

Amoebic Urbanization in Nigerian Cities

(The Case of Lagos and Ota)

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ABSTRACT: This paper investigates the relationship between the Lagos Megacity and Ota Township, a small township on its periphery. The study examines linkages between and Lagos in terms of growth, urban development as well as mobility. 553 questionnaires were administered to household heads across the 12 residential districts of Ota Township. Survey was carried out by systematic random sampling. Classified traffic counts were also taken at strategic locations along the four main axial roads in Ota. The data collected were analysed with descriptive and inferential statistical methods including cross-tabulation and correlation analysis. Findings of the research have shown that the proportion of inter-city traffic from Ota directed towards Lagos is about 48% of total inter-city traffic generated. More than 40% of Ota residents migrated from Lagos and still commute daily to the megacity. The paper concludes by recommending strategies for better synergies between Ota Township and the Lagos megacity. These include the implementation of integrated master planning, effective environmental management and traffic policies for the township as well.

Keywords: Peri-urban, Settlements, Linkages, Lagos Megacity, Ota Township.

INTRODUCTION

Central to understanding the system of cities is how they evolve and interact in the process of urban growth (Rossi-Hansberg & Wright, 2006). An interesting case is that of Lagos which has grown from a set of farming and fishing villages to arguably the third largest city in the world. The growth of the Lagos metropolis has been phenomenal, both demographically and spatially. From an estimated population of 28,518 in 1871 (Mabogunje, 1968; Ayeni, 1981), Lagos metropolis is estimated to have a population of 13million persons (UNDESA, 2011). Spatially, Lagos has grown from a traditional core settlement of about 3.8km² in 1881 to 271km² by 1981 and on to a huge metropolis of over 1,183km² by 2004 (Uthman 2005). This continual growth has had effects on settlement structure, land use, population concentration, physical and social infrastructure, housing development, traffic and transportation in such a manner that development has extended to suburban areas as well as on the frontier settlements of Ogun State (Kadiri, 2001). One of such frontier settlements is Ota Township in Ogun State whose population has grown from 14,248 in 1963 to an estimated 142,793 by 2003 (CPMS 2005a). Ota is situated near the boundary of Lagos State and has steadily grown as a result of its proximity to Lagos (Kadiri, 1992). Ogun State Government of Nigeria (2008) also identified Ota as one of the neighbouring settlements to the Lagos Metropolis bearing the brunt of the expansion pressure of the Lagos Metropolis. This paper therefore examines the relationship between the Lagos Metropolis and Ota Township and attempts to

investigate the effects of this relationship on the urban character of Ota Township.

Metropolitan Impact on Neighbouring Communities

Urban growth according to Cheng (2003), is defined as physical and functional changes due to the transition of non-urban to urban land. According to Martine & Mc Granaham (2010), rapid urban growth is the single most influential process affecting socio-economic, political and demographic trends in low and middle-income countries in the 21st century. Consequently, population concentration in towns and cities directly affect development, poverty and environmental conditions. With an increasing percentage of the world's population living in urban areas, employment is concentrated in the city centre and population growth is mainly occurring in the outlying regions (Darin-Drabkin, 1977). This has resulted in the manifestation of peri-urbanization and dormitory communities, especially in developing countries including India (Thangavel & Robinson, 2000) and China (Cheng, 2003). Dekel & Ostriker (1997) from a study of four townships adjacent to major urban centres in Ontario Canada surmised that the growth of major metropolitan centres has significant fiscal impact on adjoining localities. Konadu-Agyemang (2001) study of Accra and Kumasi metropolitan areas also revealed that urban growth in these metropolises induced both intensification of densities and sprawling on their fringes or peripheral areas. These peripheral communities, often lacking effective development control mechanisms are responsive to development pressure; hence they begin to experience the

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effects and challenges of urban development without the machinery to manage such (Hall, 1982).

The urban growth of Lagos has been largely amoebic in nature, spreading sporadically in many directions. Amoebic Urbanization has been described by Nas & Houweling (2001) and Hern (2008) as urban growth which spreads in a sprawl formation, with satellite lesions which are ragged, invasive and constantly expanding. The Lagos Megacity region includes the continuously expanding area comprising the 20 local government areas of Lagos State and the emerging settlements that have developed in close linkage to the metropolitan area. According to Lawanson et al. (2012), the spatial expansion of Lagos had extended outwards annexing nearby settlements with potential for expansion; strong interconnection with the Lagos Megacity and strong potential for informal economic activities.

