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Bima Journal of Science and Technology, Vol. 4(2) Dec, 2020 ISSN: 2536-6041

AN OVERVIEW OF URBAN SLUM GROWTH AND ENVIRONMENTAL DETERIORATION ON BULBULA AREA OF IBRAHIM KATSINA WARD, JOS, PLATEAU STATE

[1]EMMAMOGE OREWERE, [2]RUTH RAKIYA MARTINS AND [3]ATOMEN EDOM

[1]Department of Horticulture and Landscape Technology, Federal College of Forestry, Jos, Plateau State, Nigeria
[2]Department of Architecture, Bingham University Karu, Nigeria
[3]Nigerian Building and Road Research Institute, Jos, Nigeria

Corresponding Author: emmamoge3603@gmail.com

ABSTRACT

The Sustainable Development Goals adopted by the United Nation on the provision of clean water and sanitation (goal six) and sustainable cities and communities development (goal eleven) targeted for year 2030 and Nigeria's Vision 20:2020 Economic Transformation Blueprint cannot be overemphasized. The study is aimed at reviewing the growth of slums and environmental deterioration on Bulbula Area of Ibrahim Katsina Ward Jos, Plateau State. Its objectives are to identify the causes of slum growth and its negative effect on the landscape and find out strategies for solving the problem of environmental deterioration in slum communities. The methodology employed for this study is physical observation, oral interview and the review of related literature. Purposive random sampling technique was used to identify 40 houses under the study area. The study recommends that slum upgrading; planning and implementation should be inclusive of the input of urban designers working closely with slum dwellers, governments and other relevant stakeholders to ensure that prevalence of slums are reduced to the barest minimum and sustainable development is ensured.

Keywords: Bulbula, Deterioration, Environmental, Growth, Plateau, Slum,

INTRODUCTION

Increased urbanization is a major concern for less developed countries since they often lack the infrastructure and basic services (e.g., water, sanitation and healthcare) necessary to absorb the increasing number of people (Mahabir, *et al*., 2016). Unable to adequately meet the demands of the growing population, slums have emerged and continue to proliferate in many less developed countries. Currently, about 1 billion people live in slums, with most slum dwellers located in less developed countries, which accounts for about 30% of their urban population (Mahabir, et al., 2016). The number of slum dwellers is projected to increase to 2 billion by 2030 and to 3 billion by 2050 if current trends persist (Mahabir, et al., 2016).The rise of urban slum in developing countries like Nigeria is a thing of worry and concern for her national government and all stakeholders (Pat-Mbano, et al., 2012). Consequently, proliferation of slums areas are seen as major challenge to development in the developing countries. This is because slum areas are often characterized by appalling living and environmental conditions which frequently result to inadequate water supply, squalid conditions of environmental sanitation, breakdown or non-existence of waste

disposal managements, dumping of refuse on unkempt environments, poor road network, lack of proper refuse disposal, overcrowded and dilapidated habitation, hazardous location, insecurity of tenure, and vulnerability to serious health risks (Lekwot, et al., 2015; Adeleye, et al, 2016). All challenges that are associated with Slum areas are seen as an impediment undermining the actualization of goal number 6 and 11, target of the Sustainable Development Goals adopted by the United Nation for year 2030 and Nigeria's Vision 20:2020 Economic Transformation Blueprint cannot be overemphasized (Sustainable Development Goals, 2015).

