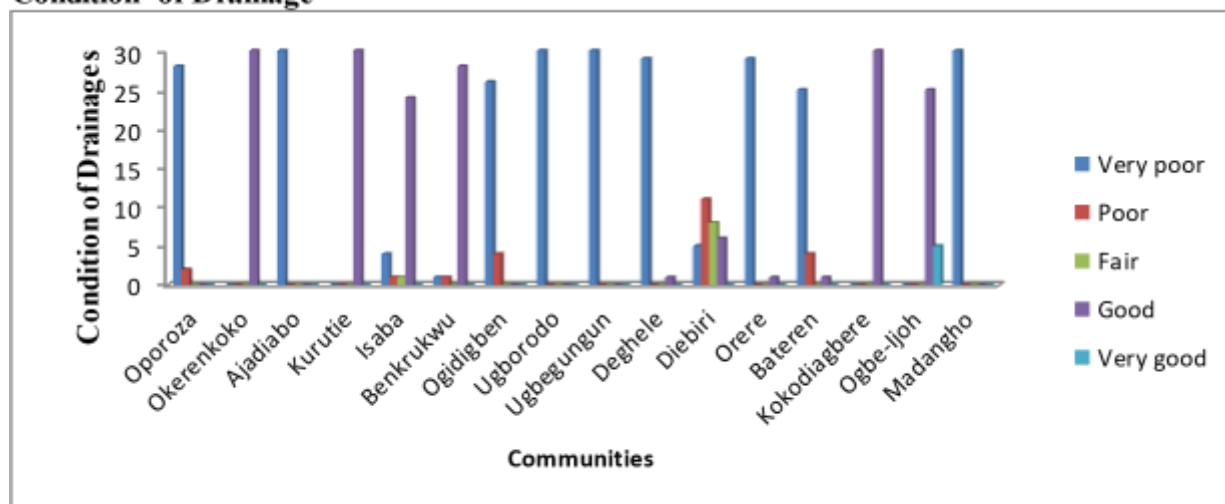


Figure 12: Condition of Drainages in the Area.

Figure 12 shows the condition of drainages in the 16 communities in Warri SouthWest LGA. From the figure, about 55.6% of the respondents are of the view that their drainage is in a very poor condition, while 4.8% of the respondents agree that the drainage is poor. Although 1.8% of the respondents said the drainages are in a fair condition, 36.6% and an additional 1% said the drainages are in good and very good conditions. The implication of the result is that more people agreed that the drainages in Warri South-West are very bad and poor.

Sources of Electric Supply of Respondents

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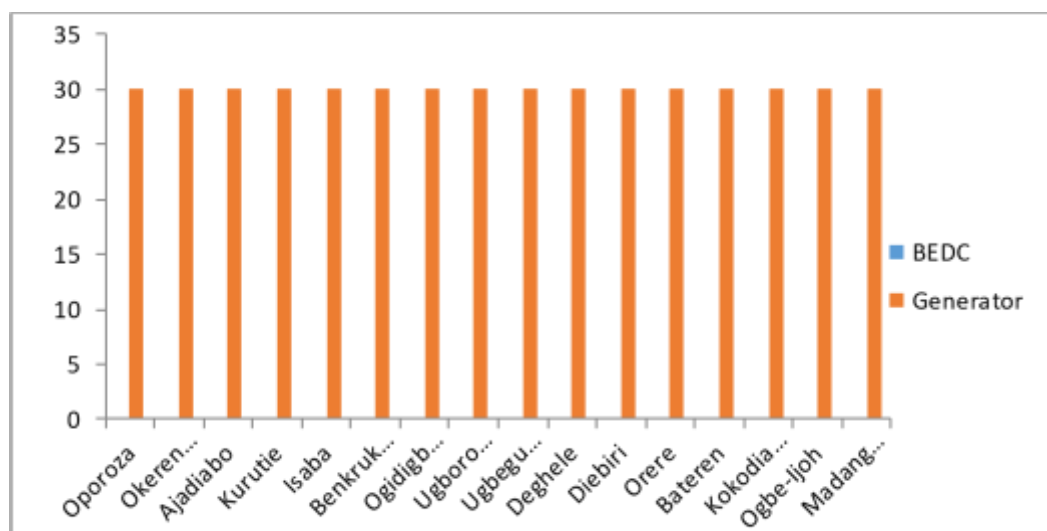


Figure 13: Source of Electricity in Warri South-West

Figure 13 shows the sources of electricity in the 16 communities in Warri SouthWest. The figure shows that the entire respondents (100%) agreed that they all rely on their generators for electricity because of the absence of Benin Electricity Distribution Company (BEDC). This implies public power supply may not have been extended to these 16 communities. This could be due to environmental factors such as lack of road access and the presence of creeks.

