Towards Achieving Urban Environmental Sustainability in Lokoja Metropolis, Kogi State Nigeria

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Abstract

The rapid increase in population, coupled with increase in the rate of urbanization, had lead to unplanned and uncontrolled expansion of Lokoja town. Consequently, this scenario has caused tremendous pressure on civic infrastructure systems, generated housing problems and unkempt environment among others. This study was carried out with the aid of Survey Research Design (SRD) using structured questionnaire, observation, photo-snaps, building demographic and housing facility survey. Using random sampling technique, every 5th house in the five districts involved in the study was picked for interview, focusing on building characteristics, condition of sanitary and infrastructural facilities as well the quality of the environment. Findings revealed that the study area exhibit slum condition which has un-denied consequences on the socio-economic lifestyle, health of residents and the general outlook of the environment. On this basis, upgrading program through the provision Urban Basic Services (UBS) and improved sanitation strategies were recommended for sustainable management of the area. These include, among others, public enlightenment campaign, environmental education and reintroduction of effective sanitary inspection schemes.

Keywords: Environmental sustainability, uncontrolled expansion, slum, UBS, sanitary inspection.

1.0   INTRODUCTION

The urban environment is a living organism; people react with it, and in turn it reacts with the people. It is the mirror with which we reflect our beings. Therefore, to look at our cities is to see into our future (UN-Habitat, 2006). What the present and the future of our cities hold for us differ from place to place and time to time. Urban cities attest to rapid urbanization particularly in the developing countries. Available statistics evidenced that 43.1% of the population was urban in 1991. It is forecast to be 63.0% in 2030. The urban growth rate is 4.5% while the rural rate is 0.9%. Already some 50.0% of the world's population lives in cities, within 25 years it will be 75.0%. Africa, currently the least urbanized continent, will have a majority of its population living in cities within 20 years. It is clear that the future of the world lies in cities. This is where the battle for sustainable development will be won or lost (World Bank, 2001). Urbanization and its sustainable management are not without externalities. The World Bank (1994) lamented that, one billion people mostly in the developing countries do not have access to clean water, 1.7 billion people do not have access to sanitation, and 2.3 million children die annually because of diseases associated with this lack of water and sanitation (Owoeye and Sogbon, 2012). With this situation, about 90 million people are been added to the global population every year again, mostly in developing countries. This is a challenge to humanity.

Nigeria as a developing country has her own share of these urban pathologies. Though statistics available are not site-specific, but what is available is equally frightening. As identified in World Bank (1995), urban poverty in Nigeria has increased from 17.0% in 1980 to 58.0% in 1996. Between 1980 and 1985, it rose from 17.6% to 37.8%. By 1996, 19 million people were poor. Out of this figure, about 11 million were estimated to be moderately poor, and 8 million people were extremely poor which increase from 3.1% to 25.2% within fifteen years between 1980 and 1995. The dichotomy between urban and rural poverty rates in Nigeria is small; 58.0% of urban dwellers are poor as compared to 60.0% in rural areas. This situation has created a plethora of undesirable environmental, socio-economic and institutional dislocation in our urban slum neighborhoods. Our urban slum environments are daily confronted with social disequilibrium and its fall out of social maladies such as unemployment, early sex, prostitution, verbal hostilities and shaming, vandalism, pollution, environmental decay, high crime rate. According to Obayomi (2012), violence of extra ordinary proportions and socio-economic inequalities are other social brown fields found in our urban slums. The response of planners to urban renewals is now becoming people-centered. They are now increasingly calling for a fast shift from the old paradigm of managing urban slum because the best economy of a city is the care and culture of men (UN-Habitat, 2006). The implication of this, however, simply means total clearance of urban slum, putting fresh coat to blighted neighborhoods or otherwise called Urban renewal.

