

## URBAN EXPANSION AND URBAN LAND USE IN ADO EKITI, NIGERIA

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### ABSTRACT

*The expansion of Ado-Ekiti started with the creation of Ado-Ekiti as the divisional headquarters of Ekiti Division in 1945 and with the creation of the old Ondo State in 1976, the city continued to expand; this expansion become significant with the creation of Ekiti State in 1996. The resultant expansion had caused a change in the use and apportioning of land because various forms of people, goods and services found their way into the city, thus diversifying the land use and making it more intense, with the resultant city expansion of the city at 10 years intervals from 1956-2006 and note how this has affected the land use. The projection is done to year 2030 to know what area of land is likely to remain unaffected by the expansion. Geo-spatial data in the form of ILWIS, GIS and RS were acquired with Ordinance Survey Maps and other graphic and literacy data to show the expansion that has resulted and questionnaires were dissemination to capture the land use changes that has resulted over the years. It was discovered that Ado-Ekiti had an area of 2.5 square kilometers in 1956, which increased to 6.9 square kilometers in 1996, and 36.7 square kilometers in 2006; if nothing is done to stem the uncontrolled expansion, the area become 134.7 square kilometers in 2030 appropriate mechanisms are recommended to be put in place to stem urban expansion, and to direct and reprioritize land use.*

**Keywords:** Urban expansion, land use, Ado-Ekiti.

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### 1.0 INTRODUCTION

Since the colonial days, Ado-Ekiti had been central (Educationally and socio-culturally) to the administration of Ekiti land, a position that attracted the infrastructure necessary for the economic and socio-cultural and political development. The increase in size has been phenomenal, thus, transforming the land use from the rural agro-economical to a variant of land use system in the typical urban setting. Though the rapid expansion of Ado-Ekiti could be traced to the 1940's (Ojo, 1966) when it became the State Capital of Ekiti State, Nigeria. This remarkable change has increased the status of Ado-Ekiti as a nerve centre of Ekiti State, thus making Ado-Ekiti a primate city which induces mass drift, not only from its nearby hinterlands, but also from the large cities like Abuja, Lagos, Ibadan, Ile-Ife and many others. The influx of people into Ado-Ekiti was exacerbated by the changes that took place in the socio-economic and political life of the city not only

because of infrastructure such as electricity and potable water, but mainly with the presence of employment opportunities that led to the influx of more and more people of whom a greater majority were erstwhile rural dwellers. This insurgence of people and firms into the city has warranted the expansion of the city both demographically and spatially and has expansion of the city. With the absence of effective planning mechanism, the city tends to mimic the painful experience of the developed countries of the world during the nineteenth century when development proceeded without Physical Planning.

In the light of these, Ado-Ekiti has witness unprecedented physical haphazard expansion. Needless to say, the upsurge has introduced its attendant misnomers specifically reflected in disoriented homestead, ram-shackle dwellings and undirected development lines that result in slums and shanty settlements, all leading to environmental management difficulties especially in Waste Management and control of congestion-related diseases. Besides there is unauthorized and uncoordinated land use both at individual and cityscape levels resulting in creation of Urban Jungle. For example, several residential buildings are converted into Commercial, Medical, Educational and other uses without regards to the parameters for Agriculture, Markets- even Roads- are converted to residential uses.

## **2.0 SCOPE, AIM AND OBJECTIVES OF THE STUDY**

Ado-Ekiti is a Yoruba settlement with a projected population in year 2006 of 409,060 inhabitants (NPC, 2006). The change in the socio-political status of the town in 1976 is probably responsible for this increase in population. The projected populations of the city for the years under reference are calculated as follows: 99,923 inhabitants for the year 1956, 200,855 for 1966, 155,181 for 1976, 204,205 for 1986, 274,205 for 1996, and 409,090 for 2006 (Oriye, 2008). The rapid influx of people, firm's industrialists, and other land use elements into the city has created disequilibria between the demand and supply of accommodation (Olotuah, 2000). The availability of land in a city has been constrained by its topography, especially the hills and rock outcrops, roads and river (Oriye, 2008). Given this situation, the non-availability of open land spaces with the corresponding increase in competition for land use has resulted in the swallowing up peripheral rural settlements such as Ebira, Adawo, Aba Aladiye, Aba opopogboro and Adebayo in a process of Urban sprawl. The chaotic land use situation of the city is made worse by the absence of a Master plan to formulate, coordinate and regulate the different land settlements within the urban fringe and the haphazard location of land use types without a clearly discernable rhythm.

