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IMPACTS OF URBANIZATION ON ENVIRONMENTAL QUALITY IN KADUNA AND ZARIA CITIES OF NORTH - WESTERN NIGERIA

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Abstract

This study examined the impacts of urbanization on the quality of the environment in Kaduna and Zaria urban centres. The primary data collection entailed the administration of structured questionnaire to residents of the urban centres. Seven hundred and fifty and two hundred and fifty copies of the questionnaire were administered in Kaduna and Zaria respectively using random sampling technique. Simple descriptive statistics were applied using Microsoft Excel 2003 and Statistical Product and Service Solutions (Formerly Statistical Package for Social Sciences). These were used in the analysis of the questionnaire. The results showed that the impact of urbanization on the quality of the environment in Kaduna and Zaria included air, water and noise pollution, solid waste disposal problems, flooding, erosion, and the development of slum and squatter settlements. It was concluded that the dynamics of urbanization in Kaduna and Zaria had affected the quality of the environment particularly in terms of environmental degradation caused by indiscriminate disposal of solid waste, air, water/noise pollution and slum/squatter settlement. Recommendations were made for sustainable growth and development of the urban centres.

Key words: Urbanization, Environmental, Urban growth, Solid waste, Pollution.

INTRODUCTION

The problems of environmental degradation resulting from rapid industrial development and largely unrestrained urban population growth have been unprecedented in many developing countries. Urbanization is the process through which towns and cities come to be. Rapid urbanization without proper physical planning leads to worsening of the environment resulting in degradation and lower quality of life. One of the foremost problems that any nation undergoing modernization has to contend with is the management of urban expansion. Rapid spatial growth of cities have been a global concern due to the attendant social, economic and environmental problems associated with such growth particularly in the developing world. A host of intractable problems often accompany rapid urban growth. Kasarda and Parnell (1993) noted that these problems include insufficient shelter, inadequate sanitation, inadequate or contaminated water supplies, serious

air pollution and other forms of environmental degradation. Cities now form a major source of environmental problems which have effects not only within their vicinity but, often times, of global significance. Kaduna and Zaria metropolis like other urban centres in Nigeria and the world at large are not static but they are dynamic in nature. They grow both numerically (in terms of population) and physically (in terms of areal extent/ coverage) as a result of several "pull factors" which include but not limited to natural increase, immigration and physical development which result primarily from the need of the growing population to occupy space for residential, commercial, transportation, institutional and recreational purposes to mention but some. The threat of global population growth in most urban centres like Kaduna and Zaria, if not properly monitored, may lead to a great threat to the dwellers in terms of available resources and environmental quality. In the same vein,

rapid population growth and the pace of urbanization in Kaduna and Zaria urban centres are mounting increasing pressures on the local and regional environment and these impacts have never been of greater concern. The paper seeks to assess the impact of urbanization on environmental quality within the study areas and proffer ways by which the impacts could be mitigated or ameliorated so as to ensure sustainable growth and development.

STUDY AREA

Kaduna metropolis bounded by latitudes $9^{\circ}03'N$ and $10^{\circ}32'N$ and longitudes $7^{\circ}25'E$ and $7^{\circ}36'E$. Kaduna Metropolis comprise of four Local Government Areas namely Kaduna North and Kaduna South and parts of Igabi and Chikun, Local Governments (Fig.1). Kaduna metropolis has a population of 1,582,102 (NPC,2007). On the other hand, Zaria as an urban centre comprises of Zaria and

Sabon Gari Local Government Areas. Zaria Metropolis is located at latitude $11^{\circ}3'N$ and longitude $07^{\circ}40'N$ and is presently one of the most important cities in Northern Nigeria. As at 2006 Census, it had a population of 975,153 (NPC, 2007).The Urban Zaria Area is made up of sub-settlements that are existing in the neighbourhood pattern. They are Zaria City, Sabongari, Muchiya, Chikaji, Kwangila, Palladan, Tudun Wada, Tudun Jukun, Wusasa etc (fig. 2) . Other major land uses are educational, health, industrial, commercial, residential and agricultural.

Like many cities in Nigeria, Kaduna and Zaria face problems of environmental sanitation such as improper disposal of refuse near residential areas; poor refuse collection and handling, etc. For example, it is a common feature to find huge refuse dumpsites within residential areas and along some minor and major roads.

