The Implications of Unplanned Settlement On Environmental Quality in Gwagwalada Town Abuja, Nigeria

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Abstract:

The study examined the implication of unplanned settlement on environmental quality in Gwagwalada Town, Gwagwalada Area Council, FCT. Abuja. The study identified the unplanned settlement, Characteristics of the areas such as accessibility, waste management, land use structure, housing structures and housing facilities. The study also assessed the impacts of these characteristics on the environment and socio-economic lives of the resident. It covered five settled settlements which form the sampled points. They include; Angwa Gwari, Dagiri, Angwa Dodo, Angwa Tiv and Gwako. In view of the above, necessary procedures were selected to accomplish this. Approach includes the development of data base and choice of appropriate data sources (primary and secondary sources). From the methodology, six hundred and twenty-eight questionnaires were administered which focused on the physical, social and economics characteristics of the environment and households in the study area. The hypothesis put forward is to test whether there is no significant variation in methods of household waste disposal among the five samples mean of the five sampled points of Gwagwalada town. The data obtained was analyzed using the Kruskal Wallis H-Test. The result obtained show that the calculated value is 0.8 and the significant level is 0.05 with degree of freedom of 4, the critical value is 9.488, the calculated value is less than critical value. Therefore, H_0 is rejected and H_1 accepted. The alternative hypothesis states that

there is significant variation in methods of household waste disposal in Gwagwalada town. The study concluded that a large percentage of the dwelling units lacked modern basic facilities, the land use structure in the area is in violation of the original plan and most of the housing units are built with substandard construction materials among others. It is therefore recommended that both short and long term policy issues relating to the physical improvement of the unplanned area such as prevention and selective development should be implemented through a deliberate effort.

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1.0   INTRODUCTION

The term environment is generally seen as the total surrounding of an organism in a given area including the physical surrounding, climate factors and other factors (Peter, 2003). According to Ogidiolu and Balogun (2000), environment offers opportunity as well as limitation to human existence and survival. If man has to continue to live on earth, then the sustainability of the resources of the environment must be his priority. In Nigeria, the rapid urbanization and the quest for development has brought great pressure on the environment. Urbanization or urban growth is a process of human agglomeration in multifunctional settlement of relatively substantial size (Mabogunye, 1981). In more general terms, unplanned settlements are found either within the traditional or indigenous part of our cities where the prevailing socio-economic and environmental condition raised several problems to the inhabitants, the general public and the environment (Castells, 1993). Such an area has an image of poverty, unemployment overcrowding, crime, poor housing quality, lack or break down of basic infrastructural facilities such as water supply, access roads, electricity supply among others (Mamman, 2006). Also unplanned settlements can endanger the health, safety and moral of the inhabitants and the public at large (George, 1999). The majorities of unplanned settlements dwellers earn their living through informal but crucial activities and therefore provide services that may not be so easily available in the formal sector.

Many cities and industries would simply come to a halt without the labour provided by people living in all unplanned settlement areas (Jockin, 2001). Lessons from other countries of the world underscore the importance of and unique role or sustained political will and commitment to improving or reducing unplanned settlements (Ekpe, 2009). In Nigeria, several attempts have been made to embark on urban renewal schemes. These schemes according to Onibokun (1987), started in Lagos in 1928 when the then Lagos Executive Development Board (LEDB) was established. It was both a planning and housing authority. It was charged with the responsibility of re-planning, improving and developing Lagos. There is no likelihood that the present trend of increasing urban population growth in Nigeria can be changed for some time to come (Adeyemo, 2003, Onokerhoraye, 1994). This is because many Nigerians belief that the only hope and faith of good standard of living is to live in an urban area (lgwe, 2004).

One major challenge of urban population growth in Nigeria during the last five decades has been to provide a tolerable urban environment for the increasing concentration of people in the towns and cities of the country (Chiras, 1993). This challenge is bound to increase in the coming decades because of the expected rise in urban population. Planners, policy makers, researchers and general public in recent years have shown concern over the existing and deteriorating environmental situation in Nigerian cities (Oyegun, 2001).

