Effect of Mixed Land use on Housing Livability in Sagamu, Ogun State, Nigeria

[1] ODUNOLA OLUTAYO OLAITAN e-mail: odunolatayo@yahoo.com
DEPARTMENT OF URBAN AND REGIONAL PLANNING,
[2] ODUNJO, OLURONKE OMOLOLA e-mail: stevomary2012@gmail.com
DEPARTMENT OF ARCHITECTURE,
LADOKE AKINTOLA UNIVERSITY OF TECHNOLOGY, OGBOMOSO, OYO STATE.

Abstract— Various incompatible land uses have been observed to cluster in residential areas in Sagamu without being checked. Evident in the town are: the agglomeration of commercial banks along the regional road, the haphazard location of filling stations, religious centers, schools, service industries among other land uses. Against this background of continuing mixed land use in the residential areas, this research seeks to assess the effects of mixed land use on housing livability in the town.

Two hundred structured questionnaires were administered in six selected localities in the town. Each of the questionnaires was administered to a resident in each of the buildings selected using systematic random sampling while the Statistical Package for Social Sciences (SPSS) was used for the data analysis. It was discovered that mixed land use has created problems in the town which include pollution, change in land value or rent, traffic problems among others, with pollution and traffic problems being the highest. The problems were constituted by both the buildings and the adjourning land uses which were not residential. Similarly, the effects of the adjourning land uses were found to vary with proximity to the sampled residential buildings.

Based on these findings, it was recommended that measures such as implementation of existing pollution control laws and regulations or enactment of new ones, provision for intra-urban mass transportation systems to reduce traffic problems should be ensured in the town. Finally, development control such as the use of planning regulations and standards, bye-laws, policies and the town local plan should be employed in solving mixed land use problems in the town.

1 INTRODUCTION

IT is pragmatic that land use planning attempt to provide an ordered and humane environment is yet not achieved in most developing nations of the world. Several factors such as distorted land market, inefficient land use and poor development control measures have led to conflict, abuse, misuse and chaotic nature of location of activities in many of their urban centers (Nigeria Properties Online, 2010). For instance, in Nigeria, most land for urban development is supplied outside state regulatory frameworks. Not a city in Nigeria has evolved an effective urban growth management strategy (Ikejiofor, 2006). Development of land such as housing and infrastructure is majorly carried out by private individuals and developers whose behaviors are not different from the simplified version of rational economic behavior and allocation efficiency (Agbola, 2004). Another major constraint is ineffective development control as most towns and cities in developing countries have no control guides for the use of land, buildings and properties, while in areas with such guides, it is either they are unavailable, weakly implemented or primitive.

Obviously, most Nigerian residential core areas and newly developed areas do not possess their peculiarities for convenience and comfortability. A cursory look at the various residential buildings is conspicuous that, most are mixed use buildings at present, due to building and or land use conversion among other factors. The state of land use admixture in Nigerian urban areas therefore, is growing at an alarming rate without being checked. Commercial, recreation, and industrial land uses are indiscriminately springing up in residential areas. Commercial banks and filling stations are sprawling along the major roads (for example, Ogbomoso-Oyo road and Sagamu- Ikorodu road in south-western Nigeria). Religious centers are also, gaining more grounds in residential environments with their contributory noise effect among others. Motels, hotels, cinemas etc. are on the display and this consequently, affects the social life of kids and adolescents.

It is therefore observed that, Nigerian urban dwellers wallow not only in abject poverty, but they also. do not live in planned urban areas, which are "orderly safe, convenient and healthy living environment' that is promised as the gains of land use planning (Falade, 2003 and Baba, 2003) .In an attempt to meet the challenges

facing the built environment in order to model her in planning principles, which had provided the developed cities of the world with agreeable and effective city development, an assessment of the effects of mixed land use on housing livability in Sagamu is undertaken.

2 METHODOLOGY

Sagamu is one of the towns in Remo Kingdom, the part of the Yoruba cultural region of southwestern Nigeria with the earth reference 12°16'N 6°33'E/ 12.267°N 6.55°E which comprises of the old and new areas. The old areas have the characteristics of the core areas of Nigerian cities, with buildings traditional in material, design and construction. The new area is a developing zone and it is with partial spatial planning. Cutting across the town, are two major routes- Sagamu- Benin Expressway and a regional route, Sagamu-Ikorodu Road, which later links the expressway.