MATERIALS AND METHODS

Questionnaire Administration/ Sampling Technique

The Reconnaissance survey carried out employed the use of digital camera in capturing the environmental problems identified within the study areas. The primary data collection also entailed the administration of structured questionnaire within the study areas. Two types of questionnaire were administered. The first type numbering 1000 copies was administered to the residents within the wards of the Local Government Areas constituting the study areas as shown on fig. 1, 2, and 3 using systematic random sampling technique. Each ward was further segmented into high, medium and low residential areas.

It was recognized that it was impossible to achieve a full coverage of the urban centres within the available time frame and considering cost implications; therefore, a suitable sample frame was sought. The available and more reliable sample frame obtained in the study areas was the number of roads in each ward. The number of roads in each ward presents a more reliable and adequate sample population for the study. The number of roads in each ward was obtained and updated using topographic maps, landuse maps and satellite images

on the study areas. Kaduna metropolis was segmented into 25 wards while Zaria metropolis was segmented into 10 wards (fig. 2 and 3). The systematic random sampling was further used in selecting the residential units for the administration of the questionnaire using a sample frame of 2 percent. The field assistants were taught to select one in every 20 buildings between the selected street/ road and the adjacent street. The questionnaire were directed to the household heads for more reliable responses.

The second type of questionnaire numbering 100 copies was administered to the staff of the Kaduna State Urban Planning and Development Authority (KASUPDA), the Kaduna State Environmental Protection Agency (KEPA) Federal Ministry of Environment, Housing and Urban Development and Town Planning departments of the Local Government Secretariat, which are in charge of physical planning and environmental management in Kaduna and Zaria urban centres. The descriptive statistics were applied using Microsoft Excel 2003 and Statistical Product and Service Solutions (formerly Statistical Package for the Social Sciences). These were used in the analysis of the questionnaire.

RESULTS AND DISCUSSION

Environmental Problems Associated with the Growth of Kaduna and Zaria.