The Abuja master plan indicates that Gwagwalada was originally designed for the development of industries, industrial zone (Angulu 2012). However, the prevailing unplanned settlement development in the study area is attributed to a number of factors among which are: The decision to hasten the movement of civil servants from Lagos to Abuja in 1990 when the Federal Capital Territory was relocated from Lagos to Abuja by the government, Bureaucracy associated with land acquisition in the Federal Capital Territory, High cost of Land, Lack of strict enforcement of Land use Regulation and Development control over the years on the part of the Federal Capital Development Authority (FCDA), and, The demolitions of illegal structures

in some parts of the Federal Capital Territory (FCT) recently according to Amenaghawon (2006) exacerbated unplanned settlement development in the area. With increasing urbanization coupled with its implications for the environment, in the area of environmental and social problems. In social problems we have areas like urban poverty, housing, access to public amenities and to mention a few and environmental problems include pollution, waste management, health, water supply and sanitation, this study presents an assessment of unplanned settlement in Gwagwalada Area Council, FCT.

The rapid growth of cities strains their capacity to provide services such as energy, education, housing, public amenities, sanitations and physical security, consequently, unhealthy settlement is created. The issue of unplanned settlement development in Nigeria cities has been a subject of so much research inquiry. However, much if not all of the research work on urban slums in Nigeria have only centered on procedures of slum development, some of these researcher and their work include Amenaghawon (2006), Sada (2000), Mabogunje (1981), Onokerhoraye (1994), among others. Very little is known about the various challenges posed by these unplanned settlements both to the environment and the socioeconomic lives of the dwellers knowledge of these challenges will help provide the blue print for learning and planning for sustainable regional development.

An unplanned settlement also acts as a complement, and deteriorates the purity of various factors of the environment such as air, water and land. This study will be guided by the following research questions;

i.   Are streets and building structures in the study area easily accessible to motor vehicles and motorcycle?

ii.   Is there difficulty in accessing the available community services such as primary schools and refuse collection point in the study area?

iii. What are the characteristics of housing in the study area?

iv.   How efficient and effective are waste management within the study area?

v.   Is there compliance to land use plan by residents of the study area.

In the light of' the above, the study examines the main characteristics of unplanned settlement as being experienced in the study area, and to recommend policy option to mitigate the situation. The study specifies a research hypothesis to be tested in the course of the study, the hypothesis is stated below:

1.1   Hypothesis:

H_o There is no significant variation in methods of household waste disposal in Gwagwalada town.

1.2   Study Area

Gwagwalada is located almost at the centre of FCT; it lies within latitude 8°55' N and 99°01 N of the equator and longitude 6°55'E and 7°13E in the FCT Gwagwalada Master plan (1980). It is along Kaduna-Lokoja Express way currently under dualization and it is about twenty-five minutes' drive to the Nnamdi Azikiwe International Airport and it takes forty-five minutes' drive to the capital city from the heart of Gwagwalada by road. The town also has a boundary with Kuje in the East, Kwali to the south, Suleja in the North and Izom in the North Eastern part (Balogun, 2001).

Gwagwalada experience both the wet and dry seasons; the wet (rainy) season begins from April and last till the end of October and the dry (sunny) season begins in November and ends in the middle of March. Balogun (2001). Gwagwalada the designated study area records the highest temperature during the dry season months, which is generally cloudless. The maximum temperatures occur in the month of March varying from 37^0 in the southwest to 30^0 in the Northeast. Rainfall plays a vital role with respect to agricultural activities within the study area and most farming activities highly depend on rainfall. About 60% of the annual rainfalls during the months of July to September (lshaya and Mashi, 2008).

The soil in the study area comprises mainly of sand, silt, clay and gravel, the incidence of soil erosion is quite small because of the productive vegetation cover. (Gwagwalada is composed of shrubs and savanna midland that is characterized by short and scattered trees and tall Grass. Trees appears as emerge with foliage loams scattered at considerable distance from one another (Balogun. 2000).

The population of Gwagwalada has been fast increasing as a result of combination of factors namely: natural increase (high fertility and immigration), the relative low cost of housing in the area especially in areas of unplanned settlement type, the presence of Federal Government Institutions; University of Abuja, University of Abuja Teaching Hospital, Civil Defence, Immigration and Prisons Pension Board (CIPB), FCT School of Nursing, FCT College of Education, and other private schools, with Commercial Banks The 2006 National Population Census (NPC) figure for the Gwagwalada Area Council were given as one hundred and fifty seven thousand seven hundred and seventy (157,770) which occupies an area of approximately 1,044sqkm, one thousand and forty four square kilometer (NPC 2008)