Six localities are selected in the town for the study and 23.5 per cent of the total number of buildings (848) located along the major streets in the selected localities was chosen as the sample size   (Table 1).

TABLE 1

Sample size of the Research

NO	LOCALITIES	NUMBERS OF BUILDINGS ON MAJOR STREETS	SAMPLE SIZE
1	Ajegunle	116	27
2	Ijokun	105	25
3	Makun	168	40
4	Sabo	172	41
5	Station	142	33
6	Surulere/Eleja	145	34
TOTAL		848	200

Source: Authors' field work (2013).

However, two hundred structured questionnaires were administered in the six selected localities in the town. Each of the questionnaires was administered to a resident in each of the buildings selected using systematic random sampling. The Statistical Package for Social Sciences (SPSS) was used for the data analysis and both descriptive and inferential statistics were used to analyze the data obtained.

3 FINDING AND DISCUSSIONS

In the area, residential localities are at present, characterized by other land uses which were not evident from the initial stage; although, the town is an organic settlement that developed as the need arose. This is proved by the traditional compound (16.5 %) and Brazilian buildings commonly referred to as the face-to-face building (35%). However, Brazilian house (21.0 %), flat bungalows (23.5 %) and compound buildings (5.0 %) were commonly used for residential and commercial purposes totaling 50.5 % which constitutes the highest mixed use of residential buildings in the area .This may result from the fact that, landlords/owners of residential buildings in most Nigerian towns and cities usually convert some of the rooms in their buildings, especially

their frontage, to commercial use. This is however, common to buildings that are accessible, especially those situated along the major roads.

Also, residential buildings in the localities constituted 34.5 per cent of the total buildings .Out of this, Brazilian is 10.5 %, compound buildings 9.0% and bungalows 6.0 % thereby constituting the highest residential use respectively. Residential, commercial and recreation use constitute 4.0 % with bungalow (1.5 %) mostly constituting such mixed uses. On the other hand, residential and industrial use constituted 3.5 % with Brazilian (1.0 %) and flat (1.0 %) utilized for the purpose while residential and recreation constitute 3.0 per cent with Brazilian (1.0 %) and flat (1.0 %t) mostly used for such purposes. Mixture of residential, commercial and industrial constituted 2.0 % with flat (1.0 %) constituting the highest of such uses while residential and agric also constitute 2.0 %, with bungalow (1.0%) mostly available for such purposes. The only building type used for residential, commercial and agric was the bungalow which constitute 0.5 %.

However, consequent upon the mixed use of buildings, many problems were perceived in the localities such as traffic problems and pollution. Traffic problems statistics for the localities (Table. 2) as observed by the respondents indicate that the highest traffic nuisance constituted by the buildings was traffic congestion with 78.0 % response. In the index analysis, traffic congestion was perceived as the highest traffic problem constituted by buildings in the area with the mean deviation of 0.29. Thus, the traffic congestion effects were perceived to be of greater significance in the localities. On the other hand, traffic accident was 61.5 % with the negative mean deviation of 0.01 which signified low effects occurrence in the area.

Meanwhile, increase in travel time and increase in transport fare were each 57.5 % which are evident in the localities. The travel time had the mean deviation of 0.05 which means that, the effects were high on travel time of passengers. Also, increase in transport fare had the negative mean deviation of 0.34 which signified that the transport fare is negatively affected.

TABLE 2

Residents' perceived rate of Traffic problems in Sagamu

Traffic Problems	Residents' Rate of Effects					RWV (y)	RRI(A) (y/200)	Mean $(\overline{X})$	$(A-\overline{X})$	$(A-\overline{X})^2$
	5	4	3	2	1					
Traffic Congestion	17	38	37	18	42	426	2.13		0.29	0.0841
Increase in Travel time	12	35	44	14	13	378	1.89		0.05	0.0025
Accident	20	31	31	15	19	366	1.83	1.84	-0.01	0.0001
Increase in Transport Fare	15	8	90	56	44	297	1.49		-0.34	0.1156
Total							7.34			0.2023

Source: Authors' field survey (2013).