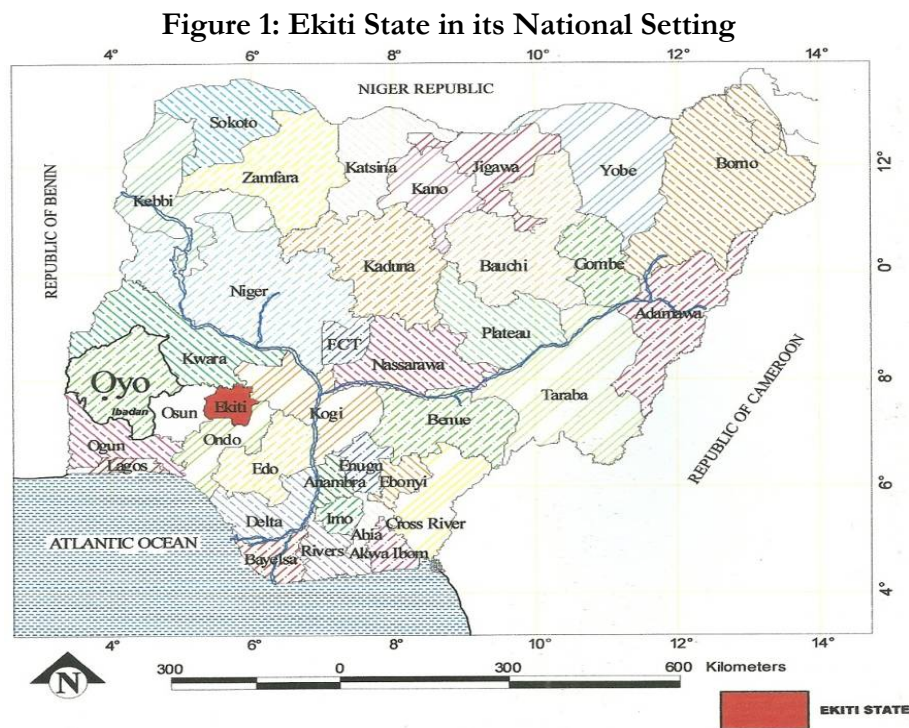
In the light of the above, it is important therefore to have a proper analysis of the contending issue of urban expansion and growth, and the complementing land uses of the city. The study intends to look into the urban expansion and land use types and propose functional approaches for strategic planning and the development

of an operational frame work for urban growth and land Use Management with particular focus on the Ado-Ekiti metropolis. However, the specific objectives to achieve include:

1. To identify the trend of expansion of the city at 10 yearly intervals of 1956-2006
2. To examine the land use type in the city, and
3. To investigate the implication of the expansion of the land use in future up to 2030.

### 3.0 THE STUDY AREA

The study took place in Ado-Ekiti, the capital city of Ekiti State. The city is located within the North Western [part of the Benin-Owena River Basin development Area. The population of the region was put at 245,661 with a density of 310 persons per square kilometers (NPC, 1991).