Nigeria has also had its own fair share of slum proliferations which are evident in urban centres across the country. According to Mohd Sharif, (2020), Nigeria is ranked as one of the countries with high slum occurrence. Olotuah (2006) opined that 75% of dwelling units in Nigeria urban centres are substandard and these dwelling units are cited in slums. Development of slums in Jos originated from the economic growth of the city which generated continual migration of labourers and traders from the North and South of the country into the booming tin mining region at the wake of twentieth century; thereby leading to development of sub-standard, unplanned and uncontrolled housing. The settlements continued to develop, especially in the areas reserved for traditional settlements, with limited management and control thereby generating environmental deterioration, inadequate housing and poor infrastructure, hence the growth of slum areas at the different locations in the city Oladosu, et al., (2015). Slum growth in Nigeria are perpetuated by numbers of forces such as rapid rural-urban migration, urban poverty, high urbanization and urban population explosion, lack of tenure security and globalization among others. As averred by (Babanyara, et al., 2010; Pat-Mbano, et al., 2012 and Mahabir, et al., 2016) environmental deterioration in slum has negatively impactedon the landscape such as mountainous heaps of solid waste that deface Nigerian cities, environmental pollution (poor sanitation, inadequate solid waste disposal, effluent discharge, rapid and unplanned urbanization, mining, and increasing use of chemical fertilizers and insecticides), lack of proper refuse dumps and sewerage system and physical exposure to natural and manmade disasters.

Although widely studied, most work on slumshas focused on one of three main lines of enquiry: socio-economic and policy (Mahabir, et al., 2016; Kigun, et al., 2016) physical manifestations, urban renewal and city decay (Pat-Mbano, et al., 2012; Morakinyo, et al., 2012; Lekwot, et al., 2015; Daniel, et al., 2015; Emma-Ochu, et al., 2016; Adeleye, et al, 2016) and, more recently, urban slum and public health (Akinwale, et al., 2013; Corburn, et al., 2020).The above different themes are all interrelated at various levels and examined using interdisciplinary approaches. However there are little or no known studies to review the growth of slums and how they contribute to environmental deterioration on the Jos Plateau. This study therefore intends to fill the gap that exists. The aim of this study is to review the growth of slums and how they contribute to environmental deterioration on Bulbula Area of Ibrahim Katsina Ward Jos, Plateau State. The objectives of the study are to: (1) examine the environmental deterioration in slum settlements, (2) identify strategies for solving the problem of environmental deterioration in urban slum settlements. The study contributes to literature and knowledge on observed

environmental deterioration in urban slum settlements. It will be of good importance to those in the academia and to construction professionals such as urban designers, town planners etc.

MATERIALS AND METHODS

Historical Background and Geographical Location of Study Areas

Bulbula got its name from the word *"bulla"* meaning finding a way out. Bulbula is named after it was discovered that water gushed out of a crack in between some rocks around Ibrahim Katsina Ward in Jos North Local Government Area of Plateau State (Figure 1). Currently, the area where the rock is found is called Bulbula (Umar, 2020).The major tribes in the area are: Hausa and Fulani.

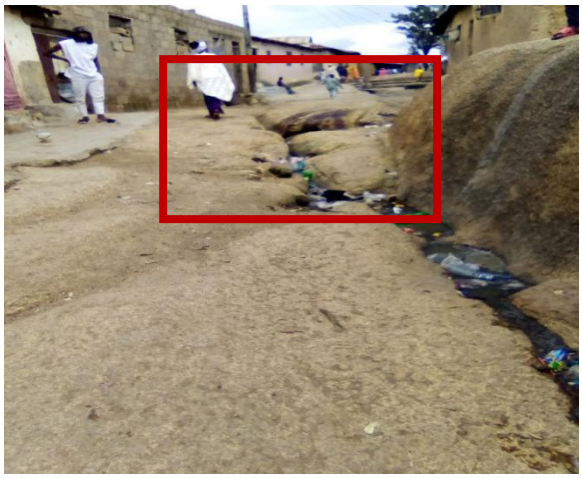


Figure 1: Rocks were water gushed out from leading to the name Bulbula Highlighted in red colour.
Source: Author's field photographs, 2020.

Geographically, Bulbula is located on Latitudes 09° 55'and 09° 43" N, and Longitudes 08° 55' and 08° 41" E. Bulbula is one of the major settlements in Ibrahim Katsina Ward in Jos North L.G.A. of Plateau State. Furthermore, it is a high density residential area dominated by Muslim and foreigners.It is accessed through the Nassarawa-Congo junction and through Zololo junction from Bauchi road. One would cross a popular bridge called (Gadan Sugai Bridge) to get to the community.Their main occupation is trading in the formal and informal sector (Umar, 2020).