∑f= 200 (Total number of respondents); N= 4 (Number of traffic effects); RWV= y;

A= RRI = (y/200); ∑A= ∑ (y/200) = 7.34; X= ∑A / N = 7.34/ 4 = 1.83 (Mean);

σ^2= ∑ $(A-X)^2$ /N= 0.2023/4= 0.0506 (Variance); $\sigma = \sqrt{\sigma^2} = \sqrt{0.0506}$ = 0.22 (Standard Deviation).

As regards pollution problems, noise is perceived as the most severe pollution problem constituted by buildings in the area with the mean deviation of 0.79, followed by indiscriminate solid waste with the mean deviation of 0.19. Gaseous discharge and water pollution, both with negative deviation of 0.56 and 0.43 respectively were perceived to be low in the area (Table 3).

TABLE 3

Resident perceived rate of the Pollution problems by Buildings in Sagamu

Pollution Problems	Residents' Rate of Effects					RWV (a)	RRI (A) (a/200)	Mean $(\overline{X})$	$(A-\overline{X})$	$(A-\overline{X})^2$
	5	4	3	2	1					
Indiscriminate Solid Waste	17	34	42	15	29	404	2.02		0.19	0.0361
Noise	22	55	45	20	19	524	2.62		0.79	0.6241
Gaseous Discharge	10	17	18	26	30	254	1.27		-0.56	0.3136
Water Pollution	50	88	78	34	29	279	1.40	1.83	-0.43	0.1849
Total							7.31			1.1587

Source: Authors' field Survey (2013).

∑f= 200 (Number of respondents); N= 4 (Number of Traffic Problems); RWV= y

A= RRI = (y/200); ∑A= ∑ (y/200) = 7.31; X= ∑A / N = 7.31/ 4 = 1.83 (Mean)

σ^2= ∑ $(A-X)^2$ /N= 1.1587/4= 0.2897 (Variance); $\sigma = \sqrt{\sigma^2} = \sqrt{0.2897} = 0.54$ (Standard Deviation).

It should be noted that, the mean was only a representative measure of dispersion. This is because, it provides information on the rate of pollution problem constituted by the buildings. However, the result of the analysis of variance used in testing the effects of all the adjourning mixed land use (bank, filling station, police station, market, motor park, dumpsite, saw mill, church, mosque, motel/hotel, poultry, school and block industry) based on their proximity (1-20, 21-40, 41-60, 61-80 and 81-100 meters) to the sampled buildings is presented in Table 4.

The effects that were perceived by respondents include pollution (land, noise, air and water), land value or rent, transportation (transport fare, travel time and accident) and, crime and insecurity (burglary and stealing, fighting and disorderliness, kidnapping and fire hazard) while the F-values and p- values for the effects were as indicated. Thus, the effects of land, noise, air and water pollution, traffic congestion, transport fare, travel time, accident and, crime and insecurity; Also, burglary and stealing, fighting and disorderliness, and kidnapping and fire hazard were found to have significant variation in reference to proximity to the residential buildings that were sampled with a p-value of below 0.05.. Thus, adjourning mixed land use effects on land, noise, air and water pollution, traffic congestion, transport fare, travel time, accident and crime and insecurity, burglary and stealing, fighting and disorderliness, and kidnapping do vary with proximity to sampled buildings in the different selected localities in the town.

TABLE 4

ANOVA Table for Effects of Adjoining Land use based on proximity to Buildings.

Variables	Sum of squares		Degree of Freedom		Mean square		F	p-value	
	Between groups	Within groups	Between groups	Within groups	Between groups	Within groups			

								Comment
Land pollution	61425.846	42463.692	4	60	15356.462	707.728	21.698	0.000	significant
Noise pollution	64871.015	88899.846	4	60	16217.754	1481.664	10.946	0.000	significant
Air pollution	29226.369	19299.077	4	60	7306.592	321.651	22.716	0.000	significant
Water pollution	18510.246	34004.862	4	60	4627.562	258.244	17.919	0.000	significant
Land value	212.062	22253.692	4	60	53.015	370.895	0.143	0.965	insignificant
Traffic congestion	41662.400	174498.462	4	60	10415.600	2908.308	3.581	0.011	insignificant
Transport fare	13641.385	29412.154	4	60	3410.346	2908.308	6.957	0.000	significant
Travel time	13258.677	30338.308	4	60	3314.669	505.638	6.555	0.000	significant
Accident	49443.385	43727.231	4	60	12360.846	728.787	16.961	0.000	significant
Burglary and stealing	52310.523	92094.615	4	60	13077.631	1534.910	8.520	0.000	significant
Fighting and disorderliness	22031.600	20974.615	4	60	5507.900	349.577	15.756	0.000	significant
Kidnapping	14208.092	16401.846	4	60	3552.023	273.364	12.994	0.000	significant
Fire hazard	6732.677	26355.077	4	60	1683.169	439.251	3.832	0.008	insignificant