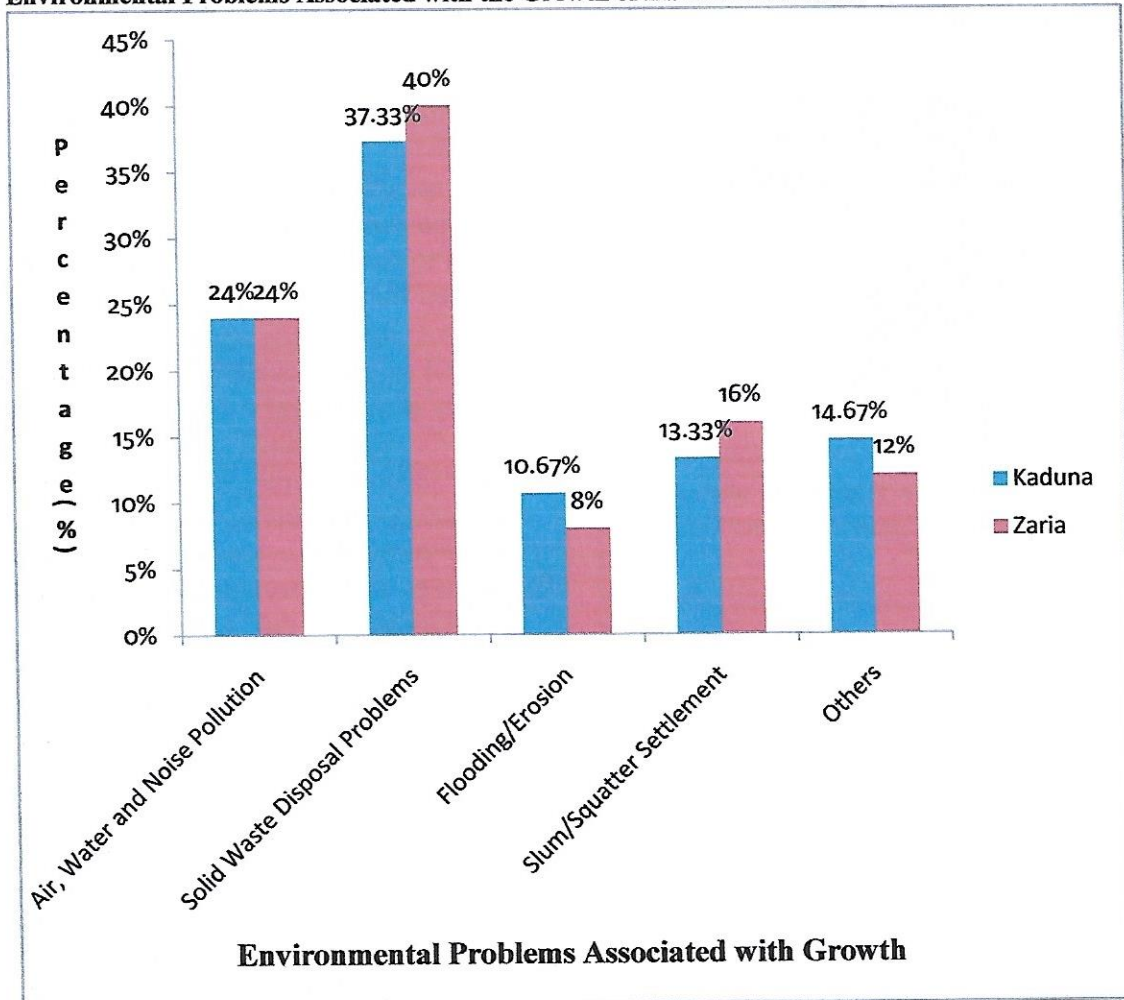


Fig. 1: Comparison of the Environmental problems Associated with the Growth of Kaduna and Zaria Urban Centres

Source: Authors' analysis of questionnaire

Fig. 1 shows a comparison of the major environmental problems associated with the growth of Kaduna and Zaria urban Centres.

An analysis of the questionnaire shows that air, water and noise pollution constitute about 24% of the environmental problems associated with the growth of the urban centres. A survey of the industrial areas in Kaduna and

Zaria reveals that the industrial areas are the major sources of air, water and noise pollution. Virtually every industrial facility in the urban areas is a source of pollutants which can adversely affect human health, the environment and human ecology. This is particularly so because, it was observed that industrial waste is not strictly controlled and most of the industries are located in close proximity to the residential areas (Ojo,

2004). While water bodies were observed to be polluted by domestic and industrial wastewater, internal combustion engines also contribute to the pollution of air, and land surfaces. This confirms the works of many scholars that rapid urbanization along sides the rising rates of industrilization are the causes of a great deal of environmental problems in our cities (Adedibu and Okekunle, (1989); Ahmed, 2000; Aderamo, 2000).

Environmental sanitation was observed to be very poor in most parts of the urban centres (See Plates). Figure 1 shows that solid waste problem constitutes the major environmental problem associated with the growth of the study areas. Solid waste constituted about 37.3% and 40% of the environmental problems in Kaduna and Zaria respectively. This is as a result of the attitude of the residents towards solid waste disposal, the failure of planning authority to provide organized dump sites at reasonable locations and the poor private sector involvement in solid waste management.

Many scholars have reported that the impact of urbanization is also felt in the generation of solid wastes by the inhabitants (Mabogunje, 1974; Ahmed, 2000; Aderamo, 2000 and Olatubara, 2004). The growths of Kaduna and Zaria urban centres have had significant negative impacts on the local environment in terms of solid waste generation. Due to the varied lifestyles and consumption patterns of the residents, the quality and the composition of waste has been more varied and changing. Rising quality of life and high rates of resource consumption patterns have had an unintended negative impact on the urban environment in terms of generation of solid wastes that go far

beyond the handling capacities of the agencies in charge of physical planning and environmental management within the study areas. This finding is supported by Adedibu (1987), who opined that "solid waste generation increases as income rises and as remarkable growth in population and income give rise to the production and consumption of goods and services."

Hence, The Kaduna Enviromental Protection Agency (KEPA) is not only grappling with the problems of high volumes of solid waste, the cost involved, the disposal technologies and methodologies to adopt, but also with the impact of the waste on the local and global environment. The concern is not only in the quantity but also in the quality and composition of the wastes which are becoming increasingly non-biodegradable.

The major generators of solid waste are households, commercial and industrial operators. In addition to general refuse (household garbage and rubbish, residential ashes, commercial and institutional refuse, construction and demolition debris, dead animals, drain-clearing wastes and sanitation residues), human excrement and manure also constitute part of the solid waste which is dumped indiscriminately at unauthorized places, for example, along major streets, near dwellings and into street gutters and valley heads which eventually drain into the streams and rivers (Plates 1, 2,5,6, and 7).

