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*Full Length Research Paper*

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# Effects of residential land use changes to other land uses in Enugu metropolis

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**The study analysed the effects of change in residential land uses to other land uses in Enugu metropolis. 150 copies of questionnaires were purposively and randomly distributed to the major residential areas and individuals in Enugu metropolis. Chi-square analysis was used to test the hypothesis which indicated Ho: at (0.05 alpha level and  $\infty = 0.05$  and  $df=4$ . The findings made showed that land use change from residential to other land uses affect the physical environment (soil, air and water quality), lack of government planning agency to implement its planning policy in the area is the major factor that causes this land use change, commercial activities contributed more to the land use changes. The recommendation made was that planning agency should work with law enforcement agency towards the implementation of its planning policy and also there should be a legal frame work that will address the issue of abnormal usage of land use in Enugu metropolis.**

**Key words:** Residential land uses, metropolis, land use regulation.

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## INTRODUCTION

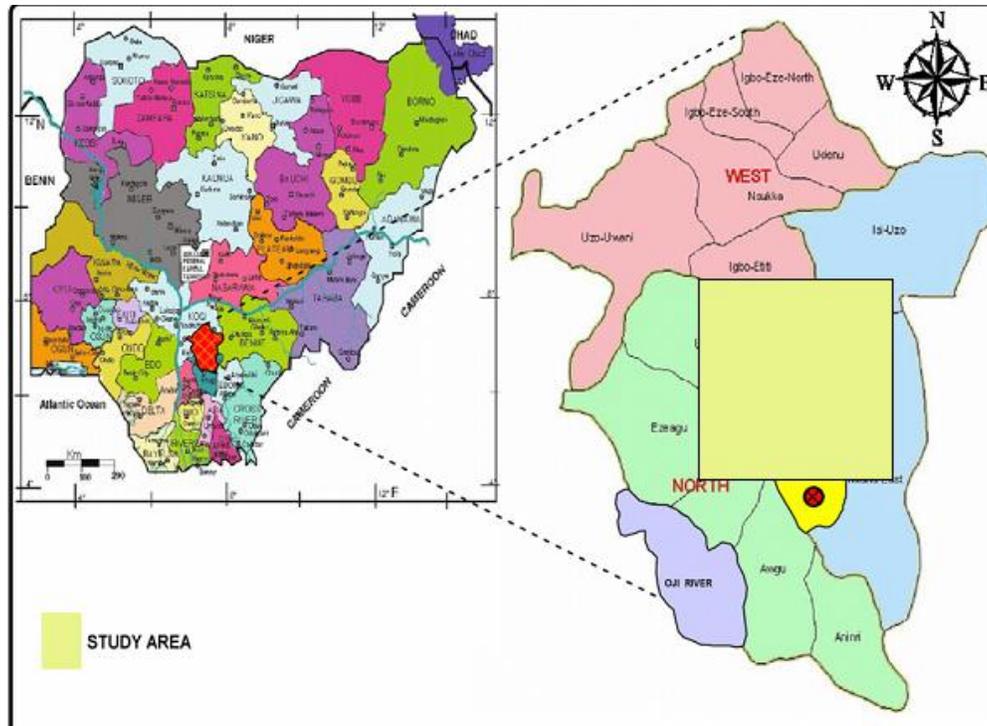
Studies of land use change do not always employ similar definitions of the principal terms land and land Use (Peter et al., 2017). Definitions and descriptions of these terms vary with the purpose of the application and the context of their use. It is thus necessary to look at alternative definitions and descriptions of these terms that are more frequently used in this study, especially those offered by official sources of Land and Land Use data.

Land use involves both the manner in which the biophysical attributes of the land are manipulated and the intent underlying that manipulation and the purpose for which the land is used (Braissoulis, 1999). In a similar vein, it is the purpose for which human beings employ the land and its resources. Briefly, land use denotes the human employment of land.