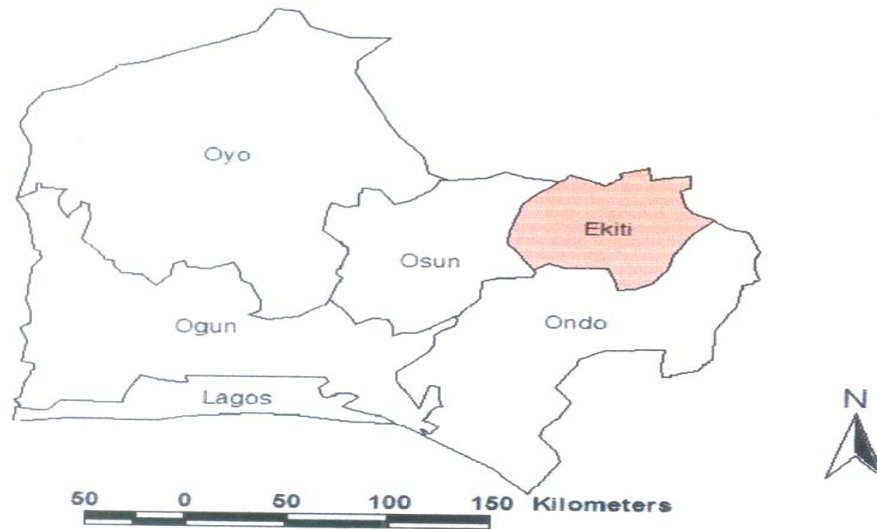


Source: Ekiti State Ministry of Lands and Physical Planning, 2011

The city lies between Latitude  $7^{\circ}34'$  and  $7^{\circ}44'$  North of the Equator and Longitude  $5^{\circ}11'$  and  $5^{\circ}18'$  east of the Greenwich Meridian. It has a number of Satellite towns around it. To the North is Iworoko, about 16 kilometers away from the city; to the east are Are and Afao, about 16 kilometers; to the West are Iyin and Igede, about 20km and to the South is Ikere, about 18 km. Ado-Ekiti enjoy the privilege of been a nodal town and located at the centre of the state; hence roads that leads to other parts of the state converge in the city. See Figures 1, 2 and 3. The change in the economic and political status of the city has brought a

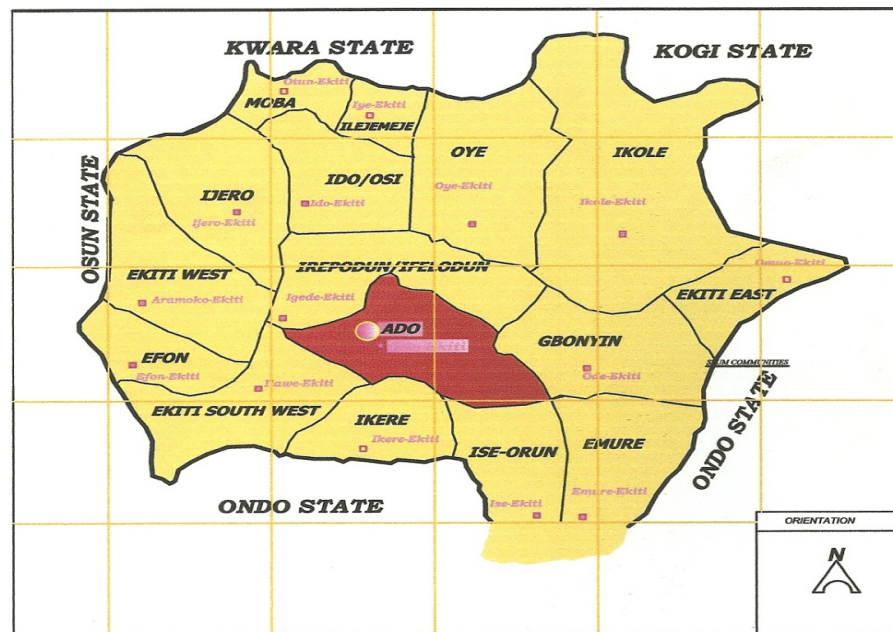
corresponding increase in the number of its inhabitants. The city had a projected population of 274,205 in the year 1995 while that of 2030 is put at 1.11 million given the current growth rate of 4 per annum out of which 82 percent are expected to live in urban centre. This development, no doubt, will have some consequences on the land use pattern of the city.

**Figure 2: MAP OF SOUTH-WESTERN NIGERIA**



Source: Ekiti State Ministry of Lands and Physical Planning, 2011

**Figure 3: Map of Ekiti State showing its Local Government Areas**



Source: Ekiti State Ministry of Lands and Physical Planning, 2011

#### 4.0 MATERIALS AND METHODS

The Data used for this research work were mainly from primary and secondary sources. The primary data were collected through the use of questionnaires, interviews, reconnaissance and personal observations. The secondary data were sourced from literature and various ministries and establishments. For instance, the ordinance Survey Maps of Ado-Ekiti, especially the Topographical Maps were obtained from the Federal Ministry of Survey, Lagos; the LANDSAT MSS, SPOT XS and UTM from Ministry of Forestry, Abuja, and RECTAS, Obafemi Awolowo University, Ile Ife. All the maps were formatted to scale as necessary for uniformity. Integrated land and water Information Systems (ILWIS), Remote Sensing (RS) and Geographic Information System (GIS) techniques were apply for the analysis, generated at the scale of 1:50,000 covering the period of 1956-2006. The growth measure was observed from 1956 to 2006 at ten years intervals.