The settlement pattern in Gwagwalada is linear due to the presence of infrastructure like road, water and electricity most especially at the Quarters political ward which comprises of Phase I, II & Ill and scattered unorganized settlement at the Kutunku I settlement area and also Zuba to mention but a few. The internal structure of Gwagwalada town comprises of old town and the new town. The old town include the Angwan which are Angwan Tiv, Angwan Hausawa, Agwan Gwari, Angwan Dodo, Angwan Gedei, to mention hut a few with poor accessibility and other social amenities. The new town include Kotongora Estate. Phase I, 2 and 3 with reference to figure 1.
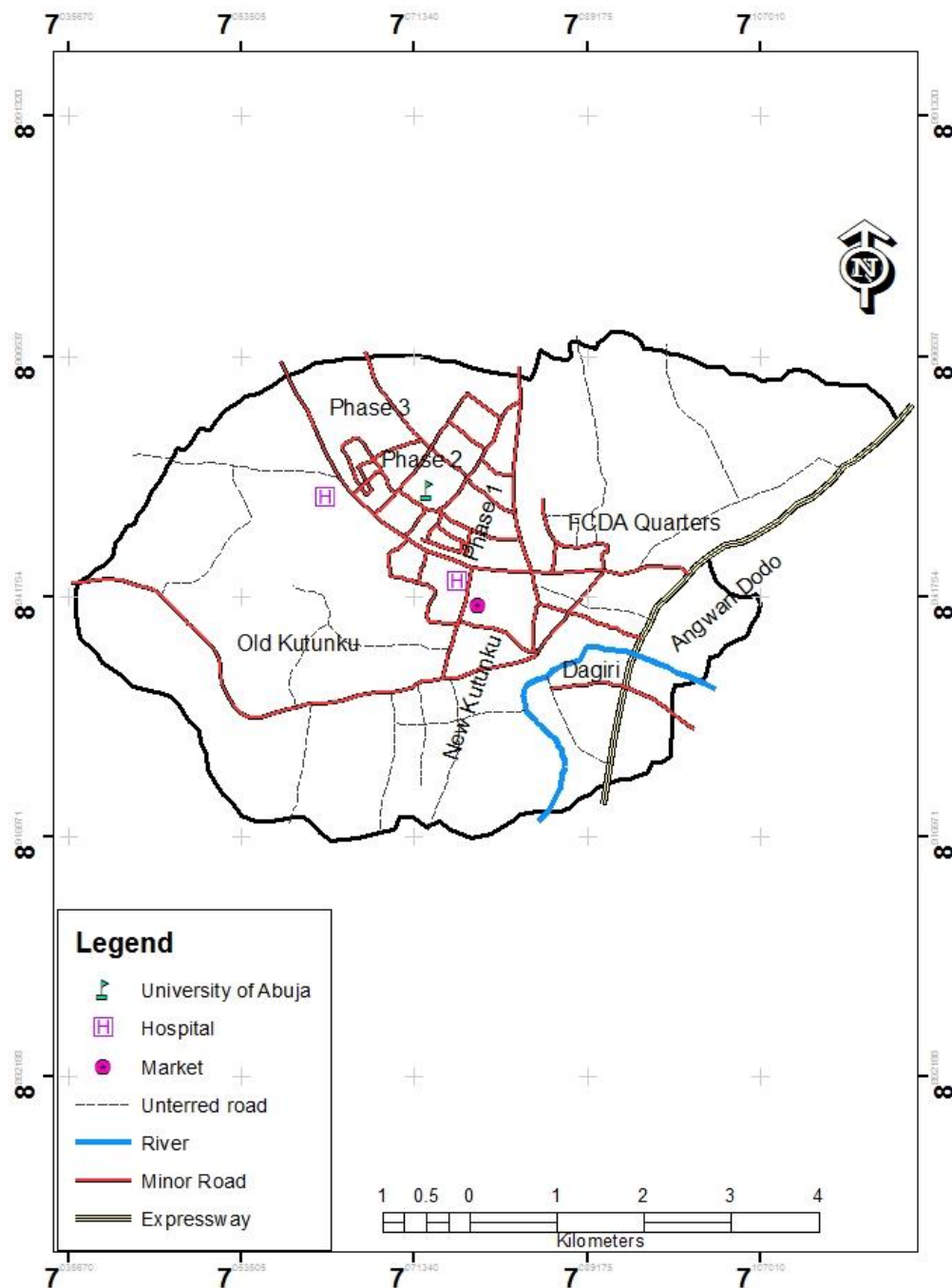
Figure 1: Map of Gwagwalada Town
Source: Gwagwalada Master Plan

2.0   LITERATURE REVIEW

Rising levels of' urbanization and rapid population growth in large cities is considered problematic. The problem for Third World cities is not only the result of a rapid population growth hut also the legal and institutional structure that fails to cope with the needs of the population the tasks of providing and running city services. Governments and international agencies fail to ensure the migrants' adequate infrastructure and service, and they often fail to enforce pollution control and other regulations needed to protect the quality of life in urban areas. Between 30 and 60 percent of the housing units in most cities in the Third World are unplanned.