Indeed, majority of the respondents expressed dissatisfaction with the present way of waste management in their communities. Apart from the ignorance on the implications of indiscriminate

dumping of solid waste, the shortage in the number and inappropriate location of the available dump sites could be traced to the proliferation of solid waste at undesirable locations in Kaduna and Zaria. For example, it was observed that the few available dump sites are not only located at sensitive areas, but over 90% of the surveyed dump sites were situated at over two kilometers from the residents. The residents therefore resort to either dumping their refuse at the nearest available open spaces, along the major streets or into drainage channels or waterways (Plates 1, 2, 5, 6, and 7).

Furthermore, the impact of the indiscriminate disposal of solid waste in Kaduna and Zaria is worrisome. There is general non-challant attitude displayed by the residents in the disposal of solid waste within the study areas as most of the residents either dump their solid waste at strategic points on major roads or into or around the existing drainage channels, streams and rivers in the neighbourhood. Apart from the blockage of these water channels and the resultant floods caused by this action, the sources of these surface and underground water supply are also contaminated. This has various health implications (Ojo, 2004). Other major environmental problems that have resulted from the lateral expansion of Kaduna and Zaria are flooding and erosion. These constituted 10.67% and 8% of the environmental problems within the study areas respectively (Fig. 1). Indeed, urban expansion may give rise to different types of geomorphologic problems (Olorunfemi, 1995; Olorunfemi and Jimoh, 2000). This is attributed to inappropriate urban land development such as farming or construction on steep slopes without providing proper contours. The results of erosion include polluted

rivers, clogged irrigation and drainage systems and frequent floods in other communities down streams. In addition, uncontrolled stripping of vegetation reduces the soil's capacity to retain moisture and causes rapid run off that exacerbate flooding (Lee, 1985).

Furthermore, slum development is another environmental problem that was observed within the study area. Slum development represented 13.33 and 16% of the environmental problems in Kaduna and Zaria urban centres respectively (Fig.

1). Urban decay has been variously described by many authors as a state of urban squalidness and over crowdedness, characterized by poor sanitary conditions, inadequate provision of amenities and general deterioration of urban environment (Abumere, 1985; Okoye, 1979 cited in Fabiyi, 1998). Some authors have identified urban decay as a stage in the cyclic process of urban growth, explaining that the same factors that induce urban growth also contribute to urban decay.

These assertions are true in some parts of Kaduna and Zaria urban Centres. While some parts of Kaduna and Zaria urban centres such as Narayi High cost, Gonigora and Romi New Extension in Kaduna and the Government Reserved Area in Zaria are experiencing growth in quality, other parts such as Makera and Nassarawa in Kaduna and Gellesu and Magume in Zaria are deteriorating in quality (Plates 4 and 5). These slum/squatter settlements which were observed both within the core and the peripheries of the cities were caused by the natural spatial changes in the urban system brought about by the influx of activities into the cities and the general over exploitation of urban infrastructure and

services. Apart from the irregular location of structures in these areas, there was also the erection of illegal structures on drainage channels (Plate 3).

Conclusions

This paper has highlighted the impact of urbanization on the quality of the environment in Kaduna and Zaria with emphasis on the effects of indiscriminate disposal of solid waste in the urban centres. The paper showed that Solid Waste constitute the major environmental problem in the study area which is as a result of the attitude of the residents towards solid waste disposal, failure of planning authority to provide organized dump sites at and poor private sector involvement in solid waste management.

Recommendations

There is therefore, an urgent need for the government and all concerned stakeholders to embark on appropriate measures that would reverse the despicable act. Some of the control measures include:

- (i) Intensive public enlightenment campaigns on environmentally and ecologically safe methods of solid waste disposal through community health workers and the electronic and print media.
- (ii) Enactment and enforcement of relevant environmental laws by the state House of Assembly and other stakeholders in order to safeguard the environment and ensure sustainability in the urbanization process with the imposition and enforcement of fine for defaulters.

