

## Environmental Challenges of Peri-Urban Settlements in the Lagos Megacity

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### 1 ABSTRACT

This paper has investigated the environmental challenges faced by Peri urban settlements in the Lagos Megacity. An intense study of the Isheri, Ibafo and Sagamu Interchange areas along the Lagos Ibadan Expressway axis was done. Socio economic characteristics, housing and environmental conditions as well as rural urban linkages were done to determine the flow of interaction between the settlements and the Lagos Metropolis. Data collection was by the administration of structured questionnaires. 46,113 and 191 were administered on household heads in Isheri, Ibafo and Sagamu Interchange areas respectively. survey was by systematic random sampling. The study revealed a high level of interaction between the settlements and the Lagos Megacity as over 60 % of respondents working in Lagos. The study also revealed that land value, rental value had increase since 2005 when the highest rate of influx was observed. However environmental problems in the area of infrastructure and security were observed. The paper concluded by suggesting strategies for mitigating identified challenges and these include the introduction of participatory planning mechanisms as well as the enforcement of development control.

### 2 INTRODUCTION

According to OECD (1979:) the impacts of economic growth and physical expansion of the urban area are not confined within urban boundaries; they reach into much wider areas surrounding urban centres, creating so-called urban areas, urban fringe areas, or peri-urban areas. As such, the peri-urban area can be defined as the meeting of urban and rural activities. While the peri-urban area retains the characteristics of the rural area, changes take place with respect to physical configuration, economic activities, social relationships and so forth. This meeting of different systems creates both opportunities and problems, which have significant impact on the environment and people's livelihoods. Lagos has grown from predominantly farming and fishing villages to highly urbanized settlements. With a population of over 10 million people on a built up area of 17500ha, it is regarded as a mega city (Mabogunje, 2002). Lagos with its high migration rate and even higher population rate has grown in an amoebic fashion into surrounding rural areas, hence the proliferation of peri-urban settlements adjacent to Lagos

This study appraises the nature and environmental challenges of peri-urban settlements along the Lagos Ibadan Axis of the Lagos Megacity, and considers in detail, the environmental conditions, socio-economic activities as well as the linkages Lagos Megacity.

### 3 URBAN-RURAL LINKAGES AND FLOWS

At the broad theoretical level, it is suggested that there are economic, social, political and ideological linkages between urban and rural places. These find their physical expression in measurable flows of people, money and budgetary allocation. These flows are also associated with interactions between people, places and objects, but do not in themselves actually embody those interactions (Unwin,1989). This system proposes four kinds of linkages (i.e. economic, social, political and ideological) and many more flows that are derived from them.

Firman (1996) identified, four levels of interactions occur with major cities and they are

- (1) the peri-urban regions: those areas surrounding the cities within a daily commuting distance from the core and characterised by high interaction with it;
- (2) the agricultural regions, often lying along the corridors connecting a large city core to smaller town centres;
- (3) densely populated rural regions;

#### (4) sparsely populated frontier regions

The Research team of the Development Planning Unit, University College London (2000) while attempting to characterise the features of the peri-urban interface and the related environmental problems posited that population size, population density in built up areas, infrastructural characteristics, administrative boundaries and predominant economic activities are the main variables that distinguish rural from urban. The peri-urban interface constitutes an uneasy phenomenon, usually characterised by either the loss of rural aspects (loss of fertile soil, agricultural land, natural landscape etc) or the lack of urban attributes (low density, lack of accessibility, lack of services and infrastructure etc). Attempts to conceptualise this new development landscape range from the emphasis on rural-urban linkages as footloose processes rapidly transforming territories, to the notion of the peri urban as a term qualifying areas with mixed rural and urban features. (Dayaratne, 2003). According to Firman (1996), the administrative integration of surrounding rural areas into the jurisdiction of the urban settlements is a pragmatic way of eliminating unnecessary conflicts in a highly integrated rural-urban territory.

Douglass (1998) proposed a new paradigm of networking settlements that integrates the realities and the potential of rural-urban linkages in the process of regional development policy formulation: Rather than trying to make a single large city into an omnibus centre for a vast region, the network concept is based on a clustering of many settlements, each with its own specialisation and localised hinterland relationships. His supposition is that even from the point of view of growth centres, an integrated network of dynamic centres is more likely to counterbalance a big city than some artificially boosted growth centre. (Douglass, 1998)

Dayaratne, (2003) on the transformations of the peri urban areas, averred that peri-urban areas are undergoing major transformations. Large numbers of urban residents, pushed out by high housing costs in the city, look for cheap accommodations in the peri-urban areas. The poorer, informal-sector workers move/rent often overcrowded temporary shack/rooms hurriedly built. Squatting is predomint, while numerous forms of slums and shanties emerge,. At the same time residents of peri-urban settlements usually are employed in the city, while traditional agriculture gives way to new forms of production aimed are fulfilling the urban dweller's need for fresh vegetables.