Source: Authors' field Survey (2013)

It can then be inferred that the livability of the residents of these localities in the town is mostly affected by the afore-listed land uses, and this vary according to their locations to the buildings sampled. The analysis from above further justifies the facts that, majority of the effects constituted by the land uses which were not used for residential purpose vary in their proximity to the residential buildings. And that those land uses that were closer to the buildings constituted greater effects. The results also proved further that residents do not have a comfortable living environment which is free from also sorts of pollution hazard, traffic congestion, social menace, ugliness and friction among others, hence indicating a poor livability. In other words, the residential localities in the town do not really conform to an ideal and imageable residential environment in terms of quality, aesthetics, character and livability.

4 RECOMMMENDATIONS

Generally, the state of the town would be bettered by incorporating physical planning approaches or strategies This could be done by the use of development control to create balance land use or the use of planning regulations and standards, bye-laws, policies and the town or local plan. Thus, Sagamu Physical and Urban

Planning Authority should rise up to their responsibilities and prepare and adopt them for their local use. However, the result from the analysis above negate the concept of residential livability and the goal of environmental sustainability thereby, having adverse health implications; such health risks include pollution of all sorts. Hence, pollution control measures should be adopted by government in areas with mixed land use in the town. These may include implementation of existing laws and regulations or enactment of new ones. Also, aside fighting and disorderliness, social menace such as kidnapping and insecurity that abound in the town should be strictly combated for the sake of the future generations and a humane environment

As regard traffic problems, efforts should be made by the government to ensure efficient accessibility for all the land uses in the town. It should be noted that mixed land uses in the town have brought about inefficient transport networks since travel volume increase with increasing mixed land use (Tanimowo 2006). Similarly, provision for intra-urban mass transportation systems would also help in reducing traffic problems in the town. Necessary machinery should be set up to determine the nature and extent of the suggested support for intra-urban mass transportation system. When this is ensured, most people would be able to commute for any purpose they desire without much hindrance.

5 CONCLUSION

There is an urgent need to establish appropriate measures to correct the menace in Sagamu as shown in the findings of this study. The various recommendations suggested in the research are however, made in order to aid the development of compatible land uses. Efforts should therefore, be made by governments both at State and local government levels on physical planning in the town so as to provide feasible solutions and proposals that will improve the living standard of the people which is the major goal of physical planning.

6 REFERENCES

[1] Abelti, G., Brazzoduro M. and Gebremedhin, B. (2001). "Housing Conditions and Demand for Housing in Urban Ethiopia". Institute for Population Research – National   Research Council (Irp-Cnr) Roma, Italy.

[2] Adedeji D. and Eziyi O. I. (2010). "Urban Environmental Problems in Nigeria: Implications for Sustainable Development". Journal of Sustainable Development in Africa. Vol.12, No.1. Pp 122.

[3] Adeyinka, A.S., Omisore, E.O., Olawuni, P.O. and Abegunde, A.A. (2006). "An Evaluation of Informal Sector Activities and Urban Land Use Management in South Western   Nigeria". Ile Ife, Nigeria. Pp 1-18.

[4] Agbola, T. (2004). "Housing Strategies". In: Readings in Urban and Regional Planning. Macmillian Nigeria Publishers Limited, Ibadan, Nigeria. Pp.187-256.

[5] Agbola, T. and Olatubara, C.O. (2003). "Private sector driven housing delivery (in Nigeria): Issues, constraints, challenges and prospects". A lead paper presented at the 2nd Annual National Workshop on Private sector Driven Housing Delivery in Nigeria, University of   Lagos, Lagos, 30th – 3rd July.

[6] Agbola, T. and Olatubara, C.O. (2004). "Land Use Planning". In: T. Agbola (2004). Readings in Urban and Regional Planning. Macmillian Nigeria Publishers Limited, Ibadan, Nigeria. Pp. 137-162.