Generally, Lokoja have been experiencing a large influx of population from its surrounding regions. This had led to rapid growth and expansion that had left profound changes on the landscape in terms of land use and land cover expansion without due consideration to interrelated factors such as transportation, employment, health and other livable factors. The city is experiencing expansion in all directions, resulting in large scale urban sprawl and changes in urban land uses. This is noticed in the city fringes, which have increased the built up area

and changes in land use patterns. The effect of this situation has been loss in valuable agricultural lands, natural forest cover and anthropogenic encroachment on fadama lands as well as loss of surface water bodies and biodiversity. On this note, the study is out to identify the existing environmental conditions of the slum area in Lokoja. It also examines the socio-economic activities of the people in the area as well as investigates government involvements over the years towards the sustainable development of the area.

2.0   CONCEPTUAL ISSUES AND LITERATURE REVIEW
2.1.0   Slum Descriptions and Definitions
Slum is a heavily populated urban area characterized by substandard housing and squalor. This definition encapsulates the essential characteristics of slums to include high densities and low standards of housing (structure and services), and squalor. The first two criteria are physical and spatial, while the third is social and behavioral (Obayomi, 2012). This spread of associations is typical, not just for the definition of slums but also of our perceptions of them. Definition of slum includes the traditional meaning; that is, housing areas that were once respectable or even desirable, but which have since deteriorated as the original dwellers have moved to new and better areas of the cities. The condition of the old houses has then declined and the units have been progressively subdivided and rented out to lower-income groups. Typical examples are the inner-city slums of many towns and cities in both the developed and the developing countries. Slums, however, have included the vast informal settlements that are quickly becoming the most visible expression of urban poverty in developing world cities, including squatter settlements and illegal subdivisions. The quality of dwellings in such settlements varies from the simplest shack to permanent structures while access to water, electricity, sanitation and other basic services and infrastructure is usually limited. Such settlements are referred to by a wide range of names and include a variety of tenure arrangements.

The term *slum* is considered an easily understandable catch-all; it disguises the fact that within this and other terms lay a multitude of different settlements and communities. Hence, slums can be divided into two broad classes – Slum of Hope and Slum of Despair.

Slums of Hope: These are 'progressing' settlements which are characterized by new self-built structures, usually illegal (e.g. squatters) that is in or has recently gone through a process of development, consolidation and improvement.

Slums of Despair: These are 'declining' neighbourhoods in which environmental conditions and domestic services are undergoing a process of degeneration. Unfortunately, the history of inner-city slum areas in Europe, North America and Australia has exhibited this in the absence of appropriate interventions. Slums of hope may all too easily yield to despair, a self-reinforcing condition that may be maintained for a very long time.

2.2.0   Slum Characteristics
A review of the definitions used by national and local governments' statistical offices and institutions involved in slum issues as well as public perceptions reveal the following attributes of slums:
(i)   Lack of basic services
This is one of the most frequently mentioned characteristics of slum definitions worldwide. Lack of access to sanitation facilities and safe water sources is the most important feature as supplemented by absence of waste collection systems, electricity supply, surface roads and footpaths, street lighting and rainwater drainage.
(ii)   Substandard (or illegal) housing and inadequate building structures
Many cities have building standards (or codes) wherein minimum requirements for residential buildings are specified. Slum areas are associated with a high number of substandard housing structures, often built with non-permanent materials unsuitable for housing. Factors contributing to a structure being considered substandard are, for example, earthen floors, mud-and-wattle walls or straw roofs. Various spaces and dwelling placement bylaws may also be extensively violated.
(iii)   Overcrowding and congestion
Overcrowding is associated with a low space per person, high occupancy rates, cohabitation by different families and a high number of single-room units. Many slum dwelling units are overcrowded, with five and more persons sharing a one-room unit used for cooking, sleeping and living.
(iv)   Unhealthy living conditions and hazardous locations
Unhealthy living conditions are the result of a lack of basic services with visible open sewers, lack of pathways, uncontrolled dumping of waste, polluted environments, etc. Houses may be built on hazardous locations or land unsuitable for settlement such as floodplains, proximity to industrial plants with toxic emissions or waste disposal sites, and on areas subject to landslip. The layout of the settlement may be hazardous because of lack of access ways and high densities of dilapidated structures.
(v)   Insecure tenure and irregular or informal settlements
A number of definitions consider lack of security of tenure as a central characteristic of slums, and regard lack of any formal document entitling the occupant to occupy the land or structure as *prima facie* evidence of illegality