Peri-urban growth has been intense along the southwest end of Ojo-Badagry Expressway, the south east along the Lekki-Epe corridor, the north east along Ikorodu corridor, Alimosho-Igando-Iba-Lasu corridor in the north west and the Lagos-Ibadan axis towards the north of the Metropolis. The corridors along the Lagos-Ogun State borders have experienced the highest pressure. Ota, Ibafo-Mowe, Ojodu-Akute, and Ogijo areas are under intense pressure of physical growth with very few indicators of real development (Lagos State Government, 2004).

Existing research on peri-urbanization in Lagos has focused largely on the spatial expansion of the Megacity and the effects of these on the Lagos Metropolis. These include the work of Mabogunje (1968; 1980), Onakomaiya (1978), Ayeni (1984), Farunkanmi (2003); Agbola (2006); Olujimi, (2009) and Dekolo & Oduwaye (2011). Scant research exists on the effects of the expansion of the Lagos Megacity on annexed settlements. As such, this paper will focus on the growth and development of Ota Township in the context of the primacy of the Lagos Metropolis.

Study Area

The study is set in Ota Township, Ogun State, Nigeria. Ota is a peripheral settlement adjoining the Lagos metropolis, located on latitude 6° 42' N and longitude 6° 13' E. In areal distance, Ota is about 53km to Abeokuta - the Ogun State capital, and 22km to Ikeja-the Lagos State capital (Fig. 1).

Ota is a fast growing medium size town whose physical growth is mainly driven by proximity to two major highways: the Lagos - Abeokuta Expressway and Idiroko Road. These two roads intersect at Sango, the commercial node;

The morphology of the town responds to the postulations of the traditional urban morphology concepts, particularly the Concentric Zone model as modified in the Multi Nuclei theory of Harris & Ullman (1945). The core area is surrounded by a transitional zone of better housing and intensive commercial and informal industrial uses and a peripheral emergent suburb where the best housing estates and industries are located. The built up area of Ota can be distinctly categorised into three sections, made up of;

- i. The traditional core areas, made up of four quarters, Ijana, Otun, Osi and Oruba, and bounded by Idiroko Road ;
- ii. The transition area comprising newly developing land uses to the north of the Bypass including the Housing Corporation Estate, Industrial Estates and Sango, mainly inhabited by the non-Yoruba community; and

The emerging suburban areas covering formerly distinct settlements as Ijoko, Ijako, Iloye, Iyesi,

Commercial activities in Ota take place in a linear form along the major arteries of Lagos – Abeokuta Expressway, Ota – Ijoko Road and Ota – Idiroko Road. The transport system in Ota consists essentially of road network, thus making the town accessible only to road traffic. Ota is highly accessible in terms of regional linkage and connectivity to other parts of the country and beyond. The internal road system consists of some trunk roads, township roads and local streets. The road and drainage system of Ota is poor given

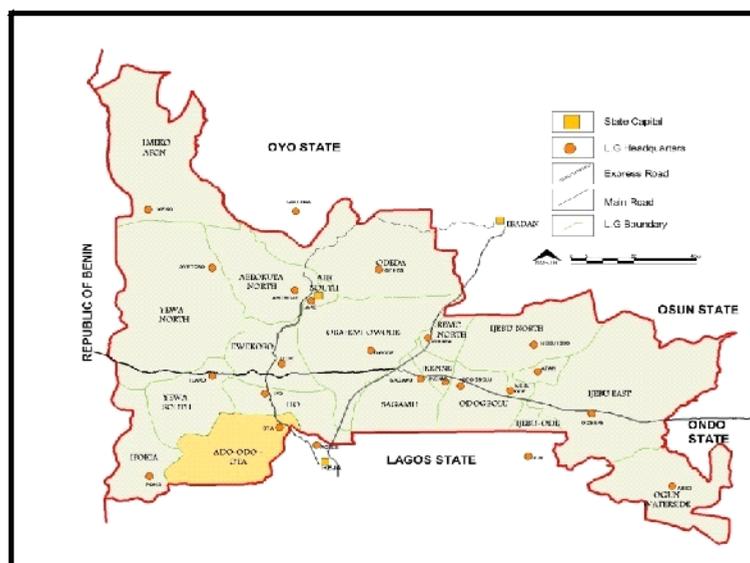


Fig. 1: Map of Ogun State showing Ota Township (Source: CPMS, 2005a)

the fact that the town has grown amorphyously over the years. Over 70% of the total road network in Ota is earth in nature and most of the traditional core area is accessible through a dense network of footpaths.