Land use change may involve either (a) conversion from one type of use to another- i.e. changes in the mix and pattern of land uses in an area or (b) modification of a certain type of Land Use. Modification of a particular land use which may involve changes in the intensity of this use as well as alterations of its characteristics qualities/ attributes- such as changes from low-income to high-income residential areas (the buildings remaining physically and quantitatively unaltered), changes of suburban forests from their natural state to recreation uses (the area of land staying unchanged), and so on (Allen, 2003). There is need for planning of Land Use patterns for better urban development. Planning is a scheme of action, procedure, a design or an arrangement of a project for definite purpose. It is a development process which takes place in the environment which brings changes. According to Adam (2015), planning is an art or science of ordering the use of land and sitting of building and communication route so as to secure a

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**Figure 1.** Study map.

maximum practicable degree of economy, conveniences and beauty.

The growth and development of urban areas is usually marked by a number of growth characteristics (Ellis, 2011). These are either singular or together brings about large population settlement. Sequentially, as cities grow and develop, they tend to involve a functional pattern of land uses. Some of these land uses that are common in Enugu include the following: residential land uses, commercial land uses, recreational land uses, agricultural land uses and industrial land uses.

It was observed that there had been considerable changes in the urban land use pattern in Enugu, which have deviated the purpose of planning. This culminated into irregularities in the use of urban land. Such irregularities have caused alterations in the internal structures of core areas of the city. Areas like New Heaven, Uwani and Zik avenue are originally planned and designed for residential purposes in the master plan presently no longer serve the initial purpose, but changes to either institutional or commercial land uses. Besides, the changes in residential land uses affect the other land uses in Enugu metropolis. Changes from residential land use to other land uses in Enugu have initiated serious disorder in the urban land use pattern and character. Most residential and commercial areas have deviated from serving the original functions to unacceptable activities. These have resulted in serious physical and socio-economic adverse condition on the urban growth

and development of Enugu urban. These problems have also led to increases in illegal land use activities, displacement of people, changes in land value, and high cost of rents. It is the intention of this research to identify the effects of residential land use changes to other land uses in Enugu metropolis.

Therefore, this study intends to identify the implications of these changes to other land uses in Enugu and also proffer a remedial solution to the situation.

### **Area of study**

Enugu metropolis, known as coal city is as old as South Eastern Nigeria. It is the capital of the then Eastern Nigeria. Now, Enugu metropolis is the capital of Enugu State with a population of 926,877. Also, Enugu metropolis is the only largest city in Enugu State which is both the State's administrative, commercial and industrial nerve of the state. Geographically, Enugu metropolis is located between coordinates  $6.4584^{\circ}$  N,  $7.5464^{\circ}$  E (Figure 1).

### **RESEARCH METHODOLOGY**

The study used quantitative research design in data collection. To achieve this, five housing areas- New heave, New layout, Ogui layout, GRA and Emene were

**Table 1.** Percentage distribution of respondents according to category of resident ownership.

Residence category	Response	Percentage (%)
Rental	70	58.3
Owner occupier	30	25
Govt quarters	15	12.5
Private establishment quarters	5	4.2
Total	120	100

**Table 2.** Percentage distribution of respondents according to their house design.

House design	Response	Percentage (%)
Flat	55	45.8
Duplex	20	16.7
Bungalow	22	18.3
One bedroom self-contain	23	19.2
Total	120	100

**Table 3.** Percentage distribution of residential land uses and other land uses by area.

Area	Number of residential houses	(%)	Number of other land uses	(%)
New heaven	4670	52.1	4300	47.1
New layout	4205	51.9	3900	48.1
Ogui	3600	53.7	3100	46.3
Emene	3820	52.1	3515	47.9
GRA	5000	51.5	4700	48.5
Total	21295	52.7	19515	46.3

Source: Ministry of Housing and Urban Development, 2015

selected through deliberate sampling method and 150 questionnaires were administered to rental occupiers, owner occupiers, government quarters, private establishment quarters, housing agencies and ministry of housing and urban development.