Rakodi, (1998) sees the peri-urban interface as a dynamic zone both spatially and structurally. Spatially it is the transition zone between fully urbanised land in cities and areas in predominantly agricultural use. It is characterised by mixed land uses and indeterminate inner and outer boundaries, and typically is split between a numbers of administrative areas. The land area which can be characterised as peri-urban shifts over time as cities expand.

It is also a zone of rapid economic and social structural change, characterised by pressures on natural resources, changing labour market opportunities and changing patterns of land use.

Rakodi further recognised the complexities of building a spatial framework around what is essentially an amorphous and mobile site for the interaction of various social, economic and cultural processes and inter-linkages between the rural and the urban, stressing the relationship between urban and the immediate rural areas being the result of a process over time.

DFID (1998) defines the peri-urban interface as characterised by strong urban influences, easy access to markets, services and other inputs, ready supplies of labour, but relative shortages of land and risks from pollution and urban growth. The concept of the peri-urban settlement is one referring to an area where urban and rural development processes meet, mix and inter-react on the edge of the cities. It is often not a discrete area, but rather a diffuse territory identified by combinations of features and phenomena, generated largely by activities within the urban zone proper; hence the development of a peri-urban area is an inevitable consequence of urbanisation and as cities in developing countries continue to grow, the peri-urban area moves outward in waves (DFID, 1998). In addition to their spatial characterisation, peri-urban settlements are conceptualised as squatter settlements, illegal areas, areas of high population growth due to rural migration (and natural growth), low priority areas in terms of urban planning, areas with diverse socio-cultural composition and low income, socio-economic situation (World Bank, 1999, UNICEF, 1999). These approaches may be classified according to the set of variables they choose to emphasize: physical attributes, such as proximity to the city and poor infrastructure; socio-economic variables; or urban-rural flows (of people, energy, goods). Adell, (1999); Allen, (1999) and Jenkins (2003).

Scant research exists on the phenomenon of peri-urban settlements in Nigeria. In a study on the impact of the spatial growth of Ibadan on its surrounding hinterland, Areola (1994) focused on the resource processes and the environmental impact of the growth. The findings of the study focused less on the problems of the growth as it affects the city itself but more on the problems generated in the city region, (Areola 1994). The study concluded that full understanding of the economic and environmental effects of Ibadan city's growth and spatial expansion can be gained only through detailed studies of the region (Areola 1994). Salau (2006) revealed an earlier research by Maconachie and Binns (2003) on people-environment relationships at the rural-urban interface of Kano, Northern Nigeria in which they identified socio-economic and cultural factors as the most significant forces shaping the process of peri-urban change in the city.

Jaiyebo, (2003) avers that there is a dearth of information on the peri-urban interface in Nigeria, and the rates of city expansion and migration to the city fringes are not adequately documented. Studies which made reference to peri-urban settlements include those of Mabogunje (1968), LASG (2004), Odumosu (2004), CPMS (2005), FGN(2006) Gandy, M (2006) MPPUD (2005),and Salau, T.I. (2006). However, they all made reference to this phenomenon in the context of the growth and development of the Lagos Metropolis. hence this paper is of utmost importance, as it investigates these settlements and identifies the challenges faced as well as the potentials for growth and development and ultimate integration with the Lagos Megacity.

#### **4 CONTEXT OF THE RESEARCH**

The spatial growth of Lagos Metropolis has gone beyond the physical boundaries of Lagos State and spilled over at many points into adjoining Ogun State. The Lagos Metropolis is located along the narrow coastal plain of the Bight of Benin. The metropolis, an estimated 300 square kilometres, is a group of islands endowed with creeks and a lagoon. The city began in the fifteenth century as a Portuguese trading post exporting ivory, peppers, and slaves, and has overflowed its natural boundaries of about 3.8 sq. km in 1881 to a huge metropolis of over 1,183 sq. km in 2002 (Oyesiku, 2002), and a diversity of activities, functions and reflections have gradually spread over a larger territorial area as the metropolitan area. According to Odumosu (2004), the spectacular pattern of urban development of Lagos has seen the mainland segment of the Metropolis expand across shanty towns like Agege, Egbeda, Idimu, Ajegunle, Ketu, Bariga, and Ejigbo-Ikotun.

