

Effects of Institutional Land Uses on Road Traffic in Metropolitan Lagos

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Abstract: There exists a reciprocal relationship between the land-use structure of an urban area and the pattern of transport network. The latter most often defines the broad frame of the former, while the former generates the traffic pattern experienced by the latter. More important is that urban transport efficiency has high influence on the socio-economic survival and strength of the city. Spatial arrangements are reciprocally tied to movement processes. Therefore, constant research into the relationships between urban traffic and the city land use is critical to urban planning. This study therefore, examines the nature of institutional land use in metropolitan Lagos. The institutional land use identified can be classified into government secretariat at both the Federal and Lagos State levels, higher educational institutions, airports and military barracks. The spatial distribution and development process of these land uses are discussed with emphasis on the effects of the land uses on traffic within the city. Major findings of the study include the fact that these lands usually occupy large traces of land to the extent that they have become constraints militating against intra-urban traffic system in the city. This most often leads to protracted traffic congestion, especially during the morning and afternoon pick periods. The study therefore, suggests that since Lagos is no more the capital city of Nigeria, some of the military barracks can be reduced in size and the land used for public housing where appropriate. They would allow major road thoroughfares to be constructed to improve spatial interaction within the city. The study also suggests the need for preparation of new Lagos Master or Strategic Plan need to update planning standards, construction of ring roads and dedicated radio station on traffic and the city information network.

Key words: Institutional, road traffic, effects, metropolitan lagos, reciprocal relationship, Nigeria

INTRODUCTION

Traffic in an urban area is necessitated by the need for various parts to relate with one another. The various parts in urban areas are the land-use types which include residential, commercial, industrial, recreational, institutional, amongst others. The volume of traffic generated by these land uses varies during different periods of the day but there is usually a predictable pattern of such traffic volumes. Most often, the structure of urban land-use fails to provide easy and convenient traffic movement, which in the case of the study area is usually that of vehicles and pedestrian traffic. Such inconvenient traffic movement generates many problems such as unnecessary longer travel time, environmental pollution, crime, emotional and psychological stress.

This study investigates effects of institutional land uses on road traffic in metropolitan Lagos. It identified the institutional land uses in the study area. Traffic problems created by these land uses are identified and suggestions provided on how to alleviate the problems identified. Institutional land uses as adopted in this study include government institutions such as barracks, airports, higher

educational institutions, secretariats, acquired lands etc. A pilot study shows that negative relationship exists between road traffic and institutional land use in metropolitan Lagos. The study observed that these uses were located in their various areas due to the strategic position of Lagos as the former capital city of Nigeria, thus the need for these uses at very large scales. Lagos which is now the commercial nerve centre of Nigeria would require more investment friendly efficient traffic interaction.

The study area: Metropolitan Lagos is located in the south-western part of Nigeria. It lies approximately on longitude 2°42'E and 3°22'E and latitude 6°22'N and 6°52'N (Odumosu, 1999). It is the largest metropolitan area in Nigeria (Ayeji, 1979). Along the southern boundary of the study area in the west are Ojo and Ijanikin settlements. Lekki settlement forms the eastern boundary. It is bounded in the north by Ikorodu in Ikorodu Local Government Area and Alagbado in Ifako-Ijaye and Alimosho Local Government Areas. The study area is about 60 km to Sagamu in Ogun State, about 80 km to Abeokuta and 100 km to Ibadan. Lagos is endowed with

many modern and socio-economic facilities. The city has 2 airports, sea ports, universities, 2 polytechnics and a university teaching hospital. It is the most industrialized part of Nigeria. All these factors contribute to high rate of immigration into the city from the hinterland resulting into heavy traffic.

Lagos metropolis lies generally on low lands, with about 17,500 hectares of built-up area of which residential areas occupy the single largest proportion of 8,939 hectares (51.9%), commercial, 821 hectares (4.8%), industrial, 1,444 hectares (8.4%), institutional and special use, 2,366 hectares (13.7%), open spaces, 453 (2.6%) and transportation, 3,205 (18.6%). The estimated population by the year 2001 was 12 million.