Jos – North local government is located at the extreme north of Plateau State on Latitudes 09° 53'and 09° 59' N, and Longitudes 08° 51' and 09° 02' E. It shares boundary to the North with Toro Local Government Area of Bauchi State; to the South with Jos-South Local Government area; to the North-East with Jos-East Local Government Area; and to the West with Bassa Local Government Area (Aliyu, et al., 2019).

Data Collection

The study made use of data and information from both primary and secondary source. Primary data were obtained by physical observation, oral interview of residents and ward head and photographic means. While Secondary data includes documented information obtained from library and the internet.

Sampling Procedure

The study covers only a specific slum known as Bulbula in the Ibrahim katsina ward of Jos North local government Area which forms part of Jos Metropolitan (Table 1).

Table 1: Senatorial District, LGA, Selected LGA, Population and Projected Population

S/N	Senatorial Districts	LGA	Selected LGA	Population	Projected Population
1	Plateau North	Jos North	Jos North	437,217	**665,427**

Source: Modified from NPC, 2009.

First, the population of the target local government areas were projected statistically using 3% growth rate as given by the National Bureau of Statistics (NBS, 2017) to have a relatively up to date population figure using the exponential formula of population projection as shown below:

$P = P_0 \times e^{rt}$

Where:

a. P= Total Population after time "t"
b. P_0= Base year Population
c. r = Percentage growth rate
d. t = Years interval
e. e = Euler number (2.71828)

Secondly, to determine the proportion of the housing units observed in the selected slum under study, Yamane (1967) formula for sample size was used. The formula is given as:

f. $SS = \frac{N}{1+N(e)^2}$

g. Where:

h. SS = Sample Size
i. N = Total population under study
j. e = Acceptable error size usually 0.05

That is,

$SS = \frac{665,427}{1+665,427(e)^2}$ SS = 400

Sample Size is ascertained as calculated to be 400.

One tenth of the sample size (housing units and their environment observed randomly) which amounts to 40 housing units of the sample population using purposive sample technique.

RESULTS AND DISCUSSION

Housing conditions and Health Problem

Physical observation reveals that the local building form is rectangular in shape .Most of the building materials used is very poor due to the low quality of materials used for their construction, inadequate technology and poor planning standards of the building components (Figure 2). This compares with the findings of (Morakinyo, et al., 2012; Ajayi, et al., 2014; and Bello, et al., 2018) of Nigeria where living conditions of the slum dwellers is very poor. Poor indoor air quality and contaminated construction materials are some of the health risks occupant are exposed to. According to Ajayi, et al., (2014) poor indoor air quality is associated with respiratory infection, chronic obstructive pulmonary disease, respiratory tract cancers, tuberculosis, cataracts, and asthma. The burning of solid fuels such as dung, wood, and coal, exposes people who use them to particulates, nitrogen and sulfur compounds, and benzene.

Furthermore, composite wood panels such as particleboard are vulnerable to moisture damage that can encourage mold growth. Mold is known to be an allergen and a lung irritant, particularly for people with asthma. The resin glue used in some particleboard, plywood paneling, and fiberboard also releases formaldehyde, a volatile organic compound that can impair lung function and cause cancer at high doses (Ajayi, et al., 2014).