The resulting Lagos Megacity region includes the continuously expanding area comprising for the moment all of the 20 local government areas of Lagos State and the emerging urban, rural communities and peri urban settlements comprising of various geographic areas that have developed at different time in close linkage to the Lagos metropolitan area, Spatial expansion of the metropolitan Lagos has extended outwards annexing nearby settlements along the southwest end of Ojo-Badagry Expressway, the south east axis along the Lekki Epe corridor, the north east axis along Ikorodu corridor, Alimosho-Igando-Iba-Lasu corridor north west of Metropolitan Lagos and the Lagos-Ibadan axis north of Metropolitan Lagos.

Since metropolitan Lagos is practically saturated, growth had been outwards to the peri urban settlements, the regions with the potential for expansion; strong interconnection with the Lagos Megacity, strong local growth for informal activities for the local and urban population. The corridors along the Lagos-Ogun State borders have been experiencing the highest pressure as the Metropolitan Lagos spills over to them. Otta, Ibafo/Mowe, Ojodu/Akute, and Ogijo areas are already under heavy and intense pressure of physical growth with very few indicators of real development. (Lagos Mega city Report 2006) . this study therefore investigates the Lagos Ibadan Peri Urban axis located in this zone.

The peri urban settlements of the Lagos Ibadan Axis is located on between Latitude 6° 44' North and Longitude 30° 25' East'' of Isheri North and Latitude 6° 54' North and Longitude 30° 7' East'' of the Sagamu interchange. In aerial distance, Lagos Ibadan Axis of the Expressway is about 32 kilometres between the Isheri North end of Lagos State and the Sagamu Interchange of the Expressway in Ogun State. The peri urban settlements of the Lagos Ibadan Axis are strategically located nodal settlements along the Lagos - Ibadan Expressway absolving the spillover population from the Lagos Megacity.

The Lagos Ibadan Peri Urban settlements are a cluster of small settlements along the axial of the Lagos Ibadan Expressway. The Lagos Ibadan Expressway is a unimode transportation route that links Lagos with other parts of Nigeria via the Sagamu-Ore Expressway. The Expressway also serves as connecting distributaries to major towns and roads that converge along its axis. The street pattern of the Expressway is

decidedly radial, with Ibafo peri urban area street pattern taking shape along its traditional core, while the newer areas of Isheri and Sagamu Interchange portray deliberate mix up of land use activities without recourse to planning standards.

Lagos Ibadan corridor has grown strongly in its physical extent along Lagos - Ibadan Expressway which runs in a north-west direction from Metropolitan Lagos towards Ibadan along the state boundary with Ogun State and extends to a distance of about 32 kilometres terminating at the Sagamu Interchange. The physical extent of the towns and settlements runs in a linear fashion along the Expressway extending inwards to some few kilometres from the Expressway.

The physical development of Lagos Ibadan corridor is further reinforced by various religious institutions that have taken over the corridor in recent years; and are major flash Point for seasonal traffic congestion. They include the Redemption Camp at Mowe, Mountain of Fire Ministry Camp at Km 12, Deeper Life Ministry at Km 15, and NASFAT site at km 16. Other major land uses are those of various private universities, Cargo Airport at Sagamu Interchange, residential estates such as the Gateway Village, Riverview, Havillah, Sparklite Estates, Paradise City and others. The peri urban settlements have similar land use with slight variations along the population pattern. All of them of course provide residential land use. A very high percentage, 86 %, has farmland cultivated by peasant subsistence farmers. These are the two predominant uses of the land. 28 % have social facilities such as schools, police posts and institutions that complement residential land use. Only a few, 12.3 %, have any commercial activities and these are mainly retail shops. The bigger settlements have markets and petrol filling stations. (CPMS, 2005). Only six have any industries at all, and these include textile industries in Ibafo, feed mill in Orimerunmu, cocoa processing industry in Warewa Araromi, and several cottage industries in Mowe, Loburo, Ofada and other smaller settlements. Major development axes are at Mowe, Ibafo, Ofada and the Redeem camp, where intensive development activities extend from the Expressway inwards to a distance of about 2.5 kilometres. Table 1 below highlights the key characteristics of the zone.