Institutional land use development in Lagos: The programme of the state government between 1979-1983 encouraged the development of physical structures to provide more classrooms mainly at the primary and secondary school levels. Also, the liberalization of education at all levels in which the private sector is allowed to establish and manage educational institutions has increased substantially the land area occupied by educational uses. However, land space for most of the private sector education institutions are mainly through the conversion of existing buildings, especially residential to educational uses. Few buildings are approved and constructed for educational uses. Most of the few specifically approved for educational uses are on plots earmarked for residential apartments, thus compromising appropriateness and efficiency of location of educational facilities.

Before 1979 many lands for institutional uses have been acquired and in many cases developed. These include the military barracks, the airports, a Federal University, College of Technology, Federal and Old State Secretariats among others. After 1979, institutional land uses witnessed major landmark effects in 2 areas—the construction of the new Lagos State Secretariat at Alausa and the movement of the nation's capital from Lagos to Abuja. Therefore, the spill over effect of the state secretariat on other land uses has been remarkable. Ikeja, the location of the State Government's Secretariat has witnessed tremendous growth of commercial and institutional uses while traffic congestion has become a major problem. In case of the Federal Secretariat at Ikoyi, the area has witnessed significant drop in traffic congestion due to the movement of the seat of Federal Government to Abuja. The establishment of the Lagos State University in Ojo has its impact on trip generation and distribution, around the Ojo origin.

Circulation and land-use development in Lagos: By the turn of the 19th century 2 bridges constructed mostly of timber had been completed to link Lagos Island with Iddo, known as Cartor Bridge and Denton Bridge. Both bridges have been replaced by new dual carriage ways with concrete median separators. The Lagos railway started under the management of the Nigerian Railway Corporation in 1896. With its terminus at Iddo, the rail lines run in a north/south direction. It still maintains the steel gauge tracks of the pre-colonial type. Road network development started in the second half of the 19th century with the initial opening up of the Marina. The administration of Governor Glover opened up the Broad Street in Lagos. He also linked up the then Victoria Street (now Nnamdi Azikwe Street) with the Mainland in 1866. By 1900 the city had about 15 km of road over which horse-drawn carriages were pulled. By 1946 main arterial roads of greater Lagos have become prominent links with the hinterlands. They are the Ikorodu Road and Agege Motor Road, both of which run in north-south direction with the Agege Motor Road running parallel with the railway line (Mabogunje, 1986). Road networks in Lagos can be classified into three broad types namely the expressways, major arterial roads and other roads which serve as access and collector roads. Existing express roads are Ikorodu Road, Abeokuta Express Road and Apapa-Oshodi-Oworonsoki Express Road. The complex network of bridges on the Lagos lagoon connect various parts of the land to the mainland with the most important line being Eko Bridge which connects the Apongbon end of the Island to Apapa, Ijora and Surulere. The new Carter Bridge links the commercial core of Idumota on the Island to Oyingbo on the Main and with a length of about 1½ kilometers. The Third Mainland Bridge completed in 1991, is about 10 km long. It is reputed to be the longest bridge in Africa. It links the Oworonshoki end of the Mainland to various parts of the Island of Ikoyi, Victoria and Lagos Islands. The Lagos-Ibadan Expressway is in the northern boundary of the metropolis. It serves as the major link of vehicular traffic out of Lagos to other parts of the country. Two airports serve Lagos, with both of them located at Ikeja the capital of Lagos State. Also two major sea ports serve Lagos the first being the Apapa Wharf and the second the recently completed Tin Can Island Port. They are both linked to the Apapa-Oshodi Expressway.

Rationale for the study: Literature on urban land use exists in the socio-economic, physical, environmental, legal and administrative systems of urban areas. Specifically there also exist many studies on the relationships between urban land use and traffic pattern,

which is an area of focus of this paper. Generally on urban land use, Mabogunje (1986) undertook the analysis of Lagos and the growth of residential districts in Ibadan. He concluded that the growth of these cities was by fission and spatial expansion. Ayeni (1979) attempted the residential location model of Lagos metropolis during which he established the general framework that could be used for the planning of Lagos metropolis. Another study on urban structures in Nigeria was that of Okpala's (1981); in his study of Onitsha and Enugu he focused on residential mobility. Recent studies are those of Olaore (1991) in which he researched into values of land and rentage of shelter in Kaduna. Omirin (1998) studied accessibility of residential land in Lagos, while Morenikeji (1998) and Adedibu *et al.* (1998) studied the growth pattern of residential land use and how they affect rental values in Ilorin and Minna.