Types of Drainage

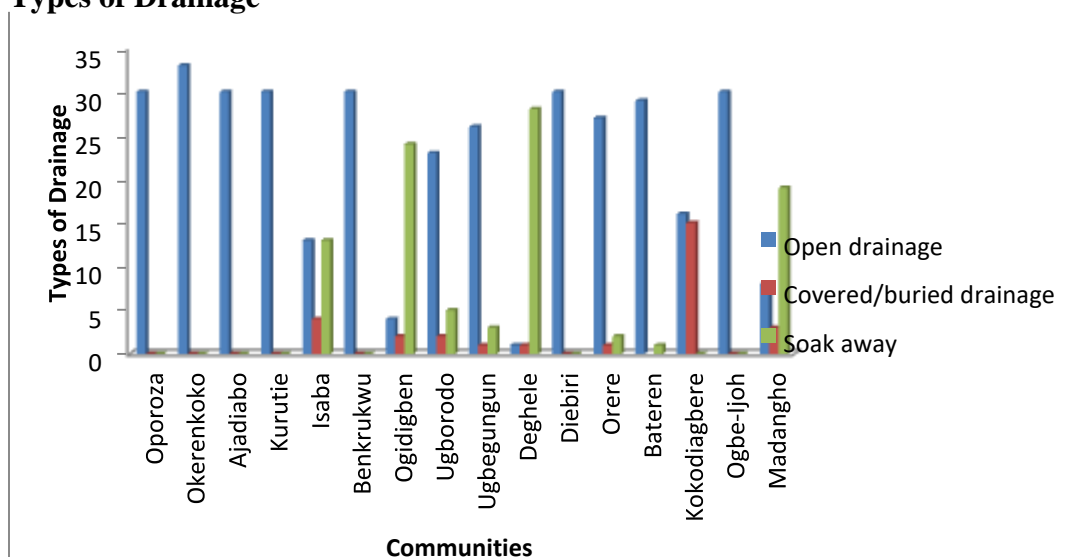


Figure 14: Types of drainage

Figure 14 presents the types of drainage in Warri South-West. The result shows that 74.4% of the respondents agreed that an open drainage system is what is available in the area. However, 5.8% of the respondents said that they have more covered/buried drainage in the area, while 19.8% indicated that there is a soakaway system. From the result, the numbers of communities with open drainages are more and closely followed by soak away pits.

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The implication of the result is the possibility of the drains being covered with waste from human activities, or people can turn the open drainage into refuse dumpsites. It could also be turned to open defecation for households who lack sanitary facilities in their houses.

Table 1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
Marital status	.769 ^a	.591	-.228	5.679	.591	.722	10	5	.692
Education	.696 ^a	.484	-.548	4.009	.484	.469	10	5	.856
Age Grade	.527 ^a	.277	-1.168	5.292	.277	.192	10	5	.987
Occupation	.713 ^a	.509	-.474	3.851	.509	.518	10	5	.824
Income	.830 ^a	.689	.068	1.963	.689	1.110	10	5	.483

a. Predictors: (Constant), Road Conditions, Crowded Housing, Rats/Flies/Mosquitoes, Waste Management-Dirtiness Level, Presence/Absence of Dilapidated Structures, Noise,

Presence/Absence of street Drains, Gutters, Security/safety, Electricity, Bushiness of Surrounding

The significant difference between the Socio-Economic Characteristics of the Residents and Environmental Quality of the Neighbourhoods

The Model Summary of the multiple regression analysis on the relationship between socioeconomic characteristics of residents and the housing and environmental quality of the study area (Table 1) The R, R², adjusted R², and standard error of the estimate are all values that can be used to measure how well a regression model fits the data in this table. The value of R, the multiple correlation coefficients, is represented in the "R" column. R can be thought of as one metric for the accuracy of the dependent variable's prediction; in this case, eleven (11) environmental quality indicators. The coefficient of determination (R²) column reflects the proportion of variance in the dependent variable that can be explained by the independent variables (technically, it is the proportion of variation accounted for by the regression model above and beyond the mean model). The R² values of 0.591 (59%), 0.484 (48%), 0.277 (28%), 0.509 (51%) and 0.689 (69%), as indicated in Table 4.5, shows that the model explained the variability in the residential environmental quality in Warri South-West as indicated by 59% of marital status, 48% on the level of Education, 28% by age grade, 51% by occupation and 69% by income level of the respondents respectively. However, flooding was an excluded variable in the model run, an indication that it is not affected by socio-economic status in the study area.

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Table 2: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	232.723	10	23.272	.722	.692 ^b
	Residual	161.277	5	32.255		
	Total	394.000	15			
2	Regression	75.387	10	7.539	.469	.856 ^b
	Residual	80.363	5	16.073		
	Total	155.750	15			
3	Regression	53.722	10	5.372	.192	.987 ^b
	Residual	140.028	5	28.006		
	Total	193.750	15			
4	Regression	76.796	10	7.680	.518	.824 ^b
	Residual	74.141	5	14.828		
	Total	150.938	15			
5	Regression	42.742	10	4.274	1.110	.483 ^b
	Residual	19.258	5	3.852		
	Total	62.000	15			

a. Dependent Variable: Marital Status¹, Education², Age Grade³, Occupation⁴, Income⁵

b. Predictors: (Constant), Road Conditions, Crowded Housing, Rats/Flies/Mosquitoes, Waste Management-Dirtiness Level, Presence/Absence of Dilapidated Structures, Noise, Presence/Absence of street Drains, Gutters, Security/safety, Electricity, Bushiness of Surrounding
The F-ratio in the ANOVA table (Table 2) tests whether the overall regression model is a good fit for the data. The table shows that the dependent variables did not statistically predict the independent variables.