<b>Peri Urban Zone Characteristics</b>	<b>PERI URBAN ZONES ACTIVITIES</b>
<b>Peri Urban Zone</b>	Sagamu Interchange: 50 %; Ibafo: 30 %; Isheri: 20 %
<b>Dominant Settlements</b>	Mowe; Ibafo; Ofada
<b>Population Estimate (2003)</b>	21,740
<b>Land Area</b>	450 km <sup>2</sup>
<b>Degree of Land Use</b>	Minimal < 10 %
<b>Topography</b>	Low and gentle 5 – 25 m
<b>Main Access</b>	Lagos-Ibadan Expressway
<b>Roads &amp; Highways</b>	No Road Network; Transit Corridor
<b>Water Supply</b>	No Water Supply System
<b>Economic Infrastructures</b>	Rudimentary
<b>Social Infrastructures</b>	Rudimentary

Table 1: Characteristics of the Lagos Ibadan Peri Urban Zones Source: CPMS (2003) Ogun State Conceptual Regional Plan (2004 - 2025) Main Report

Eighty two settlements have been identified in this zone (CPMS, 2005) of which more than 70 % are hamlet of less than 100 persons. Another 20 % have population of between 1000 and 2500 each. The six dominant settlements are Ofada, Abaren, Orimerunmu and Arepo with population sizes in the range of 2,500 to 5,000; and Mowe and Ibafo with populations greater than 10,000. (CPMS 2003).

The study area comprises three major areas

Isheri Area constitutes a substantial portion of the first OPIC acquisition; occupants in the area include the cattle and ram dealers on the bank of the Ogun River, Sparklite Estate, a private developer housing effort, the Isheri community to the east of the expressway and the OPIC head office. At its northern fringe are the settlements of Arepo and Warewa. This portion of the corridor is low-lying on both sides of the expressway.

Ibafo Area This area is dominated by Ibafo, a town on both sides of the expressway, with several other settlements including Araromi, Magboro Akeran and Magboro Sofolarin. The area also contains three religious settlements, MFM, Deeper Life and NASFAT with their potential to create large flash traffic. The centre of Ibafo is approximately at 13.5 kilometres from the State boundary with Lagos State, and it extends

for about 3 kilometres along the expressway. It is elliptical in shape, tapering off from the 3 kilometres along the expressway to less than 100 metres wide two kilometres away on both sides of the expressway.

Sagamu Interchange Area is made up of the gateway city to the north of Ibafo, starting from Mowe and extending to the Sagamu Interchange. The dominant existing settlement is Mowe, which has grown to merge with Loburo and Pakuro. Others are Ofada, Orimerunmu, Abaren and Asese. Major settlements include the Redemption Camp and CETEP University. There is projected to be about 26,500 Mowe today occupies an area of about 11 square kilometres, estimated from digital images. About 90 % of this land area is west of the expressway, and it extends about 3 kilometres inwards. Its extent along the expressway is about 3.5 kilometres starting at about kilometre 20 to 23.5 from the State boundary with Lagos State. The major catalyst for the development of Mowe is the siting of the Redemption Camp in a nearby settlement of Loburo.

## 5 RESEARCH METHODOLOGY

Lagos Ibadan Peri Urban Axis was purposively selected for this research because of its distinct geographic attribute of linking Lagos to the rest of Nigeria. The study area was delineated on the basis of its linear form of settlements along the Lagos Ibadan Expressway with scattered residential quarters for the purpose of questionnaire administration.

Data collection was by systematic random sampling. Data was collected on the socio-economic characteristics of residents, physical and infrastructural facilities as well as their interaction with the Lagos Metropolis. A sample size of 5 % of the sample frame of the estimated 6840 buildings (CPMS 2005) along the Lagos-Ibadan Axis was selected. 350 questionnaires were administered on household heads in 19 of the 82 settlements that make up the axis. 46, 113 and 191 household heads were sampled in Isheri, Ibafo and Sagamu Interchange Areas respectively. Data analysis was by both simple descriptive statistics as well as parametric analysis.

### 5.1 Socio-Economic Characteristics of the Respondents

The population is a relatively young one with about 71.1 % aged between 20 and 40 years old. 7.7 % of the respondents are less than 20 years of age, while those between 41 to 60 years make up 18 % of the population. Those above 60 years of age are 9 %. The pattern of the age distribution is similar across the three zones, this may largely due to the fact that the axis is a transitory zone for working age men, unable to afford the cost of living in the Megacity.