MATERIALS AND METHODS

Data collection was by systematic random sampling. Information was collected on the socio-economic characteristics of residents and their travel behaviour in order to determine the interactions between Ota and Lagos. Furthermore, housing and neighbourhood infrastructure survey was done to determine the urban character of the study area. The environmental condition was determined by observation A sample size of 5% of all buildings (11,051) in Ota Township was selected. A total of 553 questionnaires were administered on household heads in the 12 residential neighbourhoods that make up Ota Township. The survey was conducted using systematic random sampling in which every twentieth house was sampled. Classified traffic counts were also taken at selected points along the four main axial roads in Ota for a period of twelve hours (6am - 6pm) for three days. This was done to determine the traffic flow, volume and pattern between Ota and Lagos. Survey points were established along Ota - Ijoko Road, Ota - Abeokuta Road, Ota - Idiroko Road and Ota - Lagos Road. There was 96.38% response rate as out of the 553 questionnaire recovered from the survey exercise, 532 were

fully completed and therefore acceptable for further analysis. Data analysis was done using simple descriptive statistics and Pearson's Correlation analysis. The results of the traffic count were converted to Passenger Car Units (PCU).

RESULTS AND DISCUSSION

Socio Economic Profile of Respondents

Socio economic variables education considered are gender, age, marital status, employment and household income as shown in Table 1.

The study area is dominated by males (59.3%). However the male female ratio is negligible in the emerging communities and markedly different in the transitory communities where it is roughly 2:1. This is because the transitory zone is the main commuting zone and most of the respondents are resident there temporarily. The study revealed that that 68% of the respondents are married, 23.9% are single, 3.4% are separated, 3.3% are widowed and 1.4% are divorced. There are more single respondents in the emerging area (29%) compared to the transitional zone (21%) and the traditional core area (18.1%). This corroborates extant literature which asserts that younger unmarried people tend to reside in peripheral settlements. The study revealed that 6.3% of the respondents are younger than 20 years old. Respondents between the 20 and 40 years old are 49.7% while those aged between 41 to 60 years old are 39.1% of the entire population. Those older than 60 years old make up only 4.9% of the

Table 1: Socio economic profile of respondents

		Traditional Core % (n=127)	Transitory Area % (n=186)	Emerging Communities % (n=220)
Gender	Male	59.1	68.4	51.7
	Female	40.9	31.6	48.3
Age in years	≤ 20	0	4.1	11.7
	20 – 40	44.1	54.1	49.1
	41 – 60	48.8	39.8	33.0
	≥ 60	7.1	2.0	6.1
Highest Educational Attainment	Non formal	25.2	6.2	13.5
	Primary	11.0	12.4	23.9
	Secondary	40.9	51.0	37.0
	Tertiary	22.8	30.4	30.9
Employment Status	Unemployed	12.6	3.0	18.2
	Student/ apprentice	14.2	3.1	18.6
	Informal sector employed	11.8	15.3	14.3
	Formal sector employed	31.5	38.3	20.0
	Self employed	29.9	40.3	44.7
Average monthly income in Naira (₦)	≤ 18,000	76.3	56.8	75.4
	18,001 – 40,000	21.9	21.9	7.1
	40,001 – 60,000	14.0	13.5	6.7
	60,001 – 80,000	3.5	1.0	3.8
	≥ 80,000	6.2	6.7	6.2
Length of Stay in Ota	≤ 1 year	9.0	10.2	10.4
	1-5 years	21.0	7.1	31.3
	6-10years	23.1	43.9	29.1
	11-15years	5.9	7.4	15.2
	≥ 15years	32.3	13.3	13.9

population. The transitory zone and emerging communities had a higher concentration of young people as well as working age population.

The study area is quite literate by UNESCO standards as 71.7% of respondents have completed at least secondary school education. Those with tertiary education constitute 22.8%, 30.4% and 30.9% of the respondents in the traditional, transition and emerging communities respectively. The high proportion of highly literate population may be attributed to the concentration of factories in Ota requiring skilled manpower.