The entire population of Ado-Ekiti constitutes the target population for this study, which was projected at 409, 065 inhabitances from the 2006 NPC. The sample size of 600 was randomly selected, covering the seven zones of the study area. Graphical data inform of maps collected for the study were analyzed by subjecting them to Geographical Information System and Remote sensing method of analysis while the statistical data was analyzed using SPSS (Statistical Package for Social Sciences), version 10.0, univariate and bivariate statistics; Correlation and Multiple Regression models.

#### 5.0 RESULT AND DISCUSSIONS

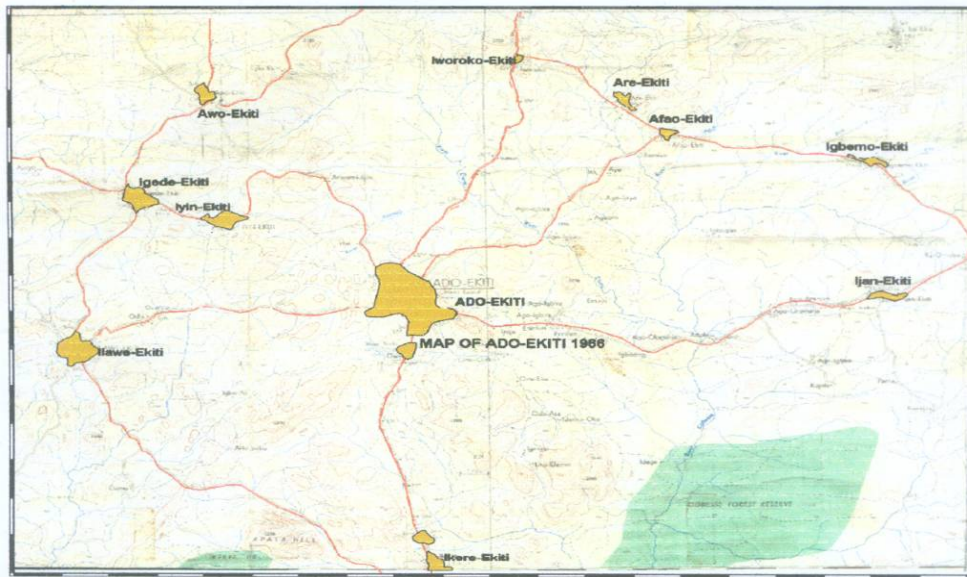
Over the past 50 years, the urban of Ado-Ekiti has increased up to about fifteen 14.68 times in size. Most of the urban expansion occurred between 1996 and 2006. Due to the rapid population growth, the urban area of the city grew from 2.5 square kilometers in 1956 to 36.7 square kilometers in 2006. The maps showing the expansion of Ado-Ekiti within the periods of study were analyzed and discussed. The aerial imagery of Ado-Ekiti generated from Ojo (1966) for the year 1956 served as the base map for the work. The map was extracted and digitized while the screen analysis was done to calculate the surface area. The result indicates a total built up of area of 2.5km<sup>2</sup> for the entire Ado-Ekiti.

##### 5.1 ADO-EKITI IN 1966

The result of this analysis proved that Ado-Ekiti Urban Area had grown over time. The aerial imagery of Ado-Ekiti generated from Ojo (1966) Yoruba Palaces, 1956, served as the base year for the work.

##### 5.2 ADO-EKITI IN 1976

The map was extracted by digitizing the map and on screen analysis was done for calculations of the area. It indicates that the total built up areas of Ado-Ekiti was 2.5km<sup>2</sup> and that the Ado-Ekiti of the time covered the Zone A area, which include Ijigbo, Mungbagba, Matthew, Okesha, Aremu, Idolofin/Barracks Road, Atikankan, Okeyinmi/Oke-Ila, Orere-Owu, Irona and Oke Agidimo/Christ School areas.