In this work the term unplanned settlements are used synonymously with 'squatter and illegal settlements', which refers to settlements with high densities and that are built in an irregular manner. These settlements either contravenes land ownership laws or they contravene building and planning laws or codes when land is obtained and developed outside the official land transfer mechanism. The 1980s and early 1990s became a period of 'urban crisis' in many African cities and was a reflection of declining or stagnating economies and a continuing rural-urban migration (Ngwara et at 2000). A large part of the urban population was forced into unplanned settlements on the outskirts of cities and a low proportion had direct access to clean water supply, garbage disposal and good health service (UN Habitat 1996). One of the most complex tasks for urban governments is how to ensure that urban land markets can serve the economic and social needs for urban dwellers and enterprises. The price and availability of land is one of the determinants of a country's economic success, quality of housing and living condition. A good land management can stimulate economic growth.

The economic costs of a poor land management are enormous where a large proportion of the urban dwellers have to settle down in illegal areas to find a home. The availability of cheap accommodation in many inner city areas has been reduced as higher income groups develop new commercial or residential sites in the place of tenements. As in the developed countries, relatively old tenement buildings or cheap boarding houses are converted to houses or apartments for the middle or upper income groups. These houses now have a considerable prestige in many cities. It is also common for many illegal settlements which has developed in good locations and have survived the threat of demolition that poorer households are pushed out by middle or even upper income 'improvers' (Hardoy *et'a*l 1992). The development of illegal settlements has been the solution for many people when they have united capacities to pay for housing and when the government is unable to cope with the citizen's needs. In several cities there are large parts of people that want to spend as little as possible on housing. Low quality housing often enables the migrants to save some money of his or her urban earnings, which may be important for short-time and newly arrived migrants who want to maximize their savings and send some money back to their families in the rural areas (UN Habitat 2010).

2.1   Characteristics of unplanned settlements

The characteristics associated with unplanned settlements vary from place to place, unplanned settlement are usually characterized by problems of accessibility, inappropriate land use, poor housing quality, overcrowding of' buildings, poor structure, waste management problem, urban decay, high rates of poverty and unemployment (WHO/UNICEF, 2003). Commonly, unplanned settlements are seen as treading ground for social problems such as crimes, drug

addiction, alcoholism, high rates of mental illness and suicide. In many poor countries that is, the developing countries, they exhibit high rate of disease due to unsanitary conditions a malnutrition and lack of basic health care (Adinna, 2001).

United Nations experts group on the environment has created an operational meaning to an unplanned area as area that combines the following characteristics: poor structure Quality of Housing, inadequate access to safe water, inadequate access to sanitation and other infrastructure: overcrowding and insecure residential status. Although the common perception is that unplanned settlement areas are hi-ceding grounds for crime, the reports available show that in fact dwellers of areas not planned are inure often victims than perpetration of crime (Mike, 2006)

In the developing nations of the world especially Nigeria unplanned settlement life often entails enduring some of the most intolerable housing conditions frequently living in overcrowd and insecure neighborhoods and constantly facing the threat of eviction (Lavry, 1991) and also to face water borne diseases such as cholera and typhoid as well as the opportunistic ones that accompany HIV/AIDS (Floris, 2007). Unplanned settlement resulting, to slum lit therefore places enormous and psychological burdens on residents which often lead to broken homes and social exclusion (Robert. 2006).

While taking up development activities, the assimilation capacities of the environmental components such as air, water, and land are rarely considered (Mc Carvey, 1996). Erection of structure indiscriminately absurd sewage management, water ways and drainage channels with their associated environmental implications cutting down of trees for fuel, wood, an Important source of energy for most urban unplanned settlement dwellers lead to deforestation and this negatively affects the climate of the region (Rafestin and Lawrence, 1990).

2.2   Impact Unplanned Settlement on Environmental Quality
Nobody can refuse the benefits provided by urbanization to the commoners in the 21st century. In fact, a country's development largely depends on the rate of urbanization in that particular country.