Ota Township has a relatively high employment rate as only the traditional core area recorded a significant proportion of unemployed persons and this was in most cases by reason of retirement. There was also insignificant proportion of respondents who were students in the transitory zone, even though the values were also relatively low in the other areas. This can be adduced to the sole proprietorship nature of most small scale businesses in the area as well as the fact that most factories in the area employed mainly skilled labour.

Further breakdown of the employment status showed that informal sector employees were mainly artisans and shopkeepers, while those employed in the formal sector were civil servants, teachers and factory workers. The self employed respondents were mainly engaged in farming and trading. There were no farmers in the transitional and emerging communities, while there were no factory workers in the traditional core areas. Average household size is quite large as 58.1% of respondents belong to households of between 5 and 9 persons. 3.5% of households in the traditional core area are more than 20. Most of the respondents fall below the poverty line as average monthly income was ₦8,000 in the core area, ₦ 12,500 in the transition zone and ₦ 10,000 in the emerging zone. The standard of living in the study area is quite low with close to 70% of respondents households earning less than the national minimum wage of ₦18,000

monthly, and only about 6% in each zone with monthly household incomes of more than ₦ 80,000.

Over 65% of the respondents had lived in Ota for more than five years and reasons adduced for choosing Ota as a place to live include cheaper cost of living (21.5%), nearness to Lagos (19.3%), nearness to work (16.7%), cheaper rent (15.2%), and nearness to kin (8.8%).

Housing and Environmental Conditions in the Study Area

The housing typology in the study area is predominantly the rooming house. The study revealed that the age of buildings in the study area was a reflection of the spatial growth. A large proportion of buildings in Ota were built between 1986 and 2005. In fact, 82.4% of buildings in the transition zone came up in this period. This translates that the spatial growth of Ota accelerated after 1985. Predictably, majority of the new buildings are in the emerging areas. The nature of housing tenure ship in the study area is such that family owned communal properties, occupied rent free is strong in the traditional core area, while majority of respondents in the transitory areas were tenants and those in the emerging areas were majorly owner occupied as shown in Table 2.

Patronage of all public facilities was high in the traditional core area while in the emerging area and transition zone, only patronage of public secondary schools was high. Respondents in these areas prefer to patronise private primary schools and health centres. This choice however may have been because of location as spatial analysis of the study area shows that public primary schools and public health facilities (Ota General Hospital) are located in the traditional core area.

General environmental condition was classified as good (concrete block building with indoor household facilities, free flowing drainage, motorable access and clean surroundings), fair (concrete block building with outdoor household facilities, open drainage, clean surroundings and no motorable access) and poor (mud building with no household facilities, drainage

Table 2: Housing and environmental profile

		Traditional Core % (n=127)	Emerging Communities% (n=220)	Transitory Area% (n=186)
Age of building	Since 2006	-	5.2	22.2
	1996 - 2005	12.6	24.7	27.4
	1986 - 1995	23.6	42.4	19.1
	1976 - 1985	11.0	14.3	13.9
	Before 1976	52.8	13.4	7.4
Housing Tenureship	Owner Occupied	31.5	34.0	56.5
	Tenant	23.6	60.8	39.6
	Family Owned	41.7	5.2	3.0
	Squatting	3.2	-	0.9
Patronage of Public Services	Primary School	84.7	44.4	15.8
	Secondary School	91.7	38.3	64.1
	Health Centre	59.0	15.31	33.3
General Environmental Condition	Good	23.6	27.4	50.4
	Fair	75.6	74.5	33.1
	Poor	16.8	35.8	16.6