**Figure 4: Map of Ado-Ekiti in 1966**

Source: Ado-Ekiti Sheet 244SW & SE Topographic map federal surveys Lagos 1966)

The result of the mapping shows an increase in the spatial coverage of Ado-Ekiti and the total built up area is 6.9km<sup>2</sup>. The areas of Ado-Ekiti that falls under the spatial-extent of the 1966 growth are the Zone B area. This includes places like Fajuyi, Dallimore, Oke-Esa, Odo-Esa, Ajowa/Temidire, Kajola/Olobe/stadium and Ugbaletere (stone-carry-stone).

There was an increase in the spatial expanse of Ado-Ekiti to 9.7 km<sup>2</sup>. The areas of Ado-Ekiti covered are in Zone C, i.e Similoluwa, Onigari, G.R.A, Textile Area, Bamgboye, oke-Bola, and Omolayo areas.

### 5.3 ADO-EKITI IN 1986

There was an increase in the spatial coverage of Ado-Ekiti to 13.6 sq.km covering Zone D. That is Hospital Road/Ori-Apata, Doctors Quarters Basiri South/Owolabi Junction, Federal polytechnic, Jimoh Aliu, Olora Layout, igbagbolere Quaters, Orire Hospital Area, Adebayo/Adamolekun, Aba- Igbira, Temidire, Odo-Ado/Agric-Road, Housing estate (State and Federal phase)

### 5.4 ADO-EKITI IN 1996

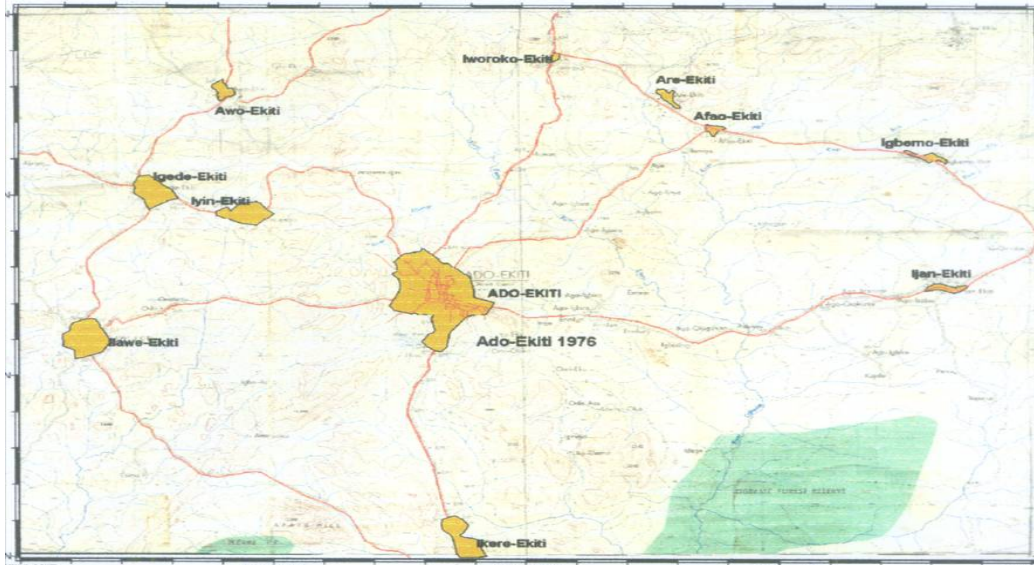
The Spatial area of Ado-Ekiti in 1996 was 19.6 sq.km covering Zone E. Places like Opopogbooro, Basiri (North), Iworoko road, Bawa Estate/Ilokun Road, Omisanjana, Nova. University of Ado-Ekiti, Ekute.

### 5.5 ADO-EKITI IN 2006

Ado-Ekiti 2006 map was extracted from a LANDSAT TM acquired in 2004. The image was processed. Geo-referenced and the boundary of Ado-Ekiti were extracted by on the screen digitizing. The area obtained is

36.7km<sup>2</sup>, this is Zone F. This include places like Atlas, Immigration Road, Ureje (Ikare Road) Erinfun, New GRA (Odo-Ado) Agric Road, Igrigiri Road, Housing estate (phase I) NTA Road, Ajebandele.