However, unplanned urbanization and settlement in urban areas brings about a heap of problem to the environment and other area like economy, health and social aspect Johnson el at (1997).

Environmental quality is a general term which varied in characteristics that relate to the natural environment as well as the built environment, such as air, water or pollution, and the potential effects which such characteristics may have on physical and mental health caused by human activities U.S EPA (2012).

The impact of unplanned settlement on environment quality can he positive and negative dimension discussion like in the area of urban sprawl, it creates a number of negative environmental out comes that are strongly related to global changes issues. For more than 100 years, it has been known that two adjacent cities are generally warmer than surrounding area 91 to 6^0c. This region of city warmth, known as urban heat island can influence the

concentration air pollution. Ibis results into reducing soil moisture and intensification of carbon dioxide emission.

Another impact could be seen on water a vital necessity for the sustenance of human life. A rapid increase in population and expansion in agriculture and industry in city areas increases the demand for water manifold. To meet the requirements of huge population, surface water is over drawn, resulting in drying up of nearby wetlands. Beside, unsystematically urbanized and industrialized centers are the areas of acute water pollution. Sewage and industrial effluents discharged into nearby water sources in enormous quantities causing water pollution. Finally, the main reason for the cities becoming area of massive sprawl and serious environmental problems is due to unmanaged settlements and urbanization as afore-mentioned is because government have less revenue to spend on the basic upkeep of cities and the provision of' services contrary to the rapid increase in urbanization. Also because rural areas lack basic amenities or do not have them properly developed, people there prefer migrating to cities. Their actions not only fulfill their whims but also invite unplanned settlements and urbanization, a curse for the modern world Johnson el al (1997).

2.3   Empirical Review

Several studies have shown the relationship between unplanned settlement and the environment, the work of Oyeniyi, (2011) examined the environmental hazards of varying magnitude dangerously threaten human and annual lives in most urban centers in Nigeria. The study used Abuja as the case study of the work and as such, the study revealed that, rapid urbanization. Rural-urban migration, little or no town planning efforts coupled with attitudinal irresponsibility, lack of political will, ineptitude and graft have independently and collectively created environmental challenge in Nigeria. From the study, the rate of rural-urban migration and urbanization has contributed immensely to the environmental hazards experienced in Nigeria. According to Adesoji (2011), sustainable urbanization seeks to pursue development in harmony with the protection of environmental quality. Providing an effective Ii using policy framework constitutes one of the major instruments required for sustainable urbanization. The need to stimulate progressive urbanization through adequate housing delivery thus constitutes a critical challenge to development. The work of Adesoji (2011) seeks to examine existing challenges of urbanization and the housing situation in Nigeria. The study concluded that existing policy framework guiding sustainable housing and urban development must he made relevant and effective in addressing both the present and future housing needs.

In a related study, Adiukwu (2014) studied informal settlements in Abuja, from the analytical framework poverty and homelessness. According to Adiukwu (2014), the environmental, socio-economic and cultural feature associated with population growth is highlighted to underscore time severity of issues. Adiukwu (2014) drew lessons from the experiences of squatter settlement in Brazil, India, South Africa and other developed economies to accentuate Government policies and interventions in upgrading 'slums' and 'squatters' settlements. The study suggested the needs to improve and upgrade the general quality of the physical conditions of the environment of urban slums and squatters' settlements in the developed edges of Abuja, Nigeria. In another study, Fumilayo and Ogunlade (2015) examined causes and characteristics of informal settlements in the assessment of housing quality. Funmilayo and Ogunlade (2015) identify the problems that have aided informal settlements, urbanization,

poverty, growth of informal sector, non-affordability of land and housing shortage. This implies that as the city centre continues to urbanize, there is the chance of informal settlements which can be termed as unplanned settlement. As a result, Funmilayo and Ogunlade (2015) suggested that there should be implementation of policies and planning, physical infrastructural development, social economic improvement, environment and health improvement. The various studies have shown that unplanned or informal settlement has negative implications on the environment.

3.0   METHODOLOGY

The data to be used in this research study was been obtained from two major sources. They include the primary and the secondary sources. The primary source would include reconnaissance survey, field observation, oral interview, and questionnaire administration. Residents of the study area were being interviewed. The question to he asked was been structured in a way that the field observation will go along side with it. Field observation done, ascertain the characteristics of structure, Human activities, level of environmental degradation and with it impact on the environment. The secondary sources include published and unpublished works, journals, The Abuja Master plan, the administrative maps of the FCT and Gwagwalada Area Council. Reports such as "pushing the poor": forced eviction under the Abuja master plan (Amenaghawons, 2006), Global Report on human health (UNCHS, 2007 and WHO 2003), text books and the internet.