and slum occupation. Informal or unplanned settlements are often regarded as synonymous with slums. Many definitions emphasize both informality of occupation and the noncompliance of settlements with land-use plans. The main factors contributing to non-compliance are settlements built on land reserved for non-residential purposes, or which are invasions of non-urban land.

(vi)   Poverty and social exclusion

Income or capability poverty is considered, with some exceptions, as a central characteristic of slum areas. It is not seen as an inherent characteristic of slums, but as a cause (and, to a large extent, a consequence) of slum conditions. Slum conditions are physical and statutory manifestations that create barriers to human and social development. Furthermore, slums are areas of social exclusion that are often perceived to have high levels of crime and other measures of social dislocation. In some definitions, such areas are associated with certain vulnerable groups of population, such as recent immigrants, internally displaced persons or ethnic minorities.

2.3.0   Urban Renewal as a Concept

In addressing the problem of slum, Urban Renewal has been suggested by several scholars as a potent tool for slum treatment and in fact, a mean of restoring life back to defected parts of an urban centre. Owoeye and Omole (2012) described urban renewal as a process by which outdated structures and degraded environment or area designated as slum, blight or squalor are altered and replaced. It is a process aimed at upgrading the physical environment of the existing settlement, particularly to eliminate, ameliorate or reduce the blight, slum or the squalor of the sub-urban development and other physical planning in our cities (Adeyanju, 2000; Owoeye, 2013). Urban renewal has become a key theme amongst built environment professionals in developing countries. This emerged from the rapid population growth and urban sprawl experienced in most developing countries such as; Nigeria, India, Philippines, China, Brazil, Hong Kong and Bangladesh. In addition, it is noted that most urban centers in Nigeria were planned before the establishment of regional town planning and urban development (Oyesiku, 2011). This has increasingly limited infrastructural innovation, urban management and integration of sustainable urban practice, necessary for 21st century urban development. On the other hand, urban renewal in England evolved after the Second World War, as a result of post war decline of industries (Macdonald, et al 2009). The urban centers in England have been gradually streamlined to suit the socio-economic challenges of the nation in the 21st century. Although Africa has one of the lowest Human Development Index (HDI) in the world, it is estimated that within the next two decades, 87 percent of the population growth will take place in urban areas of the continent (Daramola and Ibem, 2010). Nigeria, as one of the economic giants in Africa with population of over 158 Million is currently overwhelmed by rapid urbanization, poor infrastructure and ever-increasing number of urban slums across the country. The urban infrastructural decay such as poor road network, lack of portable water supply, bad drainages and canals, poor housing and poor waste management systems have increased the environmental threat within the urban populace (Gbadegesin and Aluko, 2010). Furthermore, Hayhoe, et al (2010) noted that many large cities are already subject to a number of stressors affecting the quality of their air and water, the health and welfare of their population, the availability of key resources such as energy and water, and the cost of maintaining and repairing their infrastructure.

It has being noted that urban renewal projects have faced great challenges in most urban centers of Nigeria. This has been attributed to inadequate urban renewal policies as well as poor action plans on urban regeneration projects. The willingness to accept renewal projects by urban settlers is attributed to poor communication amongst stakeholders and concerned residents. Considering the public perspective, the general concern is how to adapt into the government renewal plans without imposing further poverty, particularly those living in urban slums. Although, building surveyors' decision on renewal plan are based on building conditions and sustainable architectural merits. Town planners have additional focus on historical image and social network of the affected area (Chan, 2007). This further identifies the importance of creating a balance amongst local land owners, residents, stakeholders and their respective ecosystem.