**Figure 5: Map Ado-Ekiti in 1976**

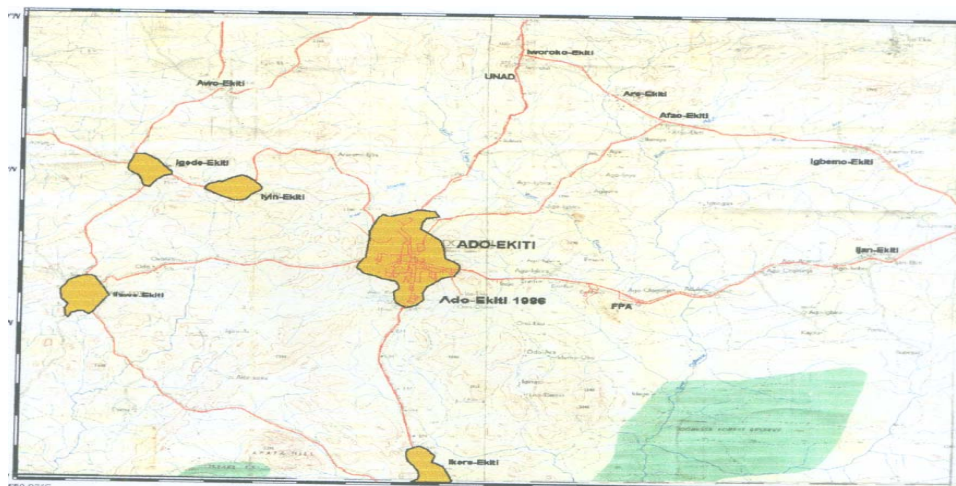


Source: Akure sheet on LANDSAT MSS, Federal Ministry of Forestry Abuja, 1976

**5.6 THE MAP OVERLAY OF ADO-EKITI 1956-2006.**

The spatial expansion of Ado-Ekiti Between 1956 and 2006 as in the previous maps was overlaid to give a composite map indicating the relative expansion per decade and giving a total picture of urban expansion in A Ado-Ekiti during the five decades (1956-2006).

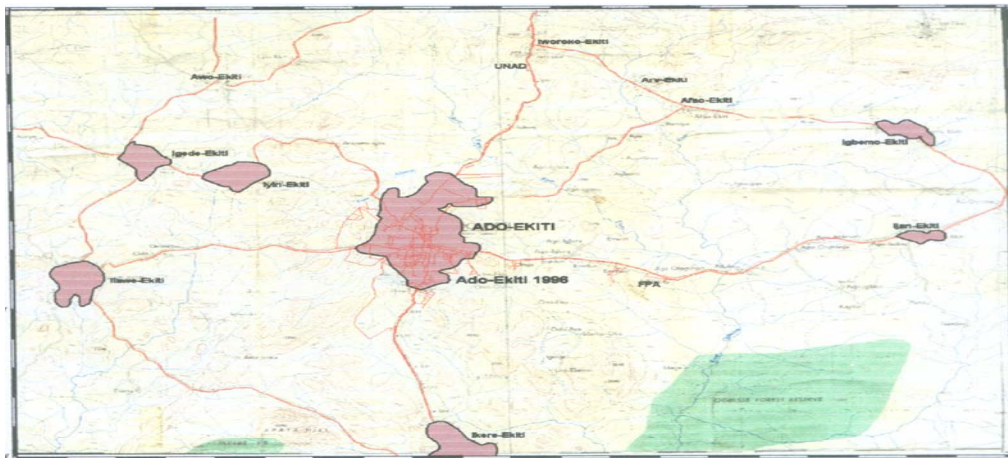
**Figure 6: Map of Ado-Ekiti in 1986**



Source: Akure sheet Map on LANDSAT MSS, Federal Ministry of Forestry Abuja, 1986

The land used for agriculture is being converted into urban purposes in all zones around the town and since Ado-Ekiti has shown the arrangement and design of buildings, public spaces, transport systems, services and amenities which is a typical urbanization. There is an urgent need for improvement in environmental planning, design and management (including Information technology) to help reduce increasing pressure on land, water, and other infrastructure on land, water and other infrastructure.