On urban transport, land use and traffic specifically, Daniel (1975) identified road transport as one of the vital factors responsible for shaping urban centres. It acts not only as a basic component of an urban area is social, economic and physical structure but also plays an important role determining the scale, nature and forms of urban area (Balchin, 1991). This accretion was earlier stated by Maxfield (1984) who noted that urban transport route not only influences levels and efficiency of urban residents' mobility but that it also influences patterns of land development. Urban road transportation systems have therefore been the focus of numerous planning efforts (Salau, 1999). Urban land use is fixed with large chunk of land area for specific uses around which urban road infrastructure are fixed facilities. They include physical components of the system in space that constitute the road networks which are permanent routes. Garrison (1979) emphasized the fact that urban transportation and land use are related issues. This was earlier stated by McLoughlin (1969) that changes in urban networks stimulate change in land use which alter the flow on the road and stimulate different traffic flows. This calls for continuous urban land use and traffic pattern research owing to the dynamic nature of this phenomenon.

On urban road traffic Owen (1956) observed that cities have become increasingly difficult to live in and to work in largely because there are difficulties in moving around in the city. The inability to overcome congestion and to remove obstacles to mobility threatens the big city. Oyesiku (1998) emphasized the poor, who largely reside in high density residential areas, the group mostly affect due to bias in the pattern of design and transport services, pricing of infrastructure and services and investment. From the review above, it can be concluded that for efficient interaction of people in urban areas,

improvement in transportation system aimed at abridgement of distance to provide, for faster, safer, cheaper and more dependable services in turn allows a greater movement of goods and people per unit of time.

Lagos roads can be traced to the background studies of Koenisberger/United Nations which highlighted major problems of metropolitan Lagos as poor and the underdeveloped nature of the road networks. The study suggested expansion in the road networks system and opening up of Lagos Island particularly by construction of more accessible roads. Wilber Smith and associate identified the problems of congestion and lack of parking facilities and public transportation, while Doxiadis and Associates identified inefficiency of the highway network system in Lagos as one of the problems of exploiting available revenue. The report proposed the need for a new bridge to link Lagos lagoon to create another entry mode in and out of Lagos Island and its environ. This subsequently led to the construction of the Third Mainland Bridge. Despite these past efforts, road traffic in Lagos remains a major problem. It is upon this background that this study investigates the effects of institutional land uses on movement between various parts of the city of Lagos. This is the rationale behind this research. It is aimed at drawing attention of planners to the dynamic nature of cities and the need to re-evaluate the city is functions when their status changes. The suggestions presented in this paper are expected to lead to desired efficient transport network to meet the primary objectives of economic growth, land use services and development, modal balance and equitable opportunity for mobility.

Conceptual issues in planning relevant to this study are procedural in nature. The former include the concept of urban land use and zoning while the latter include legal issue and administrative procedure of land use which include land acquisition policy and development control.

The concept of urban land use: Urban land use is the revelation of forces shaping urban lands and, in many cases, the regularities in their patterns. The spatial pattern and proportion of land uses in urban areas is largely influenced by the national policies and economy such as housing policy, transportation, agricultural policy, industrial policy and development of communication technologies. The proportion of the productive population and growing discretionary incomes act as economic magnets attracting new activities which eventually reshape urban growth and development. Specialization is also a characteristic of urban land use patterns.

Despite the associated problems with any attempt to classify urban land uses as in any body of organized knowledge, classification is vital for both researchers and practitioners. The grouping of urban land uses provides a framework for good urban analysis. The main class of land uses generally acceptable in the field of urban planning is residential (low, medium and high densities), commercial and central areas, industrial, public and institutional (schools, hospitals, police, post-office, cemetery, barracks etc.), semi-public (churches, mosques etc.), circulation (roads, railways, airports, seaports, walkways, bicycle tracks etc) and recreational (park, playground, open spaces etc). Usually, residential areas occupy the highest percentage in any urban settlement (Mabogunje, 1986; Ayeni, 1979). This is usually followed by circulation. Generally the proportion of land use distribution varies from one city to another.