2.3.1   Approaches to Urban Renewal Concept.

According to No. 4 Rule of the amendment to the statute for Urban Renewal, there are three approaches that can be adopted to achieve the goals of the concept. They include:

(i) Reconstruction/Redevelopment Approach: Refers to demolishing the original buildings in the renewal area, and reconstructing new buildings and accommodation, improving public facilities within the renewal area, and allowing the land use or usage density to be altered. This approach can be employed when the level of decay and deterioration is high and also when there is enough money to finance the project and the willingness by the people, to support the project.

(ii)   Refurbishment/Rehabilitation/Renovation Approach: Refers to the remodeling and repairing of the building within the renewal area or expanding its facilities and improving public facilities within the region. On the other hand this approach involves repair and upgrading of structures, amenities and facilities, to extend the life span of properties. At the macro level, it may involve some levels of clearance in order to put in some community facilities such as schools, open spaces, as well as the demolition of a few and selected buildings in

order to give way to the provisions of facilities and infrastructure which the community involved lacks.

(iii)   Maintenance/Conservation Approach: Refers to enhancing the land usage and building management within the renewal area, improve the public facilities and maintaining them in a decent condition. In this approach, there is campaigning, educating and enlightening of the inhabitants on how to keep the environment clean. The idea is that not only the structures but both the fauna and flora environment e.g soil, air and sea should be protected foe betterment.

(iv)   Economic Revitalization: This is a long term renewal strategy that borders on methods to prevent slum formation such as urban employment generation. Onokerhoraye (1995), cited in Owoeye (2012), argued that the quality of life and urban environment could not be significantly improved in Nigerian cities without increasing employment opportunities for urban dwellers. It therefore stands as a mean to alleviate poverty rate in our cities. Other issue considered by this approach includes reduction in urban rate of population growth as a way to decongest overcrowded areas and reduce high resource pressure.

3.0   RESEARCH SETTING, MATERIALS AND METHODS

Lokoja town is located in Kogi state, of the old Kabba province at the confluence of Rivers Niger and Benue. The town lies on the western bank of the river Niger at an altitude of 45 - 125 meters above sea level. At the northern part the town is dominated by a high plateau, the Patti Ridge, which reaches an altitude of 400 meters (Lokoja Master Plan, 1974 – 2005; Alabi, 2007a). Geographically, Lokoja is located between Latitude 70°45[1] north of the equator and Longitude 60°45[1] east of the Greenwich Meridian. Lokoja town, which is also the headquarters of Lokoja Local Government Area, is centrally and strategically located. It serves as the gateway to the Northern and the Southern parts of Nigeria. It shares common boundaries with Koton-Karfe (Kogi LGA), Kabba/Bunu, Ajaokuta, Bassa and Adavi Local Government Areas (Alabi, 2007b).
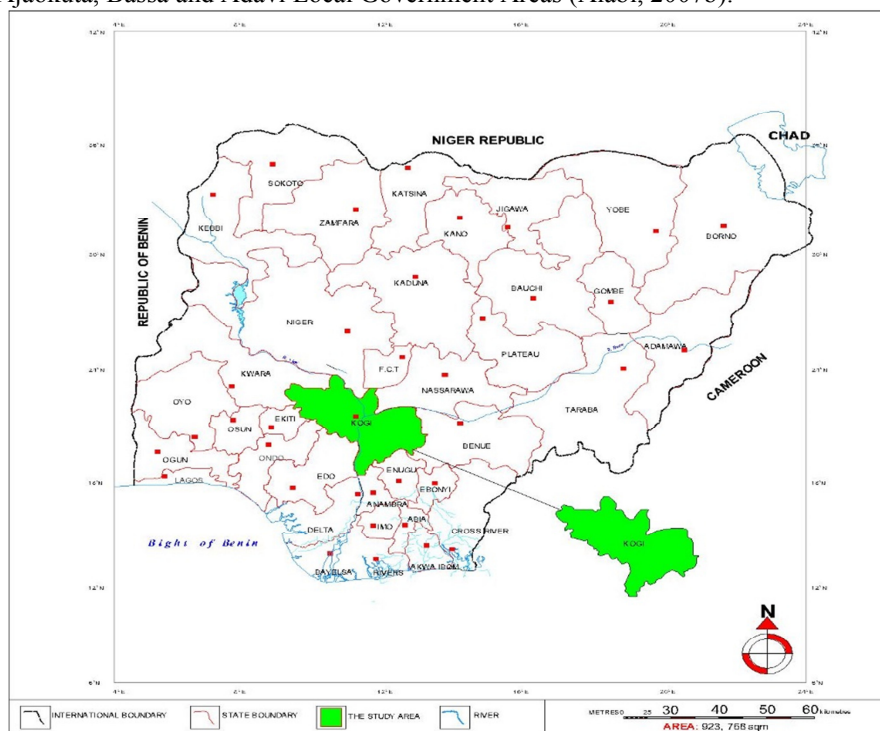