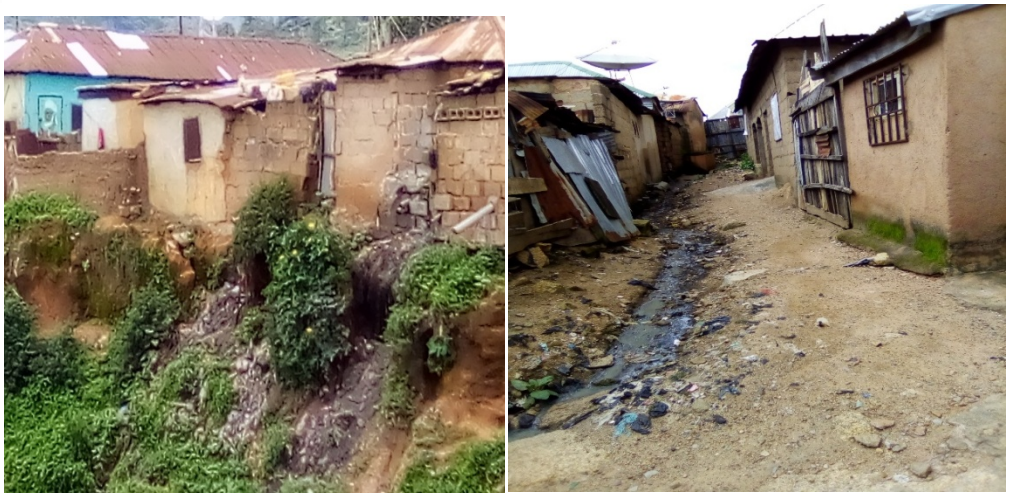


Figure 2: Unhealthy living condition in study area.
Source: Author's field photographs, 2020.

Accessibility

The slum can be accessed through the Nassarawa-Congo junction and through Zololo junction from Bauchi road. One would cross a popular bridge called (Gadan Sugai Bridge) to get to the community. Road widths are less than standard width, and rocky. Roads are seen to meander at different points and corner due to the topography of the land which has lots of rock outcrops. Footpaths and walkways are seen not to be defined (Figure 3).The mode of accessibility in the present study compares with the findings of Morakinyo, et al., (2012) and Bello, et al., (2018) of Nigeria.

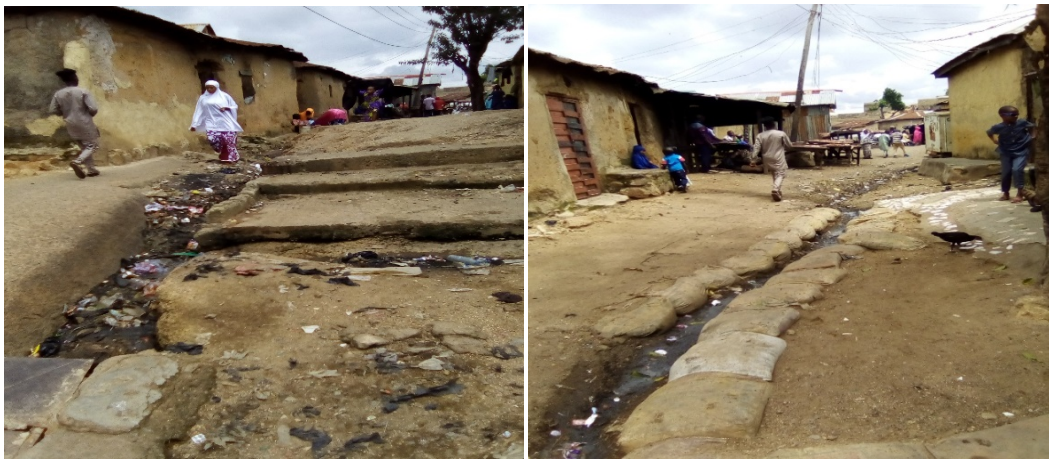


Figure 3: Accessibility to the slum community.
Source: Author's field photographs, 2020.

Solid Waste

The state of waste disposal in the area is generally poor. There is no controlled method of waste disposal in the community. Over 60% dispose their refuse in open spaces; some through burning within residential environment thereby causing air pollution while others dispose theirs at road sides and drainages. This hampers the free flow of run-off and constitutes comfortable breeding grounds for flies, mosquitoes other

health-infected animals that could contribute to the spreading of diseases. In the rainy season flooding is also prominent in the area as a result of blocked drains.