The concept of zoning: Zoning is the technique through which the plan segregates parcels of land of specific uses, for example residential, industrial, commercial, educational, recreational etc. Generally, there is no definite or comprehensive list of standards. A widely acceptable range has emerged from a variety of sources such as building regulations the use class order, the control of advertisement regulations and a host of local bye-laws relating to development. In Nigeria, there exist Federal Government administrative standards which are often integrated into the State guidelines such as regulations affecting the railways, oil-pipe lines, Federal road setbacks etc. Others are results of commissions reports and committees which should serve as guide to local planning authorities in the implementation of land-use policies. Zoning plan serves many functions. It states the standards for development, for population density and building density. It is the performance standard which is used to determine the conformity of a particular use with certain established basic criteria with regard to locational suitability such as noise, fumes, pollution, glare and congestion.

Zoning in planning can therefore be defined as the legal regulations on the use of land, for the protection of public health, welfare and safety. Zoning includes provisions for the use of property and limitations upon the shape and bulk of buildings on land. It is not a substitute nor an alternative for the general plan, whereas the latter expresses the basic policies shaping the community morphology in terms of land use, circulation and facilities while the former stabilizes specific limitations which apply to the use of land as an instrument of achieving the goals set in the general plan. For zoning

plan to be valid it should satisfy the following among others: The plan should be comprehensive provide the same regulations that will be applicable to all districts having similar zone classification. The plan should demonstrate the protection of public health, welfare and safety. Planned neighbourhood should encourage flexibility and allow greater freedom of design without the neglect of public interest. The administration of zoning could be a complex process therefore, procedures must be established for its implementation.

Zoning variances is often allowed to make amendment arising from specific and unusual problems imposed by the strict interpretation of the ordinance. It allows for the adjustment of the zoning standards to meet peculiar nature of the location, topography, soils, shape, size etc. which are otherwise difficult to comply with.

Land acquisition policy, traffic and transportation regulations in Lagos state:

The most potent law upon which land-use acquisition is derived in Nigeria is the Land-Use Act of 1978. The law vested all land within the State in the Governor. Under the law, all land was to be held in trust and administered for the use and common benefit of all Nigerians. It, however, provides for exclusive right of use and control of land (in possession of lands) under Federal Government and her agencies. Specifically, Section 1 (a) of the Land-Use Act provides that all land in urban land area shall be under the control and management of the Governor of each state. It is upon the provisions of this clause that many land areas were acquired for institutional use by both the state and the Federal Governments. Coincidentally it was easy to acquire land by the Federal Government for Federal Institutions because the law was enacted by the Military Government in 1978 due to the fact that the form of governance was more a unitary system of government.

In support of land acquisition the most recent planning law in Nigeria, the Nigerian Urban and Regional Planning Law Decree No. 88, 1992 Section 75 (1) provides that where it appears to the National Planning Commission, the State Board or the Local Planning Authority that it is necessary to obtain any land in connection with planned urban or rural development in accordance with the policies and proposals of any approved plan, any right of occupancy subsisting on such land shall be revoked on the recommendation of the appropriate authority. This is further supported by Section 75 (2) that such an action should be in accordance with the relevant provision of the Land-Use Act. It is expected that appropriate compensation should be paid within reasonable period, to the land owner(s).

The land acquired by the Federal, State and those earmarked for Local Government uses were recognized in the 1985 Metropolitan Lagos Master Plan as institutional and special uses in terms of development control. These lands have been judiciously guided to conform with the use for which they were acquired. Cases of non-compliance exist but largely there has been high degree of conformity. The most recent planning laws, the Nigerian Urban and Regional Planning Act 1992 and the Lagos State Urban and Regional Planning Board Edict No. 2 of 1998 also recognized the acquisition policy of the Land Use Act. Laws controlling transport in Lagos State include the Lagos State Transport Corporation Law Cap 104 of 1977 which was enacted to provide efficient, adequate, economically and properly integrated modern system of public transport facilities. The Lagos Parking Authority Law Cap 95 of 1980 also provides for parking authority to develop truck terminals, horizontal high rise and off street parking spaces and charge fees on private commercial parks. The recent promulgation of the Lagos State Traffic Management and the Lagos State Road Maintenance Agency are efforts to improve the traffic situation in the state.

RESULTS

The study identified major institutional land uses in metropolitan Lagos. The major areas and their distribution patterns within Lagos are shown in Table 1.