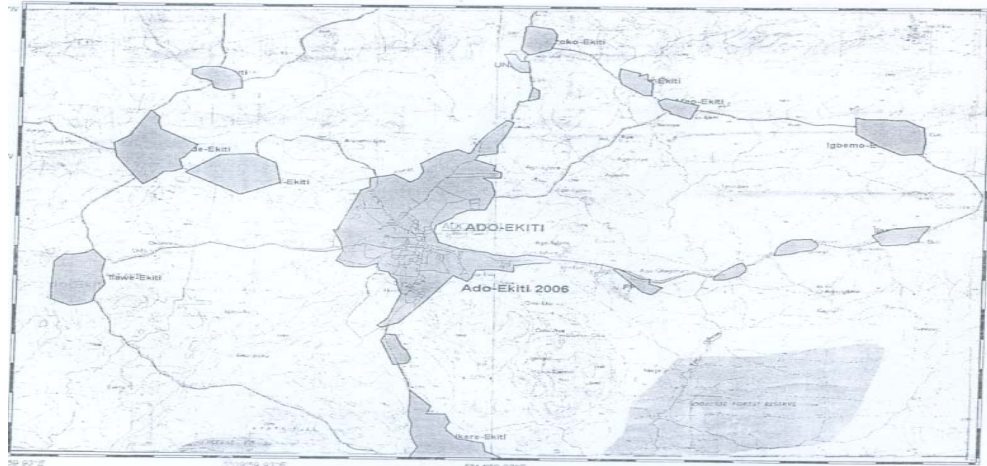
**Figure 7: Map of Ado-Ekiti in 1996**



Environmental planners need the whole data and information related to these aspects for perspective planning and management at the edge of Ado-Ekiti. There is therefore the need to create various planning scenarios for decision making.

Remote Sensing (RS) and Geographic Information System (GIS) are appropriate tools for creating such type of information system. There is also a demand to constantly monitor such changes and understand the processes for taking effective and corrective measures towards a planned and health development of Ado-Geographic Ekiti. Positioning System (GPS) and Remote Sensing data are being widely used for mapping and monitoring of urban spread, especially in some major cities in Nigeria. The same technology and data can be used for Ado-Ekiti for the spatial pattern of urban expansion over different time and can be systematically mapped, monitored and accurately assessed from satellite data alone with convectional ground data. The most productive farmland is being lost to urban encroachments into rural land over the past thirty years. The unchecked physical expansion and population of Ado-Ekiti has resulted in agricultural land loss around the town. Space is limited inside the city but multifaceted demand for space kept shooting up.



**Figure 8: Map of Ado-Ekiti in 2006**

Source: Extracted From LANDSAT TM, RECTAS, Ife; 2006

In order to meet the space requirements, village lands, (Ilokun, Aba-Igbira) are annexed by the main city. This consumed the cultivated and vegetated lands from the villages. Surrounded by Ado-Ekiti and internal structures of the town has also been changed. These changes in the city have not been planned resulting in haphazard development, which in turn yielded problems for the proper functioning of the town. The city exhibit problems common to small cities of the developing countries in varying degrees, which includes inadequate housing, economic decline, poverty, slums and over-crowding, ill health, social polarization, traffic congestion and environmental pollution among others. The growth of any city is a good sign of development, but the way the expansion takes place call for concern. In the context of urban land, one of the land use issues, which has become of prime concern in recent times is the loss of prime agricultural land use to the physical expansion of Ado-Ekiti.

As the growth are absorbing smaller villages on the periphery gulping fertile agricultural lands: Uncontrolled and unauthorized urban development have also taken place without having basic civic amenities in the city. Most fundamentally, the character of urban environments in the world is that urban environments throughout the world is the outcome of interactions among a host of Environmental, Economic, Technology, Social and Demographic, cultural and Political forces operating at a variety of geographic scales ranging from the global to the local.

During the study period, the city experienced the positive growth rate in spatial area. The area of the city increased from 2.5 to 36.7 square kilometers in the span of five decades. The city has absorbed lots of precious agricultural land. Surely, this is just a rough estimation, large-scale maps and every high-resolution satellite data, (e.g. IKONOS) covering all Ado-Ekiti should be used. There were not enough data to see the

population changes over same period, as it affects environmental problems. However, the direction of expansion is determined by the following:

- a. The Major Transport Routes: The direction of the transport routes and axis play major role in deterring the direction of expansion.
- b. Physical Obstacles: There are physical obstacles such as rocks, hills, rivers, etc. that affect the direction of development.
- c. Contiguous Settlements: There are some settlements whose expansion will trigger a leapfrogging expansion process such as Ikere, Iyin, Igede, Iworoko, Are/Afao and Ijan.