Access to Sanitation and Drainage Facilities

The findings from this section confirmed with the studies of (Morakinyo, et al., 2012; Pat-Mbano, et al., 2012; and Bello, et al., 2018) of Nigeria which reveals that the houses in the study area lack access to basic sanitation facility, very old in structure and condition. The sanitation services and waste management is extremely poor and deplorable (Figure 4). Waste water flows directly in front of the houses and have become breeding grounds for vector agents i.e. mosquitoes. Drainage facilities are deplorable, non-functional or are operating below capacity (Figure 5). Other issues with the system include frequent blockage of sewer lines and leakage of untreated sewage into local streams and rivers.

Some inhabitants share toilets while others do not even have a toilet leaving them with options of going to open spaces within the study area, bush and streams.

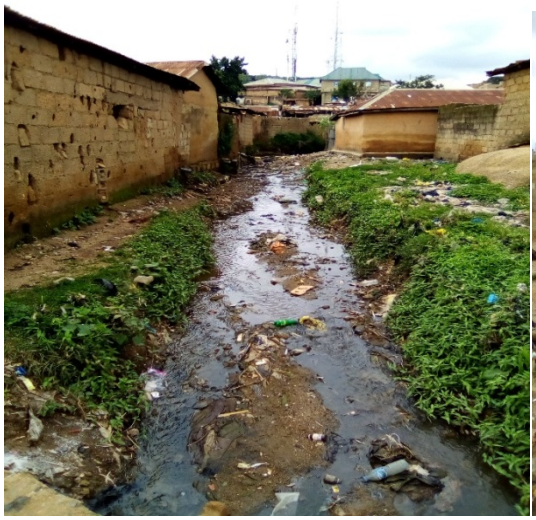


Figure 4: Poor environmental sanitation services

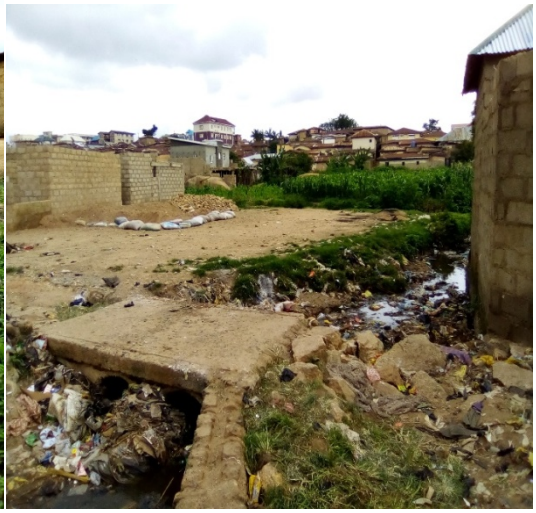


Figure 5: Deplorable drainage facilities.

Source: Author's field photographs, 2020.

Trading Activities

Trading activities such as sale of roasted meat, food items on trays and in buckets, fruits etc is done close to the deplorable drainage conditions on pedestrian lane, within the slum area thereby preventing proper usage of pedestrian walkways (Figure 6). The findings from this study is very similar to that of Morakinyo, et al., (2012) who affirmed that slum dwellers perform business activities on the road, thereby preventing proper usage of the road.