Table 1: Institution land uses on metropolitan Lagos

Land use	Location
Federal Secretariat, Ikoyi	Lagos South East Area
Ikoyi Cemetry	
Police Barrack Ikoyi	
Dodan Barrack and Golf Course, Ikoyi	
Tafawa Balewa Square, Lagos Island	
University of Lagos, Akoka-Yaba	Lagos Central Area
Yaba College of Technology	
Federal School of Health Technology, Yaba	
Lagos University Teaching Hospital, Idi-Araba	
Army (AN) Barrack, Onike	
Army Barrack, Yaba	
Maryland Army Cantonment	
Army Resettlement Scheme, Oshodi	
Lagos State University, Ojo	Lagos South West Area
Navy Barrack – Ojo	
Kirikiri Prison Complex, Kirikiri	
Ojo Army Barrack, Ojo	
International Trade Fair Complex, Ojo	
Festac Town	
Muritala International and Local Airport, Ikeja	Lagos North Central Area
Lagos State Government Secretariat, Ikeja	
Police College, Ikeja	
Lagos State Teaching Hospital, Ikeja	
Lagos State Old Secretariat, Ikeja	
Lagos High Court Complex, Ikeja	

The observations by the researcher over 10 years noticed that the land uses outlined above constitute major bottlenecks on traffic interactions around the areas in which they are located as they individually occupied large tracts of land areas, through which thoroughfares are not usually allowed. It is also observed that these land uses spread across the land area of metropolitan Lagos. The study on analysis of findings provide details on the effects of these land uses on traffic around their locations.

DISCUSSION

Generally along major arterial roads abutting institutional land uses identified in this study, major traffic hold-ups are the norms especially at mid-days, Monday to Saturday. This has been due mainly to the fact that vehicles are forced to travel the whole length of these land uses before they can turn to connect any destination around these areas. As stated earlier, land areas occupied by these land uses are usually very large. The reason for this as identified by the study was due to the fact that Lagos was the capital city of Nigeria, thus the need to have the presence of some of these land uses such as the Lagos University Teaching Hospital, Yaba College of Technology and the University of Lagos. For the required administrative reason the Federal Secretariat was located at Ikoyi, a prime land area, in Lagos south-east. Also for functional reason to connect easily with other parts of the world, the former Ikeja International and local Airports now Muritala International and Local Airports are strategically located in central area of Lagos. For security reason and due to the history of governance and political administration in Nigerian development which has been largely under military governance, military installations and barracks were sprinkled to cover the spatial spread of metropolitan Lagos from Lagos south-east (Dodan Barracks and Bonny Camp), south-west (Ojo Army Barracks and Navy Barrack), Central (Maryland Barracks, Yaba Army Barrack and Ikeja Air force Base) and north (Ikorodu Army Barracks). This configuration could have been deliberate by the several military administrations to provide security network for the city. In an attempt to achieve this, large tracts of land were acquired in these locations at very outrageous prices. Also, it is important to note that most of these acquisitions were done when these locations especially those in the central area, south-west and northern parts of the city were in the urban fringes but now these locations can no longer be defined as fringe areas rather they are now contiguous parts of the city and they have been surrounded by densely built-up land areas for variety of urban land uses and

predominantly residential areas with the later being a major urban traffic generator. The previous quiet low level traffic areas are now active, noisy and heavy traffic neighbourhoods. These call for urban research and planning solutions in order to alleviate the economic social and psychological pains inflicted on Lagosians by these massive non-thoroughfare tolerant land uses. The following study discusses the identified land uses and the traffic scenario generated by them.

The Federal Secretariat, Ikoyi: With the movement of the Federal capital of Nigeria from Lagos to Abuja in 1991 and the major directive by the government that all Federal agencies should move their headquarters to Abuja, it was expected that there will be a major relief on the traffic situation around Federal government administrative premises in Lagos of which the Federal Secretariat, Ikoyi, is a prime location. Though substantial drop in traffic volume has been achieved in terms of human and vehicular traffic but the secretariat buildings are still physically located there even though with drastical reduction in the office spaces in use. The structure and routing of the traffic still remain as the roads around the secretariat are neither improved nor any new traffic management system introduced around the area. The traffic situation around this area could have remained the nightmare it used to be but for the low density residential area of Ikoyi around its eastern side, the Lagos Lagoon on its northern boundary and the Osborne Road framing it in the north which serve as major traffic collector. It is still envisaged that with the on-going attempt at selling unused Federal properties in all parts of Nigeria of which the Federal Secretariat is a prime one, the use for which the premises will be put by the prospective buyer will certainly attract more traffic around the area. It is envisaged that this major public land use which is likely to be turned into major commercial area located beside a high profile residential area will generate a major land use conflict as major central business area is theoretically and conceptually not acceptable in planning land use principle due to their incompatibility. Envisaged environmental problems include higher level of noise, commercial traffic, miscreants, crime, prostitution, bootlegging among other social vices. There is need to put these buildings into use that will make them sustainable. Therefore this study suggests the need for investigation of the best use that will not generate grave environmental problems. The nature of use should not be determined by market forces alone.