The survey also revealed that the male population was 93.5 %, 54.9 % and 39.8 % in Isheri, Ibafo and Sagamu Interchange areas respectively. a significant proportion of the respondents are single; 43.5 %, 41.6 % and 48.2 % in Isheri, Ibafo and the Sagami Interchange areasn respectively, while there are more married people in Ibafo and Sagamu Interchange areas ( 46.9 % and 45 %). Only about 26.1 % of the respondents in Isheri are married. The differeing figures in gender and marital status in Isheri may be attributed to the Cattle Market which is a sector dominated by men.

The Lagos Ibadan Peri Urban Zones is largely made up of Nigerian nationalities (86.3 %) comprising of various tribes such as the Yoruba speaking people of the Ijebu, Awori, Egba, Yewa, and Egun extraction; the Igbo, Hausa, Isokos, Urhobos, Calaber, and Ijaw. The nationalities fro the West African Coast is about 11.4 % of the respondents, while 2.3 % of the populations are from other African Countries. Educational level is a key determinant for measuring standard of living in the study area. The study carried out revealed that 26.0 % of the total respondents are literate by United Nations standards, having completed a minimum of secondary education. 34.8 %, 32.7 % and 19.9 % have secondary education in the Isheri area, Ibafo area and the Sagamu Interchange respectively, the high level of literacy across the three zones is attributable to its proximity to the Lagos Megacity.

The survey of occupational status of the respondents revealed that 26.6 % are Government employee and self self-employed respectively while the unemployed and retired accounts for 22.6 % and 3.4 % respectively. However, a breakdown of the occupational status of the three peri urban zones revealed that trading, civil service and students/apprentice are the most common activities, representing 15.1 %, 29.4 % and 21.4 % in that order, while 6.9 % are engaged in teaching, 5.4 % in farming, 10 % are artisans, 9.4 % are factory workers, and 2.3 % are retirees. In all the peri urban zones, the majority of the respondents are civil servants

followed by students and apprentice while trading activities was high in Ibafo and Sagamu. While majority of the respondents (26.6 %) are earning less than N10,000 per month, those who are earning between N10,000 and N20,000 are 26.6 % and 25.4 % are earning between N20,001 and N40,000. 3.1 % earn between N40,001 and N60,000, 5.7 % are earning between N80,001 and N100,000. those who claimed to earn above N100,000 per month are 3.5 % of the respondents. Interestingly, mode income per month was less than N10,000 for Isheri and Sagamu Interchange areas, and between N20,000 and N40,000 in Ibafo. 16 % of the respondents in Ibafo area earn over N100,000 monthly. and It could be deciphered from all these that a larger proportion (62 %) of the respondents earn less than N20,000 per month.

## 5.2 Housing and Environmental Profile of the Study Area

Majority of the houses in the study area were built between 2000 and 2010. The period that recorded the highest rate of building was between 6 to 10 years, which recorded almost half of the total buildings surveyed. This is followed by the period between 0-5 years recording a total of 17.1 % of the total number of buildings. A study of the pattern of growth within the three peri urban zones shows that majority of the new building construction has been more concentrated around the Isheri-Ibafo areas, which adjoins the Lagos Megacity. Housing types in the study area are small rooming house types (28.6 %). The detached type of houses, 1.7 % and compound houses 27.1 %, while block of flats accounted for 25.1 %. The dominance of the rooming type is explained by the rapid growth of the Lagos Megacity in to the adjoining peri urban settlements by low income earners and the adaptable nature of its design. It is easier to build and less costly to adapt for higher returns. It is also easier to let out to the various sizes of households.

Residential areas in the peri urban zones differ according to the areas, but, the emerging trend is the acquisition of large tracks of land for the construction of housing estates. Major housing projects are Gateway Estates Riverview Estates, Havillah Estates and Sparklite Estates. Residential use in the peri urban zone covers 50.9 % of the total land area

Squatting is widespread across the study area, especially in Isheri. The study also revealed that 30 % of the respondents were landlords, while 39.7 % were tenants. Interestingly 25.1 % were squatters. In Isheri area, about 50 % of the buildings were occupied by their owners, while 32.6 % were squatters. In Ibafo, 29.2 % are owner occupier, while rented apartments made up 27.4 % and squatters were 15.9 %. 46.6 % of respondents in the Sagamu Interchange areas were rented, 30.7 % were owner-occupiers, while 22 % are squatters. Average number of rooms for exclusive household use is 2 in Ibafo area, 3 in Isheri and Sagamu Interchange areas respectively.