Table 3: Summary of Coefficients indicating the Unstandardized Coefficients

Coefficients of Description	Unstandardized Coefficients (Constant)
Environmental Quality and Marital Status	41.463
Environmental Quality and Education	-11.887
Environmental Quality and Age Grade	11.636
Environmental Quality and Occupation	-6.288

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Environmental Quality and Income	-15.494
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Table 3 presents the coefficients for marital status and residential environmental quality. Unstandardized coefficients indicate how much the dependent variable varies with an independent variable when all other independent variables are held constant. The unstandardized coefficient, B1, is equal to 41.463. This means that for each change in marital status, there is an increase in respondent's view of residential environmental quality Indicators.

The unstandardized coefficient describing the level of Education and residential environmental quality B1 is equal to -11.887. This means that each change in the level of Education does not cause an increase in respondents' views of residential environmental quality indicators. Other factors unexplained are also considered.

Table 3 also presents the coefficient for age-grade and residential environmental quality. Unstandardized coefficients indicate how much the dependent variable varies with an independent variable when all other independent variables are held constant. The unstandardized coefficient, B1, is equal to 11.636. This means that for each change in agegrade, there is an increase in respondents' views of residential environmental quality indicators.

Table 3 also shows the coefficients for occupation and residential environmental quality. Unstandardized coefficients indicate how much the dependent variable varies with an independent variable when all other independent variables are held constant. The unstandardized coefficient, B1, is equal to -6.288. This means that each change in occupation does not necessarily increase respondents' view of residential environmental quality indicators.

In Table 3, the coefficients for income and residential environmental quality are shown, indicating how much the dependent variable varies with an independent variable when all other independent variables are held constant. The unstandardized coefficient, B1, is equal to -15.494. This means that each change in income does not increase residents' view of residential environmental quality indicators.

From Table 3, since the socio-economic status did not significantly impact the residential environmental quality, the stated hypothesis is rejected (not significant), meaning that there is a significant relationship between social-economic characteristics and environmental quality in the 16 communities of Warri South-West LGA.

Statistical test of hypothesis which states that there is no significant relationship between socio-economic characteristics of residents and the housing and environmental quality of the study area showed that marital status, Education, age grade, occupation and income does not have a statistically significant relationship with the indicators of residential environmental quality. These indicators include flooding, waste management-dirtiness level of the environment, rats/flies/mosquitoes infestation, Noise, Security/safety, crowded housing, presence/absence of dilapidated structures, bushiness of the surrounding, presence/absence of street drains, gutters, electricity presence and road conditions. These indicators, to a large extent, are external to the residents of a particular environment and, in most cases, provided for by the organs of government.

4. Conclusion and Recommendations

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This study examined the environmental conditions and quality of life of the people in Warri South-West LGA of Delta State. The findings of the study revealed that a relationship exists between residents' environmental conditions and their quality of life. Also, the environmental conditions reflections of their socio-economic characteristics, such as educational attainment, household size, and income but not with age and marital status in the study area.

The environmental setting has been shown through this study to be a limiting factor to sustainable housing, especially in the face of regular environmental flood disasters. It has been shown that speed boats are the most preferred as a result of environmental determinism and the negligence of the government and its agencies to develop other means of transportation.

Asphalted roads with drainages to channel floodwater away in the environment should be constructed to provide express linkage in the area for easy flow of materials and resources and for effective spatial interaction between residents and their workplace.

Routine and continuous bush clearing, fumigation of the environment to stride off mosquitoes, rodents and flies should be carried out to improve the quality and aesthetic value of the Warri South-West environment as more development takes place.

Regular power supply could be achieved through Public/Private partnership and the current privatization of the electricity process embarked upon by the Federal Government. The provision of water supply by the government was fundamentally nonexistent. Government should partner with the private sector for the provision of this essential service to the residents. Other forms of electricity generation such as solar power, biomass, wind, tidal energy, which are in abundant supply in the country, can be looked into by the government.

Regular collection and disposal of waste should be done. However, Public/Private partnerships should also be embraced. The prevailing practice of disposal of waste into drains by the residents should be discouraged, and suitable procedures should be put in place to discipline offenders. Public enlightenment should be given to the residents using the scheduled environmental sanitation exercise of the state as a medium; during the exercise, the practice of removing waste from drains and roadsides disposal of waste should be discouraged.

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