Figure 1: Map of Nigeria showing Kogi State.

Source: Ministry of Environment and Physical Development, Lokoja (Reproduced by Authors, 2012).

The location chosen for the study is Adankolo; a slum settlement situated along Chief Olusegun Obasanjo Road, Lokoja. It is on the right hand side coming from Stella Obasanjo library or Government house junction. It is about 2000m in length and more than 300m in width where it is bounded by River Niger. It is an unplanned neighborhood characterized by high residential density. It has a population of 10,800 persons (NPC, 2006). The climate is characterized by wet and dry season. *AW* type of climate as classified by Koppen and situated in Guinea Savanna Region. The annual rainfall is between 1016mm and 1524mm with the mean annual temperature of 27.7°C.
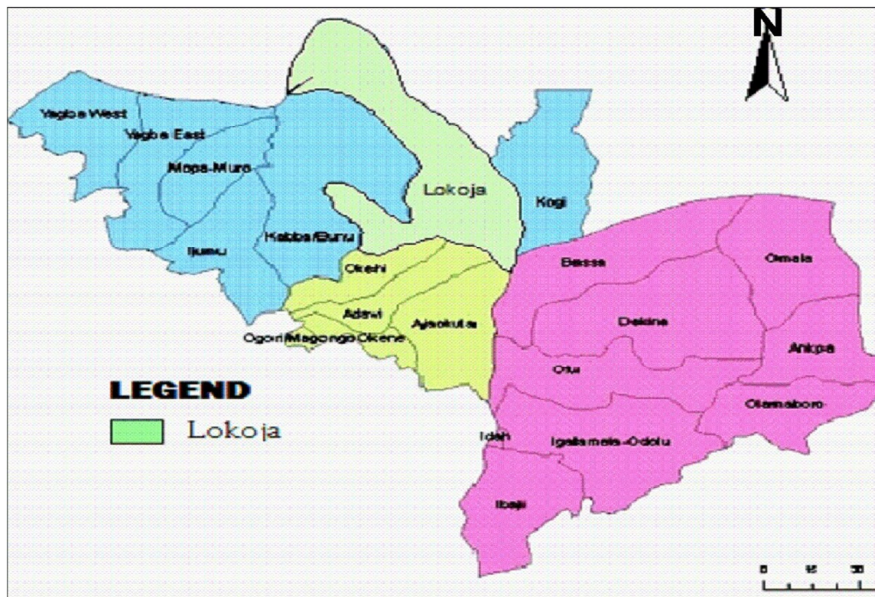
Figure 2: Map of Kogi State showing Lokoja.

Source: Ministry of Environment and Physical Development, Lokoja (Reproduced by Authors, 2012)

Figure 3: Map of Lokoja showing Adankolo (The Study Area)

Source: Ministry of Environment and Physical Development, Lokoja (Reproduced by Authors, 2012).