Household wastes generated in the study area are mostly mixed use related wastes such as cartons, papers, foodstuffs, animal waste, and other related commercial and household wastes. Wastes generated in the area are disposed by incineration (15.3 %), 6.9 % in manure piles, 26.6.5 % are thrown into canals and drains, while those collected by garbage operators accounted for 22.6 %. A look at the house waste disposal pattern of the peri urban zones shows a similar pattern for the areas; as disposals through landfills and incineration is the most common means of disposing waste, also, garbage collectors and indiscriminate disposal in to canals and drainage channels are also common.

The peri urban zone is fed primarily by the Lagos – Ibadan expressway with no significant tee-off between the Berger Junction at Isheri and the Sagamu Interchange. About 58 % of the settlements have access by road, and 20 % indeed have tarred roads. However, the dominant mode of transport is the commercial motor cycle locally known as Okada. Only Mowe and Ofada have roadside drains. In the Isheri-Ibafo area, there are a few feeder roads, mainly serving rural communities and some OPIC estates. Most of these roads are earth roads, but a few were designed and constructed by OPIC. All of them have no defined road junctions at intersections with the expressway, which. Developments along the peri urban settlements are therefore very difficult to access. Trailers park along the road at Ibafo constituting serious hazard to high speed vehicles and visual unpleasantsness. In the Sagamu Interchange area, there are much fewer feeder roads feeding the expressway, reflecting the limited development in the area. There is, however, an old network of roads connecting Ofada, Mowe and Pakuro and linking with the Papalanto – Sagamu Junction Road. There are other earth tracks in the area linking the villages.

### 5.3 Linkages of the Study Area to the Lagos Megacity

61.1 % of all respondents work within the Lagos Megacity. 27.7 % work within the peri urban axis while only 9.7 % work in Ogun State. They travel to Lagos mostly by public buses (63.1 %) or private cars (31.1 %). Outside of work, 23.4 % visit Lagos at least twice weekly for social engagements and cultural interactions, while 17.1 % to buy goods.

62.6 % of the respondents are of the opinion that land value has grown with the increasing influx of workers within the city to the peri urban zones. House rent in the Ijebu zone was considered to have increased 100 %, Ibafo 38.9 % and Sagamu Interchange by 62.6 % in the period between 2005 and 2010.

54.3 % of the respondents consider the Lagos Ibadan Expressway to exert a positive impact on their settlement. Reasons adduced include accessibility, increase land value and commercial returns. Those who consider the location of the Expressway as exerting a negative impact gave traffic congestion and accidents, noise, security and influx of strangers as their reasons.

It was discovered that in between 2005 and 2010, when the highest growth rates occurred in the axis, basic infrastructure and social amenities generally worsened. The respondents attributed the situation to the influx of people as well as the settlements still being adjudged rural when their populations had far exceeded rural limits.

Indices	Improved	Worsened	No Change observed
Electricity	33.4 %	59.1 %	6.9 %
Water Supply	43.1 %	46.6 %	9.4 %
Security	31.4 %	55.1 %	12.6 %
Cost of Travel	8.6 %	62.0 %	28.6 %
Traffic Flow	9.1 %	78 %	11.1 %
Land Value	32.3 %	37.1 %	30.0 %
Rent Value	36.9 %	48.6 %	14.0 %
Crime	38.0 %	42.3 %	16.3 %
Pollution	34.0 %	46.6 %	17.7 %

Table 2: Changes in Peri Urban Growth Indices

Generally, majority the respondents believed land value has increased consequent upon the proximity of the Lagos Megacity. Also believed to have increased are such indices as house rent (62.6 %), traffic intensity (69.4 %), population growth (76.6 %), housing density (60.3 %), urban spatial growth rate (64.9 %), crime rate (66 %), and environmental problems (60.9 %). urban sprawl is the only stable activity, while land availability has reduced considerably (51.4 %) occasioned by the different types of development taking place in the peri urban zones as shown in table 3 below

Indices	Increased	Reduced	Stable
Land Value	55.7 %	36.9 %	3.4 %
House Rent	62.6 %	30 %	4 %
Traffic Intensity	69.4 %	13.1 %	13.7 %
Population Growth	76.6 %	19.7 %	0.3 %
Housing Density	60.3 %	30.3 %	6.0 %
Urban Growth Rate	64.9 %	21.1 %	10.6 %
Crime Rate	66.0 %	19.1 %	11.4 %
Urban Sprawl	39.1 %	47.4 %	9.1 %
Land Availability	25.7 %	17.7 %	51.4 %
Environmental Problems	60.9 %	15.1 %	17.1 %

Table 3: Changes in Environmental Indices in the Study Area

In order to determine the intensity of interaction between the Lagos Megacity and the Peri urban settlements, the gravity model was adopted