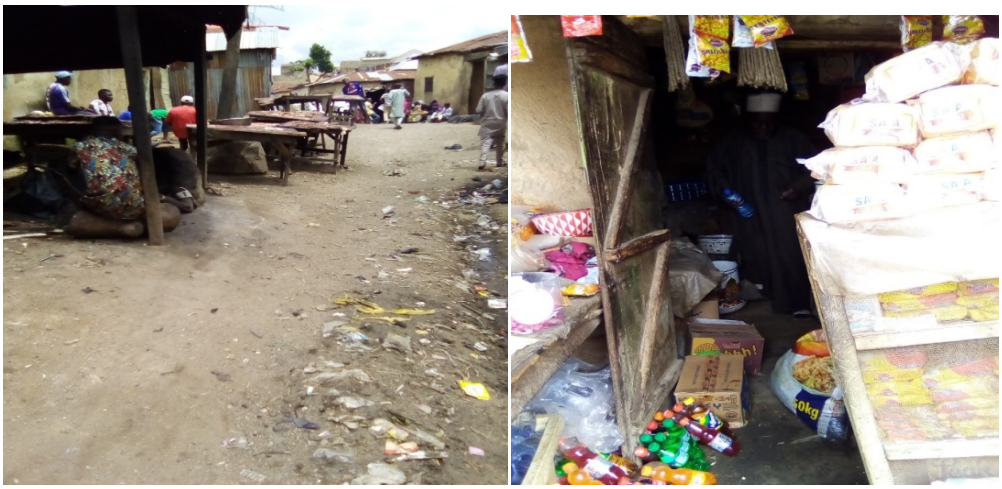
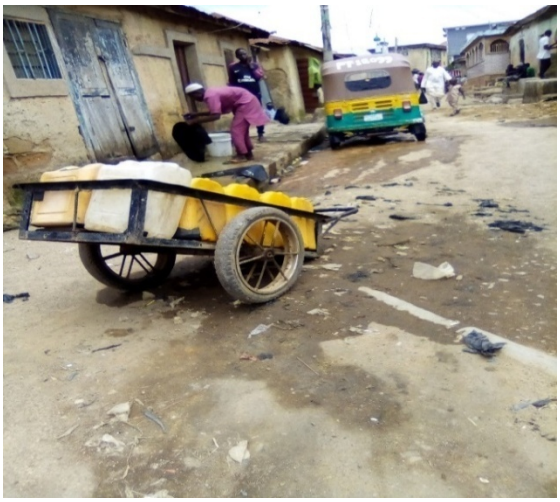


Figure 6: Showing the slum dwellers performing business activities on pedestrian lane/road
Source: Author's field photographs, 2020.

Access to Adequate Water Supply

The findings from physical observation indicated the absence of pipe borne water supply leaving the inhabitants of the area with no option than to buy water for drinking and other domestic use from water vendors and from people who have sunk in boreholes for commercial purposes (Figure 7 and 8). Here 50 litres water-can (10 in number) sells for N250.00-N300.00. This compares with the findings of Daniel, et al., (2015) who discovered that slum residents in Jos, Port Harcourt, Abuja and Makoko area of Lagos State are deprived and excluded from getting access to safe drinking water. The slum resident have to travel some distance to get water or buy from *'mairuwa'* (water vendor) who sell water that is fetched from the commercial boreholes or from distant rivers and streams. In some areas of Abuja, 50 litres water-can will cost N50 (US$0.31) (Daniel, et al., 2015).



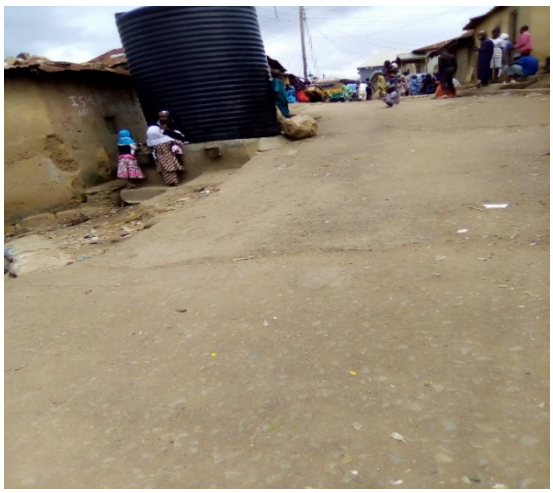


Figure 7: Water supply from a water vendor. **Figure 8:** Commercial water storage tank
Source: Author's field photographs, 2020.

Access to Electricity Supply

Slum dwellers also lack access to basic social infrastructure like electricity and therefore must make use of alternative source of power like firewood for cooking. This has resulted in arbitrary destruction of forest with its attendant consequences on global warming (Pat-Mbano, et al., 2012). Findings reveal location of high tension electric pole in front of the house can lead to electrocution of the inhabitants. No observed set-back to electric power line (Figure 9).