[7] Agbola, T. and Olatubara, C.O. (2004)."Writing an Urban and Regional Planning Dissertation". In: T. Agbola (2004).Readings in Urban and Regional Planning. Macmillian Nigeria Publishers Limited, Ibadan, Nigeria. Pp. 137-162.

[8] Akinsanya, O. (2005): "Asssessment of Residential Land Use Conversion to Commercial in Ikeja, Lagos". B.Tech. Dissertation submitted to the Department of Urban and Regional Planning, Ladoke Akintola University of Technology, Ogbomoso, Oyo State, Nigeria. Pp. 20-22.

[9] Amler B., Betke, D., Eger, H., Ehrich C., Kohler A., Kutter A.,Von Lossau A., Müller U.,Seidemann S., Steurer R, and Zimmermann W. (1999). "Land Use Planning Methods, Strategies and Tools". Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH, P.O. Box 5180, 65726 Eschborn, Germany. P.1.

[10]   Areola, O. (2001) in T. Agbola and E.O. Agbola (1997). "The Development of urban and Regional Planning Legislation and their impact on the morphology of Nigerian Cities" Nigerian Journal of Economics and Social Studies Vol.39 (1) pp123-143.

[11]   Aribigbola, A. (2007). "Urban Land Use Planning, Policies and Management in Sub Saharan African Countries": Empirical Evidence from Akure, Nigeria. Fourth Urban Research Symposium. Pp.3-5.

[12]   Baba, J.M. (1994). "Sustainable Development and the Nigerian Environments". The Nigerian Geographical Journal, Ibadan University Press. 1 - 19.

[13]   Babarinde, J.A. and Agbola, T. (2004). "Land Economics". In: Readings in Urban and Regional Planning. Macmillian Nigeria Publishers Limited, Ibadan, Nigeria. Pp.62-63.

[14]   Bartone, C. R. and   Benavides, L. (1993). "Local Management of Hazardous Wastes from Smallscale and Cottage Industries". Presented at the 5th Pacific Basin Conference on Hazardous Waste, Pacific Basin Consortium for Hazardous Waste Research, East-West Center, Honolulu, Hawaii, November 8–12.

[15]   Burgess, E. (1925). "The Growth of the City".In: Park RE, Burgess EW, Mckerzie RD (eds). The City. Chicago: University of Chicago Press.

[16]   Carney, D. (1999). "Livelihood Approaches Compared, DFID, London". In: Garrett, J and Ahmed, A (2004): Incorporating Crime in Household Surveys: A Research Note. SAGE. www.sage publications.com.

[17]   Falade, J.B. (2003). "The Urban and Regional Planning Process, the Old Order and the New Paradigm". A paper presented at the 2003 Mandatory Continuing Professional Development Programme (MCPDP) of the Nigerian Institute of Town Planners (NITP) held in Calabar, Asaba and Kaduna.

[18]   Filani, M.O. (2005). "Mobility and Survival: A Nation's Dilemma". An Inaugural Lecture in 1988. Ibadan: University of Ibadan.

[19]   Felson, M. and Clarke, R.V. (1998). "Opportunity Makes the Thief Practical Theory for   Crime Prevention". Research, Development and Statistics Directorate. 50 Queen   Anne's Gate, London, SW1H 9AT.

[20]   Garrett, J. and Ahmed, A. (2004). "Incorporating Crime in Household Surveys". A Research Note. SAGE. www.sage publications.com

[21]   Gyabaah, K.N (2010). "Urbanization Processes – Environmental and Health effects in `Africa". Panel Contribution to the PERN Cyberseminar on Urban Spatial   Expansion.   Ghana, E-mail: spolytec @yahoo.com.

[22]   Harris, C. and Ullman, E. (1945). "The Nature of Cities". Annals of the American Acad.   Polit.   Soc.   Sci.   242 (November): 7-17.

[23]   Hoyt, H. (1939). "The Structure and Growth of Residential Neighbourhood.

[24]   Ikejiofor, U. (2006)." Equity in Informal Land Delivery: Insights from Enugu, Nigeria". In: Land Use Policy. Vol.23, Issue 4, October 2006. Pp .448-459.

[25]   Tanimowo, N.B. (2006). "Mixed Land Use and Intra-Urban Travel Pattern in Ogbomoso, A Nigerian Medium Sized Town". Journal of Human Ecology. 20(3): 207-214.