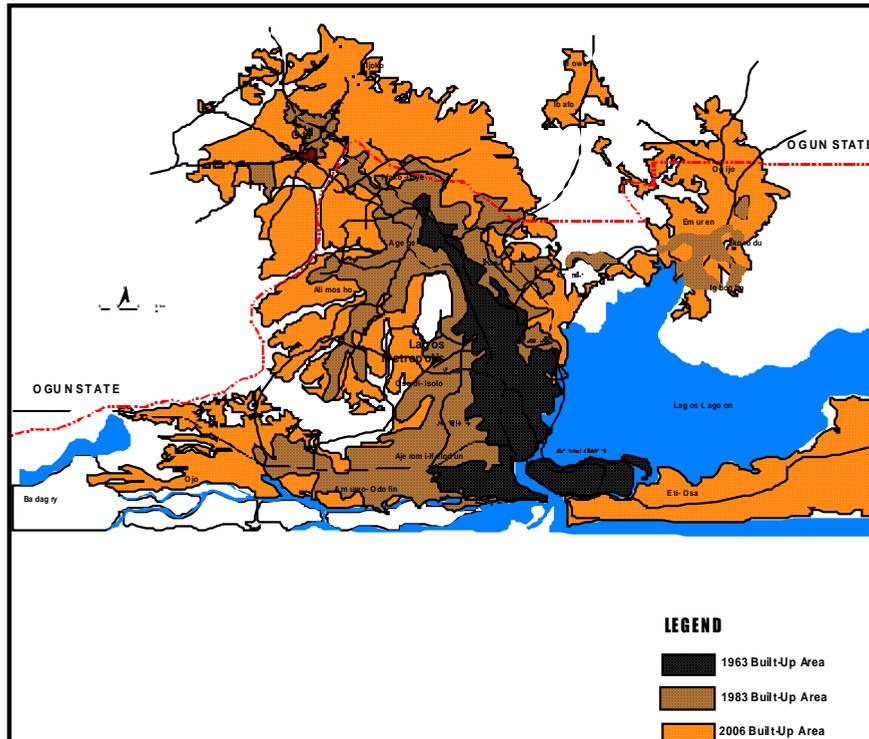


Fig. 2: Spatial growth of Lagos and Ota (1963-2006) (Sources: Office of the Surveyor General of the Federation, 1963;1983; Satellite Imagery of Metropolitan Lagos, 2006)

or motorable access and dirty surroundings). While the modal condition was fair in the traditional core area, it was good for both the transition zone and the emerging settlements.

Ota- Lagos Linkages

This section discusses the relationships between Lagos and Ota and the effects of these on the Ota Township with respect to spatial growth, urban character and traffic and transportation patterns.

Spatial Growth

Ota as a strategically located nodal town has witnessed rapid growth, largely because of its proximity to the Lagos Metropolis. The settlement of Ota has grown from its 1963 size of about less than 1km² to 11km² by 1983 and to 53km² by the year 2006. In fact, the spatial growth of Ota has been directly proportional to that of Lagos as shown in Fig. 2. Demographic comparisons also attest to this as shown in Table 3. Proximity to Lagos can be adduced as the major reason for the phenomenal increase in Ota's population, especially if one compares it to that of Ayetoro, a similarly sized town. Ayetoro, situated 115 kilometres from Lagos, had a population of 15,040 in 1963. This figure rose to 44,576 in 2005, compared to that of Ota which rose from 14,346 in 1963 to 157,977 in 2006.

To further determine if there was any significant relationship between the growth of Ota and Lagos, the following hypothesis was tested using 30 settlements with relative proximity to the Lagos Metropolis, Ota being the closest in distance (22km). Other settlements were Ifo (35km), Owode- Yewa (49km), Owode-Egba (52km), Ado Odo (55km), Ogere (57km),

Table 3: Demographic trends of Lagos and Ota (1850 - 2006) (Sources: Mabogunje, 1968; Onakomaiya et al., 1992; NPC, 1993; 2006; CPMS, 2005b)

Year	Lagos Metropolis (Population)	Ota (Population)
1850-1860	20,000	3,000
1879-1881	37,452	5,000
1952	267,407	8,914
1963	951,677	14,348
1988	7,580,000	35,523
1991	8,787,000	103,322
2001	12,949,000	132,836
2005-2006	16,860,000	157,977

Sagamu (59km), Ode Remo (60km), Iperu (61km), Igbesa (61km), Ilaro (62km), Agbara (65km), Isara (65km), Ipokia (67km), Ikenne (68km), Ilisan (71km), Odogbolu (73km), Aiyeye(74km), Idi iroko (77km), Ososa (79km), Abeokuta (80km), Igbogila (85km), Ijebu Ode (85km), Ijebu Ife(90), Omu (95km), Ijebu Igbo (110km), Ayetoro (115km), Ago Iwoye (120km), Oru (125km) and Imeko (147km),
 Ho: Proximity to Lagos Metropolis does not have significant impact on the growth of neighbouring settlements
 H₁: Proximity to Lagos Metropolis has significant impact on the growth of neighbouring settlements

The population growth factor and distance from Lagos were subjected to the Pearson's Moment Correlation Coefficient (*r*) test. A value of *r* = -0.658 was gotten and it can be inferred from this that the relationship between the distance of a settlement to Lagos and its growth factor is both moderately

negative, i.e. the greater the distance between a settlement and Lagos the less its intensity of urban growth.