The population of Adankolo settlement given by the National Population Commission (NPC, 2006) was 10,800 persons. This was projected to 2012 to give a total of 12,524 inhabitants. Meanwhile, the sample size used in the study was based on building demographic survey carried out in the area. The housing units counted were 720 with the occupancy ratio in the average of 15 persons per household (Lokoja LGA, 2012). The total number of residential housing units in the area was used as target population since the questionnaires were administered on household head per building selected out of which a sample size of 25% was taken. This amounted to 180 respondents. For easy distribution of the questionnaires, the study area was clearly delineated into five districts namely: Adankolo Junction, Adankolo Estate, Adankolo Market Street, Hausa Street and Government Day Secondary School Street. With this, respondents were randomly selected on house-head basis at every 5th building using systematic random sampling technique.

4.0   RESEARCH FINDINGS AND DISCUSSION
4.1   Socio-Economic Characteristics of Respondents.

As shown in Table 1; the 170 survey questionnaires were administered mainly to the adults in the area, out of which 62.4% were males while 37.6% were females. Meaning only 18 years of age and above were sampled. Thus, the age group 18-35 years were 48.2% of the respondents, age group 36-60 years were 41.2% while age group 60 years and above were 10.6%. However, 61.2% of the respondents were married, 30.6% were single, only 3.5% of the respondents were divorced and 4.7% were either widow or widowers. Majority (about 40.0%) of the respondents were illiterates, who have no benefit of formal education.

Table 1: Socio-Economic Characteristics of Respondents

Variable	Frequency	Percentage
Sex Distribution		
Male	106	62.4
Female	64	37.6
Total	**170**	**100.0**
Age Distribution		
18 – 35 years	79	46.2
36 – 60 years	70	41.2
60 years & above	21	10.6
Total	**170**	**100.0**
Marital Status		
Married	104	61.2
Single	52	30.6
Divorced	6	3.5
Widow/Widower	8	4.7
Total	**170**	**100.0**
Educational Level		
Primary	39	22.9
Secondary	27	15.9
Technical College	20	11.8
Tertiary	16	9.4
No Formal Education	68	40.0
Total	**170**	**100.0**
Occupational Pattern	10	05.9
Transportation	20	11.8
Farming	80	47.1
Trading	15	08.8
Civil Service	15	08.8
Craftsmanship	30	17.6
Unemployed	**170**	**100.0**
Total		

Source: Field Survey, 2012

Meanwhile, large number of those who claimed to be literate does not have more than primary, or at most secondary, education. As shown in the Table, 22.9% had elementary education while only 9.4% had tertiary education. From this trend, however, it is assumed that a reasonable number of those who claimed to be literate would understand the importance of a healthy environment and thereby campaigning to others for the need to manage their environment, but this never happened. Majority of the respondents engaged in trading, accounting for 47.1% of the total 170 respondents interviewed, 17.6% were unemployed, followed by 11.8% who were farmers. Only 8.8% of the respondents were civil servant. This of course determines their level of income, sense of environmental education and understanding of personal hygiene. Table 2 shows the pattern of household-size in the study area. From the table, about 9.4% amounting to 16 respondents has household-size of 2 - 6 persons, about 23.6% has a household-size of 6 - 10 persons while majority (about 51.1%) have between 10 and 15 household-size. People in this category mostly live in low standard and congested housing condition.

Table 2: Household-size of Respondents

Household Size	Frequency	Percentage
2 - 6 persons	16	09.4
6 – 10 persons	40	23.6
10 – 15 persons	87	51.1
15 persons and above	27	15.9
Total	**170**	**100.0**

Source: Field Survey, 2012.