This expansion of at ten years interval, between 1956 and 2006 is clearly illustrated in Table 1 below. The table shows the expansion of Ado-Ekiti for each decade.

**Table 1: Increase in Area of Ado-Ekiti for each Decade**

S/N	DECADE	INCREASE AREA (KM <sup>2</sup> )	PERCENTAGE GROWTH
1.	1956-1966	4.4	-
2.	1966-1976	2.8	9.4
3.	1976-1986	3.6	12.1
4.	1986-1996	6.3	21.2
5.	1996-2006	17.1	57.4

Source: Author's Field Survey, 2008

## 5.7 LAND USE TYPES

Land Use simply means 'the use to which a piece of land is put' Rapid Urban Growth may influence the degree, types and magnitude to which land is put, on the other land use configuration of an area determines the manner and rate of Urban Expansion on different Land Use types on the other.

Therefore, to ascertain the impact of Urban Expansion on the different Land Use types of Ado-Ekiti, the identification of the different Land Use was carried out through fieldwork.

**Table 2: Land Use Types by Zones**

Types of Use	Zone A%	Zone B%	Zone C %	Zone D%	Zone E %	Zone F %	Zone G %
Educational	30.9	9.8	25.3	15.8	21.8	23.9	16.0
Health	17.5	15.2	8.9	3.2	6.4	7.0	-
Residential	53.6	40.2	44.3	46.3	73.1	43.7	76.0
Religious	18.6	9.8	10.1	7.4	10.3	18.3	4.0
Cemetery	5.2	1.1	-	-	3.8	1.4	-
Abattoir	4.1	2.2	2.1	-	2.6	2.8	-

Industry	6.2	3.3	5.1	1.1	1.3	1.4	-
Government	5.2	2.2	-	3.2	1.3	1.4	-
Agriculture	11.2	3.3	3.8	1.1	5.1	1.4	-
Motor Park	7.2	2.2	1.3	1.1	1.3	-	4.0
Civil	5.2	2.2	1.3	1.1	1.3	-	4.0
Cultural/ Traditional	8.2	1.1	2.5	-	1.3	-	4.0
Others	4.1	-	3.8	7.4	1.3	1.4	4.0

Source: Author's Field Survey, 2008

## 6.0 SUMMARY OF FINDINGS AND RECOMMENDATION

This study focused on the impact of urban growth in relation to urban land use in Ado-Ekiti, Nigeria. The study employed Remote Sensing Technology to determine the rate of urban expansion with reference to urban land use types in Ado-Ekiti for the period of 1956-2030. The result of the work revealed and point to the fact that the city has only expanded in aerial extend and has also proceeded very rapidly within the study period (1956-2006) with some attendant consequences such as urban slum, uncoordinated growth and rapid conversion of agricultural lands to various urban uses.

In conclusion, it was discovered that:

1. There is a positive relationship between urban expansion of the city and the urban land use.
2. The physical growth of the city is a function of the changes in its political and socio- economic status.
3. The city has expanded rapidly within the study period from a total built-up area of 2.5 km<sup>2</sup> in 1956 to 6.7 km<sup>2</sup> in 2006 at a growing rate of about 8.73 percent.

From the findings, some policy guidelines are drawn inform of recommendations, which include the followings:

- i. Refining the main Land Use types and the urban structure of the city by formulating a Master-plan and backing it up with appropriate legislations.
- ii. Creating effective Land Use Control Mechanisms to execute the plan of the city and to regulate its growth and associated sprawl.
- iii. Initiating the control of urban spread-out by provision of sufficient amenities on the edge of the city.
- iv. Preserving the prime agricultural lands on the periphery of the city. This is necessary for maintaining open spaces and environmental quality of the city.
- v. Initiating urban renewal process to redevelop the inner city with a view to increasing the height and physical aesthetics of the city.

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