To determine the percentage of contribution of the proximity to variation on settlement growth, the coefficient of determination was calculated and a result of $r^2 = 0.433$ was obtained. This means that 43% of the variation in a settlement's growth is determined by its distance from a neighbouring large metropolitan centre.

Urban Character

The survey revealed that 92.3% of the respondents consider the proximity of Ota to Lagos to have overwhelming effect on the urban character of the township.

Their perception of the current status of their environment given the intense Lagos- Ota interactions is shown in Table 4.

The respondents were of the opinion that all indices of urbanization had increased significantly within the last ten years as a result of the proximity of Ota to Lagos as shown in Table 5. The most significant increases were the population growth rates

as well as housing density and urban growth rates. About half of the respondents consider the crime rate to have increased in the past ten years, while 21.2% think it has reduced.

Traffic and Transportation

The study revealed that 65.4% of respondents work within Ota Township, 4.1% in surrounding communities while 30.5% commute to Lagos for work. In fact, 38% of respondents were formerly resident in Lagos and no fewer than 75% visit Lagos at least once a month, usually for shopping and/ or social engagements as shown in Table 6. For 78.5% of respondents, the most popular mode of travel to Lagos is by public transport (78.5%), private car (19.9%) and other means such as the commercial motorcycles and tricycles.

A traffic survey was also conducted along the four main roads in Ota to determine the rate of travel between Ota and its neighbouring towns. Table 7 reveals that the Ota Lagos route was the busiest, accounting for 47.8% of all vehicular movement over the three day traffic count.

Table 4: Respondents perception of urban character of Ota Township

Indices	Good	Fair	Poor
Electricity Supply	27.9	-	72.1
Water Supply	32.8	6.8	60.4
Security	66.1	6.9	27.0
Cost of Travel	27.7	3.3	69.0
Traffic Flow	23.7	2.6	73.7
Cost of Food	24.7	0.2	75.1
Environmental Sanitation	25.2	54.4	20.3

Table 5: Respondents perception of effects of Lagos proximity on Ota Township

Indices	Increased (%)	No change (%)	Reduced (%)
Land Value	86.8	2.0	11.2
House Rent	86.1	8.8	5.1
Traffic Intensity	89.2	8.0	2.7
Population Growth	97.4	1.5	1.1
Housing Density	94.1	5.5	0.4
Urban Growth Rate	93.1	5.9	1.1
Urban Crime Rate	55.0	23.8	21.2
Urban Sprawl	66.5	26.7	6.8

Table 6: Purpose of respondents visits to Lagos

Purpose of Visit to Lagos	Daily (%) N= 553	Weekly (%)N= 553	Fortnightly (%)N= 553	Monthly (%)N= 553	Infrequently (%)N= 553	Total (%)
Employment	15.7	7.1	3.1	1.5	3.0	30.5
Schooling	9.6	3.1	1.8	2.5	-	16.0
Shopping	4.8	15.7	14.1	10.2	4.6	79.6
Social/Religious Engagements	7.1	35.3	21.7	17.6	5.2	84.3

Table 7: Average daily traffic volume (pcu) of major roads in ota

Route	Monday	Wednesday	Saturday	Total	%
Ota – Lagos Road	41931	53211	62817	157959	47.8
Ota – Ijoko Road	4285	4239	5711	14234	4.3
Ota – Idi Iroko Road	19630	19340	19706	58675	17.8
Ota – Abeokuta Road	36071	33521	29904	99496	30.1

CONCLUSION

This study has revealed the effects of a rapidly expanding metropolitan centre on neighbouring settlements using the specific case study of Ota. This study has shown that the growth potential of a particular settlement is directly proportional to its distance from a large metropolitan centre. The intense interaction between Ota and Lagos has resulted in a high rate of population influx into Ota, usually from Lagos. This has resulted in a situation of near annexation of Ota Township by the Lagos Megacity. This situation has far reaching implications for urban planning and development both in Lagos and Ogun States.