4.2.0   Housing Characteristics and Building Conditions

This section examines the importance of housing to man as an essential need and a prerequisite for the survival of man after food. This involves measuring the habitability of the respondents in the study area. The building characteristics like ownership of building, household size, materials used for construction and age of building, need to be examined. As shown in Figure 4; about 27.64% own the buildings they live-in, about 55.3% are rented buildings while 12.40% of the respondents inherited the buildings they occupy. Others, accounting for 4.70%, live in the area temporarily either as squatters or visitors.
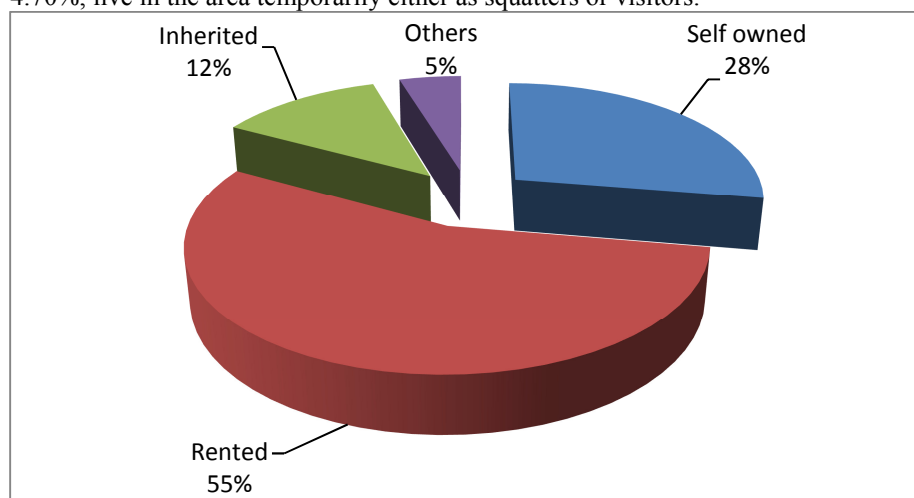

Figure 4: Ownership Status of Buildings in Adankolo
Source: Field Survey (2012)

Figure 5 shows the age distribution of building investigated in the study area. Majority (over 40.0%) of the respondents live in buildings erected between 16 – 20 years ago. Most of these building are in poor condition, either lack household facilities or dilapidated. Example of such building is shown in Plate 1.Only few (about 10.0%) live in houses build within 5 years ago which is believed to be strong; although some do not have required facilities. The type of building materials mostly used in the area is shown in Table 3. The materials shown in the table reveal the quality of housing in the study area. The low quality of building materials used for construction and the inadequate technology as well as poor planning standards of handling the building components are responsible for such categories of building found in the area. About 41.2% of the buildings are constructed with mud, 29.4% with cement block but with low technology, while 11.8% and 17.6% are constructed with timber and sun dried materials respectively.
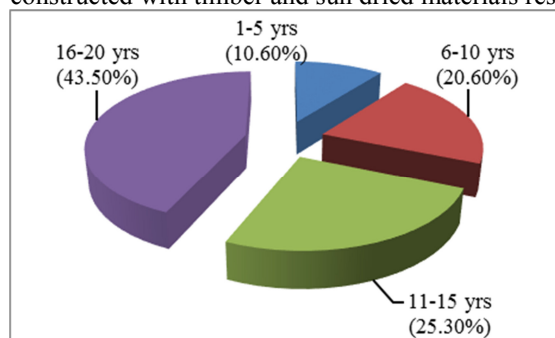

Figure 5: Age of Buildings in Adankolo Area.
Source: Field Survey (2012)

Plate 1: Example of dilapidated building identified in the Area
Source: Field Survey (2012).

Table 3: Building Materials used for construction in the Study Area

Construction materials	Frequency	Percentage
Mud material	70	41.2
Timber material	20	11.8
Sun dried material	30	17.6
Cement block	50	29.4
Total	**170**	**100.0**

Source: Field Survey (2012)

4.3.0 Condition of Infrastructural Facilities

Infrastructural facilities examined in the area, essentially, focus on sanitary services particularly sewage and refuse disposal methods, water supply source and management, and drainage condition. Plates 2 and Table 4 illustrate the typical condition of these facilities in the study area.