The formula for calculating the gravitation flow of one settlement from the other is:

$$\text{The Gravity Model} = \frac{\text{Population}^1 \times \text{Population}^2}{\text{Distance}^2}$$

Where:

$D^2$ = the distance between the settlements

$P^1$ = population of Lagos Megacity

$P^2$ = population of Lagos Ibadan Peri Urban settlements

	Distance between the Settlements	Population of Lagos Megacity	Population of Settlement	Force of attraction
Isheri	10,000m	9,3000,000	4,700	437.1
Ibafo	18,000m	9,3000,000	10,000	287.04
Sagamu Interchange	32,000m	9,3000,000	10,800	98.06

Table 4 below outlines the level of intensity

From the foregoing, the force of attractions is stronger at the Isheri peri urban zone. One may therefore say that the expected interaction between the Lagos Megacity Region and the Peri Urban Settlements increases as the product of the populations of the two ( $P_i P_j$ ) increases, and it decrease as the distance between the Megacity and the settlemetn ( $d_{ij}$ ) increases. As shown from the calculations above, the attraction between the Lagos Megacity regions and Isheri peri urban zone (437.1) increases as its approaches Ibafo and decreases as it approaches the Sagamu Interchange

## 6 DISCUSSION

This paper has examined issues relating to the peri-urban settlements along the Lagos Ibadan axis of the Lagos Megacity. The objectives of the study are to determine extent and character of peri-urban settlements of the Lagos Megacity and the relationships that exist between the peri-urban settlements and the Lagos Megacity region looking at the social and economic interactions between them

The rapid growth of the Lagos Ibadan Expressway peri urban settlements and its reflection on the environmental quality of life of the residents has been found to have been largely influenced by its close proximity to the Lagos Megacity and this situation has created a number of environmental effects on the peri urban settlements. Majority (92.3 %) of the respondents believed the town has experienced some changes as a result of the proximity,

An easily notable effect of the Lagos Megacity on the peri urban settlements is the phenomenal increase in the population of the Lagos Ibadan Peri urban settlements over time due to massive relocation of residents from the Lagos Megacity. Study of the trends of population growth pattern of the Lagos Megacity and that of the Lagos Ibadan Peri urban settlements shows direct positive correlation. This research found out that about 76.6 % of the people in the Lagos Ibadan Peri urban settlements moved in from Lagos and about 89.8 % of this group moved in less than 10 years ago. Factors such as cheaper land, cheaper rent, social engagements and cultural interactions, political affiliations nearness to Lagos and nearness to work place were identified as reasons for moving to the Lagos Ibadan Peri urban settlements.

There is intense interaction between the Lagos Megacity and the Lagos Ibadan Peri urban settlements. The spatial pull of Lagos reaches peri urban axis of the Lagos Ibadan Expressway and a dominant commuting pattern between them exists with great implications for the entire Peri urban settlements. A large number of people living in the Peri urban settlements were found to be working in Lagos and commuting to Lagos on daily basis. This study found that about 96.3 % of the respondents commute to Lagos on daily basis and about 64 % of this group do so for employment purpose only.

Traffic situation in the Lagos Ibadan peri urban zones was generally considered by the respondents to be worse accounting for about 78 % of the total respondents the traffic intensity shows that there is an increase in the capacity of the traffic; proximity to the Lagos Megacity was adduced by the respondents for the increase.

Another effects of the Lagos proximity on the peri urban settlements is the increase on house rent and land values. The value of land and house rent in the Lagos Ibadan peri urban settlements has risen sharply especially between the last 10 and 15 years.

The study of land and housing development pattern in the Lagos Ibadan peri urban settlements axis shows that land value has increased by (55.7 %) in the peri urban zones, which relates directly with upsurge in its population resulting from the spillover of the Lagos Megacity. Majority of the developments in the peri urban zones are located along the axial of the Lagos Ibadan Expressway, most of which are done without necessary planning approvals.

Due to the outward and uncoordinated growth of the Lagos Megacity, and the unplanned settlements along the peri urban corridors of the Lagos Ibadan Expressway with the attendant land use conflicts, there is the threat of growing environmental problems. The use of contiguous land between the Lagos Megacity and the Lagos Ibadan Expressway peri urban settlements consequent upon the conurbation process has important ramifications for the environmental management of the zones. The use of land is basic to all human activities and as population increases the intensity of activity becomes accelerated with consequent effects on the uses of land. It therefore implies that activities in the Lagos Megacity have spilled-over into the adjoining peri urban settlements. The issue of land use spill-over between the Lagos Megacity and peri urban settlements has become a problem within the last many years with the rapid increases in developmental activities especially residential and religious settlements that have led to the erosion of the character and integrity of the Lagos Ibadan Expressway. The attendant effects are high land values, high traffic intensity and hold-ups.