### Data presentation and analysis

A total of 150 questionnaires were distributed to different respondents in the major residential areas in Enugu metropolis which are new heaven, new layout, Ogui, GRA, and Emene.

From the Table 1, it is revealed that individuals living on rented apartment constituted 58.3% of the respondents followed by land lords that have their own houses having 25% of the respondent. 12.5% of the respondents indicated to live in government residents while 4.2% of the respondents live in private establishment quarters. The reason why the engagement of rented exceeded other categories may be as a result of high cost of building material and buying land. Also most private

Table 4 shows the percentage of commercial land use exceeded that of the other land uses. Commercial land uses constituted 60.9% of the total percentage of the land

establishments and government do not have enough houses that will reach all their staff. This has limited the chances of getting accommodation for junior staffs of this establishment.

From the Table 2, individuals that are living in flat constituted 45.8% of the respondents followed by individuals living in one bedroom self contained bungalow, and duplex having 19.2%, 18.3% and 16.7% respectively. The reason might be that most houses in Enugu are partitioned in flats because of independent and comprehensive nature of the house.

Table 3 shows that the number of residential land use in Enugu constituted 52.2% while that of recreational, industrial, commercial and agricultural land uses constituted 46.3%. Also average total number of residential land use in Ogui, New heaven, Emene, New layout and Ogui constituted 48.5%, 48.1%, 47.1% and 46.3% respectively. From the result the changes in land uses are more in GRA and New layout. This might be as a result of inability of government planning agency to combat other land use activities going on in residential area.

uses. Followed by industrial land uses having 24.15 of the total other land uses. Agricultural and recreational has lower percent of other land uses.

**Table 4.** Percentage distribution of residential land use and other land uses by area.

Area	Agric	(%)	Recreation	(%)	Comm.	(%)	industries	(%)
New Heaven	200	4.7	35	0.8	3065	71.3	1000	23.2
New Layout	500	12.8	100	2.6	2150	55.1	1150	29.5
Ogui	275	8.9	60	1.9	1970	63.5	795	25.7
Emene	505	14.4	150	4.3	1850	52.6	1010	28.7
GRA	812	18.5	235	5.4	2852	60.5	741	15.6
Total	2292	12.0	580	3.0	11887	60.9	4696	24.1

Source: Ministry of Housing and Urban Development, 2015.

**Table 5.** Percentage distribution of respondents according to factors that causes change in land use.

Factors	Response	(%)
Cost of renting apartment	25	20.5
Transportation cost to area of land uses	10	8.3
Inability of govt to implement its planning policy	50	41.7
Distance and proximity to market	15	12.5
Total	120	100

**Table 6.** Percentage distribution of respondents according to effect of land use changes from residential to other land uses.

Effects	Response	(%)
Standard of living	15	12.5
Physical environment	52	43.3
Water quality	12	10.0
Air quality	15	12.5
Soil quality	20	16.7
Biodiversity	6	5.0
Total	120	100

Also commercial land use constituted the highest percentage of total other land uses in all the areas, followed by industrial, agricultural and recreational respectively. The reason may be that, most people's source of livelihood is from commercial activities and industrial activities in Enugu. This shows that the commercial activities are the major threat to residential land uses in Enugu Metropolis.

From the Table 5, 41.7% of the total population of respondents indicated that the cause of changes from residential land use is as a result of inability of the government to enforce its planning policy, 20.5% of the respondents attributed the cause to cost of renting apartments in designated area of other land use. Distance and proximity of business also constituted

12.5% while transportation cost to the area of other land uses constituted 8.3%. This means that the ability of enforcing its planning policy in Enugu have not resulted to strict compliance.

Table 6 indicates that the effects of changes from residential to other land uses are more on the physical view of the environment followed by the impact on soil quality, air quality and standard of living both having 12.5%,, water quality having 10.0%, and biodiversities having 5% respectively. This might be that changes in land use causes the changes in the pattern of movement of people and goods, building pattern and other physical element in such area. Its low effects may be as a result of fewer numbers of biodiversities in urban area.