A sampling me population was been drawn from the live selected unplanned settlements in the study area, which are Angwa Gwari, Dagiri, Tungamnaje, Angwa Tiv, Gwako. The population of the unplanned settlement is put at about 32,071 base on regular households by type of housing unit in the 2009 National Population Census under House Counting and Numbering by 10% of 32.071 is put at 3207 which from the sample frame and to get the interval you divide 10% of the population by the sample frame 3207/3207 = 10 by so doing you get an interval of 10 you pick your first point at random than you use an interval of 10 for the next point.

The sample size involved the use of table of random number in order to minimize bias. This makes it possible for each selected or chosen unplanned settlement of the targeted population to have an equal chance of being selected. Silk (1979) said 1% of the targeted population is adequate in a given sample size.

This was done by knowing the total household and persons per household, by so three digits' number was employed from the table of random number without replacement areas including, Angwa Gwari, Dagiri, Tungamaje, Angwa Tiv, Gwako. Eighty questionnaires were distributed to each sample settlement household which makes it a total of three hundred and ninety-nine questionnaires.

Simple descriptive statistical method of data analysis was use to express the scores of the variables, as it related to the percentage interval ranking the quality distribution of the basic characteristic, of the unplanned settlement. Also pie chart to show pictorial illustration was also being used to summarize the data collected too. Furthermore, the hypothetical assumption postulated will be subjected to Kruskal Wallis H - Test.

4.0   RESULTS AND DISCUSSIONS

The study examined the implication of unplanned settlement on environmental quality in Gwagwalada town. The data collected and analyzed are structured into different categories, they are: characteristics of respondents, housing characteristics, waste management, housing facilities, land use structure and accessibility.

4.1 Characteristics of Respondents

Table 4.1: Characteristics of the Respondents base on Sex, Education and Marital Status as well as occupation

	Sex	Frequency	Percentage (%)
Sex of respondents	Male	275	68.9
	Female	124	31.1
Total		**399**	**100**
Education of respondents	Literate	301	75.4
	Non-literate	98	24.6
Total		**399**	**100**
Marital status of respondents	Married	361	90.5
	Single	38	9.5
Total		**399**	**100**
Occupation of respondents	Students	49	12.3
	Civil Servants	80	20.1
	Drivers	63	15.8
	Artisans	86	21.6
	Business	121	30.2
Total		**399**	**100**

Source: field survey, 2015.

Characteristics of Respondents: The data collected from the respondents shows that 275 (68.9%) of the total respondents are male while 124 (31.1%) are female. The table further shows that 301 (75.4%) of the total respondents are literate while 98 (24.6%) are non-literate. The marital status of the respondents indicates that 361 (90.5%) are married while 38 (9.5%) are single. Also, the data revealed that49 (12.3%) of the total respondents are students, 80 (20.1%) are civil servant, 63 (15.8%) are drivers, 86 (21.6%) are artisanship while 121 respondents representing 30.2% of the total respondents are business owners.

4.2 Housing Characteristics

Table 4.2 Average Number of Rooms Per-household and construction material in the Study Area as well as sources of water in the study area

	Person per-room	Frequency	Percentage (%)
Number of person per room	1 – 2	107	26.8
	3 – 4	241	60.4
	5 and above	51	12.8
Total		**399**	**100**
Material used for construction	Concrete block	97	24.3
	Modern cement bricks	255	63.9
	Mud bricks	47	11.8
Total		**399**	**100**
Housing facility	Kitchen, toilet and bathroom	112	28.1
	Kitchen and toilet	55	13.8
	Kitchen and bathroom	41	10.3
	Toilet and bathroom	48	12.0
	None	143	35.8
Total		**399**	**100**
Sources of water	Pipe born	79	19.8
	Borehole	104	26.1
	Well	52	13.0
	Water vendor	127	31.8
	River/Stream	37	9.3
Total		**399**	**100**

Source: Field survey, 2015

Table 4.1 above shows that housing characteristics in the sampled area of Gwagwalada, FCT; the study revealed that the average number of room per household of 1-2 rooms are 107 (26.8%), 3 - 4 rooms are 241 (60.4%), while 5 and above rooms per household are 51 (12.8%). The study reveals that majority of the number of person per household fall within 3 – 4, which will result to over-crowding as mentioned in the work of (Lavry, 1991).