- (iii) Provision of organized dump sites and refuse collection points at reasonable distances in the communities and the involvement of private waste collectors in the management of solid waste in the study areas. The National Environmental Standards Regulations Enforcement Agency (NESREA) should collaborate with the state and the local governments in order to ensure that waste collection and management in the State is properly organized. They should critically consider the allocation of dumpsites for different categories of waste such as biodegradable and non – biodegradable. This will ensure proper monitoring of waste and the conservation of our renewable resources through recycling of used products.
- (iv) The 'waste to wealth' initiative should be critically considered and explored.
- (v) NESREA should also critically appraise the impact of the existing industries in Kaduna and Zaria on the environment particularly as it relates to the emission of obnoxious gases into the atmosphere and the discharge of industrial waste water into the existing water ways.
- (vi) The role of indigenous and international non governmental organizations (NGOs) in the management of solid waste should be

critically considered and harnessed.

REFERENCES

Abumere, S. I. (1985), The Nigerian Urban Environment and the Problem of Slums. Department of Geography, University of Ibadan, P.33.

Adedibu, A. A. (1987). "Measuring Waste Generation in third World Cities : A Case Study of Ilorin, Nigeria". Environmental Monitoring and Assessment, 10 – 12 pp. 89 – 103.

Adedibu, A. A. and Okekunle, A. A. (1989). Issues in the Environmental Sanitation of Lagos State – Mainland. The Environmentalists, Vol. 9, No. 2, pp.91 – 100.

Aderamo, A. J. (2000). City Planning and Management Techniques" in Jimoh H. I. and Ifabiyi, I. P. (eds.) Contemporary Issues in Environmental Studies. Haytee Press and Publishing Co. Ilorin.

Ahmed, Y. A. (2000). "Waste Generation and Management Techniques" in Jimoh H. I. and Ifabiyi I. P. (eds.). Contemporary Issues in Environmental Studies. Haytee Press and publishing Co. Ilorin.

Aiyejina, T. W. (2008). 'Comparative Analysis of the Growth of Kaduna and Zaria Urban Centres Using Remote Sensing and Geographic Information Systems'. Unpublished M.Sc. Thesis Institute of Ecology and Environmental Studies, Obafemi Awolowo University, Ile – Ife, Nigeria.

Fabiyi, O. O. (1998). "Analysis of Urban Decay in Ibadan Metropolis Using Geographic Information Systems". Ph.D.

Thesis (Unpublished), Geography Department, F.U.T., Minna, Nigeria. PP. 38-77.

Kasarda J.D. and Parnell A. M. (Eds) (1993), "Third World Cities: Problems, Policies And Prospects" Sage, New York Pp. 9-10.

Lee, J.A. (1985), The Environment, Public Health, and Ecology: Considerations for Economic Development. John Hopkins University Press, London For World Bank. Pages 153 – 167.

Mabogunje, A. L. (1968). Urbanization in Nigeria. University of London Press Ltd.London. 353pp.

Okoye, T. O. (1979). "Urban Planning in Nigeria and the Problem of Slums" Third World Planning Review, Vol. 1, No.1, 1979 Pp. 71

OJO, O. (2004). *Indicators of Health risks from Surface water and Groundwater Contamination in Urban Centers of Nigeria*. IAHS Publication no. 233, 1995.

Olatubara, C. O. (2004). "Population and Urbanization Studies" in Readings in Urban and Regional Planning Tunde Agboola (ed.), Macmillan Nigerian Publisher Limited. Pp. 163-185.

Olorunfemi, J. F. (1995). "Rural Urban Migration in Africa: Effects of Anthropogenic Activities": A Paper Presented at the fifth Workshop on the Applicability of Environmental Physics and Meteorology in Africa. Accra, Ghana.

Olorunfemi, J. F. and Jimoh, H. I. (2000). "Anthropogenic Activities and the

Environment". Contemporary In Jimoh,
H. I. and Ifabiyi, I. P Issues in

Environmental Studies. Haytee press,
Ilorin.



Plate 1: Deposition of solid wastes into waterways in Kaduna.



Plate 2: Indiscriminate disposal of solid waste by residents in Sabon Gari, Zaria.



Plate 3: Construction of illegal structures on drainage channel at Sabon Gari, Zaria.



Plate 4: Urban slum in Zaria, an implication of urban growth.



Plate 5: Urban slum in Nassarawa neighbourhood, Kaduna.



Plate 6: Neighbourhood pond turned to community waste dump in Narayi, Kaduna.



Plate 7: Indiscriminate Solid waste disposal at Kaduna City Centre.