A study of housing development pattern in Ota reveals the slipshod manner of urban development as well as often incompatible land uses situated side by side. Coupled with inadequate and ineffective development control, there are emerging environmental problems in the study area. Challenges in the areas of infrastructural deployment, environmental pollution by the industries, and social service provision among others are such that Ota, while being a small town is being burdened with big city challenges. Development control must be invigorated, especially in the transition zone and emerging areas. Failure to do this will inevitably lead to the urban sprawl. Furthermore, within the framework of the Ogun State Regional Master plan, the full implementation of the Ota Sector as an activity centre must be operationalized. A combined effort of the Lagos and Ogun State governments is necessary for addressing the urban development challenges of Ota Township. The reality is that as many as the 47% of workers who commute between Lagos and Ota pay taxes in Lagos state and enjoy public amenities and other social services in Ogun State. When metropolitan areas spill-over into more than one administrative boundary, urban management issues require a unified and comprehensive approach covering the total extent of the metropolitan area. The fusion of Ota and Lagos is still at its infancy and the development may become uncontrollable soon resulting in physical dysfunction with its attendant high economic and social costs to both sides. The Megacity Commission must be inaugurated to oversee this process.

The effects of the Lagos –Ota linkage also has high significance for the urban transport sector. Close to 50% of all inter urban travel in Ota is either to or from Lagos. The situation presently, especially at peak periods is that the Ota Lagos road is blocked, resulting in loss of man hours, environmental pollution and environmental health hazards including stress and carbon monoxide poisoning. The traffic situation is also a high security risk as criminals consistently take advantage of the situation to extort and/or rob travellers on the route. It is imperative that an effective mass transport

solution be provided. The initial step to achieve this would be the development of a regional transportation plan for Metropolitan Lagos which will include travel to and from adjoining dormitory settlements such as Ota. The railway line between Ota and Lagos should also be rehabilitated.

Metropolitan suburb settlements have been noted to suffer a number of externalities imposed upon them as a result of their proximity to the rapidly expanding metropolitan city. Often times, development planning tends to focus on the metropolis to the detriment of the adjoining settlements. The case of Ota *vis-a-vis* the Lagos Megacity is poignant and decisive action must be taken before Ota becomes another urban hazard.

REFERENCES

- Agbola, T. (2006). *Sustainable Urbanisation and the New Urban Planning: Dilemma of New Opportunities and the Challenges for Nigeria Technocratic Planners*. A paper Presented at the 2nd Postgraduate Diploma Regular Forum Lecture Series in the Department of Urban and Regional Planning, Rufus Giwa Polytechnic, Owo.
- Ayeni, B. (1981). *The Spatial Distribution of Manufacturing Industries in Nigeria*, Ibadan. Technical Report, No. 2, Department of Geography, University of Ibadan.
- Ayeni, B. (1984). *Spatial Dimension of Manufacturing Activities in Nigeria, Ibadan*. Technical Report, Department of Geography, University of Ibadan.
- Cheng, J. (2003). Modeling Spatial and Temporal Urban Growth. Doctoral Dissertation, ITC Dissertation number 99 Faculty of Geographical Sciences Utrecht University.
- CPMS (Comprehensive Project Management Services). (2005a). Ogun State Regional Plan: Development Pressure Area Planning Zone 2.
- CPMS (Comprehensive Project Management Services). (2005b). Ogun State Regional Plan Planning Zone 5: Lagos
- Darin-Drabkin, H. (1977). *Land Policy and Urban Growth*. Oxford: Pergamon Press.
- Dekel, A & Ostriker, J (eds). (1997). *Structure Formation in the Universe*, Cambridge: Cambridge Univ. Press.
- Dekolo, S. and Oduwaye, A. (2011). Managing the Lagos Megacity and its Geospatial Imperative; International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Volume XXXVIII-4/C21
- Farunkanmi, O. (2003). Controlling Urban Sprawl through Effective Urban Governance. A Paper Presented at the Monthly Meeting of the Ondo State Chapter of Nigerian Institute of Town Planners, Akure, on March 27, 2003.
- Hall, P. (1982). *Great Planning Disasters*. California: University of California Press.