The data on the construction materials for building revealed that 97 (24.3%) of the houses are built with concrete blocks, 255 (63.9%) of the houses are built with modern cement bricks, while 47 (11.8%) of the houses are built with mud brick. The findings reveal that the modern cement bricks are of low standard which correlate with the work of Hardoy *et'al* (1992)

The table further shows that housing facilities, which reveals that 112 (28.1%) of the total respondents indicated that they the houses in their area has kitchen, toilet and bathroom. 55 (13.8%) indicated that the houses only have kitchen and toilet. 41 (10.3%) pointed out that the houses only have kitchen and bathroom, 48 (12.0%) of the total respondents stated that the

houses in their area have only toilet and bathroom without kitchen while 143 (35.8%) of the total respondents revealed that the houses in their areas have none of the facilities mentioned.

The table also shows the source of water supply in the study area. It revealed that 79 (19.8%) get their water from pipe borne, 104 (26.1%) get their water from boreholes, 52 (13.0%) get their water from well, while 127 (31.8%) of the total respondents gets their water from water vendor and 37 (9.3%) gets their water from streams/rivers. The findings reveal that water vendors are the major source of water supply in the study area. And this have serious implication of health as mention by (Adinna, 2001), (WHO/UNICEF, 2003).

4.3 Waste Management

4.3: Composition of Waste Disposed by Residents
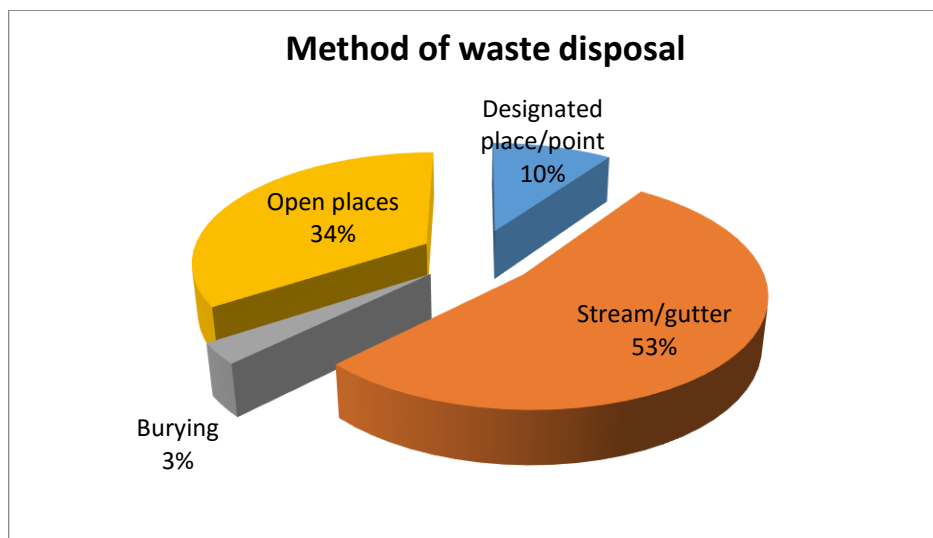

Figure 4.1: Composition of waste disposed by residents

Source: Field Survey, 2015.

Table 4.3 shows the composition of waste disposal in the study area. The data collected regarding waste management shows that 39 (9.8%) of the total respondents indicated that they dispose their waste in designated place/point. 211 (52.9%) of the total respondents indicated that they dispose their waste in streams/gutter, 12 (3.0%) of the total respondents indicated that they dispose their waste by burying them a while 137 (34.3%) dumped their waste in open places. the result is also presented on pie chat (figure 4.1). The findings reveal that waste disposal through streams/gutter is the highest with 52.9% of the total respondents while duping of waste in open places become second with 34.3%. This further reveals why flooding always occur in the study area as a result of blockage of water channels, which corroborate with the work of Oyeniyi, (2011).

4.4: Land Use Type

Table 4.4: Respondents on Land Use Type in the Study Area

		Frequency	Percentage (%)
Land use	Residential	178	44.6
	Industrial	21	5.1
	Commercial	88	22.1
	Public	46	11.5
	Transport	66	16.7
	Recreation and open space	0	0
Total		**399**	**100**

Source: Field survey, 2015.