The development of these religious settlements and the corresponding residential development all have their implications and ramifications in terms of infrastructures, environmental pollution, farmlands and agric lands, social services, economic base, that brings about an undue pressure and burden on the peri urban settlements resulting in the lopsided use of land and created by the over-spill of the Lagos Megacity into the peri urban zones.

As the Lagos Ibadan peri urban settlements grows in spatial dimensions as a result of the forces exerted by the Lagos Megacity, most of the development occurring along the axis of the peri urban settlements are largely mixed use residential, commercial, institutional use in nature, but, the spate of speed of this developments activities has outstripped environmental management process necessary for proper development and planning of the peri urban zones.

This situation is such that there are developments activities going on at a fast rate with a very low rate of infrastructural provision and environmental management.

Majority of the Lagos Ibadan peri urban settlements residents are of the opinion that the proximity of the Lagos Megacity has definite effects on environmental quality of the peri urban settlements, especially in the areas of pollution, environmental sanitation, water quality, housing, traffic, and crime rate. The study revealed that basic infrastructure as well as security and traffic have generally worsened with the influx of people into the area

This study has shown that the growth potential of any particular settlement is inversely proportional to its distance from the Lagos Megacity. Settlements that are in close proximity to the Lagos Megacity have a higher propensity to grow demographically and spatially than those that are far from such centres. This explains the phenomenal growth and expansion of the Lagos Ibadan peri urban settlements due to its close proximity to the Lagos Megacity. The attraction between the Lagos Megacity region and Ijebu-Ode peri urban zone increases as it approaches Ibafo and decreases as it approaches the Sagamu Interchange. The expected interaction between the Lagos Megacity Region and the Lagos Ibadan Expressway Peri Urban Settlements increases as the product of the populations of the two increases, and it decrease as the distance between them increases.

## 7 CONCLUSION

This study has revealed the environmental issues of peri urban settlements along the Lagos Ibadan Axis of the Lagos Megacity. The major elements that were considered are the need for a positive approach to peri urban development in development planning; the need for effective governance of the peri urban settlements of the Lagos Megacity; environmental management of the peri urban settlements and the coordination of development proposals and implementation mechanisms for infrastructure, housing and land supply in the peri urban zones. The many socio-economic and environmental problems currently found in the peri urban settlements of the Lagos Megacity make it imperative that efforts are made to define the parameters for environmental management and sustainable patterns of peri urban management.

The issues concerning planning, infrastructure, housing, land supply environmental sanitation, traffic management and community participation need to be addressed in an integrated manner through a division of responsibilities between the state and local governments. Activity centres in the peri urban settlements should be identified and redesigned to create rooms for offices, supermarkets, small-scale industrial centres, restaurants, entertainment centres and other urban amenities. These centres should receive the full attention of the Physical Planning Departments of the Lagos and Ogun State Governments and representatives of the Lagos Chamber of Commerce and industries as well as of the Nigerian Economic Summit Group to relocate or establish new employment generating enterprises in the peri urban settlements.

Curtailing the further spread of incompatible and illegal developments within the peri urban settlements is an issue of considerable importance. Anticipating such development by realistic zoning and facilitating the quick and easy access to well laid-out and, if possible, serviced plots of land by individuals or estate developer can be important strategy in this regard.

Apart from the problem of solid waste and generally poor environmental sanitation, the Lagos Megacity Region peri urban settlements suffers from water and air pollution due to the poor waste disposal facilities, traffic intensity along the Expressway, discharges of cattle waste from the operators of the Kara Cattle Market and Slaughter Slab greatly impair the quality of water in the Ogun River. Citizens in the peri urban settlements must be mandated by the local governments to maintain clean and sanitary environment and every household must own refuse dust-bin for their waste materials. The Lagos and Ogun State Governments should relocate and merge many of the existing public centres such as markets, motor parks, bus terminals, abattoirs and re-develop with adequate infrastructural facilities.

A participatory planning strategy which seeks to involve the residents themselves in determining their management of their environment, their needs in terms of the priority infrastructure and services required their willingness to contribute to the cost of providing such facilities and their engagement in poverty-reduction activities to improve on their social, economic and political situation need to be put in place in the peri urban settlements.

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