Dodan barracks and Ikoyi golf course, Ikoyi: Dodan Barracks was the former location of the office of the Head

of State of the Federal Republic of Nigeria. It is located in the Lagos south-east, adjacent to Obalende, a settlement for those affected by urban renewal scheme of Lagos Island. Obalende is a high density-low quality residential area. To the eastern part of Dodan barrack is high quality-low density residential area of Ikoyi. As expected the Dodan Barracks is strategically located and condoned from major traffic arteries except for the Ikoyi Road which leads directly to the Federal Secretariat, thus traffic around this major and massive land use are forced to travel round longer distances in a circle to get to other land uses around the Dodan Barrack. This most often leads to traffic congestion along Awolowo Road and Kingsway Road which are the major collector roads in the area. The situation is now more with the alarming rate of increased land use intensity and change of land use from residential to commercial along major roads around the Dodan Barracks and the Golf Course. Such roads rapidly experiencing intensive pressure of change of use include Kingsway Road, Awolowo Road, Sumbo Jibowu Street, Akanbi Damola Street, Raymond Njoku Street among others. Thus there has been tremendous increase in traffic around this area but with no significant increase in road and pedestrian carriage ways.

Tafawa Balewa Square (TBS), Lagos Island: This is a major symbolic public and recreational land use. It is synonymous with major classical events such as major political rally, major musical events and religious gathering. It is located on south-eastern part of Lagos Island. Surrounding it are major government institutions which include the independent Building, the Federal High Court, Kings College, Catholic Church Secretariat amongst others. Within the complex is also the former Parliament Building. The complex also discourages traffic thoroughfare, therefore traffic congestions are usually experienced around the complex, even though like the Federal Secretariat, most of the Federal establishments adjoining the TBS have moved to Abuja with skeletal staff still operating in these buildings.

Lagos central area: Major institutional land uses grouped within the Lagos central area in this study are:

- University of Lagos Akoka, Yaba
- Queens College Yaba
- Yaba College of Technology, Yaba
- Federal College of Education (Technical) Akoka
- Federal Technical College, Yaba
- Federal School of Health Technology, Yaba
- Lagos University Teaching Hospital/University of Lagos College of Medicine, Idi-Araba

- Army Barracks, Yaba-Abule Ijesha
- Army (AN) Barracks, Onike
- Atan Cemetery, Yaba

Prior to the creation of Lagos State in 1967, the Federal Territory which was the capital of Nigeria was within the land area of Lagos Island, Ikoyi and Victoria Island. It extends from the north to Yaba area, thus these institutional land use areas were located around the fringe of the Federal Territory which shared boundary with the former Western Region of Nigeria. All the institutions outlined above are still under the Management of Federal Government agencies, except the Atan Cemetery which is under the Lagos Mainland Local Government. As characterized by the nature of government land acquisition, each of these land areas occupies large chunks of land. The University of Lagos is located in the eastern part of the central area. It is bounded in the east by the Lagos Lagoon. There is only one major road leading into this massive educational area, the University Road, with the right of way of about 15 metres wide. Despite the introduction of a second gate which also opens into smaller road width in Onike end of the campus, roads leading into University of Lagos are usually congested especially the University Road approach during the morning and evening peak periods.

Neighborhood traffic stand-still is a daily scene around the Queen's College, Atan Cemetery, Yaba College of Technology, Federal College of Health Technology, Federal College of Education (Technical) and the Army Barracks between 1.30-3 p.m. on Monday-Friday. This is due to the fact that these land uses occupy large land areas of which thoroughfares are not allowed, thus traffic will have to contend with only one major traffic corridor of Herbert Macaulay Road. As soon as traffic gets into Herbert Macaulay Road at about 2 pm the road capacity is filled up with immediate traffic stand still everywhere. The repercussion of this is an hour loss, psychological stress and environmental pollution. The nature of traffic around the Lagos University Teaching Hospital/University of Lagos, College of Medicine is similar to the traffic situation around the University main campus at Akoka as the only major road into the hospital complex Ishaga Road is also a low capacity road.