Plates 2: Condition of Drainage Facilities and Poor Disposal Method of Solid Waste in the Area
Source: Field Survey (2012)

As clearly shown in Table 4, the main source of water supply is largely through underground well water; about 5.9% had access to pipe borne water while less than 10.0% enjoyed water boreholes. Over 20.0% got their own water from either rain or River Niger. These sources of water pose challenges to the people, not only because of the sources but mostly because the water is not always treated before use. The condition of waste disposal in the area is generally absurd and highly indiscriminate. Findings revealed that majority of the respondents (about 50.0%) dump their refuse on open grounds or drainages, thereby making the place an eye sore and the environment reeking. About 28.2% disposes theirs through burning consequently polluting the environment and the ozone layer which poses dangers to lives. Only 7.1% of the respondents have access to waste management services. This is clearly illustrated in plate 2.

Table 4: Condition of Water Supply and Waste Disposal methods in the Study Area

Facilities	Frequency	Percentage
Source of water		
Pipe born	10	5.9
Boreholes	15	8.8
Hand-dug Well	65	38.2
Rivers/Stream	25	14.7
Rain	20	11.8
Water Vendors	35	20.6
Total	**170**	**100.0**
Regularity of Water treatment	**Frequency**	**Percentage**
Weekly	11	6.5
Monthly	25	14.7
Yearly	40	23.5
None	94	55.3
Total	**170**	**100.0**
Waste Disposal Methods		
Dung hills	85	50.0
Burning	48	28.2
Sanitation officials	12	07.1
Other means	25	14.7
Total	**170**	**100.0**

Source: Field survey, 2012

5.0   POLICY IMPLICATIONS AND RECOMMENDATIONS

Based on major findings in the study, the following recommendations are put forward as policy guidelines toward a sustainable management of the study area. There is general need for upgrading the study area through rehabilitation/renovation approach as well as provision of urban basic services. This simply involves rejuvenation of affected parts of the area by retaining some structures that are retainable; rehabilitate old buildings and structures, upgrading the roads that are not tarred and introduction of more roads with a view to open up the blighted areas. It also involves improving the existing infrastructures as well as providing new ones. Secondly, the generation of employment opportunities, otherwise known, as economic revitalization is equally needed in the area. This will help to improve the level of capital base and potential for capital formation among the residents that will enhance their ability to provide basic household facilities and proper maintenance of buildings. This approach offers future proceed that can sustain any improvement effort that may be put in place to revive the area. Similar to this is the use of effective public enlightenment strategy to create public awareness and community participation in area of personal hygiene and need for improving sanitary condition in the area. According to Owoeye and Sogbon (2012), an enforcement of environmental sanitation laws on citizens has a little prospect of success without an enlightened public. The starting point therefore is to educate the people on the dangers of poor sanitation on their health and the need for improved healthy environment for human existence.

     Besides, sanitary services in the area need urgent attention, particularly water supply and waste disposal facilities. In this regard, mini-water-works and boreholes are to be provided in strategic places in the area under the umbrella of Urban Basic Service Programme. The efforts of the Waste Management Authority should be supported through adequate funding so that facilities for effective services to more areas can be enhanced. To make this effective, Local Government Authority should be called to their primary responsibility of ensuring regular evacuation of refuse. However, the reintroduction of old sanitary inspectors would be needed to reawaken the unconcerned attitude of the residents towards sanitary laws and regulations. Such inspections should be made without prior notice so that the people can always be prepared to keep their surroundings clean at all times. However, punitive measure on any culprit who violates such orders should be put in place. It is equally recommended that regular dredging of River Niger should be carried out to check the menace of seasonal problem of flooding that causes panic to the residents around the area. Thus, the state government is to support the initial efforts of the Ecological Department of the Federal Ministry of Environment in redeeming the sanitary image of the area. The assistance of international bodies like UNICEF and the UN-Habitat is requested for an effective and enduring renewal programme to be carried out in the area.

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