- Harris, D & Ullman, E. (1945). The Nature of Cities, *Annals of the American Academy of Political and Social Science*, Vol. 242, Building the Future City, pp. 7-17.
- Hern, W. (2008). Urban Malignancy: Similarity in the Fractal Dimensions of Urban Morphology and Malignant Neoplasms. *International Journal of Anthropology* Vol 23 Pp1-19.
- Kadiri, W. (2001). Ogun State Regional Plan Draft: Agbara – Sango-Ota – Ifo – Isheri Subregion (Ogun and Lagos States).
- Kadiri, W. (1992). Ota, in Onakomaiya, S., Oyesiku, K. and Jegede, F.(eds). (1992). Ogun State in Maps. Ibadan: Rex Charles Publication.
- Konadu-Agyemang, K. (2001). The Political Economy of Housing and Urban Development in Africa: Ghana's Experience from Colonial Times to 1998. Westport, Conn: Praeger Publishers, USA.
- Lagos State Government. (2004). State of Lagos Mega city and other Nigerian Cities Report. Lagos: Ministry of Economic Planning and Budget.
- Lawanson, T., Yadua, O., & Salako, I. (2012). Environmental Challenges of Peri-Urban Settlements in the Lagos Megacity. In M. Schrenk, V. V. Popovich, P. Zeile, & P. Elisei (Ed.), *17th International Conference on Urban Planning, Regional Development and Information Society* (pp. 275-285). Schwechat: CORP Association.
- Mabogunje, A. (1968). Urbanization in Nigeria. London: London University Press.
- Mabogunje, A. (1980). The Development Process: A Spatial Perspective 2nd Ed; London: Unwin Harman Ltd.
- Martine, G, and McGranaham G. (2010). Brazil's Early Urban Transition: What Can it Teach Urbanizing Countries? The Human Settlements Working Paper series. Retrieved from 2012http://www.iied.org/pubs/search. on December 19, 2012.
- Nas, P & Houweling, T. (2001). Mega-Urbanization in Southeast Asia in Encyclopedia of Urban Cultures In Singh S, Sing M and Sandhu J. (eds.) *Sustainable Human Settlements: The Asian Experience*,. New Delhi: Rawat Publications. pp. 38-62.
- NPC (National Population Commission). (1993). Report of the National Census 1991.
- NPC (National Population Commission). (2006). Baseline Projections of National Population Census 2001 Lagos State www.npc.org.ng.
- Office of the Surveyor General of the Federation. (1963). Federal Survey Maps: Lagos and Ogun.
- Office of the Surveyor General of the Federation. (1983). Federal Survey Maps: Lagos and Ogun.
- Ogun State Government of Nigeria. (2008). The Ogun State Regional Development Plan (2005-2025). Abeokuta: Office of the Governor, Ogun State.
- Olujimi, J. (2009). Evolving a Planning Strategy for Managing Urban Sprawl in Nigeria. Seminar paper presented at Department of Urban and Regional Planning, School of Environmental Technology, Federal University of Technology, Akure, Ondo State, Nigeria.
- Onakomaiya, S. (1978). Overland Transport, in Oguntoyinbo J. et al (eds), A Geography of Nigerian Development. Ibadan: Heinemann Educational Books, pp.316-337.
- Onakomaiya, S., Oyesiku, K. and Jegede, F.(eds). (1992). Ogun State in Maps. Ibadan: Rex Charles Publication.
- Rossey-Hansberg, T. & Wright, M. (eds). (2006). *Urban Structure and Growth Review of Economic Studies*. The Review Economic Studies Limited.
- Satellite Imagery of Metropolitan Lagos. (2006). Land sat 7 ETM+ WRS Path: 191/55; UTM Zone: 31N; Datum WGS84 (acquired 7-12-2006).
- Thangavel A & Robinson A. (2000). Prediction of Exact Boundaries of Exons. Briefings in Bioinformatics Vol 1 No 4 pp 343-356.
- UNDESA (United Nations Department of Economic and Social Affairs/Population Division). (2011). *World Urbanization Prospects*.
- Uthman, B. (2005). Lagos and the Challenge of Urban Sustainability: Urban Sustainability in Nigeria Series 1. Lagos: Development Initiatives Network.