Maryland army cantonment: The Maryland Army cantonment is perhaps one of the largest single land use areas in the central area of metropolitan Lagos. As with the tradition of military installation it is a major traffic interaction constraints in the city as traffic will have to contend with only Mobolaji Bank Anthony Way which is also a Presidential corridor linking the city with the local

airport end of the city. This road is therefore a busy traffic corridor. It is the only road through which traffic, especially commercial vehicles are forced to pass through to connect other parts of the city. To link other parts of the city, vehicles and human traffic are forced to turn round the barracks over long distances, thus creating longer journey time. Also during the morning, afternoon and evening peak periods which are unique to the Mobolaji Bank Anthony Road, horrifying traffic congestions are most often the case, with its attendant environmental consequences and man-hour loss. The problem created by the Police College and Nigeria Customs along Mobolaji Bank Anthony Way is similar to those generated by the Maryland Army Cantonment.

Muritala international and local airports Ikeja: The airport is presently located in a central position in the city; even though the land of its location was acquired when it was at the urban fringe. It is presently a major constraint to traffic circulation in the city: Despite the central advantage of its location, it is a major environmental nuisance in the city; especially the noise generated by aircrafts taking off and landing at the airport. Specifically on traffic, the major road traffic corridor on which traffics are forced are Abeokuta Expressway and Apapa-Oshodi Expressway. The former should immediately be improved through the creation of service lanes as it exists along Apapa-Oshodi Expressway. This will go a long way in relieving the traffic congestion along Abeokuta Expressway.

The Ojo region institutional land uses: The Ojo Region is located in the south western part of metropolitan Lagos. This area is laced with many institutional land uses which include the following:

- Lagos State University, Ojo
- Ojo Army Cantonment
- Technical College, Sabo
- Navy Barrack
- Kirikiri Prison Complex
- Festac Town

All the uses outlined above are contiguously located. They spread along about 30 kilometers from Lagos State University, Ojo, to Festac Town mile 2 without any opportunity for motorists linking other parts of the city to turn as they all discourage thoroughfare. It is only at the Lagos State University end that an opportunity through LASU-Idimu Road exists, which is about 30 km to mile 2 where traffic can connect Apapa-Oshodi Expressway to link other parts of the city. The land area, surrounding all these institutional land uses are high

density residential areas which generate high volume of human traffic, private and commercial vehicles during the morning and evening peak periods.

Lagos State New Secretariat Alausa, Lagos State Old Secretariat and Lagos State University Teaching Hospital, Ikeja: The Lagos State New Secretariat, Alausa, is fortunate to have been located close to the Lagos-Ibadan Expressway. Also it is well integrated in such a way that its traffic, are linked with the Lagos-Ibadan Expressway. This is a major and rational planning decision taken to avoid a major traffic problem that could have been generated by this major land use. The case of the old secretariat is not the same as that of the new secretariat. The Old Secretariat is contiguously located with the Lagos State University Teaching Hospital and the Lagos High Court Complex. The traffic congestion most often experienced around this area are forced to go through Oba Akinjobi Road.

CONCLUSION

Based on the discussions above the study suggests the following as strategic areas through which the congestion generated by the massive public institutional land areas in metropolitan Lagos can be reduced.

- Preparation of new master plan or strategic plans for land-use development in Lagos.
- Reduction in the sizes of some of the institutional land uses especially the military land use areas. This is particularly more important in Lagos since Lagos is no more the capital city of Nigeria, thus the military presence should be significantly reduced.
- Reduction in the sizes of the military areas should be planned to create major traffic corridors, mainly roads, to improve traffic interaction, thus reducing intra-urban travel time and reduction in environmental pollution from vehicle emissions.
- The city of Lagos should be planned to catch up with the global city network as an entrepreneurial city rather than her old administrative function. The city should be provided with attractive commercial and communication centres required to be classified as a global city.
- There is need to open up peripheral areas of some of the institutional areas identified, to connect with other major traffic corridors. For example the University of Lagos can be connected through the Lagos Lagoon to link up with the Third Mainland Bridge.
- Some of the Military Barracks should be totally removed and such area converted to purely residential areas and thoroughfare roads be allowed to pass through them.