$H_1$ : the level of other land use activities has a significant impact on the level of residential land use activities in Enugu metropolis

## Hypothesis

$H_0$ : the level of other land use activities do not have any significant impact on the level of residential land use activities within residential land uses in Enugu metropolis.

Because the chi-square calculated ( $\chi^2_{cal.}$ ) value (7.91), is less than the chi-square table ( $\chi^2_{tab.}$ ) value (9.45), at 0.05

## Decision rule

alpha levels,  $H_0$  cannot be rejected. This means that there is no significant difference between changes from residential land uses to other land uses within Enugu

metropolis. This signifies that other land use activities going on in residential areas in Enugu Metropolis are high.

### Discussion of findings

A number of deductions were made from the data analysis, these are highlighted as follows: the study accepted  $H_0$  at  $df =$  and  $\alpha = 0.05$ . This meaning that there is no significant different between changes in residential land use to other land uses. The analysis also shows that total residential land use in residential area in Enugu is 21295 while that of other land uses are 19515 both having percentage of 52.7% and 46.3% which are very close. This means that the differences between the rates of changes are small.

The study has also shown that commercial activities contributed to a highest percentage of these changes that occurs in residential land uses. On the aspect of factors that causes these changes, inability of government planning agency to implement it planning policy in Enugu constituted to a high percentage of the factors that drives these changes. Other factors identified includes; cost of renting an apartment, transportation cost from one area of land use to another, and distance and proximity to markets.

The study found out that the changes in land use affects the physical environment. These changes also affect the water quality, air quality, soil quality, standard of living and biodiversities in the area as identified by the study.

### Implication of findings

Since there is no significant difference between residential land use and other land use activities in residential area, it means that in no distant time the use of residential area for recreational, industrial, commercial and agricultural activities will over shadow the residential land activities in these residential areas in Enugu. This will have detrimental effect on the physical view of the environment, air quality water quality, soil quality and biodiversity such effect includes chemical and biological pollution of the residential areas, noise which affects the serenity of the environment, over-crowding etc. This effect of land use changes on water, soil, and air quality can have a serious implication on the composition of the air, water and soil in the residential areas thereby making it unfit for human and animal consumption/habitation and for certain domestic purposes.

Also the level of commercial activities in residential areas as identified by the study indicated that a large volume of goods and services that should be done in commercial areas are now done at people's residence. This might lead to shortage of goods and services in commercial centres because many people will clinch on

the advantage of saving cost of renting a shop in the market and payment of market dues to do their business at their residence.

The inability of planning authority to restrict people from using residential land uses for other purposes has led to an increase of this chaos land use pattern in the area. This means that if proper measures are not taken other land use activities will outgrow residential activities in the area.

### Recommendation

Government should identify and provide the necessary and adequate infrastructural development at cheap rate in various land use zones thereby encouraging the residence of Enugu to take cognisance of the advantages of doing their various activities at the adequate designated land use area.

Enugu state planning Authority should in-cooperate with law enforcement agencies and other civil societies to fight against this chaos pattern of land use. They should also ensure that any building that will be sited within Enugu metropolis must be in compliance with the land use pattern of the area.

Also there should be a legal frame work which will back up the enforcement of this policy and also place a punishment on the defaulters.

### Conclusion

This analysed the implication of land use changes from residential to other land uses. Inability of planning agency to implement planning policy, high cost of transportation to other land use zone and high cost of acquiring a space in other land use zone have been found as the major factors that drives these land use changes in Enugu metropolis. These changes affect the physical environment, quality of soil, water and air quality and also affect bio diversities in urban areas as well as increase housing prices thereby making housing less affordable for middle and low income households. Changes in land uses from residential to other land uses may not only affect the lives of individuals, but also the ways in which the society is organised. It can be mitigated using legal measures, law enforcement agencies, and government efforts, development control should put more efforts to see that the land use policies are strictly adhered to. This will therefore help in achieving sustainable development that will encourage socio-economic development of Enugu metropolis.

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