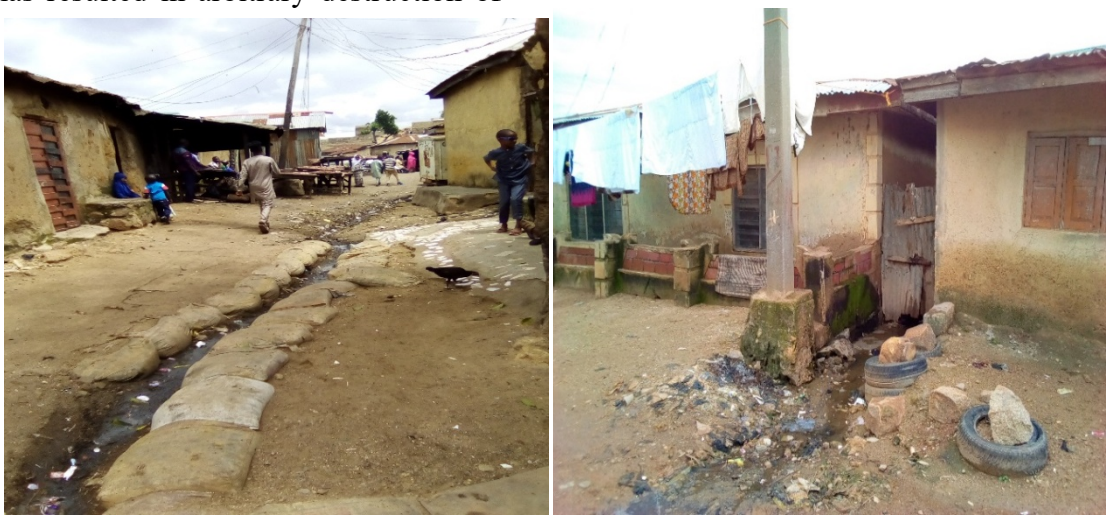


Figure 9: Location of high tension power line in front of dwelling units.
Source: Author's field photographs, 2020.

Strategies for Solving Environmental Deterioration in Slum Settlements

The results of the studies carried out by Pat-Mbano, et al., (2012), Morakinyo, et al., (2012), Daniel, et al., (2015) and Emma-Ochu, et al., (2016) in some selected slum cities in Nigeria have put forward some strategies for solving environmental deterioration in slums are summarized thus:

i. Scale-up Slum Upgrading:it focuses on the improvement of infrastructure and services in informal and slum settlements with the support of the World Bank and Government agencies
ii. Ensure Waste Collection: slum environments where solid waste is already a major challenge, the pile up of waste can exacerbate conditions, creating a new set of health problems. Plastic bags can be used to collect the waste.
iii. Public Enlightenment: there is the need to encourage behavioral change through campaigns and awareness in the study on environmental degradation.
iv. Community Engagement:there should be individual and community participation in environmental protection and improvement efforts should be encouraged as promulgated by Decree 58 of Federal Environmental Protection Agency (FEPA, 1989).
v. Promote Spatial Inclusion and Affordable Housing:provision of equal distribution of infrastructure between the urban and rural dwellers to reduce urban migration.

CONCLUSION

From the findings the researcher drew the following conclusion that the growth and impact of slum in urban centres has indeed presented a serious environmental deterioration on urban landscape. The indiscriminate dump of refuse, general unhygienic life styles, environmental deterioration, overcrowded living space and over- utilization of existing inadequate facilities has without doubt defaced the landscape. Slum growth in Nigeria are perpetuated by numbers of forces such as rapid rural-urban migration, urban poverty, high urbanization and urban population explosion, lack of tenure security and globalization among others. As well, the study recommends that infrastructural development should be a top government priority both in rural and urban centers. This will help to reduce urban poverty and also reduce the mass influx of the rural dwellers especially into the urban centers. In addition, Jos Metropolitan Development Board (JMDB) in the State embark on more awareness of environmental sanitation in line with the mandatory month-end sanitation exercise and enforcement of penalties to defaulters. Finally, inputs of professionals such as architects, urban designers and town planners should be sought in cases of re-settlement and upgrading schemes.

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