- Specifically along the Ojo Region; at the International Trade Fair point there should be a major link to connect LASU-Idimu Road and Isolo areas. This will relieve the Badagry Expressway and congestion at the Volkswagens and Iba Junction points along the road.
- Ring roads should be constructed to collect traffic around metropolitan Lagos for those who have nothing to do within the central areas of the city, to connect areas where they intend to visit within the city. This is particularly required around the south western end to link Apapa to Ojo, Igando, Abule-Egba and to Sango-Abeokuta Expressway. The construction of the Fourth Mainland Bridge at Lekki-Ibeju end to link Ikorodu will also serve as part of the Lagos Ring Road project.
- Unused land area within these institutional areas should be given out to the public through the appropriate government agencies for residential schemes, thus allowing opportunities for thoroughfares to be constructed through these land areas.
- In the interim the present radio reports on traffic situation in the city especially during the peak periods should be encouraged. It is suggested that government should specifically dedicate a radio station to traffic and the city news reporting at least to cover the peak periods. This will make traffic movement in the city more efficient. The megacity status of the city is an investment attractive index for the city and all efforts should be made to achieve Lagos investment friendly land use efficiency.
- There is need for sincere cooperation between all road traffic management agencies in the city, rather than the recent conflicts between them.

While many of these suggestions are ordinarily feasible, it is recognized that due to the nature of conflicts arising from landed properties between the Lagos State and the Federal Government a lot of logistics, security, legal and ego problems are envisaged which can make these suggestions look like mere academic exercise but with common goal and spirit of making life comfortable for Nigerians by both levels of government, the suggestions are not impossible tasks to accomplish.

REFERENCES

- Adedibu, A.A., G.O. Opeloyeru and M.A. Ibraheem, 1998. Monitoring urban growth in developing cities: A case study of Ilorin. *J. Nig. Inst. Town Planners*, pp: 56-69.

- Ayeni, B., 1979. Concepts and techniques in urban analysis. Croom Helm, London.
- Balchin, R.N., 1991. Urban Land economics and public policy, Hampshire: Macmillan Education Ltd.
- Daniel, P.W., 1975. Office location: An urban and regional study, London: Bell.
- Garrison, W.L., 1979. Connectivity of the interstate Highway System. *J. Regional Sci.*, VII: 121-137.
- Land Use Act of 1978.
- Lagos State Transport Corporation Law Cap 104, 1977.
- Lagos Parking Authority Law Cap 95, 1980.
- Nigerian Urban and Regional Planning Decree 88, 1992.
- Northam, R.M., 1979. Urban geography. New York: John Wiley and Sons.
- Mabogunje, A.L., 1986. Urbanization in Nigeria, University Press, London.
- McLoughlin, J.B., 1969. Urban and Regional Planning: A System Approach, London: Faber and Faber.
- Maxfield, D., 1984. An Interpretation of the Primal and Dual Solution of Linear Programming. *Professional Geographer*. XXI: 255-263.
- Morenikeji, W., 1998. Analysis of rental structure in residential buildings in minna (1980-1996), *Ife Planning J.*, 1: 27-34.
- Odumosu, T., 1999. Lagos State in Maps. Rex Charles Publishers, Ibadan.
- Okpala, C., 1981. Residential Mobility in Nigerian Cities: An Explanatory Analysis. NISER Monograph Series, No. 18, Ibadan.
- Omirin, M.M., 1998. Land accessibility and low income house building activity in metropolitan lagos. *J. Environ. Studies*, 1: 76-91.
- Olaore, G.O., 1991. Values of land and rentage of shelter in nigerian urban areas: A Case Study of Kaduna, NISER Monograph, Series No. 19 Ibadan.
- Owen, W., 1956. The metropolitan transportation problem. Brooking Institution, Washington D.C.
- Oyesiku, O.O., 1998. Modern urban and regional planning law and administration. Ibadan: Kraft Books Limited.
- Salau, T.I., 1999. Spatial analysis of urban road system: A study of abeokuta. *J. Transport Dev. Initiatives*, 1: 13-24.