Table 4.4 above shows the land use type in the study area. 178 (44.6%) of the total respondents indicated that the land use type in their area is residential, 21 (5.1%) said it industrial, 88 (22.1%) of the respondents said the land use type in their area is commercial, 46 (11.5%) of the respondents said its public while 66 (16.7) of the total respondents said the land use type in their area is mainly transport. None of the respondents said the land uses in their area are recreational and open space. The study reveals that residential land use is greater than other land uses which have serious consequence over time most especially that absence of recreation and open space for proper ventilation.

4.6   Test of hypothesis

The calculated value is 0.8 and the significant level is 0.05 with degree of freedom of 4, the critical value is 9.488, which is crystal clear that the calculated value is less than critical value. Therefore, H_0 is rejected and H_1 accepted. The alternative hypothesis states that there is significant variation in methods of household waste disposal in Gwagwalada town. This revealed also that the environment of the sampled points is dirty and land pollution which would lead to some environmental hazard and pose environmental health related diseases to human as mention in the work of Johnson *et'al* (1997) that unplanned urbanization and settlement have heap of environmental problem mostly waste disposal which have negative effect on health. He further stated that, unsystematically urbanized and industrialized centers are the areas of acute water pollution. Sewage and industrial effluents discharged into nearby water sources in enormous quantities causing water pollution.   See appendix 1 for Computation of Kruskal Wallis H-Test for Hypothesis.

5.0   CONCLUSION AND RECOMMENDATIONS

Based on the findings of this study, the study concluded that majority of the respondents in unplanned settlements are have long distance between them and refuse collection point. Also, the study concluded that most of the houses in the area are not up to standard with just few houses having kitchen, bathroom and toilet altogether are not built on properly allocated land. Finally, the study concluded that most unplanned settlement lack pipe borne water.

Following the findings of the study and the above conclusion, the study advanced the following recommendations:

(i). The FCT management should reorganize and plan these areas captured in this study to ensure that the houses are in accordance with the master plan of FCT.

(ii). That the refuse collection bins should be provided at strategic locations to ease waste of collection in the area.

(iii). That the government should urgently tackle the issue of water supply by connecting all the areas to FCT water board water line

(iv). Unplanned areas be cleared to provide space for roads, schools, open spaces and community services;

(v). That there should be generation of urban employment opportunities through government policies and programs as another long lent policy issue aimed at preventing the development of slums since the quality of life in the urban areas cannot he significantly improved in cities without increasing employment opportunities for urban dwellers.

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APPENDIX I

Computation for Kruskal Wallis H-Test for Hypothesis

No of Resp.	Arrangement from Lowest – Highest	Group	Rank	Rank of Angwa Gwari A	Rank of Dagiri B	Rank of Angwa Dodo C	Rank of Angwa Tiv D	Rank of Gwako E
25	3	C	1			1		
75	5	C	2			2		
30	7	B	3.5		3.5			
10	7	A	3.5	3.5				
7	8	D	5				5	
10	10	A	8	8				
55	10	B	8		8			
27	10	C	8			8		
7	10	D	8				8	
15	10	E	8					8S
10	12	E	11					11
51	15	B	12		12		13.5	
24	20	D	13.5					

3	20	E	13.5					13.5
5	24	C	15			15		
20	25	A	16	16				
79	27	B	17		17			
28	28	D	18				18	
8	30	A	19	19				
10	51	C	20			20		
87	55	B	21		21			
12	75	A	22	22				
10	79	D	23				23	
20	87	E	24					24
Sum of Rank for the group Rj		R = 24						
			$R_1 = 68.5$	$R_2 = 61.5$	$R_3 = 64$	$R_4 = 49.5$	$R_5 = 56.5$	
Size of group n		n = 24	$n_1 = 5$	$n_2 = 5$	$N_3 = 6$	$N_4 = 4$	$N_5 = 5$	

$$H - 12 \qquad \sum \frac{Ri^2}{n_i} \ldots\ldots\ldots\ldots\ldots - 3(n+1)$$
$$n(n+1)$$

Alpha level 0.05 that is 95%

Degree of freedom 5-1 = 4.

$H = 12/24 (24+1)\ 68.5^2/5 + 61.5^2/5 + 64^2/6 + 49.5^2/4 + 56.5^2/4 - 3(24+1)$

$= 12/600 \quad 938.5 + 756.5 + 682.7 + 612.6 + 798.1 - 75$

$= 75.768 - 75$

$= 0.768$

$= 0.8$

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